



LIBERTY HIGH SCHOOL BASEBALL BACKSTOP REPLACEMENT

Bid Clarification 01

August 31, 2021

**DSA File Number: 7-H4
DSA Application Number: 01-119543
PTN Number: 61721-81**

Owner:
Liberty Union High School District
850 2nd Street
Brentwood, California 95402

Architect:
Quattrocchi Kwok Architects
636 Fifth Street
Santa Rosa, California 95404
P: 707.576.0829
F: 707.576.0295

Architect's Project No.: 1923

To: Prospective Bidders

The following changes, modifications and additions to Project Manual and Drawings described below are made a part thereof and are subject to all of the requirements thereof as if originally specified.

The Bidder must acknowledge receipt of the Bid Clarification in the space provided on the Bid Form; failure to do so may subject the Bidder to disqualification.

Table of Contents – Bid Clarification 01

This Bid Clarification consists of three (3) pages and the attachments as listed below.

Deleted Text is shown in ~~strikeout type~~.

Added Text is shown in ***bold italicized type***.

ATTACHMENTS:

DSA Approved Project Manual dated August 5, 2021
Bidding Documents for Fencing and Gates Scope of Work
Bidding Documents for Demo, Grading and AC Paving Scope of Work
BSK Associates Geotechnical Investigation Report and Geologic Hazard Assessment dated April 11, 2018
LHS Baseball Backstop Replacement Overall Project Schedule

Drawings: (24 inch by 36 inch)

DSA Approved Drawings dated August 5, 2021

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A. CHANGES TO PREVIOUS BID CLARIFICATIONS

None

B. CHANGES TO THE BIDDING AND CONTRACT REQUIREMENTS

Bidding Documents for Fencing and Gates Scope of Work
Bidding Documents for Demo, Grading and AC Paving Scope of Work
LHS Baseball Backstop Replacement Overall Project Schedule

C. CHANGES/ ADDITIONS TO THE SPECIFICATIONS

DSA Approved Project Manual dated August 5, 2021

D. CHANGES/ ADDITIONS TO THE DRAWINGS

DSA Approved Drawings dated August 5, 2021

E. BIDDERS QUESTIONS

None

END OF BID CLARIFICATION



Project Manual

for the

Liberty High School Baseball Backstop Replacement

August 2, 2021

DSA File Number: 7-H4

DSA Application Number: 01-119543

PTN Number: 61721-81

Owner:

Liberty Union High School District
20 Oak Street
Brentwood, California 95413

Architect:

Quattrocchi Kwok Architects
636 Fifth Street
Santa Rosa, CA 95404
P: 707.576.0829
F: 707.576.0295

Architect's Project No.: 1923.00

DOCUMENT 00 0107

PROFESSIONAL SEALS AND DSA IDENTIFICATION STAMP

DIVISION OF THE STATE ARCHITECT IDENTIFICATION STAMP

Architect
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P: 707-576-0829
Jim Theiss
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Date: 08/02/2021



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IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT

APP: 01-119543 INC:

REVIEWED FOR

SS ☐ FLS ☐ ACS ☒

DATE: 08/05/2021

END OF SECTION

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REPLACEMENT AT LIBERTY HIGH SCHOOL

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01 4000 - QUALITY CONTROL
01 4200 - REFERENCE STANDARDS
01 4523 - TESTING AND INSPECTION SERVICES
01 6000 - PRODUCT REQUIREMENTS
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SECTION 01 3900

COORDINATION AND MEETINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Coordination and project conditions.
- B. Related work.
- C. Discrepancies.
- D. Examination.
- E. Pre-Contract meeting.
- F. Pre-construction meeting.
- G. Site mobilization meeting.
- H. Progress meetings.
- I. Pre-installation meetings.
- J. Project coordination meetings.

1.02 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of the various portions of the Contract Documents to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Coordinate hours and days of Work with local ordinances and requirements.
- C. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements, supports, and installation of mechanical and electrical Work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion.

- G. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.
- H. Contractor shall coordinate Work with work to be performed by separate contractors.

1.03 RELATED WORK

- A. Referencing specification sections in "Related Work" articles is for convenience only and shall not be construed as to limit the coordination of the Contract Documents to referenced sections.
- B. Documents affecting the work of any section include, but are not limited to, General Conditions, Supplementary General Conditions, and Sections in Division 01 of these Specifications.
- C. Work in any section may relate to other work in these documents. The Contractor is responsible to coordinate all work.

1.04 DISCREPANCIES

- A. In the event of discrepancy in the Contract Documents or if uncovered conditions are not as anticipated, immediately notify the Architect and secure needed direction.
- B. Do not proceed in areas of discrepancy until such discrepancies have been fully resolved.
- C. Before starting work, verify governing dimensions at the premises, and examine adjoining work on which this work is dependent. No "Extra" or additional compensation will be allowed on account of differences between actual measurements and dimensions shown. Submit differences discovered during the work to Architect for interpretation before proceeding with the associated work.
- D. Any time extension or any increase or decrease of cost resulting from such changes will be adjusted in the manner provided in the General Conditions.

1.05 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Examine and verify specific conditions described in individual specification sections.
- C. Verify that utility services are available, of the correct characteristics, and in the correct location.

1.06 PRE CONTRACT MEETING

- A. Construction Manager will schedule a meeting with District and apparent low bidder prior to award of Contract.
- B. Attendance Required: Owner, Construction Manager, Architect, and Contractor.
- C. Agenda: Execution of the Notice of Award, Review of documents required for Preconstruction Meeting.

1.07 PRECONSTRUCTION MEETING

- A. Construction Manager will schedule a meeting after Notice of Award.
- B. Attendance Required: Owner, Construction Manager, Architect and Contractor.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of schedule of values.
 - 5. Designation of personnel representing the parties in Contract, and the Architect/Engineer.
 - 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 7. Scheduling.
 - 8. Scheduling activities of DSA Inspector of Record.
- D. Architect will record minutes and distribute copies within five days after meeting to participants, and those affected by decisions made.

1.08 SITE MOBILIZATION MEETING

- A. Construction Manager will schedule a meeting at the Project site prior to Contractor occupancy.
- B. Attendance Required: Owner, Construction Manager, Architect, Special Consultants, Contractor, Contractor's Superintendent and major Subcontractors.
- C. Agenda:
 - 1. Use of premises by Owner and Contractor.
 - 2. Owner's requirements and partial occupancy.
 - 3. Construction facilities and controls provided by Owner.
 - 4. Temporary utilities provided by Owner.
 - 5. Security and housekeeping procedures.
 - 6. Schedules.
 - 7. Application for payment procedures.
 - 8. Procedures for testing.
 - 9. Procedures for maintaining record documents.
 - 10. Requirements for start-up of equipment.
 - 11. Inspection and acceptance of equipment put into service during construction period.
- D. Architect will record minutes and distribute copies within five days after meeting to participants, and those affected by decisions made

1.09 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at bi-weekly intervals. Provide and discuss "two-week look ahead" schedule reports at these progress meetings. Coordinate progress payments and revised schedule, to monthly meeting attended by an officer of the construction company.

- B. Make arrangements for meetings, prepare agenda with copies for participants and preside at meetings.
- C. Attendance Required: Job Superintendent, major Subcontractors and suppliers, Owner, Construction Manager, Inspector of Record and Architect as appropriate to agenda topics for each meeting.
- D. Architect will record minutes and distribute copies within five days after meeting to participants, including Owner, Contractor, and those affected by decisions made.

1.10 PREINSTALLATION MEETING

- A. When required in individual specification sections, convene a pre-installation meeting at the site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of installation, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Architect will record minutes and distribute copies within five days after meeting to participants, with copies to Owner, Contractor and participants.

1.11 PROJECT COORDINATION MEETINGS

- A. Contractor will schedule project coordination meetings to be held weekly.
- B. Attendance Required: Contractor, job superintendent, Subcontractors, as required.
- C. Contractor will prepare agenda and preside at meeting.
- D. Contractor will record minutes and distribute copies within five days after meeting to participants, Construction Manager, Architect and those affected by decisions made.
- E. Copies of the minutes to Construction Manager and Architect are required as part of submission of Application for Payment.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 4000
QUALITY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Quality assurance - control of installation.
- B. Tolerances.
- C. References.
- D. Mockup.
- E. Inspecting and testing laboratories services.
- F. Manufacturers' field services and reports.
- G. Field engineering and staking.

1.02 RELATED SECTIONS

- A. Section 01 4200- Reference Standards.
- B. Section 01 4523 - Testing and Inspection Services.

1.03 QUALITY ASSURANCE - CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Correct conditions or workmanship not in conformance with specified standards or quality.
- C. Comply with manufacturers' instructions, including each step in sequence.
- D. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- E. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- F. Perform Work by persons qualified to produce required and specified quality.
- G. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.04 TOLERANCES

- A. Monitor tolerance control of installed Products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- C. Adjust Products to appropriate dimensions; position before securing Products in place.

1.05 REFERENCES

- A. For Products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents, except where a specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.
- D. The contractual relationships, duties, and responsibilities of the parties in Contract or those of the Architect/Engineer shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.06 MOCK-UP

- A. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.
- B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mock-ups are representative of the quality required for the Work.
- D. Where mock-up has been accepted by Architect/Engineer and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so.

1.07 TESTING AND INSPECTION AGENCY SERVICES

- A. Owner will appoint, employ, and pay for specified services of an independent Testing and Inspection Agency to perform inspecting and testing. Inspections and Testing will be performed in accordance with Section 01 4523 - Testing and Inspection Services; and the General Conditions.

1.08 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship and to initiate instructions when necessary.

1.09 FIELD ENGINEERING AND STAKING

- A. Each Contractor awarded Work for this Project shall provide all necessary surveying, layout, lines and grades required for the proper location of the Work.
- B. Contractor agrees to provide any and all false-work, templates, batter-boards and other such structures or devices necessary to provide for the Contractor's layout, lines and grades. Work installed in an incorrect location or elevation shall be removed and re-installed at the expense of the Contractor.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 8113

SUSTAINABLE DESIGN REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes general requirements and procedures for compliance with California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green".
 - 1. Chapter 5- Non-Residential Mandatory Measures.

1.02 RELATED REQUIREMENTS

- A. Pertinent sections specifying erosion control.
- B. Section 01 6116 - Volatile Organic Compound (VOC) Restrictions.
- C. Section 01 7419 - Construction Waste Management and Disposal.
- D. Pertinent sections specifying landscape irrigation.

1.03 DEFINITIONS

- A. CAL-Green Definitions: Certain terms are defined by CAL-Green in Chapter 5 of the Code. Words and terms used in this section shall have the meanings shown therein.

1.04 INFORMATIONAL SUBMITTALS

- A. General: Submit CAL-GREEN submittals required by code and in other Specification Sections.
- B. CAL-GREEN submittals are in addition to other submittals. If submitted item is identical to that submitted to comply with other requirements, submit duplicate copies as a separate submittal to verify compliance with indicated CAL-GREEN requirements.
- C. Acceptable verification submittals are specified in the related sections.

PART 2 PRODUCTS

2.01 REQUIREMENTS - GENERAL

- A. Provide products and procedures necessary to confirm CAL-GREEN compliance required in this Section. Although other Sections may specify some CAL-GREEN requirements, the Contractor shall determine additional materials, techniques, means, methods and procedures necessary to comply with CAL-GREEN requirements.

2.02 STORM WATER POLLUTION PREVENTION PLAN

- A. Section 5.106.1: Comply with requirements of this code section, local ordinances, General Conditions, Special Provisions, and related sections specifying erosion control.

2.03 OUTDOOR WATER USE

- A. Section 5.304.3.1: Irrigation Controllers: Comply with requirements of this code section, local ordinances and Section 32 8000.

2.04 CONSTRUCTION WASTE REDUCTION

- A. Section 5.408 Construction Waste Management, Diversion and Recycling: Comply with requirements of this code section, local ordinances and Section 01 7419.

2.05 POLLUTANT CONTROL

- A. Section 5.504.4 Finish Material Pollutant Control: All Finish materials shall comply with requirements of this code section, local ordinances and Section 01 6116.

PART 3 EXECUTION

3.01 GENERAL

- A. Comply with Section 01 7419 - Construction Waste Management and Disposal.
- B. Comply with execution requirements of related sections and applicable local codes and ordinances.

END OF SECTION

SECTION 01 4200

REFERENCE STANDARDS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of contract, including General and Supplementary Conditions and other Division 01 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF REQUIREMENTS

- A. General: This section specifies procedural and administrative requirements for compliance with governing regulations and the codes and standards imposed upon the work. These requirements include the obtaining of permits, licenses, inspections, releases and similar documentation, as well as payments, statements and similar requirements associated with regulations, codes, and standards.
 - 1. "Regulations" is defined to include laws, statutes, ordinances and lawful orders issued by governing authorities, as well as those rules, conventions and agreements within the construction industry which effectively control the performance of the work regardless of whether they are lawfully imposed by governing authority or not.
- B. Governing Regulations: Refer to General and Supplementary Conditions for requirements related to compliance with governing regulations.

1.03 DEFINITIONS

- A. General Explanation: A substantial amount of specification language constitutes definitions for terms found in other contract documents, including the drawings. (Drawings must be recognized as diagrammatic in nature and not completely descriptive of the requirements indicated thereon.) Certain terms used in contract documents are defined in this article. Definitions and explanations of this section are not necessarily either complete or exclusive, but are general for the work to the extent they are not stated more explicitly in another element of contract documents.
- B. General Requirements: The provisions or requirements of Division 01 sections apply to entire work of Contract and, where so indicated, to other elements which are included in project.
- C. Indicated: The term "indicated" is a cross-reference to graphic representations, notes or schedules on drawings, to other paragraphs or schedules in the specifications, and to similar means of recording requirements in contract documents. Where terms such as "shown," "noted," "scheduled," and "specified" are used in lieu of "indicated," it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.

- D. Directed, Requested, Etc.: Where not otherwise explained, terms such as "directed," "requested," "authorized," "selected," "approved," "required," "accepted," and "permitted" mean "directed by Architect/Engineer," "requested by Architect/Engineer," and similar phrases. However, no such implied meaning will be interpreted to extend the Architect's/Engineer's responsibility into the Contractor's area of construction supervision.
- E. Approve: Where used in conjunction with Architect's/Engineer's response to submittals, requests, applications, inquiries, reports and claims by Contractor, the meaning of term "approved" will be held to limitations of Architect's/Engineer's responsibilities and duties as specified in General and Supplementary Conditions. In no case will "approval" by Architect/Engineer be interpreted as a release of Contractor from responsibilities to fulfill requirements of contract documents.
- F. Project Site: The term "project site" is defined as the space available to Contractor for performance of the work. The extent of project site is shown on the drawings, and may or may not be identical with the description of land upon which the project is to be built.
- G. Furnish: Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.
- H. Install: Except as otherwise defined in greater detail, term "install" is used to describe operations at project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations, as applicable in each instance.
- I. Provide: Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.
- J. Installer: The term "installer" is defined as the entity (person or firm) engaged by Contractor, or its subcontractor or subcontractor for performance of a particular unit of work at the project site, including installation, erection, application and similar required operations. It is a general requirement that such entities (installers) be expert in operations they are engaged to perform.
- K. Testing Laboratory: The term "testing laboratory" is defined as an independent entity engaged to perform specific inspections or tests of the work, either at project site or elsewhere; and to report and (if required) interpret results of those inspections or tests.
- L. Products: The term "products" includes materials, systems and equipment.
- M. Approved Equal, Or Equal: means as approved and accepted by the Architect.
- N. Shall: The term "shall" is mandatory.
- O. As Required, As Necessary, etc.: Words of similar import mean as required by the Contract Documents or essential to the completion of the Work.
- P. Concealed: The term "concealed" means as embedded in masonry or other construction, installed within furred spaces, within double partitions or above suspended ceilings, in trenches, in crawl spaces, or in enclosures.

- Q. Exposed: The term "exposed" means not installed underground or "concealed" as defined above, including work and surfaces open in whole or in part to the exterior or weather.
- R. Work: The term "work" shall include both labor and materials.
- S. The Contract Documents:
The Contract Documents consist of the Contract, any addenda thereto, the completed Bid Form, the completed Bond and Insurance forms, the Notice Inviting Bids, the Instructions to Bidders, the General Conditions, the Supplementary General Conditions, the Labor Compliance Program, if any, the Technical Specifications, the Drawings and the Bidder's Questionnaire. All modification(s) amending or extending the work shall be as binding as if originally included in the Contract Documents. A Modification is a written amendment to the Contract signed by both parties, a Change Order, a Construction Change Directive, or a written order for a minor change in the Work issued by the Architect. The Contract Documents are complementary, and each obligation of the Contractor, Subcontractors, material or equipment suppliers in any one shall be binding as if specified in all.
- T. The Contract:
The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a written Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind between the Architect and Contractor, between the Owner and any Subcontractor or Sub-subcontractor, or between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.
- U. The Work:
The Work shall include the initial obligation of any Contractor or Subcontractor, who performs any portion of the Work, to visit the Site of the proposed Work, a continuing obligation after the commencement of the Work to fully acquaint and familiarize itself with the conditions as they exist and the character of the operations to be carried on under the Contract Documents, and make such investigation as it may see fit so that it shall fully understand the facilities, physical conditions, and restrictions attending the Work under the Contract Documents. Each such Contractor or Subcontractor shall also thoroughly examine and become familiar with the Drawings, Specifications, and associated bid documents. The "Site" refers to the grounds of the Project as defined in the Contract Documents and such adjacent lands as may be directly affected by the performance of the Work.
- V. The Project:
The Project is the total construction of the Work performed in accordance with the Contract Documents in whole or in part and which may include construction by the Owner or by separate Contractors.
- W. The Drawings:

The Drawings are graphic and pictorial portions of the Contract Documents prepared for the Project and approved changes thereto, wherever located and whenever issued, showing the design, location, and scope of the Work, generally including plans, elevations, sections, details, schedules, and diagrams as drawn or approved by the Architect.

X. The Specifications:

The Specifications are that portion of the Contract Documents consisting of the written requirements for material, equipment, construction systems, instructions, quality assurance standards, workmanship, and performance of related services.

Y. The Project Manual:

The Project Manual is the volume usually assembled for the Work which may include, without limitation, the bidding requirements, sample forms, Conditions of the Contract, and Specifications.

1.04 FORMAT AND SPECIFICATION EXPLANATIONS

A. Format Explanation: The format of principal portions of these specifications can be described as in the following paragraphs. Although some portions of these specifications may not be in complete compliance with this format, no particular significance will be attached to such compliance or non-compliance.

1. Sections and Divisions: For convenience, the basic unit of text is a "section." Each section is identified by a descriptive title (name) and the number. Individual sections are grouped together with other sections of similar or related work groupings known as "divisions." Divisions are recognized as the present industry consensus on uniform specification organization and sequence. The section title is not intended to limit meaning or content of a section, nor to be fully descriptive of the requirements specified therein, nor to be an integral part of the text.
 - a. Each section of specifications has been subdivided into 3 "parts" for uniformity and convenience (Part 1-General, Part 2-Products, and Part 3 - Execution); some sections may not require the use of all three parts. These parts do not limit the meaning of and are not an integral part of text which specifies requirements.

B. Subordination of Text: Portions of specification text are subordinated to other portions in the following manner (lowest level to highest):

1. Indented (from left margin) paragraphs and lines of text are subordinate to preceding text which is not indented, or which is indented by a lesser amount.
2. Paragraphs and lines of text are subordinate to sub-article titles, which are printed in upper/lower-case lettering.
3. Sub-articles are the subordinate to article titles, which are printed in uppercase lettering.
4. Subordination (if any) of certain sections (or portions of sections) to other sections is described within those sections.
5. Underscoring is used strictly to assist the reader of specification text in scanning text for key words (for quick recall). No emphasis on or relative importance of text is intended where underscoring is used.
6. Imperative language is used generally in specifications. Except as otherwise indicated, requirements expressed imperatively are to be performed by Contractor. For clarity of reading at certain locations, contrasting subjective language is used to describe responsibilities which must be fulfilled indirectly by Contractor, or when so noted, by others.

7. Section numbering is used to facilitate cross references in the contract documents. Sections are placed in Project Manual in numeric sequence; however, numbering sequence is not complete, and listing of sections at beginning of Project Manual must be consulted to determine numbers and names of specification sections in contract documents.
 8. Page Numbering: Pages are numbered independently for each section and are recorded in the listing of sections (Index or Table of Contents) in Project Manual. The section number is shown together with the page number at the bottom of each page to facilitate the location of text in the Project Manual.
 9. Project Identification: Project name (either complete or abbreviated) is recorded at top of each page of specifications to minimize possible misuse of specifications, or confusion with other project specifications.
- C. Specification Content: Because of methods by which the project specification has been produced, certain general characteristics of content and conventions in use of language are explained as follows:
1. Specifying Methods: The techniques or methods of specifying to record requirements varies throughout text, and may include "prescriptive," "open generic-descriptive," "compliance with standards," "performance," "proprietary," or a combination of these. The method used for specifying one unit of work has no bearing on requirements for another unit of work.
 2. Overlapping and Conflicting Requirements: Where compliance with 2 or more industry standards or sets of requirements is specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, the most stringent requirement is intended and will be enforced, unless specifically detailed language written into the contract documents clearly indicates that a less stringent requirement is to be fulfilled. Refer apparently-equal-but-different requirements, and uncertainties as to which level of quality is more stringent, to Architect/Engineer for a decision before proceeding.
 3. Contractor's Options: Except for overlapping or conflicting requirements, where more than one set of requirements are specified, for a particular unit of work, option is intended to be Contractor's regardless of whether or not it is specifically indicated as such.
- D. Minimum Quality/Quantity: In every instance, quality level or quantity shown or specified is intended to be the minimum for the work to be performed or provided. Except as otherwise specifically indicated, actual work may either comply exactly with that minimum (within specified tolerances), or may exceed that minimum within reasonable limits. In complying with these requirements, indicated numeric values are either minimums or maximums as noted or as appropriate for context of the requirements. Refer instances of uncertainty to Architect/Engineer for decision before proceeding.
- E. Specialists, Assignments: In certain instances, specification text requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the Contractor has no choice or option. These requirements should not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the work; they are also not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as "expert" for indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of entire set of contract requirements remains with the Contractor.

- F. Trades: Except as otherwise indicated, the use of titles such as "carpentry" in specification text, implies neither that the work must be performed by an accredited or unionized tradesperson of corresponding generic name (such as "carpenter"), nor that specified requirements apply exclusively to work by tradespersons of that corresponding generic name.
- G. Abbreviations: The language of specifications and other contract documents is of the abbreviated type in certain instances, and implies words and meanings which will be appropriately interpreted. Actual word abbreviations of a self-explanatory nature have been included in the texts. Specific abbreviations have been established, principally for lengthy technical terminology and primarily in conjunction with coordination of specification requirements with notations on drawings and in schedules. These are frequently defined in section at first instance of use. Trade association names and titles of general standards are frequently abbreviated.
 - 1. Singular words will be interpreted as plural and plural words will be interpreted as singular where applicable and where full context of the contract documents so indicates.

1.05 DRAWING SYMBOLS

- A. General: Except as otherwise indicated, graphic symbols used on drawings are those symbols recognized in the construction industry for purposes indicated. Where not otherwise noted, symbols are defined by "Architectural Graphic Standards," published by John Wiley & Sons, Inc., seventh edition.
- B. Mechanical/Electrical Drawings: Graphic symbols used on mechanical and electrical drawings are generally aligned with symbols recommended by ASHRAE. Where appropriate, these symbols are supplemented by more specific symbols as recommended by other recognized technical associations including ASME, ASPE, IEEE and similar organizations. Refer instances of uncertainty to the Architect/Engineer for clarification before proceeding.

1.06 INDUSTRY STANDARDS

- A. General Applicability of Standards: Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, applicable standards of the construction industry have the same force and effect (and are made a part of contract documents by reference) as if copied directly into the contract documents, or as if published copies were bound herewith. Refer to other contract documents for resolution of overlapping and conflicting requirements which result from the application of several different industry standards to the same unit of work. Refer to individual unit of work sections for indications of which specialized codes and standard the Contractor must keep at the project site, available for reference.
 - 1. Referenced standards (referenced directly in contract documents or by governing regulations) have precedence over non-referenced standards which are recognized in industry for applicability to work. See also Chapter 35 of the CBC.
 - 2. Non-referenced standards are hereby defined to have no particular applicability to the work, except as general requirements of whether the work complies with standards recognized in the construction industry.
- B. Publication Dates: Except as otherwise indicated, where compliance with an industry standard is required, comply with standard in effect as of date of contract documents.

1. Updated Standards: At the request of the Architect/Engineer, Contractor or governing authority, submit a change order proposal where an applicable industry code or standard has been revised and reissued after the date of the contract documents and before the performance of the work affected. The Architect/Engineer will decide whether to issue the change order to proceed with the updated standard.
- C. Copies of Standards: The contract documents require that each entity performing work be experienced in that part of the work being performed. Each entity is also required to be familiar with recognized industry standards applicable to that part of the work. Copies of applicable standards are not bound with the contract documents.
1. Where copies of standards are needed for proper performance of the work, the Contractor is required to obtain such copies directly from the publication source.
 2. Although certain copies of standards needed for enforcement of the requirements may be required submittals, the Architect/Engineer reserves the right to require the Contractor to submit additional copies of these standards as necessary for enforcement of the requirements.
- D. Abbreviations and Names: The following acronyms or abbreviations as referenced in contract documents are defined to mean the associated names. Both names and addresses are subject to change, and are believed to be, but are not assured to be, accurate and up-to-date as of date of contract documents:

AA	Aluminum Association 1525 Wilson Boulevard, Suite 600, Arlington, VA 22209 www.aluminum.org
AAMA	American Architectural Manufacturers Association 1827 Walden Office Square, Suite 550, Schaumburg, IL 60173-4268 www.aamanet.org ; 847.303.5664
AAN	American Association of Nurserymen 1200 G St. Suite 800; Washington, DC 20005 www.anla.org ; 202 789 2900
AASHTO	American Association of State Highway & Transportation Officials 444 N. Capitol St.; Washington, DC 20001 www.transportation.org ; 202 624 5800
AATCC	American Association of Textile Chemists and Colorists P.O. Box 12215; Research Triangle Park, NC 27709-2215 www.aatcc.org ; 919 549 8141
ACA	American Coatings Association 1500 Rhode Island Ave., NW; Washington, DC 20005 www.paint.org ; 202-462-6272
ACI	American Concrete Institute

	38800 Country Club Dr., Farmington Hills, MI 48331-3439 www.concrete.org; 313 532-2600
ACIL	American Council of Independent Laboratories 1725 K Street, NW; Washington, DC 20006 www.acil.org; 202 887-5872
ACPA	American Concrete Pipe Association 8445 Freeport Parkway, Suite 350, Irving TX 75063-2595 www.concrete-pipe.org 972 506 7216
AF&PA	American Forest & Paper Association 1111 19 th St. NW, Suite 800, Washington, CD 20036 www.afandpa.org
AGA	American Gas Association 400 N. Capitol St. NW, Washington DC 20001 www.aga.org 202 824 7000
AHAM	Association of Home Appliance Manufacturers 1111 19 th St. NW, Suite 402, Washington, DC 20036 www.aham.org 202 872 5955
AI	Asphalt Institute 2696 Research Park Drive, Lexington, KY 40511-8480; www.asphaltinstitute.org 859 288 4960
AIA	American Institute of Architects 1735 New York Ave. NW; Washington, DC 20006-5292 www.aia.org 800 242 3837
A.I.A.	American Insurance Association 2101 L Street NW, Suite 400, Washington DC 20037 www.aiadc.org 202 828 7100
AISC	American Institute of Steel Construction One East Wacker Drive, Suite 700, Chicago, IL, 60601-18021 www.aisc.org 312 670 2400
ASI	American Iron and Steel Institute 25 Massachusetts Ave NW Suite 800, Washington, DC 20001 www.steel.org 202 452 7100
AITC	American Institute of Timber Construction www.aitc-glulam.org 503 639 0651
ALSC	American Lumber Standard Committee, Inc. P.O. Box 210; Germantown, MD 20875-0210; www.alsc.org 301 972 1700

ANSI	American National Standards Institute 25 West 43 rd St. 4 th Floor, New York, NY 10036 www.ansi.org 212 642 4900
APA	American Plywood Association 7011 South 19 th , Tacoma, WA 98466; www.apawood.org 253 620 7400
ARI	Air Conditioning, Heating and Refrigeration Institute 2111 Wilson Blvd, Suite 500.; Arlington, VA 22201; www.ahrinet.org 703 524 8800
ASC	Adhesive and Sealant Council 7101 Wisconsin Ave, Ste 990, Bethesda, MD 20814; 301-986-9700 www.ascouncil.org
ASCE/SEI	American Society of Civil Engineers Structural Engineering Institute 1801 Alexander Bell Drive, Reston, VA 20191-4400 www.asce.org ; 800 548 2723
ASHRAE	American Society of Heating, Refrigerating & Air Conditioning Engineers 1719 Tullie Circle, NE; Atlanta, GA 30329; www.ashrae.org ; 404 636 8400
ASME	American Society of Mechanical Engineers Three Park Ave, New York, NY 10016-5990 www.asme.org ; 800-843-2763
ASPE	American Society of Plumbing Engineers 2980 S. River Road; Des Plaines, IL 60018 www.aspe.org ; 847-296-0002
ASSE	American Society of Sanitary Engineers-CA Chapter 1111 W. James Wood Blvd.; Los Angeles, CA 90015 www.asse-plumbing.org ; 213-688-9090
ASTM	American Society for Testing and Materials 100 Barr Harbor Dr / PO Box C700, West Conshohocken, PA 19428 www.astm.org ; 215 299-5400
AWI	Architectural Woodwork Institute 46179 Westlake Drive;, Ste 120; Potomac Falls, VA 20165 571-323-3636
AWS	American Welding Society 8669 Doral Boulevard, Suite 130, Doral FL 33166 www.aws.org ; 800 443 9353

AWPA	American Wood Protection Association P.O. Box 361784; Birmingham AL 35236-1784 www.awpa.com
AWWA	American Water Works Association 6666 W. Quincy Ave., Denver, CO 80235 303-794-7711
BHMA	Builders' Hardware Manufacturers Association 355 Lexington Ave 17 th Floor, New York, NY 10017; www.buildershardware.com; 212-297-2122
BIFMA	Business and Institutional Furniture Manufacturer's Association 678 Front Ave NW, Ste. 150; Grand Rapids, MI 49504-5368; 616-285-3963
CBMA	Certified Ballast Manufacturers 2122 Keith Bldg.; Cleveland, OH 44115; 216 241-0711
CDA	Copper Development Association 260 Madison Ave; New York, NY 10016; 212-251-7200
CISPI	Cast Iron Soil Pipe Institute 1064 Dleaware Ave. SW, Atlanta, GA 30316 www.cispi.org; 404 622 0073
CPA	Composite Panel Association 19465 Deerfield Ave. Suite 306, Leesburg, VA 20176 www.compositepanel.org
CPSC	Consumer Product Safety Commission 4330 East West Highway; Bethesda, MD 20814-4408; 301-504-7923
CRI	Carpet and Rug Institute Box 2048/730 College Dr.; Dalton, GA 30720; 706-278-3176
CRSI	Concrete Reinforcing Steel Institute 933 Plum Grove Rd.; Schaumburg, IL 60173; 847-517-1200
CSA	Canadian Standards Association 5060 Spectrum Way, Mississauga, Ontario, Canada L4W 5N6
CSI	Construction Specifications Institute 110 South Union St., Ste. 100; Alexandria, VA 22314; 800-689-2900 www.csinet.org
CTI	Ceramic Tile Institute 310-574-7800
DHI	Door and Hardware Institute

14150 Newbrook Drive, Ste. 200; Chantilly, VA 20151-2232
www.dhi.org; 703-222-2010

DLPA	Decorative Laminate Products Association (Formerly National Association of Plastic Fabricators) Hulman Building; 20th Floor; 120 West Second Street; Dayton, OH 45402; 513/228-1041
DOC	US Dept. of Commerce, National Institute of Standards and Technology 1401 Constitution Avenue NW, Washington DC 20230
DOJ	US Department of Justice 950 Pennsylvania Ave. NW Civil Rights Division, Disability Rights Section-NYA Washington DC 20530
DOTn	Department of Transportation 1200 New Jersey Ave, SE; Washington, DC 20402-9325 202 426 4000
EIA	Electronic Industries Association 2001 Eye St., NW; Washington, DC 20006; 202 457-4900
EPA	Environmental Protection Agency 2001 Eye St., NW; Washington DC 20006; www.epa.gov ; 202 457 4900
FEMA	Federal Emergency Management Agency, Federal Center Plaza 500 C St. S.W., Washington DC 20472 www.fema.gov
FGMA	Flat Glass Marketing Association White Lakes Professional Bldg; 3310 Harrison; Topeka, KS 66611; 913 266-7013
FM	Factory Mutual Global Research, Standards Laboratory Dept.. 1301 Attwood Ave. POB 7500, Johnson, RI 02919; www.fmglobal.com
GA	Gypsum Association 810 First St. N.E. #510, Washington, DC 20002-4268 www.gypsum.org ; 301 277 6886
HMMA	Hollow Metal Manufacturers Association See NAAMM below.

HPVA	Hardwood Plywood Veneer Association 1825 Michael Farraday Dr., Reston, VA 20190 www.hpva.org
HUD	US Dept. of Housing and Urban Development 451 7 th St. SW, Washington, DC 20410
IBC	International Building Code 500 New Jersey Ave. NW 6 th Floor, Washington, DC 20001 www.iccsafe.org
ICC	International Code Council 500 New Jersey Ave NW, 6 th Floor, Washington DC 20001 www.iccsafe.org
IEEE	Institute of Electrical and Electronic Engineers, Inc. 3 Park Ave, 17 th Floor; New York, NY 10016 212-419-7900
IES	Illuminating Engineering Society 120 Wall St., Floor 17, New York, NY 10005-4001 212-248-5000
IRI	Industrial Risk Insurers 85 Woodland St.; Hartford, CT 06102; 203/525-2601
ISO	International Organization for Standardization ISO Central Secretariat 1 ch. De la Voie-Creuse, Case Postale 56 CH-1211 Geneva 20, Switzerland www.iso.org
MCAA	Mechanical Contractors Association of America 1385 Piccard Dr.; Rockville, MD 20850; 301-869-5800
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry 127 Park St. NE; Vienna VA 22180-4602; 703-281-6613
NAAMM	National Association of Architectural Metal Mfrs. 800 Roosevelt Rd. Bldg C, Ste 312; Glen Ellyn, IL 60137 www.naamm.org ; 630-942-6591
NBHA	National Builders Hardware Association (No Part of HDI) 711 Old Springhouse Rd.; McLean, VA 22101; 703 556-3990
NBS	National Bureau of Standards (U.S. Dept. of Commerce) Gaithersburg, MD 20234; 301 921-1000

NCMA	National Concrete Masonry Association 13750 Sunrise Valley, Herndon, VA 22071-4662
NECA	National Electrical Contractors Association 3 Bethesda Metro Center, Ste. 1100; Bethesda, MD 20814; 301 657 3110
NEII	National Elevator Industry, Inc. 1677 Country Route 64/PO Box 838; Salem, NY 12865-0838 518-854-3100
NEMA	National Electrical Manufacturers Association 1300 North 17 th Street, Ste. 1752, Rosslyn, VA 22209; 703-841-3200
NFPA	National Fire Protection Association 1 Batterymarch Park, Quincy, MA 02169-7471 www.nfpa.org ; 617 770 3000
NHLA	National Hardwood Lumber Association P.O. Box 34518; Memphis, TN 38104; 901 377-1818 www.nhla.com
NIST	National Institute of Standards and Technology (US Dept. of Commerce) 1401 Constitution Avenue NW, Washington DC 20230 www.nist.gov
NRCA	National Roofing Contractors Association 10255 W. Higgins Rd., Ste. 600, Rosemont, IL 60018-5607 www.nrca.net ; 847-299-9070
NSF	National Sanitation Foundation P.O. Box 130140/789 N. Dixboro Road, Ann Arbor, MI 48113-0140 www.nsf.org 800-673-6275
OSHA	Occupational Safety & Health Administration (U.S. Dept. of Labor) 200 Constitution Ave; Washington, DC 20210 www.osha.gov 800-321-6742
PCI	Precast Prestressed Concrete Institute 209 W. Jackson Blvd., Suite 500, Chicago, IL 60606-6938 www.pci.org
PDI	Plumbing and Drainage Institute 800 Turnpike Street, Ste. 300; North Andover, MA 01845 www.pdionline.org 978-557-0720
PTI	Post-Tensioning Institute 38800 Country Club Dr., Farmington Hills, MI 48331 www.post-tensioning.org

RFCI	Resilient Floor Covering Institute 115 Broad Street, Ste. 201; La Grange, GA 30240 www.rfci.com
RIS	Redwood Inspection Service (Grading Rules) 818 Grayson Rd., Ste. 201; Pleasant Hill, CA 94523 www.redwoodinspection.com 925-935-1499
SDI	Steel Deck Institute POB 25, Fox River Grove, IL 60021 www.sdi.org
S.D.I.	Steel Door Institute 30200 Detroit Rd.; Westlake, OH 44145 www.steeldoor.org 440-899-0010
SFM	State of California, Dept. of Forestry and Fire Protection Office of the State Fire Marshal, POB 944246, Sacramento, CA 94246 osfm.fire.ca.gov
SGCC	Safety Glazing Certification Council 100 W. Main St. / PO Box 730; Sackets Harbor, NY 13685; 315-646-2234
SJI	Steel Joist Institute 1173B London Links Dr., Forest, VA 24551 steeljoist.org
SMACNA	Sheet Metal & Air Conditioning Contractors' National Association 4201 Lafayette Center Drive;, Chantilly, VA 20151-1219 www.smacna.org 703-803-2980
SPRI	Single-ply Roofing Institute 411 Waverly Oaks Rd., Suite 331B, Waltham, MA 02452 www.spri.org
SSPC	Steel Structure Painting Council (The Society for Protective Coatings) 40 24 th Street, 6 th Floor, Pittsburgh, PA, 15222-4656 www.sspc.org
TCNA	Tile Council of North America 100 Clemson Research Blvd., Anderson, SC 29625, www.tcnatile.com 864-646-8453
TIA	Telecommunications Industry Association 2500 Wilson Blvd., Ste 300; Arlington VA 22201 www.tiaonline.org 703-907-7700
TMS	The Masonry Society 3970 Broadway, Unit 201-D, Boulder, CO 80304-1135 www.masonrysociety.org

TPI	Truss Plate Institute 218 N. Lee St., Suite 312, Alexandria, VA 22314 www.tpinst.org
UL	Underwriters Laboratories 333 Pfingsten Rd.; Northbrook, IL 60062-2096 www.ul.com 847 272 8800
ULC	Underwriters Laboratories of Canada 7 Underwriters Rd., Toronto, Ontario, Canada M1R3B4 www.ul.com/Canada/eng/pages/aboutus/
USC	United States Code, c/o Superintendent of Documents US Government Printing Office, Washington, DC 20402-9325
WCLIB	West Coast Lumber Inspection Bureau (Grading Rules) P.O. Box 23145; Portland, OR 97281 www.wclib.org 503 639 0651
WDMA	Window and Door Manufacturers Association 1400 E. Touhy, #470, Des Plaines, IL 60018 www.wdma.com
WI (WIC)	Woodwork Institute PO Box 980247; West Sacramento, CA 95798 www.wicnet.org 916-372-9943
WRI	Wire Reinforcement Institute 942 Main Street; Hartford, CT 06103 www.wirereinforcementinstitute.org
WSC	Water Systems Council 1101 30 th Street Northwest; Washington, DC 20007-3708 www.watersystemscouncil.org 888 395 1033
WWPA	Western Wood Products Association (Grading Rules) 522 SW Fifth Ave., Ste. 500; Portland, OR 97204-2122 www.wwpa.org 503 224-3930
W.W.P.A	Woven Wire Products Association www.wovenwire.org

1.07 GOVERNING REGULATIONS/AUTHORITIES

- A. General: The procedure followed by Architect/Engineer has been to contact governing authorities where necessary to obtain information needed for the purpose of preparing contract documents; recognizing that such information may or may not be of significance in relation to Contractor's responsibilities for performing the work. Contact governing authorities directly for necessary information and decisions having a bearing on performance of the work.
- B. Trade Union Jurisdiction: It is a procedural requirement that the Contractor maintain and require prime subcontractors to maintain, complete current information on jurisdictional matters, regulations actions, and pending actions, as applicable to the work.
 - 1. Discuss new developments at appropriate project meetings at the earliest feasible dates.
 - 2. Record information of relevance along with the action agreed upon.
 - 3. The manner in which contract documents have been organized and subdivided is not intended to be an indication of jurisdictional or trade union agreements.
 - 4. Assign and subcontract the work, and employ tradesmen and laborers, in a manner which will not unduly risk jurisdictional disputes of a kind which could result in conflicts, delays, claims and losses in the performance of the work.

1.08 SUBMITTALS

- A. Permits, Licenses and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgements, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 6000

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General product requirements.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations and procedures.
- E. Procedures for Owner-supplied products.
- F. Spare parts and maintenance materials.

1.02 RELATED SECTIONS

- A. Section 01 4000 - Quality Control: Product quality monitoring.

1.03 DEFINITIONS

- A. Request For Substitution: Requests for changes in products, materials, or equipment required by Contract Documents proposed by the Contractor prior to and after award of the Contract are considered requests for substitutions. The following are not considered substitutions;
 - 1. Revisions to Contract Documents requested by the Owner or Architect.
 - 2. Specified options of products, materials, and equipment included in Contract Documents.

1.04 SUBMITTALS

- A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
 - 1. Submit within 15 days after date of Agreement.
 - 2. For products specified only by reference standards, list applicable reference standards.
- B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- C. Shop Drawing Submittals: Prepared specifically for this Project.
- D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's colors, textures, and patterns.

- E. Indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances

PART 2 PRODUCTS

2.01 PRODUCTS

- A. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- B. Provide interchangeable components of the same manufacture for components being replaced.
- C. Products or equipment referenced with a manufacturer's name and/or model number shall be provided with all standard materials, components, compliance requirements and features normally furnished for that model or product. These items and requirements are inherent in the specification whether or not individually itemized.
- D. Manufacturer's Requirements: Any deviation from design requirements shown or specified, resulting either from Contractor's or supplier's change of model, or manufacturer's recommendation, or from submitted alternates or accepted substitutions, shall be clearly indicated on the Contractor's submittals. Contractor shall provide all such manufacturer or supplier supplemental requirements at no additional cost.
- E. Owner's Requirements:
 - 1. Pursuant to the requirements of California Public Contract Code 3400, the Owner may designate certain products as "District Standards" in order that a field test or experiment may be made to determine the product's suitability for future use, or in order to match other products in use on a particular public improvement, either completed or in the course of construction.
 - 2. A list of these designated products as may be applicable to the project is contained in the Notice Inviting Bids, as required by PCC 3400. These products shall be provided as specified and are not subject to substitution. All bids shall be deemed to include these listed items as specified without additional costs.
 - 3. In the event of a conflict between the Notice Inviting Bids and the technical specifications for a product's provision for substitutions, the Notice Inviting Bids shall govern.

2.02 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming a Single Manufacturer with a Provision for Substitutions: Submit a request for substitution in accordance with specified procedures for products meeting specifications from any manufacturer not named. For such specifications, the Architect is aware of only one manufacturer providing products meeting the specification, pursuant to PCC 3400.
- C. Products Specified by Naming Multiple Manufacturers with a Provision for Substitutions: Submit a request for substitution in accordance with specified procedures for products meeting specifications from any manufacturer not named.

- D. Products Specified by Naming A Single Manufacturer or Multiple Manufacturers without Provision for Substitution: Use only a product of one of the manufacturers named and meeting specifications. No options or substitutions allowed.
- E. Products Specified by Naming A Single Manufacturer or Multiple Manufacturers as listed in the Notice Inviting Bids: Use only a product of one of the manufacturers named and meeting specifications. No options or substitutions allowed

2.03 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Provide spare parts, maintenance, and extra products of types and in quantities specified in individual specification sections.
- B. Deliver to Project site, prior to final payment.
 - 1. Provide materials list for all items turned over to the Owner including quantities.
 - 2. Deliver items in presence of Owner designated representative to the location identified by the Owner.
 - 3. Obtain Owner designated representative sign-off of materials list attesting to receipt of items in triplicate. Retain one copy, provide one copy to Owner representative receiving items, and submit one copy to Architect.

PART 3 EXECUTION

3.01 LIMITATIONS ON SUBSTITUTIONS SUBMITTED PRIOR TO THE RECEIPT OF BIDS

- A. The Bid shall be based upon the standards of quality established by those items of equipment and/or materials which are indicated in the Contract Documents, including those products designated as "District Standards".
- B. Architect may consider requests for substitutions of specified equipment and/or materials only when requests are received by Architect within **twenty-one (21)** days prior to the date of bid, in conformance with Public Contract Code Section 3400. Do not request substitutions for products designated as "District Standards".
- C. Architect will consider a substitution request only if request is made in strict conformance with provisions of this Section. Request shall be fully responsive to all product requirements of the specified product, including those requirements noted in this section in the article titled PRODUCTS.
- D. Burden of proof of merit of requested substitution is the responsibility of the proposer requesting the substitution.
- E. It is the sole responsibility of the proposer requesting the substitution to establish proper content of submittal for requests for substitutions. Incomplete submittals will be rejected.
- F. When substitution is not accepted, provide specified product.
- G. Substitute products shall not be included within the bid without written acceptance by Addendum.

3.02 LIMITATIONS ON SUBSTITUTIONS SUBMITTED AFTER THE AWARD OF THE CONTRACT

- A. The Contract is based upon the standards of quality established by those items of equipment and/or materials which are indicated in the Contract Documents, including those products designated as "District Standards".
- B. Architect will consider substitution requests received after the established date of the receipt of bids or contract award only when one or more of the following conditions are met and documented:
 - 1. Specified item fails to comply with regulatory requirement.
 - 2. Specified item is no longer manufactured.
 - 3. Specified item, through no fault of the Contractor, unavailable in the time frame required to meet project schedule.
 - 4. Specified item, through subsequent information disclosure, will not perform properly or fit in designated space.
 - 5. Manufacturer declares specified product to be unsuitable for use intended or refuses to warrant installation of product,
 - 6. Substitution would be, in the sole judgment of the Architect, a substantial benefit to the Owner in terms of cost, time, energy conservation, or other consideration of merit.
- C. Notwithstanding other provisions of this section and the above, the Architect may consider a request for substitution after the date of the receipt of bids or contract award, if in the sole discretion of the Architect, there appears to be just cause for such a request. The acceptance of such a late request does not waive any other specified requirement.
- D. Architect will consider a request for substitution after the date of the receipt of bids or contract award only if request is made in strict conformance with provisions of this section. Request shall be fully responsive to all product requirements of the specified product, including those requirements noted in this section in the article titled PRODUCTS.
- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
 - 1. Review of shop drawings does not constitute acceptance of substitutions indicated or implied on shop drawings.
 - 2. Substitutions will not be considered when requested or submitted directly by subcontractor or supplier.
- F. Contractor's failure or inability to pursue the work promptly or coordinate activities properly shall not establish a cause for consideration of Substitutions.
- G. Burden of proof of merit of requested substitution is the responsibility of the Contractor.
- H. It is the sole responsibility of the Contractor to establish proper content of submittal for requests for substitutions. Incomplete submittals will be rejected.
- I. When substitution is not accepted, provide specified product.
- J. Substitute products shall not be provided without written acceptance by Change Order.

3.03 SUBSTITUTION PROCEDURES

- A. Document each request on Architect's Request For Substitution (RFS) form with complete data substantiating compliance of proposed substitution with Contract Documents. All requests for substitution must be submitted on the specified form which may be obtained from the Architect. Requests received without the Request Form will be rejected.
- B. A request for substitution constitutes a representation that the proposer:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty or bonds for the substitution as for the specified product.
 - 3. Will coordinate installation of an accepted substitution and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives all claims for additional costs or time extension which may subsequently become apparent.
 - 5. Will reimburse the Owner for services provided by Owner and Architect for review or redesign services associated with re-approval by authorities.
- C. Regulatory Requirements: Proposer requesting the substitution shall be responsible for obtaining all regulatory approvals required for proposed substitutions.
 - 1. All regulatory approval shall be obtained for proposed substitutions prior to submittal of substitution request to Architect, unless Architect participation is required by the regulating agency.
 - 2. All substitutions that affect structural safety, fire and life safety, access compliance or energy (as applicable) shall be submitted to Division of State Architect for review and approval.
 - 3. All costs incurred by the Owner in obtaining regulatory approvals for proposed substitutions, including the costs of the Architect and any authority having jurisdiction over the project shall be reimbursed to the Owner. Costs of these services shall be reimbursed regardless of final acceptance or rejection of substitution.
- D. Substitution Submittal Procedure:
 - 1. Submit one original signature copy of only the Request For Substitution Form included in this Project Manual for consideration. Forms provided by proposer or other agencies or organizations are not acceptable. Limit each request to one proposed substitution.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence, including:
 - a. Statement of cause for substitution request.
 - b. Identify product by specification section and article number.
 - c. manufacturer's name, address, and phone number.
 - d. List of fabricators, suppliers, and installers as appropriate.
 - e. List of similar Projects where proposed products have been used, date of installation and names of Architect and Owner.
 - f. Confirmation of regulatory approvals
 - g. Product data, including drawings and product samples.
 - h. Fabrication and installation procedures.
 - i. Comparison of the qualities of the proposed substitution with that specified.
 - j. Cost data comparing the proposed substitution with the product specified.
 - k. Any required license fees or royalties.
 - l. Availability of maintenance service and source of replacement materials.

- m. Coordination information, including a list of changes or modifications needed to other items of work that will be required to accommodate Proposed substitution.
- n. Statement on the Substitution's effect on the Construction Schedule.
- o. Written certification by the proposer that the Substitution is equal or better in every respect to that required by the contract Documents and that substitution will perform adequately in the application intended.
- p. Written certification that the proposer will pay for all permits, fees, and costs required to implement the substitution, and including waiver of all claims for additional costs or time extension which may subsequently become apparent, and reimbursement of Owner and Architect for review or redesign services associated with re-approval by authorities.

3.04 ARCHITECT'S REVIEW OF SUBSTITUTIONS

- A. The Architect will accept or reject proposed substitutions within fourteen (14) days of receipt of request.
- B. If a decision on a substitution cannot be made within the time allocated, the product specified shall be used.
- C. No extension of bid period or contract time will be made for substitution review.
- D. Final acceptance of a substitution submitted prior to the date established for the receipt of bids will be in the form of an Addendum.
- E. Final acceptance of a substitution submitted after the award of the contract will be in the form of a Change Order.
- F. Architect/Engineer shall be the judge of the acceptability of the proposed substitution. Architect's decision on substitution requests is final and does not require documentation or justification.
- G. Rejection Of Substitution Request: Any of the following reasons shall be cause for rejection, all as determined by the Architect;
 - 1. Vagueness or incompleteness of Substitution submittal,
 - 2. Insufficient data, failure to meet specified requirements, (including warranty).
 - 3. Qualification of the requirements of the Substitution Form, including modification of any of the requirements.
- H. The Architect/Engineer will notify Contractor in writing of decision to accept, accept as noted, or not accept the request for substitution.
- I. Substitute products shall not be ordered or installed without written acceptance.
- J. Owner shall receive full benefit of any cost reduction as a result of any request for substitution.
- K. Provide submittals for accepted substitutions in accordance with specified requirements of the respective section and provisions of Section 01 2500.
 - 1. An accepted substitution is not acceptable as a submittal under Section 01 2500. Provide separate submittals for each review.

3.05 OWNER-SUPPLIED PRODUCTS

- A. Owner's Responsibilities:
 - 1. Arrange and pay for product delivery to site.
 - 2. On delivery, inspect products jointly with Contractor.
 - 3. Submit claims for transportation damage and replace damaged, defective, or deficient items.
 - 4. Arrange for manufacturers' warranties, inspections, and service.
- C. Contractor's Responsibilities:
 - 1. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
 - 2. Handle, store, install and finish products.
 - 3. Repair or replace items damaged after receipt.
 - 4. Coordinate installation with other trades.

3.06 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

3.07 STORAGE AND PROTECTION

- A. Store and protect products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- D. For exterior storage of fabricated products, place on sloped supports above ground.
- E. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- F. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- G. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- H. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.
- I. Provide bonded off-site storage and protection only when site does not permit on-site storage or protection. Obtain Owner's permission prior to initiating such off-site storage.

END OF SECTION

(REQUEST FOR SUBSTITUTION FORM FOLLOWS)

Request for Substitution

{Projects.Name}

Project Number: {Projects.Number}

DSA Application: {LegalDocInfo.NotaryStateOf}

DSA File: {LegalDocInfo.NotaryName}

Specification Title: _____

Product Description: _____

Specification Section: _____

Article/Paragraph: _____

Architect will consider substitution requests received after the date established as deadline for substitution request only when one or more of the following conditions are met and documented; indicate one or more conditions which apply:

- ☐ Specified item fails to comply with regulatory requirement.
- ☐ Specified item is no longer manufactured.
- ☐ Specified item, through no fault of the Contractor, unavailable in the time frame required to meet project schedule.
- ☐ Specified item, through subsequent information disclosure, will not perform properly or fit in designated space.
- ☐ Manufacturer declares specified product to be unsuitable for use intended or refuses to warrant installation of product.
- ☐ Substitution would be a substantial benefit to the Owner in terms of cost, time, energy conservation, or other consideration of merit.

Explain benefit (required): _____

Proposed Product Name (include specific model number): _____

Manufacturer: _____ Phone: _____

Address: _____

Installer: _____

Address: _____ Phone: _____

History: ☐ New product ☐ 2-5 years old ☐ 5-10 years old ☐ More than 10 years old

Difference between proposed substitution and specified product: _____

☐ Attached comparative table. Include point-by-point comparison of each article number. **REQUIRED**

Similar Installation:

Project: _____ Architect: _____

Address: _____ Owner: _____

_____ Date Installed: _____

Proposed substitution affects other parts of Work? ☐ No ☐ Yes; Explain: _____

Savings to Owner for accepting substitution: _____ (\$ _____).

Proposed substitution changes Contract Time? ☐ No ☐ Yes; [Add] or [Deduct] _____ days.

Substitution Request

(Continued)

As outlined in Specification Section 01 6000, a request for substitution constitutes a representation that the proposer:

- ☐ Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
- ☐ Will provide the same warranty or bonds for the substitution as for the specified product.
- ☐ Will coordinate installation of an accepted substitution and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
- ☐ Waives all claims for additional costs or time extension which may subsequently become apparent.
- ☐ Will reimburse Owner for services provided by Owner and Architect associated with re-approval by authorities.

{Company.Name} Representative Printed Name: _____

{Company.Name} Representative Signature: _____

Date Submitted from {Company.Name} to Architect: _____

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports

Additional comments: _____

Architect's review and action:

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01 3300.
- ☐ Substitution approved as noted - Make submittals in accordance with Specification Section
- ☐ 01 3300. Substitution rejected - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Reviewed by: _____ Date: _____

SECTION 01 6116

VOLATILE ORGANIC COMPOUND (VOC) RESTRICTIONS

PART 1 GENERAL

1.01 SUMMARY

- A. VOC restrictions for product categories listed below under "DEFINITIONS."
 - 1. California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green".
- B. All products of each category that are installed in the project must comply; applicable laws and ordinances do not allow for partial compliance.
- C. Listing of a product in these specifications shall not be construed as a solicitation or requirement to use any product or combination of products in violation of the requirements of South Coast Air Quality Management District Rule No.1168, as described in Rule 1168(g).
 - 1. If a listed product does not meet the requirements of this rule, request approval for use of an alternate product by the same or another manufacturer meeting the requirements of this rule.
 - 2. Do not use products which do not meet the requirements of this rule.

1.02 RELATED REQUIREMENTS

- A. Divisions 01 through 33 contain related requirements specific to the work of each of these Sections. Requirements may or may not include reference to this section.
- B. Section 01 8113 "Sustainable Design Requirements".

1.03 DEFINITIONS

- A. VOC-Restricted Products: All products of each of the following categories when installed or applied on-site:
 - 1. Adhesives, sealants, and sealer coatings, regardless of specification section or division.
 - 2. Paints and coatings.
 - 3. Composite wood products; plywood, particleboard, wood fiberboard.
- B. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.
- C. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

1.04 REFERENCE STANDARDS

- A. California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green".
- B. Low-Emitting Materials Product List; California Collaborative for High Performance Schools (CHPS); current edition at www.chps.net.
- C. CRI (GLCC) - Green Label Testing Program - Approved Product Categories for Carpet Cushion; Carpet and Rug Institute; Current Edition.
- D. CRI (GLP) - Green Label Plus Carpet Testing Program - Approved Products; Carpet and Rug Institute; Current Edition.

- E. GEI (SCH) - GREENGUARD "Children and Schools" Certified Products; GREENGUARD Environmental Institute; current listings at www.greenguard.org.
- F. GreenSeal GS-36 - Commercial Adhesives; Green Seal, Inc.
- G. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov.
- H. SCS (CPD) - SCS Certified Products; Scientific Certification Systems; current listings at www.scs-certified.com.

1.05 SUBMITTALS

- A. See Section 01 3300 - Submittals Procedures.
- B. Evidence of Compliance: Submit for each different product in each applicable category.
 - 1. Identify evidence submittals with the words "CAL-Green VOC Compliance Report".
- C. Product Data: For each VOC-restricted product used in the project, submit product data showing compliance, except when another type of evidence of compliance is required.
- D. Installer Certifications for Accessory Materials: Require each installer of any type of product, (not just the products for which VOC restrictions are specified) to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of his products, or 2) that such products used comply with these requirements.
 - 1. Use the form following this section for installer certifications.

1.06 QUALITY ASSURANCE

- A. A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General: Provide only products having volatile organic compound (VOC) content not greater than required by South Coast Air Quality Management District Rule No.1168 and less where required by code.
 - 1. These products may be specified in multiple sections throughout these specifications.
- B. Adhesives, including carpet: Comply with Title 24, Part 11, Table 5.504.4.1.
 - 1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Report of laboratory testing performed in accordance with requirements.
 - b. Published product data showing compliance with requirements.
 - c. Certification by manufacturer that product complies with requirements.
- C. Joint Sealants: Comply with Title 24, Part 11, Table 5.504.4.2.
 - 1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Report of laboratory testing performed in accordance with requirements.
 - b. Published product data showing compliance with requirements.
 - c. Certification by manufacturer that product complies with requirements.
- D. Aerosol Adhesives: Comply with Title 24, Part 11, Table 5.504.4.1. and California Code of Regulations Title 17, Section 94507.
 - 1. Evidence of Compliance: Acceptable types of evidence are:

- a. Current GreenSeal Certification.
 - b. Report of laboratory testing performed in accordance with GreenSeal GS-36 requirements.
 - c. Published product data showing compliance with requirements.
- E. Paints and Coatings: Comply with Title 24, Part 11, Table 5.504.4.3; California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2008.
1. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
 - a. Evidence of Compliance: Acceptable types of evidence are:
 - 1) Report of laboratory testing performed in accordance with requirements.
 - 2) Published product data showing compliance with requirements.
 - 3) Certification by manufacturer that product complies with requirements.
 - b. Provide coatings that comply with the most stringent requirements specified in the following:
 - 1) 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
 - 2) South Coast Air Quality Management District Rule No.1168.
- H. Composite Wood Products: Comply with Title 24, Part 11, Table 5.504.4.5 formaldehyde limits for hardwood plywood, particleboard, and medium density fiberboard composite wood products.
1. Title 24, Part 11, Table 5.504.4.5 Composite Wood Products Maximum Formaldehyde Emissions in Parts per Million.

PRODUCT	CURRENT LIMIT (Effective July 1, 2012)
Hardwood Plywood veneer core	0.05
Hardwood Plywood composite core	0.05
Particleboard	0.09
Medium Density Fiberboard	0.11
Thin Medium Density Fiberboard	0.13

2. Evidence of Compliance: Acceptable types of evidence are:
 - a. Chain of custody certifications
 - b. Published product data showing compliance with requirements.
 - c. Certification by manufacturer that product complies with requirements.
 - d. Other method acceptable to enforcing agency.

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

- A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.
- B. All additional costs to restore indoor air quality, including fines by authorities, due to installation of non-compliant products will be borne by Contractor.

3.02 RESTRICTED COMPONENTS

A. Restricted Components:

1. Paints and coatings shall not contain any of the following:

- a. Acrolein.
- b. Acrylonitrile.
- c. Antimony.
- d. Benzene.
- e. Butyl benzyl phthalate.
- f. Cadmium.
- g. Di (2-ethylhexyl) phthalate.
- h. Di-n-butyl phthalate.
- i. Di-n-octyl phthalate.
- j. 1,2-dichlorobenzene.
- k. Diethyl phthalate.
- l. Dimethyl phthalate.
- m. Ethylbenzene.
- n. Formaldehyde.
- o. Hexavalent chromium.
- p. Isophorone.
- q. Lead.
- r. Mercury.
- s. Methyl ethyl ketone.
- t. Methyl isobutyl ketone.
- u. Methylene chloride.
- v. Naphthalene.
- w. Toluene (methylbenzene).
- x. 1,1,1-trichloroethane.
- y. Vinyl chloride.

- B. The following tables are taken from South Coast Air Quality Management District Rule No.1168 and are believed accurate at the time of publication. All products used shall comply with the limits of Rule No. 1168. In the event of discrepancy between these values and those of Rule No. 1168, those of Rule No. 1168 shall prevail.

C. **Table 5.504.4.1 ADHESIVE VOC LIMIT**

Architectural Applications	Current VOC Limit
Indoor Carpet Adhesives	50
Carpet Pad Adhesives	50
Outdoor Carpet Adhesives	150
Wood Flooring Adhesives	100
Rubber Floor Adhesives	60
Subfloor Adhesives	50
Ceramic Tile Adhesives	65
VCT and Asphalt Tile Adhesives	50
Dry Wall and Panel Adhesives	50
Cove Base Adhesives	50
Multipurpose Construction Adhesives	70
Structural Glazing Adhesives	100
Single Ply Roof Membrane Adhesives	250

D. Table 5.504.4.1 Continued

	VOC Limits and Effective Dates **	** The specified limits remain in effect unless revised limits are listed in subsequent columns.		
Specialty Applications	Current VOC Limit	1-1-05	7-1-05	1-1-07
PVC Welding	510			
CPVC Welding	490			
ABS Welding	400		325	
Plastic Cement Welding	350	250		
Adhesive Primer for Plastic	650		550	
Computer Diskette Manufacturing	350			
Contact Adhesive	80			
Special Purpose Contact Adhesive	250			
Tire Retread	100			
Adhesive Primer for Traffic Marking Tape	150			
Structural Wood Member Adhesive	140			
Sheet Applied Rubber Lining Operations	850			
Top and Trim Adhesive	540			250

E. Table 5.504.4.1 Continued

For adhesives, adhesive bonding primers, or any other primer not regulated by the above two tables and applied to the following substrates, the following limits shall apply	
Substrate Specific Applications	Current VOC Limit

Metal to Metal	30
Plastic Foams	50
Porous Material (Except Wood)	50
Wood	30
Fiberglass	80

F. Table 5.504.4.2 SEALANT VOC LIMIT

If an adhesive is used to bond dissimilar substrates together the adhesive with the highest VOC content shall be allowed.	
Sealant	Current VOC Limit
Architectural	250
Marine Deck	760
Nonmembrane Roof	300
Roadway	250
Single Ply Roof Membrane	450
Other	420

Sealant Primers	Current VOC Limit
Architectural	
Porous	250
Non-Porous	775
Modified Bituminous	500
Marine Deck	760
Other	750
For low-solid adhesives or sealants the VOC limit is expressed in grams per liter of material as determined in paragraph (b)(32); for all other adhesives and sealants, VOC limits are expressed as grams of VOC per liter of adhesive or sealant less water and less exempt compounds as determined in paragraph (b)(31).	

- G. Paints and Coatings: Architectural Paints and Coatings shall comply with VOC limits in Table 1 of ARB Architectural Coatings Suggested Control Measure, California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green" Table 5.504.4.3. All products used in this category shall comply with these limits, unless more stringent local and regional rules apply.

H. Table 5.504.4.3 VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS (See Notes 2 & 3 below)

Grams of VOC per Liter of Coating, less water and less exempt compounds.	
COATING CATEGORY	Current VOC Limit 1/1/2012
Flat Coatings	50

Nonflat Coatings	100
Nonflat High Gloss Coatings	150
Specialty Coatings	
Aluminum Roof Coatings	400
Basement Specialty Coatings	400
Bituminous Roof Coatings	50
Bituminous Roof Primers	350
Bond Breakers	350
Concrete Curing Compounds	350
Concrete / Masonry Sealers	100
Driveway Sealers	50
Dry Fog Coatings	150
Faux Finishing Coatings	350
Fire Resistive Coatings	350
Floor Coatings	100
Form-Release Compounds	250
Graphic Arts Coatings (Sign Paints)	500
High-Temperature Coatings	420
Industrial Maintenance Coatings	250
Low Solids Coatings (See Note 1 above)	120
Magnesite Cement Coatings	450
Mastic Texture Coatings	100
Metallic Pigmented Coatings	500
Multicolor Coatings	250
Pretreatment Wash Primers	420
Primers, Sealers and Undercoaters	100
Reactive Penetrating Sealers	350
Recycled Coatings	250
Roof Coatings	50
Rust Preventative Coatings	250
Shellacs:	
Clear	730
Opaque	550
Specialty Primers, Sealers and Undercoaters	100
Stains	250

Stone Consolidants	450
Swimming Pool Coatings	340
Traffic Marking Coatings	100
Waterproofing Membranes	250
Wood Coatings	275
Wood Preservatives	350
Zinc Rich Primers	340

1. Note 1: Grams of VOC per liter of coating including water and including exempt compounds
2. Note 2: Not Applicable

3. Note 3: Values in this table are derived from those specified by the California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2008. More information is available from the Air Resources Board.

END OF SECTION

SECTION 01 6116.01

ACCESSORY MATERIAL VOC CONTENT CERTIFICATION FORM

1.01 FORM

- A. Identification:
1. Project Name: _____
 2. Project No.: _____
 3. Architect: _____
- B. Use of This Form:
1. Because installers are allowed and directed to choose accessory materials suitable for the applicable installation, there is a possibility that such accessory materials might contain VOC content in excess of that permitted, especially where such materials have not been explicitly specified.
 2. Contractor is required to obtain and submit this form from each installer of work on this project.
 3. For each product category listed, circle the correct words in brackets: either [HAS] or [HAS NOT].
 4. If any of these accessory materials has been used, attach to this form product data and MSDS sheet for each such product.
- C. VOC content restrictions are specified in Section 01 6116.

2.01 PRODUCT CERTIFICATION

- A. I certify that the installation work of my firm on this project:
1. [HAS] [HAS NOT] required the use of any ADHESIVES.
 2. [HAS] [HAS NOT] required the use of any JOINT SEALANTS.
 3. [HAS] [HAS NOT] required the use of any PAINTS OR COATINGS.
 4. [HAS] [HAS NOT] required the use of any COMPOSITE WOOD or AGRIFIBER PRODUCTS.
- B. Product data and MSDS sheets are attached.

3.01 CERTIFIED BY: (Installer/Manufacturer/Supplier Firm)

- A. Firm Name: _____
- B. Print Name: _____
- C. Signature: _____
- D. Title: _____ (officer of company)
- E. Date: _____

END OF SECTION

SECTION 01 7419

CONSTRUCTION WASTE MANAGEMENT

PART 1 GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of each prime Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY:

- A. Contractor shall implement procedures to divert **75%** of construction waste. As many of the waste materials as economically feasible shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized.
- B. The Contractor shall develop a Waste Management Plan as defined in this Section and submit for review by the Owner, Construction Manager, and Architect.

1.03 DEFINITIONS

- A. Waste Materials: construction materials that are excess to the contract requirements and which can not be effectively used in the Work.
- B. Salvage Materials: waste materials or materials that exist on the site that can be reused, either on site or by another entity.
- C. Recyclable Waste: waste materials that exist on site or are generated during the construction process that can be recycled/remanufactured into another material.
- D. Categories of salvageable or recyclable waste include the following:
 - 1. Concrete, Masonry, and Other Inert Fill Material: concrete, brick, rock, broken up asphalt pavement, clay, and other inert (non-organic) materials.
 - 2. Metals: metal scrap including iron, steel, copper, brass, and aluminum; includes beverage containers, packaging materials (such as metal banding), fencing, reinforcing bar, wiring, plumbing, etc.
 - 3. Untreated Wood: unpainted, untreated dimensional lumber, wood edging, wood shipping pallets, etc. Does not include pressure treated or creosote treated wood.
 - 4. Engineered Wood Products: plywood, oriented strand board, "Masonite", particleboard, manufactured trusses and beams, and glue-laminated timbers.
 - 5. Gypsum Wallboard: excess drywall construction materials including cuttings, other scrap, and excess materials.
 - 6. Cardboard: clean, corrugated cardboard such as used for packaging, etc.
 - 7. Paper Goods:
 - 8. Office paper: includes any paper, such as manufacturer instruction, specification sheets, files, correspondence, packaging, stiffeners, etc.
 - 9. Newsprint: shredded or whole newspaper goods.

10. Plastic: beverage containers, packaging materials (such as polystyrene “peanuts” and expanded polystyrene), containers (other than those used for hazardous materials), vinyl products, etc.
 11. Glass: includes glass beverage containers, and recyclable glass building materials.
 12. Insulation: rigid foam, batt, and loose fill insulation materials.
 13. Carpet: face fiber, backing, padding, and carpet cushion scrap.
 14. Paints: unused portions of paints and coatings applied on-site.
 15. Fabric: uncontaminated fabric scraps.
 16. Rubber: uncontaminated rubber scraps, including but not limited to recycled-content rubber flooring, rubber edging, tires that are no longer serviceable, etc.
 17. Other: any additional materials identified on-site to be valued for salvage, reuse, or recycling by the Contractor, Owner, Construction Manager, or Architect.
- E. Non-Recyclable Waste: All waste materials that are not able to be recycled, due to contamination, lack of recycling facilities or salvage options, or high cost.
- F. Source Separated: Materials that are separated on-site by category.
- G. Co-Mingled: Several types of construction waste that are combined in a single container. Co-mingling of recycling waste must be approved by the identified recycling facility.
- H. Hazardous Waste: Any substance whose handling and/or disposal is regulated as hazardous waste by local, state, or federal authorities.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with all applicable federal, state, and local ordinance and regulation requirements for recycling and waste management.
- B. Disposal Sites, Recyclers, and Waste Materials Processors: Use only facilities properly permitted by state and local authorities.
- C. Preconstruction Waste Management Conference: Prior to beginning work at the site, schedule and conduct a conference to review the Construction Waste Management Plan and discuss procedures, schedules and specific requirements for waste materials recycling and disposal. Discuss coordination and interface between the Contractor and other construction activities. Identify and resolve problems with compliance with requirements. Record minutes of the meeting, identifying all conclusions reached and matters requiring further resolution.
1. Plan Revision: Make any revisions to the Construction Waste Management Plan agreed upon during the meeting and incorporate resolutions agreed to be made subsequent to the meeting. Submit the revised plan to the Contracting Officer's Representative for approval.
- D. Implementation:
1. Designate an on-site party responsible for instructing workers and implementing the Construction Waste Management Plan.
 2. Distribute copies of the Construction Waste Management Plan to the job site foreman and each subcontractor.
 3. Include waste management and recycling in worker orientation.
 4. Provide on-site instruction on appropriate separation, handling, recycling, and salvaging methods to be used by all parties at the appropriate stages of the work at the site.

5. Prominently display Waste Management Plan and clearly mark all containers and areas on site dedicated to source separation.
6. Include waste management and recycling discussion in pre-fabrication meetings with subcontractors and fabricators.
7. Also include discussion of waste management and recycling in regular job meetings and job safety meetings conducted during the course of work at the site.

1.05 STORAGE AND HANDLING

- A. Salvage Materials: Provide protective handling and storage as required for all items identified for salvage and reuse by the Owner, Construction Manager, or Architect.
- B. Recyclable Waste: Remove all recyclable materials, as identified in the Waste Management Plan, from the work location to approved containers daily. Failure to remove waste materials will be considered cause for withholding payment and/or termination of Contract.
- C. Provide separate collection containers as required by recycling haulers and to prevent contamination of materials, including protection from rain as applicable.
- D. Replace loaded containers with empty ones as demand requires but not less than weekly.
- E. Handling: Deposit all indicated recyclable materials in the containers in a clean (no mud, adhesives, solvents, petroleum contamination), debris-free condition. Do not deposit contaminated materials into the containers until such time as such materials have been cleaned.
- F. If contamination chemically combines with the material so that it cannot be cleaned, do not deposit into the recycle containers.

1.06 PROJECT/SITE CONDITIONS

- A. Environmental Requirements: Transport recyclable waste materials from the Work Area to the recycle containers and carefully deposit in the containers in a manner to minimize noise and dust. Close container covers immediately after materials are deposited. Do not place recyclable waste materials on the ground adjacent to a container.
- B. Existing Conditions: Coordinate with "Instructions to Bidders" and "Supplementary Conditions".

1.07 SUBMITTALS

- A. Construction Waste Management Plan: Contractor must submit complete Construction Waste Management Plan for review within 30 days from the Notice to Proceed.

PART 2 PRODUCTS

2.01 CONSTRUCTION WASTE MANAGEMENT PLAN

- A. Construction Waste Management Plan: Contractor shall develop a construction waste management plan indicating proposed methods for collection, segregation, and removal of all construction wastes and debris produced by the work of this Contract, including all costs associated with this plan. Those waste materials produced during the course of this Contract that can be recycled cost-effectively, shall be. The Waste Management Plan shall include, at a minimum, the following:

1. Provide an analysis of jobsite waste to be generated, including types and quantities.
 2. Provide strategies for salvage, reuse, or recycling for a minimum of all materials listed below. Include additional waste materials that are deemed cost-effective to salvage, reuse, or recycle. See "Definitions" above for material categories.
 3. Provide documentation to justify decision not to recycle any items listed below.
 4. Show compliance with applicable state and local ordinances and regulations.
 5. Include a list of recycling facilities to which indicated recyclable materials will be distributed for disposal.
 6. Identify materials that are not recyclable or otherwise conservable that must be disposed of in a landfill or other means acceptable under governing State and local regulations.
 7. List permitted landfills and/or other disposal means to be employed.
 8. Indicate any instances where compliance with requirements of this Section does not appear to be possible and request resolution from the Architect.
- B. Waste Materials: The following materials shall be salvaged or recycled according to this specification. Strategies for salvage and recycling shall be identified in the Waste Management Plan as required above.
1. Salvage Materials: Identify materials existing on site that are candidates for salvage and reuse, either on this Project or through sale or donation to local organizations.
 2. Recyclable Materials: The following materials, at a minimum, shall be salvaged or recycled. Applies to all such listed waste materials produced during the course of this Contract.
 - a. Concrete, Masonry, and Other Inert Fill Material
 - b. Metals
 - c. Untreated Wood
 - d. Gypsum Wallboard Scrap
 - e. Cardboard
 - f. Paper Goods
 - g. Beverage Containers
 - h. Plastic
 - i. Glass
 - j. Carpet
- C. Delivery Receipts: Maintain copies of delivery receipts for waste materials salvaged and sent to permitted waste materials processors or recyclers that indicate the location and name of firm accepting recyclable waste materials, types of materials, net weights of each type, date of delivery and value of materials.
- D. Maintain working copy of Construction Waste Management Plan at site for review by Owner, Construction Manager, Architect, and all Trades involved in Project.

PART 3 EXECUTION

3.01 WASTE MANAGEMENT

- A. General: Implement waste management procedures in accordance with approved construction waste management plan. Maintain procedure throughout the life of this Contract.
- B. Source Separation: Separate, store, protect, and handle at the project site all identified recyclable and salvageable waste products to prevent contamination of materials and maximize recyclability and salvageability of materials.
- C. Collection: Arrange for timely pickups from the site or deliveries to approved recycling facilities of designated waste materials to keep construction site clear and prevent

contamination of recyclable materials. Maintain records accessible to the Contracting Officer's Representative for verification of construction waste materials recycling.

- D. Delivery Receipts: Keep and maintain records of all deliveries to recycling facilities and all pickups of waste materials at the site by others as specified above.
- E. Salvage and Reuse: Identify salvage and reuse options for all materials that are deemed to be reusable, but will not be reused on this Project.
- F. Non-Recyclable Waste: Collect and segregate non-recyclable waste for delivery to a permitted landfill site.
- G. Hazardous Waste: Control and dispose of hazardous waste in accordance with local, state, and federal regulations.

END OF SECTION

SECTION 01 4523

TESTING AND INSPECTION SERVICES

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work Included:
 - 1. Selection and payment of Testing and Inspection Agency
 - 2. Testing and Inspection Agency submittals.
 - 3. Testing and Inspection Agency responsibilities.
 - 4. Testing and Inspection Agency reports.
 - 5. Limits on Testing and Inspection authority.
 - 6. Contractor's Responsibilities.
 - 7. Architect's Responsibilities.

1.02 RELATED SECTIONS

- A. Related Sections:
 - 1. Drawings and Contract Documents, including General and Supplemental General Conditions.
 - 2. Section 01 4000 - Quality Control.
 - 3. Technical Specifications - Pertinent Sections requiring tests and inspections.

1.03 REFERENCES

- A. ASTM C802 - Practice for Conducting an Interlaboratory Test Program to Determine the Precision of Test Methods for Construction.
- B. ASTM C1021 - Practice for Laboratories Engaged in the Testing of Building Sealants.
- C. ASTM C1077 - Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.
- D. ASTM C1093 - Practice for Accreditation of Testing Agencies for Unit Masonry.
- E. ASTM D290 - Recommended Practice for Bituminous Mixing Plant Inspection.
- F. ASTM D3740 - Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- G. ASTM D4561 - Practice for Quality Control Systems for an Inspection and Testing Agency for Bituminous Paving Materials.
- H. ASTM E329 - Practice for Use in the Evaluation of Inspection and Testing Agencies as Used in Construction.
- I. ASTM E543 - Practice for Determining the Qualification of Nondestructive Testing Agencies.

- J. ASTM E548 - Practice for Preparation of Criteria for Use in the Evaluation of Testing Laboratories and Inspection Bodies.
- K. ASTM E699 - Practice for Criteria for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating Building Components in Accordance with Test Methods Promulgated by ASTM Committee E6.

1.04 SELECTION AND PAYMENT

- A. An independent testing laboratory approved by DSA shall perform inspections, tests, and other services as specified by various specification sections.
 - 1. Owner will employ and pay for testing laboratory to provide initial testing indicated under specific specification sections and specifically noted to be paid by the Owner.
 - 2. Contractor shall be back-charged for testing costs when:
 - a. Additional tests and inspections by Owner's testing agency where initial tests and inspections reveal failure to meet Contract requirements.
 - b. Excessive inspection time by Owner's testing agency is required by Contractor's failure to provide sufficient workman or to properly pursue the progress of work.
 - c. Test(s) deemed necessary by the Owner/Architect to evaluate any substitution proposed by the Contractor.
 - d. Testing and inspection for the Contractor's convenience.
 - e. Testing and inspection overtime necessitated by the Contractor's schedule.
- B. Employment of inspection firm in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- C. Employment of any testing laboratory by Contractor shall be subject to Owner approval; laboratory shall be under direct supervision of a registered Engineer and shall conform to ASTM 329. Laboratory of concrete producer shall not be acceptable for concrete mix designs.
- D. Owner reserves the right to test any material or work of Project at any time, whether or not tests are indicated in Contract Documents.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of the referenced standards.
- B. Laboratory: Authorized to operate in State in which Project is located.
- C. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
- D. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

1.06 CONTRACTOR SUBMITTALS

- A. Prior to start of Work, submit testing laboratory OR inspection firm's name, address, and telephone number, and names of full time registered Engineer and responsible officer.

- B. Each Contractor responsible for the construction of a main wind- or seismic-force resisting system, designated seismic or a wind- or seismic-resisting component list in the statement of special inspections shall submit a written statement of responsibility prior to commencement of work on the system or component. A copy of this written statement shall be maintained at the project site and made available upon request. The Contractor's statement of responsibility shall contain the following:
 - 1. Acknowledgment of awareness of the special requirements contained in the statement of special inspections;
 - 2. Acknowledgement that control will be exercised to obtain conformance with the construction documents approved by the building official;
 - 3. Procedures for exercising control within the Contractor's organization, the method and frequency of reporting and the distribution of the reports; and
 - 4. Identification and qualifications of the person(s) exercising such control and their position(s) in the organization.
- C. Submit copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

1.07 AGENCY RESPONSIBILITIES

- A. Test samples of mixes submitted by Contractor.
- B. Provide qualified personnel at site. Cooperate with Architect/Engineer and Contractor in performance of services.
- C. Perform specified sampling and testing of Products in accordance with specified standards.
- D. Ascertain compliance of materials and mixes with requirements of Contract Documents.
- E. Promptly notify Architect/Engineer and Contractor of observed irregularities or non-conformance of Work or Products.
- F. Perform additional tests required by Architect/Engineer.
- G. Attend preconstruction meetings and progress meetings.

1.08 AGENCY AND INSPECTION REPORTS

- A. After each test, observation or inspection, promptly submit copies of report to Architect, Engineer, DSA, Owner's Inspector, Owner, Contractor and as otherwise directed.
- B. Include:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Name of inspector.
 - 4. Date and time of sampling or inspection.
 - 5. Identification of product and specifications section.
 - 6. Location in the Project.
 - 7. Type of inspection or test.
 - 8. Date of test.

- 9. Results of tests.
- 10. Conformance with Contract Documents.

- C. When requested by Architect/Engineer, provide interpretation of test or inspection results.

1.09 LIMITS ON TESTING and INSPECTION AUTHORITY

- A. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Agency or laboratory may not approve or accept any portion of the Work.
- C. Agency or laboratory may not assume any duties of Contractor.
- D. Agency or laboratory has no authority to stop the Work.

1.10 CONTRACTOR RESPONSIBILITIES

- A. Provide information regarding activities requiring special inspection and tests to District's inspection and testing laboratory upon request.
- B. Provide agency or laboratory representative access to any chosen location and adequate samples of materials proposed to be used which require testing, along with proposed mix designs.
- C. Cooperate with laboratory personnel, and provide access to the Work.
- D. Provide incidental labor and facilities:
 - 1. To provide access to Work to be tested.
 - 2. To obtain and handle samples at the site or at source of Products to be tested.
 - 3. To facilitate tests.
 - 4. To provide storage and curing of test samples.
- E. Notify agency or laboratory and Architect/Engineer forty-eight (48) hours prior to expected time for operations requiring testing services. Become familiar with time constraints of tests required. Schedule work to allow time for performance of required tests.
- F. Employ services of an independent qualified testing laboratory and pay for additional samples and tests required by Contractor beyond specified requirements.

1.11 ARCHITECT RESPONSIBILITIES

- A. Architect is not responsible for notification of the Testing Agency or scheduling its work.
- B. Architect will not be responsible for the actions of the Testing Agency.

1.12 RE-TESTING

- A. When initial tests indicate non-compliance with the Contract Documents, subsequent re-testing shall be performed by the same testing laboratory and the costs thereof shall be paid by the Owner and deducted from the Contract Sums owed to the Contractor.

1.13 SCHEDULE OF INSPECTIONS

A. Division of State Architect Form SSS-103 SCHEDULE OF TESTS AND INSPECTIONS is attached.

B. Individual Specification Sections: Other tests or inspections required; standards for testing.

PART 2 PRODUCTS - NOT USED.

PART 3 EXECUTION - NOT USED.

END OF SECTION

DIVISION OF STATE ARCHITECT FORM SSS-103 SCHEDULE OF TESTS AND INSPECTIONS FOLLOWS
THIS SECTION

SECTION 01 8113

SUSTAINABLE DESIGN REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes general requirements and procedures for compliance with California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green".
 - 1. Chapter 5- Non-Residential Mandatory Measures.

1.02 RELATED REQUIREMENTS

- A. Pertinent sections specifying erosion control.
- B. Section 01 6116 - Volatile Organic Compound (VOC) Restrictions.
- C. Section 01 7419 - Construction Waste Management and Disposal.
- D. Pertinent sections specifying landscape irrigation.

1.03 DEFINITIONS

- A. CAL-Green Definitions: Certain terms are defined by CAL-Green in Chapter 5 of the Code. Words and terms used in this section shall have the meanings shown therein.

1.04 INFORMATIONAL SUBMITTALS

- A. General: Submit CAL-GREEN submittals required by code and in other Specification Sections.
- B. CAL-GREEN submittals are in addition to other submittals. If submitted item is identical to that submitted to comply with other requirements, submit duplicate copies as a separate submittal to verify compliance with indicated CAL-GREEN requirements.
- C. Acceptable verification submittals are specified in the related sections.

PART 2 PRODUCTS

2.01 REQUIREMENTS - GENERAL

- A. Provide products and procedures necessary to confirm CAL-GREEN compliance required in this Section. Although other Sections may specify some CAL-GREEN requirements, the Contractor shall determine additional materials, techniques, means, methods and procedures necessary to comply with CAL-GREEN requirements.

2.02 STORM WATER POLLUTION PREVENTION PLAN

- A. Section 5.106.1: Comply with requirements of this code section, local ordinances, General Conditions, Special Provisions, and related sections specifying erosion control.

2.03 OUTDOOR WATER USE

- A. Section 5.304.3.1: Irrigation Controllers: Comply with requirements of this code section, local ordinances and Section 32 8000.

2.04 CONSTRUCTION WASTE REDUCTION

- A. Section 5.408 Construction Waste Management, Diversion and Recycling: Comply with requirements of this code section, local ordinances and Section 01 7419.

2.05 POLLUTANT CONTROL

- A. Section 5.504.4 Finish Material Pollutant Control: All Finish materials shall comply with requirements of this code section, local ordinances and Section 01 6116.

PART 3 EXECUTION

3.01 GENERAL

- A. Comply with Section 01 7419 - Construction Waste Management and Disposal.
- B. Comply with execution requirements of related sections and applicable local codes and ordinances.

END OF SECTION

SECTION 03 1000

CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: All labor, materials and equipment and all operations required to complete all formwork as indicated on the drawings; to produce shapes and configurations as shown, as required; and as specified herein, including:
 - 1. Forms, shores, bracing, removal and other operations as necessary for all cast-in-place concrete placed.
 - 2. Setting and securing anchor bolts and other metal items embedded in concrete into formwork, using materials and layouts furnished and delivered to jobsite as specified under other sections.
- B. Related Sections:
 - 1. Pertinent Sections of Division 03 specifying concrete construction.
 - 2. Pertinent Sections of other Divisions specifying work to be embedded in concrete or work penetrating concrete foundations and formwork.

1.02 REFERENCES

- A. California Code of Regulations, Title 24, latest adopted edition (herein noted as CBC): Chapter 19A Concrete.
- B. American Concrete Institute (ACI) 347 "Recommended Practice for Concrete Formwork".
- C. American Plywood Association (APA) "Concrete Forming Guide".
- D. West Coast Lumberman Inspection Bureau (WCLIB) "Standard Grading Rules for West Coast Lumber".
- E. ACI SP-066 "ACI Detailing Manual".
- F. ACI 301 "Specifications for Structural Concrete".
- G. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice".

1.03 DESIGN REQUIREMENTS

- A. Design, engineer, and construct formwork, shoring and bracing to conform to design and code requirements, resist imposed loads; resultant concrete to conform to required shape, line, and dimension.

1.04 SUBMITTALS

- A. Limitation of review: Structural Engineer's review will be required only where specifically requested for general architectural applications and features only. Contractor is responsible for structural stability, load-resisting characteristics, and sufficiency of form work design.

1.05 QUALITY ASSURANCE

- A. General: All form materials shall be new at start of work. Produce high quality concrete construction. Minimize defects due to joints, deflection of forms, roughness of forms, nonconforming materials, concrete, or workmanship.
- B. Reuse of Forms: Plywood forms may be reused, if thoroughly cleaned of all dirt, mortar, and foreign materials, and undamaged at edges and contact face. Reuse shall be subject to permission from the Architect without exception and issued in writing. Reuse of any panel which will produce a blemish on exposed concrete, will not be permitted.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Form Materials:
 - 1. Non-Exposed Surface Formwork Facing: Forms for concrete which is not exposed to view, may be of plywood as specified for exposed surfaces, or square edge 1x nominal Douglas Fir, Construction Grade, S4S.
 - 2. Exposed Surface Formwork Facing:
 - a. Forms for all exterior and interior concrete flat surfaces unless otherwise specified as board formed shall be new Douglas Fir Plywood (APA) ply, 5/8-inch, B-B Plyform, Class 1, Exterior Type, oiled and edged and edge-sealed conforming to U.S. Product Standard PS 1 in large sheet sizes to achieve joint patterns shown.
 - b. All exposed concrete edges shall be chamfered 3/4" minimum or as noted on the drawings.
 - 3. Exposed Surface Formwork - Special Pattern Form Liner:
 - a. Forms for all exterior and interior concrete flat surfaces indicated shall be as designated by Architect.
- B. Earth Forms: Allowed, subject to soil standing in excavations without ravel or caving.
- C. Form Release Agent: Spray-on compound, not affecting color, bond or subsequent treatment of concrete surfaces. Maximum VOC content shall comply with local requirements and California Green Building Code.
- D. Accessories: Types recommended by manufacturers or referenced standards to suit conditions indicated;
 - 1. Anchors, spacers, void in-fill materials: sized to resist imposed loads.
 - 2. Form Ties: Prefabricated rod, flat band, or wire snap ties with 1" break-back or threaded internal disconnecting type with external holding devices of adequate bearing area. Ties shall permit tightening and spreading of forms and leave no metal closer than 1" to surface.

- E. Corner Chamfers and Rustications: Filleted, wood strip or foam type; sizes and shapes as detailed, or 3/4 x 3/4 inch size minimum if not detailed; maximum possible lengths.
- F. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.
- G. Foam Block Formwork: For use only where specified on drawings to create void space under or within concrete. ASTM D6817. 1 pound per cubic foot maximum density. 10 pounds per square inch minimum compressive strength at 10% deformation. 3.5 pounds per square inch minimum compressive resistance at 1% deformation. 8 pounds per square inch minimum compressive resistance at 5% deformation. InsulFoam Geofoam EPS15, or equivalent.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Inspect the substrate and the conditions under which concrete formwork is to be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected. Commencement of work indicates acceptance of substrates and conditions.
- B. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 EARTH FORMS

- A. If natural soil or compacted fill can be accurately cut and maintained, foundations and grade beams may be poured against earth without forming. Provide positive protection of trench top corners.
- B. Maintain earth forms free of water and foreign materials.

3.03 ERECTION - FORMWORK

- A. General: Construct formwork in accordance with calculations, and recommendations of Section 401 of ACI 347. Construct forms to the sizes, shapes, lines and dimensions shown, and as required to obtain accurate alignment, location, grades, level and plumb work in finished structure. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required. Use selected materials to obtain required finishes.
 - 1. Construct cambers specified in concrete members and slabs in the formwork.
 - 2. Schedule the work and notify other trades in ample time so that provisions for their work in the formwork can be made without delaying progress of the project. Install all sleeves, pipes, etc. for building services systems, or other work. Secure information about and provide for all openings, offsets, recessed nailing blocks, channel chases, anchors, ties, inserts, etc. in the formwork before concrete placement.
 - 3. Deflection: Formwork and concrete with excessive deflection after concrete placement will be rejected. Excessive deflection is that which will produce visible and noticeable waves in the finished concrete.

- B. Formwork Construction: Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301. Uniform, substantial and sufficiently tight to prevent leakage of concrete paste, readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials. Tie, brace, shore, and support to insure stability against pressures from any source, without failure of any component part and without excessive deflection. Solidly butt joints and provide backup material at joints as required to prevent leakage and fins.
- C. Provide all openings, offsets, inserts, anchorages, blocking, and other features of the work as shown or required. See INSERTS, EMBEDDED PARTS, AND OPENINGS for detailed requirements.
- D. Warped, checked, or scuffed forms will be rejected.
- E. Maintain membranes, reinforcing and other work free of damage; protect with plywood runway boards or other positive, durable means.
- F. Align joints and make watertight. Keep form joints to a minimum.
- G. Provide fillet and chamfer strips on external corners of exposed locations and as indicated to form patterns in finished work. Extend patterns around corners and into alcoves, on backs of columns and similar locations not otherwise shown.
 - 1. Produce beveled, smooth, solid, unbroken lines, except as otherwise indicated to conform to patterns.
 - 2. Form corners and chamfers with 3/4 inch x 3/4 inch strips, unless otherwise indicated, accurately formed and surfaced to produce uniformly straight lines and tight edge joints. Extend terminal edges to required limit and miter chamfer at changes in direction.
- H. Unexposed corners may be formed either square or chamfered.
- I. Ties and Spreaders: Arrange in a pattern acceptable to the Architect when exposed. Snap-ties may be used except at joints between pours where threaded internal disconnecting type shall be used.
- J. Coordinate this section with other sections of work that require attachment of components to formwork.
- K. Reglets and Rebates: Accurately locate, size, and form all reglets and rebates required to receive work of other trades, including flashing, frames, and equipment.

3.04 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Do not allow excess form coating material to accumulate in the forms or to come into contact with reinforcement or surfaces which will be bonded to fresh concrete.

- D. Coat steel forms with a non-staining, rust-preventative form oil or otherwise protect against rusting. Rust-stained steel formwork will be rejected.
- E. Leave no residue or stain on the face of the concrete, nor affect bonding of subsequent finishes or work specified in other sections.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in passing through concrete work.
 - 1. Provide openings in concrete formwork to accommodate work of other sections including those under separate contracts (if any). Size and location of openings, recesses and chases shall be in accordance with the section requiring such items. Accurately place and securely support items to be built into forms.
- B. Construction Joints: Construct and locate generally as indicated on Drawings and only at locations approved by Structural Engineer, so as not to impair the strength of the structure. Form keys in all cold joints shown or required.
- C. Locate and set in place items that will be cast directly into concrete.
- D. Rough Hardware and Miscellaneous Metal: Set inserts, sleeves, bolts, anchors, angles, and other items to be embedded in concrete. Set embedded bolts and sleeves for equipment to template and approved shop drawings prepared by trades supplying equipment.
- E. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.
- F. Wood Inserts and Nailers: Provide approved preservative-treated lumber. Set all required nailing blocks, grounds, and other inserts as required to produce results shown. Wood plugs shall not be used.
- G. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- H. Piping: Do not embed piping in structural concrete unless locations specifically approved by Structural Engineer.
- I. Conduit: Place conduit below slabs-on-grade and only as specifically detailed on structural drawings. Minimum clear distance between conduits shall be 3 diameters. Location shall be subject to Engineer's written approval and shall not impair the strength of the structure.
- J. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
 - 1. Provide openings for the introduction of vibrators at intervals necessary for proper placement.
 - 2. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

- K. Install Form Liner inserts in accordance with manufacturer's recommendations, to produce patterns and textures indicated.
- L. Install waterstops in accordance with manufacturer's recommendations to provide continuous waterproof barrier.

3.06 FORM CLEANING

- A. Clean forms as erection proceeds, remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.
 - 1. Remove all dirt, chips, sawdust, rubbish, water and foreign materials detrimental to concrete.
 - 2. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

3.07 FOOTINGS

- A. Verify elevations and provide final excavation required for footings prior to placing of concrete.

3.08 EQUIPMENT BASES

- A. Form concrete bases for all mechanical and electrical equipment in accordance with approved shop details furnished by other sections.
- B. Sizes and locations as indicated and as required to produce results shown.
- C. Provide coved base for all equipment bases placed on concrete slabs.

3.09 FORMWORK TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI 301.

3.10 FOAM BLOCK FORMWORK

- A. Blocks shall be placed on prepared leveling course for level bearing. Place adjacent blocks in tight contact together. Where placed in multiple layers, orient long axis of upper layer at 90° to lower layer, and so forth for subsequent layers. Anchor blocks as required to prevent movement prior to and during concrete placement. Do not expose to hydrocarbons, solvents, or coal tar.

3.11 FIELD QUALITY CONTROL

- A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.
- B. Do not reuse wood formwork more than 2 times for concrete surfaces to be exposed to view. Do not patch formwork.

- C. Clean and repair surfaces to be re-used in the work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable. Apply new form coating compound material to concrete contact surfaces as specified for new formwork.
- D. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close all joints. Align and secure joints to avoid offsets.

3.12 FORM REMOVAL

- A. Do not loosen or remove forms before minimum curing period has elapsed without employment of appropriate alternate curing methods, approved by the Architect in writing.
- B. Remove forms without damage to the concrete using means to insure complete safety of the structure and without damage to exposed beams, columns, wall edges, chamfers and inserts. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- C. Do not remove forms until the concrete has hardened sufficiently to permit safe removal and the concrete has attained sufficient strength to safely support imposed loads. The minimum elapsed time for removal of forms after concrete has been placed shall be as follows:
 - 1. Columns and Walls: 7 days, provided members are not subjected to overhead loads.
 - 2. Retaining Walls: 21 days minimum.
 - 3. Footings: 7 days minimum. If backfilled immediately, side forms may be removed 24 hours after concrete is placed.
 - 4. Beams, elevated slab, and similar overhead conditions: 28 days unless adequate shoring is provided.
- D. Durations listed above are minimums and are subject to extension at the sole judgment of the Architect/Engineer.
- E. Reshoring: Reshore members where and if required by Formwork Design Engineer.
- F. Do not subject concrete to superimposed loads (structure or construction) until it has attained full specified design strength, nor for a period of at least 14 days after placing.
- G. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

3.13 CLEANING

- A. Remove excess material and debris associated with this work from the job site.

END OF SECTION

SECTION 03 2000

CONCRETE REINFORCING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Reinforcing steel work for all concrete work as indicated on the drawings and specified herein.
2. Coordinate this work with other work affected by these operations, such as forms, electrical work, mechanical work, structural steel, and concrete.

B. Related Sections:

1. Pertinent Sections of Division 01 specifying Quality Control and Testing Laboratory services.
2. Pertinent Sections of Divisions 03 specifying concrete construction.
3. Pertinent Sections of Divisions 04 specifying masonry construction.
4. Pertinent Sections of other Divisions specifying work to be embedded in concrete or work penetrating concrete work.

1.02 REFERENCE STANDARDS

- A. California Code of Regulations, Title 24, latest adopted edition (herein noted as CBC) Chapter 19A Concrete.
- B. American Concrete Institute (ACI) 301 "Specifications for Structural Concrete for Buildings".
- C. ACI 318 "Building Code Requirements for Reinforced Concrete and Commentary".
- D. ACI SP-066 "ACI Detailing Manual".
- E. American Society for Testing and Materials (ASTM) A1064 "Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete".
- F. ASTM A615 "Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement".
- G. ASTM A706 "Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement".
- H. American Welding Society (AWS) D1.4 - "Structural Welding Code for Reinforcing Steel".
- I. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice".

1.03 SUBMITTALS

- A. Submit in accordance with pertinent sections of Division 01 specifying submittal procedures. Submit for review prior to fabrication.
- B. Limitation of Review: Structural Engineer's review will be for general conformance with design intent as indicated in the Contract Documents and does not relieve Contractor of full responsibility for conformance with the Contract Documents. The General Contractor shall review and approve shop drawings prior to submittal to the Architect/Engineer.
- C. Shop Drawings: Show complete fabrication and placing details of all reinforcing steel. Comply with requirements of ACI SP-66. Include:
 - 1. Bar sizes and schedules;
 - 2. Shapes of bent bars, layout and spacing of bars, location of splices.
 - 3. Stirrup spacing, arrangements and assemblies,
 - 4. References to Contract Document detail numbers and designations.
- D. Product Data: Submit manufacturer's product data, specifications, location and installation instructions for proprietary materials and reinforcement accessories. Provide samples of these items upon request.
- E. Certificates: Submit all certifications of physical and chemical properties of steel for each heat number as manufactured, including location of material in structure as specified below in Article titled QUALITY ASSURANCE. All materials supplied shall be tagged with heat numbers matching submitted Mill Test Report analyses.
- F. Samples: Provide to the Owner's Testing laboratory as specified in Article SOURCE QUALITY CONTROL.

1.04 QUALITY ASSURANCE

- A. Perform work of this Section in accordance with CRSI DA4, CRSI P1, ACI 301, and ACI 318.
- B. Requirements of Regulatory Agencies, refer to pertinent Sections of Division 01 and CBC.
- C. Certification and Identification of Materials and Uses: Provide Owner's Testing Agency with access to fabrication plant to facilitate inspection of reinforcement. Provide notification of commencement and duration of shop fabrication in sufficient time to allow inspection and all material identification/test information listed below.
 - 1. Provide manufacturer's Mill Test Reports for all materials. Include chemical and physical properties of the material for each heat number manufactured. Tag all fabricated materials with heat number.
 - 2. Provide letter certifying all materials supplied are from heat numbers covered by supplied mill certificates. Include in letter the physical location of each grade of reinforcing and/or heat number in the project (i.e. foundations, walls, etc.).
 - 3. Unidentified Material Tests: Where identification of materials by heat number to mill tests cannot be made, Owner's Testing Agency shall test unidentified materials as described below.

- D. Testing and Inspection: Tests and Inspections required by Independent Testing Agency are specified below in Articles SOURCE QUALITY CONTROL and FIELD QUALITY CONTROL. Duties and limitations of Independent Testing Agency, test costs and test reports in conformance with pertinent Sections of Division 01.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Comply with pertinent requirements of Division 01.
- B. Deliver reinforcement to project site in bundles marked with durable tags indicating heat number, mill, bar size and length, proposed location in the structure and other information corresponding with markings shown on placement diagrams.
- C. Handle and store materials above ground to prevent damage, contamination or accumulation of dirt or rust.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Reinforcing Steel: Deformed billet steel bars, ASTM A706 Grade 60 or ASTM A615 Grade 60.
 - 1. Welded reinforcement shall be ASTM A706, or A615 meeting carbon requirements of AWS D1.4. Welding shall conform with AWS D1.4.
 - 2. All reinforcement to be unfinished.
- B. Welded Wire Reinforcement: ASTM A1064.
- C. Tie Wire: No. 16 AWG or heavier, black annealed.
- D. Concrete Blocks: On-grade conditions only, as required to support reinforcing bars in position.
- E. Reinforcing Supports: Plastic or galvanized steel chairs, bolsters, bar supports, or spacers sized and shaped for adequate support of reinforcement and construction loads imposed during concrete placement, meeting ACI and CRSI standards.
 - 1. For use over formwork: Galvanized wire bar type supports complying with CRSI recommendations. Provide plastic tips where exposed to view or weather after removal of formwork. Do not use wood, brick, or other unacceptable materials.
- F. Reinforcement Splice Couplers: For use only where specified on drawings. Submit other locations proposed for use to Engineer for review. "L-Series Bar Lock" Coupler Systems for Splicing Reinforcement Bars, UES ER-0319, by Dayton-Superior Corporation.

2.02 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI (DA4), unless specifically shown otherwise. Details not specifically shown or indicated shall conform to SP-066 and specified codes and standards.

1. Accurately shop-fabricate to shapes, bends, sizes, gauges and lengths indicated or otherwise required.
 2. Bend bars once only. Discard bars improperly bent due to fabricating or other errors and provide new material; do not re-bend or straighten unless specifically indicated. Rebending of reinforcement in the field is not allowed.
 3. Do not bend reinforcement in a manner that will injure or weaken the material or the embedding concrete.
 4. Do not heat reinforcement for bending. Heat-bent materials will be rejected.
- B. Unacceptable materials: Reinforcement with any of the following defects will not be permitted in the work.
1. Bar lengths, depths and bends exceeding specified fabrication tolerances.
 2. Bends or kinks not indicated on Drawings or final shop drawings.
 3. Bars with reduced cross-section due to rusting or other cause.
- C. Tag reinforcement with durable identification to facilitate sorting and placing.
- D. Shop Fusion Welded Stirrup/Tie/Spiral Cages
1. Shop fusion welding of stirrup/tie/spiral cages is permitted to aid in fabrication and handling. The following requirements shall be met.
 2. All reinforcing bars receiving weld shall be ASTM A706.
 3. Longitudinal holding wires shall be ASTM A1064.
 4. Shop welding shall be performed by machines under a continuous, controlled process.
 5. Quality control tests shall be performed on shop-welded specimens and the test results shall be available, upon request, to the Architect/Engineer.
 6. Tack welding of reinforcing steel is not permitted.
 7. Welding of any type shall not occur at 90°, 135°, or 180° bends. Circular ties and spirals may be shop fusion welded outside of areas with 90°, 135°, or 180° hook bends.
 8. Longitudinal bars shall not be welded to stirrups/ties/spirals.

2.03 SOURCE QUALITY CONTROL

- A. The Testing Agency, as specified in the Article QUALITY ASSURANCE, will perform the following:
1. Sampling and Tests of Reinforcing Bars per CBC 1910A.2.
 2. Material Testing:
 - a. Identified Steel: When samples are taken from bundled steel identified by heat number, matched with accompanying mill analyses as delivered from the mill, Owner's Testing Agency will perform one tensile test and one bend test per each ten tons or fraction thereof for each required size of reinforcing steel.
 - b. Unidentified Steel: When identification of materials by heat number matched to accompanying mill analyses cannot be made, perform one tensile test and one bend test per each two and one-half tons or fraction thereof for each required size of reinforcing steel. Tests of unidentified steel shall be performed by the Owner's Testing Agency and costs for these tests shall be paid by the Contractor by deductive change order.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspect the conditions under which concrete reinforcement is to be placed. Do not proceed with the work until unsatisfactory conditions have been corrected.
- B. Coordinate with work of other sections to avoid conflicts or interference. Bring conflicts between reinforcement and other elements to Architect's attention. Resolve conflicts before concrete is placed.
- C. Notify Architect, Structural Engineer, and Authority Having Jurisdiction for review of steel placement not less than 48 hours before placing concrete.

3.02 PLACEMENT

- A. General: Comply with the specified codes and standards, and Concrete Reinforcing Steel Institute recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified.
- B. Clean bars free of substances which are detrimental to bonding. Maintain reinforcement clean until embedded in concrete.
- C. Place reinforcement to obtain the minimum coverages for concrete protection. Do not deviate from required position. Maintain required distance, spacing and clearance between bars, forms, and ground.
- D. Location and Support: Provide metal chairs, runners, bolsters, spacers and hangers, as required.
- E. Provide additional steel reinforcement as necessary or as directed, to act as spreaders or separators to maintain proper positioning.
- F. Tying and Attachment: Securely tie at all intersections and supports with wire. Prevent dislocation or movement during placement of concrete. Direct twisted ends of wire ties away from exposed concrete surfaces.
- G. Separate reinforcing from pipes or conduits with approved non-metallic separators. Do not use wood or steel form stakes or reinforcement used as stakes as support for reinforcement.
- H. Accommodate placement of formed openings required by other sections.
- I. Obstructions:
 - 1. Where obstructions, block-outs, or penetrations (conduits, raceways, ductwork) prevent continuous placement of reinforcement as indicated, provide additional reinforcing as detailed and as directed by the Structural Engineer to supplement the indicated reinforcement around the obstruction.
 - 2. Place additional trim bars, ties, stirrups, or other elements as detailed and as directed at all opening, sleeves, pipes or other penetrations through structural elements.

- J. Welded Wire Reinforcement: Reinforce slabs with 6"x 6"-W1.4 x W1.4 welded wire reinforcement reinforcing, unless otherwise noted on drawings.
1. Provide flat sheets only, no rolls. Straighten, cut to required size, and lay out flat in place.
 2. Securely wire-tie reinforcement to other reinforcement at frequent intervals.
 3. Extend reinforcement over supporting beams and walls, and to within 1 inch of edge of slabs, construction joints, and expansion joints.
 4. Support reinforcement in mid-depth of slab.
 5. Lift reinforcement at intervals as slab concrete is placed, ensure proper embedment

3.03 REINFORCING SPACING AND COVERAGE

- A. Spacing: Do not space bars closer than four (4) diameters of the largest of two adjacent bars, except at bar laps, which shall be placed such that a minimum of 2 bar diameters is clear between bars.
- B. Where reinforcing in members is placed in two layers, the distance between layers shall not be less than four bar diameters of the largest bar and the bars in the upper layers shall be placed directly above those in the bottom layer, unless otherwise detailed or dimensioned.
- C. Coverage of bars (including stirrups and ties) shall be as follows, unless otherwise shown:
1. Footings: 3 inches to any soil face, 2 inches to top.
 2. Slabs (on grade): 2 inches to grade face, 1-1/2 inches to top face.

3.04 DOWELS, SPLICES, OFFSETS AND BENDS

- A. Provide standard reinforcement splices at splices, corners, and intersections by lapping ends, placing bars in contact, and tightly tying with wire at each end. Comply with details shown on structural drawings and requirements of ACI 318.
- B. Provide minimum 1-1/2 inch clearance between sets of splices. Stagger splices in horizontal bars so that adjacent splices will be 4 feet apart.
- C. Laps of welded wire reinforcement shall be at least two times the spacing of the members in the direction lapped but not less than twelve inches.
- D. Splices of reinforcement shall not be made at points of maximum stress. Provide splice lengths as noted on the structural drawings, with sufficient lap to transfer the stress between bars by bond and shear.
- E. Spacing:
1. Space bars minimum distance specified and all lapped bars 2 bar diameters (minimum) clear of the next bar.
 2. Stagger splices of adjacent bars where possible and where required to maintain bar clearance.
 3. Beam or slab top bars shall be spliced mid-span of column support and bottom bars spliced at column supports.

4. Request Architect/Engineer review prior to placement for all splices not shown on the drawings.
- F. Reinforcement Couplers: Install at all locations indicated. Install couplers in accordance with manufacturer's recommendations.

3.05 WELDING

- A. No reinforcing shall be welded unless specifically indicated. No reinforcing shall be welded without prior approval of the Structural Engineer and the Authority Having Jurisdiction.
- B. Only when so approved for use as noted above, all welding shall conform to AWS D1.4, ACI 318 Section 26.6.4, and CBC 1903A.8 and the following:
 1. All welding performed by certified welders.
 2. All reinforcement requires preheat prior to welding. All preheat and welding shall be continuously inspected by the Testing Agency.

3.06 MISPLACED REINFORCEMENT

- A. Notify Architect/Engineer immediately if reinforcing bars are known to be misplaced after concrete has been placed.
- B. Perform no correction or cutting without specific direction. Do not bend or kink misplaced bars.
- C. Correct misplaced reinforcing only as directed in writing by the Architect/Engineer. Bear all costs of redesign, new, or additional reinforcing required because of misplaced bars at Contractor's expense.

3.07 FIELD QUALITY CONTROL

- A. The Testing Agency as specified in the Article QUALITY ASSURANCE, will inspect the work for conformance to contract documents before concrete placement.
 1. Inspection: Provide inspection and verification of installed reinforcement. Confirm that the surface of the rebar is free of form release oil or other coatings.
 2. Inspect all preheat and welding activities for steel reinforcement, when these occur.
 3. Exception: Non-structural patios, driveways, and sidewalks do not require special inspection.

3.08 CLEANING

- A. Remove excess material and debris associated with this work from the job site.

END OF SECTION

SECTION 03 3000

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Provide all labor, materials, equipment, and services to complete all concrete work required, including, but not limited to, the following:
 - 1. Foundations and exterior slabs-on-grade.
 - 2. Installation of all bolts, inserts, sleeves, connections, etc. in the concrete.
 - 3. Joint devices associated with concrete work.
 - 4. Miscellaneous concrete elements, including, but not limited to: equipment pads, light pole bases, flagpole bases, thrust blocks, and manholes.
 - 5. Concrete curing.
 - 6. Coordination with other sections:
 - a. Make all preparations and do all work necessary to receive or adjoin other work. Install all bolts and anchors, including those furnished by other sections, into formwork and provide all required blocking.
 - b. Install all accessories embedded in the concrete and provide all holes, blockouts and similar provisions necessary for the work of other sections. Provide all patching or cutting made necessary by failure or delay in complying with this requirement at the Contractor's expense.
 - c. Coordinate with other sections for the accurate location of embedded accessories.
- B. Related Sections:
 - 1. Pertinent Sections of Division 01 specifying Quality Control and Testing Laboratory services.
 - 2. Pertinent Sections of Division 03 specifying concrete construction.
 - 3. Pertinent Sections of other Divisions specifying work to be embedded in concrete or work penetrating concrete.
 - 4. Pertinent sections of other Divisions specifying floor finishes and sealants applied to concrete substrates.

1.02 REFERENCES

- A. California Code of Regulations, Title 24, latest adopted edition (herein noted as CBC) Chapter 19A Concrete.
- B. American Concrete Institute (ACI) 211.1 "Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete"; ACI 211.2 "Standard Practice for Selecting Proportions for Lightweight Concrete".
- C. ACI 301 "Specifications for Structural Concrete".
- D. ACI 302.1R "Guide for Concrete Floor and Slab Construction".

- E. ACI 304R "Guide for Measuring, Mixing, Transporting, and Placing Concrete".
- F. ACI 305R "Hot Weather Concreting".
- G. ACI 306R "Cold Weather Concreting".
- H. ACI 308 "Standard Practice for Curing Concrete".
- I. ACI 318 "Building Code Requirements for Reinforced Concrete and Commentary".

1.03 SUBMITTALS

- A. Submit in accordance with pertinent sections of Division 01 specifying submittal procedures. The General Contractor shall review and approve shop drawings prior to submittal to the Architect/Engineer. Submittals that do not meet these requirements will be returned for correction without review. Submit for review prior to fabrication.
- B. Limitation of Review: Structural Engineer's review will be for general conformance with design intent as indicated in the Contract Documents and does not relieve Contractor of full responsibility for conformance with the Contract Documents.
- C. Product Data: Submit manufacturers' data on manufactured products and other concrete related materials such as bond breakers, cure/sealer, admixtures, etc. Demonstrate compliance with specified characteristics. Provide samples of items upon request. Submit material certificates for concrete aggregates and cementitious materials. Certificates shall show compliance to applicable ASTM's, the CBC, and additional requirements stated herein.
- D. Mix Designs: Submit Mix Designs for each structural concrete type required for work per requirements of articles CONCRETE MIXES and QUALITY ASSURANCE. Resubmit revised designs for review if original designs are adjusted or changed for any reason. Non-Structural mixes need not be submitted for review by Structural Engineer.
- E. Shop Drawings: Proposed location of construction and cold joints. Proposed location of all slab construction/dowel joints, control joints, and blockouts.
- F. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent construction for concrete accessories.
- G. Batch Plant Certificates: Include with delivery of each load of concrete. Provide Certificates to the Testing Agency and the Architect/Engineer as separate submittals. Concrete delivered to the site without such certificate shall be rejected and returned to the plant. Each certificate shall include all information specified in Article SOURCE QUALITY CONTROL below.
- H. Engineering Analysis: Prepared by a California-licensed Civil or Structural Engineer, justifying construction-imposed loads on slabs, beams, and walls which exceed those allowed by CBC for the specified use.
 - 1. 2000 lbs maximum allowable construction load without analysis.
 - 2. 10,000 lbs maximum allowable construction load with analysis.

- I. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.04 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
- B. Concrete construction verification and inspection to conform to CBC 1705A.3.
- C. Common Sourcing: Provide each of the following materials from consistent sources for entire project.
 1. Cement.
 2. Fly ash.
 3. Aggregate.
 4. Ground Granulated Blast Furnace Slag.
- D. Follow recommendations of ACI 305R when concreting during hot weather. Follow recommendations of ACI 306R when concreting during cold weather.
- E. Services by the Independent Testing Agency (includes "Special" Inspections) as specified in this Section and as follows:
 1. Perform tests and inspections specified below in articles SOURCE QUALITY CONTROL and FIELD QUALITY CONTROL. Duties and limitations of Independent Testing Agency, test costs and reports to be in conformance with pertinent Sections of Division 01.
- F. Contractor shall bear the entire cost of remediation, removal, and/or replacement of concrete determined defective or non-conforming, including Architect/Engineer fees for redesign.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Materials specified by brand name shall be delivered in unbroken packages bearing manufacturer's label and shall be brand specified or an approved equal.
- B. Delivery, Handling and Storage of other materials shall conform to the applicable sections of the current editions of the various reference standards listed in this Section.
- C. Protect materials from weather or other damage. Sort to prevent inclusion of foreign materials.
- D. Specific Requirements:
 1. Cement: Protect against dampness, contamination, and warehouse set. Store in weather tight enclosures.
 2. Aggregates: Prevent excessive segregation, or contamination with other materials or other sizes of aggregates. Use only one supply source for each aggregate stock pile.
 3. Admixtures:
 - a. Store to prevent contamination, evaporation, or damage.
 - b. Protect liquid admixtures from freezing and extreme temperature ranges.
 - c. Agitate emulsions prior to use.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Cold Weather (Freezing or near-freezing temperatures) per ACI 306R:
 - 1. Heat concrete materials before mixing, as necessary to deposit concrete at a temperature of at least 50°F but not more than 90°F.
 - 2. Do not place concrete during freezing, near-freezing weather, snow, rain or sleet unless protection from moisture and/or cold is provided.
 - 3. Protect from freezing and maintain at a temperature of at least 50°F for not less than seven days after placing. Take special precautions to protect transit-mixed concrete.
 - 4. No salts, chemical protection or admixture are permitted without written approval of Architect/Engineer.
 - 5. Contractor shall maintain an air temperature log for the first 7 days after placement with entry intervals not to exceed 8 hours.
- B. Hot Weather per ACI 305R:
 - 1. Cool concrete materials before mixing, or add ice in lieu of mix water as necessary to deposit concrete at a temperature below 85°F.
 - 2. Do not place concrete in hot/windy weather without Architect/ Engineer review of procedures.
 - 3. Provide sunshades and/or wind breakers to protect concrete during finishing and immediate curing operations. Do not place concrete at air temperature exceeding 90°F.
 - 4. Provide modified mix designs, adding retarders to improve initial set times and applying evaporation reducers during hot/windy weather for review by Independent Testing Agency prior to use.

1.07 SCHEDULING AND SEQUENCING

- A. Organize the work and employ shop and field crew(s) of sufficient size to minimize inspections by the Testing Agency.
- B. Provide schedule and sequence information to Testing Agency in writing upon request. Update information as work progresses.

PART 2 PRODUCTS

2.01 FORMWORK

- A. Comply with requirements of Section 03 1000.

2.02 REINFORCEMENT

- A. Comply with requirements of Section 03 2000.

2.03 MATERIALS

- A. General Requirements: All materials shall be new and best of their class or kind. All materials found defective, unsuitable, or not as specified, will be condemned and promptly removed from the premises.
- B. Cementitious Materials:
 - 1. Portland Cement: ASTM C150, Type II, low alkali.
 - 2. Fly Ash (Pozzolan): ASTM C618, Class F.
 - 3. Ground Granulated Blast Furnace Slag: ASTM C989, Grade 100 or 120.
- C. Concrete Aggregates:
 - 1. Coarse and Fine Aggregates: ASTM C33; Stone aggregate and sand. Specific source aggregate and/or sand or shrinkage characteristics as required for class of concrete specified.
 - 2. Lightweight aggregate: ASTM C330 and C332.
 - 3. Source shall remain constant throughout the duration of the job. The exact portions of the fine aggregates and coarse aggregates to be used in the mix shall be determined by the mix design.
 - 4. Aggregates shall be tested for alkali reactivity per CBC section 1903A.5. Where test results exceed allowable limits, additional testing of mitigation procedures shall be provided, as outlined per CBC section 1903A.5.
- D. Water: Potable, clean, from domestic source.
- E. Admixtures: All admixtures shall be used in strict accordance with the manufacturer's recommendations. Admixtures containing calcium chlorides or other accelerators shall not be used without the approval of the Architect/Engineer and the Owner's Testing Laboratory.
 - 1. Mid Range Water Reducing Admixtures: ASTM C494 Type A, "MasterPolyHeed" (formerly "PolyHeed") series by Master Builders Solutions, "WRDA" series by W.R. Grace, or equal.
 - 2. High Range Water-Reducing Admixtures: ASTM C494 Type F, "MasterRheoBuild 1000" (formerly "RheoBuild 1000") or "MasterGlenium" (formerly "Glenium") series by Master Builders Solutions or equal.
 - 3. Water Reducing Admixture and Retarder: ASTM C494 Type B or D, "MasterPozzolith" (formerly "Pozzolith") series or "MasterSet DELVO" (formerly "DELVO") series by Master Builders Solutions, "Plastiflow-R" by Nox-crete, or equal.
 - 4. Air Entraining Admixtures: ASTM C260, product suit condition by Master Builders Solutions or equal.
 - 5. Viscosity Modifiers: ASTM C494 Type S.
- F. Slurry: Same proportion of cement to fine aggregates used in the regular concrete mix (i.e. only coarse aggregate omitted); well mixed with water to produce a thick consistency.
- G. High Strength Grout: See section 05 1100 for requirements.
- H. Dry Pack: Dry pack (used only for cosmetic concrete repairs) shall consist of:

1. One part cement to 2-1/2 parts fine aggregate (screen out all materials retained on No.4 sieve), mixed with a minimum amount of water, added in small amounts.
2. Mix to consistency such that a ball of the mixture compressed in the hand will retain its shape, showing finger marks, but without showing any surface water.

2.04 ACCESSORIES

- A. Bonding Agent: ASTM C881, Type II Grade 2 Class B or C. Do not allow epoxy to set before placing fresh concrete.
 1. "MasterEmaco ADH 326" (formerly "Concresive Liquid LPL") by Master Builders Solutions;
 2. "Rezi-Weld 1000" by W.R. Meadows.
- B. Chemical Hardener: Fluorosilicate solution designed for densification of cured concrete slabs. "MasterKure HD 300 WB" (formerly "Lapidolith") by Master Builders Solutions, "LIQUI-HARD" W.R. Meadows Co, or equal.
- C. Moisture-Retaining Cover: ASTM C171, type 1, one of the following;
 1. Regular Curing Paper, Type I, reinforced waterproof: Fortifiber Corporation "Orange Label Sisalkraft", "Pabcotite" paper, or equal.
 2. Polyethylene Film: ASTM D 2103, 4 mil thick, clear or white color.
 3. White-burlap-polyethylene sheet, weighing not less than 10 oz/per linear yd.
- D. Liquid Curing Compound: ASTM C 309, Type 1, Class B, clear or translucent, 25% minimum solids, water base acrylic cure/sealer which will not discolor concrete and compatible with bonding of finishes specified in related sections. W.R. Meadows Co. "Vocomp 25" or equal. Maximum VOC content shall comply with local requirements and California Green Building Code.
- E. Underslab Water Vapor Retarder: See Section 07 2500 "Weather Barriers".
- F. Evaporation Reducer: "MasterKure ER 50" (formerly Confilm), by Master Builders Solutions.
- G. Permeability Reducer: Use only where specifically referred to.
 1. Admixture Type: Xypex Chemical Corporation "XYPEX Admix C-500". Dosage: 2-3% of cement content by weight; 15 lb/cu. yd. max. or Master Builders Solutions "MasterLife 300D" (formerly "Rheomac 300D"). Dosage: 2% of cement content by mass.
 2. Surface-Applied Type: Xypex Chemical Corporation "XYPEX Concentrate. Brush application: 1.25-1.50lb/sq. yd., 5 parts powder to 2 parts water. Master Builders Solutions "MasterSeal 500" (formerly "Tegraproof"). Slurry coat: one part water to 2.25-2.5 parts powder by volume.
 3. Approved equal.

2.05 JOINT DEVICES AND MATERIALS

- A. Waterstops: Resilient type, meeting Corps of Engineers CRD-C 572. Consult manufacturer for appropriate product for specific use. Submit for review. Install per manufacturers

recommendation. Provide W. R. Meadows "Seal Tight" PVC waterstop, Sika "Greenstreak" PVC waterstop, or approved equal.

- B. Expansion Joint Filler: ASTM D1751, Nonextruding, resilient asphalt impregnated fiberboard or felt, 3/8 inch thick and 4 inches deep; tongue and groove profile.
 - 1. Products: "Servicised Products", W.R. Meadows, Inc., "National Expansion Joint Company", "Celotex Corporation", or equal.
- C. Joint Filler: ASTM D944, Compressible asphalt mastic with felt facers, 1/4 inch thick and 4 inches deep.
- D. Sealant and Primer: As specified in Section 07 9200.
- E. Slab Joint Sealant: Compatible with floor finishes specified in related sections.

2.06 CONCRETE MIXES

- A. General requirements for mix design and submittal of structural class concrete:
 - 1. Provide Contractor submittals to Architect/Engineer not less than 15 days before placing concrete.
 - 2. Contractor shall review mix designs and proposed placing requirements prior to submittal for compatibility to ensure that the concrete as designed can be placed in accordance with the drawings and specifications.
 - 3. Changes or revisions require re-submittal: All variations to approved mix designs, including changing type and/or quantity of admixtures shall be resubmitted to the Architect/Engineer for review prior to use.
 - 4. Mix design(s) for all structural classes of concrete to be prepared by qualified person experienced in mix design. Allow for time necessary to do trial batch testing when required.
 - 5. Preparer to provide backup data and certify in writing that mix design meets:
 - a. Requirements of the specifications for concrete durability and quality;
 - b. Requirements of the California Building Code and ACI 318 Section 26.4, including break histories, trial batching test results, and/or a mix designed by a California Registered Civil Engineer per ACI 318 Section 26.4.3.1(b) and bearing the Engineer's seal & signature.
 - 6. Clearly note on mix designs with specified maximum WCR if design permits addition of water on site, or clearly identify in the mix design that no water is to be added on site.
 - 7. Deviations: Clearly indicate proposed deviations, and provide written explanation explaining how the deviating mix design(s) will provide equivalent or better concrete product(s) than those specified.
 - 8. Include adjustments to reviewed mix designs to account for weather conditions and similar factors.
- B. Proportioning - General: The following provisions apply to all mix designs:

1. Proportion concrete mixes to produce concrete of required average strength (as defined by ACI 318 Section 19.2.1). Select slump, aggregate sizes, shrinkage, and consistency that will allow thorough compaction without excessive puddling, spading, or vibration, and without permitting the materials to segregate, or allow free water to collect on the surface.
 2. Select aggregate size and type to produce dense, uniform concrete with low to moderate shrinkage, free from rock pockets, honeycomb and other irregularities.
 3. Mix designs may include water reducing and retarding admixtures to meet or exceed minimum set times (time required to place and finish) and to minimize Water Cement Ratios (WCR). Minimum and maximum criteria presented in this section are guidelines and do not represent a specific mix design.
 4. Cement Content: Minimum cement content indicates minimum sacks of cementitious material. Increasing cement content to increase early strengths or to achieve specified WCR while maintaining water content is discouraged in order to minimize effects of shrinkage.
 - a. Substitution of fly ash for Portland cement on an equivalent weight basis up to 25% replacement is permitted, except at high early strength concrete. Replacement in excess of 25% is not permitted unless part of a specified mix design that has been submitted for review.
 - b. Substitution of slag for Portland cement on an equivalent weight basis up to 45% replacement is permitted, except at high early strength concrete. Replacement in excess of 45% is not permitted unless part of a specified mix design that has been submitted for review.
 - c. Such substitution requests may be denied by the Engineer.
 5. Water Content: Mix designs with a specified maximum Water Cement Ratio (WCR) may be designed with a lower WCR than specified in order to allow addition of water at the site.
 6. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301 and this section.
 - a. For trial mixtures method, employ independent testing agency acceptable to Architect/Engineer for preparing and reporting proposed mix designs.
 7. Placement Options: Mix designs may, at the Contractor's option, be designed for either pump or conventional placement with aggregate size, slumps, etc. to be maintained as specified in this section.
- C. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations and this section.

D. Mix Design Minimum Requirements:

Concrete Class	Coarse Aggregate Size (Inches) & Fine Aggregate ³	Maximum WCR or Maximum Nominal Slump & Tolerance (Inches) ^{1,2}	Minimum 28-Day Design Strength	Minimum Cement Sacks/per yd ⁴
NON-STRUCTURAL				
1) Lean Concrete (use only where specified)	---	---	---	3.0
2) Slab on Grade Exterior (Walks & Patios)	1" x #4	WCR = .55	2,500	4.5
STRUCTURAL				
3) Drilled Pier	3/4" x #4	WCR = .53	3,000	5.0

1. The tolerance is the maximum deviation allowable without rejection. The mix design shall be based on the nominal value specified and is without water reducing mixtures. Slump to be measured at the end of the hose.
2. The maximum water cement ratio (WCR) is limited at time of placement as noted. No water is to be added on site such that the specified WCR or maximum slump is exceeded without approval of the testing laboratory and the Architect/Engineer. Workability is to be achieved utilizing an acceptable mid range to high range water reducing admixture.
3. Gradation of aggregate is per ACI 318 section 26.4.1.2 and ASTM C33.
4. Minimum cement content includes all cementitious materials.

2.07 MIXING CONCRETE

- A. Batch final proportions in accordance with approved mix designs. All adjustments to approved proportions, for whatever reason, shall be reviewed by the Architect/Engineer prior to use.
- B. Batch and mix concrete in accordance with ASTM C94, at an established plant. Site mixed concrete will be rejected.
- C. Provide batch and transit equipment adequate for the work. Operate as necessary to provide concrete complying with specified requirements.
- D. Place mixed concrete in forms within 1-1/2 hours from the time of introduction of cement and water into mixer or 300 revolutions of the drum whichever comes first. Use of, re-mixing, and/or tempering mixed concrete older than 1 hour will not be permitted.
- E. Do not add water at the site to concrete mixes with a maximum specified WCR unless the water content at batch time provides for a WCR less than specified and this provision, including the quantity of water which may be added at the site, is specifically noted on the mix design and certification by the mix preparer. See ASTM C94 for additional requirements.

2.08 SOURCE QUALITY CONTROL

- A. Services by independent Testing Agency:

1. Where aggregate alkali reactivity testing (and, when applicable, mitigation testing) per the MATERIALS section is not available, the Testing Agency shall perform this testing to verify materials conformance to CBC section 1903A.5.
2. Batch Plant inspection at automated plants to occur at commencement of concrete work each day (first truck). Batch Plant inspection at non-automated plants and when accuracy is questionable shall be continuous. Additionally, water cement ratio (WCR) is to be verified where a WCR is specified herein. The computed WCR is to be written on the Batch Plant Certificate to be taken to the job site prior to the truck leaving the plant. See requirements of CBC 1705A.3.3.
3. Batch Plant Certificates: Obtain the weighmaster's Batch Plant Certificate at arrival of truck at the site. If no batch plant certificate is provided, recommend to the General Contractor that the truckload of concrete be rejected. So note in daily log, along with the location of the load of concrete in the structure if the load is not rejected. See requirements of CBC 1705A.3.3.
 - a. Laboratory's inspector shall obtain for each transit mixer Batch Plant Certificates to verify mix design quantities and condition upon delivery to the site.
 - b. Certificates to include: Date, time, ingredient quantities, water added at plant and on job, total mixer revolutions at time of placement, and time of departure.
 - c. Concrete with specified water cement ratio: Add no water on site unless mix design and batch records each show additional water may be added. See ASTM C94 for additional requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.
- B. Verify work of other sections is complete and tested as required before proceeding.

3.02 PREPARATION

- A. Observation, Inspection and Testing:
 1. Architect/Engineer: Notify not less than 2 working days before each concrete placement, for observation and review of reinforcing, forms, and other work prior to placement of concrete.
 2. Testing Agency: Notify not less than 24 hours before each placement for inspection and testing.
- B. Placement Records: Contractor shall maintain records of time, temperature and date of concrete placement including mix design and location in the structure. Retain records until completion of the contract. Make available for review by Testing Agency and Architect/Engineer.
- C. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.
- D. Verify location, position, and inclusion of all embedded and concealed items.

- E. Verify installation of vapor retarder under interior slabs on grade, as specified in related section, is complete.
- F. Cleaning and Preparation:
 - 1. Remove loose dirt, mud, standing water, and foreign matter from excavations and cavities.
 - 2. Close cleanout and inspection ports securely.
 - 3. Thoroughly clean reinforcement and other embedded items free from loose rust and foreign matter. Maintain reinforcing securely in place. Do not place concrete on hot reinforcing.
 - 4. Dampen form materials and substrates on which concrete is to be placed at least 1 hour in advance of placing concrete; repeat wetting as necessary to keep surfaces damp. Do not saturate. Do not place concrete on saturated material.
 - a. Thoroughly wet wood forms (except coated plywood), bottom and sides of trenches, adjacent concrete or masonry and reinforcement.
 - b. Concrete slabs on base rock, dampen rock.
 - c. Concrete slabs on vapor retarder, do not wet vapor retarder.
 - 5. Verify that metal forms are clean and free of rust before applying release agent.
 - 6. Thoroughly clean metal decking. Do not place concrete on wet deck surface.
 - 7. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
- G. Drill holes in existing concrete at locations where new concrete is doweled to existing work. Insert steel dowels and prepare connections as detailed.
- H. Do not overcut at existing concrete work to remain. Contractor is responsible for repair/replacement of overcut concrete to the Owner's satisfaction.

3.03 PIPES AND CONDUITS IN CONCRETE

- A. No pipes or conduit are permitted within drilled piers.

3.04 CONCRETE PLACEMENT

- A. Transporting:
 - 1. Provide clean, well-maintained equipment of sufficient quantity and capacity to execute the work and produce concrete of quality specified.
 - 2. Handle and transport concrete from mixer to final deposit location as rapidly as practicable. Prevent separation or loss of ingredients.
- B. Perform concrete placement by methods which will not puncture, damage, or disturb vapor retarder membrane. Repair all damage to vapor retarder membrane before covering.
- C. Placement - General: Placement, once started, shall be carried on as a continuous operation until section of approved size and shape is completed. Provide construction joints as detailed on the drawings. Engineer's written approval required for all deviations.
 - 1. Deposition:

- a. Deposit concrete to maintain an approximately horizontal plastic surface until the completion of the unit placement.
 - b. Deposit as neatly as practicable in final position, minimize re-handling or flow.
 - c. Do not drop concrete freely where reinforcing bars, embeds, or obstructions occur that may cause segregation. Provide spouts, elephant trunks, or other means to prevent segregation during placement.
 2. Depth: Layered placement in piers shall not exceed ten feet vertical depth.
 - a. Place concrete in minimum 32 inch horizontal lifts.
 - b. Schedule placement to ensure that concrete will not take initial set before placement of next lift.
 - c. No horizontal cold joints are allowed in piers.
 3. Progress Cleaning: Remove all concrete spilled on forms or reinforcing steel in portions of structure not immediately concreted. Remove completely before concrete sets.
 4. Interruptions: Shut down placement operations and dispose of all remaining mixed concrete and concrete in hoppers or mixers following all interruption in placement longer than 60 minutes.
 - a. If such interruption occurs, provide new or relocate existing construction joints as directed by Engineer.
 - b. Cut concrete back to the designated line, cleaning forms and reinforcing as herein specified.
 - c. Prepare for resumption of placement as for new unit when reason for interruption is resolved.
- D. Consolidation:
 1. Consolidate all concrete thoroughly during placement with high-speed mechanical vibrators and other suitable tools. Perform manual spading and tamping to work around reinforcement, embedded fixtures, and into corners of formwork as required to obtain thorough compaction.
 - a. Provide vibrators with sufficient amplitude for adequate consolidation.
 - b. Use mechanical vibrators at each point of concrete placement.
 - c. Keep additional spare vibrators, in addition to those required for use, at the site for standby service in case of equipment failure.
 2. Consolidate each layer of concrete as placed.
 - a. Insert vibrators vertically at points 18 to 30 inches apart; work into top area of previously placed layer to reconsolidate, slowly withdraw vibrator to surface.
 - b. Avoid contact of vibrator heads with formwork surfaces.
 - c. Systematically double back and reconsolidate wherever possible. Consolidate as required to provide concrete of maximum density with minimized honeycomb.
- E. Unacceptable Materials:
 1. Do not place concrete that has started to set or stiffen. Dispose of these materials.
 2. Do not add water on site to concrete except as specified in the approved mix design, see PART 2 above.
- F. Protection of installed work:
 1. Do not introduce any foreign material into any specified drainage, piping or duct systems.

2. Contractor shall bear all costs of work required to repair or clean affected work as a result of failure to comply with this requirement.

3.05 CONCRETE JOINTS

A. Structural Joints (Construction/Cold Joints):

1. Locate joints only where shown, or as approved.
2. Review Required: Joints not indicated on the plans shall be located to meet the minimum requirements below, shall not impair the strength of the structure and shall be submitted to Architect/Engineer for review prior to placement of concrete.
 - a. Indicate proposed location(s) of construction/cold/expansion joints on shop drawing submittals for review prior to placing concrete.
3. Clean and roughen all surfaces of previously placed concrete at construction joints by washing and sandblasting to expose aggregate to 1/4 inch amplitude.
4. Slabs-On-Grade: Maximum Length of continuous placement shall not exceed 60 feet without special review by the Architect/Engineer. Alternate or stagger placement sections.

B. Expansion/Construction Joints (Dowel Joints and Control Joints):

1. Exterior Concrete Slabs on Grade (walkways, patios):
 - a. Expansion/ construction joints: Provide a 2 inch deep troweled groove or asphalt impregnated joint material embedded 50 percent of the slab depth at 12 feet on center, maximum.
 - b. Proportions: Place no section with a length larger than two times width. Additionally, place joints at all inside corners and at all intersections with other work.

C. Joint Types:

1. Dowel Joint: A keyed joint with smooth dowels passing through to allow unrestricted movement due to contraction and expansion. Joints are as specified on the drawings.
2. Control Joint(s): Shrinkage crack control joints may be of the following types when shown on the drawings. Install joints in a straight line between end points with edges finished appropriate to type. Depth shall be 25% of the slab thickness, unless noted otherwise. Fill joints with sealant as shown on the drawings or as required by related sections.
 - a. 1/4 inch wide troweled joint.
 - b. Keyed joint: Only at locations where concealed by other finishes.
 - c. Masonite Strip, 1/8 inch: Only at locations where concealed by other finishes.
 - d. Saw Cut, 1/8 inch: Must be performed within eight hours of completion of finishing. Do not make saw cuts if aggregate separates from cement paste during cutting operation. Prevent marring of surface finish. Fill with flexible sealant.

3.06 VAPOR RETARDER

- A. Vapor Retarder Installation: Install as specified in Section 07 2500 "Weather Barriers", ASTM E1643, and per manufacturer's recommendations including taping and lapping of seams, sealing of penetrations, and repair of damage. Do not extend vapor retarder below footings.

3.07 FLATWORK

A. General Requirements for All Concrete Formed & Finished Flat:

1. Edge Forms and Screeds: Set accurately to produce indicated design elevations and contours in the finished surface, edge forms sufficiently strong to support screed type proposed.
2. Jointing: Located and detailed as indicated.
3. Consolidation: Concrete in slabs shall be thoroughly consolidated.

B. Flatwork Schedule:

1. Exterior Slabs-On-Grade: Place concrete directly over sub-base as indicated.
 - a. Sub-Base: Clean free-draining, crushed base rock, 4 inch minimum thickness, thoroughly compacted.

3.08 FORMED SURFACES

- A. Form all concrete members level and plumb, except as specifically indicated. Comply with tolerances specified in ACI 318 Section 26.11, ACI 301 Section 2, and this specification, except that maximum permissible deviation is 1/4 inch end-to-end for any single member.

3.09 CONCRETE FINISHES

A. Flatwork Finishing:

1. All exposed concrete flatwork surfaces shall be non-slip. See Architectural, Civil, and Landscape drawings.
2. Perform with experienced operators.
3. Finish surfaces monolithically. Establish uniform slopes or level grades as indicated. Maintain full design thickness.
4. In areas with floor drains, maintain design floor elevation at walls; slope surfaces uniformly to drains as indicated on drawings.
5. Flatwork Finish Types:
 - a. Wood Float Finish: Surfaces to receive quarry tile, ceramic tile, or cementitious terrazzo with full bed setting system, or wood frame for raised finished floors.
 - b. Steel Trowel Finish: Surfaces to receive carpeting, resilient flooring, seamless flooring, thin set terrazzo, thin set tile or similar finishes specified in related sections. Trowel twice, minimum.
 - c. Broom Texture Finish: Exterior surfaces as indicated or for which no other finish is indicated. Finish as for steel trowel finish, except immediately following first troweling, (depending on conditions of concrete and nature of finish required) provide uniform surfaces texture using a medium or coarse fiber broom.

B. Other Concrete: Provide as required to achieve appearance indicated on structural and architectural drawings and related sections.

1. Repair surface defects, including tie holes, immediately after removing formwork.
2. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.

3. Exposed Form Finish: Finish concrete to match forms. Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
 - a. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
 - b. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture by brush or spray; scrub immediately to remove excess grout. After drying, rub vigorously with clean burlap, and keep moist for 36 hours.
 - c. Cork Floated Finish: Immediately after form removal, apply grout with trowel or firm rubber float; compress grout with low-speed grinder, and apply final texture with cork float.
4. Intermediate joint and score marks and edges: Tool smooth and flush unless otherwise indicated or as directed by the Architect.
5. Use steel tools of standard patterns and as required to achieve details shown or specified. All exposed corners not specified to be chamfered shall have radiused edges.

3.10 TOLERANCES

- A. Minimum Flatwork Tolerances: Measure flatness of slabs within 48 hours after slab installation in accordance with ACI 302.1R and ASTM E1155 and to achieve the following FF and FL tolerances:
 1. Exterior surfaces: 1/8 inch minimum per foot where sloped to drain. Level otherwise. FF20 and FL15.
- B. Formed Surface Tolerances:
 1. Permanently Exposed Joints and Surfaces: Provide maximum differential height within two feet of, and across construction joints of 1/16 inch.

3.11 SEPARATE FLOOR TOPPINGS

- A. Prior to placing floor topping, roughen substrate concrete surface and remove deleterious material. Broom and vacuum clean.
- B. Place required dividers, edge strips, reinforcing, and other items to be cast in.
- C. Apply bonding agent to substrate in accordance with manufacturer's instructions.
- D. Apply sand and cement slurry coat on base course, immediately prior to placing toppings.
- E. Place concrete floor toppings to required lines and levels. Place topping in checkerboard panels not to exceed 20 feet in either direction.
- F. Screed toppings level, maintaining surface tolerances per above.

3.12 CONCRETE CURING

- A. Curing - General: Cure in accordance with ACI 308. Maintain concrete water content for proper hydration and minimize temperature variations. Begin curing immediately following finishing.

- B. Protection During Curing: Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury. The General Contractor is responsible for the protection of the finished slab from damage.
 - 1. Avoid foot traffic on concrete for minimum of 24-hours after placement.
 - 2. Protect concrete from sun and rain.
 - 3. Maintain concrete temperature at or above 50 degrees F. during the first 7 days after placement. See Article ENVIRONMENTAL REQUIREMENTS.
 - 4. Do not subject concrete to design loads until concrete is completely cured, and until concrete has attained its full specified 28-day compressive strength or until 21 days after placement, whichever is longer.
 - 5. Protect concrete during and after curing from damage during subsequent building construction operations. See Article PROTECTION.
- C. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
 - 1. Normal concrete: Not less than 7 days.
- D. Begin curing immediately following finishing.
- E. Surfaces Not in Contact with Forms:
 - 1. Start initial curing as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than 3 days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
 - 2. Begin final curing after initial curing but before surface is dry.
 - a. Moisture-retaining cover: Seal in place with waterproof tape or adhesive.
 - b. Curing compound: Apply in two coats at right angles, using application rate recommended by manufacturer.
 - 3. In addition, see specific conditions noted below.
- F. Slabs on Grade: Cure by one of the following methods:
 - 1. Water Cure (Ponding): Maintain 100 percent coverage of water over floor slab areas, continuously for minimum 7 calendar days.
 - 2. Spraying: Spray water over floor slab areas and maintain wet for 7 days.
 - 3. Moisture-Retaining Film or Paper: Lap strips not less than 6 inches and seal with waterproof tape or adhesive; extend beyond slab or paving perimeters minimum 6 inches and secure at edges; maintain in place for minimum 7 days.
 - 4. Absorptive Moisture-Retaining Covering: Saturate burlap-polyethylene and place burlap-side down over floor slab areas, lapping ends and sides and extend beyond slab or paving perimeters 6 inches minimum; maintain in place for minimum 7 days.
 - 5. Liquid Membrane-forming Curing Compound: Provide only when subsequent concrete treatments or finish flooring specified in related sections will not be affected by cure/sealer. Apply curing compound in accordance with manufacturer's instructions at the maximum recommended application rate in two coats, with second coat applied at right angles to first.
- G. Foundations: Apply curing compound immediately after floating.

3.13 CONCRETE HARDENER

- A. Apply hardener to all floor slabs not receiving other finishes after 30 days minimum curing. Clean slabs of non-compatible cure/sealers or other foreign material(s) and apply in strict accordance with the manufacturer's directions.

3.14 GROUTING AND DRY PACK

- A. Set steel plates on concrete or masonry with high strength grout bed, completely fill all voids; thoroughly compact in place. See Section 05 1100.
- B. Bolts or inserts dry packed or grouted in place shall cure for minimum 7 days before tensioning.

3.15 FIELD QUALITY CONTROL

- A. Testing and Inspections by Independent Testing Agency: Provided verification and inspection of concrete per CBC Table 1705A.3. Provide written reports for to Engineer, Architect, Contractor and Building Official for the following tests and inspections:
- B. Testing & Inspection: Provide periodic inspection of reinforcing steel. Provide continuous inspection during placement of structural class concrete, 3000 psi or more. Non-structural class concrete with a design strength of 2500 psi or less to have periodic inspection on a 150 cubic yard basis as required to assure conformance.
 - 1. Provide periodic inspection of bolts in concrete prior to and during placement where so noted on the construction documents.
 - 2. Structural Concrete Cylinder Tests: Perform in accordance with ASTM C31.
 - a. Take four standard 6 inch x 12 inch (or five 4 inch x 8 inch) cylinder specimens on the site, of each class of concrete as specified in PART 2, not less than once a day or for each 50 cubic yards or 2000 sq ft or fraction thereof placed each day.
 - b. Record the location of each concrete batch in the building in a log and also note on each specimen.
 - c. Perform standard compression test of cylinders in accordance with ASTM C39, one at 7 days and two (three for 4x8 cylinders) at 28 days.
 - d. Hold fourth (fifth) cylinder untested until specified concrete strengths are attained.
 - 3. Structural Concrete Slump Test and Air Tests: Perform in accordance with ASTM D143 and C231 or C173 at the time of taking test cylinders, and/or at one-hour intervals during concrete placing.
 - 4. Measure and record concrete temperature upon arrival of transit mixers and when taking specimens. Note weather conditions and temperature.
 - 5. Propose adjustments to reviewed mix designs for Architect / Engineer review to account for variations in site or weather conditions, or other factors as appropriate.
 - 6. Water Vapor Transmission Tests: Floors receiving floor finishes specified in related sections will be tested prior to installation of flooring systems. Refer to sections specifying floor finishes for related requirements.
- C. Services by Contractor:

1. Rejection of Concrete Materials: Do not use the following without prior written approval of the Architect/Engineer;
 - a. Materials without batch plant certificates.
 - b. Materials not conforming to the requirements of these specifications.

3.16 ADJUSTING

- A. Inspect all concrete surfaces immediately upon formwork removal. Notify Architect/Engineer of identified minor defects. Repair all minor defects as directed.
- B. Surface and Finish Defects: Repair as directed by the Architect/Engineer, at no added expense to the Owner. Repairs include all necessary materials; reinforcement grouts, dry pack, admixtures, epoxy and aggregates to perform required repair.
 1. Repair minor defective surface defects by use of drypack and surface grinding. Specific written approval of Architect/Engineer is required. Submit proposed patching mixture and methods for approval prior to commencing work.
 2. Slabs-on-Grade, Elevated Slabs and on Slabs on Metal Deck: Review for "curled" slab edges and shrinkage cracks prior to installation of other floor finishes. Grind curled edges flush, fill cracks of 1/16 inch and greater with cementitious grout.
 3. Grind high spots, fins or protrusions caused by formwork; Fill-in pour joints, voids, rock pockets, tie holes and other void not impairing structural strength. Provide surfaces flush with surrounding concrete.

3.17 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required compressive strength, lines, details, dimensions, tolerances, finishes or specified requirements; as determined by the Architect/Engineer.
- B. Repair or replacement of defective concrete will be determined by the Architect/Engineer who may order additional testing and inspection at his option. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- C. Specific Defects:
 1. "Low-Strength"; Concrete Not Meeting Specified Compressive Strength after 28 days:
 - a. Concrete with less than 25% Fly Ash or 35% Slag as cementitious material: Test remaining cylinder(s) at 56 days. If strength requirements are met, concrete strength is acceptable.
 - b. Concrete with 25% or more Fly Ash or 35% or more Slag as cementitious material: Test remaining cylinder(s) at 70 days. If strength requirements are met, concrete strength is acceptable.
 2. Excessive Shrinkage, Cracking, Cracking or Curling; Defective Finish: Remove and replace if repair to acceptable condition is not feasible.
 3. Lines, Details, Dimensions, Tolerances: Remove and replace if repair to acceptable condition is not feasible.
 4. Slab sections not meeting specified tolerances for trueness/flatness or lines/levels: Remove and replace unless otherwise directed by the Architect/Engineer. Minimum area for removal: Fifteen square feet area unless directed otherwise by the Architect/Engineer.

5. Defective work affecting the strength of the structure or the appearance: Complete removal and replacement of defective concrete, as directed by the Architect/Engineer.

3.18 CLEANING

- A. Maintain site free of debris and rubbish. Remove all materials and apparatus from the premises and streets at completion of work. Remove all drippings; leave the entire work clean and free of debris.
- B. Slabs to Receive Floor Finishes Specified in other sections: Remove non-compatible cure/sealers or other foreign material(s) which may affect bonding of subsequent finishes. Leave in condition to receive work of related sections.

3.19 PROTECTION

- A. Protect completed work from damage until project is complete and accepted by Owner.
- B. Construction Loads: Submit engineering analysis for equipment loads (including all carried loads) specified in article submittals.
- C. Keep finished areas free from all equipment traffic for a minimum of 4 additional days following attainment of design strength and completion of curing.
- D. Protection of Drainage Systems:
 1. Care shall be taken not to introduce any foreign material into any specified drainage, piping or duct system.
 2. Cost of work to repair or clean drainage system as a result of failure to comply with this requirement will be back charged to the contractor.
- E. Cover traffic areas with plywood sheets or other protective devices; maintain protection in place and in good repair for as long as necessary to protect against damage by subsequent construction operations.

END OF SECTION

SECTION 05 1100

STRUCTURAL AND MISCELLANEOUS STEEL

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: All labor, materials, equipment and operations required to complete structural and miscellaneous metals in shapes and configurations indicated; including:
 - 1. Structural steel columns, base plates, and bolts.
 - 2. Miscellaneous structural steel and connections; fabricated connectors and hangers installed by related sections.
 - 3. Anchor bolts and steel inserts embedded in concrete, installed by related sections.
 - 4. Fabricated steel items embedded in concrete installed by related sections.
 - 5. Supervision of anchor bolt setting, leveling and elevations to insure required fit of steel work.
 - 6. Shop priming and field touch-up, galvanizing.
 - 7. Bracing, Shoring, Fabrication and Erection.
- B. Related Sections:
 - 1. Pertinent sections of Division 01 specifying Quality Control and Testing Agency services.
 - 2. Pertinent Sections of other Divisions specifying concrete reinforcement, formwork, concrete, structural and miscellaneous metal fabrications, steel joists, metal decking, cold-formed metal framing, rough carpentry.

1.02 REFERENCES

- A. California Code of Regulations, Title 24, latest adopted edition (herein noted as CBC): Chapter 22A Steel.
- B. American Institute of Steel Construction (AISC) 303 "Code of Standard Practice for Steel Buildings and Bridges".
- C. AISC 360 "Specification for Structural Steel Buildings".
- D. American Welding Society (AWS) D1.1 "Structural Welding Code - Steel".
- E. Underwriters Laboratories (UL) FRD "Fire Resistance Directory".

1.03 SUBMITTALS

- A. Submit in accordance with pertinent sections of Division 01 specifying submittal procedures. The General Contractor shall review and approve shop drawings prior to submittal to the Architect/Engineer. Submittals that do not meet these requirements will be returned for correction without review.

- B. Limitation of Review: Structural Engineer's review will be for general conformance with design intent as indicated in the Contract Documents and does not relieve Contractor of full responsibility for conformance with the Contract Documents.
- C. Product Data: Submit manufacturer's product data, specifications, location and installation instructions for proprietary materials and reinforcement accessories. Provide samples of these items upon request.
- D. Shop drawings: Submit each building as a complete unit. Do not mix components from multiple buildings or units of work in a submittal. Include all of the following;
 - 1. Profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
 - 2. Fabrication tolerances for all steel.
 - 3. Connections: All, including type and location of shop and field connections.
 - 4. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths, type, size, and sequence. Designate demand critical welds.
 - 5. Cross-reference all shop drawing detail references to contract document detail references.
 - 6. Secure all field measurements as necessary to complete this work prior to submitting shop drawings for review.
 - 7. Provide holes, welded studs, etc. as necessary to secure work of other sections.
 - 8. Provide the following as separate submittals for each building or unit of work:
 - a. Bolt and anchor setting plans.
 - b. Layout, fabrication, and erection drawings.
- E. Certifications:
 - 1. Steel Materials: Submit the following for identified materials.
 - a. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.
 - b. Mill Test Reports: Indicate structural strength, destructive test analysis, and non-destructive test analysis.
 - c. Contractor's affidavit certifying that all identified steel materials provided are of the grades specified and match the certificates supplied.
 - 2. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification per AWS D1.1.
- F. Samples: Provide samples to the Testing Agency as specified in Article SOURCE QUALITY CONTROL, at no additional costs.

1.04 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies, refer to pertinent sections of Division 01 and CBC Chapter 17A.
- B. All tests shall be performed by a recognized testing agency as specified in pertinent sections of Division 01.

- C. Certification and Identification of Materials and Uses: Provide Testing Agency with access to fabrication plant to facilitate inspection of steel. Provide notification of commencement and duration of shop fabrication in sufficient time to allow inspection and all material identification/test information listed below.
 - 1. Test all steel as required by ASTM A6.
 - 2. Provide manufacturer's Mill Test Reports for all materials. Include chemical and physical properties of the material for each heat number manufactured. Tag all fabricated materials with heat number.
 - 3. Provide letter certifying all materials supplied are from heat numbers covered by supplied mill certificates. Include in letter the physical location of each material type and/or heat number in the project (i.e. walls, braced frames etc.).
 - 4. Unidentified Material Tests: Where identification of materials by heat number or mill tests cannot be made, Owner's Testing Agency shall test unidentified materials.
 - 5. Provide all certification, verifications, and other test data required to substantiate specified material properties at no additional cost to the Owner.
- D. Testing and Inspection: Tests and Inspections performed by Independent Testing Agency are specified below in Articles SOURCE QUALITY CONTROL and FIELD QUALITY CONTROL. Duties and limitations of Independent Testing Agency, test costs and test reports in conformance with pertinent sections of Division 01.
- E. The following standards are the minimum level of quality required. Provide higher quality work as specifically indicated in the Contract Documents.
 - 1. Workmanship and details of structural steel work shall conform to the CBC and AISC 360.
 - 2. The quality of materials and the fabrication of all welded connections shall conform to AWS D1.1.
 - 3. Comply with Section 10 of AISC 303 for architecturally exposed structural steel.
- F. The Testing Agency will review all submittals and testing of materials.
- G. All re-inspections made necessary by non-conforming work shall be at the Contractor's expense.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to project site in bundles marked with durable tags indicating heat number, mill, member size and length, proposed location in the structure and other information corresponding with markings shown on placement diagrams.
- B. Handle and store materials above ground to prevent damage, contamination or accumulation of dirt or rust.

1.06 SCHEDULING AND SEQUENCING

- A. Organize the work and employ shop and field crew(s) of sufficient size to minimize inspections by the Testing Agency.
- B. Provide schedule and sequence information to Testing Agency in writing upon request.

Update information as work progresses.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Structural Steel Plates: ASTM A36
- B. HSS (Hollow Structural Sections):
 - 1. Round: ASTM A500, Gr. C.
 - 2. Rectangular or Square: ASTM A500, Gr. C.
- C. Pipe: ASTM A53, Grade B.
- D. Bolts, Nuts, and Washers: ASTM A307 Grade A machine bolts with ASTM A563 Grade A nuts and ASTM F844 washers to match. See FINISHES section for galvanization, where required.
- E. Anchor Bolts/Rods, Nuts, and Washers: ASTM F1554 Gr. 36 with ASTM A563 Grade A nuts, and ASTM F436 Type 1 washers. No upset thread allowed.
- F. Arc-Welding Electrodes: AWS Standards E70 or equivalent, except no E70T-4 allowed.
- G. Other Welding Materials: AWS D1.1; type required for materials being welded.
- H. Deformed Bar Anchors: ASTM A496.

2.02 ACCESSORIES

- A. High Strength Grout: ASTM C1107, non-shrink, premixed compound consisting of aggregate, cement, and water reducing plasticizing agents. Minimum compressive strength $f'c = 7000$ psi at 28 days. Non-metallic where exposed to view. BASF "MasterFlow 928" or equivalent.
- B. Building Structural Steel Primers: Comply with local VOC limitations of authorities having jurisdiction and the California Green Building Code. Verify compatibility with finish coats specified in other sections. Follow manufacturers printed instructions. Apply one coat unless otherwise directed.
 - 1. Type A: Self-Crosslinking Hydrophobic Acrylic passing 2000 hours ASTM D4585 & 7000 hours ASTM D5894. "Series 115 Uni-Bond DF" by Tnemec (2.0 to 4.0 mils DFT).
 - 2. Type B: Organic Zinc-Rich Urethane passing 50,000 hours ASTM B117 and 15000 hours ASTM G855. "Series 90-97 Tneme-Zinc" by Tnemec (2.5 to 3.5 mils DFT) or "Series 94-H20 Hydro-Zinc" by Tnemec (2.5 to 3.5 mils DFT).
 - 3. Type C: MIO-Zinc Filled Urethane passing 10,000 hours ASTM B117 and 5000 hours ASTM D4585. "Series 394 PerimePrime" by Tnemec (2.5 to 3.5 mils DFT).
- C. Galvanizing: ASTM A153 and A123.
- D. Touch-Up Primer for Galvanized Surfaces: Type B primer.

2.03 FABRICATION

- A. Shop fabricate to greatest extent possible.
- B. Continuously seal built up members by continuous welds where exposed to weather.
- C. Fabricate connections for bolt, nut, and washer connectors.
- D. Protect all materials, before and after fabrication, from rust, corrosion, dirt, grease, and other foreign matter.
- E. Fabricate framing members free from twists or bends. Form holes, cut and sheared edges neatly without kinks, burrs, or warped edges.
- F. Exposed Steel: Straight, smooth, free of nicks, scars or dents.
- G. Gas Cutting: Gas cutting of holes in a member shall not be permitted.
- H. Splicing of members: Members requiring splicing due to length requirements may be spliced using full penetration butt welds when such welds and procedures are inspected and certified by the Testing Agency, in conformance with AWS and AISC standards. The location of splices shall be approved by the Architect/Engineer in writing prior to fabrication.
- I. Welding: Welding of structural steel connections shall be performed by qualified welders in accordance with AWS Standards. All weld sizes shall match those shown on the drawings.
 - 1. Preparation: Clean all surfaces free of rust, paint and all foreign matter. Remove paint or scale by brushing, chipping or hammering as required. Chip clean and wire brush burned or flame cut edges before welding. Space and alternate welds, clamping as necessary to prevent warp or misalignment.
 - 2. Sequence Welding: When welds enclose, or partially enclose, the perimeter or portion of the surface of a member, make weld bead in sequence, or staggered. Minimize internal stresses. Weld groups of members occurring in a single line in staggered sequence to minimize distortion of the structural frame.
 - 3. Faulty and Defective Welding: Welds failing to meet AWS standards and the Contract Documents shall be rejected and remade at Contractor expense. All welds showing cracks, slag inclusion, lack of fusion, bad undercut or other defects, ascertained by visual or other means of inspection shall be removed and replaced with conforming work.
 - 4. Minimum Weld Strengths: All welds shall match the minimum weld sizes recommended by AISC. Details of fabrication not specifically shown shall match similar details which are specifically shown. All bevel and groove welds shall be full penetration unless size is noted otherwise.
 - 5. Threaded studs, headed studs, and deformed bar anchors shall be full-fusion welded conforming to ASW D1.1.
- J. Grinding: Grind smooth the following structural steel and connections;
 - 1. Exposed cut ends of structural and fabricated shapes.
 - 2. All welds exposed to view.
 - 3. Mitered and fit-up corners and intersections.

- K. Back-Up Bars: Required for all complete penetration welds.
- L. Bolt Holes: Edge, end distances and spacing shall conform to dimensions shown on the drawings, and as follows;
 - 1. Round: Size indicated and 1/16 inch maximum oversize, except 1 inch and larger bolts may have 1/8 inch maximum oversize.
 - 2. Slotted: At locations specifically noted on the drawings, provide size indicated and 1/16 inch by 1/4 inch oversize slotted in direction perpendicular to applied loads.
 - 3. Holes in base plates for anchor bolts may be 1/8 inch oversize.
- M. Comply with Section 10 of AISC 303 for architecturally exposed structural steel (AESS). See architectural & structural drawings for locations of AESS.

2.04 FINISHES

- A. Steel exposed to inclement atmospheric conditions or weather (such as coastal moisture or seasonal rain) shall be sufficiently primed or otherwise protected against corrosion. If condition of steel is suspect due to weathering/corrosion, Contractor shall bear cost of inspection to determine if excessive corrosion is present and if steel member(s) requires repair or replacement. Contractor shall bear cost of repair or replacement.
- B. Prepare and finish structural and miscellaneous steel component surfaces as follows, unless a higher standard-of-care is determined necessary per item A:
 - 1. Unpainted, interior, dry exposure surfaces need not be primed.
 - 2. Finished painted, interior, dry exposure surfaces:
 - a. Surface Preparation: SSPC-SP2 Hand-Tool and/or SP3 Power-Tool Cleaning. Apply Primer Type A. Field touchup with same primer.
 - b. Where jobsite exposure is expected to exceed 6 months, SSPC-SP6 / NACE No. 3 Commercial Blast-Cleaning is required. Apply Primer Type B or C. Field touchup with same primer.
 - 3. Finish painted surfaces with exterior exposure, interior exposure subject to wet conditions or fumes, or surfaces to receive high performance finish coatings (for example epoxy or urethane coatings).
 - a. Surface Preparation: SSPC-SP6 / NACE No. 3 Commercial Blast-Cleaning to create a dense, uniform angular surface profile of 2.0 mils minimum. For severe (immersion) exposure, SSPC-SP10 / NACE No. 2 Near-White Blast-Cleaning is required.
 - b. Apply Primer Type B. Field touchup with same primer.
 - 4. Exterior exposed (unpainted) surfaces and as otherwise indicated to receive galvanizing:
 - a. Galvanize per ASTM A123 Class 55 minimum. Passivation agents are not permitted on galvanized metal that is to be painted. Provide vent holes per ASTM A385 at closed sections (such as HSS). Submit proposed location of vent holes for review by Engineer.
 - b. Connection hardware shall be hot-dip galvanized per ASTM A153 or F2329. Mating bolts and nuts shall receive the same zinc-coating process.
 - c. Repair all uncoated, damaged, or altered galvanized surfaces per ASTM A780.
- C. Do not prime the following surfaces unless otherwise indicated:

1. Connections to be field welded.
 2. Steel in contact with concrete.
- D. Do not cover up work with finish materials until inspection is complete and work is approved by the Testing Agency.

2.05 SOURCE QUALITY CONTROL

- A. An independent Testing Agency will perform source quality control tests and submit reports, as specified in pertinent sections of Division 01.
- B. Steel Materials Testing:
1. No testing is required for materials identified in accordance with CBC 2202A.1 (heat number, grade stencil, etc.).
 2. Unidentified steel- General: Test all structural shapes. In addition, test to verify Fy and Fu values when engineering requirements exceed $F_y = 25$ ksi for design.
- C. Shop Welding Inspection:
1. Testing Agency shall inspect and certify all structural welds.
 2. Welder Qualifications: Welding inspector shall verify that all the welders are properly qualified prior to steel fabrication and state the qualifications of each welder in the welding inspection report.
 3. Welding Inspection: Continuous inspection required unless otherwise noted below. Comply with requirements of AWS D1.1.
 - a. Welding Inspector shall check all welds, materials, equipment and procedures.
 - b. Welding Inspector shall provide reports certifying the welding is as required and has been done in conformity with the plans, specifications and codes.
 - c. Welding Inspector shall use radiographic, ultrasonic, magnetic particle, or any other necessary aid to visual inspection to assure adequacy of welds. Ultrasonic Testing (UT) shall be required for all complete joint penetration (CJP) welds of material 5/16 inch thick or greater.
 4. Periodic Inspection Acceptable:
 - a. Single pass fillet welds not exceeding 5/16 inch.
- D. Bolts, Nuts, and Washers: Provide samples to Testing Agency for required testing, at no additional cost.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

3.02 ERECTION

- A. Erect structural steel in compliance with AISC 303.
- B. Framing:
 - 1. Erect all structural steel true and plumb.
 - 2. Verify proper final alignment prior to making final connections.
- C. Field Connections:
 - 1. Workmanship of field bolted and welded connections shall conform in all respects to methods and tolerances specified for fabrication.
 - 2. Field weld components indicated on shop drawings. Sequence field welds to minimize built-up stress and distortion of the structural frame. Verify sequence with Engineer. Coordinate field welding schedule with Testing Laboratory.
 - 3. Welded Studs: Install in accordance with manufacturer's instructions and structural welding code AWS D1.1.
- D. Templates: Provide bolt setting templates for all anchor bolts. Provide instructions for the setting of anchors and bearing plates, verify these items are set correctly as work progresses.
- E. Column base plates: Set level to correct elevations, support temporarily on steel wedges, shims, or leveling nuts where shown, until the supported members are plumbed and base plate is grouted.
 - 1. Grout solid the full bearing area under base plates prior to installation of floor and/or roof decks.
 - 2. Comply with manufacturer's instructions for high strength grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.
- F. Bolting:
 - 1. Inspect mating surfaces to insure that bolt head and nut will have full bearing and that metal plies will mate flush between bolts.
 - 2. Install bolts in matching holes. Do not distort metal or enlarge holes by drifting during assembly. Remake mismatched components to achieve tolerances indicated.
 - 3. Holes mismatched in excess of 1/8 inch will be rejected.
 - 4. Holes mismatched less than 1/8 inch may be reamed to the next larger size bolt.
 - 5. Do not enlarge holes by flame cutting or air/arc ("plasma") cutting.
 - 6. Provide flat washer(s) at over-size holes.
 - 7. Provide washer at bolt head and nut where connected part is less than 1/4 inch thick.
 - 8. Provide ASTM F436 beveled washers when the slope of the surfaces of parts in contact with the bolt head or nut is greater than 1:20.
 - 9. Do not install bolts with damaged threads.
 - 10. Threads shall commence outside of the shear plane.
 - 11. Machine Bolts (MB): Install and tighten to a snug condition (ST) such that laminated surfaces bear fully on one another, using an impact wrench or "full effort" of an installer using a standard spud wrench.
- G. Supports, Shoring and Bracing: Allow for erection loads and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion

of erection and installation of permanent bracing. Conform to requirements of all applicable laws and governing safety regulations. Resist imposed loads, including those of stored materials and equipment.

1. Provide all temporary supports, shoring and bracing necessary to achieve work of tolerances indicated.
2. Provide all necessary temporary flooring, planking and scaffolding required for erection of steel, and support of erection machinery.
3. Construction Loading: Do not overload the structure or temporary supports with stored materials, equipment or other loads.
4. Maintain temporary bracing and shoring until work is complete, and longer as required to ensure stability and safety of structure.

H. Do not make final connections until structure is aligned to meet specified tolerances.

3.03 ERECTION TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.

3.04 FIELD QUALITY CONTROL

- A. The independent Testing Agency will perform field quality control tests, as specified in pertinent sections of Division 01.
- B. Field Welding Inspection: Conform to all requirements of section SOURCE QUALITY CONTROL.
 1. Inspect mating surfaces.
 2. Test all materials prior to use. Use only materials meeting specified requirements.

3.05 ADJUSTING

- A. Touch-up damaged finishes with compatible specified primer.
- B. Replace defective or damaged work with conforming work. Replace all defective work at Contractor's expense.
- C. Straighten materials by means that will not injure the materials.
- D. Replace defective or damaged work which cannot be corrected in the field with new work, or return defective items to the shop for repair.
- E. Architect/Engineer shall review all proposals for the repair or replacement of damaged, defective, or missing work.
- F. Pay expenses incurred by Owner for Architect/Engineer's costs for (re-)design and obtaining approvals of Authorities Having Jurisdiction (AHJ) necessitated by incomplete, inefficiently scheduled, improperly performed, defective or nonconforming work, as specified in pertinent

sections of Division 01.

- G. Pay expenses due to re-testing and re-inspection necessitated by incomplete, inefficiently scheduled, improperly performed, defective or nonconforming work, as specified in pertinent sections of Division 01.

3.06 CLEANING AND PROTECTION

- A. Clean all surfaces upon completion of erection; leave free of grime and dirt. Remove unused materials, tools, equipment and debris from the premises and leave surfaces broomed clean.
- B. Protect work from damage by subsequent operations.

END OF SECTION

SECTION 07 9200
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nonsag gunnable joint sealants.
- B. Self-leveling pourable joint sealants.

1.02 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions: Additional requirements for sealants and primers.
- B. Pertinent Sections specifying sealants or referencing this Section for sealant products and execution requirements.

1.03 REFERENCE STANDARDS

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2006 (Reapproved 2011).
- B. ASTM C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants; 2015.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.
- D. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2000 (Reapproved 2011).
- E. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2013.
- F. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2008 (Reapproved 2012).
- G. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2014.
- H. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2013.
- I. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015, with Editorial Revision (2017).
- J. California Code of Regulations, Title 24, Part 11 California Green Building Standards Code, "CAL-Green".
- K. Manufacturer's recommendations and specifications.
- L. SWRI (VAL) - SWR Institute Validated Products Directory; Current Listings at www.swrionline.org.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
 - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 - 2. List of backing materials approved for use with the specific product.

3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 4. Substrates the product should not be used on.
 5. Substrates for which use of primer is required.
 6. Substrates for which laboratory adhesion and/or compatibility testing is required.
 7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
 8. Sample product warranty.
 9. Certification by manufacturer indicating that product complies with specification requirements.
 10. SWRI Validation: Provide currently available sealant product validations as listed by SWRI (VAL) for specified sealants.
- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
1. Manufacturer's Installation Instructions: Indicate limitations, special procedures, surface preparation, and perimeter conditions requiring special attention.
 2. Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: For each sealant specified to be validated by SWRI's Sealant Validation Program.
- D. Joint-Sealant Schedule: Include the following information:
1. Joint-sealant application, joint location, and designation.
 2. Joint-sealant manufacturer and product name.
 3. Joint-sealant formulation.
 4. Joint-sealant colors (multiple colors will be required).
- E. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- F. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
- G. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.
- H. Sustainable Design Documentation: For sealants and primers, submit VOC content and emissions documentation as specified in Section 01 6116.
- I. Manufacturer Qualifications. Demonstrate compliance with specified requirements.
- J. Installer Qualifications. Demonstrate compliance with specified requirements.
- K. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.
- L. Installation Plan: Submit at least four weeks prior to start of installation.
- M. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.
- N. Field Quality Control Plan: Submit at least two weeks prior to start of installation.

- O. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.
- P. Installation Log: Submit filled out log for each length or instance of sealant installed.
- Q. Field Quality Control Log: Submit filled out log for each length or instance of sealant installed, within 10 days after completion of inspections/ tests; include bagged test samples and photographic records, if any.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.
- C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.
- D. Manufacturer of sealant and caulking material to certify that cleaners, joint filler or bond breakers, and primers, for a particular application, are compatible with sealant.
- E. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
 - 1. Adhesion Testing: In accordance with ASTM C794.
 - 2. Compatibility Testing: In accordance with ASTM C1087.
 - 3. Allow sufficient time for testing to avoid delaying the work.
 - 4. Deliver to manufacturer sufficient samples for testing.
 - 5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
 - 6. Testing is not required if sealant manufacturer provides data showing previous testing, not older than 24 months, that shows satisfactory adhesion, lack of staining, and compatibility.
- F. Installation Plan: Include schedule of sealed joints, including the following.
 - 1. Joint width indicated in Contract Documents.
 - 2. Joint depth indicated in Contract Documents; to face of backing material at centerline of joint.
 - 3. Method to be used to protect adjacent surfaces from sealant droppings and smears, with acknowledgement that some surfaces cannot be cleaned to like-new condition and therefore prevention is imperative.
 - 4. Approximate date of installation, for evaluation of thermal movement influence.
 - 5. Installation Log Form: Include the following data fields, with known information filled out.
 - a. Location on project.
 - b. Substrates.
 - c. Sealant used.
 - d. Primer to be used, or indicate as "No primer" used.
 - e. Size and actual backing material used.
 - f. Date of installation.
 - g. Name of installer.
 - h. Actual joint width; provide space to indicate maximum and minimum width.
 - i. Actual joint depth to face of backing material at centerline of joint.

- j. Air temperature.
- G. Preinstallation Field Adhesion Test Plan: Include destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants, and include the following for each tested sample.
 - 1. Identification of testing agency.
 - 2. Name(s) of sealant manufacturers' field representatives who will be observing
 - 3. Preinstallation Field Adhesion Test Log Form: Include the following data fields, with known information filled out.
 - a. Substrate; if more than one type of substrate is involved in a single joint, provide two entries on form, for testing each sealant substrate side separately.
 - b. Test date.
 - c. Location on project.
 - d. Sealant used.
 - e. Stated movement capability of sealant.
 - f. Test method used.
 - g. Date of installation of field sample to be tested.
 - h. Date of test.
 - i. Copy of test method documents.
 - j. Age of sealant upon date of testing.
 - k. Test results, modeled after the sample form in the test method document.
 - l. Indicate use of photographic record of test.
- H. Field Quality Control Plan:
 - 1. Visual inspection of entire length of sealant joints.
 - 2. Non-destructive field adhesion testing of sealant joints, except interior acrylic latex sealants.
 - a. For each different sealant and substrate combination, allow for one test every 12 inches in the first 10 linear feet of joint and one test every 24 inches thereafter.
 - b. If any failures occur in the first 10 linear feet, continue testing at 12 inch intervals at no extra cost to Owner.
 - 3. Destructive field adhesion testing of sealant joints, except interior acrylic latex sealant.
 - a. For each different sealant and substrate combination, allow for one test every 100 feet in the first 1000 linear feet, and one test per 1000 linear feet thereafter, or once per floor on each elevation.
 - b. If any failures occur in the first 1000 linear feet, continue testing at frequency of one test per 500 linear feet at no extra cost to Owner.
 - 4. Field testing agency's qualifications.
 - 5. Field Quality Control Log Form: Show same data fields as on Preinstallation Field Adhesion Test Log, with known information filled out and lines for multiple tests per sealant/substrate combinations; include visual inspection and specified field testing; allow for possibility that more tests than minimum specified may be necessary.
- I. Field Adhesion Test Procedures:
 - 1. Allow sealants to fully cure as recommended by manufacturer before testing.
 - 2. Have a copy of the test method document available during tests.
 - 3. Take photographs or make video records of each test, with joint identification provided in the photos/videos; for example, provide small erasable whiteboard positioned next to joint.
 - 4. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.

5. When performing destructive tests, also inspect the opened joint for proper installation characteristics recommended by manufacturer, and report any deficiencies.
 6. Deliver the samples removed during destructive tests in separate sealed plastic bags, identified with project, location, test date, and test results, to Owner.
 7. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.
- J. Non-Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Nondestructive Spot Method.
1. Record results on Field Quality Control Log.
 2. Repair failed portions of joints.
- K. Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Destructive Tail Procedure.
1. Sample: At least 18 inch long.
 2. Minimum Elongation Without Adhesive Failure: Consider the tail at rest, not under any elongation stress; multiply the stated movement capability of the sealant in percent by two; then multiply 1 inch by that percentage; if adhesion failure occurs before the "1 inch mark" is that distance from the substrate, the test has failed.
 3. If either adhesive or cohesive failure occurs prior to minimum elongation, take necessary measures to correct conditions and re-test; record each modification to products or installation procedures.
 4. Record results on Field Quality Control Log.
 5. Repair failed portions of joints.

1.06 MOCK-UP

- A. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.
- B. Construct mock-up with specified sealant types and with other components noted.
- C. Locate where directed.
- D. Mock-up may remain as part of the Work.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of Section 01 6000.
- B. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.
- C. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.08 FIELD CONDITIONS

- A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:
 1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer.
 2. When joint substrates are wet.

- B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.
- C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.
- D. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.09 COORDINATION

- A. Coordinate the work with all sections referencing this section.

1.10 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Sealants and Primers - General: Provide products having volatile organic compound (VOC) content as specified in Section 01 6116.
- B. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- C. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
- D. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- E. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.
- F. Colors: Provide color of exposed joint sealants to comply with the following:
 - 1. Provide colors matching selections made by Architect from manufacturer's full range of colors for products of type indicated. Colors may be listed in schedule at the end of this section or on the drawings. Request color selection for all products listed without a preselected color.

2.02 JOINT SEALANT APPLICATIONS

- A. Scope:
 - 1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
 - a. Wall expansion and control joints.
 - b. Joints between door, window, and other frames and adjacent construction.
 - c. Joints between different exposed materials.
 - d. Openings below ledge angles in masonry.

- e. Other joints indicated below.
- 2. Do not seal the following types of joints.
 - a. Intentional weepholes in masonry.
 - b. Intentional weepholes in window assemblies and head flashings.
 - c. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - d. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - e. Joints where installation of sealant is specified in another section.
 - f. Joints between suspended panel ceilings/grid and walls.

2.03 JOINT SEALANTS - GENERAL

- A. Sealants and Primers: Provide products with levels of volatile organic compound (VOC) content as indicated in Section 01 6116.
- B. Colors: As indicated on the drawings. If no colors are indicated, request colors before preparation of schedule submittals and include on all schedule submittals.

2.04 NONSAG JOINT SEALANTS

- A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus and minus 50 percent, minimum.
 - 2. Non-Staining To Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.
 - 3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
 - 4. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
 - 5. Color: To be selected by Architect from manufacturer's standard range.
 - 6. Service Temperature Range: Minus 20 to 180 degrees F.
 - 7. Manufacturers:
 - a. Dow Chemical Company; DOWSIL 790 Silicone Building Sealant: consumer.dow.com/en-us/industry/ind-building-construction.html/#sle.
 - b. Pecora Corporation: www.pecora.com/#sle.
 - c. Sika Corporation; Sikasil WS-290: www.usa-sika.com/#sle.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- B. Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus and minus 50 percent, minimum.
 - 2. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
 - 3. Color: To be selected by Architect from manufacturer's standard range.
 - 4. Cure Type: Single-component, neutral moisture curing
 - 5. Service Temperature Range: Minus 65 to 180 degrees F.
 - 6. Manufacturers:
 - a. Dow Corning Corporation; 795: www.dowcorning.com.
 - b. Substitutions: See Section 01 6000 - Product Requirements.
- C. Silicone Sealant: ASTM C920, Type S, Grade NS, Class 25, single component, neutral curing, non-sagging, non-staining, non-bleeding, RTV silicone designed for adhesion to low energy surfaces common in sheet or peel-and-stick flexible flashings and air/weather barriers.
 - 1. Color: To be selected by Architect from manufacturer's standard range.
 - 2. Service Temperature Range: -65 to 180 degrees F.
 - 3. Products:

- a. Dow Corning Corporation; 758: www.dowcorning.com.
 - b. Sika Corporation, Construction Products Division; Sikasil-N.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
- D. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A, Class 25; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
 1. Color: White.
 2. Manufacturers:
 - a. BASF Construction Chemicals-Building Systems; Omnipus: www.buildingsystems.basf.com.
 - b. Dow Corning Corporation; 786-M White.
 - c. GE Construction Sealants; SCS1700 Sanitary.
 - d. Pecora Corporation; Pecora 898 NST (Non-Staining Technology): www.pecora.com/#sle.
 - e. Substitutions: See Section 01 6000 - Product Requirements.
- E. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
 1. Movement Capability: Plus and minus ____ percent, minimum.
 2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
 3. Color: Custom as selected..
 4. Manufacturers:
 - a. BASF Building Systems, MasterSeal (Sonolastic) NP-2.
 - b. Sika Corporation; Sikaflex-2c NS: www.usa-sika.com/#sle.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
- F. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single component; not expected to withstand continuous water immersion or traffic.
 1. Movement Capability: Plus and minus 25 percent, minimum.
 2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
 3. Color: To be selected by Architect from manufacturer's standard range.
 4. Products:
 - a. BASF Building Systems, MasterSeal (Sonolastic) NP-1.
 - b. Sika Corporation; Sikaflex-1a: www.usa-sika.com.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
- G. Type ____ - Non-Sag "Traffic-Grade" Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; explicitly approved by manufacturer for continuous water immersion and traffic without the necessity to recess sealant below traffic surface.
 1. Movement Capability: Plus and minus 25 percent, minimum.
 2. Hardness Range: 40 to 50, Shore A, when tested in accordance with ASTM C661.
 3. Color: To be selected by Architect from manufacturer's standard range.
 4. Service Temperature Range: Minus 40 to 180 degrees F.
 5. Manufacturers:
 - a. Pecora Corporation; Dyna-Tred: www.pecora.com.
 - b. Sika Corporation, Construction Products Division; Sikaflex 2C-NS.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
- H. Non-Curing Butyl Sealant: Solvent-based, single component, non-sag, non-skinning, non-hardening, non-bleeding; non-vapor-permeable; intended for fully concealed applications.
 1. Manufacturers:

- a. Pecora Corporation; Pecora BA-98 Non-Skinning Butyl Sealant: www.pecora.com/#sle.
- b. Substitutions: See Section 01 6000 - Product Requirements.

2.05 SELF-LEVELING SEALANTS

- A. Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; single or multi-component; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion .
 1. Movement Capability: Plus and minus 25 percent, minimum.
 2. Hardness Range: 35 to 55, Shore A, when tested in accordance with ASTM C661.
 3. Color: To be selected by Architect from manufacturer's standard range.
 4. Color at colored concrete: Custom-mixed colors matching colored concrete floors or paving.
 5. Service Temperature Range: Minus 40 to 180 degrees F.
 6. Manufacturers:
 - a. BASF Construction Chemicals-Building Systems; MasterSeal (Sonneborn) SL-2 Slope Grade or Self Leveling Sealant: www.buildingsystems.basf.com.
 - b. Sika Corporation; Sikaflex-2c SL: www.usa-sika.com/#sle.
 - c. Substitutions: See Section 01 6000 - Product Requirements.
- B. Concrete Paving Joint Sealant: Polyurethane, pourable self-leveling; ASTM C920, Class 25, Uses T, I, M and A; multi- component.
 1. Color: Custom mixed color matching colored concrete.
 2. Products:
 - a. BASF Construction Chemicals-Building Systems; MasterSeal (Sonneborn) SL-2: www.buildingsystems.basf.com.
 - b. Pecora Corporation; Dyna-Trol II-SG: www.pecora.com.
 - c. Sika Corporation, Construction Products Division; Sikaflex 2C-SL.
 - d. Substitutions: See Section 01 6000 - Product Requirements.
- C. Semi-Rigid Self-Leveling Epoxy Joint Filler: Epoxy or epoxy/polyurethane copolymer; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
 1. Meet requirements of American Concrete Institute 302.1 R-04 "Guide for Concrete Floor and Slab Construction" and American Concrete Institute 360 R10 "Guide to Design of Slabs-on-Ground" for industrial floor joint fillers
 2. Composition: Multi-component, 100 percent solids by weight.
 3. Durometer Hardness: Minimum of 85 for Type A or 35 for Type D, after seven days when tested in accordance with ASTM D2240.
 4. Color: To be selected by Architect from manufacturer's standard colors.
 5. Joint Width, Minimum: 1/8 inch.
 6. Joint Width, Maximum: 1/4 inch.
 7. Joint Depth: Provide product suitable for joints from 1/8 inch to 2 inches in depth including space for backer rod.
 8. Manufacturers:
 - a. Euco 700 by The Euclid Chemical Company.
 - b. MM-80 by Metzger-McGuire.
 - c. BASF Construction Chemicals, MasterSeal CR190.
 - d. W.R. Meadows, Inc; Rezi-Weld Flex: www.wrmeadows.com/#sle.
 - e. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.
 - 1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
 - 2. Notify Architect of date and time that tests will be performed, at least 7 days in advance.
 - 3. Arrange for sealant manufacturer's technical representative to be present during tests.
 - 4. Record each test on Preinstallation Adhesion Test Log as indicated.
 - 5. If any sample fails, review products and installation procedures, consult manufacturer, or take whatever other measures are necessary to ensure adhesion; re-test in a different location; if unable to obtain satisfactory adhesion, report to Architect.
 - 6. After completion of tests, remove remaining sample material and prepare joint for new sealant installation.

3.02 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.
- D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- E. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- F. Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.
- G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.
 - 1. Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air

pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

2. Provide concave joint configuration per Figure 8A in ASTM C 1193, unless otherwise indicated.
3. Provide flush joint configuration, per Figure 8B in ASTM C 1193, where indicated.
4. Provide recessed joint configuration, per Figure 8C in ASTM C 1193, of recess depth and at locations indicated.
 - a. Use masking tape to protect adjacent surfaces of recessed tooled joints.

3.04 FIELD QUALITY CONTROL

- A. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.
- B. Non-Destructive Adhesion Testing: If there are any failures in first 100 linear feet, notify Architect immediately.
- C. Destructive Adhesion Testing: If there are any failures in first 1000 linear feet, notify Architect immediately.
- D. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.
- E. Repair destructive test location damage immediately after evaluation and recording of results.

3.05 FINISHING

- A. Work that is exposed to view: Uniform surface with neat, straight edges and no excess material on adjacent surface.

3.06 CLEANING

- A. Clean adjacent soiled surfaces.

3.07 PROTECTION

- A. Protect sealants until cured. Replace damaged work with repairs indistinguishable from original work.

3.08 SCHEDULE

- A. Architect will provide color selections and locations for each sealant type and for Contractor's use. Not all locations will have the same color.
 1. Custom colors will be required.
- B. Exterior Locations:
 1. Horizontal joints in sidewalks, decks, concrete floors, and driveways: Exterior or Interior Horizontal Expansion Joint Sealant - Polyurethane, self-leveling; ASTM C 920, Grade P, Class 25, Uses T, M and A; single component.
 - a. At walk expansion joints.
 - b. Where walks abut structural slabs or stoops.
 - c. Where walks abut exterior wall of buildings.
 - d. Where exposed interior concrete slabs abut vertical surfaces.
 - e. Where sealant is shown on the Drawings for concrete slabs.
- C. General:

1. Joints in construction between interior and exterior spaces and other designated or required locations to provide effective barrier against passage of elements, Other joints for which no other type of sealant is indicated.:
 - a. Multicomponent, Nonsag, Urethane Joint Sealant: ASTM C 920, Type M, Grade NS, Class 25, for Use NT, M, A and O; capable of 50% extension and compression movement.
 - b. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
 2. Specialty perimeters where required for appearance or weathertightness:
 - a. Multicomponent, Nonsag, Urethane Joint Sealant: ASTM C 920, Type M, Grade NS, Class 25, for Use NT, M, A and O; capable of 50% extension and compression movement.
 - b. Single-Component, Nonsag, Urethane Joint Sealant: ASTM C 920, Type S, Grade NS, Class 25, for Use NT.
- D. Paving:
1. Exterior joints in the following horizontal traffic surfaces:
 - a. Isolation (Expansion) and contraction joints within cement concrete pavement.
 - b. Isolation (Expansion) Joints between building and site concrete.
 - c. Joints between different materials listed above.
 - d. Other joints as indicated.
 2. Horizontal Joints, less than 5 percent slope; Multicomponent, Pourable, Self-leveling, Urethane Joint Sealant: ASTM C 920, Type M, Grade P, Class 25, for Exposure T, Uses M, A and O; .
 3. Horizontal Joints, grades steeper than 5 percent; Multicomponent, Non-Sag, Urethane Joint Sealant: ASTM C 920, Type M, Grade NS, Class 25, for Exposure T, Uses M, A and O.
 4. Vertical Joints; Multicomponent, Non-Sag, Urethane Joint Sealant: ASTM C 920, Type M, Grade NS, Class 25, for Exposure T, Uses M, A and O.

3.09 POST-OCCUPANCY

- A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width; i.e. at low temperature in thermal cycle. Report failures immediately and repair.

END OF SECTION

SECTION 31 1000
SITE CLEARING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clearing and protection of vegetation.
- B. Removal of existing debris.

1.02 RELATED REQUIREMENTS

- A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- C. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products.
- D. Section 31 2200 - Grading: Topsoil removal.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SITE CLEARING

- A. Comply with other requirements specified in Section 01 7000.
- B. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

3.02 VEGETATION

- A. Do not remove or damage vegetation beyond the limits indicated on drawings.
- B. Install substantial, highly visible fences at least 3 feet high to prevent inadvertent damage to vegetation to remain:
 - 1. At vegetation removal limits.
- C. In areas where vegetation must be removed but no construction will occur other than pervious paving, remove vegetation with minimum disturbance of the subsoil.
- D. Vegetation Removed: Do not burn, bury, landfill, or leave on site, except as indicated.
 - 1. Chip, grind, crush, or shred vegetation for mulching, composting, or other purposes; preference should be given to on-site uses.
 - 2. Trees: Sell if marketable; if not, treat as specified for other vegetation removed; remove stumps and roots to depth of 18 inches.
 - 3. Sod: Re-use on site if possible; otherwise sell if marketable, and if not, treat as specified for other vegetation removed.
- E. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to Owner.

3.03 DEBRIS

- A. Remove debris, junk, and trash from site.

- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 31 2200
GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Removal of topsoil.
- B. Rough grading the site.
- C. Finish grading.

1.02 RELATED REQUIREMENTS

1.03 SUBMITTALS

- A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.04 QUALITY ASSURANCE

- A. Perform Work in accordance with State of California, Highway Department standards.

1.05 PROJECT CONDITIONS

- A. Protect above- and below-grade utilities that remain.
- B. Protect plants, lawns, rock outcroppings, and other features to remain as a portion of final landscaping.
- C. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from grading equipment and vehicular traffic.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Topsoil - Soil Type turf: Topsoil excavated on-site.
- B. Other Fill Materials: See Section 31 2323.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.
- B. Verify the absence of standing or ponding water.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect from damage above- and below-grade utilities to remain.
- D. Notify utility company to remove and relocate utilities.
- E. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.

3.03 ROUGH GRADING

- A. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.
- B. Do not remove topsoil when wet.
- C. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.
- D. Do not remove wet subsoil, unless it is subsequently processed to obtain optimum moisture content.
- E. When excavating through roots, perform work by hand and cut roots with sharp axe.
- F. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.
- G. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

3.04 SOIL REMOVAL

- A. Stockpile topsoil to be re-used on site; remove remainder from site.
- B. Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; protect from erosion.

3.05 FINISH GRADING

- A. Before Finish Grading:
 - 1. Verify building and trench backfilling have been inspected.
 - 2. Verify subgrade has been contoured and compacted.
- B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.
- C. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 3 inches.
- D. Place topsoil where required to level finish grade.
- E. Place topsoil during dry weather.
- F. Remove roots, weeds, rocks, and foreign material while spreading.
- G. Near plants spread topsoil manually to prevent damage.
- H. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
- I. Lightly compact placed topsoil.
- J. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

3.06 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 0.10 foot (1-3/16 inches) from required elevation.
- B. Top Surface of Finish Grade: Plus or minus 0.04 foot (1/2 inch).
- C. Top Surface of Subgrade: Plus or minus 1/10 foot from required elevation.
- D. Top Surface of Finish Grade: Plus or minus 1/2 inch.

3.07 FIELD QUALITY CONTROL

- A. See Section 31 2323 for compaction density testing.

3.08 CLEANING

- A. Remove unused stockpiled topsoil and subsoil. Grade stockpile area to prevent standing water.
- B. Leave site clean and raked, ready to receive future landscaping.

END OF SECTION

SECTION 32 1216

ASPHALT CONCRETE PAVING AND BASE

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Section, apply to this Section.

1.02 SUMMARY

- A. This Section includes, but is not limited to, the following:
 - 1. Provide, spread and compact aggregate base as shown on the Contract Documents and as specified herein.
 - 2. Provide, spread and compact asphaltic concrete pavement.
 - 3. Provide and install redwood headerboards (HB) where indicated on the plans.
 - 4. Adjusting to finish grade any and all new or existing, cleanouts, drainage structures, utility vaults, manholes, etc., which are included in the limits of work.
- B. Related Sections includes, but are not limited to the following:
 - 1. Earthwork - Section 31 2000
 - 2. Trenching, Backfilling and Compaction - Section 31 2316

1.03 REFERENCES

- A. Reference Data:
 - 1. If the year of the adoption or latest revision is omitted from the designation, it shall mean the specification, manual or test designation in effect the date the Notice to Proceed with the Work is given.
- B. Town of Windsor Standard Plans and Specifications.
- C. Caltrans Standard Specifications.

1.04 QUALITY ASSURANCE

- A. Testing and inspection of the aggregate base and asphaltic concrete shall be done by a testing laboratory retained and paid for by the District. Any areas receiving failing tests shall be reworked by the Contractor to achieve the minimum specified degree of compaction. It shall be the sole responsibility of the Contractor to achieve satisfactory results.
- B. Test Methods: Unless otherwise indicated, tests shall be made in conformance with the

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following standard methods:

1. Relative compaction shall be determined by Test Method No. California 216 and 231.
2. Design and Construction Standards of the Town of Brentwood latest edition.
3. Caltrans Standards and Specifications, July 2006 Edition.

1.05 SUBMITTALS

- A. Submit asphalt mix design parameters and certificates of compliance.
- B. Submit certificate of compliance for aggregate base.
- C. Submittals shall conform to the requirements of Section 01 33 00.

PART 2 PRODUCTS

2.01 AGGREGATE BASE

- A. Aggregate for aggregate bases shall be clean and free of vegetable matter and other deleterious substances.
- B. Aggregate base shall be of such a nature that it can be compacted readily under watering and rolling to form a firm, stable base.
- C. Aggregate base shall be Class 2, and the combined aggregate shall conform to the ¾" maximum grading specified in Section 26-1.02A "Class 2 Aggregate Base" of the 1992 Caltrans Specifications.
- D. Recycled Class 2 aggregate base materials meeting the gradation and strength requirement of virgin material is acceptable.
- E. At the Contractor's option, the non-contaminated, demolished aggregate base may be reused provided it is approved by the project Geotechnical Engineer. See Section 31 1000, Site Preparation.

2.02 ASPHALT CONCRETE

- A. The asphalt concrete shall be Type A, ½" maximum, medium and shall conform to the applicable portions of Section 39 of the Caltrans Standard Specifications. See Pavement Plan for locations of each size.

2.03 HEADER BOARDS

- A. Header boards shall be constructed of nominal 2"x 6" wood, meeting the requirements of Section 20-2.12, "Lumber", of the Caltrans specifications.

PART 3 EXECUTION

3.01 SUBGRADE PREPARATION FOR BASE MATERIAL

- A. Subgrade preparation shall conform with the requirements in Section 31 2000 - Earthwork, and shall not vary more than 0.05 foot above, or 0.05 foot below the grade established by

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the plans.

- B. Prepared subgrade shall be inspected by the independent testing laboratory retained by the District prior to the placement of any aggregate base.
- C. As per Section 31 2200 - Grading

3.02 SPREADING

- A. Aggregate base and aggregate subbase shall be delivered to the roadbed as uniform mixtures and shall be graded in layers or windrows. Segregation shall be avoided and the base/subbase shall be free from pockets of coarse or fine material.
- B. The aggregate base and aggregate subbase, after spreading as above specified, shall be shaped to such thickness that after watering and compacting the completed base will conform to the required grade and cross section, within the tolerances specified in Section 26-1.05 "Compacting" of the Caltrans Specifications.
- C. The base/subbase shall be spread, watered and compacted in layers not to exceed 6 inches in compacted thickness to achieve the specified thickness.

3.03 COMPACTION AND TOLERANCE

- A. The relative compaction of the base shall not be less than 95 percent.
- B. The finished surface of the aggregate base and aggregate subbase shall not vary more than 0.05 foot from the design grades.
- C. Aggregate base and aggregate subbase which fails to meet the specified tolerances shall be reshaped, dewatered and recompacted at the Contractor's expense.

3.04 SUBGRADE PREPARATION FOR ASPHALT CONCRETE

- A. All construction beneath the subgrade shall be completed, including pipeline testing, prior to asphalt concrete placement.
- B. Subgrade shall not vary more than 0.05 foot above or below design grade.
- C. Any soft spots in the subgrade shall be repaired by the Contractor, regardless of cause, prior to paving.
- D. Minimum Class 2 aggregate base material under private walkways as shown on the Drawings shall be 4 inches in compacted thickness, unless otherwise noted.

3.05 TACK COAT

- A. Apply tack coat of RS-1 or CRS1 Emulsion to vertical surfaces of existing surfacing that will come into contact with asphalt concrete.

3.06 SPREADING AND COMPACTING ASPHALT CONCRETE

- A. Shall be in accordance with Section 39 of the Caltrans Standard Specifications.

3.07 STRUCTURE ADJUSTMENT

- A. The Contractor shall mark the location of all structures to be adjusted to grade and shall be responsible for their location after paving operations are completed.
- B. After surfacing or resurfacing is completed, the Contractor shall construct or reconstruct the structures to grade as shown on the plans.

3.08 FLOW TEST

- A. Finished pavement areas shall be flow tested in the presence of the Inspector of record to confirm that positive gradients that facilitate proper and complete surface drainage, have been achieved in all paved areas.
- B. Any areas that fail the flow test, defined as any area where depth of ponding water exceeds 1/8 inch or where the surface of a ponding area exceeds 10 square feet, shall be repaved to achieve positive drainage.

3.09 CLEAN UP

- A. Remove all debris and stains resulting from the work of this section.

END OF SECTION

SECTION 32 1313

CONCRETE PAVEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Provide Portland cement concrete site work complete. including the following items:
 - 1. Concrete pavement.
- B. Related requirements include:
 - 1. Section 03 3000, Cast-In-Place Concrete
 - 2. Section 32 3113, Chain Link Fences and Gates

1.2 QUALITY ASSURANCE

- A. Reference and Standards
 - 1. Perform work in accordance with all applicable laws. codes and regulations required by City of Brentwood and County of Contra Costa and the State of California.
 - 2. Reference to "Standard Specifications" shall mean the current Standard Specifications of the State of California, Business and Transportation Agency, Department of Transportation, CALTRANS.
 - 3. The American Concrete Institute (ACI): "Manual of Concrete Practice," Parts 1, 2 and 3.
- B. Stipulations
 - 1. Finish Surface Tolerance: 1/4-inch maximum variation in 10 feet.

1.3 TESTS

- A. The Project Inspector will select a qualified testing laboratory to take samples for testing during the course of the work as considered necessary. The Owner will pay costs for such tests. Contractor shall cooperate in making tests and shall be responsible for notifying the designated laboratory in sufficient time to allow taking of samples at time of pour.
- B. Should tests show that concrete is below specified strength, Contractor shall remove all such concrete, as directed by the Project Inspector. Full cost of removal of low strength concrete, its replacement with concrete of proper specified strength and testing, shall be borne by Contractor.

1.4 COORDINATION

- A. Coordinate items of other trades. Contractor shall be responsible for the proper installation of all accessories embedded in the concrete and for the provision of holes, openings, etc., necessary to the execution of the work of the trades.

1.5 SOILS REPORT:

- A. A soil investigation report has prepared for the project by the firm of BSK, entitled:
 - 1. Geotechnical Investigation Report and Geologic Hazard Assessment, Liberty High School Campus Expansions by BSK dated April 11, 2018.
- B. This report is available in the office of the Architect and the Construction Manager for inspection by the Contractor. Unless otherwise specified, it is intended that all work be performed in accordance with the provisions of these report.

1.6 SOILS BORINGS

- A. Subsurface soils investigations have been made at the site and logs of the test holes are available with the soils report. Such investigations have been made for the purposes of design only, and neither the Landscape Architect, Architect, the Owner, nor the Soils Engineers guarantee adequacy or accuracy of the data, or that data are representative of all conditions to be encountered. Such information is made available for general information only and shall not relieve the Contractor of the responsibility for making their own investigations

1.7 SUBMITTALS

- A. Submittals per Division 1 requirements
- B. The Contractor's Testing Laboratory's certificate of compliance.
- C. The Contractor shall submit:
1. Certified copies of mix designs for each concrete class specified including compressive strength test reports.
 2. Certification that materials meet requirements specified.
 3. Certification from vendor that samples originate from and are representative of each lot proposed for use.
- D. Mock-ups of all materials under this Division shall be supplied for testing as requested by the Architect
- E. Provide mockup of all concrete finishes, color and joints (with curing compound if any to be used) indicated on the drawings. Accepted mock-ups shall be kept at the job site to serve as a prerequisite for all finishes.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Supply ready mixed concrete throughout. Batch mix and transport in accordance with ASTM C-94, "Specifications for Ready Mixed Concrete."
- B. Mix and deliver concrete in quantities that will permit immediate use only.
- C. Indiscriminate addition of water for any reason will be cause for rejection of the load.

PART 2 - PRODUCTS

2.1 FORMWORK MATERIALS

- A. Forms shall be wood.
1. Plywood: APA Plyform, Grade B-B, 5/8-inch thickness minimum.
 2. Lumber: Douglas fir, "Standard" grade or better (grade marks not required).
 3. Plywood: 5/8-inch thickness minimum. Use overlaid plywood complying with U.S.Product Standard PS-1 "A-C or B-B High Density Overlaid Concrete Form", Class 1. Panels to receive specified form sealer to ensure uniform finish of exposed surfaces
- B. Form Coatings: Knox-Crete, or equal.
- C. Form Ties: Burke "Penta-Tie," or equal, cone and rod type with 1-inch break-back. Do not use form ties on exposed concrete of seat walls.

2.2 REINFORCING MATERIALS

- A. Bar Reinforcement ASTM A615.
1. #3 and smaller: Grade 40.

- 2 #4 and larger: Grade 60.

2.3 CONCRETE MATERIALS

- A. Portland Cement: ASTM C150, Type II.
- B. Aggregate: ASTM C33.
 1. Coarse Aggregate: Normal weight; 3/4-inch maximum size; clean, uncoated, crushed aggregate, free of materials which cause staining or rust spots.
 2. Fine Aggregate: Clean, natural sand.
- C. Water: Clear and potable, free from deleterious impurities.
- D. Admixtures: Admixtures are optional, must be compatible with color pigments where required. Any proposed admixture shall comply with State Section 2603(b) 5 of Part 2, Title 24 CCR. Accelerating admixtures are not permitted.

2.4 CONCRETE MIXES

- A. Concrete mixes shall be accepted and shall be in accordance with CalTrans Standard Specifications Section 90. Unless otherwise noted, mix shall be Class "A," 3,000 psi, Type II Portland cement and 3/4-inch maximum aggregate.
- B. Lamp Black: Concrete for exposed "natural colored" concrete shall be darkened by the addition of accepted agents at the mixer. The proportion of lampblack or other accepted colorant, to a great extent dependent on the color of the cement used in the mix, shall be that required to properly darken the concrete to reduce glare, and shall be subject to the approval of the Project Inspector or as required by Architect. Provide mockups with a ratio of one pound of lamp black for each cubic yard of concrete or as otherwise approved.

2.5 ANCILLARY MATERIALS

- A. Expansion Joint Material: Fiber Expansion Joint: A non-extruding resilient filler, saturated with high quality bituminous materials having preserving characteristics. W. R. Meadows or accepted equal. Conform to ASTM- 01751-83. Include Joint Sealant
- B. Curing Compound: ASTM C309, Water-base type, free of permanent color, oil or wax, or accepted equal. Curing compound shall be compatible with color pigments.
- C. Concrete Sealer: As manufactured by L. M. Scofield Co. or silicone-based, non-staining product such as Siloxane as manufactured by Prosoco and available from White Cap (415) 626-3750 and as accepted by Architect. Concrete Sealer shall be compatible with color pigments.
- D. Combination Curing Compound Concrete Sealer: W. R. Meadows Vocomp-20, (800-342-5976) or accepted equal. Combination Curing Compound. Combination Curing Compound Concrete Sealer shall be compatible with color pigments.
- E. Joint Sealant: W. R. Meadows or Sonneboun 2-part joint sealant or Sikaflex-1a elastomeric joint sealant or equal product. Available from Sika Corporation, Hayward (510) 487-2294. Color shall be as selected by Architect.
- F. Color of Concrete: Pigments for integral colored concrete as manufactured by Davis Colors, 800-356-4848, applied at manufacturer's specified rates of application, or accepted equal

2.6 WATERPROOFING

- A. Subseal-60 Self-adhering Waterproofing Membrane available from MFM Building Products Corp or accepted equal.

2.7 TRUNCATED DOMES

- A. Detectable dome spacing and size to meet detail on Architectural Drawings.
- B. Detectable warning devices to be color yellow conforming to Federal color number 33538.
- C. When placed on asphalt, adhesive type detectable warning surface may be installed in lieu of cast-in concrete.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

- A. Install all concrete work true to line and grade as indicated on the drawings.
- B. Correct irregularities to the satisfaction of the Project Inspector.

3.2 PREPARATION

- A. Take every precaution to obtain a subgrade of uniform bearing power by compaction to provide a firm base.
- B. Subgrade shall be kept moist and shall not be allowed to dry out before placement of concrete. Place no material on muddy subgrade.
- C. Aggregate base, where indicated, shall be placed and compacted in conformance with CalTrans Standard Specifications 26-1.04 and 26-1 .05.
- D. Obtain acceptance of subgrade from Project Inspector prior to placing steel and concrete.

3.3 FORMS

- A. Forms shall be constructed in accordance with ACI 347 and shall be of sufficient strength and sufficiently tight to prevent visible distortion or leakage of mortar and fines.
- B. Forms for exposed surfaces shall be designed to protect intended finish. Deflection of facing material between studs shall not exceed 0.0025 of the span. Facing material and pattern of joints shall be as accepted by the Architect.
- C. For vertical surface of wall footings below grade, clean-cut trench may be used in lieu of form if character of soil will permit installation without sluffing and width of concrete is increased at least 1 inch beyond indicated dimension of each face poured against earth.
- D. Curb and pavement edge forms shall extend full depth of concrete. Curves shall be formed with flexible metal or wood made up of thin laminations. Curve forms shall extend one stake space straight beyond tangent point.
- E. Maintain forms within the following tolerances.
 - 1. Top of Form: Plus or minus 1/8 inch in 10 feet and no abrupt variations; at required elevation to plus 3/8 inch.
 - 2. Face of Form: Plus or minus 1/4 inch in 10 feet longitudinal and no abrupt variations; perpendicular to surface plus or minus 1/8 inch.
- F. Obtain approval of formwork from Project Inspector prior to placing concrete. Forms may be reused upon cleaning and coating with parting compound to ensure

separation from concrete without damage. After concrete is placed, the following minimum times shall elapse before removal of forms.

1. Footing sides: 24 hours.
2. Mow bands, curbs and pads: 48 hours.

3.4 REINFORCEMENT

- A. All concrete shall be steel reinforced unless specifically noted to be "not reinforced." If no reinforcement is shown, reinforce in same manner as that shown in similar places.
- B. Fabricate and place reinforcement as indicated on the Drawings and in accordance with ACI "Detailing Manual" SP-66. No reinforcement shall be placed prior to distribution of the accepted shop drawings.
- C. Secure reinforcement in position by suitable supports and by wiring at intersections with tie wire. Supports shall be of sufficient number and strength to resist crushing or displacement under full load. Metal shall not extend to surface of concrete.
- D. At time of placing concrete, reinforcing shall be free of excessive rust, mill scale, or other bond reducing matter. Immediately before placing concrete, check and adjust position, support and anchorage.

3.5 MIXING AND PLACING CONCRETE

- A. Conform to applicable requirements set forth in CalTrans Standard Specifications Section 90.

3.6 JOINTS AND GROOVES

- A. Plane of joints shall be perpendicular to surface. Where new pavements join existing, joints shall align.
- B. Install joint sealant at fiber expansion joints per manufacturer's specifications.
- C. Construction Joints: Place construction joints at the end of pours and at locations where placement operations are stopped for a period of more than one half hour, except where such pours terminate at expansion joints.
 1. Construction joints shall be keyed with formed tongue and groove.
 2. Tool concrete edge both sides of construction joint.
- D. Saw Cut Joints: Begin as soon as concrete has hardened enough to support saw and operator, and to allow cutting without raveling, or deforming the surface finish. Use a concrete cutting blade. Form a smooth uniform joint 1/8" wide, to 1" depth unless shown otherwise. Joints shall be cut within 48 hours of pour. Hold saw cuts 1/2" from edge of concrete.
- E. Score Joints: Form in the fresh concrete using a jointer to cut the groove so that a smooth uniform impression is obtained to 1" depth unless shown otherwise. All joints shall be struck before and after brooming. Tool concrete both sides of joint.
- F. Expansion Joints and Edging: Provided at the location and intervals as shown on the drawings, and at all locations where concrete paving abuts buildings, curbs or other structures, and not greater than 20 feet on center. Approved joint material shall be placed with top edge below the paved surface and shall be securely held in place to prevent movement. Joint and other edges shall be formed in the fresh concrete using an edging tool to provide a smooth uniform impression. All edges shall be struck before and after brooming.

3.7 FINISHING

- A. Mow bands, headers, paving and other exposed work.
 1. Surface Finishes

- a. Float Finish (typical preliminary finishing for slabs to receive other finishes): The surface of the slab shall be screeded and all surface water and laitance removed. Floating shall be started as soon as the screeded surface has stiffened sufficiently. Floating shall be performed by hand using a wood float and shall be the minimum necessary to produce a relatively smooth, level, even-textured surface.
- b. Medium Broom Finish: After the slab has been float finished as described above, the surface shall be uniformly directional textured by coarse stable broom to match accepted mock up to be a non-slip finish.
- c. Sandblast Finish: Perform in as continuous an operation as possible, utilizing the same work crew to maintain continuity of finish to match accepted mock up. Use abrasive grit of the proper type and gradation to expose the aggregate and surrounding matrix surfaces to match mock up panel, as follows:
 - 1) Medium Cut: Approximately 1/8" to 3/16" depth.
 - 2) Heavy cut: Approximately 1/2" to 3/4" depth.
 - 3) Blast corners and edge of patterns carefully, using backup boards in order to maintain a uniform corner of edge line.
 - 4) Use same nozzle, nozzle pressure and blasting technique as used for mock up panel.
 - 5) Maintain control of abrasive grit and concrete dust in each area of blasting. Clean up and remove all expended abrasive grit, concrete dust and debris at the end of each day of blasting operations.

3.8 DEFECTIVE CONCRETE

- A. If any concrete work is not formed as indicated, is under strength concrete, if concrete is out of line, level or plumb, or showing objectionable cracks, honeycomb, rock pockets, voids, spelling or exposed reinforcing, it shall be removed, repaired or replaced as directed by the Architect.

3.9 CURING

- A. Cure exposed concrete in accordance with CalTrans Standard Specifications Section 90.
- B. Only water or curing compounds that impart no permanent color or gloss shall be used for curing concrete.

3.10 CONCRETE SEALING

- A. Seal all exposed surfaces according to manufacturer's specifications.

3.11 WATERPROOFING

- A. Where soil is backfilled against seat walls install waterproofing per manufacturer's specifications. Hold 2" below finish grade.
- B. During construction, wash off work as quickly as possible when stains or splotches are unavoidable.

3.12 TRUNCATED DOMES

- A. Detectable warning surface shall be recessed and cast in concrete.

3.13 CLEANUP: Per Division 1 requirements.

- A. Upon completion, clean exposed surfaces carefully. Brushing and cleaning solution, if used, must be preceded and followed with a through rinsing of clear water. No sandblasting will be allowed to clean surfaces.
- B. Remove from premises; equipment, debris and surplus material needed for, or resulting from, this

work. Remove all concrete waste from planting areas and legally dispose of it.

C. All work shall be left in a condition satisfactory to the Architect.

END OF SECTION

SECTION 32 3113

CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.01 SUMMARY

A. Scope of Work

The Contractor shall furnish all labor, materials, equipment, and incidentals necessary to furnish and construct the fencing specified herein, and shown on the Drawings, complete.

B. The work shall include, but shall not be limited to:

1. Fence and Gate Fabric, Rails, Hardware, Framework, and Posts
2. Excavation for Post Bases
3. Concrete Anchorage for Posts

C. Related Work

1. 03 3000 Cast-In-Place Concrete
2. 32 1313 Concrete Paving

1.02 COORDINATION

- ###### A.
- Coordinate work fully with all other trades involved. Coordinate with items of other trades to be furnished and set in place. Such portions of their work as is all or in part embedded, built-in, attached to, or supported by the work shall be executed by them in ample time that progress of the work is not delayed. Contractor shall be responsible for the proper installation of all items related to this section.

1.03 REFERENCE

- ###### A.
- Perform work in accordance with all applicable laws, codes and regulations, as required by the Architect.
- ###### B.
- Reference to "Standard Specifications" shall mean the current Standard Specifications of the State of California, Business and Transportation Agency, Department of Transportation, CALTRANS.

1.04 SUBMITTALS

The following information shall be submitted for approval by the Architect.

- ###### A.
- Erector Qualifications:
- ###### B.
- List of seven (7) similar fence installations in Northern California. Include job location and name and phone number of project administrator.
- ###### C.
- Product Data: Submit Manufacturer's descriptive literature and/or standard catalog "cut-sheets" of all materials, coatings, fittings and equipment proposed to be furnished and installed under this portion of the work. Include Manufacturer's name and catalog number for each item where applicable. Clearly annotate (star or asterisk - in black ink) which portions of "cut-sheets" are applicable if more than one product is shown.

1. Framework (rail, post and gate)
 2. Wire mesh
 3. Support arm
 4. Hinges and latches
 5. Gate hardware
- D. Shop Drawings: Submit complete Shop Drawings for all different types and sizes of gates and fencing systems.
1. Shop Drawings shall include, but not be limited to:
 - a. All information regarding clearances, connections, components and any miscellaneous related appurtenances (such as locking mechanisms, wiring etc.).
 - b. Concrete footing and reinforcement information.
- E. Installation instructions and/or drawings: Submit as applicable.
- 1.05 SEQUENCE AND SCHEDULING
- A. Contractor shall coordinate construction timing of all fencing and related work with installation of concrete work and all other work.
- 1.06 CLEAN UP
- A. Keep job site free of debris and rubbish as well as excess materials, tools and equipment connected with work specified herein. Clean up periodically during construction and at completion of work specified herein; lawfully dispose of all such material off District's premises.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General Note: It is intended that all fencing, by area, receive the same finish coating wherever possible. Nuts, bolts, applicable moving portions of hinges etc, shall be finished to match.
- B. Fabric
1. Selvage: Knuckled finish top and bottom.
 2. Steel Fabric: Comply with Chain Link Fence Manufacturers Institute (CLFMI) Product Manual. Furnish one-piece fabric widths for fencing up to sixteen feet (16') feet high. Wire sizes includes zinc coating.
 3. Size: One and one quarter inch (1.25"), 9-gauge (0.148 inch diameter) as noted on the Drawings.
 4. Galvanized Wire: Zinc coated wire-ASTM A 392, Class 1, with not less than 1.2 oz. zinc per sq. ft.
- C. Framing
1. Strength requirements for posts and rails shall conform to ASTM F 669.
 2. Pipe shall be straight, true to section, material, and sizes specified, and shall conform to the following weights per foot:

<u>NPS in Inches</u>	<u>Outside Diameter (OD in inches)</u>	<u>Type 1 Steel</u>	<u>Type 2 Steel</u>
1	1.315	1.68	1.35
1.25	1.660 (1-5/8")	2.27	1.84
1.5	1.900 (2")	2.72	2.28

2	2.375 (2-1/2")	3.65	3.12
2.5	2.875 (3")	5.79	4.64
3	3.500	7.58	5.71
3.5	4.000	9.11	6.56
4	4.500	10.79	---
6	6.625	18.97	---
8	8.625	28.55	---

D. Steel Framework

1. Posts, Rails, Braces, and Gate Frames:
 - a. Type I Steel Pipe: Hot-dipped galvanized steel pipe conforming to ASTM F 1083, plain ends, standard weight (Schedule 40) with not less than 1.8 oz. zinc per sq. ft. of surface area.
 - b. Type II pipe: not applicable.
2. Top, Bottom and Horizontal Intermediate Rails:
 - a. Top, bottom and horizontal intermediate rails (as applicable) shall be as shown on the Drawings.
3. Gate Frames: Furnish frames (single or double gate), for nominal gate widths as shown on the Drawings.

E. Fittings and Accessories

1. Material: Comply with ASTM F 626. Mill-finished aluminum or galvanized iron or steel, in accordance with Manufacturer's standards.
 - a. Zinc Coating: Unless specified otherwise, steel fence fittings and accessories shall be galvanized in accordance with ASTM A 153, with zinc weights per Table 1 of ASTM A153.
2. Tension Wire: 7 gauge (0.177 inch diameter) coil spring steel with finish to match fabric.
3. Tie Wires: 9 gauge (0.148 inch diameter) steel with finish to match fabric.
4. Post and Line Caps: Provide weather tight closure cap for each post. Provide line post caps with loop to receive wire or top rail with finish to match fabric.
5. Tension Bars: Hot dipped galvanized steel with minimum length two inches (2") less than full height of fabric, minimum cross-section of 3/16 inch by 3/4 inch and minimum of 1.2 oz. zinc coating per sq. ft. of surface area.
6. Tension Clips: Minimum 3/4 inch wide 12 gauge (0.105 inch) thick with finish to match fabric.
7. Truss Rods: Hot dipped galvanized steel rods with minimum diameter of 5/16 inches (5/16") (7.9 mm).
8. Hinges: Master Halco heavy duty for maintenance gates, or acceptable equal.
9. Accessible gates shall have hydraulic hinges, self-closing and adjustable speed, Mammoth or approved equal. Adjust and maintain gate so that from the open position of 70 degrees, the gate shall move to the closed position in 1.5 seconds minimum (11B-404.2.8.2).
10. Provide or fabricate all mounting hardware as required for hinges, closers, lever handles, strike plates and panic hardware.
11. Concrete: Concrete for footings shall conform to the requirements of ASTM C94, normal Portland cement, 3000 psi at twenty-eight (28) days, four inch (4") slump. Refer to Section 03 3000 – Cast-In-Place Concrete.

PART 3 EXECUTION

3.01 PREPARATION

- A. Prior to excavation, layout all fencing locations for review and acceptance by Architect.

3.02 INSTALLATION

- A. Chain link fencing shall be constructed as shown on the Drawings and a height therein specified. The line of the fence shall be cleared of all obstructions and surface irregularities and the bottom of the fence shall be to uniform grade.
- B. Unless otherwise set forth in the Drawings, all fences shall be constructed with a top rail, and bottom rail.
- C. The posts shall be spaced as specified on the Drawings. Terminal posts and gate posts shall be set as specified on Drawings. Line posts shall be set as specified on Drawings.
- D. Post shall be set as specified on the Drawings.
- E. Concrete bases for terminal, line, and gate posts shall be allowed to cure for not less than seven (7) days before wire fabric is placed.
- F. Fabric shall be fastened to line posts with fabric bands spaced approximately fourteen inches (14") apart and to top rail and bottom tension wire with tie wires spaced approximately twenty-four inches (24") apart.
- G. Stretcher bar and truss bands shall be spread and slipped on end, corner, pull, brace, and gate posts before installation of top rails. Extension joints shall be provided from rails at intervals of one hundred feet (100'). Bottom tension wire shall be seven (7) gauge galvanized coil spring steel.
- H. Pass top rail through line post tops to form continuous bracing. Install seven inch (7") long couplings midspan at pipe ends.
- I. The placing of the rails, braces, and the wire fabric shall be accomplished in such a manner that the finished fence shall be taut, true, and of precise workmanship throughout. The fabric shall be stretched so that no slack sections remain at any point. The fabric shall be securely tied to posts and rails in a manner so that the fabric will remain tight and immovable.
- J. Position bottom of fabric two inches (2") above finished grade, or as shown on the Drawings.
- K. Cut and peen bolts so that bolts protrude one quarter inch (1/4") maximum beyond nuts and there are no sharp edges.

END OF SECTION

SECTION 32 1700
PAVEMENT MARKING AND SIGNS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Provide painted traffic striping, traffic signs and posts, thermoplastic pavement markings.
- B. Obtain and pay for encroachment permit for work within public rights of way.

1.02 RELATED SECTIONS

- A. Pertinent sections of Division 32 addressing Asphalt Concrete Paving and Base.

1.03 REFERENCES

- A. Caltrans Traffic Manual and Standard Specifications, latest edition.
- B. California Building Code, Title 24, Part 2, California Building Code.
- C. ADA STANDARDS - Americans with disabilities Act (ADA) Standards for Accessible Design; 2010.
- D. Standards for jurisdiction where project is located.
- E. ASTM E303 Standard Test Method for Measuring Surface Frictional Properties.
- F. ASTM C1028 Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surface
- G. ASTM D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces

1.04 PERFORMANCE REQUIREMENTS

- A. All work shall conform to referenced standards..
- B. Provide a slip-resistant surface measurable by the ASTM E 303 standard.

1.05 SUBMITTALS

- A. See Section 01 3300 - Submittals for submittal procedures.
- B. Provide a mock up of pavement marking finishes, color and texture. Demonstrate acceptable slip resistance under wet conditions.

PART 2 PRODUCTS

2.01 PARKING STALL STRIPING

- A. The paint to be used on Parking stall striping shall be a commercial quality paint and be applied in two coats to achieve the designed coverage. Thinner shall not be mixed with paint.
 - 1. Formula shall include an evenly dispersed fine-aggregate additive to provide a textured slip-resistant coating complying with CBC 11B-302.1.
- B. Manufacturers:
 - 1. Dunn-Edwards.
 - 2. Plexi Pave . Plexicolor textured line paint
 - 3. Nova Sports. Novatex textured line paint.

2.02 THERMOPLASTIC MARKINGS

- A. Thermoplastic materials shall comply with the requirements of Section 84-2 of the State Standard Specifications. Glass beads are required on all thermoplastic markings.

2.03 SIGNS

- A. Traffic and Regulatory Signs: Conform to requirements of local authority having jurisdiction and CalTrans Traffic Manual for the type of sign indicated.
- B. Mount at standard heights on 2 inch diameter round galvanized steel posts embedded in concrete per referenced standards.

PART 3 EXECUTION

3.01 PARKING STALL STRIPING

- A. No parking stall striping shall be started until all paving work on the entire job has been completed, and the various finished surfaces are sufficiently cured to prevent undue tracking onto new striping.
- B. Paint shall dry "track free" in not less than thirty (30) minutes and not more than ninety (90) minutes.
- C. The air compressor used shall have a capacity of 60 cubic feet per minute.
- D. All stripes for parking spaces shall have a width of four inches. All widths shall be within 1/3-inch of the specified widths.
- E. Paint application rate:
 - 1. Solid single stripes: 17 to 18 gallons per mile.
- F. All lines and other shapes shall be clean and sharp as to dimensions and shall be painted in the locations shown on the plans. Ragged ends of segments, foginess along the sides, or objectionable dribbling along the unpainted portions of the stripe shall not be permitted.
- G. The finished product shall have an opaque, well painted appearance with no black or other discolorations showing through. All smears shall be painted out with black paint to the satisfaction of the Owner's Representative.
- H. Take all reasonable precautions to protect the paint during drying time. Paint out all objectionable tracking. Provide appropriate traffic control necessary to insure non-tracking while maintaining reasonable traffic flows.
- I. Painted stripes shall receive two coats of paint.
- J. No work shall be done when the pavement is appreciably damp.

3.02 THERMOPLASTIC PAVEMENT MARKINGS

- A. Thermoplastic pavement markings shall be applied in strict conformance with the requirements of Section 84-2.04, Application, of the State Standard Specifications
- B. Glass beads shall be applied immediately to the surface of the molten thermoplastic material at a rate of not less than 8 pounds per 100 square feet.

3.03 CLEANING and PROTECTION

- A. Clean and remove all debris and stains resulting from the work of this section..
- B. Protect installed work from subsequent construction operations.
- C. Do not permit traffic over painted markings.

END OF SECTION

SECTION 32 1726
TACTILE WARNING SURFACES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tactile Warning Surfaces: Truncated dome detectable warnings required for compliance with State and Federal accessibility regulations.

1.02 RELATED SECTIONS

- A. Pertinent sections of other Divisions specifying paving, striping, storm drainage or site plumbing work affecting this Section.
- B. Section 07 9005 - Sealants.
- C. Pertinent sections of other Divisions specifying electrical work affecting this Section.

1.03 REFERENCES

- A. ADA STANDARDS - Americans with disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar.
- C. California Building Code (CBC), Title 24, Part 2.
- D. Manufacturer's recommendations and specifications.

1.04 SUBMITTALS

- A. See Section 01 3300 - Submittals, for submittal procedures.
- B. Product Data: Provide manufacturer's brochures illustrating conformance to specified characteristics.
- C. Shop Drawings: Provide standard installation details. Indicate dome spacing, height, width and length of dome fields for required conditions.
- D. Installation Instructions: Include recommended environmental conditions for installation.
- E. Samples: Submit two samples of each exposed finish or product, 8x10 inch in size, illustrating finish, appearance and color.
- F. Test Reports: Indicate that products will meet all performance requirements of this specification. Previously completed test reports will be acceptable if they are current and indicative of products used on this project.
- G. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements: Meet all requirements of ADAAG 4.29.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- C. Installer Qualifications: Company specializing in installing products specified in this section, licensed by Manufacturer.

1.06 MOCK-UP

- A. Construct mock-up comprised of one horizontal field sample panel, approximately 4 feet long. Mock-up shall be ready for review not less than 4 weeks before placement of work is scheduled to begin.
- B. Locate where directed.
- C. Mock-up may remain as part of the Work.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver products and materials to project site in original containers and packaging.
- B. Comply with pertinent provisions of Section 01 6000.
- C. Prevent contact with materials which may cause discoloration or staining. Clean materials which are discolored or stained.
- D. Replacements: In the event of damage, immediately make repairs and replacements necessary to the approval of the Architect and Division of the State Architect, without change in contract amount or time.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Do not install products until environmental conditions are within range recommended by manufacturer.

1.09 WARRANTY

- A. See Section 01 7000 - Contract Closeout, for additional warranty submittal requirements.
- B. Provide five year manufacturer warranty for products. Manufacturer shall warrant that the installation's shape, color-fastness, confirmation, sound-on-cane acoustic quality, resilience and attachment will not degrade significantly (defined as maintaining at least 90 percent of the approved design characteristics as determined by the Authority Having Jurisdiction) for five years from the date of installation.

1.10 EXTRA MATERIALS

- A. See Section 01 6000 - Product Requirements, for additional provisions.

PART 2 PRODUCTS

2.01 SUBSTITUTIONS

- A. Substitutions: See Section 01 6000 - Product Requirements.
 - 1. Request For Substitution of proposed alternate products must be made in writing as specified in Section 01 6000 and shall demonstrate that the proposed substitution meets or exceeds each of the specified characteristics.
 - 2. All product and manufacturer requirements listed in Articles titled QUALITY ASSURANCE and WARRANTY must be met and provided with the Request For Substitution.
 - 3. Submit complete product and test data as specified in the Article titled SUBMITTALS for each proposed substitution.
 - 4. No substitutions will be accepted following the bid, except as otherwise specified in Section 01 6000.

2.02 MANUFACTURERS

- A. Detectable/Tactile Warning Surfaces: Armor-Tile: www.armortile.com. Substitutions per Section 01 6000 - Product Requirements.
 - 1. Cast-In-Place or Surface-Applied Vitrified Polymer Composite Tactile Warnings Surfaces
 - a. Compressive Strength: ASTM D695-02a, 28,000 psi minimum.
 - b. Water Absorption: ASTM D 570-98, 5 percent maximum absorption.
 - 2. Tactile Warning Shapes: Conform to referenced codes and standards;
 - a. Height: 0.20 inches nominal.
 - b. Spacing and Configuration: As indicated.
 - 3. Size: 12 inch by 12 inch nominal minimum, or as required to conform to size required on drawings.
 - 4. Color: Selected by Architect from full range of available colors including custom and premium price options.

2.03 ACCESSORIES

- A. Sealant: Compatible material of types specified in Section 07 9005.
- B. Adhesive: "Armor-Bond" as supplied by Engineered Plastics Inc., or type recommended by manufacturer.
- C. Fasteners: Color matched, corrosion resistant, flat head drive anchors as recommended by manufacturer.
- D. Expansion Joint Filler: Types specified in Section 32 1313.
- E. Accessory Materials: Other materials not specifically indicated but required to achieve the results specified; commercial quality. Types recommended by manufacturer to suit conditions.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work. Correct conditions detrimental to the proper and timely performance of this work before proceeding with installation. Commencement of work indicates acceptance of substrates.
- B. Verify all opening sizes, dimensions and tolerances in field.
- C. Verify location and sizes of utility rough-in associated with work of this section.

3.02 PREPARATION - SURFACE-APPLIED TACTILE WARNING TILES

- A. Surface-applied tactile warning tiles must be installed on concrete substrate. Asphalt substrate is not acceptable.
- B. Examine surfaces to receive tiles and conditions under which tiles will be installed. Do not proceed with installation until surfaces and conditions comply with requirements indicated in referenced installation standards and manufacturer's printed instructions.
- C. Verify that concrete substrate is smooth and flat within the tolerances specified for that type of work and are ready to receive tiles.
- D. Verify that concrete substrate is dry, fully-cured, dust-free and free of substances which would impair bonding of tile to concrete. Mechanically clean and scarify concrete substrate to remove curing compounds if these are used and roughen surface per the manufacturer's instructions.

- E. Clean the backside of tile using acetone per the manufacturer's instructions.

3.03 INSTALLATION - TACTILE WARNING TILES

A. Cast-In-Place Tactile Warning Tiles

1. Install components in strict accordance with manufacturer's instructions and approved shop drawings. Use materials as recommended by manufacturer and as required to suit field conditions.
2. Cast-in-place tactile warning tiles must be installed in concrete; installation in asphalt is not acceptable.
3. The physical characteristics of the concrete shall be consistent with the contract specifications while maintaining a slump range of 4 - 7 to permit solid placement of the tiles.
4. Do not remove concrete in the area to accept the tiles. It is imperative that the installation technique eliminates any air voids under the tile. Holes in the tile perimeter allow air to escape during the installation process. Concrete will flow through the large holes in each embedment flange on the underside of the tile which will lock the tile solidly into the cured concrete.
5. The concrete shall be poured and finished true and smooth to the required dimensions and slope prior to the tile placement. Immediately after finishing concrete verify that required slopes are achieved. Tactile warning tiles shall be tamped or vibrated into the fresh concrete to ensure that the field level of the tile is flush to the adjacent concrete surface. The embedment process should not be accomplished by stepping on the tile as this may cause uneven setting which can result in air voids under the tile surface.
6. Tiles shall be placed true and square in accordance with the contract drawings. Individual tiles shall be bolted together using hardware recommended by the manufacturer to ensure that adjacent tiles are flush to each other during the installation process.
7. The factory-installed plastic sheeting must remain in place during the entire installation process to prevent the splashing of concrete onto the finished surface of the tile. Following the concrete curing stage, the protective plastic wrap is to be removed per the manufacturer's instructions.
8. During and after the tile installation and the concrete curing stage, it is imperative that there is no walking, leaning or external forces placed on the tile that may rock the tile causing a void between the underside of tile and concrete.

B. Surface Applied Tactile Warning Tiles

1. Install components in strict accordance with manufacturer's instructions and approved shop drawings. Use materials as recommended by manufacturer and as required to suit field conditions.
2. Apply adhesive to the backside of the tile per the manufacturer's instructions.
3. Tiles shall be set true and square in accordance with the contract drawings.
4. After adhering tiles, drill and install all fasteners in the tile's molded recesses, working from the center of the tile outward.
5. Clean the concrete around the tile's perimeter using acetone to ensure a clean, dry surface to receive perimeter sealant.
6. Apply sealant around the tile installation perimeter using care to work sealant into any void between the tile and concrete interface. Tool the perimeter sealant to create a cove profilr between the tile and adjacent concrete.
7. Do not allow foot traffic on installed tiles until perimeter sealant has cured sufficiently to avoid tracking.

3.04 ERECTION TOLERANCES

- A. Maximum Variation From True Position: one-sixteenth inch.
- B. Maximum Offset From True Alignment: one-sixteenth inch.
- C. Maximum Out-of-Position: 1/8 inch.
- D. Maximum Misalignment of Two Adjoining Surfaces Abutting in Plane: one-sixteenth inch.

3.05 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with Section 01 4523.

3.06 ADJUSTING

- A. Repair damaged and defective work and eliminate functional and visual defects. Where repair is not possible replace work. Adjust joints for uniform appearance. No unfinished surfaces or irregularities in completed work.

3.07 CLEANING and PROTECTION

- A. Clean exposed surfaces.
- B. Strictly follow manufacturer guidelines when removing foreign substances from finished surfaces.
- C. Protect installed work from subsequent construction operations until Owner's acceptance. Utilize durable protective wrappings and panel materials using methods which will not damage surfaces or finishes. Do not remove until Owner acceptance following move-in.
- D. Do not permit traffic near unprotected finish surface(s).

END OF SECTION

LIBERTY UNION HIGH SCHOOL DISTRICT

BIDDING DOCUMENTS

FOR THE

LIBERTY UNION HIGH SCHOOL DISTRICT

FOR

BASEBALL BACKSTOP REPLACEMENT PROJECT BACKSTOPS, FENCING AND GATES SCOPE OF WORK

AT

LIBERTY HIGH SCHOOL

850 Second Street, Brentwood, CA 94513

Project No. 1923.00

DSA Application No. 01-119543

Bid No: U2122L

LIBERTY UNION HIGH SCHOOL DISTRICT

20 Oak Street, Brentwood, CA 94513

August 2, 2021

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NOTICE INVITING BIDS

LIBERTY UNION HIGH SCHOOL DISTRICT

NOTICE IS HEREBY GIVEN that the Liberty Union High School District, acting by and through its Governing Board, hereinafter referred to as “District”, will receive prior to 11:00 AM on September 14, 2021 sealed bids for the award of a Contract for the following:

BID NO. U2122L

Liberty High School Baseball Backstop Replacement Project

Backstops, Fencing and Gates Scope of Work (as described below):

Provide all labor, equipment and materials to complete the new Backstops, Fencing and Gates scope of work associated with the new Varsity Baseball and JV Baseball Backstop Replacement project as shown on the plans, in accordance with the General Conditions, Supplementary Conditions, General Requirements and as required by Specification Sections; 03 2000 – Concrete Reinforcing (as it applies to post foundation reinforcing), 03 3000 – Cast-in Place Concrete (as it applies to post foundation concrete), 05 1100 Structural and Miscellaneous Steel (as it applies to base plates, steel fence posts, welding to the base plate, bolt holes in the base plates, anchor bolts, and high strength grout), and 32 3113 – Chain Link Fences and Gates.

Backstops, Fencing and Gates specific work inclusions and exclusions are noted in the Bid Form.

Liberty High School Baseball Backstop Replacement Project

Backstops, Fencing and Gates Scope of Work:

All bids shall be made and presented only on the forms presented by the District. Bids shall be received in the Office of the LUHSD Maintenance and Transportation Facility, at 19 Oak Street, Brentwood, California 94513 and shall be opened and publicly read aloud at the above state time and place. Any bids received after the time specified above or after any extensions due to material changes shall be returned unopened.

The Contract Time is 92 calendar days (as reflected in the Overall Project Schedule document).

CONTRACTOR should consult the General Conditions, Supplementary Conditions, and General Requirements regarding Milestones and Liquidated Damages.

Additive/ Deductive Bid Alternates (See Section 13 of Instruction to Bidders)

NONE

Miscellaneous Information

Bids shall be received in the place identified above and shall be opened and publicly read aloud at the above-stated time and place.

The bid documents are available on the Liberty Union High School District website at www.luhdsd.net as well as through Lathrop Construction by sending an email to maria.galligan@lathropconstruction.com.

There will be a mandatory Pre-Bid Conference for chain link fencing subcontractors (Prime Contractors) on September 7, 2021 at 10:00 AM at the LUHSD Maintenance and Transportation Facility, 19 Oak Street, Brentwood. Any Prime Contractor bidding on the Project who fails to attend the entire mandatory job walk and conference will be deemed a non-responsive bidder and will have its bid returned unopened. All attendees are required to wear masks and comply with CDC and Contra Costa County Health Order Requirements.

Each bidder shall be a licensed contractor pursuant to the California Business and Professions Code, and be licensed to perform the work called for in the Contract Documents. The successful bidder must possess a valid and active Type C-13 Fencing Contractor License at the time of bid and throughout the duration of this Contract. The Contractor's California State License number shall be clearly stated on the bidder's proposal

Subcontractors shall be licensed pursuant to California law for the trades necessary to perform the Work called for in the Contract Documents.

Each bid must strictly conform with and be responsive to the Contract Documents as defined in the General Conditions.

The District reserves the right to reject any or all bids or to waive any irregularities or informalities in any bids or in the bidding.

Each bidder shall submit with its bid — on the form furnished with the Contract Documents — a list of the designated subcontractors on this Project as required by the Subletting and Subcontracting Fair Practices Act, California Public Contract Code section 4100 et seq.

In accordance with California Public Contract Code section 22300, the District will permit the substitution of securities for any moneys withheld by the District to ensure performance under the Contract. At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the District, or with a state or federally chartered bank as the escrow agent, who shall then pay such moneys to the Contractor. Upon satisfactory completion of the Contract, the securities shall be returned to the Contractor.

Each bidder's bid must be accompanied by one of the following forms of bidder's security: (1) cash; (2) a cashier's check made payable to the District; (3) a certified check made payable to the District;

or (4) a bidder's bond executed by a California admitted surety as defined in Code of Civil Procedure section 995.120, made payable to the District in the form set forth in the Contract Documents. Such bidder's security must be in an amount not less than ten percent (10%) of the maximum amount of bid as a guarantee that the bidder will enter into the proposed Contract, if the same is awarded to such bidder, and will provide the required Performance and Payment Bonds, insurance certificates and any other required documents. In the event of failure to enter into said Contract or provide the necessary documents, said security will be forfeited.

The Contractor and all subcontractors shall comply with the requirements set forth in Division 2, Part 7, Chapter 1 of the Labor Code. The District has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this work is to be performed for each craft, classification or type of worker needed to execute the Contract. These per diem rates, including holiday and overtime work, as well as employer payments for health and welfare, pension, vacation, and similar purposes, are on file at the District, and are also available from the Director of the Department of Industrial Relations. Pursuant to California Labor Code section 1720 et seq., it shall be mandatory upon the Contractor to whom the Contract is awarded, and upon any subcontractor under such Contractor, to pay not less than the said specified rates to all workers employed by them in the execution of the Contract.

A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in the Labor Code, unless currently registered and qualified to perform public work pursuant to Labor Code section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

The Contractor and all subcontractors shall furnish certified payroll records as required pursuant Labor Code section 1776 directly to the Labor Commissioner in accordance with Labor Code section 1771.4 on at least on a monthly basis (or more frequently if required by the District or the Labor Commissioner) and in a format prescribed by the Labor Commissioner. Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE).

No bidder may withdraw any bid for a period of ninety (90) calendar days after the date set for the opening of bids.

Separate payment and performance bonds, each in an amount equal to 100% of the total Contract amount, are required, and shall be provided to the District prior to execution of the Contract and shall be in the form set forth in the Contract Documents.

All bonds (Bid, Performance, and Payment) must be issued by a California admitted surety as defined in California Code of Civil Procedure section 995.120.

Where applicable, bidders must meet the requirements set forth in Public Contract Code section 10115 et seq., Military and Veterans Code section 999 et seq. and California Code of Regulations, Title 2, Section 1896.60 et seq. regarding Disabled Veteran Business Enterprise ("DVBE") Programs. Forms are included in this Bid Package.

Any request for substitutions pursuant to Public Contract Code section 3400 must be made at the time of Bid on the Substitution Request Form set forth in the Contract Documents and included with the bid.

No telephone or facsimile machine will be available to bidders on the District premises at any time.

It is each bidder's sole responsibility to ensure its bid is timely delivered and received at the location designated as specified above. Any bid received at the designated location after the scheduled closing time for receipt of bids shall be returned to the bidder unopened.

LIBERTY UNION HIGH SCHOOL DISTRICT

INSTRUCTIONS TO BIDDERS

1. **Preparation of Bid Form.** Proposals under these specifications shall be submitted on the blank forms furnished herewith at the time and place stated in the Notice Inviting Bids. All blanks in the bid form must be appropriately filled in, and all proposed prices must be stated clearly and legibly in both words and numerals. All bids must be signed by the bidder in permanent blue ink and submitted in sealed envelopes, bearing on the outside, the bidder's name, address, telephone number, and California Contractor's License number, and the name of the Project for which the bid is submitted. The District reserves the right to reject any bid if all of the above information is not furnished. It is each bidder's sole responsibility to ensure its bid is timely delivered and received at the location designated as specified above. Any bid received at the designated location after the scheduled closing time for receipt of bids shall be returned to the bidder unopened.

2. **Bid Security.** Each bid must be accompanied by one of the following forms of bidder's security: (1) cash; (2) a cashier's check made payable to the District; (3) a certified check made payable to the District; or (4) a bidder's bond executed by a California admitted surety as defined in Code of Civil Procedure section 995.120, made payable to the District, in the form set forth in the Contract Documents. Such bidder's security must be in an amount not less than ten percent (10%) of the maximum amount of such bidder's bid as a guarantee that the bidder will enter into the Contract, if the same is awarded to such bidder, and will provide the required Performance and Payment Bonds, insurance certificates and any other required documents. In the event that a bidder is awarded the Contract and such bidder fails to enter into said Contract or provide the surety bond or bonds within five (5) calendar days after award of the Contract to bidder, said security will be forfeited.

3. **Signature.** The bid form, all bonds, all designations of subcontractors, the Contractor's Certificate, the Agreement, and all Guarantees must be signed in permanent blue ink in the name of the bidder and must bear the signature in longhand of the person or persons duly authorized to sign the bid.

If bidder is a corporation, the legal name of the corporation shall first be set forth, together with two signatures: one from the President and one from the Secretary or Assistant Secretary. Alternatively, the signature of other authorized officers or agents may be affixed, if a certified copy of the resolution of the corporate board of directors authorizing them to do so is provided to the District. Such documents shall include the title of such signatories below the signature and shall bear the corporate seal.

If bidder is a partnership, the true name of the firm shall first be set forth, together with the names of all persons comprising the partnership or co-partnership. The bid must be signed by all partners comprising the partnership unless proof in the form of a certified copy of a statement of partnership acknowledging the signer to be a general partner is presented to the District, in which case the general partner may sign.

Bids submitted as joint ventures must so state and be signed by each joint venturer.

Bids submitted by individuals must be signed by the bidder unless an up to date power- of-attorney is on file in the District office, in which case, said person may sign for the individual.

The above rules also apply in the case of the use of a fictitious firm name. In addition, however, where a fictitious name is used, it must be so indicated in the signature.

4. Modifications. Changes in or additions to the bid form, recapitulations of the work bid upon, alternative proposals, or any other modification of the bid form which is not specifically called for in the Contract Documents may result in the District's rejection of the bid as not being responsive to the Notice Inviting Bids. **No oral or telephonic modification of any bid submitted will be considered.**

5. Erasures, Inconsistent or Illegible Bids. The bid submitted must not contain any erasures, interlineations, or other corrections unless each such correction creates no inconsistency and is suitably authenticated by affixing in the margin immediately opposite the correction the signature or signatures of the person or persons signing the bid. In the event of inconsistency between words and figures in the bid price, words shall control figures. In the event that the District determines that any bid is unintelligible, inconsistent, or ambiguous, the District may reject such bid as not being responsive to the Notice Inviting Bids.

6. Examination of Site and Contract Documents. Each bidder shall visit the site of the proposed work and become fully acquainted with the conditions relating to the construction and labor so that the facilities, difficulties, and restrictions attending the execution of the work under the Contract are fully understood. Bidders shall thoroughly examine and be familiar with the drawings and specifications and all others documents and requirements that are attached to and/or contained in the Project Manual or other documents issued to bidders. The failure or omission of any bidder to receive or examine any Contract Documents, form, instrument, addendum, or other document or to visit the site and become acquainted with conditions there existing shall not relieve any bidder from obligations with respect to the bid or to the contract. The submission of a bid shall be taken as prima facie evidence of compliance with this Section. Bidders shall not, at any time after submission of the bid, dispute, complain, or assert that there were any misunderstandings with regard to the nature or amount of work to be done.

7. Withdrawal of Bids. Any bid may be withdrawn, either personally or by written request, at any time prior to the scheduled closing time for receipt of bids. The bid security for bids withdrawn prior to the scheduled closing time for receipt of bids, in accordance with this paragraph, shall be returned upon demand therefor.

No bidder may withdraw any bid for a period of ninety (90) calendar days after the date set for the opening of bids.

8. Agreements, Insurance and Bonds. The Agreement form which the successful bidder, as Contractor, will be required to execute, and the forms and amounts of surety bonds and insurance endorsements which Contractor will be required to be furnished at the time of execution of the Agreement, are included in the bid documents and should be carefully examined by the bidder. The number of executed copies of the Agreement, the Performance Bond, and the Payment Bond required is three (3). Payment and Performance bonds must be executed by an admitted surety insurer as defined in Code of Civil Procedure 995.120.

9. Interpretation of Plans and Documents/Pre-Bid Clarification. If any prospective bidder is in doubt as to the true meaning of any part of the Contract Documents, or finds discrepancies in, or omissions, a written request for an interpretation or correction thereof may be submitted to the District. The bidder submitting the request shall be responsible for its prompt delivery. **Any interpretation or correction of the Contract Documents will only be made by Addendum duly issued, and a copy of such Addendum will be made available for each contractor receiving a set of the Contract Documents.** No person is authorized to make any oral interpretation of any provision in the Contract Documents, nor shall any oral interpretation be binding on the District. If discrepancies on drawings, specifications or elsewhere in the

Contract Documents are not covered by addenda, bidder shall include in their bid methods of construction and materials for the higher quality and complete assembly. Each request for clarification shall be submitted in writing, via email, to only the following persons:

TO: Paul Melloni, Facilities Director
mellonip@luhsd.net

Each transmitted request shall contain the name of the person and/or firm filing the request, address, telephone, and fax number, Specifications and/or Drawing number. Bidder is responsible for the legibility of hand written requests. Pre-bid clarification request shall be filed a minimum of **six (6)** days prior to bid opening. Requests received less than **six (6)** days before bid opening shall not be considered or responded to. A written response to timely pre-bid clarifications requests which materially affects the bidders price will be made by Addendum issued by the District not less than seventy-two (72) hours prior to bid opening.

10. Bidders Interested in More Than One Bid. No person, firm, or corporation shall be allowed to make, or file, or be interested in more than one prime bid for the same work unless alternate bids are specifically called for. A person, firm, or corporation that has submitted a proposal to a bidder, or that has quoted prices of materials to a bidder, is not thereby disqualified from submitting a proposal or quoting prices to other bidders or making a prime proposal.

11. Award of Contract. The Contract will be awarded to the lowest responsive responsible bidder by action of the governing Board. The District reserves the right to reject any or all bids, or to waive any irregularities or informalities in any bids or in the bidding. In the event an award is made to bidder, and such bidder fails or refuses to execute the Contract and provide the required documents within five (5) calendar days after award of the Contract to bidder, the District may award the Contract to the next lowest responsible and responsive bidder or release all bidders. **Each bid must conform and be responsive to the Contract Documents as defined in the General Conditions.**

12. Bid Protest Procedure. Any bidder may file a bid protest. The protest shall be filed in writing with the District's Facilities Director not more than five (5) business days after the date of the bid opening. An e-mail address shall be provided and by filing the protest, protesting bidder consents to receipt of e-mail notices for purposes of the protest and protest related questions and protest appeal, if applicable. The protest shall specify the reasons and facts upon which the protest is based.

a. Resolution of Bid Controversy: Once the bid protest is received, the apparent lowest responsible bidder will be notified of the protest and the evidence presented. If appropriate, the apparent low bidder will be given an opportunity to rebut the evidence and present evidence that the apparent low bidder should be allowed to perform the Work. If deemed appropriate by the District, an informal hearing will be held. District will issue a written decision within fifteen (15) calendar days of receipt of the protest, unless factors beyond the District's reasonable control prevent such resolution. The decision on the bid protest will be copied to all parties involved in the protest.

b. Appeal: If the protesting bidder or the apparent low bidder is not satisfied with the decision, the matter may be appealed to the Chief Business Officer or their designee, within three (3) business days after receipt of the District's written decision on the bid protest. The appeal must be in writing and sent via overnight registered mail with all accompanying information relied upon for the appeal and an e-mail address from which questions and responses may be provided to:

**Liberty Union High School District
Business Department
20 Oak Street, Brentwood, CA 94513**

c. Appeal Review: The Chief Business Officer or their designee shall review the decision on the bid protest from the Director of Facilities and issue a written response to the appeal, or if appropriate, appoint a Hearing Office to conduct a hearing and issue a written decision. The written decision of the Chief Business Officer or the Hearing Officer shall be rendered within fifteen (15) calendar days and shall state the basis for the decision. The decision concerning the appeal will be final and not subject to any further appeals.

d. Reservation of Rights to Proceed with Project Pending Appeal. The District reserves the right to proceed to award the Project and commence construction pending an Appeal. If there is State Funding or a critical completion deadline, the District may choose to shorten the time limits set forth in this Section if written notice is provided to the protesting party. E-mailed notice with a written confirmation sent by First Class Mail shall be sufficient to constitute written notice. If there is no written response to a written notice shortening time, the District may proceed with the award.

e. Finality. Failure to comply with this Bid Protest Procedure shall constitute a waiver of the right to protest and shall constitute a failure to exhaust the protesting bidder's administrative remedies.

13. Alternates. If alternate bids are called for, the Contract may be awarded at the election of the Governing Board to the lowest responsible and responsive bidder using the method and procedures outlined in the Notice Inviting Bids and as specified in the section entitled Alternate/Deductive Bid Alternates.

a. Subcontractor Listing for Alternates. If alternate bids are called for and the bidder intends to use different or additional subcontractors, a separate list of subcontractors must be submitted for each such alternate.

14. Evidence of Responsibility. Upon the request of the District, a bidder whose bid is under consideration for the award of the Contract shall submit promptly to the District satisfactory evidence showing the bidder's financial resources, surety and insurance claims experience, construction experience, completion ability, workload, organization available for the performance of the Contract, and other factors pertinent to a Project of the scope and complexity involved.

15. Listing Subcontractors. Each bidder shall submit with his bid, on the form furnished with the Contract Documents, a list of the names, license numbers, scopes of work, locations of the places of business, contact information, and Department of Industrial Relations ("DIR") registration numbers of each subcontractor who will perform work or labor or render service to the bidder in or about the project, or a subcontractor who under subcontract to the bidder, specially fabricates and installs a portion of the work, in an amount in excess of one-half of 1 percent of the bidder's total bid as required by the Subletting and Subcontracting Fair Practices Act (Public Contract Code section 4100, et seq.) Pursuant to Labor Code section 1725.5, all subcontractors (of any tier) performing work on this Project must be properly registered with DIR.

16. Workers' Compensation. In accordance with the provisions of Labor Code section 3700, the successful bidder as the Contractor shall secure payment of compensation to all employees. The Contractor shall sign and file with the District the following certificate prior to performing the work under this contract: "I am aware of the provisions of Section 3700 of the Labor Code, which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the

provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract.” The form of such certificate is included as a part of the Bid Documents.

17. Contractor’s License. To perform the work required by this notice, the Contractor must possess the Contractor’s License as specified in the Notice Inviting Bids, and the Contractor must maintain the license throughout the duration of the contract. If, at the time of bid, bidder is not licensed to perform the Project in accordance with Division 3, Chapter 9, of the Business and Professions Code for the State of California and the Notice to Contractors calling for bids, such bid will not be considered and the Contractor will forfeit its bid security to the District.

18. Anti-Discrimination. It is the policy of the District that in connection with all work performed under contracts, there be no discrimination against any prospective or active employee engaged in the work because of race, color, ancestry, national origin, religious creed, sex, age, or marital status. The Contractor agrees to comply with applicable federal and California laws, including, but not limited to, the California Fair Employment and Housing Act, beginning with Government Code section 12900 and Labor Code section 1735. In addition, the Contractor agrees to require like compliance by any subcontractors employed on the work by such Contractor.

19. Preference for Materials and Substitutions.

a. One Product Specified. Unless the Plans and Specifications state that no Substitution is permitted, whenever the Contract Documents indicate any specific article, device, equipment, product, material, fixture, patented process, form, method, construction, or any specific name, make, trade name, or catalog number, with or without the words, “or equal,” such specification shall be read as if the language “or equal” is incorporated.

b. Request for Substitution. Bidder may, unless otherwise stated, offer any material, process, article, etc., which is materially equal or better in every respect to that so indicated or specified (“Specified Item”) and will completely accomplish the purpose of the Contract Document. If bidder desires to offer a Substitution for a Specified Item, such bidder must make a request in writing on the District’s Substitution Request Form (“Request Form”) and submit the completed Request Form with the bidder’s bid. The Request Form must be accompanied by evidence as to whether the proposed substitution:

- 1) Is equal in quality, service, and ability to the Specified Item as demonstrated by a side by side comparison of key characteristics and performance criteria (CSI comparison chart);
- 2) Will entail no changes in detail, construction and scheduling of related work;
- 3) Will be acceptable in consideration of the required design and artistic effect;
- 4) Will provide no cost disadvantage to the District;
- 5) Will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts; and
- 6) Will require no change in the Contract Time.

In completing the Request Form, bidder must state with respect to each requested substitution whether bidder will agree to provide the Specified Item in the event that the District denies bidder’s request for substitution of a Specified Item. In the event that bidder does not agree in the Request Form to provide the Specified Item and the District denies the requested Substitution, the bidder’s bid shall be considered non-responsive and the District may award the Contract to the next lowest bidder or in its sole discretion, release all bidders. In the event that bidder has agreed in the Request Form to provide the Specified Item and the District denies bidder’s requested substitution for a Specified Item, bidder shall

execute the Agreement and provide the Specified Item without any additional cost or charge to the District, and if bidder fails to execute the Agreement with the Specified Item(s), bidder's bid bond will be forfeited.

After the bids are opened, the apparent lowest bidder shall provide, within five (5) calendar days of opening such bids, any and all Drawings, Specifications, samples, performance data, calculations, and other information as may be required to assist the Architect and the District in determining whether the proposed substitution is acceptable. The burden of establishing these facts shall be upon the bidder.

After the District's receipt of such evidence by bidder, the District will make its final decision as to whether the bidder's request for Substitution for any Specified Items will be granted. The District shall have sole discretion in deciding as to whether a proposed request for Substitution is equal to or better than a Specified Item. Any request for Substitution which is granted by the District shall be documented and processed through a Change Order. The District may condition its approval of any Substitution upon delivery to the District of an extended warranty or other assurances of adequate performance of the Substitution. Any and all risks of delay due to DSA, or any other governmental agency having jurisdiction shall be on the bidder.

20. Disqualification of Bidders and Proposals. More than one proposal for the same work from any individual, firm, partnership, corporation, or association under the same or different names will not be accepted; and reasonable grounds for believing that any bidder is interested in more than one proposal for the work will be cause for rejecting all proposals in which such bidder is interested and the bidder will forfeit their bid security to the District.

21. Unbalanced or Altered Bids. Proposals in which the prices are obviously unbalanced, and those which are incomplete or show any alteration of form, or contain any additions or conditional or alternate bids that are not called for or otherwise permitted, may be rejected. A proposal on which the signature of the bidder has been omitted may be rejected. If, in the District's sole discretion, it determines any pricing, costs or other information submitted by a bidder may result in an unbalanced bid, the District may deem such bid non-responsive. A bid may be determined by the District to be unbalanced if the bid is based on prices significantly less than cost for some work and prices which are significantly overstated in relation to cost for other work, and if there is a reasonable doubt that the bid will result in the lowest overall cost to the District even though it may be the low evaluated bid, or if it is so unbalanced as to be tantamount to allowing an advanced payment.

22. Employment of Apprentices. The Contractor and all Subcontractors shall comply with the provisions of California Labor Code including, but not limited to sections 1777.5, 1777.6, and 1777.7 concerning the employment of apprentices. The Contractor and any Subcontractor under him shall comply with the requirements of said sections, including applicable portions of all subsequent amendments in the employment of apprentices; however, the Contractor shall have full responsibility for compliance with said Labor Code sections, for all apprenticeable occupations, regardless of any other contractual or employment relationships alleged to exist.

23. Non-Collusion Declaration. Public Contract Code section 7106 requires bidders to submit declaration of non-collusion with their bids. This form is included with the bid documents and must be signed and dated by the bidder under penalty of perjury.

24. Wage Rates, Travel and Subsistence.

a. The Contractor and all subcontractors shall comply with the requirements set forth in Division 2, Part 7, Chapter 1 of the Labor Code. Pursuant to Labor Code section 1770 et seq., the District has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this work is to be performed for each craft, classification or type of worker needed to execute the contract. Copies are available from the District to any interested party on request and are also available from the Director of the Department of Industrial Relations. The Contractor shall obtain copies of the above-referenced prevailing wage sheets and post a copy of such wage rates at appropriate, conspicuous, weatherproof points at the Site.

b. Any worker employed to perform work on the Project and such work is not covered by any classification listed in the published general prevailing wage rate determinations or per diem wages determined by the Director of the Department of Industrial Relations, shall be paid not less than the minimum rate of wages specified therein for the classification which most nearly corresponds to the employment of such person in such classification.

c. Holiday and overtime work, when permitted by law, shall be paid for at the rate set forth in the prevailing wage rate determinations issued by the Director of the Department of Industrial Relations or at least one and one-half (1½) times the specified basic rate of per diem wages, plus employer payments, unless otherwise specified in the Contract Documents or authorized by law.

d. These per diem rates, including holiday and overtime work, and employer payments for health and welfare, pension, vacation, and similar purposes, are on file at the administrative office of the District, located as noted above and are also available from the Director of the Department of Industrial Relations. It is the Contractor's responsibility to ensure the appropriate prevailing rates of per diem wages are paid for each classification. It shall be mandatory upon the Contractor to whom the Contract is awarded, and upon any subcontractor under such Contractor, to pay not less than the said specified rates to all workers employed by them in the execution of the Contract.

25. DIR Registration of Contractor and Subcontractors. A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in the Labor Code, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

This Project is a public works project as defined in Labor Code section 1720. Each contractor bidding on this Project and all subcontractors (of any tier) performing any portion of the Work must comply with the Labor Code sections 1725.5 and 1771.1 and must be properly and currently registered with DIR and qualified to perform public works pursuant to Labor Code section 1725.5 throughout the duration of the Project. For more information and up to date requirements, contractors are recommended to periodically review the DIR's website at www.dir.ca.gov. Contractor shall be solely responsible for ensuring compliance with Labor Code section 1725.5 as well as any requirements implemented by DIR applicable to its services or its subcontractors throughout the term of the Agreement and in no event shall contractor be granted increased payment from the District or any time extensions to complete the Project as a result of contractor's efforts to maintain compliance with the Labor Code or any requirements implemented by the DIR. Failure to comply with these requirements shall be deemed a material breach of this Agreement and grounds for termination for cause. The contractor and all subcontractors shall furnish certified payroll

records as required pursuant Labor Code section 1776 directly to the Labor Commissioner in accordance with Labor Code section 1771.4 on at least on a monthly basis (or more frequently if required by the District or the Labor Commissioner) and in a format prescribed by the Labor Commissioner. The District reserves the right to withhold contract payments if the District is notified, or determines as the result of its own investigation, that contractor is in violation of any of the requirements set forth in Labor Code section 1720 et seq. at no penalty or cost to the District. Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE).

26. No Telephone or Facsimile Availability. No telephone or facsimile machine will be available to bidders on the District premises at any time.

27. Obtaining Bidding Documents. Bidding Documents, may be obtained from:

Liberty Union High School District Website – www.luhdsd.net

Lathrop Construction – email Maria Galligan at maria.galligan@lathropconstruction.com

Bidder shall utilize a complete set of Bidding Documents in preparing a bid. The failure or omission of bidder to receive any Bidding Document, form, instrument, Addendum, or other document shall not relieve bidder from any obligations with respect to the bid and/or Contract.

28. Addenda. Clarification or any other notice of a change in the Bidding Documents will be issued only by the District and only in the form of a written Addendum, transmitted by fax, e-mail, or available for pick up to all who are known by the issuing office to have received a complete set of Bidding Documents. Any other purported Addenda are void and unenforceable.

Bidder is responsible for ascertaining the disposition of all Addenda issued regardless of District notification and to acknowledge all Addenda in the submitted sealed bid prior to the bid opening. Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for inspection. Each Addendum will be numbered, dated, and identified with the Project number. Oral statements or any instructions in any form, other than Addendum as described above, shall be void and unenforceable. Addenda issued by the District and not noted as being acknowledged by bidder as required in the Bid Form, may result in the bid being deemed non-responsive.

29. Debarment. Bidder may also be subject to debarment, in addition to seeking remedies for False Claims under Government Code section 12650 et seq. and Penal Code section 72, the District may debar a Contractor pursuant to Article 15 of the General Conditions if the Board, or the Board may designate a hearing officer who, in his or her discretion, finds the Contractor has done any of the following:

- a. Intentionally or with reckless disregard, violated any term of a contract with the District
- b. Committed an act or omission which reflects on the Contractor's quality, fitness or capacity to perform work for the District;
- c. Committed an act or offense which indicates a lack of business integrity or business honesty; or,
- d. Made or submitted a false claim against the District or any other public entity (See Government Code section 12650, et seq., and Penal Code section 72)

CHECKLIST OF MANDATORY BID FORMS

(For Contractor's use and reference only. Additional documents may be required so bidders should carefully review all Contract Documents and Bid Documents)

- ☐ Designation of Subcontractors
- ☐ Bid Form
- ☐ Contractor's Certificate Regarding Workers Compensation
- ☐ Non-Collusion Declaration
- ☐ Bid Bond (or Bid Guarantee form if Security is other than Bid Bond)
- ☐ Substitution Request Form (If Substitution Request Form is not submitted then NO Substitutions will be allowed after the bids are opened)
- ☐ Acknowledgment of Bidding Practices Regarding Indemnity
- ☐ DVBE Participation Statement
- ☐ Contractor's Certificate Regarding Drug-Free Work Place
- ☐ Contractor's Certificate Regarding Alcoholic Beverage and Tobacco-Free Campus Policy

PROJECT NAME:	Liberty High School Baseball Backstop Replacement Project Backstops, Fencing and Gates Scope of Work		
PROJECT NUMBER:	1923.00		
TO:	Paul Melloni	EMAIL:	Mellonip@LUHSD.net

DATE:			
FROM:		EMAIL:	
DOCUMENT/DIVISION NUMBER:		DRAWING NUMBER:	

REQUESTED CLARIFICATION:	
RESPONSE TO CLARIFICATION:	

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

DESIGNATION OF SUBCONTRACTORS

In compliance with the Subletting and Subcontracting Fair Practices Act (California Public Contract Code section 4100 et seq.) and any amendments thereof, each Bidder shall set forth below: (a) the name, license number, and location of the place of business of each subcontractor who will perform work or labor or render service to the Contractor, who will perform work or labor or work or improvement to be performed under this Contract, or a subcontractor licensed by the State of California who, under subcontract to the Contractor, specially fabricates and installs a portion of the work or improvements according to detailed Drawings contained in the Plans and Specifications in an amount in excess of one-half of one percent of the Contractor's total bid; and (b) the portion and description of the work which will be done by each subcontractor under this Act. The Contractor shall list only one subcontractor for each such portion as is defined by the Contractor in this bid. All subcontractors shall be properly licensed by the California State Licensing Board.

If a Contractor fails to specify a subcontractor, or if a Contractor specifies more than one subcontractor for the same portion of work to be performed under the Contract in excess of one-half of one percent of the Contractor's total bid, the Contractor shall be deemed to have agreed that the Contractor is fully qualified to perform that portion, and that the Contractor alone shall perform that portion.

No Contractor whose bid is accepted shall (a) substitute any subcontractor, (b) permit any subcontractor to be voluntarily assigned or transferred or allow the relevant portion of the work to be performed by anyone other than the original subcontractor listed in the original bid, or (c) sublet or subcontract any portion of the work in excess of one-half of one percent of the Contractor's total bid where the original bid did not designate a subcontractor, except as authorized in the Subletting and Subcontracting Fair Practices Act.

Subletting or subcontracting of any portion of the work in excess of one-half of one percent of the Contractor's total bid where no subcontractor was designated in the original bid shall only be permitted in cases of public emergency or necessity, and then only after a finding, reduced to writing as a public record, of the authority awarding this Contract setting forth the facts constituting the emergency or necessity.

All subcontractors (of any tier) performing any portion of the Work must comply with the Labor Code sections 1725.5 and 1771.1 and must be properly and currently registered with the California Department of Industrial Relations and qualified to perform public works pursuant to Labor Code section 1725.5 throughout the duration of the Project.

NOTE: If alternate bids are called for and bidder intends to use different or additional subcontractors on the alternates, a separate list of subcontractors must be provided for each such Alternate.

DESIGNATION OF SUBCONTRACTORS FORM

Scope of Work	Name of Subcontractor	Location & Place of Business	License Type and Number	DIR Registration Number	<i>E-Mail & Telephone*</i>

Scope of Work	Name of Subcontractor	Location & Place of Business	License Type and Number	DIR Registration Number	E-Mail & Telephone*

* This information must be provided at the time of submission of bid or must be provided within 24 hours after the time set for the opening of bids. Bidders who choose to provide this information within 24 hours after the time set for the opening of bids are solely responsible to ensure the District receives this information in a timely manner. The District is not responsible for any problems or delays associated with emails, faxes, delivery, etc. Absent a verified fax or email receipt date and time by the District, the District's determination of whether the information was received timely shall govern and be determinative. Bidder shall not revise or amend any other information in this form submitted at the time of bid. The information submitted at the time of bid shall govern over any conflicts, discrepancies, ambiguities or other differences in any subsequent Subcontractor Designation Forms submitted by the bidder.

Proper Name of Bidder:

Date: _____

Name: _____

Signature of Bidder _____

Representative: _____

Address: _____

Phone: _____

BID FORM

FOR

**Liberty High School Baseball Backstop Replacement Project
Backstops, Fencing and Gates Scope of Work
850 Second Street, Brentwood, CA 94513**

Project No. 1923.00

Bid No. U2122L

FOR

LIBERTY UNION HIGH SCHOOL DISTRICT

CONTRACTOR
NAME:

ADDRESS:

TELEPHONE:

() _____

FAX:

() _____

EMAIL

TO: Liberty Union High School District, acting by and through its Governing Board, herein called "District".

1. Pursuant to and in compliance with your Notice Inviting Bids and other documents relating thereto, the undersigned bidder, having familiarized himself with the terms of the Contract, the local conditions affecting the performance of the Contract, the cost of the work at the place where the work is to be done, with the Drawings and Specifications, and other Contract Documents, hereby proposes and agrees to perform within the time stipulated, the Contract, including all of its component parts, and everything required to be performed, including its acceptance by the District, and to provide and furnish any and all labor, materials, tools, expendable equipment, and utility and transportation services necessary to perform the Contract and complete all of the Work in a workmanlike manner required in connection with the construction of:

**LIBERTY HIGH SCHOOL BASEBALL BACKSTOP REPLACEMENT PROJECT
BACKSTOPS, FENCING AND GATES SCOPE OF WORK:**

Provide all labor, equipment, and materials to complete the new Backstops, Fencing and Gates scope of work associated with the new Varsity Baseball and JV Baseball Backstop Replacement Project as shown on the plans, in accordance with the General Conditions, Supplementary Conditions, General Requirements and as required by Specification Sections; 03 2000 – Concrete Reinforcing (as it applies to post foundation reinforcing), 03 3000 - Cast-In-Place Concrete (as it applies to post foundation concrete), 05 1100 Structural and Miscellaneous Steel (as it applies to base plates, steel fence posts, welding to the base plate, bolt holes in the base plates, anchor bolts, and high strength grout), 32 3113 – Chain Link Fences and Gates.

Work Includes: All new chain link backstops, fences and gates at the existing Varsity Baseball and JV Baseball diamonds (and fencing at JV Bull Pen area).

- Layout (surveying provided by others).
- Excavation, reinforcing, and concrete for new backstop, fencing, and gate posts. Includes aggregate base at bottom of backstop footing and pier footings per 3/L1.3 and 3/S-0.1.
- All gate hardware identified on the plans and required by the specifications (including but not limited to panic hardware, hinges, hydraulic hinges, latches, etc.).
- Backstop planks, including painting.
- Placement of spoils from backstop and fence post excavations in one pile/location at each baseball diamond near home plate for relocation by others.
- Cleanup and removal from site of all debris generated by the scope of this contract including but not limited to excess chain link materials and concrete placement cleanout debris.
- Work to be completed based on the dates and durations noted in the Overall Project Schedule document.

Work Excludes: Removal of existing Varsity and Junior Varsity backstops, fencing, and gates and related backstop and fencing foundations that are identified to be removed on the plans.

- All backfill and grading related demolition of existing backstops and fencing posts and related to new work.
- All concrete demolition work.
- Removal of existing wall padding at Varsity backstop.
- All concrete flatwork, this does not exclude new concrete at post footings for new backstops, fencing, and gates.
- All asphalt paving.
- Infield fines work.
- Players benches.
- Surveying for placement of new backstops, fencing and gates.
- Painting, except backstop planks.
- Regrading or improvements to baseball diamonds other than backstops, fencing and gate work.
- Irrigation and landscaping.
- Key cores (keying by District).
- Temporary toilet and wash stations (to be provided by others).
- Temporary construction/safety/security fencing (to be provided by others).

BID NO. U2122L

Liberty High School Baseball Backstop Replacement Project

Backstops, Fencing and Gates Scope of Work

in the District described above, all in strict conformance with the drawings and other Contract Documents on file at the Facilities Office of said District for amounts set forth herein.

2. BIDDER ACKNOWLEDGES THE FOLLOWING ADDENDUM:

Number	Number	Number	Number	Number	Number	Number	Number
_____	_____	_____	_____	_____	_____	_____	_____

Acknowledge the inclusion of all addenda issued prior to bid in the blanks provided above. Your failure to do so may render your bid non-responsive.

3. TOTAL CASH PURCHASE PRICE IN WORDS & NUMBERS:

_____ DOLLARS

(\$ _____)

4. ALTERNATE BIDS: The following amounts shall be added to or deducted from the Base Bid at the District's option. Alternates are fully described in the Specifications. **N/A**

5. TIME FOR COMPLETION: The District may give a notice to proceed within ninety (90) days of the award of the bid by the District. Once the Contractor has received the notice to proceed, the Contractor shall complete the work in the time specified in the Agreement. By submitting this bid, Contractor has thoroughly studied this Project and agrees that the Contract Time for this Project is adequate for the timely and proper completion of the Project. Further, Contractor has included in the analysis of the time required for this Project, Rain Days, Governmental Delays, and the requisite time to complete Punch List.

In the event that the District desires to postpone giving the notice to proceed beyond this ninety (90) day period, it is expressly understood that with reasonable notice to the Contractor, giving the notice to proceed may be postponed by the District. It is further expressly understood by the Contractor, that the Contractor shall not be entitled to any claim of additional compensation as a result of the postponement of giving the notice to proceed.

If the Contractor believes that a postponement will cause a hardship to it, the Contractor may terminate the contract with written notice to the District within ten (10) days after receipt by the Contractor of the District's notice of postponement. Should the Contractor terminate the Contract as a result of a notice of postponement, the District shall have the authority to award the Contract to the next lowest responsible bidder, if applicable.

It is understood that the District reserves the right to reject any or all bids and/or waive any irregularities or informalities in this bid or in the bid process. The Contractor understands that it may not withdraw this bid for a period of ninety (90) days after the date set for the opening of bids.

6. Attached is bid security in the amount of not less than ten percent (10%) of the bid:

Bid bond (10% of the Bid), certified check, or cashier's check (circle one)

7. The required List of Designated Subcontractors is attached hereto.

8. The required Non-Collusion Declaration is attached hereto.

9. The Substitution Request Form, if applicable, is attached hereto.

10. It is understood and agreed that if written notice of the acceptance of this bid is mailed, telegraphed, or delivered to the undersigned after the opening of the bid, and within the time this bid is required to remain open, or at any time thereafter before this bid is withdrawn, the undersigned will execute and deliver to the District a Contract in the form attached hereto in accordance with the bid as accepted, and that he or she will also furnish and deliver to the District the Performance Bond and Payment Bond, all within five (5) calendar days after award of Contract, and that the work under the Contract shall be commenced by the undersigned bidder, if awarded the Contract, by the start date provided in the District's Notice to Proceed, and shall be completed by the Contractor in the time specified in the Contract Documents.

11. The names of all persons interested in the foregoing proposal as principals are as follows:

(IMPORTANT NOTICE: If bidder or other interested person is a corporation, state the legal name of such corporation, as well as the names of the president, secretary, treasurer, and manager thereof; if a co-partnership, state the true names of the firm, as well as the names of all individual co-partners comprising the firm; if bidder or other interested person is an individual, state the first and last names in full.)

12. PROTEST PROCEDURES. If there is a bid protest, the grounds shall be submitted as set forth in the Instructions to Bidders.

13. The undersigned bidder shall be licensed and shall provide the following California Contractor's license information:

License Number: _____

License Expiration Date: _____

Name on License: _____

Class of License: _____

DIR Registration Number: _____

If the bidder is a joint venture, each member of the joint venture must include the above information.

14. Time is of the essence regarding this Contract, therefore, in the event the bidder to whom the Contract is awarded fails or refuses to post the required bonds and return executed copies of the Agreement form within five (5) calendar days from the date of receiving the Notice of Award, the District may declare the bidder's bid deposit or bond forfeited as damages.

15. The bidder declares that he/she has carefully examined the location of the proposed Project, that he/she has examined the Contract Documents, including the Plans, General Conditions, Supplemental Conditions, Addenda, and Specifications, all others documents and requirements that are attached to and/or contained in the Project Manual, all other documents issued to bidders and read the accompanying instructions to bidders, and hereby proposes and agrees, if this proposal is accepted, to furnish all materials and do all work required to complete the said work in accordance with the Contract Documents, in the time and manner therein prescribed for the unit cost and lump sum amounts set forth in this Bid Form.

16. DEBARMENT. In addition to seeking remedies for False Claims under Government Code section 12650 et seq. and Penal Code section 72, the District may debar a Contractor pursuant to Article 15 of the General Conditions if the Board, or the Board may designate a hearing officer who, in his or her discretion, finds the Contractor has done any of the following:

- a. Intentionally or with reckless disregard, violated any term of a contract with the District;
- b. Committed an act or omission which reflects on the Contractor's quality, fitness or capacity to perform work for the District;
- c. Committed an act or offense which indicates a lack of business integrity or business honesty; or
- d. Made or submitted a false claim against the District or any other public entity. (See Government Code section 12650, et seq., and Penal Code section 72)

17. DESIGNATION OF SUBCONTRACTORS. In compliance with the Subletting and Subcontracting Fair Practices Act (California Public Contract Code section 4100 et seq.) and any amendments thereof, each bidder shall list subcontractors on the District's form Subcontractor list. This subcontractor list shall be submitted with the bid and is a required form

I agree to receive service of notices at the e-mail address listed below.

I the below-indicated bidder, declare under penalty of perjury that the information provided and representations made in this bid are true and correct.

Proper Name of Company

Name of Bidder Representative

Street Address

City, State, and Zip

()
Phone Number

()
Fax Number

E-Mail

By: _____ Date: _____
Signature of Bidder Representative

NOTE: If bidder is a corporation, the legal name of the corporation shall be set forth above together with the signature of authorized officers or agents and the document shall bear the corporate seal; if bidder is a partnership, the true name of the firm shall be set forth above, together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership; and if bidder is an individual, his signature shall be placed above.

All signatures must be made in permanent blue ink.

CONTRACTOR'S CERTIFICATE REGARDING WORKERS' COMPENSATION
FORM

Labor Code section 3700 in relevant part provides:

Every employer except the State shall secure the payment of compensation in one or more of the following ways:

1. By being insured against liability to pay compensation by one or more insurers duly authorized to write compensation insurance in this State.
2. By securing from the Director of Industrial Relations a certificate of consent to self-insure, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to employees.
3. For any county, city, city and county, municipal corporation, public district, public agency, or any political subdivision of the state, including each member of a pooling arrangement under a joint exercise of powers agreement (but not the state itself), by securing from the Director of Industrial Relations a certificate of consent to self-insure against workers' compensation claims, which certificate may be given upon furnishing proof satisfactory to the director of ability to administer workers' compensation claims properly, and to pay workers' compensation claims that may become due to its employees. On or before March 31, 1979, a political subdivision of the state which, on December 31, 1978, was uninsured for its liability to pay compensation, shall file a properly completed and executed application for a certificate of consent to self-insure against workers' compensation claims. The certificate shall be issued and be subject to the provisions of Section 3702.

I am aware of the provisions of Labor Code section 3700 which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provision before commencing the performance of the work of this Contract.

(Signature)

(Print)

(Date)

In accordance with Article 5 (commencing at section 1860), Chapter 1, Part 7, Division 2 of the Labor Code, the above certificate must be signed and submitted with the Contractor's bid.

NON-COLLUSION DECLARATION

The undersigned declares:

I am the _____ [Title] of _____ [Name of Company], the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____ [Date], at _____ [City], _____ [State].

Signed: _____

Typed Name: _____

BID GUARANTEE FORM

(Use only when not using a Bid Bond)

Accompanying this proposal is a cashier's check payable to the order of the Liberty Union High School District or a certified check payable to the order of the Liberty Union High School District in an amount equal to ten percent (10%) of the base bid and alternates (\$_____).

The proceeds of this check shall become the property of said District, if, this proposal shall be accepted by the District through the District's Governing Board, and the undersigned fails to execute a Contract with and furnish the sureties required by the District within the required time; otherwise, said check is to be returned to the undersigned.

Bidder

Note: Use this form, in lieu of Bid Bond form, when a cashier's check or certified check is accompanying the bid

BID BOND FORM

KNOW ALL MEN BY THESE PRESENT that we, the undersigned, (hereafter called "Principal"), and _____ (hereafter called "Surety"), are hereby held and firmly bound unto the Liberty Union High School District (hereafter called "District") in the sum of _____ (\$_____) for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors, and assigns.

SIGNED this _____ day of _____, 20____.

The condition of the above obligation is such that whereas the Principal has submitted to the District a certain Bid, attached hereto and hereby made a part hereof, to enter into a Contract in _____ writing _____ for _____ the _____ construction _____ of _____.

NOW, THEREFORE,

- a. If said Bid is rejected, or
- b. If said Bid is accepted and the Principal executes and delivers a Contract or the attached Agreement form within five (5) calendar days after acceptance (properly completed in accordance with said Bid), and furnishes bonds for his faithful performance of said Contract and for payment of all persons performing labor or furnishing materials in connection therewith,

Then this obligation shall be void; otherwise, the same shall remain in force and effect.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract, or the call for bids, or the work to be performed thereunder, or the specifications accompanying the same, shall in anyway affect its obligation under this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of said Contract, or the call for bids, or the work, or to the specifications.

In the event suit is brought upon this bond by the District and judgment is recovered, the Surety shall pay all costs incurred by the District in such suit, including without limitation, attorneys' fees to be fixed by the court.

IN WITNESS WHEREOF, Principal and Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, on the day and year first set forth above.

(Corporate Seal)

By _____
Principal's Signature

Typed or Printed Name

Principal's Title

(Corporate Seal)

By _____
Surety's Signature

Typed or Printed Name

Title

(Attached Attorney in Fact Certificate)

Surety's Name

Surety's Address

Surety's Phone Number

IMPORTANT:

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code section 105, and if the work or project is financed, in whole or in part, with federal, grant, or loan funds, it must also appear on the Treasury Department's most current list (Circular 570 as amended).

THIS IS A REQUIRED FORM.

Any claims under this bond may be addressed to:

(Name and Address of Surety)

(Name and Address of agent or representative for service of process in California if different from above)

(Telephone Number of Surety and agent or representative for service of process in California).

REQUEST FOR SUBSTITUTION AT TIME OF BID

Pursuant to Public Contract Code section 3400, bidder submits the following request to Substitute with the bid that is submitted. I understand that if the request to substitute is not an “or equal” or is not accepted by District and I answer “no” I will not provide the specified item, then I will be held non-responsive and my bid will be rejected. With this understanding, I hereby request Substitution of the following articles, devices, equipment, products, materials, fixtures, patented processes, forms, methods, or types of construction:

	Specification Section	Specified Item	Requested Substituted Item	Contractor Agrees to Provide Specified Item if request to Substitute is Denied ¹ (circle one)	District Decision (circle one)
1.				Yes No	Grant Deny
2.				Yes No	Grant Deny
3.				Yes No	Grant Deny
4.				Yes No	Grant Deny
5.				Yes No	Grant Deny
6.				Yes No	Grant Deny
7.				Yes No	Grant Deny
8.				Yes No	Grant Deny
9.				Yes No	Grant Deny
10.				Yes No	Grant Deny
11.				Yes No	Grant Deny
12.				Yes No	Grant Deny

This Request Form must be accompanied by evidence as to whether the proposed Substitution (1) is equal in quality, service, and ability to the Specified Item; (2) will entail no change in detail, construction, and scheduling of related work; (3) will be acceptable in consideration of the required design and artistic

¹ Bidder must state whether bidder will provide the Specified Item in the event the Substitution request is evaluate and denied. If bidder states that bidder will not provide the Specified Item the denial of a request to Substitute shall result in the rejection of the bidder as non-responsive. However, if bidder states that bidder will provide the Specified Item in the event that bidder’s request for Substitution is denied, bidder shall execute the Agreement and provide the Specified Item(s). If bidder refuses to execute the Agreement due to the District’s decision to require the Specified Item(s) at no additional cost, bidder’s Bid Bond shall be forfeited.

effect; (4) will provide no cost disadvantage to the District; (5) will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts; (6) will require no change of the construction schedule or milestones for the Project; and, (7) Contractor agrees to pay for any DSA Fees or other Governmental Plan check costs associated with this Substitution Request. (See General Conditions Section 3.6)

The undersigned states that the following paragraphs are correct:

1. The proposed Substitution does not affect the dimensions shown on the Drawings.
2. The undersigned will pay for changes to the building design, including Architect, engineering, or other consultant design, detailing, DSA plan check or other governmental plan check costs, and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse effect on other trades, the Contract Time, or specified warranty requirements.
4. Maintenance and service parts will be available locally for the proposed substitution.
5. In order for the Architect to properly review the substitution request, within five (5) days following the opening of bids, the Contractor shall provide samples, test criteria, manufacturer information, and any other documents requested by Architect or Architect's engineers or consultants, including the submissions that would ordinarily be required under Article 3.7 for Shop Drawings along with a document which provides a side by side comparison of key characteristics and performance criteria (often known as a CSI side by side comparison chart).
6. If Substitution Request is accepted by the District, Contractor is still required to provide a Submittal for the substituted item pursuant to Article 3.7 and shall provide required Schedule information (including schedule fragnets, if applicable) for the substituted item as required under Article 8.3.2.1. The approval of the Architect, Engineer, or District of the substitution request does not mean that the Contractor is relieved of Contractor's responsibilities for Submittals, Shop Drawings, and schedules under Article 3.7 and 8.3.2 if the Contractor is awarded the Project.

Name of Bidder: _____

By: _____

District: _____

By: _____

ACKNOWLEDGMENT OF BIDDING PRACTICES REGARDING INDEMNITY FORM

TO: Liberty Union High School District

RE: Project Number _____

Construction Contract for _____

Please be advised that with respect to the above-referenced Project the undersigned Contractor on behalf of itself and all subcontractors hereby waives the benefits and protection of Labor Code section 3864, which provides:

“If an action as provided in this chapter is prosecuted by the employee, the employer, or both jointly against the third person results in judgment against such third person, the employer shall have no liability to reimburse or hold such third person harmless on such judgment or settlement in the absence of a written agreement to do so executed prior to the injury.”

This Agreement has been signed by an authorized representative of the contracting party and shall be binding upon its successors and assignees. The undersigned further agrees to promptly notify the District of any changes of ownership of the contracting party or any subcontractor while this Agreement is in force.

Contracting Party

Name of Agent/Title

Liberty High School Backstop Replacement Project
Backstops, Fencing and Gates Scope of Work
Liberty Union High School District

Acknowledgment of Bidding Practices Regarding
Indemnity Form

DISABLED VETERAN BUSINESS ENTERPRISE (DVBE) PARTICIPATION
STATEMENT

Each bidder must complete this form in order to comply with the Liberty Union High School District ("District") policy for participation of disabled veteran business enterprises (School District projects funded in whole or in part by the State of California pursuant to the Leroy F. Greene School Facilities Act of 1998. (Education Code §17070.10, *et seq.*)

Project Name: _____

Bid No.: _____

DSA No.: _____

The undersigned, on behalf of the Contractor named below, certifies that the Contractor has made reasonable efforts to secure participation by DVBE in the Contract to be awarded for the above-referenced Bid No., including participation by DVBE subcontractors and/or material suppliers. **Check only one of the following:**

- ☐ The Contractor was unable after reasonable efforts to secure DVBE participation in the Contract for the above-referenced Project/Bid No. However, the Contractor will use DVBE services if the opportunity arises at any time during construction of the Project. Upon completion of the Project, the Contractor will report to the District the total dollar amount of DVBE participation in any Contract awarded to Contractor, and in any change orders, for the above-referenced Project.
- ☐ The Contractor has secured DVBE participation in the Contract for the above referenced Project/Bid No., and anticipates that such DVBE participation will equal approximately _____ dollars (\$ _____), which represents approximately _____ percent (____%) of the total Contract for such Project. Upon completion of the Project, Contractor will report to the District the actual total dollar amount of DVBE participation in the Contract awarded to Contractor, and in any change orders, for such Project

Company: _____

Name: _____

Title: _____

Signature: _____

Date: _____

CONTRACTOR'S CERTIFICATE REGARDING DRUG-FREE WORKPLACE

This Drug-Free Workplace Certification form is required from all successful bidders pursuant to the requirements mandated by Government Code section 8350 et seq., the Drug-Free Workplace Act of 1990. The Drug-Free Workplace Act of 1990 requires that every person or organization awarded a contract or grant for the procurement of any property or service from any State agency must certify that it will provide a drug-free workplace by performing certain specified acts. In addition, the Act provides that each contract or grant awarded by a State agency may be subject to suspension of payments or termination of the contract or grant, and the Contractor or grantee may be subject to debarment from future contracting, if the contracting agency determines that specified acts have occurred.

Pursuant to Government Code section 8355, every person or organization awarded a contract or grant from a State agency shall certify that it will provide a drug-free workplace by doing all of the following:

1. Publishing a statement, notifying employees that the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited in the person's or organization's workplace, and specifying actions which will be taken against employees for violations of the prohibition.
2. Establishing a drug-free awareness program to inform employees about all of the following:
 - a. The dangers of drug abuse in the workplace;
 - b. The person's or organization's policy of maintaining a drug-free workplace;
 - c. The availability of drug counseling, rehabilitation and employee-assistance programs; and
 - d. The penalties that may be imposed upon employees for drug abuse violations;
3. Requiring that each employee engaged in the performance of the contract or grant be given a copy of the statement required by subdivision (a) and that, as a condition of employment on the contract or grant, the employee agrees to abide by the terms of the statement.

I, the undersigned, agree to fulfill the terms and requirements of Government Code section 8355 listed above and will (a) publish a statement notifying employees concerning the prohibition of controlled substance at the workplace, (b) establish a drug-free awareness program, and (c) require each employee engaged in the performance of the contract be given a copy of the statement required by section 8355(a) and require such employee agree to abide by the terms of that statement.

I also understand that if the Liberty Union High School District determines that I have either (a) made a false certification herein, or (b) violated this certification by failing to carry out the requirements of Section 8355, that the contract awarded herein is subject to termination, suspension of payments, or both. I further understand that, should I violate the terms of the Drug-Free Workplace Act of 1990, I may be subject to debarment in accordance with the requirements of Section 8350 et seq.

I acknowledge that I am aware of the provisions of Government Code section 8350 et seq. and hereby certify that I will adhere to the requirements of the Drug-Free Workplace Act of 1990.

DATE: _____

CONTRACTOR

By: _____
Signature

**CONTRACTOR'S CERTIFICATE REGARDING ALCOHOLIC BEVERAGE AND
TOBACCO-FREE CAMPUS POLICY**

The Contractor agrees that it will abide by and implement the District's Alcoholic Beverage and Tobacco-Free Campus Policy, which prohibits the use of alcoholic beverages and tobacco products, of any kind and at any time, in District-owned or leased buildings, on DISTRICT property and in DISTRICT vehicles. The Contractor shall procure signs stating "ALCOHOLIC BEVERAGE AND TOBACCO USE IS PROHIBITED" and shall ensure that these signs are prominently displayed in all entrances to school property at all times.

DATE: _____

CONTRACTOR

By: _____
Signature

[End of Bid Documents to be Submitted with Bid]

AGREEMENT FORM

THIS AGREEMENT, entered into this ____ day of _____, 20__ in the County of Contra Costa of the State of California, by and between the Liberty Union High School District, hereinafter called the "District", and _____, hereinafter called the "Contractor".

WITNESSETH that the District and the Contractor for the consideration stated herein agree as follows:

ARTICLE 1 - SCOPE OF WORK: The Contractor shall furnish all labor, materials, equipment, tools, and utility and transportation services, and perform and complete all work required in connection with Liberty High School Baseball Backstop Replacement Project, Backstops, Fencing and Gates Scope of Work ("Project") in strict accordance with the Contract Documents enumerated in Article 7 below. The Contractor shall be liable to the District for any damages arising as a result of a failure to comply with that obligation, and the Contractor shall not be excused with respect to any failure to so comply by an act or omission of the Architect, Engineer, Inspector, Division of the State Architect (DSA), or representative of any of them, unless such act or omission actually prevents the Contractor from fully complying with the Contract Documents and the Contractor protests, in accordance with the Contract Documents, that the act or omission is preventing the Contractor from fully complying with the Contract Documents. Such protest shall not be effective unless reduced to writing and filed with the District office within seven (7) days of the date of occurrence of such act or omission preventing the Contractor from fully complying with the Contract Documents.

ARTICLE 2 - TIME OF COMPLETION: The District may give notice to proceed within ninety (90) days of the award of the bid by the District. Once the Contractor has received a notice to proceed, the Contractor shall reach Substantial Completion (See Article 1.1.46) of the Work within ninety two (92) calendar days from receipt of the Notice to Proceed. This shall be called Contract Time. (See Article 8.1.1). It is expressly understood that time is of the essence.

Contractor has thoroughly studied the Project and has satisfied itself that the time period for this Project was adequate for the timely and proper completion of the Project within each milestone and within the Contract time. Further, Contractor has included in the analysis of the time required for this Project, items set forth in General Conditions Article 8.3.2.1, Submittal Schedules, Rain Day Float, and Governmental Delay Float.

In the event that the District desires to postpone giving the notice to proceed beyond this ninety (90) day period, it is expressly understood that with reasonable notice to the Contractor, giving the notice to proceed may be postponed by the District. It is further expressly understood by the Contractor, that the Contractor shall not be entitled to any claim of additional compensation as a result of the District's postponement of giving the notice to proceed.

If the Contractor believes that a postponement will cause hardship to it, the Contractor may terminate the Contract with written notice to the District within ten (10) days after receipt by the Contractor of the District's notice of postponement. It is further understood by the Contractor that in the event that the Contractor terminates the Contract as a result of postponement by the District, the District shall only be obligated to pay the Contractor for the work performed by the Contractor at the time of notification of

postponement. Should the Contractor terminate the Contract as a result of a notice of postponement, the District shall have the authority to award the Contract to the next lowest responsible bidder.

ARTICLE 3 - LIQUIDATED DAMAGES: It being impracticable and infeasible to determine the amount of actual damage, it is agreed that the Contractor will pay the District the sum of one thousand (\$1,000) per calendar day for each and every day of delay beyond the Contract Time set forth in Article 2 of this Agreement (inclusive of Milestones that are critical on the critical path or noted as critical to the District) as liquidated damages and not as a penalty or forfeiture. In the event Liquidated Damages are not paid, the Contractor further agrees that the District may deduct such amount thereof from any money due or that may become due the Contractor under the Contract (See Article 9.6 and 2.2 of the General Conditions).

ARTICLE 4 - CONTRACT PRICE: The District shall pay to the Contractor as full consideration for the faithful performance of the Contract, subject to any additions or deductions as provided in the Contract Documents, the sum of _____ DOLLARS (\$ _____), said sum being the total amount stipulated in the Bid Contractor submitted. Payment shall be made as set forth in the General Conditions.

Should any Change Order result in an increase in the Contract Price, the cost of such Change Order shall be agreed to in advance by the Contractor and the District, subject to the monetary limitations set forth in Public Contract Code section 20118.4. In the event that the Contractor proceeds with a Change in work without an agreement between the District and Contractor regarding the cost of a Change Order, the Contractor waives any Claim of additional compensation for such additional work.

ARTICLE 5 - HOLD HARMLESS AGREEMENT: Contractor shall defend, indemnify and hold harmless District, Architect, Inspector, the State of California and their officers, employees, agents and independent contractors from all liabilities, claims, actions, liens, judgments, demands, damages, losses, costs or expenses of any kind arising from death, personal injury, property damage or other cause based or asserted upon any act, omission, or breach connected with or arising from the progress of Work or performance of service under this Agreement or the Contract Documents. As part of this indemnity, Contractor shall protect and defend, at its own expense, District, Architect, Construction Manager, Inspector, the State of California and their officers, employees, agents and independent contractors from any legal action including attorney's fees or other proceeding based upon such act, omission, breach or as otherwise required by this Article.

Furthermore, Contractor agrees to and does hereby defend, indemnify and hold harmless District, Architect, Construction Manager, Inspector, the State of California and their officers, employees, agents and independent contractors from every claim or demand made, and every liability, loss, damage, expense or attorney's fees of any nature whatsoever, which may be incurred by reason of:

(a) Liability for (1) death or bodily injury to persons; (2) damage or injury to, loss (including theft), or loss of use of, any property; (3) any failure or alleged failure to comply with any provision of law or the Contract Documents; or (4) any other loss, damage or expense, sustained by any person, firm or corporation or in connection with the Work called for in this Agreement or the Contract Documents, except for liability resulting from the sole or active negligence, or the willful misconduct of the District.

(b) Any bodily injury to or death of persons or damage to property caused by any act, omission or breach of Contractor or any person, firm or corporation employed by Contractor, either directly or by independent contract, including all damages or injury to or death of persons, loss (including theft) or loss

of use of any property, sustained by any person, firm or corporation, including the District, arising out of or in any way connected with Work covered by this Agreement or the Contract Documents, whether said injury or damage occurs either on or off District property, but not for any loss, injury, death or damages caused by the sole or active negligence or willful misconduct of the District.

(c) Any dispute between Contractor and Contractor's subcontractors/supplies/ Sureties, including, but not limited to, any failure or alleged failure of the Contractor (or any person hired or employed directly or indirectly by the Contractor) to pay any Subcontractor or Materialman of any tier or any other person employed in connection with the Work and/or filing of any stop notice or mechanic's lien claims.

(d) Any claims, allegations, penalties, assessments, or liabilities to the extent caused by the Contractor's failure or the failure of any Subcontractor of any tier, to fully comply with the DIR registration requirements under Labor Code section 1725.5 at all times during the performance of any Work on the Project and shall reimburse the District for any penalties assessed against the District arising from any failure by the Contractor or any Subcontractor of any tier from complying with Labor Code sections 1725.5 and 1771.1. Nothing in this paragraph, however, shall require the Contractor or any Subcontractor to be liable to the District or indemnify the District for any penalties caused by the District in accordance with Labor Code section 1773.3 (g).

Contractor, at its own expense, cost, and risk, shall defend any and all claims, actions, suits, or other proceedings that may be brought or instituted against the District, its officers, agents or employees, on account of or founded upon any cause, damage, or injury identified herein Article 5 and shall pay or satisfy any judgment that may be rendered against the District, its officers, agents or employees in any action, suit or other proceedings as a result thereof.

The Contractor's and Subcontractors' obligation to defend, indemnify and hold harmless the Owner, Architect, Inspector, the State of California and their officers, employees, agents and independent contractors hereunder shall include, without limitation, any and all claims, damages, and costs for the following: (1) any damages or injury to or death of any person, and damage or injury to, loss (including theft), or loss of use of, any property; (2) breach of any warranty, express or implied; (3) failure of the Contractor or Subcontractors to comply with any applicable governmental law, rule, regulation, or other requirement; (4) products installed in or used in connection with the Work; and (5) any claims of violation of the Americans with Disabilities Act ("ADA").

ARTICLE 6 - PROVISIONS REQUIRED BY LAW: Each and every provision of law and clause required to be inserted in this Contract shall be deemed to be inserted herein, and this Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted or is not inserted correctly, then upon application of either party the Contract shall forthwith be physically amended to make such insertion or correction.

ARTICLE 7 - COMPONENT PARTS OF THE CONTRACT: The Contract entered into by this Agreement consists of the following Contract Documents, all of which are component parts of the Contract as if herein set out in full or attached hereto.

Notice Inviting Bids
Instructions to Bidders
Designation of Subcontractors
Non-Collusion Declaration

Bid Guarantee Form
 Bid Bond
 Bid Form
 Contractor's Certificate Regarding Worker's Compensation
 Acknowledgment of Bidding Practices Regarding Indemnity
 DVBE Participation Statement and Close-Out Forms
 Agreement Form
 Payment Bond
 Performance Bond
 Guarantee
 Escrow Agreement for Security Deposit In Lieu of Retention
 Workers' Compensation/Employers Liability Endorsement
 General Liability Endorsement
 Automobile Liability Endorsement
 Contractor's Certificate Regarding Drug-Free Workplace
 Contractor's Certificate Regarding Alcohol and Tobacco
 Contractor's Certificate Regarding Background Checks
 General Conditions
 Supplementary and Special Conditions
 Specifications
 All Addenda as Issued
 Drawings/Plans
 Substitution Request Form
 Requirements, Reports and/or Documents in the Project Manual or Other Documents Issued to Bidders

All of the above named Contract Documents are intended to be complementary. Work required by one of the above named Contract Documents and not by others shall be done as if required by all.

ARTICLE 8 - PREVAILING WAGES: Wage rates for this Project shall be in accordance with the general prevailing rate of holiday and overtime work in the locality in which the work is to be performed for each craft, classification, or type of work needed to execute the Contract as determined by the Director of the Department of Industrial Relations. Copies of schedules of rates so determined by the Director of the Department of Industrial Relations are on file at the administrative office of the District and are also available from the Director of the Department of Industrial Relations. Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE).

The following are hereby referenced and made a part of this Agreement and Contractor stipulates to the provisions contained therein.

1. Chapter 1 of Part 7 of Division 2 of the Labor Code (Section 1720 et seq.)
2. California Code of Regulations, Title 8, Chapter 8, Subchapters 3 through 6 (Section 16000 et seq.)

ARTICLE 9 - RECORD AUDIT: In accordance with Government Code section 8546.7 (and Davis Bacon, if applicable) and Article 13.11 of the General Conditions, records of both the District and

the Contractor shall be subject to examination and audit for a period of five (5) years after a Final Retention Payment or the Recording of a Notice of Completion, whichever occurs first.

ARTICLE 10 - CONTRACTOR'S LICENSE: The Contractor must possess throughout the Project a Class C-13 Contractor's License, issued by the State of California, which must be current and in good standing.

IN WITNESS WHEREOF, this Agreement has been duly executed by the above named parties,
on the day and year first above written.

LIBERTY UNION HIGH SCHOOL DISTRICT: CONTRACTOR:

Type or Printed Name

Typed or Printed Name

Title (Authorized Officers or Agents)

Title

Signature

Signature

Dated: _____

Dated: _____

(CORPORATE SEAL)

PAYMENT BOND
(CALIFORNIA PUBLIC WORK)

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, the LIBERTY UNION HIGH SCHOOL DISTRICT (sometimes referred to hereinafter as "Obligee") has awarded to _____ (hereinafter designated as the "Principal" or "Contractor"), an agreement for the work described as follows: _____ (hereinafter referred to as the "Public Work"); and

WHEREAS, said Contractor is required to furnish a bond in connection with said Contract, and pursuant to California Civil Code section 9550;

NOW, THEREFORE, We, _____, the undersigned Contractor, as Principal; and _____, a corporation organized and existing under the laws of the State of _____, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the LIBERTY UNION HIGH SCHOOL DISTRICT and to any and all persons, companies, or corporations entitled by law to file stop notices under California Civil Code section 9100, or any person, company, or corporation entitled to make a claim on this bond, in the sum of _____ Dollars (\$ _____), such sum being not less than one hundred percent (100%) of the total amount payable by said Obligee under the terms of said Contract, for which payment will and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal, its heirs, executors, administrators, successors, or assigns, or subcontractor, shall fail to pay any person or persons named in Civil Code section 9100; or fail to pay for any materials, provisions, or other supplies, used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code, with respect to work or labor thereon of any kind; or shall fail to deduct, withhold, and pay over to the Employment Development Department, any amounts required to be deducted, withheld, and paid over by Unemployment Insurance Code section 13020 with respect to work and labor thereon of any kind, then said Surety will pay for the same, in an amount not exceeding the amount herein above set forth, and in the event suit is brought upon this bond, also will pay such reasonable attorneys' fees as shall be fixed by the court, awarded and taxed as provided in California Civil Code section 9550 et seq.

This bond shall inure to the benefit of any person named in Civil Code section 9100 giving such person or his/her assigns a right of action in any suit brought upon this bond.

It is further stipulated and agreed that the Surety of this bond shall not be exonerated or released from the obligation of the bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, or specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described; or pertaining or relating to the furnishing of labor, materials, or equipment therefor; nor by any change or modification of any terms of payment or extension of time for payment pertaining or relating to any scheme or work of improvement herein above described;

nor by any rescission or attempted rescission of the contract, agreement or bond; nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond; nor by any fraud practiced by any person other than the claimant seeking to recover on the bond; and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given; and under no circumstances shall the Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the Obligee and the Contractor or on the part of any obligee named in such bond; that the sole condition of recovery shall be that the claimant is a person described in California Civil Code section 9100, and who has not been paid the full amount of his or her claim; and that the Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned.

IN WITNESS WHEREOF this instrument has been duly executed by the Principal and Surety above named, on the _____ day of _____, 20__.

PRINCIPAL/CONTRACTOR:

By: _____

SURETY:

By: _____

Attorney-in-Fact

IMPORTANT: THIS IS A REQUIRED FORM.

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code section 105, and if the work or project is financed, in whole or in part, with federal, grant or loan funds, Surety's name must also appear on the Treasury Department's most current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

(Name and Address of Surety)

(Name and Address of agent or representative for
service for service of process in California)

Telephone: _____

Telephone: _____

A notary public or other office completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
) ss.
COUNTY OF)

On _____, before me, _____,
personally appeared _____, who proved on the basis of satisfactory
evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged
to me that he/she/they executed the same in his/her/their authorized capacity(ies) as the Attorney-in-Fact
of _____ (Surety) and acknowledged to me that by his/her/their signature(s)
on the instrument the person(s), or the entity upon behalf of which the person(s) executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing
paragraph is true and correct.

WITNESS my hand and official seal.

Notary Public in and for said State

(SEAL)

Commission expires: _____

NOTE: A copy of the power-of-attorney to local representatives of the bonding company must be
attached hereto.

PERFORMANCE BOND
(CALIFORNIA PUBLIC WORK)

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, the LIBERTY UNION HIGH SCHOOL DISTRICT (sometimes referred to hereinafter as "Obligee") has awarded to _____ (hereinafter designated as the "Principal" or "Contractor"), an agreement for the work described as follows: _____ (hereinafter referred to as the "Public Work"); and

WHEREAS, the work to be performed by the Contractor is more particularly set forth in that certain contract for said Public Work dated _____, (hereinafter referred to as the "Contract"), which Contract is incorporated herein by this reference; and

WHEREAS, the Contractor is required by said Contract to perform the terms thereof and to provide a bond both for the performance and guaranty thereof.

NOW, THEREFORE, we, _____, the undersigned Contractor, as Principal, and _____, a corporation organized and existing under the laws of the State of _____, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the LIBERTY UNION HIGH SCHOOL DISTRICT in the sum of _____ Dollars (\$ _____), said sum being not less than one hundred percent (100%) of the total amount payable by said Obligee under the terms of said Contract, for which amount well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT, if the bounded Contractor, his or her heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and agreements in said Contract and any alteration thereof made as therein provided, on his or her part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill guarantees of all materials and workmanship; and indemnify, defend and save harmless the Obligee, its officers and agents, as stipulated in said Contract, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exoneration or pro tanto) by any change, extension of time, alteration in or addition to the terms of the contract or to the work to be performed there under or the specifications accompanying the same, nor by any change or modification to any terms of payment or extension of time for any payment pertaining or relating to any scheme of work of improvement under the contract. Surety also stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exoneration or pro tanto) by any overpayment or underpayment by the Obligee that is based upon estimates approved by the Architect. The Surety stipulates and agrees that none of the aforementioned changes, modifications, alterations, additions, extension of time or actions shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, modifications,

alterations, additions or extension of time to the terms of the contract, or to the work, or the specifications as well notice of any other actions that result in the foregoing.

Whenever Principal shall be, and is declared by the Obligee to be, in default under the Contract, the Surety shall promptly either remedy the default, or shall promptly take over and complete the Contract through its agents or independent contractors, subject to acceptance and approval of such agents or independent contractors by Obligee as hereinafter set forth, in accordance with its terms and conditions and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of Liquidated Damages; or, at Obligee's sole discretion and election, Surety shall obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Obligee of the lowest responsible bidder, arrange for a contract between such bidder and the Obligee and make available as Work progresses (even though there should be a default or succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the "balance of the Contract Price" (as hereinafter defined), and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of Liquidated Damages. The term "balance of the Contract Price," as used in this paragraph, shall mean the total amount payable to Principal by the Obligee under the Contract and any modifications thereto, less the amount previously paid by the Obligee to the Principal, less any withholdings by the Obligee allowed under the Contract. Obligee shall not be required or obligated to accept a tender of a completion contractor from the Surety.

Surety expressly agrees that the Obligee may reject any agent or contractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Principal. Unless otherwise agreed by Obligee, in its sole discretion, Surety shall not utilize Principal in completing the Contract nor shall Surety accept a bid from Principal for completion of the work in the event of default by the Principal.

No final settlement between the Obligee and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

The Surety shall remain responsible and liable for all patent and latent defects that arise out of or relate to the Contractor's failure and/or inability to properly complete the Public Work as required by the Contract and the Contract Documents. The obligation of the Surety hereunder shall continue so long as any obligation of the Contractor remains.

Contractor and Surety agree that if the Obligee is required to engage the services of an attorney in connection with enforcement of the bond, Contractor and Surety shall pay Obligee's reasonable attorneys' fees incurred, with or without suit, in addition to the above sum.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including reasonable attorneys' fees to be fixed by the Court.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this ____ day of _____, 20 ____.

PRINCIPAL/CONTRACTOR:

By: _____

SURETY:

By: _____

Attorney-in-Fact

The rate of premium on this bond is _____ per thousand.

The total amount of premium charged: \$ _____ (This must be filled in by a corporate surety).

IMPORTANT: THIS IS A REQUIRED FORM.

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code section 105, and if the work or project is financed, in whole or in part, with federal, grant or loan funds, Surety's name must also appear on the Treasury Department's most current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

(Name and Address of Surety)

(Name and Address of agent or representative for service for service of process in California)

Telephone: _____

Telephone: _____

GUARANTEE

Guarantee for _____ . We hereby guarantee that the _____, which we have installed in _____ has been done in accordance with the Contract Documents, including without limitation, the drawings and specifications, and that the work as installed will fulfill the requirements included in the bid documents. The undersigned and its surety agrees to repair or replace any or all such work, together with any other adjacent work, which may be displaced in connection with such replacement, that may prove to be defective in workmanship or material within a period of One (____1____) year from the date of the Notice of Completion of the above-mentioned structure by the Liberty Union High School District, ordinary wear and tear and unusual abuse or neglect excepted.

In the event the undersigned or its surety fails to comply with the above-mentioned conditions within a reasonable period of time, as determined by the District, but not later than ten (10) days after being notified in writing by the District or within forty eight (48) hours in the case of an emergency or urgent matter, the undersigned and its surety authorizes the District to proceed to have said defects repaired and made good at the expense of the undersigned and its surety, who will pay the costs and charges therefor upon demand. The undersigned and its surety shall be jointly and severally liable for any costs arising from the District's enforcement of this Guarantee.

Countersigned

(Proper Name)

(Proper Name)

By: _____

By: _____

(Signature of Subcontractor or Contractor)

(Signature of General Contractor if for Subcontractor)

Representatives to be contacted for service:

Name: _____

Address: _____

Phone Number: _____

ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

This Escrow Agreement is made and entered into by and between the Liberty Union High School District Oak Street, Brentwood, CA 94513 hereinafter called "Owner", and _____ whose address is _____, hereinafter called "Contractor", and _____ whose address is _____, hereinafter called "Escrow Agent".

For the consideration hereinafter set forth, the Owner, Contractor and Escrow Agent agree as follows:

1. Pursuant to Section 22300 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for Retention earnings required to be withheld by Owner pursuant to the Construction Contract entered into between the Owner and Contractor for _____ in the amount of _____ dated _____ (hereinafter referred to as the "Contract"). Alternatively, on written request of the Contractor, the Owner shall make payments of the Retention earnings directly to the escrow agent. When Contractor deposits the securities as a substitute for Contract earnings, the Escrow Agent shall notify the Owner within ten (10) days of deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as Retention under the terms of the Contract between the Owner and Contractor. Securities shall be held in the name of the Owner, and shall designate the Contractor as beneficial owner.
2. The Owner shall make progress payments to the Contractor for such funds which otherwise would be withheld from progress payments pursuant to the Contract provisions, provided that the Escrow Agent holds securities in the form and amount specified above.
3. When the Owner makes payments of Retentions earned directly to the Escrow Agent, the Escrow Agent shall hold them for the benefit of the Contractor until such time as the escrow created under this Contract is terminated. The Contractor may direct the investment of the payments into securities. All terms and conditions of this Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when the Owner pays the Escrow Agent directly.
4. Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account and all expenses of the Owner. These expenses and payment terms shall be determined by the Owner, Contractor, and Escrow Agent.
5. The interest earned on the securities or the money market accounts held in escrow and all interest earned on that interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to the Owner.
6. Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from the Owner to the Escrow Agent that Owner consents to the withdrawal of the amount sought to be withdrawn by Contractor.
7. The Owner shall have a right to draw upon the securities in the event of default by the Contractor. Upon seven (7) days' written notice to the Escrow Agent from the Owner of the notice of default under Article 2.2, Article 9.6 or Article 14, the Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by the Owner.

8. Upon receipt of written notification from the Owner certifying that the Contract is final and complete, and that the Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payment of fees and charges.

9. Escrow Agent shall rely on the written notifications from the Owner and the Contractor pursuant to Sections (5) to (8), inclusive, of this Agreement and the Owner and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of the securities and interest as set forth above.

10. The names of the persons who are authorized to give written notice or to receive written notice on behalf of the Owner and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of Owner:

Title

Name

Signature

Address

On behalf of Contractor:

Title

Name

Signature

Address

On behalf of Agent:

Title

Name

Signature

Address

At the time the Escrow Account is opened, the Owner and Contractor shall deliver to the Escrow Agent a fully executed counterpart of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement by their proper officers on the date set forth above.

OWNER

CONTRACTOR

Title

Title

Name

Name

Signature

Signature

INSURANCE DOCUMENTS & ENDORSEMENTS

The following insurance endorsements and documents must be provided to the Liberty Union High School District within five (5) calendar days after receipt of notification of award. If the apparent low bidder fails to provide the documents required below, the District may award the Contract to the next lowest responsible and responsive bidder or release all bidders, and the bidder's bid security will be forfeited. All insurance provided by the bidder shall fully comply with the requirements set forth in Article 11 of the General Conditions.

1. **General Liability Insurance:** Certificate of Insurance with all specific insurance coverages set forth in Article 11 of the General Conditions, proper Project description, designation of the District as the Certificate Holder, a statement that the insurance provided is primary to any insurance obtained by the District and minimum of 30 days' cancellation notice. Bidder shall also provide required additional insured endorsement(s) designating all parties required in Article 11 of the General Conditions. The additional insured endorsement shall be an ISO CG 20 10 (04/13), or an ISO CG 20 38 (04/13), or their equivalent as determined by the District in its sole discretion.

Incidents and claims are to be reported to the insurer at:

Attn: _____
(Title) _____ (Department) _____

(Company) _____

(Street Address) _____

(City) _____ (State) _____ (Zip Code) _____
(_____) _____
(Telephone Number)

2. **Workers' Compensation/ Employer's Liability Insurance:** Certificate of Workers' Compensation Insurance meeting the coverages and requirements set forth in Article 11 of the General Conditions, minimum of 30 days' cancellation notice, proper Project description, waiver of subrogation and any applicable endorsements.

3. Automobile Liability Insurance: Certificate of Automobile Insurance meeting the coverages and requirements set forth in Article 11 of the General Conditions, minimum 30 days' cancellation notice, any applicable endorsements and a statement that the insurance provided is primary to any insurance obtained by the District.

Incidents and claims are to be reported to the insurer at:

Attn: _____
(Title) (Department)

(Company)

(Street Address)

(City) (State) (Zip Code)
() _____
(Telephone Number)

DATE: _____ CONTRACTOR _____

By: _____
Signature

**DISABLED VETERAN BUSINESS ENTERPRISE (DVBE) CONTRACTOR CLOSE-
OUT STATEMENT**

The Contractor shall complete this form, as a condition to Final Payment, for purposes of reporting participation by Disabled Veteran Business Enterprises (DVBE) in the Contract for the Project/Bid No. specified below.

Project Name: _____

Bid No.: _____

DSA No.: _____

Name	Address/Phone	Category of Work*	\$ Amount of Contract

* Categories of work include: (1) construction services (specify services that DVBE will provide); (2) architecture and engineering services; (3) procurement of materials, supplies and equipment; and (4) information technology.

The undersigned, on behalf of the Contractor, certifies that DVBE participation on the Contract for Bid No. _____ equaled _____ dollars (\$ _____), which represents approximately _____ percent (____%) of the total Contract price including change orders for the Project.

Company: _____

Name: _____

Title: _____

Signature: _____

Date: _____

CONTRACTOR CERTIFICATION REGARDING BACKGROUND CHECKS

(Modernization Projects)

_____ certifies that it has performed one of the following:
[Name of contractor/consultant]

- ☐ Pursuant to Education Code section 45125.1, Contractor has conducted criminal background checks, through the California Department of Justice, of all employees providing services to the _____ District, pursuant to the contract/purchase order dated _____, and that none have been convicted of serious or violent felonies, as specified in Penal Code sections 1192.7(c) and 667.5(c), respectively.

As further required by Education Code section 45125.1, attached hereto as Attachment "A" is a list of the names of the employees of the undersigned who may come in contact with pupils.

OR

- ☐ Pursuant to Education Code section 45125.2, Contractor will ensure the safety of pupils by one or more of the following methods:
- ☐ 1. The installation of a physical barrier at the worksite to limit contact with pupils.
 - ☐ 2. Continual supervision and monitoring of all employees of the entity by an employee of the entity whom the Department of Justice has ascertained has not been convicted of a violent or serious felony.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Date _____, 20__

[Name of Contractor/Consultant]

By its: _____

ATTACHMENT A:

CONTRACTOR CERTIFICATION REGARDING BACKGROUND CHECKS

(INSERT NAMES OF EMPLOYEES WHO MAY COME IN CONTACT WITH PUPILS)

GENERAL CONDITIONS

ARTICLE 1 DEFINITIONS

1.1 BASIC DEFINITIONS

NOTE: The following shall not be construed as a comprehensive list of all definitions in the Contract Documents and there may be other definitions set forth in the Contract Documents. Additionally, any references to any DSA forms, documents or requirements shall be construed to incorporate any updates, supplements, or additions. The Contractor shall be required to meet the latest DSA requirements applicable to the Project.

1.1.1 Action of the Governing Board is a vote of a majority of the District's Governing Board.

1.1.2 Approval means written authorization through action of the Governing Board. The Governing board has delegated to the Chief Business Officer the authority to approve certain modifications, Change Orders or Immediate Change Directives (Subject to the limits of the Delegation of Authority provided by the Board). In no case shall the Assistant Superintendent have authority to approve total Change Orders or Modifications to the Project exceeding 10% of the Contract Sum.

1.1.3 Architect means the architect, engineer, or other design professional engaged by the District to design and perform general observation of the work of construction and interpret the Drawings and Specifications for the Project. (See ARTICLE 4)

1.1.4 As-Builts are a set of Plans and Specifications maintained by the Contractor clearly showing all changes, revisions, substitutions, field changes, final locations, and other significant features of the Project. The As-Builts shall be maintained continuously throughout the Work for the Project and is both a prerequisite to the issuance of Payment Application and a requirement for Contract Close-Out. (See Article 3.17)

1.1.5 Beneficial Occupancy is the point in time when a building or buildings are fit for occupancy is fit for occupancy and its intended use. Basic requirements are the building is safe, at or near Substantial Completion, and all fire/ life safety items are approved and operational. The fact that a building is occupied does not mean that the building is ready for Beneficial Occupancy if there are elements that are unsafe or if fire/ life safety items are not approved and operational. Taking occupancy on a structure that is under a fire watch is not considered beneficial occupancy. Further, taking of Beneficial Occupancy is not a point in time when retention is due unless the entire school has obtained a Certificate of Substantial Completion that meets the definition of 1.1.46.

1.1.6 Claims. A Claim is a request for payment, supported by back-up documentation which includes, invoices time sheets, or other documents substantiating legitimacy or entitlement that is submitted during the Project or immediately following the Project made prior to the Final Retention Payment Application and prior to Final Completion of the Project. A "Claim" means a separate demand by the Contractor for (1) time extension, (2) payment of money or damages arising from Work done by or on behalf of the Contractor pursuant to the CONTRACT and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or (3) and amount the payment of which is disputed by the District. (See Article 4.6)

GENERAL CONDITIONS

1.1.7 Change Order (CO). A CO is a written instrument prepared by the Architect and signed by the District (as authorized by the District's Governing Board), the Contractor, and the Architect, stating their agreement upon (1) A description of a change in the Work, (2) The amount of the adjustment in the Contract Sum, if any; and (3) The extent of the adjustment in the Contract Time, if any. (See Article 7.2)

1.1.8 Change Order Request (COR). A COR is a written request supported by backup documentation prepared by the Contractor requesting that the District and the Architect issue a CO based upon a proposed change, or a change that results in an adjustment in cost, time or both, or arising from an RFP, CCD or ICD. (See Article 7.6)

1.1.9 Close-Out means the process for Final Completion of the Project, but also includes the requirements for the DSA Certification that the Project is Complete (See DSA Certification Guide). (See Article 9.9)

1.1.10 Construction Change Document (CCD). A Construction Change Document is a DSA term that is utilized to address changes to the DSA approved Plans and Specifications. There are two types of Construction Change Documents. (1) DSA approved CCD Category A for work affecting structural, access or fire/ life safety of the Project which will require a DSA approval; and, (2) CCD Category B for work NOT affecting structural safety, access compliance or fire/ life safety that will not require a DSA approval (except to confirm that no approval is required). Both CCD Category A and Category B shall be set forth in DSA Form 140 and submitted to DSA as required. (See Article 7.3)

1.1.11 Complete/ Completion/ Final Completion means that all Work in the Contract Documents is finished, the requirements of the Contract Documents have been met, the Project has been Closed Out, and all Work has ceased on the Project. This may also be referred to as Final Completion. In most cases, the recording of a Notice of Completion shall represent Completion of the Project. Beneficial Occupancy does not mean the Work is Complete.

1.1.12 Completion Date is the date when all Work for the Project shall be Substantially Complete and is the date assigned at the end of the Contract Time for the Project. (See Article 1.1.46)

1.1.13 Construction Manager. The Construction Manager is a consultant to the District contracted to assist in Project planning, management and construction of the Project. If there is a Construction Manager, they may assist in various aspects of the Project including, but not limited to Monitoring the progress of the construction, reviewing and monitoring the schedule, progress of work, monitoring pay requests, facilitating communications, advising the District and its Board of Education on various aspects of the construction process, monitoring the RFI, COR, CCD, ICD, RFP, Claims, Disputes and other Project related processes.

1.1.14 Contract or Agreement when the terms are used in these General Conditions shall be references to the Contract Documents as defined herein.

1.1.15 Contract Documents (sometimes referred to as Construction Documents) consist of the Agreement between District and Contractor (hereinafter the Agreement or Contract), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to bid, instructions to bidders, notice to bidders, and the requirements contained in the Bid Documents, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is a written amendment to the Contract signed by parties, a Change Order, a Construction Change Document, or a written order for a minor change in the Work issued by the Architect. The Contract

GENERAL CONDITIONS

Documents collectively form the Contract. The Contract represents the entire and integrated Agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a written Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind between the Architect and Contractor, between the District and any Subcontractor or Sub-subcontractor, or between any persons or entities other than the District and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

1.1.16 Contract Time is the time period specified in the Contract Documents in which the Project shall be completed. This is sometimes referred to a Contract Duration, or "time in which the Contractor has to complete the Project". (See Article 8.1.1)

1.1.17 Contractor, District, and Architect are those mentioned as such in the Agreement. They are treated throughout the Contract Documents as if they are of singular number and neuter gender. Any reference to "Owner" shall mean "District" or Liberty Union High School District.

1.1.18 Cure is the act of remedying a material failure to perform under the terms of the Contract Documents during the time provided to correct Contractor's Default. Specific time periods are provided to Cure and Correct a Contractor Default under Article 14 and for a Partial Default under Article 2.2 as well as elsewhere in the Contract Documents.

1.1.19 Days mean calendar days unless otherwise specifically stated.

1.1.20 Default is a material breach of Contract. A Termination for Cause under Article 14 is a declaration of Default of the Contract and shall act as a demand upon the Surety to perform under the terms of the Performance Bond. Partial Defaults may also be tendered to the Surety at District's discretion. (See Article 2.2)

1.1.21 Dispute. A dispute is a disagreement on terms or conditions of the Project where the Contractor's opinion of the Project, Payment, Change Order or Request for Proposal differs from that of the District or Architect. A dispute only rises to the level of a claim once the dispute is assembled with back-up documentation and presented for evaluation. (See Article 4.6)

1.1.22 District Representative is the person designated by the District to represent the District during the Construction for the Project. This District Representative shall have the delegated authority as further defined in Article 1.1.2. This District Representative may be an employee of the District who may have the delegated authority as set forth in Article 1.1.3, and may also include Construction Managers. In some cases, the District and its Board may be assisted by a Construction Manager. When a Construction Manager is assisting the District, the Contractor, Architect, and Inspector shall have a primary contact with the District's Construction Manager who will advise the District.

1.1.23 Drawings/Plans are graphic and pictorial portions of the Contract Documents prepared for the Project and approved changes thereto, wherever located and whenever issued, showing the design, location, and scope of the Work, generally including Plans, elevations, sections, details, schedules, and diagrams as drawn or approved by the Architect. Sometimes Drawings will also be included in Addenda, Change Orders, and Specifications.

GENERAL CONDITIONS

1.1.24 DSA is the Division of State Architect. DSA is the agency that provides design and construction oversight for K-12 Schools, Community Colleges, and State Funded Charter School Projects. DSA is the responsible agency for this Project and Contractor has submitted a bid for the Project since Contractor is familiar with Contractor's responsibilities under the DSA requirements more thoroughly set forth at Title 24 of the California Code of Regulations. Contractor agrees to abide by the jurisdiction of DSA and shall construct the Project to conform with the approved Plans, Specifications, Addenda, and Change Orders (inclusive of approved CCD's and ICD's issued by the District pending CCD approval). See DSA website.

1.1.25 Emergency shall be defined as a sudden, unexpected occurrence, involving a clear and imminent threat to the continuation of school classes, a critical path delay that will result in not being able to occupy the school when students arrive to use the facility, danger from the facility or from outside the facility, Act of God, or other action which requires immediate action to prevent or mitigate loss of, or damage to, life, health, property, or essential public services.

1.1.26 Float the total number of days an activity may be extended or delayed without delaying the Completion Date shown in the schedule. Float will fall into three categories: (1) Rain Days; (2) Governmental Delays; and, (3) Project Float. (See Article 8.1.4)

1.1.27 Immediate Change Directive. (ICD) A written order prepared by the Architect and signed by the District and the Architect, directing a change in the Work where the Work must proceed immediately and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. (See Article 7.3)

1.1.28 Inspector of Record (IOR)/ Project Inspector (PI) is the individual retained by the District in accordance with Title 24 of the California Code of Regulations and who will be assigned to the Project

1.1.29 Notice of Non-Compliance (DSA Form 154) is a document issued by the Inspector if there is a deviation from the DSA approved Plans, Specifications, and Change Orders. (See Article 7.1.2)

1.1.30 Payment Application or Certificate of Payment is the Contractor's certified representation of the actual level of Work performed on the Project. Payment Applications are sometimes also called "Certificate of Payment", "Request for Payment", "Payment Application", or similar terms, and shall follow the Schedule of Values that are approved by the Architect, Inspector and District. (See Article 9.3)

1.1.31 Project is the complete construction of the Work performed in accordance with the Contract Documents.

1.1.32 Project Manual is the volume assembled for the Work which may include, without limitation, the bidding requirements, sample forms, Conditions of the Contract, and Specifications.

1.1.33 Provide shall include "provide complete in place," that is "furnish and install complete."

1.1.34 Punch List/ Punch Item/ Incomplete Punch Item is a list of minor repair items, prepared after the issuance of a Certificate of Substantial Completion, by the Inspector and Architect of Work required in order to complete the Contract Documents and ensure compliance with the DSA Approved

GENERAL CONDITIONS

Plans so the Project may be Closed Out. Issuance of the Retention Payment is dependent of the proper completion of the Punch List. (See Article 9.9)

1.1.34.1 *Contractor's List of Punch Items* is a list of minor repair items the Contractor submits when the Contractor considers the Work Substantially Complete. Submission of this List of Incomplete Punch Items is the Contractor's representation that the Project is Substantially Complete. (See Article 9.9.1.1)

1.1.35 Request for Information (RFI) is a written request prepared by the Contractor requesting the Architect to provide additional information necessary to clarify or amplify an item which the Contractor believes is not clearly shown or called for in the Drawings or Specifications, or to address problems which have arisen under field conditions. (See Article 7.4)

1.1.36 Request for Proposal (RFP) is a written request prepared by the Architect (and/or CM) requesting the Contractor to submit to an estimate of the effect of a proposed change on the Contract Price and (if applicable) the Contract Time. (See Article 7.5)

1.1.37 Safety Orders are those issued by any city, county, state or federal agency having jurisdiction over the Project.

1.1.38 Schedule is the Contractor's view of the practical way in which the Work will be accomplished. In this Agreement there is a requirement for a Baseline Schedule and regular Schedule Updates that show all Work to be completed during the Contract Time and shall include all items listed under Article 8.3.2.9. See Article 8 of the General Conditions.

1.1.39 Schedule of Values is a detailed breakdown of the Contract Price for each Project, building, Phase of Work or Site as determined by the District. This Schedule of Values shall adequately detail the price for the Work so Progress Payments Applications can be meaningfully reviewed by the Inspector, Architect of Record, Engineer of Record, and District. (See Article 9.2)

1.1.40 Separate Contracts are Contracts that the District may have with other Contractors, vendors, suppliers, or entities to perform Work on the Project. This may include, but is not limited to Multi-Prime Trade Contractors, furniture installers, testing agencies, clean-up contractors, or network or low voltage contractors. Contractor shall plan for certain other contractors that may also be working on the Project site and address these other contractors in Contractor's Schedule. (See Article 6)

1.1.41 Site refers to the grounds of the Project as defined in the Contract Documents and such adjacent lands as may be directly affected by the performance of the Work.

1.1.42 Specifications are that portion of the Contract Documents consisting of the written requirements for material, equipment, construction systems, instructions, quality assurance standards, workmanship, and performance of related services.

1.1.43 Standards, Rules, and Regulations referred to are recognized printed standards and shall be considered as one and a part of these Specifications within limits specified. Federal, state and local regulations are incorporated into the Contract Documents by reference.

1.1.44 Stop Work Order, or an Order to Comply, is issued when either (1) the Work proceeds without DSA approval; (2) the Work proceeds without a DSA Inspector of Record, or (3) where DSA

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determines that the Work is not being performed in accordance with applicable rules and regulations, and would compromise the structural integrity of the Project or would endanger lives. If a Stop Work Order is issued, the Work in the affected area shall cease until DSA withdraws the Stop Work Order. Pursuant to Education Code section 17307.5(b), the District shall not be held liable in any action filed against the District for any delays caused by compliance with the Stop Work Order

1.1.45 Subcontractor, as used herein, includes those having direct or indirect contracts with Contractor and ones who furnished labor, material or services for a special design according to Plans, Drawings, and Specifications of this Work.

1.1.46 Substantial Completion/ Substantially Complete(d) is not reached unless and until each of the following four (4) conditions have been met: (1) all contractually required items have been installed with the exception of only minor and Incomplete Punch List Items (See Article 9.9.1.2); (2) All Fire/Life Safety Systems have been installed, and are working and signed off on the DSA Form 152 Inspection Card, and all building systems including mechanical, electrical and plumbing are all functioning; (3) all other items DSA Form 152 Inspection Card for the Project have been approved and signed off; and (4) the Project is fit for occupancy and its intended use. For the purposes of this Contract, any references to Completion Date means Substantial Completion Date.

1.1.47 Substitution is a change in product, material, equipment, or method of construction from those required by the Construction Documents proposed by the Contractor. For this Project, a Substitution is subject to the filing of a Construction Substitution Request Form at the time of bid and meeting the requirements of Article 3.10.

1.1.48 Supplementary Conditions/ Supplementary General Conditions/ Special Conditions are terms that are sometimes used interchangeably and refer to any additional requirements or changes to the General Conditions as noted.

1.1.49 Surety is the person, firm, or corporation that executes as a bid bond, Payment Bond or Performance Bond guarantor on the Contractor's Bid, Contractor's Performance on the Contract and Payment of the Contractor's Subcontractors, material suppliers, vendors and labor on the Project. The Surety is bound to the same extent as the Contractor is bound once a Default occurs. A default includes a Termination for Substantial Failure to Perform under Article 14, but also includes any breach of Contract and is subject to the requirements and responsibilities as set forth in the Performance Bond.

1.1.50 Work shall include all labor, materials, services and equipment necessary for the Contractor to fulfill all of its obligations pursuant to the Contract Documents. It shall include the initial obligation of any Contractor or Subcontractor who performs any portion of the Work, to visit the Site of the proposed Work (a continuing obligation after the commencement of the Work), to fully acquaint and familiarize itself with the conditions as they exist and the character of the operations to be carried out under the Contract Documents, and make such investigation as it may see fit so that it shall fully understand the facilities, physical conditions, and restrictions attending the Work under the Contract Documents. Each such Contractor and its Subcontractors shall also thoroughly examine and become familiar with the Drawings, Specifications, and associated Contract Documents and bid documents before preparing and submitting any bid.

1.1.51 Workers include laborers, workers, and mechanics.

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1.2 EXECUTION, CORRELATION AND INTENT

1.2.1 Correlation and Intent

1.2.1.1 *Documents Complementary and Inclusive.* The Contract Documents are complementary and are intended to include all items required for the proper execution and completion of the Work. All Contract Documents form the Contractor's Contract with the District. Any item of Work mentioned in the Specifications and not shown on the Drawings, or shown on the Drawings and not mentioned in the Specifications, shall be provided by Contractor as if shown or mentioned in both. The Contractor is bound to provide the Work complete and is under a legal duty to carefully study Plans and schedule operations well ahead of time and identify inconsistencies with the Plans and Specifications and call such inconsistencies to the attention of the Architect or Registered Engineer through the Inspector under Section 4-343(b) of Title 24.

1.2.1.2 *Work to be Complete.* Contractor has thoroughly studied the Contract Documents and understands that the District contracted with Contractor to provide a complete Project which means complete systems and buildings. The entire set of Contract Documents shows a complete Project and Contractor agrees that there are multiple disciplines putting together a set of Contract Documents. Thus, if portions of a system are shown on some Drawings and not others, this does not mean the Contractor is to only provide part of a system. For example, if an air conditioning unit is shown on the mechanical Drawings, the plumbing for the air conditioning is shown on another Drawing, and the electrical shown on the electrical Drawings, the Contractor is to provide a complete and working air conditioning system. The only time when an item is supplied incomplete is if the system is shown specifically as incomplete since others will be completing the system. Work includes, but is not limited to materials, workmanship, and manufacture of fabrication of components for the Project.

1.2.1.3 *Coverage of the Drawings and Specifications.* The Drawings and Specifications generally describe the Work to be performed by Contractor. Generally, the Specifications describe Work which cannot be readily indicated on the Drawings and indicate types, qualities, and methods of installation of the various materials and equipment required for the Work. It is not intended to mention every item of Work in the Specifications, which can be adequately shown on the Drawings, or to show on the Drawings all items of Work described or required by the Specifications even if they are of such nature that they could have been shown. All materials or labor for Work, which is shown on either the Drawings or the Specifications (or is reasonably inferable therefrom as being necessary to complete the Work), shall be provided by the Contractor. The Contractor is responsible for the whole Project as contractually set forth as the Contract Documents. It is intended that the Work be of sound, quality construction, and the Contractor shall be responsible for the inclusion of adequate amounts to cover installation of all items indicated, described, or implied in the portion of the Work to be performed by them.

1.2.1.4 *Conflicts.* In the event there is a discrepancy between the various Contract Documents, it is intended that the more stringent, higher quality, and greater quantity of Work shall apply.

1.2.1.5 *Conformance with Laws.* Each and every provision of law required by law to be inserted in this Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though it were included herein, even if through mistake or otherwise any such provision is not inserted, or is not correctly inserted.

Before commencing any portion of the Work, Contractor shall check and review the Drawings and Specifications for such portion for conformance and compliance with all laws,

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ordinances, codes, rules and regulations of all governmental authorities and public and municipal utilities affecting the construction and operation of the physical plant of the Project, all quasi-governmental and other regulations affecting the construction and operation of the physical plant of the Project, and other special requirements, if any, designated in the Contract Documents. Such checking shall include review of Title 24 of the California Code of Regulations, California Building Code, local utility, local water connection, local grading and all other applicable agencies. In the event Contractor observes any violation of any law, ordinance, code, rule or regulation, or inconsistency with the Contract Documents, Contractor shall, within five (5) days, notify the Inspector, Architect and District in writing of same and shall ensure that any such violation or inconsistency shall be corrected in the manner provided hereunder prior to the construction of that portion of the Project. (See Title 24 Section 4-343)

The Contractor shall bear all expenses of correcting Work done contrary to said laws, ordinances, rules, and regulations if the Contractor performed same (1) without first consulting the Architect for further instructions regarding said Work or (2) disregarded the Architect's instructions regarding said Work.

1.2.1.6 *Ambiguity and Inconsistency.* Before commencing any portion of the Work, Contractor shall carefully examine all Drawings and Specifications and other information given to Contractor as to materials and methods of construction and other Project requirements. Prior to commencing any portion of the Work, Contractor shall notify Architect and District in writing of any perceived or alleged error, inconsistency, conflict, ambiguity, or lack of detail or explanation in the Drawings and Specifications in the manner provided herein. If the Contractor or its Subcontractors, material or equipment suppliers, or any of their officers, agents, and employees performs, permits, or causes the performance of any Work under the Contract Documents, which it knows or should have known to be in error, inconsistent, or ambiguous, or not sufficiently detailed or explained, Contractor shall bear any and all costs arising therefrom including, without limitation, the cost of correction thereof without increase or adjustment to the Contract Price or the time for performance. Contractor shall maintain an adequate inspection system and perform personal observations and review work and pre-plan the project to ensure the Work performed under the Contract conforms to Contract requirements. Contractor shall maintain records of such review and observation to ensure strict compliance with the terms of the Contract.

1.2.1.7 *Typical Parts and Sections.* Whenever typical parts or sections of the Work are completely detailed on the Drawings, and other parts or sections which are of the same construction are shown in outline only, the complete or more detailed shall apply to the Work which is shown in outline.

1.2.1.8 *Dimensions.* Dimensions of Work shall not be determined by scale or rule. Figured dimensions shall be followed at all times. If figured dimensions are lacking on Drawings, Architect shall supply them on request. The Architect's decisions on matters relating to aesthetic effect will be final.

1.2.2 Addenda and Deferred Approvals

1.2.2.1 *Addenda* are the changes in Specifications, Drawings, Contract Documents, and Plans which have been authorized in writing by the District or Architect, and which alter, explain, or clarify the Contract Documents. Addenda shall govern over all other Contract Documents. Subsequent addenda issued shall govern over prior addenda unless otherwise specified in the addenda.

1.2.2.2 *Deferred Approvals.* Deferred Approvals are Submittals that are reviewed by the Architect (or Engineer of Record) and submitted to DSA for approval based on thorough detailing of manufacturer and Project specific design. See Article 3.9.1 and 3.9.3. The Deferred Approval item

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cannot be fully detailed on the originally approved Drawings or Specifications because of variations in product design and manufacture. Contract Documents which require Deferred Approval items are meant to be for illustration purposes only. Approval of Plans for such a portion of the Work may be deferred until the material suppliers and Subcontractors are selected. All Deferred Approvals are noted in the Plans and Specifications. Contractor is responsible for all Deferred Approval requirements set forth in the Contract Documents. Contractor is responsible to comply with all laws, building codes, Title 24 and regulations necessary to obtain all necessary approvals, including those required from the Division of the State Architect (“DSA”) and the State Fire Marshall. Contractor shall not be granted an extension of time for failure to plan, schedule for and obtain necessary approvals. Contractor shall Schedule all Deferred Approval items in the Baseline Schedule and Schedule Updates under Article 3.9.6

1.2.3 Specification Interpretation

1.2.3.1 *Titles.* The Specifications are separated into titled sections for convenience only and not to dictate or determine the trade or craft involved.

1.2.3.2 *As Shown, Etc.* Where “as shown,” “as indicated,” “as detailed,” or words of similar import are used, reference is made to the Drawings accompanying the Specifications unless otherwise stated. Where “as directed,” “as required,” “as permitted,” “as authorized,” “as accepted,” “as selected,” or words of similar import are used, the direction, requirement, permission, authorization, approval, acceptance, or selection by Architect is intended unless otherwise stated.

1.2.3.3 *General Conditions.* The General Conditions and Supplementary General Conditions are a part of the Contract Documents which further defines and refines the Contract entered between the Contractor and District.

1.2.3.4 *Abbreviations.* In the interest of brevity, the Specifications are written in an abbreviated form and may not include complete sentences. Omission of words or phrases such as “Contractor shall,” “shall be,” etc., are intentional. Nevertheless, the requirements of the Specifications are mandatory. Omitted words or phrases shall be supplied by inference in the same manner as they are when a “note” occurs on the Drawings. In the interest of brevity, the Contract Documents frequently omit modifying words such as “all” and “any” and articles such as “the” and “an,” but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

1.2.3.5 *Plural.* Words in the singular shall include the plural whenever applicable or the context so indicates.

1.2.3.6 *Metric.* The Specifications may indicate metric units of measurement as a supplement to U.S. customary units. When indicated thus: 1” (25 mm), the U. S. customary unit is specific, and the metric unit is nonspecific. When not shown with parentheses, the unit is specific. The metric units correspond to the “International System of Units” (SI) and generally follow ASTM E 380, “Standard for Metric Practice.”

1.2.3.7 *Standard Specifications.* Any reference to standard specifications of any society, institute, association, or governmental authority is a reference to the organization’s standard specifications, which are in effect at the date of the Contractor’s proposal unless directed otherwise. If applicable specifications are revised prior to completion of any part of the Work, the Contractor may, if acceptable to Architect, perform such Work in accordance with the revised specifications. The standard

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specifications, except as modified in the Specifications for the Project, shall have full force and effect as though printed in the Specifications. Architect will furnish, upon request, information as to how copies of the standard specifications referred to may be obtained.

1.2.4 Rules of Document Interpretation

1.2.4.1 In the event of conflict within the Drawings, the following rules shall apply:

- a. General Notes, when identified as such, shall be incorporated into other portions of Drawings.
- b. Schedules, when identified as such, are complementary with other notes and other portions of Drawings including those identified as General Notes.
- c. Larger scale Drawings shall take precedence over smaller scale Drawings.
- d. At no time shall the Contractor base construction on scaled Drawings.

1.2.4.2 Specifications shall govern as to materials, workmanship, and installation procedures.

1.2.4.3 If Contractor observes that Drawings and Specifications are in conflict, Contractor shall, prior to commencing work, notify the Architect in writing for the purposes of obtaining an interpretation of the Contract Documents.

1.2.4.4 In the case of conflict or inconsistencies, the order of precedence shall be as follows:

- a. General Conditions take precedence over Drawings and Specifications.
- b. Supplemental Conditions take precedence over General Conditions.
- c. The Agreement Form shall take precedence over the Supplemental Conditions.
- d. In the case of disagreement or conflict between or within Specifications, and Drawings, the more stringent, higher quality, and greater quantity of Work shall apply.
- e. Addenda shall take precedence over Drawings and Specifications.
- f. General Conditions shall take precedence over Addenda.
- g. Drawings and Specifications take precedence over the Soils Report.

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1.3 OWNERSHIP AND USE OF ARCHITECT'S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS

The Drawings, Specifications, and other Contract Documents for the Project are the property of the District and/or Architect pursuant Contract requirements between the District and Architect. The Contractor may retain one Contract record set. Neither the Contractor nor any Subcontractor, or material or equipment supplier shall own or claim a Copyright in the Drawings, Specifications, and other documents prepared by the Architect. All copies except the Contractor's record set, shall be returned or properly accounted for upon completion of the Work. The Drawings, Specifications, and other documents prepared by the Architect, and copies thereof furnished to the Contractor are not to be used by the Contractor or any Subcontractor, Sub-subcontractor, or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work. The District and/or Architect hereby grants the Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers a limited license to use applicable portions of the Drawings, Specifications, and other documents prepared for the Project in the execution of their Work under the Contract Documents. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the District's property interest or other reserved right.

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ARTICLE 2 DISTRICT

2.1 INFORMATION AND SERVICES REQUIRED OF THE DISTRICT

2.1.1 Site Survey

The District will furnish, at its expense, a legal description of the Site and a land survey showing the boundaries of the Site. Contractor shall be responsible for all surveys regarding location of construction, grading and site work.

2.1.2 Soils

When required by the scope of the Project, the District will furnish, at its expense, the services of geotechnical engineers or consultants when reasonably required and deemed necessary by the Architect or as required by local or state codes. Such services, with written reports and appropriate written professional recommendations, may include test boring, test pits, soil bearing values, percolation tests, air and water pollution tests, and ground corrosion and resistivity tests, including necessary operations for determining subsoil, air, and water conditions.

2.1.3 Soils Report Part of the Contract Documents: Contractor Reliance

A soils investigation report has been obtained from test holes at the Site, and such report is incorporated into this Contract and made available for the Contractor's use in preparing its bid and Work under this Contract. Where the Plans and Specifications are more specific and provide more significant structure, systems, reinforcing, thicknesses, or construction methods, the Drawings shall control over the soils report. The soils report is available at the Architect's office for review and it is Contractor's responsibility to ensure that Contractor has reviewed the soils investigation report. Any information obtained from such report or any other information given on Drawings as to subsurface soil condition or to elevations of existing grades or elevations of underlying rock is approximate only. If, during the course of Work under this Contract, Contractor encounters subsurface conditions which differ materially from those indicated in the soils report, then Contractor shall notify the District within five (5) calendar days of discovery of the condition, and changes to the Contract Price may be made in accordance with Article 7 entitled "Changes in the Work." Contractor agrees that no claim against District will be made by Contractor for damages and hereby waives any rights to damages in the event the Contractor fails to notify District within the five-day period mentioned above.

WARNING: DISTRICT DOES NOT WARRANT THE SOILS AT THE PROJECT SITE. CONTRACTOR HAS REVIEWED AND IS FAMILIAR WITH THE REQUIREMENTS OF THE SOILS INVESTIGATION REPORT. CONTRACTOR UNDERSTANDS THAT PLANS, DRAWINGS AND SPECIFICATIONS SUPERSEDE THE SOILS REPORT IF THERE ARE CONFLICTS. FURTHER, IN ADDITION TO THE INFORMATION IN THE SOILS REPORT, CONTRACTOR HAS CONDUCTED AN INDEPENDENT INVESTIGATION OF THE PROJECT SITE AND THE SOILS CONDITIONS OF THE SITE. DISTRICT DOES NOT WARRANT THE SOILS CONDITIONS OF THE SITE AND CONTRACTOR IS FULLY RESPONSIBLE TO ASCERTAIN SITE CONDITIONS

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FOR THE PURPOSES OF DETERMINING CONSTRUCTION MEANS AND METHODS PRIOR TO COMMENCING CONSTRUCTION.

2.1.4 Utilities

2.1.4.1 *Location of Point of Connection.* The locations shown for the point of connection are approximate. It shall be the responsibility of the Contractor to determine the exact location of all service connections.

2.1.4.2 *Regional Notification Center.* Contractor, except in an emergency, shall contact the appropriate regional notification center at least two (2) business days prior to commencing any excavation if the excavation will be conducted in an area or in a private easement which is known, or reasonably should be known, to contain subsurface installations other than the underground facilities owned or operated by the District, and obtain an inquiry identification number from that notification center. See Government Code section 4216.3. No excavation shall be commenced and carried out by the Contractor unless such an inquiry identification number has been assigned to the Contractor or any Subcontractor of the Contractor and the District has been given the identification number by the Contractor. Any damages arising from failure to make appropriate regional notification shall be at the sole risk of Contractor. Contractor shall solely be responsible for any fines, penalties or damages for violation of this Article and Government Code section 4216.6 or 4216.7. Any delays caused by failure to make appropriate regional notification shall be at the sole risk of Contractor and shall not be considered for extension of time pursuant to Article 8.4.

2.1.4.3 *Utilities - Removal and Restoration.* The District has endeavored to determine the existence of utilities at the Site of the Work from the records of the District of known utilities in the vicinity of the Work. The positions of these utilities as derived from such records are shown in the Contract Documents. Thus, the locations of the main or trunklines located on the Drawings are approximate locations and not exact.

No excavations were made to verify the locations shown for underground utilities. Other than the main or trunkline, which the District has endeavored to locate on the Plans, service connections or laterals to these utilities may not be shown on the Plans. It shall be the responsibility of the Contractor to determine the exact location of all service connections. The Contractor shall make its own investigations, including exploratory excavations, to determine the locations and type of service connections, prior to commencing work which could result in damage to such utilities. The Contractor shall immediately notify the District's representative as to any utility main or trunkline discovered by Contractor in a different position than provided by the Regional Notification Center. With respect to main or trunklines, Contractor is to immediately notify District if the location is substantially different than as shown in the Contract Documents.

Contractor shall coordinate its Work with all utilities, including, but not limited to electricity, water, gas and telephone and meet with said utilities prior to the start of any work. Contractor shall show timing of all utility coordination activities under the Scheduling requirements of Article 8.

2.1.4.4 *Other Utilities.* In case it should be necessary to remove, relocate, or temporarily maintain a utility because of interference with the Work, the work on the utility shall be performed and paid for as follows:

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When it is necessary to remove, relocate or temporarily maintain a service connection, the cost of which is not required to be borne by the owner of the service connection, the Contractor shall bear all expenses incidental to the work on the service connection. The work on the service connection shall be done in a manner satisfactory to the owner thereof; it being understood that the owner of the service connection has the option of doing such work with his own forces or permitting the work to be done by the Contractor.

When it is necessary to remove, relocate, or temporarily maintain a utility which is in the position shown on the Plans, the cost of which is not required to be borne by the owner thereof, the Contractor shall bear all expenses incidental to the work on the utility. The work on the utility shall be done in a manner satisfactory to the owner thereof; it being understood that the owner of the utility has the option of doing such work with his own forces or permitting the work to be done by the Contractor.

When it is necessary to remove, relocate, or temporarily maintain a utility which is not shown on the Plans or is in a position different from that shown on the Plans and were it in the position shown on the Plans would not need to be removed, relocated, or temporarily maintained, and the cost of which is not required to be borne by the owner thereof, the District will make arrangements with the owner of the utility for such work to be done at no cost to the Contractor, or will require the Contractor to do such work in accordance with Article 7 or will make changes in the alignment and grade of the Work to obviate the necessity to remove, relocate, or temporarily maintain the utility. Changes in alignment and grade will be ordered in accordance with Article 7 herein.

No representations are made that the obligations to move or temporarily maintain any utility and to pay the cost thereof is or is not required to be borne by the owner of such utility, and it shall be the responsibility of the Contractor to investigate to find out whether said cost is required to be borne by the owner of the utility.

The right is reserved to governmental agencies and to owners of utilities to enter at any time upon any street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the Work and for the purpose of maintaining and making repairs to their property.

2.1.5 Existing Utility Lines; Removal, Relocation

2.1.5.1 *Main or Trunkline Facilities.* If the Contractor while performing the Contract discovers utility facilities not identified in the Contract Documents, Contractor shall notify the District and utility in writing prior to commencing work.

The owner of the public utility shall have the sole discretion to perform repairs or relocation work or permit the Contractor to do such repairs or relocation work at a reasonable price.

The Contractor shall exercise reasonable care and shall be compensated by the District for the actual verified field costs of locating, and removing, relocating, protecting or temporarily maintaining such main or trunkline utility facilities located in a substantially different location than in the Plans and Specifications, and for equipment in use on the project necessarily idled during such work. This Work shall be performed in accordance with Article 7 of these General Conditions.

2.1.5.2 *Assessment.* Nothing in these subparagraphs shall be deemed to require the District to indicate the presence of existing service laterals or appurtenances whenever the presence of such

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utilities on the Site can be inferred from the presence of other visible facilities, such as buildings, or meter junction boxes on or adjacent to the Site and could be inferred from the Main or Trunkline shown on the Drawings.

2.1.5.3 *Notification.* If the Contractor, while performing Work under this Contract, discovers utility facilities not identified by the District in the Contract Documents. Contractor shall, within five (5) days, notify the District and the utility in writing. If Contractor fails to notify the District within forty eight hours after discovery of any utility facilities not identified by District in the Contract Documents, Contractor waives all rights to be compensated for any extra Work or damages resulting from such discovered utilities.

2.1.6 Easements

District shall secure and pay for easements for permanent structures or permanent changes in existing facilities, if any, unless otherwise specified in the Contract Documents.

2.2 DISTRICT'S RIGHT TO CARRY OUT THE WORK DUE TO PARTIAL DEFAULT IN A SPECIFIC SEGREGATED AREA OF WORK (48 HOUR NOTICE TO CURE AND CORRECT)

If the Contractor Defaults or neglects to carry out the Work in accordance with the Contract Documents, the District may provide forty-eight (48) hour written notice to cure (a shorter period of time in the case of Emergency or a critical path delay as defined in Article 2.2.1) Contractor's Partial Default in a specific segregated area of work. The District's right to issue a Partial Default of the Contractor's Work and take over that segregated area of Work includes, but is not limited to:

1. Failure to supply adequate workers on the entire Project or any part thereof;
2. Failure to supply a sufficient quantity of materials;
3. Failure to perform any provision of this Contract;
4. Failure to comply with safety requirements, or due to Contractor is creation of an unsafe condition;
5. Cases of bona fide emergency;
6. Failure to order materials in a timely manner;
7. Failure to prepare Deferred Approval items or Shop Drawings in a timely manner;
8. Failure to comply with Contractor's Baseline or Update Schedule, meet critical Milestones which would result in a delay to the critical path, or delay the Contract Time;
9. Failure to comply with the Subletting and Subcontracting Fair Practices, Public Contract Code section 4100, et seq.
10. Failure to meet the requirements of the Americans with Disabilities Act;

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11. Failure to complete Punch List work;
12. Failure to proceed on an Immediate Change Directive
13. Failure to correct a Notice of Deviation

If during the forty eight (48) hour period, the Contractor fails to Cure and correct the deficiency noted in the 48 hour notice of Partial Default with diligence and promptness, the District may correct such deficiencies without prejudice to other remedies the District may have, including a Termination for Cause as set forth in Article 14. If there are inadequate funds remaining the Project balance or in the Retention Escrow to address at least 150% of the costs set forth in the Article 2.2 notice, the District may copy the Surety on the written notice of Partial Default. If a notice to the Surety is provided, except in the cases of emergency or critical path delay, the Surety has the option to take over and complete the Work described in the written notice if Surety personally delivers notice to District that it intends to perform such work. In the case where written notice has been provided, the District shall allow Surety seven (7) days to perform the Work.

2.2.1 Service of Notice of Partial Default with Right to Cure

A written notice of Partial Default and right to cure under Article 2.2 (“Article 2.2 Notice” or “Notice of Partial Default”) shall be served by e-mail (with a copy provided by regular mail) to the e-mail address provided on the Bid submitted and copied to the Project Superintendent.

2.2.2 Shortened Time for Partial Default in the Case of Emergencies.

In an Emergency situation, the District may correct any of the deficiencies described in Article 2.2 without prejudice to other remedies by providing service of written notice of Emergency requiring a shortened time for Partial Default specifying the time given to cure, if any.

2.2.3 Shortened Time for Partial Default in the Case of Critical Path Delay

In the case of critical path delay, the District may correct any of the deficiencies described in Article 2.2 without prejudice to other remedies providing service of written notice of critical path delay to the Contractor with a specific description of the critical path delay items noting the line item or area of Work that is on the critical path and prescribe the length of shortened time to cure, if any.

2.2.4 Written Notice of Partial Default to be Deducted by Deductive Change Order

The District shall have the right to determine the reasonable value of the Article 2.2 Partial Default Work, or if there is an actual value for the Work, shall use that value and issue a Deductive Change Orders under Article 7.7.4

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ARTICLE 3 THE CONTRACTOR

3.1 SUPERVISION AND CONSTRUCTION PROCEDURES

3.1.1 Contractor

The Contractor shall continually supervise and direct the Work using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, procedures; and shall coordinate all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. The Contractor shall not perform the Work without utilizing the Contract Documents or, where required, approved Submittals, Shop Drawings, or samples for any such portion of the Work. If any of the Work is performed by contractors retained directly by the District, Contractor shall be responsible for the coordination and sequencing of the work of those other contractors so as to avoid any impact on the Project Schedule pursuant to the requirements of Article 6 and Article 8. Specific duties of the Contractor shall include those set out in Section 43 of Title 21 of the California Code of Regulations and Section 4-343 of Title 24 of the California Code of Regulations. These duties include, but are not limited to the following:

3.1.1.1 *Responsibilities.* It is the duty of the Contractor to complete the Work covered by his or her Contract in accordance with the approved Plans and Specifications. The Contractor in no way is relieved of any responsibility by the activities of the Architect, Engineer, Inspector or DSA in the performance of their duties.

3.1.1.2 *Performance of the Work.* The Contractor shall carefully study the approved Plans and Specifications and shall plan its schedule of operations well ahead of time. If at any time it is discovered that work is being done which is not in accordance with the approved Plans and Specifications, the Contractor shall correct the Work immediately.

3.1.2 Contractor Responsibility to Study the Plans and Specifications

All inconsistencies or timing or sequences which appear to be in error in the Plans and Specifications shall promptly be called to the attention of the Architect or, Engineer, for interpretation or correction. Local conditions which may affect the structure shall be brought to the Architect's attention at once. In no case, shall the instruction of the Architect be construed to cause work to be done which is not in conformity with the approved Plans, Specifications, change orders, construction change documents, and as required by law. (See Title 24, Section 4-343)

3.1.3 All Work Under the Direction of Inspector

Pursuant to Title 24 requirements, the Contractor shall not carry on Work except with the knowledge of the Inspector. (See Title 24 generally)

3.1.4 Contractor to Establish Timing and Protocol with Inspector

Contractor shall establish a protocol for requesting inspection with Inspector so as to not delay the Work and provide adequate time for the Inspector to perform inspection. If such a protocol is not established ahead of time, Inspector may utilize the time criteria set by Title 24 of 48 hours in advance of

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submitting form DSA 156 for each new area. DSA requirements under PR 13-01 specifically gives the Special Inspector fourteen (14) days to post to the DSA website. Contractor is responsible for delays and for failure to plan.

For some Projects, there may be a need to incrementally install certain assemblies. It is up to Contractor to identify areas and assemblies that may be constructed incrementally. Contractor must identify and establish incremental areas of construction and establish protocols with Inspector for DSA 152 approvals so they may be presented to DSA. (See PR-13 item 1.17 for further discussion)

3.1.5 Verified Reports

The Contractor shall make and submit to the office from time to time, verified reports as required in Title 24 Section 4-366. As part of the Close-Out of the Project (see Article 9.9), Contractor shall be required to execute a Form 6-C as required under Title 24 Sections 4-343.

Contractor shall fully comply with any and all reporting requirements of Education Code sections 17315, et seq., in the manner prescribed by Title 24, as applicable.

3.1.6 Contractor Responsibility

The Contractor shall be responsible to the District for acts and omissions of the Contractor's employees, Subcontractors, material and equipment suppliers, and their agents, employees, invitees, and other persons performing portions of the Work under direct or indirect contract with the Contractor or any of its Subcontractors.

3.1.7 Obligations not Changed by Architect's Actions

The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract or by tests, inspections, or approvals required or performed by persons other than the Contractor.

3.1.8 Acceptance/Approval of Work

The Contractor shall be responsible to determine when any completed portions of the Work already performed under this Contract or provided pursuant to Article 6 are suitable to receive subsequent Work thereon.

3.2 SUPERVISION

3.2.1 Full Time Supervision

Unless personally present on the Project site where the Work is being performed, the Contractor shall keep on the Work at all times during its progress a competent, English speaking construction Superintendent satisfactory to the District. The Superintendent shall be present on a full-time basis, shall be dedicated exclusively to the Project and shall not share superintendency duties with another project or job. The Superintendent shall not be replaced except with written consent of the District. The Superintendent shall represent the Contractor in its absence and shall be fully authorized to receive and fulfill any instruction from the Architect, the Inspector, the District or any other District Representative

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(including CM in the cases where the District has a CM representative). All Requests for Information shall be originated by the Superintendent and responses thereto shall be given to the Superintendent. No Work shall begin on any day by any Subcontractor or other person on the Project site until the Superintendent has arrived, or shall any Work continue during the day after the Superintendent has departed from the Project site. The Superintendent shall have authority to bind Contractor through the Superintendent's acts. The Superintendent shall represent the Contractor, and communications given to the Superintendent shall be binding on the Contractor. Before commencing the Work, Contractor shall give written notice to District (and CM representative) and Architect of the name and a Statement of Qualifications of such superintendent. Superintendent shall not be changed except with written consent of District, unless a superintendent proves to be unsatisfactory to Contractor and ceases to be in its employ, in which case, Contractor shall notify District and Architect in writing. Contractor shall provide a replacement superintendent approved by the District prior to performing additional work.

3.2.2 Staff

Notwithstanding other requirements of the Contract Documents, the Contractor and each Subcontractor shall: (1) furnish a competent and adequate staff as necessary for the proper administration, coordination, supervision, and superintendence of its portion of the Work; (2) organize the procurement of all materials and equipment so that the materials and equipment will be available at the time they are needed for the Work; and (3) keep an adequate force of skilled and fit workers on the job to complete the Work in accordance with all requirements of the Contract Documents.

3.2.3 Right to Remove

District shall have the right, but not the obligation, to require the removal from the Project of any superintendent, staff member, agent, or employee of any Contractor, Subcontractor, material or equipment supplier.

3.3 LABOR AND MATERIALS

3.3.1 Contractor to Provide

Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, material, equipment, tools, construction equipment and machinery, water, heat, air conditioning, utilities, transportation, and other facilities, services and permits necessary for proper execution and completion of the Work whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

3.3.2 Quality

Unless otherwise specified, all materials and equipment to be permanently installed in the Project shall be new and shall be of the highest quality or as specifically stated in the Contract Documents. The Contractor shall, if requested, furnish satisfactory evidence as to kind and quality of all materials and equipment within ten (10) days of a written request by the District, including furnishing the District with bona fide copies of invoices for materials or services provided on the Project. All labor shall be performed by workers skilled in their respective trades, and shall be of the same or higher quality as with the standards of other school construction.

3.3.3 Replacement

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Any work, materials, or equipment, which do not conform to these requirements or the standards set forth in the Contract Documents, may be disapproved by the District, in which case, they shall be removed and replaced by the Contractor at no additional cost or extension of time to the District.

3.3.4 Discipline

The Contractor shall enforce strict discipline and good order among the Contractor's and Subcontractor's employees, and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them. As used in this subsection, "unfit" includes any person who the District concludes is improperly skilled for the task assigned to that person, who fails to comply with the requirements of this article, or who creates safety hazards which jeopardize other persons and/or property.

3.3.5 Fingerprinting (Applicable at the time Project is Occupied and on all Projects where Workers will come in Contact with Pupils, such as Modernization Projects)

If applicable, Contractor shall comply with the applicable provisions of Education Code section 45125.1 in a method as determined by the District. Pursuant to Education Code section 45125.1, Contractor shall either conduct criminal background checks of all employees of Contractor assigned to the Project site, and shall certify that no employees who have been convicted of serious or violent felonies, as specified in Education Code section 45125.1, will have contact with pupils, by utilizing the Certification Regarding Background Checks and the corresponding Attachment "A" as found in the Contract Documents or shall be separated by a physical barrier from students.

If it is determined that Contractor must provide certification of employees, as part of such certification, Contractor must provide the District with a list of all employees providing services pursuant to this Agreement, and designate which sites such employees will be assigned. In performing the services set forth in this Agreement, Contractor shall not utilize any employees who are not included on the above-referenced list.

At District's sole discretion, District may make a finding, as authorized under Education Code section 45125.1, that Contractor's employees will have only "limited contact" with pupils. Contractor's failure to comply with this law shall be considered a material breach of this Agreement upon where this Agreement may be terminated, at District's sole discretion, without any further compensation to Contractor.

In the case of new construction Projects where there are no students, if the Project Schedule provides for Beneficial Occupancy or portions of the Project or if the Project should be delayed, then Contractor, at no additional costs, shall meet the requirements of either fingerprinting or providing a physical barrier as required by the District.

3.3.6 Noise, Drugs, Tobacco, and Alcohol

Contractor shall take all steps necessary to insure that employees of Contractor or any of its Subcontractors' employees do not use, consume, or work under the influence of any alcohol, tobacco or illegal drugs while on the Project. Contractor shall further prevent any of its employees or its Subcontractor employees from playing any recorded music devices or radios or wearing any radio headphone devices for entertainment while working on the Project. Likewise, Contractor shall prevent its employees or

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Subcontractor's employees from bringing any animal onto the Project. Contractors shall not violate any written school policies.

3.3.7 Delivery of Material

Contractor shall place orders for materials or equipment so that the Work may be completed in accordance with the Construction schedule for the Work as set forth in Article 8 of this Agreement. Contractor shall, upon demand from the Architect, furnish to the Architect documentary evidence including, but not limited to purchase orders, invoices, bills of materials, work orders and bills of lading, showing that orders have been placed. Contractor shall have a system to receive materials and to ensure that the proper materials are being delivered, including in the case of critical materials to the Project, checking the delivery against Shop Drawings and ensuring that the materials meet the requirements of not only the Plans and Specifications, but also the approved Shop Drawings and Submittals and in conformance with Contractor's plan for delivery of materials (including but not limited to Contractor's representations in the Schedules for the Project and Contractor's equipment and materials schedule under Article 3.7.2.2). Contractor shall be responsible for all costs of accepting non-conforming materials delivered to the Project given Contractor's responsibilities and system for acceptance of deliveries. Contractor shall notify Inspector and District Representative (including CM) as early as possible, in writing, of the delivery of materials for the Project. The deliveries shall include documentation identifying the shipment sufficiently so that the Inspector, Architect or District Representative (including CM) may review the materials that are received. Under no circumstances shall materials be delivered to the Project site that are meant for another Project.

3.3.8 Liens and Other Security Interests of Subcontractors and Material Suppliers

No material, supplies, or equipment for the Work shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by seller or supplier. Contractor warrants good title to all material, supplies, and equipment installed or incorporated in Work and agrees upon completion of all Work to deliver premises, together with all improvements and appurtenances constructed or placed thereon by it, to District free from any claims, security interests, liens, or charges. Contractor further agrees that neither it nor any person, firm, or corporation furnishing any materials or labor for any Work covered by this Contract shall have any right to place a lien upon the premises or any improvement or appurtenance thereof, except that Contractor may install metering devices or other equipment of a utility company or political subdivision, title to which is commonly retained by the utility company or political subdivision. In event of installation of any such metering device or equipment, Contractor shall advise District as to its owner within five (5) days of such installation in writing, prior to making the installation.

Contractor agrees to indemnify, defend and hold the District harmless from any liens, stop notices, or assertion of security interests, including judgments and levies. If after written notice Contractor fails to address the lien, stop notice, or other security interest, the District may proceed to address the lien, stop notice or claim and seek reimbursement from Contractor.

3.3.9 Title to Materials

The title to new materials or equipment for the Work of this Contract shall remain with Contractor until incorporated in the Work of this Contract until final acceptance of the Project; no part of said materials shall be removed from its place of storage, and Contractor shall keep an accurate inventory of all said materials and equipment in a manner satisfactory to the District or its authorized representative.

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Responsibility for materials remains with Contractor and Contractor shall replace materials in case of loss. District similarly may pay for materials stored off site, but Contractor shall remain responsible for the materials that are stored off site.

3.3.10 Assemblies

For all material and equipment specified or indicated in the Drawings, the Contractor shall provide all labor, materials, equipment, and services necessary, (including engineering as specifically required with Shop Drawings or Deferred Approvals) for complete assemblies and complete working systems. Incidental items not indicated on the Drawings, nor mentioned in the Specifications, that can legitimately and reasonably be inferred to belong to the Work described, or be necessary in good practice to provide a complete assembly or system, shall be furnished as though itemized in the Contract Documents in every detail. In all instances, material and equipment shall be installed in strict accordance with each manufacturer's most recent published recommendations and Specifications.

3.3.11 Noise Control

The Contractor shall be responsible for the installation of noise reducing devices on construction equipment. Contractor shall comply with the requirements of the city and county having jurisdiction with regard to noise ordinances governing construction sites and activities. Construction equipment noise is subject to the control of the Environmental Protection Agency's Noise Control Program (Part 204 of Title 40, Code of Federal Regulations). If school is in session at any point during the progress of the Project, and, in the District's reasonable discretion, the noise from such Work disrupts or disturbs the students or faculty or the normal operation of the school, at the District's request, the Contractor shall schedule the performance of all such Work around normal school hours or make other arrangements so that the Work does not cause such disruption or disturbance. There are specific periods of testing at operational schools and it is critical that Contractor control noise during periods of testing. In no event shall Contractor have a right to receive additional compensation or an extension to the Contract time as a result of any such rescheduling or the making of such arrangements. These controls shall be implemented during site preparation and construction. All noise related issues, including school operations, and noise during testing should be detailed in the Schedule provided pursuant to Article 8

3.4 WARRANTY

The Contractor warrants to the District and Architect that material and equipment furnished under the Contract will be of the highest quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. Contractor's warranty to District includes, but is not limited to, the following representations:

3.4.1 In addition to any other warranties provided elsewhere, Contractor shall, and hereby does, warrant all Work after the date of Notice of Completion of Work by District and shall repair or replace any or all such Work, together with any other Work, which may be displaced in so doing that may prove defective in workmanship or materials within a one (1) year period from date of Final Completion which shall be no later than the final date of Punch List as noted at Article 9.11) without expense whatsoever to District, ordinary wear and tear, unusual abuse or neglect excepted. District will give notice of observed defects with reasonable promptness. Contractor shall notify District upon completion of repairs.

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3.4.2 In the event of failure of Contractor to comply with above mentioned conditions within one week after being notified in writing, District is hereby authorized to proceed to have defects repaired and made good at expense of Contractor who hereby agrees to pay costs and charges therefore immediately on demand.

3.4.3 If, in the opinion of the District, defective Work creates a dangerous condition or requires immediate correction or attention to prevent further loss to the District, the District will attempt to give the notice required by this Article. If the Contractor cannot be contacted or does not comply with the District's requirements for correction within a reasonable time as determined by the District, the District may, notwithstanding the provisions of this article, proceed to make such correction or attention which shall be charged against Contractor. Such action by the District will not relieve the Contractor of the guarantee provided in this Article or elsewhere in this Contract.

3.4.4 This Article does not in any way limit the guarantee on any items for which a longer warranty is specified or on any items for which a manufacturer gives a guarantee for a longer period. Contractor shall furnish District all appropriate guarantee or warranty certificates upon completion of the project.

3.5 TAXES

Contractor will pay all applicable Federal, State, and local taxes on all materials, labor, or services furnished by it, and all taxes arising out of its operations under the Contract Documents. District is exempt from Federal Excise Tax, and a Certificate of Exemption shall be provided upon request.

3.6 PERMITS, FEES AND NOTICES

3.6.1 Payment

The Contractor shall secure and pay for all permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work which are necessary after execution of the Contract and are legally required by any authority having jurisdiction over the Project, except those required by the Division of the State Architect (DSA). District shall be responsible for all testing and inspection as required by the DSA on-site or within the distance limitations set forth in Article 13.5.2, unless a different mileage range is specified in the Supplemental Conditions.

3.6.1.1 *DSA Fees.* DSA policy is to charge CCD review fees for processing and approval of changes in the Plans and Specifications through the Construction Change Document process. Contractor is specifically directed to the current DSA IR A-30 which provides fee structure and charges that will be incurred for proceeding with respect to the CCD process, a process that must be followed for each change in the Plans and Specifications.

3.6.2 Compliance

The Contractor shall comply with and give notices required by any law, ordinance, rule, regulation, and lawful order of public authorities bearing on performance of the Work. Specifically, the Division of State Architect provides State oversight of the Project and enforcement of Title 24 rules and regulations. Contractor is directed to the DSA website. There will be local governmental oversight from City, County or both. Finally, Regional Water Quality Control Board, State Fire Marshall, local fire marshal, Department of Industrial Relations, Department of Labor Standards Enforcement, and Air Quality

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Management District (Local and State) are some of the agencies that provide oversight and may require specific permits, fees, or provide oversight over the Project. Contractor represents understanding and specialized knowledge of the rules governing school districts and Contractor shall maintain compliance over the applicable rules and will file all documents required in order to ensure compliance with State, local, and other rules that apply to the Project.

3.6.3 Responsibility

The Contractor shall perform all Work in conformance with every law, statute, ordinance, building code, rule or regulation. The Contractor shall assume full responsibility for such Work and shall bear the attributable cost of correction or project delay.

Pursuant to Title 24 Section 4-343(b):

“Contractor shall carefully study the approved Plans and Specifications and shall plan a schedule of operations well ahead of time.... All inconsistencies or items which appear to be in error in the Plans and Specifications shall be promptly called to the attention of the architect or registered engineer, through the inspector, for interpretation or correction.”

To help Contractor plan its operations, Contractor is directed to study the current version of the DSA 152 Inspection Card Manual identifying the exact steps the Inspector is to follow in the review and sign off process for the DSA 152. The DSA 152 Inspection Card Manual provides specific detail as to the order of operations, review items and compliance items beyond the Specifications and Plans which are reviewed for DSA compliance. The most current version of this manual is located on DSA’s website.

Contractor is also specifically directed to the time periods for posting of Special Inspection Reports and Inspector Notifications under DSA PR 13-01 since the timing of Inspection is not a Governmental Entity related delay.

3.7 SUBMITTALS REQUIRED AT THE COMMENCEMENT OF THE PROJECT

3.7.1 Requirements Within Ten (10) Calendar Days

Within ten (10) calendar days after Notice to Proceed, Contractor shall submit the following:

- 3.7.1.1 Detailed Schedule of Values (See Article 9.2)
- 3.7.1.2 Submittal Listing and Schedule for Submittals
- 3.7.1.3 Critical Path Baseline Schedule (See Article 8)

3.7.2 Requirements Within Thirty-Five (35) Calendar Days

Within thirty-five (35) calendar days after Notice to Proceed, Contractor shall submit the following:

3.7.2.1 *All Submittals for the Project* except those specifically agreed upon by District and Architect, in writing, and shall be specifically incorporated into the Submittal section of the

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Schedule so as to not delay the Work. The agreement to allow a later Submittal does not mean that Article 3.3.7 is waived. Contractor shall order materials and ensure prices are honored and secured for the Project.

- a. Structural Steel may be included as a later Submittal than 35 days if Structural Steel is a significant portion of the Work, at least one or some of the Project is a structural steel structural system, or as specifically agreed upon by the Architect or District.
- b. It is specifically agreed that submissions of structural steel Submittals shall not be piecemeal (unless some portion is requested separately by the District or Architect), shall provide complete designs, shall be stamped by the structural steel Subcontractor, Contractor, and structural steel Subcontractor's structural engineer at time of submission and as further addressed in Article 3.9.
- c. In no case shall the submission of structural steel Drawings delay the critical path for the schedule. If a Milestone is provided for submission of complete structural steel Shop Drawings then the date shall be no later than as set forth in the Milestone

3.7.2.2 *Exceptions to Submittal Within Thirty-Five (35) Days by Written Agreement.* A written request detailing the specific reasons for a submission later than 35 days due to complexity of design or non-critical path status of the Submittal shall be submitted at the time the Baseline Schedule is submitted. The Baseline Schedule shall not include a delayed Submittal until written agreement is provided. In addition to the request for providing a Submittal after the thirty-five (35) day period, a copy of the Contract with the Subcontractor who shall be performing the Submittal, a written statement from the Subcontractor verifying that work has commenced on the Submittal and providing Subcontractor's own schedule of Milestones and completion dates, and a corresponding Submittal designation in the Schedule as required under Article 8. Approval of a delayed Submittal shall not result in any increase in the Contract Price or result in an extension of time for the completion of the Project.

3.7.2.3 *Piecemeal Submissions of Submittals.* Piecemeal Submittals mean providing portions of Shop Drawings or Submittals as they are being completed. The submission of piecemeal Submittals results in the appearance of a submission when there is inadequate information for the Architect or Engineer to adequately review a submission. Piecemeal differs from submission of complete buildings or phases of buildings or complete assemblies. The Architect may agree to allow submission of single buildings or areas as long as the Submittals are complete. .

3.8 DOCUMENTS, SAMPLES, AND COMPUTER AT THE SITE

The Contractor shall maintain at the Site for the District one current copy of the California Building Code, Titles 19 and 24 of the California Code of Regulations, any other document required by DSA, and one record copy of the Drawings, Specifications, Addenda, Change Orders, and other Modifications, in good order and marked currently to record changes and selections made during construction. In addition, the Contractor shall maintain at the Site approved Shop Drawings, Product Data, Samples, and similar required Submittals. These documents shall be available to the Architect and shall be delivered to the Architect for delivery to the District upon completion of the Work.

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Contractor shall have an operational computer with internet access so Contractor can review and post documents as required for the Project, including but not limited to the filing and posting of DSA required documents for the Project.

Contractor shall be prepared to review documents posted to the DSA Project website.

3.9 SUBMITTALS INCLUDING SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

3.9.1 Definitions

3.9.1.1 *Deferred Approvals.* Approval of certain aspects of the construction may be deferred until the construction Contract has been awarded. To facilitate the design process, DSA grants Deferred Approval to the design and detailing of certain elements of the Project at the request of the Architect or Engineer of Record. Design elements that may be deferred may include, but are not limited to access floors, bleachers, elevator guide rails and related elevator systems, exterior wall systems - precast concrete, glass fiber reinforced concrete, etc., skylights, window wall systems, storefronts, stage rigging, and other systems as noted in the Contract Documents. (Also see Article 1.2.2.2 and 3.9.3)

3.9.1.2 *Shop Drawings.* The term “Shop Drawings” as used herein means Drawings, diagrams, equipment or product schedules, and other data, which are prepared by Contractor, Subcontractors, manufacturers, suppliers, or distributors illustrating some portion of the Work, and includes: illustrations; fabrication, erection, layout and setting Drawings; manufacturer’s standard Drawings; schedules; descriptive literature, instructions, catalogs, and brochures; performance and test data including charts; wiring and control diagrams; and all other Drawings and descriptive data pertaining to materials, equipment, piping, duct and conduit systems, and methods of construction as may be required to show that the materials, equipment, or systems and their position conform to the requirements of the Contract Documents.

3.9.1.3 *Manufactured* applies to standard units usually mass-produced, and “Fabricated” means items specifically assembled or made out of selected materials to meet individual design requirements. Shop Drawings shall: establish the actual detail of all manufactured or Fabricated items, indicate proper relation to adjoining work, amplify design details of mechanical and electrical systems and equipment in proper relation to physical spaces in the structure, and incorporate minor changes of design or construction to suit actual conditions.

3.9.1.4 *Submittals* is a term used interchangeably and sometimes refers to Shop Drawings, Product Data, and samples since all Subcontractor submissions are tracked in a Submittal Log and may include any of the noted items. However, generally, a Submittal is a manufacturer’s product information and Product Data including description, characteristics, size, physical characteristics, and requirements to prepare the jobsite for receiving of the particular manufactured item.

3.9.1.5 *Samples.* The term “samples” as used herein are physical examples furnished by Contractor to illustrate materials, equipment, or quality and includes natural materials, Fabricated items, equipment, devices, appliances, or parts thereof as called for in the Specifications, and any other samples as may be required by the Architect to determine whether the kind, quality, construction, finish, color, and other characteristics of the materials, etc., proposed by the Contractor conform to the required characteristics of the various parts of the Work. All Work shall be in accordance with the approved samples.

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3.9.2 Shop Drawings.

3.9.2.1 *When Shop Drawings Are Required.* Shop Drawings are required for prefabricated components and for installation and coordination of these prefabricated components into the Project. In addition, Shop Drawings, are prepared to address the actual size and installation of components from various Subcontractors and provides an opportunity for the Contractor to coordinate and address conflicts between the subcontracting trades. In some cases, each Subcontractor or trade will provide Shop Drawings in a BIM format or other format as agreed by District.

3.9.2.2 *Purpose for Shop Drawings.* Shop Drawings are the Contractor's manufacturer, Subcontractor, supplier, vendor or the Contractor's detailed drawings showing particularized method for assembly, specifics to a manufacturer, manufacturer component installation requirements, specifics as to a manufactured item, alterations to a manufactured, a custom created item, or drawn version of more detailed information expanding on the Architect's design shown in the Contract Documents. The Shop Drawings address the appearance, performance, size, weight, characteristics and prescriptive descriptions associated with the Contractor or Contractor's Subcontractor's plan for installation or assembly based on the design in the Specifications and Contract Documents. The Shop Drawing often is more detailed than the information shown in the Contract Documents to give the Architect and Engineer the opportunity to review the fabricator's version of the product (along with particulars specific to that particular product), prior to fabrication. References to the Contract Documents, Construction Documents, Drawings, Plans, and Specifications assist the Architect and Engineer in their review of the Shop Drawings. Attachment of manufacturer's material Specifications, "catalog cut sheets," and other manufacturer's information may be provided to accompany Shop Drawings. Because Shop Drawings facilitate the Architect's and Engineer's approval of the system, they should be as clear and complete as possible so they may be reviewed by Architect or Engineer for the Project.

3.9.2.3 *Shop Drawing Requirements.* The Contractor shall obtain and submit with Shop Drawings all seismic and other calculations and all Product Data from equipment manufacturers. "Product Data" as used herein are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate a material, product, or system for some portion of the Work.

3.9.2.4 *Not a Reproduction of Architectural or Engineering Drawings.* The Shop Drawings are not a reproduction of the architectural or engineering Drawings. Instead, they must show more detail than the Construction Documents and details the fabrication and/or installation of the items to the manufacturer's production crew or Contractor's installation crews.

3.9.2.5 *Shop Drawings Engineering Requirements:* Some Shop Drawings require an engineer stamp to be affixed on the Drawings and calculations. In such cases, a current and valid engineering stamp shall be affixed by a California registered engineer. No out of State engineers shall stamp Shop Drawings. (See DSA IR A-18). In most cases, an engineer means California registered mechanical, structural, electrical or plumbing engineer. California Registered Civil Engineers will not be accepted for structural details unless specifically approved by DSA.

3.9.2.6 *DSA Approvals Required Prior to Work.* No work on a Shop Drawing that requires DSA approval may proceed until DSA approval is received. Contractor has provided DSA approval time and allowed adequate time for corrections in Contractor's Schedule as required pursuant to Article 8.

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3.9.2.7 *Shop Drawing Identification.* All Shop Drawings must be properly identified with the name of the Project and dated, and accompanied by a letter of transmittal referring to the name of the Project and to the Specification section number for identification of each item clearly stating in narrative form, as well as “clouding” all qualifications, departures, or deviations from the Contract Documents. Shop Drawings, for each section of the Work shall be numbered consecutively and the numbering system shall be retained throughout all revisions. All Subcontractor submissions shall be made through the Contractor. Each drawing shall have a clear space for the stamps of Architect and Contractor.

3.9.3 Deferred Approvals

Deferred approvals shall be submitted and processed to ensure all DSA and other governmental approvals are secured so as to not delay the Project. There may be additional requirements for Deferred Approvals at Division 1 of the Specifications. All Deferred Approvals shall be prepared by Contractor or Contractor’s agent early enough so as to not delay the Project. Contractor is aware that Title 24 California Code of Regulations Section 4-317 have specific requirements for Deferred Approval as to governing agencies and as to the Architect and Engineer for the Project. As a result, any delay associated with the time for approval by applicable agencies or by the Architect or Architect’s consultants shall be Contractor’s. Contractor is required to comply with inclusion of Deferred Approvals in the Schedule as required under Article 3.9.6 *DSA Approvals Required Prior to Work*. No work on a Deferred Approval item may proceed on the components until DSA approval is received. Contractor has provided DSA approval time and allowed adequate time for any DSA revisions in Contractor’s Schedule as required pursuant to Article 8.

3.9.4 Submittals and Samples

3.9.4.1 *Information Required With Submittals:* Manufacturer, trade name, model or type number and quantities: Information provided must be of sufficient detail to allow Architect and Engineer to compare the submitted item with the specified products and acceptable products listed, in the Specifications and addenda.

3.9.4.2 *Description of Use and Performance Characteristics:* Information should be furnished describing the normal use and expected performance of the product. The Architect and Contractor review this information to confirm that the product is appropriate for the intended use.

3.9.4.3 *Size and Physical Characteristics:* The size and physical characteristics, such as adjustment capabilities, which is reviewed by both the Contractor and Architect. The Contractor has the most available information for comparing adjoining materials and equipment. The Contractor also needs to know the size and weight of the equipment for lifting and handling considerations.

3.9.4.4 *Finish Characteristics:* The Architect reviews the available finishes and selects the appropriate finish, if the finish was not previously specified in the documents. The Contractor should confirm that finish requirements in the Specifications are being met by the product.

3.9.4.5 *Contractor Responsible for Jobsite Dimensions:* Some material is custom-fabricated to job conditions, requiring dimensions from the jobsite. These jobsite dimensions are provided by the Contractor as part of the Contractor’s responsibilities for the Project and shall be provided prior to release of the product for manufacture. Contractor shall not rely on Architect or Engineers to provide jobsite dimensions.

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3.9.4.6 *Full Range of Samples Required (When Specific Items Not Specified).*

Except in cases where the exact color and type of item is specified since the District is utilizing items Standardized or pre-selected by District, the full range of color, graining, texture, or other characteristics are anticipated for review in finished products, a sufficient number of samples of the specified materials shall be furnished by the Contractor to indicate the full range of characteristics which will be present in the finished products. Products delivered or erected without Submittal and approval without providing a full range of samples shall be subject to rejection. Except for range samples, and unless otherwise called for in the various sections of the Specifications or Specification Section 1, samples shall be submitted in duplicate.

3.9.4.7 *Labeling of Samples.*

All samples shall be marked, tagged, or otherwise properly identified with the name of the submitting party, the name of the Project, the purpose for which the samples are submitted and the date.

3.9.4.8 *Transmittal letter.*

All samples shall be accompanied by a letter of transmittal containing similar information, together with the Specification section number.

3.9.4.9 *Labels and Instructions.*

All samples of materials shall be supplied with the manufacturer's descriptive labels and application instructions. Each tag or sticker shall have clear space for the review stamps of Contractor and Architect.

3.9.4.10 *Architect's Review.*

The Architect will review and, if appropriate, approve submissions and will return them to the Contractor with the Architect's stamp and signature applied thereto, indicating the timing for review and appropriate action in compliance with the Architect's (or District's) standard procedures. In the cases where a CM is hired by the District, CM may be the party that receives and performance logging and initial processing of the Samples. CM may, in some cases, reject samples that are not in conformance with Contract requirements.

3.9.5 Submittal Submission Procedure

3.9.5.1 *Transmittal Letter and Other Requirements.*

All Submittals must be properly identified with the name of the Project and dated, and each lot submitted must be accompanied by a letter of transmittal referring to the name of the Project and to the Specification section number for identification of each item clearly stating in narrative form, as well as "clouding" on the submissions, all qualifications, departures, or deviations from the Contract Documents. Shop Drawings, for each section of the Work shall be numbered consecutively and the numbering system shall be retained throughout all revisions. All Subcontractor submissions shall be made through the Contractor. Each drawing shall have a clear space for the stamps of Architect and Contractor. Refer to Division 1. In the case where a CM is hired on the Project, the CM may be designated to receive the Submittals for the Project, log the Submittals, and in some cases reject Submittals that do not conform to Contract requirements. Submittal Procedures for further information.

3.9.5.2 *Copies Required.*

Each Submittal shall include one (1) legible, reproducible (if electronic is available, electronic copies shall also be provided) and five (5) legible prints of each drawing or schedule, table, cut sheet, etc., including fabrication, erection, layout and setting drawings, and such other drawings as required under the various sections of the Specifications, until final acceptance thereof is obtained. Subcontractor shall submit copies, in an amount as requested by the Contractor, of: (1) manufacturers' descriptive data for materials, equipment, and fixtures, including catalog sheets showing dimensions, performance, characteristics, and capacities; (2) wiring diagrams and controls;

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(3) schedules; (4) all seismic calculations and other calculations; and (5) other pertinent information as required by the District or Architect. (See also Division 1)

3.9.5.3 *Corrections.* The Contractor shall make all corrections required by Architect, District or CM and shall resubmit, as required by Architect or CM, corrected copies of Shop Drawings or new samples until approved. Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections required by the Architect on previous submissions. Professional services required for more than one (1) re-review of required Submittals of Shop Drawings, Product Data, or samples are subject to charge to the Contractor pursuant to Article 4.5.

3.9.5.4 *Approval Prior to Commencement of Work.* No portion of the Work requiring a Shop Drawing or sample submission or other Submittal shall be commenced until the submission has been reviewed by Contractor and Architect (and CM, if applicable) and approved by Architect (and CM where applicable) unless specifically directed in writing by the Architect. All such portions of the Work shall be in accordance with approved Shop Drawings and samples.

3.9.5.5 *District's Property.* All Submittals, Shop Drawings, computer disks, BIM modeling information, clash checks, schedules, annotated Specifications, samples and other Submittals shall become the District's property upon receipt by the District or Architect.

3.9.6 Schedule Requirements for Submittals

Contractor shall obtain and shall submit all required Submittals (i.e. Shop Drawings, Deferred Approvals, Samples, etc.), in accordance with Contractor's "Schedule for Submission of Shop Drawings and Samples" as required in the scheduling portion of the General Conditions at Articles 8 and the Specifications (as long as the Specifications do not conflict with General Conditions. In the case of conflict, the conflicting provision shall be controlled by the General Conditions and the remaining Specifications sections shall be interpreted as if the general conditions language is inserted) with such promptness as to cause no delay in its own Work or in that of any other contractor or subcontractor but in no event later than thirty five (35) days after the Notice to Proceed is issued except in the specific cases noted as an exception under Article 3.7.2.1. No extensions of time will be granted to Contractor or any Subcontractor because of its failure to have Shop Drawings and samples submitted in accordance with Division 1 and the Schedule. Each Subcontractor shall submit all Shop Drawings, samples, and manufacturer's descriptive data for the review of the District, the Contractor, and the Architect through the Contractor.

3.9.6.1 *Consideration of Schedule.* Contractor has considered lead times, DSA or other agency governmental review times, Architect or Engineer review times, manufacturing seasons, and specific long lead procurement concerns for all submittals for the Project.

3.9.7 General Submittal Requirements

3.9.7.1 *Contractor Submittal Representations and Coordination.* By submitting Shop Drawings, Product Data, samples, etc., the Contractor represents that it has determined and verified all materials, field measurements, catalog numbers, related field construction criteria, and other relevant data in connection with each such submission, and that it has checked, verified, and coordinated the information contained within such Submittals with the requirements of the Work and of the Contract Documents, including the construction schedule.

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3.9.7.2 *Contractor Coordination.* Contractor shall stamp, sign, and date each Submittal indicating its representation that the Submittal meets all of the requirements of the Contract Documents and evidence Contractor's review through execution of the following stamp to be placed on each Shop Drawings:

“[Contractor] has reviewed and approved the field dimensions and the construction criteria, and has also made written notation regarding any information in the Shop Drawings and Submittals that does not conform to the Contract Documents. This Shop Drawing or Submittal has been coordinated with all other Shop Drawings and Submittals received to date by me as Contractor and this duty of coordination has not been delegated to Subcontractors, material suppliers, the Architect, or the Engineers on this Project.

Signature of Contractor and date

3.9.7.3 *No Deviation from Contract Documents.* The submission of the Shop Drawings, Product Data, samples, etc., shall not deviate from the *requirements* of the Contract Documents including detailing and design intent which is specifically outlined in Contract Documents except as specifically authorized by the Architect or through an accepted substitution pursuant to Article 3.10.4. All deviations from the Contract Documents shall be narratively described in a transmittal accompanying the Shop Drawings. However, Shop Drawings shall not be used as a means of requesting a substitution, the procedure for which is defined in Article 3.10.4, “Substitutions.”

3.9.7.4 *Contractor Responsibility for Shop Drawings Conformance to Contract Documents.* Review by District and Architect shall not relieve the Contractor or any Subcontractor from its responsibility in preparing and submitting proper Shop Drawings in accordance with the Contract Documents.

3.9.7.5 *Incomplete Submittals.* Any submission, which in Architect's opinion is incomplete, contains errors, or has been checked superficially, will be returned not reviewed by the Architect for resubmission by the Contractor. Refer to Submittal Procedures of the Specifications for additional information. The Contractor shall be responsible for any related delays and shall not be the basis for any Claim.

3.9.7.6 *Shop Drawings and Submittals Shall Not Be Used as a Method to Make a Substitution.* Shop Drawings and Submittals shall not be used as a means of requesting a substitution or to make changes in the Contract Documents. If changes are made to the Contract Documents through the Shop Drawings, the Architect shall have the right to reject the Submittal. If the Architect does not note the deviation from the approved Plans and Specifications, the Contractor is still responsible for the change and the Architect or the District may require the Shop Drawings be revised to properly reflect the approved Contract Documents. The Architect or District may also require that the Contractor bear all costs under Article 4.5 and consequential damages associated with a CCD to revise Plans and Specifications to accommodate the deviation from approved Plans and Specifications.

3.9.7.7 *Extent of Review.* In reviewing Shop Drawings, the Architect will not verify dimensions and field conditions. The Architect will review and approve Shop Drawings, Product Data, samples, etc., for aesthetics and for conformance with the design concept of the Work and the information in the Contract Documents. The Architect's review shall neither be construed as a complete check which relieves the Contractor, Subcontractor, manufacturer, fabricator, or supplier from responsibility for any

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deficiency that may exist or from any departures or deviations from the requirements of the Contract Documents unless the Contractor has, in writing, called the Architect's attention to the deviations at the time of submission. The Architect's review shall not relieve the Contractor or Subcontractors from responsibility for errors of any sort in Shop Drawings or schedules, for proper fitting of the Work, coordination of the differing Subcontractor trades and Shop Drawings and Work which is not indicated on the Shop Drawings at the time of submission of Shop Drawings. Contractor and Subcontractors shall be solely responsible for any quantities which may be shown on the Submittals or Contract Documents.

3.10 SUBSTITUTIONS

3.10.1 Definition

A Substitution is a change in product, material, equipment, or method of construction from those required by the Construction Documents proposed by the Contractor. For this Project, a Substitution is subject to the filing of a Construction Substitution Request Form at the time of bid and meeting the requirements of this Article.

3.10.2 One Product Specified

Unless the Specifications state that no substitution is permitted, whenever the Contract Documents indicate any specific article, device, equipment, product, material, fixture, patented process, form, method, or type of construction or any specific name, make, trade name, or catalog number, with or without the words "or equal," such specification shall be deemed to be used for the purpose of facilitating description of the material, process, or article desired and shall be deemed to be followed by the words "or equal." Subject to the requirements of properly submitting a Substitution Request for as Addressed in Article 3.10.4, the Contractor may, unless otherwise stated, offer any material, process, article, etc., which shall be materially equal or better in every respect to that so indicated or specified ("Specified Item") and will completely accomplish the purpose of the Contract Documents.

3.10.3 Products Specified Which Are Commercially Unavailable

If the Contractor fails to make a request for substitutions for products, prior to the submission of its bid, and such products subsequently become commercially unavailable, the Contractor may request a substitution for such commercially unavailable item. The decision to grant this request is solely at the District's discretion. The written approval of the District, consistent with the procedure for Change Orders, shall be required for the use of a proposed substitute material. The District may condition its approval of the substitution upon the delivery to District of an extended warranty or other assurances of adequate performance of the substitution as well as an equitable deduction in the Contract Price should the substituted item cost less than the Specified Item. All risks of delay due the approval of a requested substitution by the DSA, or any other governmental agency having jurisdiction, shall be on the requesting party. All additional costs, DSA review costs, all procurement and construction delays, and all costs for review by the Architect or its consultants shall be the responsibility of the Contractor and will be deducted from Contractor's pay request.

3.10.4 Substitution Request Form

Requests for substitutions of products, materials, or processes in place of a Specified Item must be in writing on the District's Substitution Request Form ("Request Form") at the time of submitting bids to the District, except as provided for in Article 3.10.3.

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The Request Form must be accompanied by evidence as to whether the proposed substitution:

- a. Is equal in quality/service/ability to the Specified Item;
- b. Will entail no changes in detail, construction, and scheduling of related work;
- c. Will be acceptable in consideration of the required design and artistic effect;
- d. Will provide no cost disadvantage to the District;
- e. Will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts; and
- f. Will required no change of the construction schedule.

In completing the Request Form, the bidder must state, with respect to each requested substitution, whether the bidder will agree to provide the Specified Item in the event that the District denies the bidder's request for such requested substitution. In the event that the bidder has agreed in the Request Form to provide the Specified Item and the District denies the bidder's requested substitution for a Specified Item, the bidder shall provide the Specified Item without any additional cost or charge to the District.

After bids are opened, the apparent lowest bidder shall provide, within five (5) days of opening such bids, any and all Drawing, Specifications, samples, performance data, calculations, and other information, as may be required to assist the Architect, CM and the District in determining whether the proposed substitution is acceptable. The burden of establishing these facts shall be upon the bidder.

After the District's receipt of such evidence by the bidder, the District will make its final decision as to whether the bidder's request for substitution for any Specified Items will be granted. The decision as to whether a proposed request for substitution is equal to a Specified Item shall be at the sole discretion of the District. Any request for substitution that is granted by the District shall be documented and processed through a Change Order. Contractor must submit a complete Submittal of the requested substitution and a Shop Drawing showing configuration, dimensions, and other critical information associated with the substitution that meets the requirements of Article 3.9. The District may condition its approval of any substitution upon delivery to the District of an extended warranty or other assurances of adequate performance of the substitution. Any and all risks of delay due to approval by the DSA or any other governmental agency having jurisdiction shall be on the bidder.

If the Architect and District accept a proposed substitution, the Contractor agrees to pay for all DSA review costs, engineering and design services, including, without limitation, compensation to the Architect and affected engineers for their required time to process such substitution through the Division of the State Architect, if required, and to make all changes and adjustments in materials or the work of all trades directly or indirectly affected by the substituted item or items at no cost to the District.

3.10.5 Substitution Requests After Bid

The District, in its sole discretion, may accept a request for substitution by the Contractor or may request Contractor substitute a specified item. Any substitutions requested after bids are opened shall be subject to the same conditions and requirements set forth in Article 3.10.4 above. If any

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substitutions, that in the District or Architect's determination, results in a credit to the District, the credit amount shall be agreed upon in writing, otherwise, the request for substitution shall be deemed denied.

3.11 INTEGRATION OF WORK

3.11.1 Scope

The Contractor shall be responsible for cutting, fitting, or patching to complete the Work and to make all parts fit together properly. Contractor shall be responsible for ensuring that all trades are coordinated and scheduled so as to ensure the timely and proper execution of the work. When modifying existing work or installing new Work adjacent to existing work, Contractor shall match, as closely as conditions of Site and materials will allow, the finishes, textures, and colors of the original work, refinishing existing work at no additional cost to District. All cost caused by defective or ill-timed work shall be borne by Contractor. Contractor shall be solely responsible for protecting existing work on adjacent properties and shall obtain all required permits for shoring and excavations near property lines.

3.11.2 Structural Members

New or existing structural members and elements, including reinforcing bars and seismic bracing, shall not be cut, bored, or drilled except by written authority of the Architect. Work done contrary to such authority is at the Contractor's risk and subject to replacement at its own expense without reimbursement under the Contract. Schedule delays resulting from Agency approvals for unauthorized work shall be the Contractor's responsibility.

3.11.3 Subsequent Removal

Permission to patch any areas or items of the Work shall not constitute a waiver of the District's or the Architect's right to require complete removal and replacement of the areas or items of the Work if, in the opinion of the Architect or the District, the patching does not satisfactorily restore quality and appearance of the Work or does not otherwise conform to the Contract Documents.

3.12 CLEANING UP

3.12.1 Contractor's Responsibility to Clean Up

Contractor at all times shall keep premises free from debris such as waste, dust, excess water, storm water runoffs, rubbish, and excess materials and equipment. Contractor shall not leave debris under, in, or about the premises, but shall promptly remove same from the premises and dispose of it in a lawful manner. Disposal receipts or dump tickets shall be furnished to the Architect within five (5) days of request.

Contractor shall remove rubbish and debris resulting from the Work on a daily basis. Contractor shall maintain the structures and Site in a clean and orderly condition at all times until acceptance of the Project by the District. Contractor shall keep its access driveways and adjacent streets, sidewalks, gutters and drains free of rubbish, debris and excess water by cleaning and removal each day. All concrete, sidewalks, and paths of travel shall be broom cleaned daily.

3.12.2 General Final Clean-Up

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Upon completion of Work, Contractor shall employ experience workers or professional cleaners for final cleaning. Contractor shall clean each surface to the condition expected in a normal, commercial, building cleaning and maintenance program including, but not limited to, the performed of the following:

- a. Clean interior and exterior of buildings, including fixtures, equipment, walls, floors, ceilings, roofs, window sills and ledges, horizontal projections, and any areas where debris has collected, so surfaces are free from foreign material or discoloration;
- b. Clean the Project site. The grounds should be cleared of any Contractor equipment, raked clean of debris and trash removed. Sweep paved areas broom clean;
- c. Repair or replace any damaged materials. Replace any chipped or broken glass;
- d. Remove any and all stains;
- e. Remove labels that aren't permanent labels;
- f. Clean and polish all glass, plumbing fixtures, equipment, finish hardware and similar finish surfaces. Remove any glazing compounds;
- g. Remove temporary utilities, fencing, barricades, planking, sanitary facilities and similar temporary facilities from Site;
- h. Remove temporary film that remains on any hardware, doors or other surfaces; and
- i. Seal the bottom and tops of all doors.

3.12.3 Special Clean-Up.

In addition to the general cleaning, the following special cleaning shall be done at the completion of the Work in accordance with the Specifications including, but not limited to:

- a. Remove putty stains from glazing, then wash and polish glazing;
- b. Remove marks, stains, fingerprints and other soil or dirt from painted, stained or decorated work;
- c. Remove temporary protection and clean and polish floors and waxed surfaces;
- d. Clean and polish hardware and plumbing trim; remove stains, dust, dirt, plaster and paint;
- e. Wipe surfaces of mechanical and electrical equipment;
- f. Remove spots, soil, plaster and paint from tile work, and wash tile;

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- g. Clean all fixtures and equipment, remove excess lubrication, clean light fixtures and lamps, polish metal surfaces;
- h. Vacuum-clean carpeted surfaces; and
- i. Remove debris from roofs, down spout and drainage system.

3.12.4 Failure to Cleanup

If the Contractor fails to clean up as provided in the Contract Documents, the District may do so, and the cost thereof shall be the responsibility of the Contractor pursuant to Article 2.2 and seek a Deductive Change Order.

3.13 ACCESS TO WORK

The Contractor shall provide the District, the Architect, Engineers and the Inspector of Record, access to the Work in preparation and progress wherever located. Contractor shall provide safe and proper facilities for such access so that District's representatives may perform their functions.

CONTRACTOR IS AWARE THAT THIS CONTRACT MAY BE SPLIT INTO SEVERAL PHASES AS ADDRESSED IN ARTICLE 6.

3.13.1 Special Inspection, Inspections or Tests Out of State, Out of Country or Remote from Project

If Contractor has a Subcontractor or supplier that requires in plant or special inspections or inspections or tests that are out of the country, out of the state, or a distance of more than 200 miles from the Project site, the Special Inspector or Inspector shall be provided access so the special inspection or inspection may occur in the remote location. In some cases, the DSA Inspector may also require access in addition to Special Inspectors and individuals performing tests. Inspections/tests shall occur during normal work hours. (See also Article 4.3.6)

3.14 ROYALTIES AND PATENTS

3.14.1 Payment and Indemnity for Infringement

Contractor shall hold and save the District and its officers, agents, and employees, the Construction Manager, the Architect, and the Architect's consultants harmless from liability of any nature or kind, including cost and expense, for or on account of any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the District, unless otherwise specifically provided in the Contract Documents, and unless such liability arises from the sole negligence, or active negligence, or willful misconduct of the District, the Architect, or the Architect's consultants.

3.14.2 Review

The review by the Architect of any method of construction, invention, appliance, process, article, device, or material of any kind shall be for its adequacy for the Work and shall not be an approval for the use by the Contractor in violation of any patent or other rights of any person or entity.

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3.15 INDEMNIFICATION

3.15.1 Contractor

See Agreement Form. Contractor shall ensure that its contract with each of its Subcontractors contains provisions requiring the Subcontractors to defend, indemnify and hold harmless the District, Architect, Inspector, the State of California to a minimum level as set forth in this Article and consistent with the indemnity and hold harmless language in the Agreement Form.

The Contractor's and Subcontractors' obligation to defend, indemnify and hold harmless the District, Architect, Inspector, the State of California and their officers, employees, agents and independent contractors hereunder shall include, without limitation, any and all claims, damages, and costs for the following: (1) any damages or injury to or death of any person, and damage or injury to, loss (including theft), or loss of use of, any property; (2) breach of any warranty, express or implied; (3) failure of the Contractor or Subcontractors to comply with any applicable governmental law, rule, regulation, or other requirement; (4) products installed in or used in connection with the Work; and (5) any claims of violation of the Americans with Disabilities Act ("ADA")

3.16 SUBMISSION OF DAILY REPORTS

3.16.1 General

By 10:00 a.m. on the following business day, the Contractor shall submit a Daily Report to the Inspector and copy the Architect for the previous day's Work. If there is a Construction Manager, the original Daily Report is to be provided to the Construction Manager and copies sent to the Architect and the Inspector. Daily Reports shall be prepared on forms approved by the District, together with applicable delivery tickets, listing all labor, materials, and equipment involved for that day. The District reserves the right to note inconsistencies or inaccuracies in the Daily Reports. In such cases, pertinent notes shall be entered by each party to explain points which cannot be resolved that day. Each party shall retain a signed copy of the report. Daily Reports by Subcontractors or others shall be submitted through the Contractor.

3.16.2 Labor

The Daily Report shall show names of workers, classifications, hours worked and hourly rate. The locations where work occurred shall also be identified in the Daily Report. Project superintendent expenses are not allowed.

3.16.3 Materials

The Daily Report required shall describe and list quantities of materials used and unit costs.

3.16.4 Equipment

The Daily Report required shall show type of equipment, size, identification number, and hours of operation, including loading and transportation, if applicable, and hourly/daily cost. Move-on and move-off fees shall be noted.

3.16.5 Other Services and Expenditures

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Other services and expenditures shall be described in the Daily Report in detail as the District requires.

3.16.6 Failure to Submit Daily Report

If Contractor does not submit its Daily Report by 10 am the next business day, the Inspector of Record shall prepare a Daily Report addressing each of the above items. The cost for the Inspector's services to prepare the Daily Report shall be addressed through a Deductive Change Order under Article 7.7.4.

3.17 AS-BUILT DRAWINGS AND ANNOTATED SPECIFICATIONS

Throughout the duration of the Project, Contractor shall maintain on a current basis an accurate and complete set of As-Built Drawings (and Annotated Specifications) clearly showing all changes, revisions to Specifications and substitutions during construction, including, without limitation, field changes and the final location of all electrical and mechanical equipment, utility lines, ducts, outlets, structural members, walls, partitions, and other significant features. In case a Specification allows Contractor to elect one of several brands, makes, or types of material or equipment, the annotations shall show which of the allowable items the Contractor has furnished. The Contractor will update the As-Built Drawings and Annotated Specifications as often as necessary to keep them current, but no less often than weekly.

Contractor shall update As-Built Drawings with complete information on an area of Work at or near the time when the Work is being performed and prior to any DSA 152 sign off and prior to any Work being covered.

The As-Built Drawings and Annotated Specifications shall be kept at the Site and available for review and inspection by the District and the Architect. Failure to maintain and update the As-Built Drawings is a basis to withhold Progress Payments pursuant to Article 9.6.

3.17.1 Upon Beneficial Occupancy

Contractor shall obtain and pay for reproducible Plans upon Beneficial Occupancy. Contractor shall deliver Plans to District Representative (Construction Manager if one is hired for the Project).

3.17.2 As-Built at Completion of Work

Upon completion of the Work and prior to and as a condition precedent to Application for Retention Payment, the Contractor will provide one neatly prepared and complete set of As-Built Drawings and Annotated Specifications to the District. Contractor shall certify the As-Built as a complete and accurate reflection of the actual construction conditions of the Work by affixing a stamp indicating the Drawings are As-Built and certifying accuracy on the final set of As-Built. Failure to deliver a complete As-Built set of Drawings may result in significant withholdings to ensure Work is properly documented. (See Article 9.9.2)

3.17.3 Log of Control and Survey Documentation

Contractor shall complete and maintain an accurate log or all control and survey documentation for the Project as the Work progresses. All reference and control points shall be recorded

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on the As-Built Drawings. The basis of elevations shall be one of the established benchmarks that must be maintained on the As-Built.

3.17.4 Record Coordinates for Key Items

Contractor shall record, by coordinates, all utilities on-site with top of pipe elevations, major grade and alignment changes, rim, grate or top of curb and flow line elevations of all drainage structures and sewer manholes. Contractor shall update record information at or near the time when work is occurring in an area and prior to DSA 152 sign off on any category of Work and prior to covering the Work.

3.17.5 BIM As-Built Drawings

If BIM is utilized for the Project, then an electronic version of such As-Built Drawings and Annotated Specifications will be delivered to District (in an acceptable format to District).

3.18 EQUIPMENT MANUALS

Contractor shall obtain and furnish three (3) complete sets of manuals containing the manufacturers' instructions for maintenance and operation of each item of equipment and apparatus furnished under the Contract Documents and any additional data specifically requested under the various sections of the Specifications for each division of the Work. The manuals shall be arranged in logical, sequential order, labeled, indexed, and placed in three-ring binders. At the completion of its Work, the Contractor shall certify, by endorsement thereon, that each of the manuals is complete, accurate, and covers all of its Work. Prior to submittal of Contractor's Application for Retention Payment, and as a further condition to its approval by the Architect, each Subcontractor shall deliver the manuals, arranged in logical, sequential order, labeled, indexed, endorsed, and placed in three-ring binders, to the Contractor, who shall assemble these manuals for all divisions of the Work, review them for completeness, and submit them to the District through the Architect.

3.19 DIR REGISTRATION

Strict compliance with all DIR registration requirements in accordance with Labor Code sections 1725.5 and 1771.1 is a material obligation of the Contractor and all of its subcontractors (of any tier) under the Contract Documents. The foregoing includes, without limitation, compliance with DIR registration requirements at all times during performance of the Work by the Contractor and all of its subcontractors of any tier. The failure of the Contractor and all subcontractors of any tier to be properly registered with DIR at all times during performance of the Work is a material breach of the Contract and subject to termination for cause.

An affirmative and ongoing obligation of the Contractor under the Contract Documents is the verification that all subcontractors of any tier are at all times during performance of the Work are in full and strict compliance with the DIR registration requirements. The Contractor shall not permit or allow any subcontractor of any tier to perform any Work without the Contractor's verification that all subcontractors are in full and strict compliance with the DIR registration requirements. Any subcontractors of any tier not properly registered with DIR shall be substituted in accordance with Labor Code section 1771.1. Contractor or its subcontractors of any tier shall not be entitled to any additional costs or time arising from or in any way related to compliance with the DIR registration requirements.

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ARTICLE 4 ADMINISTRATION OF THE CONTRACT AND CLAIMS

4.1 ARCHITECT

4.1.1 Replacement of Architect

In the case of the termination of the Architect, the District may appoint an Architect or another construction professional or may perform such functions with its own licensed professional personnel. The status of the replacement Architect under the Contract Documents shall be the same as that of the former Architect.

4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

4.2.1 Status

Pursuant to Titles 2 of the California Code of Regulations and as required pursuant to the Field Act, Education Code 17280 et seq., the Architect will provide administration of the Contract Documents and the Work, and will be the District's representative during construction, as well as during the one (1) year period following the commencement of any warranties. The Architect will have authority to act on behalf of the District only to the extent provided in the Contract Documents.

4.2.2 Site Visits

The Architect will visit the Site at intervals necessary in the judgment of the Architect to become generally familiar with the progress and quality of the Work and to determine in general if the Work is being performed in accordance with the Contract Documents and as otherwise required by DSA.

4.2.3 Limitations of Construction Responsibility

The Architect, District and CM shall not have control over, charge of, or be responsible for construction means, methods, techniques, schedules, sequences or procedures, fabrication, procurement, shipment, delivery, receipt, installation, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility under the Contract Documents. The Architect, District and CM shall not be responsible for the Contractor's, Subcontractors', material or equipment suppliers', or any other person's schedules or failure to carry out the Work in accordance with the Contract Documents. The Architect, District and CM shall not have control over or charge of acts or omissions of the Contractor, Subcontractors, their agents or employees, or any other persons or entities performing or supplying portions of the Work. The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect, District or CM in the Architect, District or CM's administration of the Contract Documents, or by tests, inspections, or approvals required or performed by persons other than the Contractor.

4.2.4 Communications Facilitating Contract Administration

Except where a CM is on the Project, or as otherwise provided in the Contract Documents or when direct communications are warranted by special circumstances, the District and the Contractor shall communicate through the Architect. In the cases where a CM is hired for the Project, all

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communication shall be through the CM (unless otherwise directed) with copies to the District, Architect and Inspector. Where direct communication is necessary between the District and the Contractor, the District's communication shall be through the District's authorized designated person. The Architect and CM shall be promptly informed, and shall receive copies of all written communications. Contractor shall not rely upon any communications from the District that is not from the District's Representative. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material or equipment suppliers shall be through the Contractor. In the case where a CM is hired for the Project, the CM shall be the main point of contact for communication of information. Copies should be sent to the Architect, District Representative and Inspector.

4.2.5 Payment Applications

The Architect will review and make recommendations to the District regarding the amounts due the Contractor on the Certificates for Payment pursuant to Article 9.3.4 and subject to the Inspector's review, (CM review, if applicable) and Architect's observation. This review of Payment Applications is sometimes called a "Pencil Draft." Return of a Pencil Draft shall constitute the District's dispute of the Payment Application that has been submitted. Contractor shall promptly respond to Pencil Drafts or Contractor's Payment Applications may be delayed. Contractor's failure to promptly respond to a Pencil Draft shall qualify as a delay in the Prompt Payment of a Request for Payment or Request for Retention.

4.2.6 Rejection of Work

In addition to the rights, duties, and obligations of the Inspector under this Article, the Architect may recommend to the District that the District reject Work which does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable to achieve the intent of the Contract Documents, the Architect (and/or CM) may recommend to the District that the District require additional inspection or testing of the Work in accordance with Article 13.5, whether or not such Work is Fabricated, installed, or completed. District may have Non-conforming Work removed and replaced pursuant to Article 9.7. However, neither this authority of the Architect (or CM) nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect (or CM) to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

Contractor shall, without charge, replace or correct Work found by the District to not be in conformance to Contract requirements. Contractor shall promptly segregate and remove rejected materials from the Project site.

This section is does not address a Notice of Non-Compliance and the remedies associated with a Notice of Non-Compliance which are addressed at Article 7.1.2

4.2.7 Warranties upon Completion

The Architect (and where applicable CM), in conjunction with the Inspector will conduct field reviews of the Work to determine the date of Substantial Completion and of Final Completion, shall receive and forward to the District for the District's review written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment when the Architect believes the Work has been completed in compliance with the requirements of the Contract Documents (See Article 9.11 for Close-Out). The handling by the Architect (or where applicable CM) of such warranties, maintenance manuals, or similar documents shall not diminish or transfer to the

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Architect any responsibilities or liabilities required by the Contract Documents of the Contractor or other entities, parties, or persons performing or supplying the Work.

On some Projects, the District will take a phased occupancy of the Project. In those cases, the District may commence the running of warranties on the buildings, or phases that are accepted after Punch List is completed and the District has accepted Completion of the separate phase. A separate Notice of Completion may be filed for the separate building or phase of work and warranties shall commence for the separate phase only to the extent that warranties do not require coordination or connection to other buildings or other parts of the site and only if the warranted item is completed to its entirety in the segregated building or phased area.

If written warranties are not provided at the time the Punch List is nearing completion, Architect (with recommendations from the CM and Inspector) shall determine the dollar value of the warranties and shall make recommendation for withholdings necessary to effectuate the transfer of such warranties to the District for future use as part of the Punch List for the Project pursuant to Article 9.6.

Warranties are not commenced through utilizing of equipment for testing and operation as necessary to acclimate buildings or where necessary to test systems.

4.2.8 Interpretation

The Architect will interpret and decide matters concerning performance and requirements of the Contract Documents. Architect shall make clarifications as necessary to interpret the Contract Documents.

4.3 PROJECT INSPECTOR

4.3.1 General

One or more Project Inspectors employed by the District and approved by the Division of the State Architect will be assigned to the Work in accordance with the requirements of Title 24 of the California Code of Regulations. The Inspector(s) duties are as specifically defined in Title 24 Section 4-333 and 4-342 and in DSA IR A-8.

4.3.2 Inspector's Duties and DSA Noted Timelines for Inspection

All Work shall be under the observation of the Inspector. Contractor shall establish a protocol for requesting inspection with Inspector so as to not delay the Work and provide adequate time for the Inspector to perform inspection. If such a protocol is not established ahead of time, Inspector may utilize the time criteria set by Title 24 of 48 hours in advance of submitting form DSA 156 for each new area. The Inspector shall have free access to any or all parts of the Work at any time. The Contractor shall furnish the Inspector such information as may be necessary to keep the Inspector fully informed regarding progress and manner of Work and character of materials. Such observations shall not, in any way, relieve the Contractor from responsibility for full compliance with all terms and conditions of the Contract, or be construed to lessen to any degree the Contractor's responsibility for providing efficient and capable superintendence. The Inspector is not authorized to make changes in the Drawings or Specifications nor shall the Inspector's approval of the Work and methods relieve the Contractor of responsibility for the correction of subsequently discovered defects, or from its obligation to comply with the Contract Documents.

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Inspector shall electronically post DSA required documents on the DSA electronic posting website. It is the Contractor's responsibility to determine the status of posting and determine if all the criteria for sign off of a category of Work on the Project Inspection Card (Form DSA 152) as defined more thoroughly in the most current version of the DSA 152 manual posted on the DSA website.

Inspector may collaborate with Contractor about approval of areas that may be constructed and approved incrementally under the DSA 152 card pursuant to the guidelines of PR-13 at Article 1.17. Inspector shall work with Contractor to present incremental approval proposals to DSA.

4.3.3 Inspector's Authority to Reject or Stop Work

The Inspector shall have the authority to reject Work whenever provisions of the Contract Documents are not being complied with, and Contractor shall instruct its Subcontractors and employees accordingly. In addition, the Inspector may stop any Work that poses a probable risk of harm to persons or property. The Contractor shall instruct its employees, Subcontractors, material and equipment suppliers, etc., accordingly. The absence of any Stop Work Order or rejection of any portion of the Work shall not relieve the Contractor from any of its obligations pursuant to the Contract Documents.

4.3.4 Inspector's Facilities

Within seven (7) days after the notice to proceed, the Contractor shall provide the Inspector with the temporary facilities as required. More specific requirements for the Inspector facilities may be further described under Division 1 of the Specifications.

4.3.5 Testing Times

The District will provide inspection and testing at its cost during the normal eight (8) hour day Monday through Friday (except holidays). Work by the Contractor outside of the normal eight (8) hour day shall constitute an authorization from the Contractor to the District to provide inspection and testing as required outside of the normal eight (8) hour day. Contractor shall provide adequate time for inspections so as to not delay the Work. An advanced timing protocol may be established pursuant to Article 4.3.2. If the Contractor is behind Schedule then it is incumbent on the Contractor to provide advance forecast through look ahead of the anticipated date for inspection so the Inspector may plan their activities so as to not delay the Project. Contractor shall reimburse District for any additional costs associated with inspection and testing (including re-inspection and re-testing) outside the normal eight-hour day and for any retests caused by the Contractor.

It is the Contractor's responsibility to request special inspections with sufficient time so all testing may be timely completed and posted so work may proceed and the Inspector's signature is attached to the Project Inspection Card (Form 152). Specifically, timely request for special inspection under the DSA Verified Report Forms 291 (laboratory), DSA Verified Report Form 292 (Special Inspection), and DSA Verified Report 293 (geotechnical) since DSA requirements under PR 13-01 specifically gives the Special Inspections 14 days to post to the DSA website. Failure to plan and pay (if applicable) for quicker delivery of Special Inspections may be counted as Float, but is not considered Governmental Delay Float under Article 8.1.4.

4.3.6 Special Inspections, Inspections or Tests Out of State, Out of Country or Remote from Project

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If Contractor has a Subcontractor or supplier that requires in plant or special inspections, inspections or tests that are out of the country, out of the state or a distance of more than 200 miles from the Project Site, the District shall provide the Special Inspector or individual performing tests time for inspection and testing during normal work hours. Contractor, however, is responsible for the cost of travel, housing, food, out of area premiums that may be in the Inspector/Testing Agreement with District, or other expenses necessary to ensure proper inspection, special inspection or testing is provided by a DSA Certified Inspector, Special Inspector, or individual performing tests. In some cases all three (DSA Inspector, Special Inspector, and Tester) may be required. In addition, if the DSA Certified Inspector, Special Inspector, or individual performing test has contractual travel clauses or special rates for out of town inspection, Contractor is responsible for all costs associated with the contractual travel costs in addition to all other costs. Arrangements for inspection and/or testing shall be made far enough in advance so as to not delay the Work.

4.4 STOP WORK ORDER

DSA may issue a Stop Work Order, or an Order to Comply, when either (1) the Work proceeds without DSA approval; (2) the Work proceeds without a DSA Inspector of Record, or (3) where DSA determines that the Work is not being performed in accordance with applicable rules and regulations, and would compromise the structural integrity of the Project or would endanger lives. If a Stop Work Order is issued, the Work in the affected area shall cease until DSA withdraws the Stop Work Order. Pursuant to Education Code section 17307.5(b), the District shall not be held liable in any action filed against the District for any delays caused by compliance with the Stop Work Order, except to the extent that an error or omission by the District is the basis for the issuance of the Stop Work Order.

Examples of Stop Work Orders that may be issued by DSA include DSA Bulletin 07-04 and Policy 10-01, the installation of automatic fire sprinkler systems without approved Plans, covering Work that has not been approved by Inspector on DSA Project Inspection Card (Form 152).

4.5 RESPONSIBILITY FOR ADDITIONAL CHARGES INCURRED BY THE DISTRICT FOR PROFESSIONAL SERVICES

If at any time prior to the completion of the requirements under the Contract Documents, the District is required to provide or secure additional professional services (including CM, Inspection, Architect, Engineering and Special Consultant Services) for any reason by any act of the Contractor, the District may seek a Deductive Change Order for any costs incurred for any such additional services, which costs shall be deducted from the next progress payment. A Deductive Change Order shall be independent from any other District remedies and shall not be considered a waiver of any District rights or remedies. If payments then or thereafter due to the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the District. Additional services shall include, but shall not be limited to, the following:

- a. Services made necessary by the default of the Contractor (Article 14 or Article 2.2).
- b. Services made necessary due to the defects or deficiencies in the Work of the Contractor (Article 2.2 and Article 9.6).
- c. Spurious or frivolous RFI's issued that do not conform to the requirements of Article 7.4. Issuance of the same RFI after receiving an answer from the Architect or Engineer

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- d. Review of Schedules that are provided by Contractor that do not Conform with the Requirements of Article 8.
- e. Preparation of a CCD or ICD to correct a Contractor Deficiency, or Contractor Caused Notice of Non-Compliance (See Article 7.3).
- f. Review of Incomplete Shop Drawings or Submittals, including the submission of Piecemeal Shop Drawings or Submittals unless piecemeal Submittals are specifically agreed upon by District (See Article 3.9)
- g. Services required by failure of the Contractor to perform according to any provision of the Contract Documents.
- h. Services in connection with evaluating substitutions of products, materials, equipment, Subcontractors' proposed by the Contractor, and making subsequent revisions to Drawings, Specifications, obtaining DSA approvals, DSA costs for review of CCD's, other governmental agency review costs, and providing other documentation required (except for the situation where the specified item is no longer manufactured or available). (See Article 3.10)
- i. Services for evaluating and processing Claims or Disputes submitted by the Contractor in connection with the Work outside the established Change Order process.
- j. Services required by the failure of the Contractor to prosecute the Work in a timely manner in compliance within the specified time of completion.
- k. Services in conjunction with the testing, adjusting, balancing and start-up of equipment other than the normal amount customarily associated for the type of Work involved.
- l. Services in conjunction with more than one (1) re-review of Submittals of Shop Drawings, Product Data, samples, RFI's etc.

4.6 DISPUTES AND CLAIMS

4.6.1 Decision of Architect

"Disputes" or "Claims" as defined in Article 4.6.9.1 between District and Contractor involving money or time, including those alleging an error or omission by the Architect shall be referred initially to the Architect for action as provided in Article 4.6.2 within ten (10) days after Contractor's Article 7 request for Change is denied. If there is a CM, the CM shall receive the Dispute and may review and also assemble opinions and documents to assist the Architect. A decision by the Architect, as provided in Article 4.6.5, shall be required as a condition precedent to proceeding with remedies set forth in Article 4.6.9 as to all such matters arising prior to the date Retention Payment Application is due, regardless of whether such matters relate to execution and progress of the Work, or the extent to which the Work has reached Final Completion.

The condition precedent of an Architect decision shall be waived if: (1) the position of Architect is vacant; (2) the Architect has failed to take action required under Article 4.6.5 within the time

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periods required therein; or (3) the Dispute or Claim relates to a stop notice claim not arising from any extra Change Order or Immediate Change Directive for which approval has not been provided.

4.6.2 Architect's Review

The Architect (and CM) will review the Dispute and take one or more of the following preliminary actions upon receipt of a Dispute: (1) request additional supporting data from the claimant; (2) submit a schedule to the parties indicating when the Architect expects to take action; (3) reject the Dispute in whole or in part, stating reasons for rejection; (4) recommend approval of the Dispute; or (5) suggest a compromise. The Architect may also, but is not obligated to, notify the Surety, if any, of the nature and amount of the Dispute.

4.6.2.1 *Architectural Immunity.* Architect review of Disputes and Claims shall be impartial and meant to resolve Disputes and Claims. Pursuant to the case, Huber, Hunt & Nichols, Inc. v. Moore (1977) 67 Cal.App.3d 278, the Architect is provided a quasi-judicial immunity for interpreting and deciding Disputes and Claims between the District and Contractor.

4.6.3 Documentation if Resolved

If a Dispute has been resolved, the Architect (and/or CM) will prepare a Change Order or obtain appropriate documentation to document the terms for Board approval.

4.6.4 Actions if Not Resolved

If a Dispute has not been resolved and all documentation requested pursuant to Article 4.6.2 has been provided, the Contractor shall, within ten (10) days after the Architect's initial response, assemble all the documents involved in the Dispute including copies of all back-up documentation of costs and the basis for the Dispute and take one or more of the following actions: (1) modify the initial Dispute; (2) notify the Architect that the initial Dispute stands; or (3) supplement with additional supporting data and re-submit to the Architect under Article 4.6.2.

4.6.5 Architect's Written Decision

If a Dispute has not been resolved after consideration of the foregoing and of other evidence presented by the parties or requested by the Architect, the Architect (or Architect through CM) shall provide a written decision twenty (20) days after compliance with Article 4.6.4. Upon expiration of such time period, the Architect (or Architect through CM) will render to the parties its written decision relative to the Dispute, including any change in the Contract Sum or Contract Time or both. The Architect may also request reasonable additional time to complete Architect's written decision.

If the resolution of the Dispute by the Architect is not satisfactory to the Contractor and copies of all back-up documentation of costs and the basis for the Dispute is fully articulated in a package of material that is complete, the Contractor may then submit a Claim to the District under Article 4.6.9.

4.6.6 Continuing Contract Performance

Pending final resolution of a Dispute or Claim, including, negotiation, mediation, arbitration, or litigation, the Contractor shall proceed diligently with performance of the Contract, and the District shall continue to make any undisputed payments in accordance with the Contract (less any

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withholdings or offsets). If the Claim is not resolved, Contractor agrees it will neither rescind the Contract nor stop the progress of the work, but Contractor's sole remedy shall be to submit such controversy to determination by a court of competent jurisdiction in the county where the Project is located, after the Project has been completed, and not before.

4.6.6.1 *District's Option to Submit Individual Disputes to Arbitration during Claims and Disputes Process.* At the District's sole option, in order to more efficiently resolve Claims during the Project and prior to the completion of the Claims Process, pursuant to Government Code section 9201, the District may submit individual Disputes or Claims for binding arbitration and Contractor agrees to the resolution of for each individual Dispute or Claim by an Arbitrator, including resolution of time and delays. If binding arbitration is utilized for individual Disputes or Claims, such resolution is full and final as to that particular Dispute or Claim. THIS INDIVIDUAL DISPUTE ARBITRATION PROCESS IS NOT AN ARBITRATION CLAUSE AND SHALL NOT BE CONSTRUED AS AN AGREEMENT TO ARBITRATE. THIS INDIVIDUAL DISPUTES ARBITRATION PROCESS IS FOR THE SOLE PURPOSE OF STREAMLINING AND RESOLVING DISPUTES OR CLAIMS DURING CONSTRUCTION AND SHALL BE REQUESTED ON SPECIFIC INDIVIDUAL ITEMS BY THE DISTRICT PRIOR TO RETENTION PAYMENT (EVEN IF THERE ARE DEDUCTIONS MADE FROM RETENTION PAYMENT) WHICH REPRESENTS THE FINAL COMPLETION OF THE PROJECT.

- a. If there is no Retention remaining on the Project, individual Disputes initiated prior to Project Final Completion shall continue until a final disposition of the Arbitration or resolution of the individual Claim or Dispute.
- b. No Tolling. The Arbitration process shall not toll the Disputes or Claims process under Article 4.6 or the requirement to submit Claims to Court under Article 4.6.9.5.

4.6.7 Claims for Concealed Trenches or Excavations Greater Than Four Feet Below the Surface

When any excavation or trenching extends greater than four feet below the surface or if any condition involving hazardous substances are encountered:

- a. Immediately upon discovery, The Contractor shall promptly, and before the following conditions are disturbed, notify the District, by telephone and in writing, of the condition except:
 1. If such condition is a hazardous waste condition, Contractor's bid includes removal or disposal of hazardous substances. Material that the Contractor believes may be a material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, is required to be removed to a Class I, Class II, or Class III disposal site in accordance with the provisions of existing law. In such case, the notice bulletin procedures of Article 7 apply.

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2. Subsurface or latent physical conditions at the Site differing from those indicated in the Drawings, Specifications, Soils Report, and from Contractor's own investigation under Article 2.1.
 3. Unknown physical conditions at the Site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in Work of the character provided for in the Contract.
- b. The District shall investigate the conditions, and if District finds that the conditions do materially so differ, do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the Work shall issue a Change Order or Construction Change Document under the procedures described in the Contract.
 - c. In the event that a dispute arises between the public entity or District and the Contractor whether the conditions materially differ, involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the Work, the Contractor shall not be excused from any scheduled Completion Date provided for by the Contract, but shall proceed with all Work to be performed under the Contract. The Contractor shall retain any and all rights provided either by Contract or by law which pertain to the resolution of disputes and protests between the contracting parties.

4.6.8 Dispute Concerning Extension of Time.

If Contractor and District cannot agree upon an extension of time, whether compensable or not, then Contractor must have first completed the procedures set forth in Article 8.4. Upon completion of the procedures set forth under Article 8.4, Contractor must then comply with the requirements in this Article including those set forth under Article 4.6.9.

4.6.9 Claims Procedures

Pursuant to the remedies under Public Contract Code section 9201 and Government Code section 930.2, Contractor, through execution of this Agreement, also agrees to comply with the Claims requirements of Article 4.6 to quickly and efficiently resolve Disputes and Claims. Further, to provide a level of accuracy to the records submitted, the District shall have the right to audit books and records pursuant to Article 13.11 based on the actual costs incurred and to reduce the uncertainty in resolving Disputes and Claims with limited information.

4.6.9.1 *Procedure Applicable to All Claims*

- a. Definition of Claim: A "Claim" is where a Dispute between the parties rises to the level where backup documentation is assembled and provided to the District as a separate demand by the Contractor for: (1) a time extension, including, without limitation, for relief from damages or penalties for delay assessed by the District under the Contract; (2) payment by the District of money or damages arising from Work done by, or on behalf of, the Contractor pursuant to the Contract and payment for which is not otherwise expressly provided for or to which the Contractor is not

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otherwise entitled to; or (3) an amount of payment disputed by the District. If the Claim is for damages associated with a DSA Stop Work Order, the Contractor shall not be entitled to a request for Compensation, but shall be entitled to utilize Governmental Delay Float (See Article 8.1.4.1.)

- b. Filing Claim Is Not Basis to Discontinue Work: The Contractor shall promptly comply with Work under the Contract or Work requested by the District even though a written Claim has been filed. The Contractor and the District shall make good faith efforts to resolve any and all Claims that may arise during the performance of the Work covered by this Contract.
- c. Claim Notification: The Contractor shall within seven (7) calendar days after the written decision of the Architect, or if the time period for Architect's decision has passed under Article 4.6.5, submit a notification in writing sent by registered mail or certified mail with return receipt requested, with the District (and the District's CM) stating clearly the basis for the Claim and including all relevant and required documents. If the notification is not submitted within seven (7) days after the written decision of the Architect or the passage of time under Article 4.6.5, the Contractor shall be deemed to have waived all right to assert the Claim, and the Claim shall be denied. Claims submitted after the Retention Payment date shall also be considered null and void by the District. All Claims shall be reviewed pursuant to Articles 4.6.1 through 4.6.5.

The Formal Notification of Claim must be presented as follows:

- (1) The term "Claim" must be at the top of the page in no smaller than 20 point writing.
 - (2) All documentation submitted pursuant to Article 4.6 to the Architect shall be submitted with the "Claim."
 - (3) A stack of documents, copy of all Project documents, or the submission of random documents shall not constitute an adequate reference to supporting documentation.
 - (4) Any additional or supporting documentation that Contractor believes is relevant should be submitted at this time.
- d. Reasonable Documents to Support Claim: The Contractor shall furnish reasonable documentation to support the Claim. The Contractor shall provide all written detailed documentation which supports the Claim, including but not limited to: arguments, justifications, cost, estimates, Schedule analysis and detailed documentation. The format of the required reasonable documentation to support the Claim shall include, without limitation:
 - 1. Cover letter.

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2. Summary of factual basis of Claim and amount of Claim.
3. Summary of the basis of the Claim, including the specific clause and section under the Contract under which the Claim is made.
4. Documents relating to the Claim, including:
 - a. Specifications sections in question.
 - b. Relevant portions of the Drawings
 - c. Applicable Clarifications (RFI's)
 - d. Other relevant information, including responses that were received.
 - e. Contractor Analysis of Claim merit.
 - (a) Contractor's analysis of any Subcontractor vendor Claims that are being passed through.
 - (b) Any analysis performed by outside consultants
 - (c) Any legal analysis that Contractor deems relevant
 - f. Break down of all costs associated with the Claim.
 - g. For Claims relating to time extensions, an analysis and supporting documentation evidencing any effect upon the critical path in conformance with the requirements of Article 8.4 chronology of events and related correspondence.
 - h. Applicable Daily Reports and logs.
 - (a) If the Daily Reports or Logs are not available, lost or destroyed, there shall be a presumption that the lost documentation was unfavorable to the Contractor. See California Civil Jury Instruction 204.
 - i. For Claims involving overhead, cost escalation, acceleration, disruption or increased costs, a full version of job costs reports organized by category of work or Schedule of Values with budget information tracked against actual costs. Any and all supporting back-up data, including the original bid (and associated original unaltered metadata).
 - (a) The metadata and bid information shall be provided confidentially and subject to a protective order to prevent dissemination to other contractors or to the public. However, the bid documentation should remain intact and available for review and inspection in case of this type of increased cost Claim.
 - (b) This data on the bid shall be made available to any District attorneys or experts and shall also be utilized as evidence for any legal proceedings.
 - (c) If the bid documentation is not available, lost or destroyed, there shall be a presumption that the lost bid documentation was unfavorable to the

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Contractor. See California Civil Jury Instruction 204.

- e. Certification: The Contractor (and Subcontractors, if applicable) shall submit with the Claim a certification under penalty of perjury:
 - 1. That the Contractor has reviewed the Claim and that such Claim is made in good faith;
 - 2. Supporting data are accurate and complete to the best of the Contractor's knowledge and belief;
 - 3. The amount requested accurately reflects the amount of compensation for which the Contractor believes the District is liable.
 - 4. That the Contractor is familiar with Government Code sections 12650 et seq. and Penal Code section 72 and that false claims can lead to substantial fines and/or imprisonment.
- f. Signature of Certification: If the Contractor is not an individual, the certification shall be executed by an officer or general partner of the Contractor having overall responsibility for the conduct of the Contractor's affairs.
- g. Upon receipt of a Claim and all supporting documents as required above, the District shall conduct a reasonable review of the Claim and, within a period not to exceed 45 days, shall provide the Contractor a written statement identifying what portion of the Claim is disputed and what portion is undisputed. Upon receipt of a Claim, the District and Contractor may, by mutual agreement, extend the time period provided in this paragraph.
- h. If the District needs approval from its governing Board to provide the Contractor a written statement identifying the disputed portion and the undisputed portion of the Claim, and the governing Board does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a Claim sent by registered mail or certified mail, return receipt requested, the District shall have up to three days following the next duly publicly noticed meeting of the governing Board after the 45-day period, or extension, expires to provide the Contractor a written statement identifying the disputed portion and the undisputed portion.
- i. Any payment due on an undisputed portion of the Claim shall be processed and made within 60 days after the District issues its written statement. If the District fails to issue a written statement, paragraph o below shall apply.

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- j. If the Contractor disputes the District's written response, or if the District fails to respond to a Claim issued pursuant to this Article 4.6.9 within the time prescribed, the Contractor may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the District shall schedule a meet and confer conference within 30 days for settlement of the Claim.
- k. Within 10 business days following the conclusion of the meet and confer conference, if the Claim or any portion of the Claim remains in dispute, the District shall provide the Contractor a written statement identifying the portion of the Claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the Claim shall be processed and made within 60 days after the District issues its written statement. Any disputed portion of the Claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation, with the District and the Contractor sharing the associated costs equally. The District and Contractor shall mutually agree to a mediator within 10 business days after the disputed portion of the Claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the Claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the Claim remaining in dispute shall be subject to applicable procedures in Article 4.6.9.5.
- l. For purposes of this Article 4.6.9, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.
- m. Unless otherwise agreed to by the District and the Contractor in writing, the mediation conducted pursuant to this Article 4.6.9 shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.
- n. This Claims process does not preclude the District from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this Article 4.6.9 does not resolve the parties' Claim. This Claims process does not preclude the District from submitting individual Disputes or Claims to binding arbitration pursuant to Article 4.6.9.4 below.
- o. Failure by the District to respond to a Claim from the Contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this Article 4.6.9 shall result in the Claim being deemed

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rejected in its entirety. A Claim that is denied by reason of the District's failure to have responded to a Claim, or its failure to otherwise meet the time requirements of this Article 4.6.9, shall not constitute an adverse finding with regard to the merits of the Claim or the responsibility or qualifications of the Contractor.

- p. If a subcontractor or a lower tier subcontractor lacks legal standing to assert a Claim against a District because privity of contract does not exist, the Contractor may present to the District a Claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that the Contractor present a Claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the Claim be presented to the District shall furnish reasonable documentation to support the Claim. Within 45 days of receipt of this written request, the Contractor shall notify the subcontractor in writing as to whether the Contractor presented the Claim to the District and, if the Contractor did not present the Claim, provide the subcontractor with a statement of the reasons for not having done so.
- q. Upon receipt of a Claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable.
- r. The Contractor's Claim shall be denied if it fails to follow the requirements of this Article.

4.6.9.2 *District (through CM or District's Agent or Attorney) May Request Additional Information.* Within thirty (30) days of receipt of the Claim and the information under this Article, the District may request in writing any additional documentation supporting the Claim or documentation relating to defenses to the Claim which the District may assert. If additional documents are required, the time in which the Claim is evaluated may be extended by a reasonable time so the Claim and additional documents may be reviewed.

4.6.9.3 *Claims Procedures in Addition to Government Code Claim.* Nothing in the Claims procedures set forth in this Article 4 of the General Conditions shall act to waive or relieve the Contractor from meeting the requirements set forth in Government Code section 900 et seq.

4.6.9.4 *Binding Arbitration of Individual Claim Issues.* To expedite resolution of Claims pursuant to Public Contract Code section 9201, at the District's sole option, the District may submit individual Claims to Arbitration prior to Retention Payment consistent with the requirements of Article 4.6.6.1.

4.6.9.5 *Resolution of Claims in Court of Competent Jurisdiction.* If Claims are not resolved under the procedure set forth and pursuant to Article 4.6.9, such Claim or controversy shall be submitted to a court in the County of the location of the Project after the Project has been completed, and not before.

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4.6.9.6 *Warranties, Guarantees and Obligations.* The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon Contractor by the General Conditions and amendments thereto; and all of the rights and remedies available to District and Architect thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by laws or regulations by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this Article will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply.

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ARTICLE 5 SUBCONTRACTORS

5.1 DEFINITIONS

5.1.1 Subcontractual Relations Bound to Same Contract Terms at General Contractor

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the same obligations and responsibilities, assumed by Contractor pursuant to the Contract Documents. Each subcontract agreement shall preserve and protect the rights of the District and the Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound. Upon written request of the Subcontractor, the Contractor shall identify to the Subcontractor the terms and conditions of the proposed subcontract agreement, which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

5.1.2 Subcontractor Licenses and DIR Registration

All Subcontractors shall be properly licensed by the California State Licensing Board. All Subcontractors (of any tier) performing any portion of the Work must comply with the Labor Code sections 1725.5 and 1771.1 and must be properly and currently registered with the California Department of Industrial Relations and qualified to perform public works pursuant to Labor Code section 1725.5 throughout the duration of the Project. No portion of the Work is permitted to be performed by a Subcontractor of any tier unless the subcontractor is properly registered with DIR. Any Subcontractors of any tier not properly registered with DIR shall be substituted in accordance with Labor Code section 1771.1.

5.1.3 Substitution of Subcontractor

Substitution of Subcontractors shall be permitted only as authorized under Public Contract Code §§ 4107 et seq. Any substitutions of Subcontractors shall not result in any increase in the Contract Price or result in the granting of any extension of time for the completion of the Project.

5.1.4 Contingent Assignment of Subcontracts and Other Contracts

Each subcontract, purchase order, vendor contract or agreement for any portion of the Work is hereby assigned by the Contractor to the District provided that:

- a. Such assignment is effective only after Termination of this Contract with the Contractor by the District as provided under Article 14 and only for those subcontracts and other contracts and agreements that the District accepts by notifying the Subcontractor or Materialman (as may be applicable) in writing; and

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- b. Such assignment is subject to the prior rights of the Surety(ies) obligated under the Payment Bond and Performance Bond.
- c. The Contractor shall include adequate provisions for this contingent assignment of subcontracts and other contracts and agreements in each such document.

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ARTICLE 6 CONSTRUCTION BY DISTRICT OR BY SEPARATE CONTRACTORS

6.1 DISTRICT'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1 Separate Contracts.

6.1.1.1 District reserves the right to let other contracts in connection with this Work. Contractor shall afford other contractors reasonable opportunity for (1) introduction and storage of their materials; (2) access to the Work; and (3) execution of their work. Contractor shall properly connect and coordinate its work with that of other Contractors.

6.1.1.2 If any part of Contractor's Work depends on proper execution or results of any other contractor, the Contractor shall inspect and within seven (7) days or less, report to Architect, in writing, any defects in such work that render it unsuitable for proper execution of Contractor's Work. Contractor will be held accountable for damages to District for that Work which it failed to inspect or should have inspected. Contractor's failure to inspect and report shall constitute its acceptance of other contractors' Work as fit and proper for reception of its Work, except as to defects which may develop in other contractors' work after execution of Contractor's work.

6.1.1.3 To ensure proper execution of its subsequent Work, Contractor shall measure and inspect Work already in place and shall at once report to the Architect in writing any discrepancy between executed Work as built and the Contract Documents.

6.1.1.4 Contractor shall ascertain to its own satisfaction the scope of the Project and nature of any other contracts that have been or may be awarded by District in prosecution of the Project and the potential impact of such Work on the Baseline Schedule or Schedule updates.

6.1.1.5 Nothing herein contained shall be interpreted as granting to Contractor the exclusive occupancy at the site of Project. Contractor shall not cause any unnecessary hindrance or delay to any other contractor working on the Project Site. If execution of any contract by the District is likely to cause interference with Contractor's performance of this Contract, once Contractor provides District timely written notice and identifies the Schedule Conflict, District shall decide which contractor shall cease work temporarily and which contractor shall continue, or whether Work can be coordinated so that contractors may proceed simultaneously.

6.1.1.6 District shall not be responsible for any damages suffered or extra costs incurred by Contractor resulting directly or indirectly from award or performance or attempted performance of any other contract or contracts at the Project necessary for the performance of the Project (examples include Electrical Utility Contractor, separate offsite contractor, a separate grading contractor, furniture installation etc.)

CONTRACTOR IS AWARE THAT THIS CONTRACT MAY BE SPLIT INTO SEVERAL PHASES BASED ON DOCUMENTATION PROVIDED WITH THIS BID OR DISCUSSED AT THE JOB WALK. CONTRACTOR HAS MADE ALLOWANCE FOR ANY DELAYS OR DAMAGES WHICH MAY ARISE FROM COORDINATION WITH CONTRACTORS REQUIRED FOR OTHER PHASES.

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IF ANY DELAYS SHOULD ARISE FROM ANOTHER CONTRACTOR WORKING ON A DIFFERENT PHASE, CONTRACTOR'S SOLE REMEDY FOR DAMAGES, INCLUDING DELAY DAMAGES, SHALL BE AGAINST THE CONTRACTOR WHO CAUSED SUCH DAMAGE AND NOT THE DISTRICT. CONTRACTOR SHALL PROVIDE ACCESS TO OTHER CONTRACTORS FOR OTHER PHASES AS NECESSARY TO PREVENT DELAYS AND DAMAGES TO OTHER CONTRACTORS WORKING ON OTHER PHASES OF CONSTRUCTION.

6.1.2 District's Right to Carry Out the Work

(See Article 2.2)

6.1.3 Designation as Contractor

When separate contracts are awarded to contractors on the Project Site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate District/Contractor Agreement.

6.1.4 District Notice to the Contractor of Other Contractors

The Contractor shall have overall responsibility to reasonably coordinate and schedule Contractor's activities with the activities of the District's forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the District in reviewing their construction schedules when:

- a. Notice is provided in the Contract Documents of other scope of Work,
- b. In the case where there is known Work to be performed by other Contractors
- c. For outside contractors hired by utilities
- d. Where the Contract Document provides "Work by Others" or "By Others"
- e. Where specifically noted during the Pre-Bid Conference
- f. Where specifically noted in the Mandatory Job Walk
- g. By CO or ICD,
- h. With respect to the installation of :
 - 1. Furniture,
 - 2. Electronics and networking equipment,
 - 3. Cabling,
 - 4. Low voltage,
 - 5. Off-site work,
 - 6. Grading (when by a separate contractor),

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7. Environmental remediation when excluded by the Contract Documents (i.e. asbestos, lead or other hazardous waste removal)
8. Deep cleaning crews,
9. Commissioning and testing,
10. Keying and re-keying,
11. Programming

6.1.4.1 Exception where no Coordination is Required on the Part of the Contractor for Turn Key Operations. If the Contractor has specifically outlined a “Turn Key” or “Complete Delivery” of a final completed operational school in writing as part of the Baseline Schedule..

6.1.4.2 The Contractor shall make any revisions to the Baseline Schedule (or Schedule Update) and Contract Sum deemed necessary after a joint review and mutual agreement. The Baseline Schedule (or Schedule Update) shall then constitute the Schedules to be used by the Contractor, separate contractors, and the District until subsequently revised. Additionally, Contractor shall coordinate with Architect, District, and Inspector to ensure timely and proper progress of Work.

6.2 CONSTRUCTIVE OWNERSHIP OF PROJECT SITE AND MATERIAL

Upon commencement of Work, the Contractor becomes the constructive owner of the entire site, improvements, material and equipment on Project site. Contractor must ensure proper safety and storage of all materials and assumes responsibility as if Contractor was the owner of the Project site. All risk of loss or damage shall be borne by Contractor during the Work until the date of Completion. As constructive owner of the Project site, Contractor must carry adequate insurance in case of calamity and is not entitled to rely on the insurance requirements as set forth in this Agreement as being adequate coverage in case of calamity.

6.3 DISTRICT’S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors, and the District as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Article 3.12, the District may clean up and allocate the cost among those it deems responsible.

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ARTICLE 7 CHANGES IN THE WORK

7.1 CHANGES

7.1.1 No Changes Without Authorization

There shall be no change whatsoever in the Drawings, Specifications, or in the Work without an executed Change Order, Change Order Request, Immediate Change Directive, or order by the Architect for a minor change in the Work as herein provided. District shall not be liable for the cost of any extra work or any substitutions, changes, additions, omissions, or deviations from the Drawings and Specifications unless the District's Governing Board or designated representative with delegated authority (subject to Board ratification) has authorized the same and the cost thereof approved in writing by Change Order or executed Construction Change Document. No extension of time for performance of the Work shall be allowed hereunder unless claim for such extension is made at the time changes in the Work are ordered, and such time duly adjusted in writing in the Change Order. The provisions of the Contract Documents shall apply to all such changes, additions, and omissions with the same effect as if originally embodied in the Drawings and Specifications. Notwithstanding anything to the contrary in this Article 7, all Change Orders shall be prepared and issued by the Architect and shall become effective when executed by the District's Governing Board, the Architect, and the Contractor.

Should any Change Order result in an increase in the Contract Price, the cost of such Change Order shall be agreed to, in writing, in advance by Contractor and District and be subject to the monetary limitations set forth in Public Contract Code section 20118.4 (Please check with the District since there are different interpretations of the limitations of Public Contract Code section 20118.4 depending on the County the Project is located). In the event that Contractor proceeds with any change in Work without first notifying District and obtaining the Architect's and District's consent to a Change Order, Contractor waives any Claim of additional compensation for such additional work and Contractor takes the risk that a Notice of Non-Compliance may issue, a critical path Project delay may occur, and the Contractor will also be responsible for the cost of preparation and DSA CCD review fees for a corrective DSA approved Construction Change Document.

CONTRACTOR UNDERSTANDS, ACKNOWLEDGES, AND AGREES THAT THE REASON FOR THIS NOTICE REQUIREMENT IS SO THAT DISTRICT MAY HAVE AN OPPORTUNITY TO ANALYZE THE WORK AND DECIDE WHETHER THE DISTRICT SHALL PROCEED WITH THE CHANGE ORDER OR ALTER THE PROJECT SO THAT SUCH CHANGE IN WORK BECOMES UNNECESSARY AND TO AVOID THE POSSIBLE DELAYS ASSOCIATED WITH THE ISSUANCE OF A NOTICE OF NON-COMPLIANCE.

7.1.2 Notices of Non-Compliance

Contractor deviation or changes from approved Plans and Specifications may result in the issuance of a Notice of Non-Compliance (See DSA Form 154). Contractor is specifically notified that deviations from the Plans and Specifications, whether major or minor, may result in the requirement to obtain a DSA Construction Change Document to correct the Notice of Non-Compliance. (See Article 7.3.1 for Definition of CCD). In some cases, the lack of a DSA approved CCD AND verification from the Inspector that a Notice of Non-Compliance has been corrected may result in a critical path delay to the next

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stage of Work on the Project. Specifically, a deviation from approved Plans and Specifications may prevent approval of the category of Work listed in the DSA 152 Project Inspection Card. Any delays that are caused by the Contractor's deviation from approved Plans and Specifications shall be the Contractor's responsibility.

7.1.3 Architect Authority

The Architect will have authority to order minor changes in the Work that do not involve DSA Approval not involving any adjustment in the Contract Sum, or an extension of the Contract Time.

7.2 CHANGE ORDERS ("CO")

A CO is a written instrument prepared by the Architect and signed by the District (as authorized by the District's Governing Board), the Contractor, and the Architect stating their agreement upon all of the following:

- a. A description of a change in the Work;
- b. The amount of the adjustment in the Contract Sum, if any; and
- c. The extent of the adjustment in the Contract Time, if any.

A CO may be comprised of ICD's, Response to RFP's and COR's

7.3 CONSTRUCTION CHANGE DOCUMENT (CCD Category A, and CCD Category B) and IMMEDIATE CHANGE DIRECTIVE (ICD)

7.3.1 Definitions

7.3.1.1 *Construction Change Document (CCD)*. A Construction Change Document is a DSA term that is utilized to address changes to the DSA approved Plans and Specifications. There are two types of Construction Change Documents. (1) DSA approved CCD Category A for Work affecting structural, access compliance or fire/ life safety of the Project which will require a DSA approval; and, (2) CCD Category B for work NOT affecting structural safety, access compliance or fire/ life safety that will not require a DSA approval (except to confirm that no approval is required). Both CCD Category A and Category B shall be set forth in DSA Form 140 and submitted to DSA as required.

7.3.1.2 *Immediate Change Directive (ICD)*. An Immediate Change Directive is a written order to the Contractor prepared by the Architect and signed by the District (and CM if there is a CM on the Project) and the Architect, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. The District may by ICD, without invalidating the Contract, direct immediate changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions within. If applicable, the Contract Sum and Contract Time will be adjusted accordingly.

In the case of an Immediate Change Directive being issued, Contractor must commence Work immediately or delays from failure to perform the ICD shall be the responsibility of Contractor and the failure to move forward with Work immediately shall also be grounds for Termination under Article 14.

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An ICD does not automatically trigger an Article 7.6 Dispute or Claim. Contractor must timely follow the procedures outlined at Article 7.6 and 4.6 where applicable.

Refer to Division 1 and Supplementary General Conditions for a copy of the proposed Immediate Change Directive form.

7.3.2 Use to Direct Change

An ICD shall be used to move work forward immediately and to avoid delay. In some cases, an ICD shall be issued in the absence of agreement on the terms of a CO, COR, or RFP. A copy of an ICD form is provided in the Supplementary General Conditions and Division 1. The anticipated not to exceed price for the Work will be inserted into the ICD. In the case of an ICD issued to correct Contractor Deficiencies or to correct a Contractor caused Notice of Non-Compliance, the ICD may be issued with \$0 and no additional time. Contract may prepare a COR associated with the ICD pursuant to Article 7. However, Contractor shall proceed with all Work required under an Approved ICD immediately upon issuance. Failure to proceed with the Work under an ICD shall be grounds for Termination for Cause under Article 14 or take over the Work under Article 2.2.

If adequate time exists, an ICD may be subject of an RFP for pricing and determination if any time that may be required. However, if an RFP is not completed, Contractor shall immediately commence Work when an ICD is issued. If the RFP is incomplete, it may still be completed to be submitted for pricing purposes as long as the RFP is submitted within the timeline provided by the RFP, or within 10 days following issuance of the ICD.

7.3.3 ICD Issued Over a Notice of Non-Compliance or to Cover Work Subject to a DSA 152 Sign Off

In some cases, an ICD shall be for the purpose of proceeding with Work to keep the Project on Schedule and as an acknowledgement by the District that Contractor is proceeding with Work contrary to a Notice of Non-Compliance, prior to issuance of a DSA approved CCD Category A, or to direct the covering of Work which has not yet received a DSA 152 Inspection Approval to move forward.

7.3.3.1 *Contractor Compliance with all Aspects of an ICD.* Contractor is to undertake the ICD and comply with all aspects of the Work outlined in the ICD. Inspector is to inspect the Work pursuant to the ICD. Failure to follow the ICD may result in deduction of the ICD Work under Article 2.2 or Termination of the Contractor pursuant to Article 14.

7.3.3.2 *Exception in the Case of DSA Issued Stop Work Order.* Contractor must proceed with an ICD even if a CCD has not been approved by DSA except in the case of a DSA issued Stop Work Order. If a DSA Stop Work Order is issued, Contractor must stop work and wait further direction from the District.

7.3.3.3 *ICD Due to Contractor Deficiency or Contractor Caused Notice of Non-Compliance.* If an ICD is issued to correct a Contractor Deficiency or a Contractor caused notice of Non-Compliance, Contractor specifically acknowledges responsibility for all consequential damages associated with the Contractor Deficiency or Contractor caused Notice of Non-Compliance and all consequential damages and costs incurred to correct the deficiency under Article 4.5

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7.4 REQUEST FOR INFORMATION ("RFI")

7.4.1 Definition

A RFI is a written request prepared by the Contractor requesting the Architect to provide additional information necessary to clarify or amplify an item which the Contractor believes is not clearly shown or called for in the Drawings or Specifications, or to address problems which have arisen under field conditions.

7.4.1.1 A RFI shall not be used as a vehicle to generate time extensions.

7.4.1.2 Resubmission of the same or similar RFI is not acceptable. RFI's that are similar should be addressed in Project meetings where the requestor (Contractor, Subcontractor or vendor) is able to address the particular issue with the Architect or Engineer and a resolution addressed in the minutes.

7.4.1.3 A RFI response applicable to a specific area cannot be extended to other situations unless specifically addressed in writing within the RFI or in a separate RFI.

7.4.1.4 RFI's should provide a proposed solution and should adequately describe the problem that has arisen.

7.4.2 Scope

The RFI shall reference all the applicable Contract Documents including Specification section, detail, page numbers, Drawing numbers, and sheet numbers, etc. The Contractor shall make suggestions and interpretations of the issue raised by the RFI. An RFI cannot modify the Contract Cost, Contract Time, or the Contract Documents.

7.4.3 Response Time

The Architect must respond to a RFI within a reasonable time after receiving such request. If the Architect's response results in a change in the Work, then such change shall be effected by a written CO, COR RFP or ICD, if appropriate. If the Architect cannot respond to the RFI within a reasonable time, the Architect shall notify the Contractor, with a copy to the Inspector and the District, of the amount of time that will be required to respond.

7.4.4 Costs Incurred

The Contractor shall be responsible for any costs incurred for professional services as more fully set forth in Article 4.5, which shall be subject to a Deductive Change Order, if an RFI requests an interpretation or decision of a matter where the information sought is equally available to the party making such request. District, at its sole discretion, shall issue a Deductive Change Order to Contractor for all such professional services arising from this Article.

7.5 REQUEST FOR PROPOSAL ("RFP")

7.5.1 Definition

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A RFP is a written request prepared by the Architect (and/or CM) requesting the Contractor to submit to the District and the Architect an estimate of the effect of a proposed change on the Contract Price and (if applicable) the Contract Time. If Architect issues a Bulletin, the Changed items in the Bulletin shall be addressed as an RFP and all responses shall be prepared to a Bulletin as addressed in this Article 7.5. A form RFP is included in the Division 1 documents.

7.5.2 Scope

A RFP shall contain adequate information, including any necessary Drawings and Specifications, to enable Contractor to provide the cost breakdowns required by Article 7.7. The Contractor shall not be entitled to any Additional Compensation for preparing a response to an RFP, whether ultimately accepted or not.

7.5.3 Response Time

Contractor shall respond to an RFP within ten (10) days or the time period otherwise set forth in the RFP.

7.6 CHANGE ORDER REQUEST ("COR")

7.6.1 Definition

A COR is a written request prepared by the Contractor supported by backup documentation requesting that the District and the Architect issue a CO based upon a proposed change, cost, time, or cost and time that may be incurred on the Project or arising from an RFP, ICD, or CCD.

7.6.2 Changes in Price

A COR shall include breakdowns per Article 7.7 to validate any change in Contract Price due to proposed change or Claim.

7.6.3 Changes in Time

A COR shall also include any additional time required to complete the Project only if the delay is a critical path delay. Any additional time requested shall not be the number of days to make the proposed change, but must be based upon the impact to the Project Schedule as defined in Article 8. A schedule fragnet showing the time delay must be submitted with the COR. Any changes in time will be granted only if there is an impact to the critical path. If Contractor fails to request a time extension in a COR, then the Contractor is thereafter precluded from requesting or claiming a delay.

7.7 COST OF CHANGE ORDERS

7.7.1 Scope

Within ten (10) days after a request is made for a change that impacts the Contract Sum as defined in Article 9.1, the critical path, or the Contract Time as defined in Article 8.1.1, the Contractor shall provide the District and the Architect, with a written estimate of the effect of the proposed CO upon the Contract Sum and the actual cost of construction, which shall include a complete itemized cost breakdown of all labor and material showing actual quantities, hours, unit prices, and wage rates required for the

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change, and the effect upon the Contract Time of such CO. Changes may be made by District by an appropriate written CO, or, at the District's option, such changes shall be implemented immediately upon the Contractor's receipt of an appropriate written Construction Change Document.

District may, as provided by law and without affecting the validity of this Agreement, order changes, modification, deletions and extra work by issuance of written CO or CCD from time to time during the progress of the Project, Contract Sum being adjusted accordingly. All such Work shall be executed under conditions of the original Agreement except that any extension of time caused thereby shall be adjusted at time of ordering such change. District has discretion to order changes on a "time and material" basis with adjustments to time made after Contractor has justified through documentation the impact on the critical path of the Project.

7.7.1.1 *Time and Material Charges.* If the District orders Work on a "time and material" basis, timesheets shall be signed daily by the Inspector or District Representative at or near the time the Work is actually undertaken and shall show the hours worked, and the Work actually completed. No time sheets shall be signed the next day. A copy shall be provided to the Person signing the document at the time the document is signed, but not before 10 am the following day.

7.7.2 Determination of Cost

The amount of the increase or decrease in the Contract Price from a CO or COR, if any, shall be determined in one or more of the following ways as applicable to a specific situation:

- a. Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation. If an agreement cannot be reached within fifteen (15) days after submission and negotiation of Contractor's proposal, Contractor may submit pursuant to Article 7.7.3. Submission of sums which have no basis in fact are at the sole risk of Contractor and may be a violation of the False Claims Act set forth under Government Code section 12650 et seq.);
 1. If the District objects to 7.7.2(a) as a method for submission due to inaccuracies in the submitted amount, overstatement of manpower or time required to perform the CO, or unreliability of the data provided, the District may either have the Architect or a professional estimator determine the cost for the CO, and the applicable time extension, or the Contractor shall utilize Article 7.7.2(d) or 7.7.3.
 2. Once the District provides a written objection to use of Article 7.7.2(a) due to unreliability of the estimated price, the Contractor shall no longer utilize mutual acceptance of a lump sum as a method for submission of CO's and shall provide a breakdown of estimated or actual costs pursuant to Article 7.7.2(d) or 7.7.3
- b. By unit prices contained in Contractor's original bid and incorporated in the Project documents or fixed by subsequent agreement between District and Contractor;

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- c. Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee. However, in the case of disagreement, Contractor must utilize the procedure under Article 7.7.3; or
- d. By cost of material and labor and percentage of overhead and profit. If the value is determined by this method the following requirements shall apply:

1. *Basis for Establishing Costs*

- (1) Labor will be the cost for wages prevailing locally for each craft or type of workers at the time the extra Work is done, plus employer payments of payroll taxes and workers compensation insurance (exclude insurance costs as part of the overhead and profit mark-up), health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State, or local laws, as well as assessments or benefits required by lawful collective bargaining agreements. In no case shall the total labor costs exceed the applicable prevailing wage rate for that particular classification. The use of a labor classification which would increase the extra Work cost will not be permitted unless the Contractor establishes the necessity for such additional costs. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.
- (2) Materials shall be at invoice or lowest current price at which such materials are locally available and delivered to the Site in the quantities involved, plus sales tax, freight, and delivery. The District reserves the right to approve materials and sources of supply or to supply materials to the Contractor if necessary for the progress of the Work. No markup shall be applied to any material provided by the District.
- (3) Tool and Equipment Rental. No payment will be made for the use of tools which have a replacement value of \$250 or less.

Regardless of ownership, the rates to be used in determining equipment rental costs shall not exceed listed rates prevailing locally at equipment rental agencies or distributors at the time the Work is performed. Rates applied shall be appropriate based on actual equipment need and usage. Monthly, weekly or other extended use rates that results in the lowest cost shall be applied if equipment is used on site for extended periods.

The rental rates paid shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals.

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Necessary loading and transportation costs for equipment used on the extra Work shall be included. If equipment is used intermittently and, when not in use, could be returned to its rental source at less expense to the District than holding it at the Work Site, it shall be returned unless the Contractor elects to keep it at the Work Site at no expense to the District.

All equipment shall be acceptable to the Inspector, in good working condition, and suitable for the purpose for which it is to be used. Manufacturer's ratings and modifications shall be used to classify equipment, and equipment shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

If tool and equipment charges are part of a Dispute, Claim, or Appeal, the District reserves the right to utilize actual costs for tools and equipment or a depreciation rate for equipment based on audit finding under Article 13.11 and deduct any rental charges that exceed actual or depreciated costs.

- e. Other Items. The District may authorize other items which may be required on the extra work. Such items include labor, services, material, and equipment which are different in their nature from those required by the Work, and which are of a type not ordinarily available from the Contractor or any of the Subcontractors. Invoices covering all such items in detail shall be submitted with the request for payment.
- f. Invoices. Vendors' invoices for material, equipment rental, and other expenditures shall be submitted with the COR. If the request for payment is not substantiated by invoices or other documentation, the District may establish the cost of the item involved at the lowest price which was current at the time of the Daily Report.
- g. Overhead. Overhead, including direct and indirect costs, shall be submitted with the COR and include: field overhead, home office overhead, off-site supervision, CO preparation/negotiation/research, time delays, Project interference and disruption, additional guaranty and warranty durations, on-site supervision, additional temporary protection, additional temporary utilities, additional material handling costs, liability and property damage insurance, and additional safety equipment costs.

7.7.3 Format for COR or CO's

The following format shall be used as applicable by the District and the Contractor to communicate proposed additions to the Contract. All costs submitted shall be actual costs and labor shall be unburdened labor. Refer to Division 1 for a copy of the Construction Change Order form.

	<u>EXTRA</u>	<u>CREDIT</u>
(a) Material (attach itemized quantity and unit cost plus sales tax)	_____	_____

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		<u>EXTRA</u>	<u>CREDIT</u>
(b)	Labor Not to Exceed Applicable Prevailing Wage Rates (attach itemized hours and rates)		
(c)	Equipment (attach invoices)		
(d)	Subtotal		
(e)	If Subcontractor performed work, add Subcontractor's overhead and profit to portions performed by Subcontractor, not to exceed 10% of item (d).		
(f)	Subtotal		
(g)	Contractor's Overhead and Profit: Not to exceed 10% of Item (d) if Contractor performed the work. No more than 5% of Item (d) if Subcontractor performed the work. If work was performed by Contractor and Subcontractors, portions performed by Contractor shall not exceed 10% of Item (d), and portions performed by Subcontractor shall not exceed 10% of Item (d).		
(h)	Subtotal		
(i)	Bond not to exceed one percent (1%) of Item (h)		
(k)	TOTAL		
(l)	Time/ Days		

The undersigned Contractor approves the foregoing Change Order or Immediate Change Directive as to the changes, if any, and the Contract price specified for each item and as to the extension of time allowed, if any, for completion of the entire Work on account of said Change Order or Immediate Change Directive, and agrees to furnish all labor, materials and service and perform all Work necessary to complete any additional Work specified therein, for the consideration stated herein. It is understood that said Change Order or Immediate Change Directive shall be effective when approved by the Governing Board of the District.

It is expressly understood that the value of such extra Work or changes, as determined by any of the aforementioned methods, expressly includes any and all of the Contractor's costs and expenses, both direct and indirect, resulting from additional time required on the Project or resulting from delay to the Project. Any costs, expenses, damages or time extensions not included are deemed waived.

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The Contractor expressly acknowledges and agrees that any change in the Work performed shall not be deemed to constitute a delay or other basis for claiming additional compensation based on theories including, but not limited to, acceleration, suspension or disruption to the Project.

7.7.3.1 *Adjustment for Time and Compensable Delay.* A CO shall also include any additional time required to complete the Project. Any additional time requested shall not be the number of days to make the proposed change, but must be based upon the impact to the Project Schedule as defined in Article 8 of the General Contract. A schedule fragnet showing the time delay must be submitted with the CO. Any changes in time will be granted only if there is an impact to the critical path. If Contractor fails to request a time extension in a CO, then the Contractor is thereafter precluded from requesting or claiming a delay.

7.7.4 Deductive Change Orders

All Deductive Change Order(s) must be prepared utilizing the form under Article 7.7.3 (a) – (d) only, setting forth the actual costs incurred. Except in the case of an Article 2.2 or 9.6 Deductive Change Order where no mark-up shall be allowed, Contractor will be allowed a maximum of 5% total profit and overhead.

For unilateral Deductive Change Orders, or where credits are due from Contractor for Allowances, Deductive Items, Inspection, Damage, DSA CCD review costs, Architect or Inspector costs for after hours or corrective services, Work removed from the Agreement under Article 2.2 or Article 9.6, there shall be no mark-up.

District may, any time after a Deductive Change Order is presented to Contractor by District for items under Article 2.2 or Article 9.6 or if there is disagreement as to the Deductive Change Order, issue a unilateral Deductive Change Order on the Project and deduct the Deductive Change Order from a Progress Payment, Final Payment, or Retention.

7.7.5 Discounts, Rebates, and Refunds

For purposes of determining the cost, if any, of any change, addition, or omission to the Work hereunder, all trade discounts, rebates, refunds, and all returns from the sale of surplus materials and equipment shall accrue and be credited to the Contractor, and the Contractor shall make provisions so that such discounts, rebates, refunds, and returns may be secured, and the amount thereof shall be allowed as a reduction of the Contractor's cost in determining the actual cost of construction for purposes of any change, addition, or omissions in the Work as provided herein. All CO's are subject to Audit under Article 13.11 for discounts, rebates and refunds.

7.7.6 Accounting Records

With respect to portions of the Work performed by CO's and CCD's on a time-and-materials, unit-cost, or similar basis, the Contractor shall keep and maintain cost-accounting records in a format consistent with accepted accounting standards and satisfactory to the District, which shall be available to the District on the same terms as any other books and records the Contractor is required to maintain under the Contract Documents.

Any time and material charges shall require Inspector's signature on time and material cards showing the hours worked and the Work actually completed. (See Article 7.7.1.1)

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7.7.7 Notice Required

If the Contractor desires to initiate a Dispute for an increase in the Contract Price, or any extension in the Contract Time for completion, Contractor shall notify the applicable party responsible for addressing the Dispute or Claim pursuant to Article 4.6. No Claim or Dispute shall be considered unless made in accordance with this subparagraph. Contractor shall proceed to execute the Work even though the adjustment may not have been agreed upon. Any change in the Contract Price or extension of the Contract Time resulting from such Claim shall be authorized by a CO.

7.7.8 Applicability to Subcontractors

Any requirements under this Article 7 shall be equally applicable to CO's, COR's or ICD's issued to Subcontractors by the Contractor to the same extent required by the Contractor.

7.7.9 Alteration to Change Order Language

Contractor shall not alter or reserve time in COR's, CO's or ICD's. Contractor shall execute finalized CO's and proceed under Article 7.7.7 and Article 4.6 with proper notice. If Contractor intends to reserve time without an approved CPM schedule prepared pursuant to Article 8 or without submitting a fragnet showing delay to critical path, then Contractor may be prosecuted pursuant to the False Claim Act.

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ARTICLE 8 TIME AND SCHEDULE

8.1 DEFINITIONS

8.1.1 Contract Time

Contractor shall perform and reach Substantial Completion (See Article 1.1.46) within the time specified in the Agreement Form. Moreover, Contractor shall perform its Work in strict accordance with the Project Milestones in the Contract Documents and shall proceed on a properly developed and approved Baseline Schedule, which represents the Contractor's view of the practical way in which the Work will be accomplished. Note that Contract Time includes and incorporates all Float and other Baseline inclusions as noted in Article 8.3.2.1 and as otherwise specifically noted in Article 8.

8.1.2 Notice to Proceed

District may give a Notice to Proceed within ninety (90) days of the award of the bid by District. Once Contractor has received the notice to proceed, Contractor shall complete the Work in the period of time referenced in the Contract Documents.

In the event that District desires to postpone the giving of the Notice to Proceed beyond this three-month period, it is expressly understood that with reasonable notice to the Contractor, the giving of the date to proceed may be postponed by District. It is further expressly understood by Contractor, that Contractor shall not be entitled to any claim of additional compensation as a result of the postponement of the giving of the notice to proceed

If the Contractor believes that a postponement will cause a hardship to Contractor, Contractor may terminate the Contract with written notice to District within 10 days after receipt by Contractor of District's notice of postponement. It is further understood by Contractor that in the event that Contractor terminates the Contract as a result of postponement by the District, the District shall only be obligated to pay Contractor for the Work that Contractor had performed at the time of notification of postponement and the grounds for notification and hardship shall be subject to Audit pursuant to Article 13.11. Should Contractor terminate the Contract as a result of a notice of postponement, District may award the Contract to the next lowest responsible bidder.

8.1.3 Computation of Time

The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

8.1.4 Float

Float is time the total number of days an activity may be extended or delayed without delaying the Completion Date shown in the schedule. Float will fall into three categories: (1) Rain Days; (2) Governmental Delays; and, (3) Project Float. Project Float and Rain Days are owned by the Project and may be utilized as necessary for critical path delays once the days become available for consumption (i.e. the Rain Day arrives and is not utilized since rain did not occur or Work was performed on the interior of

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a building). However, Governmental Delay float shall not be utilized for purposes other than to address critical path delays that arise due to approvals, Inspector approvals or verifications on governmental forms.

8.1.4.1 *Governmental Delay Float.* It is anticipated that there will be governmental generated delays. Specific to DSA approvals, it is anticipated that no less than twelve (12) days per calendar year shall be set aside as Governmental Float to be utilized on critical path delays. A pro-rated number of days shall be calculated based on length of Contract Time. (For example, a two (2) year Contract Time shall require twenty-four (24) days of Governmental Float. If the Contract Time is 182 days, then the Contract Time shall require six (6) days of Governmental Float) This Governmental Delay float must be incorporated into the schedule and should be incorporated in each critical activity as Contractor deems fit. Specifically, major categories of Work under the DSA 152 (Project Inspection Card) should be allocated Governmental Delay Float at the Contractor's discretion. Governmental Delay Float on the Project may exceed 12 days per one (1) year period, but Contractor is required to include not be less than 12 days of Governmental Delay Float during each one (1) year period.

Contractor's failure to establish a protocol for requesting inspections is not grounds to utilize Governmental Delay Float. As noted in Article 3.1.4, 48 hours advance notice of commencing Work on a new area is required after submitting form DSA 156 and under PR 13-01 Special Inspection reports are not required to be posted until at least 14 days after the Work was inspected. Failure to plan, and pay (if applicable) for quicker delivery of Special Inspections is not Governmental Delay Float under Article 8.1.4.1. If Governmental Delay Float is not utilized, this float is carried through to other DSA 152 categories of inspection and consumed over the course of the Project

Governmental Delay Float may be utilized for a DSA Stop Work Order regardless of fault as defined under Education Code section 17307.5(b).

8.1.4.2 *Inclement Weather (Rain Days).* The Contractor will only be allowed a time extension for unusually severe weather if it results in precipitation or other conditions which in the amount, frequency, or duration is in excess of the norm at the location and time of year in question as established by NOAA weather data. No less than 22 calendar days for each calendar year for Southern California will be allotted for in the Contractor's schedule for each winter weather period or carried at the end of the schedule as Rain Float. Float for weather days in other geographical regions shall be adjusted based on NOAA weather data for the geographical location. Contractor has anticipated all the days it takes to dry out and re-prepare areas that may be affected by weather delays which extend beyond the actual weather days. The weather days shall be shown on the schedule and if not used will become float for the Project's use. The Contractor will not be allowed a day-for-day weather delay for periods noted as float in the Schedule. The Contractor is expected to work seven (7) days per week (if necessary, irrespective of inclement weather), to maintain access, and to protect the Work under construction from the effects of inclement weather. Additional days beyond the NOAA shall be considered under the same criteria that weather days are granted below.

A Rain Day shall be granted by Architect or CM if the weather prevents the Contractor from beginning Work at the usual daily starting time, or prevents the Contractor from proceeding with seventy-five (75%) of the normal labor and equipment force towards completion of the day's current controlling item on the accepted schedule for a period of at least five hours, and the crew is dismissed as a result thereof, the Architect will designate such time as unavoidable delay and grant one (1) critical path activity calendar-day extension if there is no available float for the calendar year.

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8.1.4.3 *Project Float.* The Contractor may determine some activities require a lesser duration than allocated and may set aside float in the Project Schedule. There shall be no early completion. Instead, to the extent float is either addressed at the end of the Project or throughout each category of critical path work, Project float may be used as necessary during the course of the Project and allocated on a first, come first serve basis. However, the use of float does not extend to Governmental Delay Float, which shall only be used for Governmental Delays.

8.2 HOURS OF WORK

8.2.1 Sufficient Forces

Contractors and Subcontractors shall continuously furnish sufficient forces to ensure the prosecution of the Work in accordance with the Construction Schedule.

8.2.2 Performance During Working Hours

Work shall be performed during regular working hours as permitted by the appropriate governmental agency except that in the event of an emergency, or when required to complete the Work in accordance with job progress, Work may be performed outside of regular working hours with the advance written consent of the District and approval of any required governmental agencies.

8.2.3 Costs for After Hours Inspections

If the Work done after hours is required by the Contract Documents, a Recovery Schedule, or as a result of the Contractor's failure to plan, and inspection must be conducted outside the Inspector's regular working hours, the costs of any after hour inspections, shall be borne by the Contractor.

If the District allows the Contractor to do Work outside regular working hours for the Contractor's convenience, the costs of any inspections required outside regular working hours shall be invoiced to the Contractor by the District and a Deductive Change Order shall be issued from the next Progress Payment.

If the Contractor elects to perform Work outside the Inspector's regular working hours, costs of any inspections required outside regular working hours shall be invoiced to the Contractor by the District and a Deductive Change Order from the next Progress Payment as a Deductive Change Order.

8.3 PROGRESS AND COMPLETION

8.3.1 Time of the Essence

Time limits stated in the Contract Documents are of the essence to the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

8.3.2 Baseline Schedule Requirements

8.3.2.1 *Timing:* Within ten (10) calendar days after Notice to Proceed, Contractor shall submit a practical schedule showing the order in which the Contractor proposes to perform the Work, and the dates on which the Contractor contemplates starting and completing the salient categories of the Work.

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This first schedule which outlines the Contractor's view of the practical way in which the Work will be accomplished is the Baseline Schedule. If the Contractor Fails to submit the Baseline Schedule within the ten (10) days noted, then District may withhold processing and approval of progress payments pursuant to Article 9.4 and 9.6.

8.3.2.2 *District Review and Approval:* District, Architect and CM will review both a paper and electronic copy of Baseline Schedule and may provide comments as noted in this Article and either approve or disapprove the Baseline Schedule. All Schedules shall be prepared using an electronic scheduling program acceptable to District. All Schedules shall be delivered in an electronic format usable by the District. All logic ties and electronic information shall be included in the electronic copy of the Baseline Schedule that is delivered to the District.

8.3.2.3 *Schedule Must Be Within the Given Contract Time.* The Baseline Schedule shall not exceed time limits set forth in the Contract Documents and shall comply with all of the scheduling requirements as set forth in the Specifications and Contract Documents.

8.3.2.4 *Submittals Must Be Incorporated (See Articles 3.7 and 3.9):* Contractor shall include Submittals as line items in the Baseline Schedule as required under Article 3.7.2 and 3.9.6. Submittals shall not delay the Work, Milestones, or the Completion Date. Failure to include Submittals in the Baseline Schedule shall be deemed a material breach by the Contractor.

8.3.2.5 *Float Must Be Incorporated.* The Baseline Schedule must indicate the beginning and completion of all phases of construction and shall use the "critical path method" (commonly called CPM) for the value reporting, planning and scheduling, of all Work required under the Contract Documents. The Baseline Schedule must incorporate all Milestones in the Project and apply Governmental Float at each Milestone in the Contractor's discretion. The Baseline Schedule shall incorporate any Schedule provided by the District as part of the bid and shall note durations that will not be adequate or should be shortened based on Contractor's review. These changes shall be identified and incorporated into Contractor's Baseline Schedule as long as requested changes are made within 10 days after the District chooses to move forward with the Project. Scheduling is necessary for the District's adequate monitoring of the progress of the Work and shall be prepared in accordance with the time frame described in this Article 8. The Architect may disapprove of any Schedule or require modification to it if, in the opinion of the Architect or District, adherence to the any Schedule prepared by the Contractor will not cause the Work to be completed in accordance with the Agreement.

8.3.2.6 *No Early Completion.* Contractor shall not submit any Schedule showing early completion without indicating float time through the date set for Project completion by District. Contractor's Baseline Schedule shall account for all days past early completion as float which belongs to the Project. Usage of float shall not entitle Contractor to any delay Claim or damages due to delay.

8.3.2.7 *Use of Schedule Provided in Bid Documents.* In some cases, the bid will include a preliminary schedule indicating Milestones and construction sequences for the Project along with general timing for the Project. The preliminary schedule is not intended to serve as the Baseline Schedule utilized for construction. It is up to the Contractor to study and develop a Baseline Schedule to address the actual durations and sequences of Work that is anticipated while maintaining the Milestones provided by the District. Contract shall obtain information from Contractor's Subcontractors and vendors on the planning, progress, delivery of equipment, coordination, and timing of availability of Subcontractors so a practical plan of Work is fully developed and represented in the Baseline Schedule.

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8.3.2.8 *Incorrect Logic, Durations, Sequences, or Critical Path.* The District may reject or indicate durations, sequences, critical path or logic are not acceptable and request changes. The electronic copy of the Baseline Schedule shall have adequate information so logic ties, duration, sequences and critical path may be reviewed electronically. Contractor is to diligently rebuild and resubmit the Baseline Schedule to represent the Contractor's plan to complete the Work and maintain Milestones at the next progress meeting, or before the next progress meeting. If Contractor is not able to build a Baseline Schedule that is acceptable to the District or Architect, the District reserves the right to utilize the unapproved originally submitted Baseline Schedule (See Article 8.3.2.12) and the comments submitted to hold Contractor accountable for timely delivery of Work and maintenance of Milestones. Furthermore, Contractor's representations in the Baseline Schedule, if unacceptable, may also be used as a basis for termination of the Contract under Article 14 if Contractor fails to adequately maintain the Schedule and falls significantly behind without undertaking the efforts to either submit and follow a Recovery Schedule or fail to submit a Recovery Schedule and make no effort toward recovery on the Project.

8.3.2.9 *Contractor Responsibility Even if Schedule Issues Are Not Discovered.* Failure on the Part of the District to discover errors or omissions in any Schedules submitted shall not be construed to be an approval of the error or omission and any flawed Schedule is not grounds for a time extension.

8.3.2.9 Inclusions in Baseline Schedule. In addition to scheduling requirements set forth at Article 8.3.2, Contractor is specifically directed to include (broken out separately) in Contractor's Baseline Schedule and all Schedule updates, the following items required pursuant to these General Conditions, including but not limited to:

1. Rain Day Float (excluding inclement weather) as required under Article 8.1.4.2. For example, if the NOAA provides 22 days of Rain Days, all 22 days must be incorporated and noted in the Baseline Schedule. Further, any days required to clean-up or dry out shall be included for operations that are likely to require a clean-up or dry out period. Days that are not utilized shall be considered float owned by the Project.
2. Governmental Delay Float under Article 8.1.4.1. This Governmental Delay Float shall only be utilized for Governmental Delays and shall not be considered available float owned by the Project. This float shall only be distributed to the Project upon the completion of the Project and shall be used to offset Liquidated Damages and shall not generate compensable delays.
3. Submittal and Shop Drawing schedule under Article 3.9.
4. Deferred Approvals under Article 3.9.
5. Time for separate contractors, including furniture installation and start up activities, under Article 6.1.
6. Coordination and timing of any Drawings, approvals, notifications, permitting, connection, and testing for all utilities for the Project. (See Article 2.1.4).

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7. Testing, special events, or school activities

8.3.2.10 *Failure to include Mandatory Schedule Items.* District may withhold payment pursuant to Articles 9.3, 9.4 and 9.6. In lieu of withholding payment for failure to include Mandatory Schedule Items, after the District or Architect has notified the Contractor of failure to meet the Baseline Schedule or Updated Schedule requirements and provided a written notification of this failure and provided a written notice of Schedule preparation errors, and the Contractor fails to correct the noted deficiencies or the Contractor does not provide an updated Baseline Schedule correcting the deficiencies, then Contractor shall not be granted an extension of time for failure to obtain necessary items and approvals under Article 8.3.2 and for the time required for failure to comply with laws, building codes, and other regulations (including Title 24 of the California Code of Regulations). Contractor shall maintain all required Article 8.3.2 Schedule items in the Baseline Schedule and indicate any days that have been used as allowed in Article 8. If Contractor fails to include all Article 8.3.2 items in its Baseline Schedule or Schedule Updates and the District either utilizes an Unapproved Schedule under Article 8.3.2.12 or does not object to the inclusion of required scheduling items, then all mandatory Schedule inclusions, including float, shall be utilized in the District's discretion. If the Contract Time is exceeded, then Contractor shall be subject to the assessment of Liquidated Damages pursuant to Article 8.4.

8.3.2.11 *Failure to Meet Requirements.* Failure of the Contractor to provide proper Schedules as required by this Article and Article 9 is a material breach of the Contract and grounds for Termination pursuant to Article 14. The District, at its sole discretion, may choose, instead, to withhold, in whole or in part, any Progress Payments or Retention amounts otherwise payable to the Contractor.

8.3.2.12 *Use of an Unapproved Baseline Schedule.* If the Baseline Schedule submitted by the Contractor is unacceptable to the District (i.e. failing to meet the requirements of Article 8.3.2) and Contractor does not incorporate or address the written comments to the Baseline Schedule and a Baseline Schedule is not approved, but due to extreme necessity, the District moves forward without an approved Baseline Schedule, Contractor shall diligently revise and meet Schedule update requirements of Article 8 and incorporate all Article 8.3.2 comments in all updates). However, for purposes of Termination pursuant to Article 14, the unapproved Baseline Schedule initially submitted shall be treated as the Baseline Schedule with durations shortened or revised to accommodate all float, all mandatory Schedule requirements under Article 8.3.2, any requirements in the Contract Documents, and all revisions by the District or Architect.

8.3.3 Update Schedules

8.3.3.1 *Updates Shall Be Based on Approved Baseline Schedule.* Except in the case where there has not been agreement as to a Baseline Schedule, the approved Baseline Schedule shall be used to build future Schedule updates. Schedule updates shall be a CPM based Schedule consistent with the Baseline Schedule requirements of 8.3.2

In the case that no Baseline has been approved, Schedule updates shall be provided monthly and each update shall incorporate all comments and revisions noted as not complying with the requirements of Article 8.3.2. Contractor shall be held to the Article 8.3.2.12 unapproved Baseline Schedule, inclusive of all Milestones, float, comments and revisions by the District and Architect, all required Baseline Schedule Inclusions under Article 8.3.2, and any requirements in the Contract Documents.

8.3.3.2 *Schedule Updates.* Contractor shall update the approved Schedule each month to address actual start dates and durations, the percent complete on activities, actual completion dates,

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estimated remaining duration for the Work in progress, estimated start dates for Work scheduled to start at future times and changes in duration of Work items

8.3.3.3 *Listing of Items Causing Delays.* Schedule updates shall provide a listing of activities which are causing delay in the progress of Work and a narrative shall be provided showing a description of problem areas, anticipated delays, and impacts on the Construction Schedule. Simply stating "District Delay" or "Architect Delay" shall be an inadequate listing. Delays shall only be listed if they meet the requirements of Article 8.4.

8.3.3.4 *Recovery Schedule.* In addition to providing a schedule update every thirty (30) days, the Contractor, if requested by the Architect or District, shall take the steps necessary to improve Contractor's progress and demonstrate to the District and Architect that the Contractor has seriously considered how the lost time, the Completion Date, or the Milestones that are required to be met within the terms of the Contract. Contractor shall immediately provide a Recovery Schedule showing how Milestones and the Completion Date will be met. In no case, shall a Recovery Schedule be provided later than ten (10) days following the request for a Recovery Schedule from the Architect or District.

- a. Failure to Provide a Recovery Schedule. Shall subject Contractor to the assessment of Liquidated Damages for failure to meet the Contract Time. Refusal or failure to provide a Recovery Schedule shall be considered a substantial failure of performance and a material breach of Contract and may result in Termination of the Contract pursuant to Article 14.
- b. Recovery Schedule Acceleration without Additional Cost. The District may require Contractor prepare a Recovery Schedule showing how the Project shall be accelerated, without any additional cost to the District. The District may order, without additional cost, the following:
 1. Increase the number of shifts;
 2. Utilize overtime to recover the approved Schedule; and/or
 3. Increase the days when Work occurs, including weekends, at the Project and at any manufacturer's plant.
- c. Recovery Schedule Acceleration without Additional Cost. If Contractor disputes that the Recovery Schedule acceleration shall be issued without additional costs, the Contractor shall submit concurrent with Recovery Schedule acceleration notice pursuant to Articles 8.4.3 and 8.4.4.

8.4 EXTENSIONS OF TIME - LIQUIDATED DAMAGES

8.4.1 Liquidated Damages

CONTRACTOR AND DISTRICT HEREBY AGREE THAT THE EXACT AMOUNT OF DAMAGES FOR FAILURE TO COMPLETE THE WORK WITHIN THE TIME SPECIFIED IS EXTREMELY DIFFICULT OR IMPOSSIBLE TO DETERMINE. IF THE WORK IS NOT SUBSTANTIALLY COMPLETED IN THE TIME SET FORTH IN THE AGREEMENT, IT IS UNDERSTOOD THAT THE DISTRICT WILL SUFFER DAMAGES. IT BEING IMPRACTICAL AND

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UNFEASIBLE TO DETERMINE THE AMOUNT OF ACTUAL DAMAGE, IT IS AGREED THE CONTRACTOR SHALL PAY TO THE DISTRICT THE AMOUNT LIQUIDATED DAMAGES SET FORTH IN THE AGREEMENT, FOR EACH CALENDAR DAY OF DELAY IN REACHING SUBSTANTIAL COMPLETION (SEE ARTICLE 1.1.46). CONTRACTOR AND ITS SURETY SHALL BE LIABLE FOR THE AMOUNT THEREOF PURSUANT TO GOVERNMENT CODE SECTION 53069.85.

8.4.2 Delay

Except and only to the extent provided under Article 7 and Article 8, by signing the Agreement, Contractor agrees to bear the risk of delays to Completion of the Work and that Contractor's bid for the Project was made with full knowledge of this risk.

In agreeing to bear the risk of delays to complete the Work, Contractor understands that, except and only to the extent provided otherwise in Article 7 and 8, the occurrence of events that delay the Work shall not excuse Contractor from its obligation to achieve Completion of the Project within the Contract Time, and shall not entitle the Contractor to an adjustment to the Contract time.

8.4.3 Excusable Delay

Contractor shall not be charged for Liquidated Damages because of any delays in completion of Work which are not the fault or negligence of Contractor or its Subcontractors, arising from Rain Float or Project Float, including acts of God, as defined in Public Contract Code section 7105, acts of enemy, epidemics and quarantine restrictions. Contractor shall within five (5) calendar days of beginning of any such delay notify District in writing of causes of delay; thereupon District shall ascertain the facts and extent of delay and grant extension of time for completing Work when, in its judgment, the findings of fact justify such an extension. Extensions of time shall apply only to that portion of Work affected by delay, and shall not apply to other portions of Work not so affected. An extension of time may only be granted after proper compliance with Article 8.3 requiring preparation and submission of a properly prepared CPM schedule.

8.4.3.1 *Excusable Delay Is Not Compensable.* No extended overhead, general conditions costs, impact costs, out-of-sequence costs or any other type of compensation, by any name or characterization, shall be paid to the Contractor for any delay to any activity not designated as a critical path item on the latest approved Project schedule.

8.4.3.2 *Notification.* The Contractor shall notify the Architect in writing of any anticipated delay and its cause, in order that the Architect may take immediate steps to prevent, if possible, the occurrence or continuance of delay, and may determine whether the delay is to be considered avoidable or unavoidable, how long it continues, and to what extent the prosecution and completion of the Work might be delayed thereby.

8.4.3.3 *Extension Request.* In the event the Contractor requests an extension of Contract time for unavoidable delay, such request shall be submitted in accordance with the provisions in the Contract Documents governing changes in Work (See Article 7). When requesting time, i.e., extensions, for proposed Change Orders, they must be submitted with the proposed Change Order with full justification and documentation. If the Contractor fails to submit justification with the proposed Change Order it waives its right to a time extension at a later date. Such justification must be based on the official Contract schedule as updated at the time of occurrence of the delay or execution of Work related to any changes to the scope

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of Work. Blanket or general claims for extra days without specific detailed information as required herein or a blanket or general reservation of rights do not fulfill the requirements of this Article and shall be denied. The justification must include, but is not limited to, the following information:

- a. The duration of the activity relating to the changes in the Work and the resources (manpower, equipment, material, etc.) required to perform these activities within the stated duration.
- b. Logical ties to the official Baseline Schedule or Approved Updated Schedule for the proposed changes and/or delay showing the activity/activities in the schedule whose start or completion dates are affected by the change and/or delay. (A fragnet of any delay of over ten (10) days must be provided.)

The Contractor and District understand and expressly agree that insofar as Public Contract Code section 7102 may apply to changes in the Work or delays under this Contract, the actual delays and damages, if any, and time extensions are intended to, and shall provide, the exclusive and full method of compensation for changes in the Work and construction delays.

8.4.4 Notice by Contractor Required

The Contractor shall within five (5) calendar days of beginning of any such delay notify the District in writing of causes of delay with justification and supporting documentation. In the case of a Recovery Schedule pursuant to Article 8.3.3.4, Contractor shall submit written notice concurrent with the Recovery Schedule. District will then ascertain the facts and extent of the delay and grant an extension of time for completing the Work when, in its judgment, the findings of fact justify such an extension. Extensions of time shall apply only to that portion of the Work affected by the delay and shall not apply to other portions of the Work not so affected.

Claims relating to time extensions shall be made in accordance with applicable provisions of Article 7.

8.4.4.1 *Adjustment for Compensable Delays.* The Schedule may be adjusted for a delay if, and only if, Contractor undertakes the following:

- a. Contractor submits a timely COR or CO pursuant to the requirements of Article 7.
- b. Contractor submits a fragnet showing the critical path delay caused by the COR, CO, Changed Condition, CCD, or ICD
- c. Contractor has addressed all required float days in the Fragnet.
- d. Contractor submits a complete breakdown of all costs incurred utilizing the format of Article 7.3.3

8.4.5 No Additional Compensation for Coordinating Governmental Submittals and the Resulting Work

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CONTRACTOR HAS PLANNED ITS WORK AHEAD OF TIME AND IS AWARE THAT GOVERNMENTAL AGENCIES, SUCH AS THE GAS COMPANIES, ELECTRICAL UTILITY COMPANIES, WATER DISTRICTS AND OTHER AGENCIES MAY HAVE TO APPROVE CONTRACTOR PREPARED DRAWINGS OR APPROVE A PROPOSED INSTALLATION. CONTRACTOR HAS INCLUDED DELAYS AND DAMAGES WHICH MAY BE CAUSED BY SUCH AGENCIES IN CONTRACTOR'S BID AND HAS INCLUDED ADEQUATE TIME IN THE CONTRACTOR'S BASELINE SCHEDULE. FAILURE TO ADEQUATELY PLAN AND SCHEDULE IS NOT A BASIS TO USE GOVERNMENTAL DELAY FLOAT.

8.4.6 District Right to Accelerate the Work

The District may direct the Contractor to meet schedule requirements when the Work has been delayed. The District shall compensate the Contractor for the additional costs incurred by acceleration to the extent that such costs are directly attributable to the acceleration and are incurred through no fault or negligence of the Contractor.

8.4.6.1 *Management of Acceleration.* Contractor acceleration shall not include Work that is part of the scope of Work detailed in the Plans and Specifications. Instead, the acceleration costs shall be premium or overtime and quantifiable additional work added to the Project meant to accelerate the Project. Contractor is directed to keep consistent crews on the Project so time can be tracked. If crews are circulated off the Project or crews brought in only for overtime, the District may be charged for Contract Work and not accelerated time. In such case, the District may object to the costs submitted.

8.4.6.2 *Costs for Acceleration.* Cost for Acceleration shall be supported by backup documentation, and time sheets signed by the Inspector for each day work has been performed, at or near the time when the Work was performed. A listing on the time sheet shall document all labor, materials and services utilized that day and provide areas of work, and amount of work performed. Contractor shall comply with submission requirements of Article 7.7.

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ARTICLE 9 PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

The Contract Sum or Contract Price is stated in the Agreement and, including authorized adjustments, is the total amount payable by the District to the Contractor for performance of the Work under the Contract Documents.

9.2 COST BREAKDOWN

9.2.1 Required Information

Contractor shall furnish the following:

- a. Within ten (10) days after Notice to Proceed, a detailed breakdown of the Contract Price (hereinafter "Schedule of Values") for each Project, Site, building, Milestone or other meaningful method to measure the level of Project Completion as determined by the District shall be submitted as a Submittal for the Project.;
- b. Within ten (10) days after the date of the Notice to Proceed, a schedule of estimated monthly payment requests due the Contractor showing the values and construction time of the various portions of the Work to be performed by it and by its Subcontractors or material and equipment suppliers containing such supporting evidence as to its correctness as the District may require;
- c. Within ten (10) days after the date of the Notice to Proceed, address, telephone number, telecopier number, California State Contractors License number, classification and monetary value of all subcontracts for parties furnishing labor, material, or equipment for completion of the Project.

9.2.2 Information and Preparation of Schedule of Values

9.2.2.1 *Break Down of Schedule of Values.* Schedule of Values shall be broken down by Project, site, building, Milestone, or other meaningful method to measure the level of Project Completion as determined by the District.

9.2.2.2 *Based on Contractor Bid Costs.* The Schedule of Values shall be based on the costs from Contractor's bid to the District. However, the submission of the Schedule of Values shall not be front loaded so the Contractor is paid a greater value than the value of the Work actually performed and shall not shift funds from parts of the Project that are later to Work that is performed earlier.

9.2.2.3 *Largest Dollar Value for Each Line Item.* Identify Subcontractors and materials suppliers proposed to provide portions of Work equal to or greater than ten thousand dollars (\$10,000) or one-half of one percent (0.5%) of their Contract Price, whichever is less.

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9.2.2.4 *Allowances.* Any Allowances provided for in the Contract shall be a line item in the Schedule of Values.

9.2.2.5 *Labor and Materials Shall Be Separate.* Labor and Materials shall be broken into two separate line items unless specifically agreed in writing by the District.

9.2.3 District Approval Required

The District shall review all submissions received pursuant to Article 9.2 in a timely manner. All submissions must be approved by the District before becoming the basis of any payment.

9.3 PROGRESS PAYMENTS

9.3.1 Payments to Contractor

Unless there is a resolution indicating that the Work for the Project is substantially complex, within thirty-five (35) days after approval of the Request for Payment, Contractor shall be paid a sum equal to ninety-five percent (95%) of the value of the Work performed (as certified by Architect and Inspector and verified by Contractor) up to the last day of the previous month, less the aggregate of previous payments. In the case of a Project designated substantially complex, the sum paid to the Contractor shall be equal to ninety percent (90%) of the value of the Work performed (as certified by the Architect and Inspector and verified by Contractor). The value of the Work completed shall be the Contractor's best estimate. Work completed as estimated shall be an approximation or estimate only and no mistake, inaccuracy, error or falsification in said any approved estimate shall operate to release the Contractor, or any Surety upon any bond, from damages arising from such Work, or from the District's enforcement of each and every provision of this Contract including but not limited to the Performance Bond and Payment Bond. The District shall have the right to subsequently to correct any mistake, inaccuracy, error or falsification made or otherwise set forth in any approved Request for Payment and such correction may occur in any future Payment Application or in the Retention Payment to the Contractor. No Surety upon any bond shall be relieved, released or exonerated of its obligations under this Contract or any applicable bond when the District is unable to correct an overpayment to the Contractor due to any abandonment by the Contractor or termination by the District.

The Contractor shall not be entitled to have any payment requests processed, or be entitled to have any payment made for Work performed, so long as any lawful or proper direction given by the District concerning the Work, or any portion thereof, remains incomplete.

Notwithstanding anything to the contrary stated above, the Contractor may include in its Request for Payment the value of any structural steel, glue laminated beams, trusses, bleachers and other such custom-made materials prepared specifically for the Project and unique to the Project so long as all of the following requirements are satisfied:

- a. The aggregate cost of materials stored off-site shall not exceed Twenty Five Thousand Dollars (\$25,000) at any time or as otherwise agreed to be District in writing;
- b. Title to such materials shall be vested in the District as evidenced by documentation satisfactory in form and substance to the District, including, without limitation, recorded financing statements, UCC filings and UCC searches;

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- c. With each Contractor Request for Payment, the Contractor shall submit to the District a written list identifying each location where materials are stored off-site (which must be a bonded warehouse) and the value of the materials at each location. The Contractor shall procure insurance satisfactory to the District (in its reasonable discretion) for materials stored off-site in an amount not less than the total value thereof;
- d. The consent of any Surety shall be obtained to the extent required prior to payment for any materials stored off-site;
- e. Representatives of the District shall have the right to make inspections of the storage areas at any time; and
- f. Such materials shall be: (1) protected from diversion, destruction, theft and damage to the reasonable satisfaction of the District; (2) specifically marked for use on the Project; and (3) segregated from other materials at the storage facility.

9.3.2 Purchase of Materials and Equipment and Cost Fluctuations

The Contractor is required to order, obtain, and store materials and equipment sufficiently in advance of its Work at no additional cost or advance payment from District to assure that there will be no delays. Contractor understands that materials fluctuate in value and shall have adequately addressed market fluctuations through agreements with Contractor vendors or by other means. Contractor further understands and incorporates into Contractor's bid cost any wage rate increases during the Project for the Contractor's labor force as well as all other Subcontractor and vendor labor forces. District shall not be responsible for market fluctuations in costs or labor rate increases during the Project. Contractor further has incorporated any and all cost increases in areas of Work where there may be schedule variations so that cost increases are not passed through to the District.

9.3.3 No Waiver

No payment by District hereunder shall be interpreted so as to imply that District has inspected, approved, or accepted any part of the Work. Contractor specifically understands that Title 24 Section 4-343 which states:

"It is the duty of the contractor to complete the work covered by his or her contract in accordance with the approved Plans and Specifications therefore. The contractor in no way is relieved of any responsibility by the activities of the Architect, Engineer, Inspector or DSA in the performance of such duties... In no case, however, shall the instruction of the Architect or registered Engineer be construed to cause work to be done with is not in conformity with the approved Plans, Specifications, and change orders..."

Notwithstanding any payment, the District may enforce each and every provision of this Contract which includes, but is not limited to, the Performance Bond and Payment Bond. The District may correct any error subsequent to any payment. In no event shall the Contractor or the Surety be released or exonerated from performance under this Contract when the District overpays the Contractor based upon any mistake, inaccuracy, error or falsification in any estimate that is included in any Request for Payment.

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9.3.4 Issuance of Certificate of Payment

The Architect shall, within seven (7) days after receipt of the Contractor's Application for Payment, either approve such payment or notify the Contractor in writing of the Architect's reasons for withholding approval in whole or in part as provided in Article 9.6. The review of the Contractor's Application for Payment by the Architect is based on the Architect's observations at the Project and the data comprising the Application for Payment that the Work has progressed to the point indicated and that, to the best of the Architect's knowledge, information, and belief, the quality of the Work is in accordance with the Contract Documents. In some cases, the Architect may act upon or rely on the evaluation of the Work by the Inspector. This review of Payment Applications is sometimes called a "Pencil Draft." District's return of a Pencil Draft shall constitute the District's dispute of the Payment Application that has been submitted. Contractor shall promptly respond to Pencil Drafts or Contractor's Payment Applications may be delayed. Contractor's failure to promptly respond to a Pencil Draft shall qualify as a delay in the prompt payment of a Request for Payment or Request for Retention. The foregoing representations are subject to: (1) an evaluation of the Work for conformance with the Contract Documents, (2) results of subsequent tests and inspections, (3) minor deviations from the Contract Documents correctable prior to completion, and (4) specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute the Contractor's verified representation that the Contractor is entitled to payment in the amount certified.

9.3.5 Payment of Undisputed Contract Payments

In accordance with Public Contract Code section 7100, payments by the District to the Contractor for any and all undisputed amounts (including all Progress Payments, Final Payments or Retention Payment) is contingent upon submission of a proper and accurate Payment Application and the Contractor furnishing the District with a release of all Claims against the District related to such undisputed amounts. Disputed Contract Claims in stated amounts may be specifically excluded by the Contractor from the operation of the release. If, however, the Contractor specifically excludes any Claims, the Contractor shall provide details such as a specific number of disputed days or costs of any such exclusion in accordance with Articles 4.6 and 7.7.

9.4 APPLICATIONS FOR PROGRESS PAYMENTS

9.4.1 Procedure

9.4.1.1 *Application for Progress.* On or before the fifth (5th) day of each calendar month during the progress of the Work, Contractor shall submit to the Architect an itemized Application for Progress Payment for operations completed. Such application shall be notarized, if required, and supported by the following or such portion thereof as Architect requires:

1. The amount paid to the date of the Payment Application to the Contractor, to all its Subcontractors, and all others furnishing labor, material, or equipment for its Contract;
2. The amount being requested under the Payment Application by the Contractor on its own behalf and separately stating the amount requested on behalf of each of the Subcontractors and all others furnishing labor, material, and equipment under the Contract;

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3. The balance that will be due to each of such entities after said payment is made;
4. A certification that the As-Built Drawings and Annotated Specifications are current;
5. Itemized breakdown of Work done for the purpose of requesting partial payment;
6. An updated or approved Baseline Schedule or other Schedule updates in conformance with Article 8;
7. Failure to submit an updated Schedule for the month or any previous month;
8. The additions to and subtractions from the Contract Price and Contract Time;
9. A summary of the Retention held;
10. Material invoices, evidence of equipment purchases, rentals, and other support and details of cost as the District may require from time to time;
11. The percentage of completion of the Contractor's Work by line item;
12. An updated Schedule of Values from the preceding Application for Payment;
13. Prerequisites for Progress Payments; and
14. Any other information or documents reasonably requested by the District, Architect, Inspector or CM (if applicable).

9.4.1.2 *First Payment Request.* The following items, if applicable, must be completed before the first payment request will be accepted for processing:

1. Installation of the Project sign;
2. Receipt by Architect of Submittals;
3. Installation of field office;
4. Installation of temporary facilities and fencing;
5. Submission of documents listed in the Article 9.2 relating to Contract Price breakdown;
6. Preliminary schedule analysis, due within 10 days after Notice to Proceed;

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7. Contractor's Baseline Schedule (to be CPM based in conformance with Article 8);
8. Schedule of unit prices, if applicable;
9. Submittal Schedule;
10. Copies of necessary permits;
11. Copies of authorizations and licenses from governing authorities;
12. Initial progress report;
13. Surveyor qualifications;
14. Written acceptance of District's survey of rough grading, if applicable;
15. List of all Subcontractors, with names, license numbers, telephone numbers, and scope of work;
16. All bonds and insurance endorsements; and
17. Resumes of General Contractor's Project Manager, and if applicable, job site secretary, record documents recorder, and job site Superintendent.

9.4.1.3 *Second Payment Request.* The second payment request will not be processed until all Submittals and Shop Drawings have been accepted for review by the Architect.

9.4.1.4 *All Payment Requests.* No payment requests will be processed unless Contractor has submitted copies of the certified payroll records for the Work which correlates to the payment request and a proper CPM schedule pursuant to Article 8 is submitted.

9.4.1.5 *Final Payment Application (90% or 95%).* See Article 9.11.1

9.4.1.6 *Final Payment Application (100%).* See Article 9.11.3

9.5 STOP NOTICE CLAIMS AND WARRANTY OF TITLE

The Contractor warrants title to all Work. The Contractor further warrants that all Work is free and clear of liens, claims, security interests, stop notices, or encumbrances in favor of the Contractor, Subcontractors, material and equipment suppliers, or other persons or entities making a claim by reason of having provided labor, materials, and equipment relating to the Work. Failure to keep work free of liens, stop notices, claims, security interests or encumbrances is grounds to make a claim against Contractor's Payment and Performance Bond to immediately remedy and defend.

If a lien or stop notice of any nature should at any time be filed against the Work or any District property, by any entity which has supplied material or services at the request of the Contractor, Contractor and Contractor's Surety shall promptly, on demand by District and at Contractor's and Surety's own

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expense, take any and all action necessary to cause any such lien or stop notice to be released or discharged immediately therefrom.

If the Contractor fails to furnish to the District within ten (10) calendar days after written demand by the District, satisfactory evidence that a lien or stop notice has been so released, discharged, or secured, then District may discharge such indebtedness and deduct the amount required therefor, together with any and all losses, costs, damages, and attorney's fees and expense incurred or suffered by District from any sum payable to Contractor under the Contract. In addition, any liens, stop notices, claims, security interests or encumbrances shall trigger the indemnification requirements under Article 3.15 and the Agreement Form, and shall act as a trigger under Civil Code section 2778 and 2779 requiring reimbursement for any and all costs following the District's written demand has been made. Any withholdings by the District for stop notices in accordance with Civil Code section 9358 shall not be a basis by the Contractor to make a Claim for interest penalties under Public Contract Code sections 7107 or 20104.50.

9.6 DECISIONS TO WITHHOLD PAYMENT

9.6.1 Reasons to Withhold Payment

The District may withhold payment in whole, or in part, to the extent reasonably necessary to protect the District if, in the District's opinion, the representations to the District required by Article 9.4 cannot be made. The District may withhold payment, in whole, or in part, to such extent as may be necessary to protect the District from loss because of, but not limited to:

- a. Defective Work not remedied;
- b. Stop notices served upon the District;
- c. Liquidated Damages assessed against the Contractor;
- d. The cost of Completion of the Contract if there exists reasonable doubt that the Work can be Completed for the unpaid balance of any Contract Price or by the completion date;
- e. Damage to the District or other contractor;
- f. Unsatisfactory prosecution of the Work by the Contractor;
- g. Failure to store and properly secure materials;
- h. Failure of the Contractor to submit on a timely basis, proper and sufficient documentation required by the Contract Documents, including, without limitation, acceptable monthly progress schedules, Shop Drawings, Submittal schedules, Schedule of Values, Product Data and samples, proposed product lists, executed Change Order, Construction Change Documents, and verified reports;
- i. Failure of the Contractor to maintain As-Built Drawings;
- j. Erroneous estimates by the Contractor of the value of the Work performed, or other false statements in an Payment Application;

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- k. Unauthorized deviations from the Contract Documents (including but not limited to Unresolved Notices of Deviations (DSA Form 154));
- l. Failure of the Contractor to prosecute the Work in a timely manner in compliance with established progress schedules and completion dates.
- m. Failure to properly pay prevailing wages as defined in Labor Code section 1720, et seq.;
- n. Failure to properly maintain or clean up the Site;
- o. Payments to indemnify, defend, or hold harmless the District;
- p. Any payments due to the District including but not limited to payments for failed tests, or utilities changes or permits;
- q. Failure to submit an acceptable Baseline Schedule or any Schedule or Schedule update in accordance with Article 8;
- r. Failure to pay Subcontractor or suppliers as required by Article 9.8.1
- s. Failure to secure warranties, including the cost to pay for warranties;
- t. Failure to provide releases from material suppliers or Subcontractors when requested to do so;
- u. Items deducted pursuant to Article 2.2;
- v. Incomplete Punch List items under Article 9.9.1.1 which have gone through the Article 2.2 process; or
- w. Allowances that have not been used.

9.6.2 Reallocation of Withheld Amounts

District may, in its discretion, apply any withheld amount to payment of outstanding claims or obligations as defined in Article 9.6.1 and 9.5. In so doing, District shall make such payments on behalf of Contractor. If any payment is so made by District, then such amount shall be considered as a payment made under Contract by District to Contractor and District shall not be liable to Contractor for such payments made in good faith. Such payments may be made without prior judicial determination of claim or obligation. District will render Contractor an accounting of such funds disbursed on behalf of Contractor.

If Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents or fails to perform any provision thereof, District may, after ten (10) calendar days written notice to the Contractor and without prejudice to any other remedy make good such deficiencies. The District shall adjust the total Contract price by reducing the amount thereof by the cost of making good such deficiencies. If District deems it inexpedient to correct Work which is damaged, defective, or not done in accordance with Contract provisions, an equitable reduction in the Contract Price (of at least 150% of the estimated reasonable value of the nonconforming Work) shall be made therefor.

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9.6.3 Payment After Cure

When the grounds for declining approval are removed, payment shall be made for amounts withheld because of them. No interest shall be paid on any retainage or amounts withheld due to the failure of the Contractor to perform in accordance with the terms and conditions of the Contract Documents.

9.7 NONCONFORMING WORK

Contractor shall promptly remove from premises all Work identified by District as failing to conform to the Contract whether incorporated or not. Contractor shall promptly replace and re-execute its own Work to comply with the Contract without additional expense to District and shall bear the expense of making good all Work of other contractors destroyed or damaged by such removal or replacement.

If Contractor does not remove such Work which has been identified by District as failing to conform to the Contract Documents within a reasonable time, fixed by written notice, District may remove it and may store the material at Contractor's expense. If Contractor does not pay expenses of such removal within ten (10) calendar days' time thereafter, District may, upon ten (10) calendar days' written notice, sell such materials at auction or at private sale and shall account for net proceeds thereof, after deducting all costs and expenses that should have been borne by Contractor.

9.8 SUBCONTRACTOR PAYMENTS

9.8.1 Payments to Subcontractors

No later than ten (10) days after receipt, or pursuant to Business and Professions Code section 7108.5, the Contractor shall pay to each Subcontractor, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

9.8.2 No Obligation of District for Subcontractor Payment

The District shall have no obligation to pay, or to see to the payment of, money to a Subcontractor except as may otherwise be required by law.

9.8.3 Payment Not Constituting Approval or Acceptance

An approved Request for Payment, a progress payment, a Certificate of Substantial Completion, or partial or entire use or occupancy of the Project by the District shall not constitute acceptance of Work that is not in accordance with the Contract Documents.

9.8.4 Joint Checks

District shall have the right, if necessary for the protection of the District, to issue joint checks made payable to the Contractor and Subcontractors and material or equipment suppliers. The joint check payees shall be responsible for the allocation and disbursement of funds included as part of any such joint payment. In no event shall any joint check payment be construed to create any contract between the District and a Subcontractor of any tier, any obligation from the District to such Subcontractor, or rights in such Subcontractor against the District. The District may choose to issue joint checks at District's sole

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discretion and only after all the requirements of that particular school district and county are specifically met. Some school districts cannot issue joint checks, so the ability to issue joint checks depends on the school district and the specific circumstances.

9.9 COMPLETION OF THE WORK

9.9.1 Close-Out Procedures

9.9.1.1 *Incomplete Punch Items.* When the Contractor considers the Work Substantially Complete (See Article 1.1.46 for definition of Substantially Complete), the Contractor shall prepare and submit to the District a comprehensive list of minor items to be completed or corrected (hereinafter “Incomplete Punch Items” or “Punch List”). The Contractor and/or its Subcontractors shall proceed promptly to complete and correct the Incomplete Punch Items listed. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Contractor is aware that Title 24 Section 4-343(a) provides:

“RESPONSIBILITIES. IT IS THE DUTY OF THE CONTRACTOR TO COMPLETE THE WORK COVERED BY HIS OR HER CONTRACT IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS THEREFOR. THE CONTRACTOR IN NO WAY IS RELIEVED OF ANY RESPONSIBILITY BY THE ACTIVITIES OF THE ARCHITECT, ENGINEER, INSPECTOR OR DSA IN THE PERFORMANCE OF SUCH DUTIES.

9.9.1.2 *Punch List Is Prepared Only After the Project Is Substantially Complete.* If any of the conditions noted in Article 1.1.46 as defining Substantial Completion are not met, the Inspector, Architect or District may reject Contractor’s Incomplete Punch Items as premature. If the Architect and Inspector commence review of Incomplete Punch Items, all rights are reserved until the Project actually meets the definition of Substantially Complete. Liquidated Damages, warranties, and other contractual rights are not affected by Incomplete Punch Items unless otherwise addressed in these General Conditions.

Once the Inspector and the Architect determine the Project is Substantially Complete, a Certificate of Substantial Completion shall be issued. The Inspector and Architect shall prepare a Punch List of items which is an inspection report of the Work, if any, required in order to complete the Contract Documents and ensure compliance with the DSA Approved Plans so the Project may be Completed by the Contractor and a final DSA Close-Out is approved. When all Work for the Project is Complete, including Punch Lists and all Work complies with the approved Contract Documents and Change Orders, the Project has reached Final Completion.

9.9.1.3 *Time for Completion of Punch List.* Contractor shall only be given a period of no more than thirty (30) days to complete the Punch List for the Project. During the Punch List period, the Contractor’s Superintendent and Project Manager shall remain engaged in the Project and shall not be removed or replaced. If the Punch List is not completed at the end of the Punch List time then Contractor shall issue a valued Punch List within 5 days after the date the Punch List time ends. If Contractor does not issue such a list, the District or Architect may issue a valued Punch List to the Contractor and withhold up to 150% of the value of the Punch List Work pursuant to Article 2.2 of this Agreement.

Failure to issue a timely written request for additional time to complete Punch List shall result in the deletion of the remaining Punch List Work pursuant to Article 2.2 and the issuance of a Deductive Change Order.

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- a. Extension of Time to Complete Punch List. If Contractor cannot finish the Punch List Work during the time period allotted under Article 9.9.1.3, the Contractor may make a written request for a Non-Compensable Punch List time extension accompanied by an estimate of the number of additional days it will take to complete the Punch List Work for a written consent from the District to allow continued Punch List Work. Punch List time extensions are a maximum of thirty (30) days for each request and must be accompanied by an itemized valued Punch List.
- b. If there is no valued Punch List accompanying any request or if Contractor intends to undertake Punch List without the continued support and supervision of its Superintendent and Project Manager (as required under Article 3.2), the District, Construction Manager or Architect may issue a valued Punch List, reject the Punch List Time Extension and deduct 150% of the valued Punch List pursuant to Article 2.2 and proceed to Close-Out the Project. Contractor shall cease work on the Project and proceed to complete Contractor's Retention Payment Application and complete the Work for the Project required pursuant to Article 9.11.3.

9.9.1.4 *District Rejection of Written Request for Punch List Time Extensions.* Following sixty (60) Days of Punch List under Article 9.9.1.3, the District has the option of rejecting Punch List Time Extension requests. The District may proceed under Article 2.2 and deduct the value of remaining Punch List Work pursuant to Article 2.2. If the District rejects the Punch List Time Extension request then Contractor shall cease Work on the Project and proceed to Final Inspection pursuant to Article 9.11.2.

9.9.1.5 *Punch List Liquidated Damages to Compensate for Added District Project Costs.* If the total time utilized for Punch List exceeds sixty (60) days [the thirty (30) day period under Article 9.9.1.3 plus an additional thirty (30) day period that has been requested in writing], and the District grants an additional written Punch List Time Extension that exceeds sixty (60) days of Punch List, then Contractor shall be charged Liquidated Damages of at least \$750 per day for continued Punch List Work to partially compensate the Inspector, Architect, and Construction Manager's extended time on the Project. This Punch List Liquidated Damage number is based on anticipated cost for an Inspector on site and additional costs for the Architect and Construction Manager to reinspect Punch List items and perform the administration of the Close-out.

Contractor received thirty (30) days without any charges for Punch List Liquidated Damages and is placed on notice pursuant to this Article 9.9.1.5 that \$750 is due for each day of Punch List that exceeds sixty (60) days at \$750, a cost much lower than typical (and actual) costs for Inspection, Architect and Construction Manager time required during Punch List. Starting at ninety (90) days of Punch List (an excessive number of days to complete Punch List), the District shall be entitled to adjust Punch List Liquidated Damages to an estimate of the actual costs incurred to oversee, monitor and inspect the Punch List. If costs exceed \$750 per day, the anticipated extended contract charges for Inspection, Architect, Construction Manager, and any other costs that will be incurred due to the extended Punch List shall be itemized and a daily rate of Punch List Liquidated Damages shall be presented in writing to the Contractor within five (5) days following the receipt of a written request for Punch List Time Extension by the Contractor that extends the Punch List time beyond ninety (90) days. This written notice of actual Punch List Liquidated Damages may be provided to the Contractor at any time following the first written request for Punch List Time extension requested under Article 9.9.1.3. The adjusted actual Punch List Liquidated

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Damage amount shall be applicable as Punch List Liquidated Damages commencing on the ninetieth (90th) day of Punch List.

9.9.2 Close-Out Requirements for Final Completion of the Project

- a. Utility Connections. Buildings shall be connected to water, gas, sewer, and electric services, complete and ready for use. Service connections shall be made and existing services reconnected
- b. As-Built Up to Date and Complete. The intent of this procedure is to obtain an exact “As-Built” record of the Work upon completion of the project. The following information shall be carefully and correctly drawn on the prints and all items shall be accurately located and dimensioned from finished surfaces of building walls on all As-Built Drawings
 - 1. The exact location and elevations of all covered utilities, including valves, cleanouts, etc. must be shown on As-Built Drawings
 - 2. Contractor is liable and responsible for inaccuracies in As-Built Drawings, even though they become evident at some future date.
 - 3. Upon completion of the Work and as a condition precedent to approval of Retention Payment, Contractor shall obtain the Inspector’s approval of the “As-Built” information. When completed, Contractor shall deliver corrected sepias and/or a Diskette with an electronic file in a format acceptable to the District.
 - 4. District may withhold the cost to hire a draftsman and potholing and testing service to complete Record As-Built Drawings at substantial cost if the Contractor does not deliver a complete set of Record As-Built Drawings. This shall result in withholding of between \$10,000 to \$20,000 per building that does not have a corresponding Record As Built Drawing.
- c. Any Work not installed as originally indicated on Drawings
- d. All DSA Close-Out requirements (See DSA Certification Guide) Contractor is also specifically directed to Item 3.2 in the DSA Certification Guide and the applicable certificates for the DSA-311 form.
- e. Submission of Form 6-C. Contractor shall be required to execute a Form 6-C as required under Title 24 Sections 4-343. The Contractor understands that the filing with DSA of a Form 6-C is a requirement to obtain final DSA Approval of the construction by Contractor and utilized to verify under penalty of perjury that the Work performed by Contractor complies with the DSA approved Contract Documents. The failure to file a DSA Form 6C has two consequences. First, the Construction of the Project will not comply with the design immunity provisions of Government Code section 830.6 and exposes the District and the individual Board members to personal liability for injuries that occur on the Project.

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Secondly , under DSA IR A-20, since the Project cannot be Certified by DSA, no future or further Projects will be authorized so Contractor will have essentially condemned the campus from any future modernization or addition of new classrooms through their failure to file the DSA Form 6C.

1. *Execution of the DSA Form 6-C is Mandatory.* Refusal to execute the Form 6-C, which is a Final DSA Verified Report that all Work performed complies with the DSA approved Contract Documents is a violation of Education Code section 17312 and shall be referred to the Attorney General for Prosecution.
 2. *Referral to the District Attorney for Extortion.* If the Contractor's refusal to execute the DSA Form 6C is to leverage a Dispute, Claim or Litigation, then the matter shall also be referred to the District Attorney for prosecution for extortion.
 3. *Contractor shall be Responsible for All Costs to Certify the Project.* The District may certify the Project complies with Approved Plans and Specifications by utilizing the procedures under the Project Certification Guide (located at the DSA website). All costs for professionals, inspection, and testing required for an alternate Project Certification shall be the Contractor's responsibility and the District reserves its right to institute legal action against the Contractor and Contractor's Surety for all costs to certify the Project and all costs to correct Non-Compliant Work that is discovered during the Alternate Certification Process.
- f. ADA Work that must be corrected to receive DSA certification. See Article 12.2.
- g. Maintenance Manuals. At least thirty (30) days prior to final inspection, three (3) copies of complete operations and maintenance manuals, repair parts lists, service instructions for all electrical and mechanical equipment, and equipment warranties shall be submitted. All installation, operating, and maintenance information and Drawings shall be bound in 8½" x 11" binders. Provide a table of contents in front and all items shall be indexed with tabs. Each manual shall also contain a list of Subcontractors, with their addresses and the names of persons to contact in cases of emergency. Identifying labels shall provide names of manufactures, their addresses, ratings, and capacities of equipment and machinery.
1. Maintenance manuals shall also be delivered in electronic media for the Project. Any demonstration videos shall also be provided on electronic media.
- h. Inspection Requirements. Before calling for final inspection, Contractor shall determine that the following Work has been performed:
1. The Work has been completed;
 2. All fire/ life safety items are completed and in working order;

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3. Mechanical and electrical Work complete, fixtures in place, connected and tested;
4. Electrical circuits scheduled in panels and disconnect switches labeled;
5. Painting and special finishes complete;
6. Doors complete with hardware, cleaned of protective film relieved of sticking or binding and in working order;
7. Tops and bottoms of doors sealed;
8. Floors waxed and polished as specified;
9. Broken glass replaced and glass cleaned;
10. Grounds cleared of Contractor's equipment, raked clean of debris, and trash removed from Site;
11. Work cleaned, free of stains, scratches, and other foreign matter, replacement of damaged and broken material;
12. Finished and decorative work shall have marks, dirt and superfluous labels removed;
13. Final cleanup, as in Article 3.12;
14. All Work pursuant to Article 9.11.2; and
15. Furnish a letter to District stating that the District's Representative or other designated person or persons have been instructed in working characteristics of mechanical and electrical equipment.

9.9.3 Costs of Multiple Inspections

More than two (2) requests of the District to make inspections required under Article 9.9.1 shall be considered an additional service of Architect, Inspector, Engineer or other consultants shall be the Contractor's responsibility pursuant to Article 4.5 and all subsequent costs will be prepared as a Deductive Change Order.

9.10 PARTIAL OCCUPANCY OR USE

9.10.1 District's Rights

The District may occupy or use any completed or partially completed portion of the Work at any stage. The District and the Contractor shall agree in writing to the responsibilities assigned to each of them for payments, security, maintenance, heat, utilities, damage to the Work, insurance, the period for correction of the Work, and the commencement of warranties required by the Contract Documents. If District and Contractor cannot agree as to responsibilities such disagreement shall be resolved pursuant to

GENERAL CONDITIONS

Article 4.6. When the Contractor considers a portion complete, the Contractor shall prepare and submit a Punch List to the District as provided under Article 9.9.1.

9.10.2 Inspection Prior to Occupancy or Use

Immediately prior to such partial occupancy or use, the District, the Contractor, and the Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

9.10.3 No Waiver

Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

9.11 COMPLETION AND FINAL PAYMENT

9.11.1 Final Payment (90% Billing if Substantially Complex Finding and 95% Billing If No Finding Is Made)

The following items must be completed before the Final Payment Application will be accepted for processing at Substantial Completion of the Project:

- a. Inspector sign-off of each item in the DSA 152 Project Inspection Card;
- b. The Project has reached the Punch List items under Article 9.9.1.2 and the Project has been determined to be Substantially Complete under Article 1.1.46;
- c. Removal of temporary facilities and services;
- d. Testing, adjusting and balance records are complete;
- e. Removal of surplus materials, rubbish, and similar elements;
- f. Changeover of door locks;
- g. Deductive items pursuant to Article 9.6 and Article 2.2; and
- h. Completion and submission of all final Change Orders for the Project.

9.11.2 Final Inspection (Punch List Completion)

Contractor shall comply with Punch List procedures under Article 9.9.1.1, and maintain the presence of Project Superintendent and Project Manager (not replacement project superintendent or project manager) until the Punch List is complete to ensure proper and timely completion of the Punch List. Under no circumstances shall Contractor demobilize its forces prior to completion of the Punch List.

Upon completion of the Work under Article 9.9.1, the Contractor shall notify the District and Architect, who shall again inspect such Work. If the Architect and the District find the Work contained in the Punch List acceptable under the Contract Documents, the Work shall have reached Final Completion.

GENERAL CONDITIONS

Architect shall notify Contractor, who shall then submit to the Architect its Application for Retention Payment. This Application for Retention Payment shall contain any deductions under Article 9.6, including but not limited to incomplete Punch List items under Article 9.9.1.

Upon receipt and approval of Application for Retention Payment, the Architect shall issue a Form 6 stating that to the best of its knowledge, information, and belief, and on the basis of its observations, inspections, and all other data accumulated or received by the Architect in connection with the Work, such Work has been completed in accordance with the Contract Documents. The District shall thereupon inspect such Work and either accept the Work as complete or notify the Architect and the Contractor in writing of reasons why the Work is not complete. Upon acceptance of the Work of the Contractor as fully complete (which, absent unusual circumstances, will occur when the Punch List items have been satisfactorily completed), the District shall record a Notice of Completion with the County Recorder, and the Contractor shall, upon receipt of payment from the District, pay the amounts due Subcontractors.

If the Architect and the District find that the Work contained in the Punch List is unacceptable, then Contractor shall issue a valued Punch List within 5 days after the date the Punch List time ends. If Contractor does not issue such a list, the District or Architect may issue a valued Punch List to the Contractor and withhold up to 150% of the value of the Punch List Work pursuant to Article 2.2 of this Agreement.

9.11.3 Retainage (100% Billing for the Entire Project)

The retainage, less any amounts disputed by the District or which the District has the right to withhold pursuant to the Contract Documents (including but not limited to incomplete Punch List items under Article 9.9.1), shall be paid after approval by the District of the Application for Retention Payment, after the satisfaction of the conditions set forth in Article 9, the Final Inspection under Article 9.11.2 is completed, and after thirty-five (35) days after the acceptance of the Work and recording of the Notice of Completion by District. No interest shall be paid on any retainage, or on any amounts withheld due to a failure of the Contractor to perform, in accordance with the terms and conditions of the Contract Documents, except as provided to the contrary in any escrow agreement between the District and the Contractor.

- a. Procedures for Application for Retention Payment. The following conditions must be fulfilled prior to release of Retention Payment:
 1. A full and final waiver or release of all stop notices in connection with the Work shall be submitted by Contractor, including a release of stop notice in recordable form, together with (to the extent permitted by law) a copy of the full and final release of all Stop Notice rights.
 2. The Contractor shall have made all corrections, including all Punch List Items, to the Work which are required to remedy any defects therein, to obtain compliance with the Contract Documents or any requirements of applicable codes and ordinances, or to fulfill any of the orders or directions of District required under the Contract Documents.

GENERAL CONDITIONS

3. Each Subcontractor shall have delivered to the Contractor all written guarantees, warranties, applications, releases from the Surety and warranty bonds (if applicable) required by the Contract Documents for its portion of the Work.
4. Contractor must have completed all requirements set forth in Article 9.9
5. Contractor must have issued a Form 6C for the Project.
6. The Contractor shall have delivered to the District all manuals and materials required by the Contract Documents.
7. The Contractor shall have completed final clean up as required by Article 3.12
8. Contractor shall have all deductive items under Article 9.6 and Article 2.2 submitted as part of the Retention Payment.

9.11.4 Recording of a Notice of Completion After Punch List Period and Final Inspection.

When the Work, or designated portion thereof, is complete or the District has completed the Article 9.6 and/or the Article 2.2 process, whichever occurs first, the District will file either a Notice of Completion or a Notice of Completion noting valued Punch List items. Valued Punch List items will be deducted from the Retention Payment.

During the time when Work is being performed on the Punch List, the Project does not meet the definition of "Complete" under Public Contract Code section 7107(c)(1) even if there is "beneficial occupancy" of the Project since that has been no "cessation of labor" on the Project. Completion of Punch List under this Article is not "testing, startup, or commissioning by the public entity or its agent." In other words, the continuing Punch List Work is Contractor labor on the Project until each and every item of Punch List Work is complete or the time periods under Article 9.9.1 have expired.

9.11.5 Warranties

Warranties required by the Contract Documents shall commence on the date of Completion of the entire Work. Warranty periods DO NOT commence at Substantial Completion or when a particular Subcontractor work is complete. No additional charges, extras, Change Orders, or Claims may be sought for warranties commencing from the Notice of Completion.

District shall have the right to utilize equipment, test, and operate as necessary for acclimation, or testing without voiding or starting warranties. Taking beneficial occupancy shall not start warranties except in the case where the District agrees, in writing, that warranties shall commence running or where the District is taking phased occupancy of specific buildings or areas and completes separate Punch Lists as further addressed in Article 4.2.7.

9.11.6 Time for Submission of Application for Final Payment and Retention Payment (Unilateral Processing of Final and Retention Payment Application).

GENERAL CONDITIONS

If Contractor submits a Final Payment Application which fails to include deductive items under Article 9.6, the District or Architect shall note this defective request for Final Payment Application. The Contractor shall be notified that specific deductive items shall be included in the Final Payment Application. If Contractor either continues to submit the Final Payment Application without deductive items under Article 9.6, or a period of 14 calendar days passes after Contractor is provided written notice of deductive items for inclusion in Final Payment Application, then District may either alter the Final Payment Application and recalculate the math on the Final Payment Application to address the Article 9.6 deductive items or process a unilateral Final Payment Application.

9.11.7 Unilateral Release of Retention

After the recordation of the Notice of Completion, or within sixty (60) days following the completion of the Punch List or the expiration of the time for completion of Punch List under Article 9.9.1, if Contractor does not make an Application for Release of Retention, the District may unilaterally release retention less any deducts under Article 9.6 and/or Article 2.2, withholds due to stop notices, or withholdings due to other defective Work on the Project. District may also choose to unilaterally release Retention after deduction of 150% of any disputed items, which may also include items under Article 9.6 and 2.2. If a deduction pursuant to Article 9.6 is made from Retention, a letter deducting specific valued items shall be considered a notice of Default under the terms of the Escrow Agreement.

9.12 SUBSTITUTION OF SECURITIES

The District will permit the substitution of securities in accordance with the provisions of Public Contract Code section 22300 as set forth in the form contained in the Bid Documents.

GENERAL CONDITIONS

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 Contractor Responsibility

The Contractor shall be responsible for all damages to persons or property that occur as a result of its fault or negligence in connection with the prosecution of this Contract and shall take all necessary measures and be responsible for the proper care and protection of all materials delivered and Work performed until completion and final acceptance by the District. All Work shall be solely at the Contractor's risk, with the exception of damage to the Work caused by "acts of God" as defined in Public Contract Code section 7105(b)(2).

Contractor shall take, and require Subcontractor to take, all necessary precautions for safety of workers on the Work and shall comply with all applicable federal, state, local and other safety laws, standards, orders, rules, regulations, and building codes to prevent accidents or injury to persons on, about, or adjacent to premises where Work is being performed and to provide a safe and healthful place of employment. In addition to meeting all requirements of OSHA, Cal-OSHA, state, and local codes, Contractor shall furnish, erect and properly maintain at all times, as directed by District or Architect or required by conditions and progress of Work, all necessary safety devices, safeguards, construction canopies, signs, audible devices for protection of the blind, safety rails, belts and nets, barriers, lights, and watchmen for protection of workers and the public, and shall post danger signs warning against hazards created by such features in the course of construction. Contractor shall designate a responsible member of its organization on the Work, whose duty shall be to post information regarding protection and obligations of workers and other notices required under occupational safety and health laws, to comply with reporting and other occupational safety requirements, and to protect the life, safety and health of workers. The name and position of person so designated shall be reported to District by Contractor. Contractor shall correct any violations of safety laws, rules, orders, standards, or regulations. Upon the issuance of a citation or notice of violation by the Division of Occupational Safety and Health, such violation shall be corrected promptly.

10.1.2 Subcontractor Responsibility

Contractor shall require that Subcontractors participate in, and enforce, the safety and loss prevention programs established by the Contractor for the Project, which will cover all Work performed by the Contractor and its Subcontractors. Each Subcontractor shall designate a responsible member of its organization whose duties shall include loss and accident prevention, and who shall have the responsibility and full authority to enforce the program. This person shall attend meetings with the representatives of the various Subcontractors employed to ensure that all employees understand and comply with the programs.

10.1.3 Cooperation

All Subcontractors and material or equipment suppliers shall cooperate fully with Contractor, the District, and all insurance carriers and loss prevention engineers.

10.1.4 Accident Reports

GENERAL CONDITIONS

Subcontractors shall immediately, within two (2) days, report in writing to the Contractor all accidents whatsoever arising out of, or in connection with, the performance of the Work, whether on or off the Site, which caused death, personal injury, or property damage, giving full details and statements of witnesses. In addition, if death or serious injuries or serious damages are caused, the accident shall be reported within four (4) days by telephone or messenger. Contractor shall thereafter immediately, within two (2) days, report the facts in writing to the District and the Architect giving full details of the accident.

10.1.5 First-Aid Supplies at Site

The Contractor will provide and maintain at the Site first-aid supplies which complies with the current Occupational Safety and Health Regulations.

10.1.6 Material Safety Data Sheets and Compliance with Proposition 65

Contractor is required to have material safety data sheets available in a readily accessible place at the job site for any material requiring a material safety data sheet per the Federal "hazard communication" standard, or employees' "right-to-know law." The Contractor is also required to properly label any substance brought into the job site, and require that any person working with the material, or within the general area of the material, is informed of the hazards of the substance and follows proper handling and protection procedures.

Contractor is required to comply with the provisions of California Health and Safety Code section 25249, et seq., which requires the posting and giving of notice to persons who may be exposed to any chemical known to the State of California to cause cancer. The Contractor agrees to familiarize itself with the provisions of this Section, and to comply fully with its requirements.

10.1.7 Non-Utilization of Asbestos Material

NO ASBESTOS OR ASBESTOS-CONTAINING PRODUCTS SHALL BE USED IN THIS CONSTRUCTION OR IN ANY TOOLS, DEVICES, CLOTHING, OR EQUIPMENT USED TO EFFECT THIS CONSTRUCTION.

Asbestos and/or asbestos-containing products shall be defined as all items containing, but not limited to, chrysotile, amosite, anthophyllite, tremolite, and antinolite.

Any or all material containing greater than one-tenth of one percent (>.1%) asbestos shall be defined as asbestos-containing material.

All Work or materials found to contain asbestos or Work or material installed with asbestos-containing equipment will be immediately rejected and this Work will be removed at no additional cost to the District.

Decontamination and removal of Work found to contain asbestos or Work installed with asbestos-containing equipment shall be done only under supervision of a qualified consultant, knowledgeable in the field of asbestos abatement and accredited by the Environmental Protection Agency.

The asbestos removal contractor shall be an EPA accredited contractor qualified in the removal of asbestos and shall be chosen and approved by the asbestos consultant, who shall have sole discretion and final determination in this matter.

GENERAL CONDITIONS

The asbestos consultant shall be chosen and approved by the District, who shall have sole discretion and final determination in this matter.

The Work will not be accepted until asbestos contamination is reduced to levels deemed acceptable by the asbestos consultant.

Interface of Work under this Contract with Work containing asbestos shall be executed by the Contractor at his risk and at his discretion, with full knowledge of the currently accepted standards, hazards, risks, and liabilities associated with asbestos work and asbestos-containing products. By execution of this Contract, the Contractor acknowledges the above and agrees to hold harmless District and its assigns for all asbestos liability which may be associated with this work and agrees to instruct his employees with respect to the above-mentioned standards, hazards, risks, and liabilities.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 The Contractor

The Contractor shall take reasonable precautions for the safety of, and shall provide reasonable protection to prevent damage, injury, or loss to:

- a. Employees on the Work and other persons who may be affected thereby;
- b. The Work, material, and equipment to be incorporated therein, whether in storage on or off the Site, under the care, custody, or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and
- c. Other property at the Site or adjacent thereto such as trees, shrubs, lawns, walks, pavement, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

Contractor is constructive owner of Project site as more fully discussed in Article 6.2.

10.2.2 Contractor Notices

The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on the safety of persons or property or their protection from damage, injury, or loss.

10.2.3 Safety Barriers and Safeguards

The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.

10.2.4 Use or Storage of Hazardous Material

When use or storage of explosives, other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on

GENERAL CONDITIONS

such activities under supervision of properly qualified personnel. The Contractor shall notify the District any time that explosives or hazardous materials are expected to be stored on Site. Location of storage shall be coordinated with the District and local fire authorities.

10.2.5 Protection of Work

The Contractor and Subcontractors shall continuously protect the Work, the District's property, and the property of others, from damage, injury, or loss arising in connection with operations under the Contract Documents. The Contractor and Subcontractors, at their own expense, shall make good any such damage, injury, or loss, except such as may be solely due to, or caused by, agents or employees of the District.

The Contractor, at Contractor's expense, will remove all mud, water, or other elements as may be required for the proper protection and prosecution of its Work.

Contractor shall take adequate precautions to protect existing roads, sidewalks, curbs, pavements, utilities, adjoining property and structures (including, without limitation, protection from settlement or loss of lateral support), and to avoid damage thereto, and repair any damage thereto caused by construction operations. All permits, licenses, or inspection fees required for such repair Work shall be obtained and paid for by Contractor.

10.2.6 Requirements for Existing Sites

Contractor shall (unless waived by the District in writing):

- a. When performing construction on existing sites, become informed and take into specific account the maturity of the students on the Site; and perform Work which may interfere with school routine before or after school hours, enclose working area with a substantial barricade, and arrange Work to cause a minimum amount of inconvenience and danger to students and faculty in their regular school activities. The Contractor shall comply with Specifications and directives of the District regarding the timing of certain construction activities in order to avoid unnecessary interference with school functioning.
- b. Avoid performing any Work that will disturb students during testing.
- c. Provide substantial barricades around any shrubs or trees indicated to be preserved.
- d. Deliver materials to building area over route designated by Architect.
- e. Take preventive measures to eliminate objectionable dust, noise, or other disturbances.
- f. Confine apparatus, the storage of materials, and the operations of workers to limits indicated by law, ordinances, permits or directions of Architect; and not interfere with the Work or unreasonably encumber premises or overload any structure with materials; and enforce all instructions of District and Architect regarding signs, advertising, fires, and smoking and require that all workers comply with all regulations while on the Project site.

GENERAL CONDITIONS

- g. Take care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners. If such markers are disturbed by accident, they shall be replaced by an approved land surveyor or civil engineer and all maps and records required therefrom shall be filed with county and local authorities, at no cost to the District. All filing and plan check fees shall be paid by Contractor.
- h. Provide District on request with Contractor's written safety program and safety plan for each site.

10.2.7 Shoring and Structural Loading

The Contractor shall not impose structural loading upon any part of the Work under construction or upon existing construction on or adjacent to the Site in excess of safe limits, or loading such as to result in damage to the structural, architectural, mechanical, electrical, or other components of the Work. The design of all temporary construction equipment and appliances used in construction of the Work and not a permanent part thereof, including, without limitation, hoisting equipment, cribbing, shoring, and temporary bracing of structural steel, is the sole responsibility of the Contractor. All such items shall conform with the requirements of governing codes and all laws, ordinances, rules, regulations, and orders of all authorities having jurisdiction. The Contractor shall take special precautions, such as shoring of masonry walls and temporary tie bracing of structural steel Work, to prevent possible wind damage during construction of the Work. The installation of such bracing or shoring shall not damage the Work in place or the Work installed by others. Any damage which does occur shall be promptly repaired by the Contractor at no cost to the District.

10.2.8 Conformance within Established Limits

The Contractor and Subcontractors shall confine their construction equipment, the storage of materials, and the operations of workers to the limits indicated by laws, ordinances, permits, and the limits established by the District or the Contractor, and shall not unreasonably encumber the premises with construction equipment or materials.

10.2.9 Subcontractor Enforcement of Rules

Subcontractors shall enforce the District's and the Contractor's instructions, laws, and regulations regarding signs, advertisements, fires, smoking, the presence of liquor, and the presence of firearms by any person at the Site.

10.2.10 Site Access

The Contractor and the Subcontractors shall use only those ingress and egress routes designated by the District, observe the boundaries of the Site designated by the District, park only in those areas designated by the District, which areas may be on or off the Site, and comply with any parking control program established by the District, such as furnishing license plate information and placing identifying stickers on vehicles.

10.2.11 Security Services.

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The Contractor shall be responsible for providing security services for the Site as needed for the protection of the Site and as determined in the District's sole discretion.

10.3 EMERGENCIES

10.3.1 Emergency Action

In an emergency affecting the safety of persons or property, the Contractor shall take any action necessary, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 7.

10.3.2 Accident Reports

The Contractor shall promptly report in writing to the District all accidents arising out of or in connection with the Work, which caused death, personal injury, or property damage, giving full details and statements of any witnesses in conformance with Article 10.1.4. In addition, if death, serious personal injuries, or serious property damages are caused, the accident shall be reported in accordance with Article 10.1.4, immediately by telephone or messenger to the District.

10.4 HAZARDOUS MATERIALS

10.4.1 Discovery of Hazardous Materials

In the event the Contractor encounters or suspects the presence on the job site of material reasonably believed to be asbestos, polychlorinated biphenyl (PCB), or any other material defined as being hazardous by § 25249.5 of the California Health and Safety Code, which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the District and the Architect in writing, whether or not such material was generated by the Contractor or the District. The Work in the affected area shall not thereafter be resumed, except by written agreement of the District and the Contractor, if in fact the material is asbestos, polychlorinated biphenyl (PCB), or other hazardous material, and has not been rendered harmless. The Work in the affected area shall be resumed only in the absence of asbestos, polychlorinated biphenyl (PCB), or other hazardous material, or when it has been rendered harmless by written agreement of the District and the Contractor.

10.4.2 Hazardous Material Work Limitations

In the event that the presence of hazardous materials is suspected or discovered on the Site (except in cases where asbestos and other hazardous material Work in the Contractor's responsibility), the District shall retain an independent testing laboratory to determine the nature of the material encountered and whether corrective measures or remedial action is required. The Contractor shall not be required pursuant to Article 7 to perform without consent any Work in the affected area of the Site relating to asbestos, polychlorinated biphenyl (PCB), or other hazardous material, until any known or suspected hazardous material has been removed, or rendered harmless, or determined to be harmless by District, as certified by an independent testing laboratory and approved by the appropriate government agency.

10.4.3 Indemnification by Contractor for Hazardous Material Caused by Contractor

GENERAL CONDITIONS

In the event the hazardous materials on the Project Site is caused by the Contractor, the Contractor shall pay for all costs of testing and remediation, if any, and shall compensate the District for any additional costs incurred as a result of Contractor's generation of hazardous material on the Project Site. In addition, the Contractor shall defend, indemnify and hold harmless District and its agents, officers, and employees from and against any and all claims, damages, losses, costs and expenses incurred in connection with, arising out of, or relating to, the presence of hazardous material on the Project Site.

10.4.4 Terms of Hazardous Material Provision

The terms of this Hazardous Material provision shall survive the completion of the Work and/or any termination of this Contract.

GENERAL CONDITIONS

ARTICLE 11 INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.1 Insurance Requirements

Before the commencement of the Work, the Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in California with a financial rating of at least an A-VIII status as rated in the most recent edition of Best's Insurance Reports or as amended by the Supplementary General Conditions, such insurance as will protect the District from claims set forth below, which may arise out of or result from the Contractor's Work under the Contract and for which the Contractor may be legally liable, whether such Work are by the Contractor, by a Subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. Any required insurance shall not contain any exclusion that applies to the type of work performed by the Contractor under the Contract Documents.

- a. Claims for damages because of bodily injury, sickness, disease, or death of any person District would require indemnification and coverage for employee claim;
- b. Claims for damages insured by usual personal injury liability coverage, which are sustained by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor or by another person;
- c. Claims for damages because of injury or destruction of tangible property, including loss of use resulting therefrom, arising from operations under the Contract Documents;
- d. Claims for damages because of bodily injury, death of a person, or property damage arising out of the ownership, maintenance, or use of a motor vehicle, all mobile equipment, and vehicles moving under their own power and engaged in the Work;
- e. Claims involving contractual liability applicable to the Contractor's obligations under the Contract Documents, including liability assumed by and the indemnity and defense obligations of the Contractor and the Subcontractors; and
- f. Claims involving Completed Operations, Independent Contractors' coverage, and Broad Form property damage, without any exclusions for collapse, explosion, demolition, underground coverage, and excavating. (XCU)
- g. Claims involving sudden or accidental discharge of contaminants or pollutants.

11.1.2 Specific Insurance Requirements

GENERAL CONDITIONS

Contractor shall take out and maintain and shall require all Subcontractors, if any, whether primary or secondary, to take out and maintain:

Comprehensive General Liability Insurance with a combined single limit per occurrence of not less than \$2,000,000.00 or Commercial General Liability Insurance which provides limits of not less than:

- | | | |
|-------|--|----------------|
| (a) | Per occurrence (combined single limit) | \$2,000,000.00 |
| | | |
| (b) | Project Specific Aggregate (for this Project only) | \$2,000,000.00 |
| | | |
| (c) | Products and Completed Operations (aggregate) | \$2,000,000.00 |
| | | |
| (d) | Personal and Advertising Injury Limit | \$1,000,000.00 |
| | | |

Insurance Covering Special Hazards

The following Special hazards shall be covered by riders or riders to above mentioned public liability insurance or property damage insurance policy or policies of insurance, in amounts as follows:

- | | | |
|-------|--|----------------|
| (a) | Automotive and truck where operated in amounts | \$1,000,000.00 |
| | | |
| (b) | Material Hoist where used in amounts | \$1,000,000.00 |
| | | |
| (c) | Explosion, Collapse and Underground (XCU coverage) | \$1,000,000.00 |
| | | |
| (d) | Hazardous Materials | \$1,000,000.00 |
| | | |

In addition, provide Excess Liability Insurance coverage in the amount of Four Million Dollars (\$4,000,000.00).

11.1.3 Subcontractor Insurance Requirements

The Contractor shall require its Subcontractors to take out and maintain public liability insurance and property damage insurance required under Article 11.1 in like amounts. A “claims made” or modified “occurrence” policy shall not satisfy the requirements of Article 11.1 without prior written approval of the District.

11.1.4 Additional Insured Endorsement Requirements

GENERAL CONDITIONS

The Contractor shall name, on any policy of insurance required under Article 11.1, the District, CM, Architect, Inspector, the State of California, their officers, employees, agents, volunteers and independent contractors as additional insureds. Subcontractors shall name the Contractor, the District, Architect, Inspector, the State of California, their officers, employees, agents, volunteers and independent contractors as additional insureds. The Additional Insured Endorsement included on all such insurance policies shall be an ISO CG 20 10 (04/13), or an ISO CG 20 38 (04/13), or their equivalent as determined by the District in its sole discretion, and must state that coverage is afforded the additional insured with respect to claims arising out of operations performed by or on behalf of the insured. If the additional insureds have other insurance which is applicable to the loss, such other insurance shall be on an excess or contingent basis. The insurance provided by the Contractor pursuant to 11.1 must be designated in the policy as primary to any insurance obtained by the District. The amount of the insurer's liability shall not be reduced by the existence of such other insurance.

11.2 WORKERS' COMPENSATION INSURANCE

During the term of this Contract, the Contractor shall provide workers' compensation and employer's liability insurance for all of the Contractor's employees engaged in Work under this Contract on or at the Site of the Project and, in case any of the Contractor's Work is subcontracted, the Contractor shall require the Subcontractor to provide workers' compensation insurance for all the Subcontractor's employees engaged in Work under the subcontract. Any class of employee or employees not covered by a Subcontractor's insurance shall be covered by the Contractor's insurance. In case any class of employees engaged in Work under this Contract on or at the Site of the Project is not protected under the Workers' Compensation laws, the Contractor shall provide or cause a Subcontractor to provide insurance coverage for the protection of those employees not otherwise protected. The Contractor shall file with the District certificates of insurance as required under Article 11.6 and in compliance with Labor Code § 3700.

Workers' compensation limits as required by the Labor Code, but not less than \$1,000,000 and employers' liability limits of \$1,000,000 per accident for bodily injury or disease.

11.3 BUILDER'S RISK/ "ALL RISK" INSURANCE

11.3.1 Course-of-Construction Insurance Requirements

The Contractor, during the progress of the Work and until final acceptance of the Work by District upon completion of the entire Contract, shall maintain Builder's Risk, Course of Construction or similar first party property coverage issued on a replacement cost value basis consistent with the total replacement cost of all insurable Work and the Project included within the Contract Documents. Coverage is to insure against all risks of accidental direct physical loss, and must include, by the basic grant of coverage or by endorsement, the perils of vandalism, malicious mischief (both without any limitation regarding vacancy or occupancy), fire, sprinkler leakage, civil authority, sonic boom, earthquake, flood, collapse, wind, lightning, smoke and riot. The coverage must include debris removal, demolition, increased costs due to enforcement of building ordinance and law in the repair and replacement of damage and undamaged portions of the property, and reasonable costs for the Architect's and engineering services and expenses required as a result of any insured loss upon the Work and Project which is the subject of the Contract Documents, including completed Work and Work in progress, to the full insurable value thereof. Such insurance shall include the District and the Architect as additional named insureds, and any other person with an insurable interest as designated by the District.

GENERAL CONDITIONS

The Contractor shall submit to the District for its approval all items deemed to be uninsurable. The risk of the damage to the Work due to the perils covered by the “Builder’s Risk/All Risk” Insurance, as well as any other hazard which might result in damage to the Work, is that of the Contractor and the Surety, and no Claims for such loss or damage shall be recognized by the District nor will such loss or damage excuse the complete and satisfactory performance of the Contract by the Contractor.

11.4 FIRE INSURANCE

Before the commencement of the Work, the Contractor shall procure, maintain, and cause to be maintained at the Contractor’s expense, fire insurance on all Work subject to loss or damage by fire. The amount of fire insurance shall be sufficient to protect the Project against loss or damage in full until the Work is accepted by the District. This requirement may be waived upon confirmation by the District that such coverage is provided under the Builder’s Risk Insurance being provided.

11.5 AUTOMOBILE LIABILITY

11.5.1 The District, Architect and Construction Manager, Inspectors, their directors, officers, employees, agents and volunteers shall be covered as additional insureds with respect to the ownership, operation, maintenance, use, loading or unloading of any auto owned, leased, hired or borrowed by the Contractor or for which the Contractor is responsible. Such insurance coverage shall be primary and non-contributory insurance as respects the District, Architect, Construction Manager, Project Inspector, their directors, officers, employees, agents and volunteers, or if excess, shall stand in an unbroken chain of coverage excess of the Contractor’s scheduled underlying coverage. Any insurance or self-insurance maintained by the District, Architect, Construction Manager, Project Inspector, their directors, officers, employees, agents and volunteers shall be excess of the Contractor’s insurance and shall not be called upon to contribute with it. The insurer shall agree to waive all rights of subrogation against the District, Architect, Construction Manager, Project Inspector, their directors, officers, employees, agents and volunteers for losses paid under the terms of the insurance policy that arise from Work performed by the Contractor.

11.5.2 Insurance Services Office Business Auto Coverage Form Number CA 0001, Code 1 (any auto) is required. Comprehensive Automobile Liability insurance to include all autos, owned, non-owned, and hired, with limits of \$1,000,000 per accident for bodily injury and property damage.

11.6 OTHER INSURANCE

The Contractor shall provide all other insurance required to be maintained under applicable laws, ordinances, rules, and regulations.

11.7 PROOF OF INSURANCE

The Contractor shall not commence Work nor shall it allow any Subcontractor to commence Work under this Contract until all required insurance and certificates have been obtained and delivered in duplicate to the District for approval subject to the following requirements:

a. Certificates and insurance policies shall include the following clause:

“This policy and any coverage shall not be suspended, voided, non-renewed, canceled, or reduced in required limits of liability or amounts of insurance or coverage

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until notice has been mailed via certified mail to the District. Date of cancellation or reduction may not be less than thirty (30) days after the date of mailing notice.”

- b. Certificates of insurance shall state in particular those insured, the extent of insurance, location and operation to which the insurance applies, the expiration date, and cancellation and reduction notices.
- c. Certificates of insurance shall clearly state that the District and the Architect are named as additional insureds under the policy described and that such insurance policy shall be primary to any insurance or self-insurance maintained by District.
- d. The Contractor and its Subcontractors shall produce a certified copy of any insurance policy required under this Section upon written request of the District.

11.8 COMPLIANCE

In the event of the failure of Contractor to furnish and maintain any insurance required by this Article 11, the Contractor shall be in default under the Contract. Compliance by Contractor with the requirement to carry insurance and furnish certificates or policies evidencing the same shall not relieve the Contractor from liability assumed under any provision of the Contract Documents, including, without limitation, the obligation to defend and indemnify the District and the Architect.

11.9 WAIVER OF SUBROGATION

Contractor waives (to the extent permitted by law) any right to recover against the District for damages to the Work, any part thereof, or any and all claims arising by reason of any of the foregoing, but only to the extent that such damages and/or claims are covered by property insurance and only to the extent of such coverage (which shall exclude deductible amounts) by insurance actually carried by the District.

The provisions of this Article are intended to restrict each party to recovery against insurance carriers only to the extent of such coverage and waive fully and for the benefit of each, any rights and/or claims which might give rise to a right of subrogation in any insurance carrier. The District and the Contractor shall each obtain in all policies of insurance carried by either of them, a waiver by the insurance companies thereunder of all rights of recovery by way of subrogation for any damages or claims covered by the insurance.

11.10 PERFORMANCE AND PAYMENT BONDS

11.10.1 Bond Requirements

Unless otherwise specified in the Supplemental Conditions, prior to commencing any portion of the Work, the Contractor shall furnish separate Payment and Performance Bonds for its portion of the Work which shall cover 100% faithful performance of and payment of all obligations arising under the Contract Documents and/or guaranteeing the payment in full of all claims for labor performed and materials supplied for the Work. All bonds shall be provided by a corporate Surety authorized and admitted to transact business in California as sureties.

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To the extent, if any, that the Contract Price is increased in accordance with the Contract Documents, the Contractor shall, upon request of the District, cause the amount of the bonds to be increased accordingly and shall promptly deliver satisfactory evidence of such increase to the District. To the extent available, the bonds shall further provide that no change or alteration of the Contract Documents (including, without limitation, an increase in the Contract Price, as referred to above), extensions of time, or modifications of the time, terms, or conditions of payment to the Contractor will release the Surety. If the Contractor fails to furnish the required bonds, the District may terminate the Contract for cause.

11.10.2 Surety Qualification

Only bonds executed by admitted Surety insurers as defined in Code of Civil Procedure § 995.120 shall be accepted. Surety must be a California-admitted Surety and listed by the U.S. Treasury with a bonding capacity in excess of the Project cost.

11.10.3 Alternate Surety Qualifications

If a California-admitted Surety insurer issuing bonds does not meet these requirements, the insurer will be considered qualified if it is in conformance with § 995.660 of the California Code of Civil Procedure and proof of such is provided to the District.

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ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

12.1 COMPLIANCE WITH TITLE 24 INSTALLATION REQUIREMENTS

Contractor is aware of the requirements governing Contractor's Work under title 24 Section 4-343 which provides, in pertinent part:

4-343. Duties of the Contractor.

(a) **Responsibilities.** It is the duty of the contractor to complete the Work covered by his or her contract in accordance with the approved Plans and Specifications therefore. The contractor in no way is relieved of any responsibility by the activities of the architect, engineer, Inspector or DSA in the performance of such duties.

(b) **Performance of the Work.** The contractor shall carefully study the approved Plans and Specifications and shall plan a schedule of operations well ahead of time. If at any time it is discovered that Work is being done which is not in accordance with the approved Plans and Specifications, the contractor shall correct the Work immediately. All inconsistencies or items which appear to be in error in the Plans and Specifications shall be promptly called to the attention of the architect or registered engineer, through the Inspector, for interpretation or correction. In no case, however, shall the instruction of the architect or registered engineer be construed to cause Work to be done which is not in conformity with the approved Plans, Specifications, and Change Orders. The contractor must notify the Project Inspector, in advance, of the commencement of construction of each and every aspect of the Work.

12.1.1 Issuance of Notices of Non-Compliance

The Inspector may issue a Notice of Non-Compliance on the Project indicating deviation from Plans and Specifications. It is Contractor's responsibility to correct all deviations from the approved Plans and Specifications unless the District has issued an Immediate Change Directive. In such case, the Contractor shall proceed with the Work with the understandings of the District as set forth in the ICD and as specifically noted in Article 7.3.

12.2 SPECIAL NOTICE OF AMERICAN'S WITH DISABILITIES ACT

Some of the requirements in the Plans and Specifications are meant to comply with the Americans with Disabilities Act ("ADA"). The requirements of the ADA are technical in nature and may appear to be minor in nature (i.e. whether a walkway or ramp has a 2% cross-slope). Contractor is warned that even the slightest deviation from the specific requirements from the ADA is considered a Civil Rights violation and subjects the District to fines of three times actual damages sustained by a handicap individual or up to \$4,000 per violation and attorney's fees required to enforce the ADA violation. As a result of the significant liability and exposure associated with ADA aspects of the Contract, Contractor shall take special care to meet all ADA requirements detailed in the Plans and Specifications. Failure to comply with ADA rules that results in a Notice of Non-Compliance shall be repaired to meet ADA requirements promptly. In addition, any ADA violations that are not identified by Inspector or Architect that are later identified shall be repaired and charged back to the Contractor through a Deductive Change Order.

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12.2.1 Indemnification of ADA Claims

Contractor shall indemnify, hold harmless and defend the District from ADA claims arising from the failure to comply with the Plans and Specifications. Further, any withholdings for ADA violations under Article 9.6 shall include potential redesign costs and an accelerated repair costs due to the potential for ADA claims arising from DSA posting of ADA violations on the Project.

12.3 UNCOVERING OF WORK

12.3.1 Uncovering Work for Required Inspections

Work shall not be covered without the Inspector's review and the Architect's knowledge that the Work conforms with the requirements of the approved Plans and Specifications (except in the case of an ICD under Article 7.3). Inspector must be timely notified of inspections and of new areas so Work can be inspected at least 48 hours before opening a new area (For example, see DSA Form 156 for Commencement/Completion of Work Notification which requires "at least 48 hour" advance notification of a new area). An Inspector must comply with DSA protocols for signing each category or phase of Work under DSA Form 152 (in compliance with the Form 152 Manual) or a Notice of Deviation (DSA Form 154) will be issued requiring the Work that was not inspected be uncovered for inspection. Thus, if a portion of the Work is covered without inspection or Architect approval, is subject to a Notice of Non-Compliance for being undertaken without inspection, or otherwise not in compliance with the Contract Documents, after issuance of a Written Notice of Non-Compliance (Form 154) or a written notice to uncover Work, Contractor shall promptly uncover all Work (which includes furnishing all necessary facilities, labor, and material) for the Inspector's or the Architect's observation and such Work shall be replaced at the Contractor's expense without change in the Contract Sum or Time.

12.3.2 Costs for Inspections Not Required

If a portion of the Work has been covered is believed to be Non-Conforming to the Plans and Specifications, even if the Form 152 for the category of Work has been signed by the Inspector, the Inspector or the Architect may request to see such Work, and it shall be promptly uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncover and replacement shall, by appropriate Change Order and shall, be charged to the District. If such Work is not in accordance with Contract Documents, the Contractor shall be responsible for all costs to uncover the Work, delays incurred to uncover the Work, and Contractor shall pay all costs to correct the Non-Conforming construction condition unless the condition was caused by the District or a separate contractor, in which event the District shall be responsible for payment of such costs to the Contractor.

12.4 CORRECTION OF WORK

12.4.1 Correction of Rejected Work

The Contractor shall promptly correct the Work rejected by the Inspector or the District upon recommendation of the Architect as failing to conform to the requirements of the Contract Documents, whether observed before or after Completion and whether or not Fabricated, installed, or completed. The Contractor shall bear costs of correcting the rejected Work, including cost for delays that may be incurred by Contractor or Subcontractors, the cost for additional testing, inspections, and compensation for the Inspector's or the Architect's services and expenses made necessary thereby (including costs for preparing a CCD, DSA CCD review fees, and additional inspection and special inspection costs).

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12.4.2 One-Year Warranty Corrections

If, within one (1) year after the date of Completion of the Work or a designated portion thereof, or after the date for commencement of warranties established under Article 9.9.1, or by the terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the District to do so unless the District has previously given the Contractor a written acceptance of such condition. This period of one (1) year shall be extended with respect to portions of the Work first performed after Completion by the period of time between Completion and the actual performance of the Work. This obligation under this Article 12.4.2 shall survive acceptance of the Work under the Contract and termination of the Contract. The District shall give such notice promptly after discovery of the condition.

12.4.3 District's Rights if Contractor Fails to Correct

If the Contractor fails to correct nonconforming Work within a reasonable time, the District may correct the Work and seek a Deductive Change Order, pursuant to Article 9.6 or Article 2.2.

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ARTICLE 13 MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located.

13.2 SUCCESSORS AND ASSIGNS

The District and the Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to the other party hereto and to partners, successors, assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

13.3 WRITTEN NOTICE

In the absence of specific notice requirements in the Contract Documents, written notice shall be deemed to have been duly served if delivered in person to the individual, member of the firm or entity, or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

13.4 RIGHTS AND REMEDIES

13.4.1 Duties and Obligations Cumulative

Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

13.4.2 No Waiver

No action or failure to act by the Inspector, the District, or the Architect shall constitute a waiver of a right or duty afforded them under the Contract Documents, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

13.5 TESTS AND INSPECTIONS

13.5.1 Compliance

Tests, inspections, and approvals of portions of the Work required by the Contract Documents will comply with Division 1, Title 24, and with all other laws, ordinances, rules, regulations, or orders of public authorities having jurisdiction.

13.5.2 Independent Testing Laboratory

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The District will select and pay an independent testing laboratory to conduct all tests and inspections. Selection of the materials required to be tested shall be made by the laboratory or the District's representative and not by the Contractor. See Articles 3.13.1 and 4.3.6 regarding costs or expenses of inspection or testing outside of the Project Site.

13.5.3 Advance Notice to Inspector

The Contractor shall notify the Inspector a sufficient time in advance of its readiness for required observation or inspection so that the Inspector may arrange for same. The Contractor shall notify the Inspector a sufficient time in advance of the manufacture of material to be supplied under the Contract Documents which must, by terms of the Contract Documents, be tested in order that the Inspector may arrange for the testing of the material at the source of supply.

13.5.4 Testing Off-Site

Any material shipped by the Contractor from the source of supply, prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice from said Inspector that such testing and inspection will not be required, shall not be incorporated in the Work.

13.5.5 Additional Testing or Inspection

If the Inspector, the Architect, the District, or public authority having jurisdiction determines that portions of the Work require additional testing, inspection, or approval not included under Article 13.5.1, the Inspector will, upon written authorization from the District, make arrangements for such additional testing, inspection, or approval. The District shall bear such costs except as provided in Articles 13.5.6 and 13.5.7.

13.5.6 Costs for Retesting

If such procedures for testing, inspection, or approval under Articles 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs arising from such failure, including those of re-testing, re-inspection, or re-approval, including, but not limited to, compensation for the Architect's services and expenses. Any such costs shall be paid by the District, invoiced to the Contractor, and deducted from the next Progress Payment.

13.5.7 Costs for Premature Test

In the event the Contractor requests any test or inspection for the Project and is not completely ready for the inspection, the Contractor shall be invoiced by the District for all costs and expenses resulting from that testing or inspection, including, but not limited to, the Inspector's and Architect's fees and expenses, and the amount of the invoice shall be deducted from the next Progress Payment.

13.6 TRENCH EXCAVATION

13.6.1 Trenches Greater Than Five Feet

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Pursuant to Labor Code section 6705, if the Contract Price exceeds \$25,000 and involves the excavation of any trench or trenches five (5) feet or more in depth, the Contractor shall, in advance of excavation, submit to the District or a registered civil or structural engineer employed by the District or Architect, a detailed plan showing the design of shoring for protection from the hazard of caving ground during the excavation of such trench or trenches.

13.6.2 Excavation Safety

If such plan varies from the Shoring System Standards established by the Construction Safety Orders, the plan shall be prepared by a registered civil or structural engineer, but in no case shall such plan be less effective than that required by the Construction Safety Orders. No excavation of such trench or trenches shall be commenced until said plan has been accepted by the District or by the person to whom authority to accept has been delegated by the District.

13.6.3 No Tort Liability of District

Pursuant to Labor Code § 6705, nothing in this Article shall impose tort liability upon the District or any of its employees.

13.6.4 No Excavation without Permits

The Contractor shall not commence any excavation Work until it has secured all necessary permits including the required CAL OSHA excavation/shoring permit. Any permits shall be prominently displayed on the Site prior to the commencement of any excavation.

13.7 WAGE RATES, TRAVEL, AND SUBSISTENCE

13.7.1 Wage Rates

Pursuant to the provisions of Article 2 (commencing at § 1720), Chapter 1, Part 7, Division 2, of the Labor Code, the District has obtained the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this public works project is to be performed for each craft, classification, or type of worker needed for this Project from the Director of the Department of Industrial Relations ("Director"). These rates are on file at the administrative office of the District and are also available from the Director of the Department of Industrial Relations. Copies will be made available to any interested party on request. The Contractor shall post a copy of such wage rates at appropriate, conspicuous, weatherproof points at the Site.

Any worker employed to perform Work on the Project, but such Work is not covered by any classification listed in the published general prevailing wage rate determinations or per diem wages determined by the Director of the Department of Industrial Relations, shall be paid not less than the minimum rate of wages specified therein for the classification which most nearly corresponds to the employment of such person in such classification.

13.7.2 Holiday and Overtime Pay

Holiday and overtime work, when permitted by law, shall be paid for at the rate set forth in the prevailing wage rate determinations issued by the Director of the Department of Industrial Relations

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or at least one and one-half (1½) times the specified basic rate of per diem wages, plus employer payments, unless otherwise specified in the Contract Documents or authorized by law.

13.7.3 Wage Rates Not Affected by Subcontracts

The Contractor shall pay and shall cause to be paid each worker engaged in the execution of the Work on the Project not less than the general prevailing rate of per diem wages determined by the Director, regardless of any contractual relationship which may be alleged to exist between the Contractor or any Subcontractor and such workers.

13.7.4 Per Diem Wages

The Contractor shall pay and shall cause to be paid to each worker needed to execute the Work on the Project per diem wages including, but not limited to, employer payments for health and welfare, pensions, vacation, travel time and subsistence pay as provided for in Labor Code §1773.1.

13.7.5 Forfeiture and Payments

Pursuant to Labor Code §1775, the Contractor shall forfeit to the District, not more than Two Hundred Dollars (\$200.00) for each calendar day, or portion thereof, for each worker paid less than the prevailing wages rates as determined by the Director of the Department of Industrial Relations, for the work or craft in which the worker is employed for any Work done under the Agreement by the Contractor or by any Subcontractor under it. The amount of the penalty shall be determined by the Labor Commissioner and shall be based on consideration of: (1) whether the Contractor or Subcontractor's failure to pay the correct rate of per diem wages was a good faith mistake and, if so, the error was promptly and voluntarily correct upon being brought to the attention of the Contractor or Subcontractor; and (2) whether the Contractor or Subcontractor has a prior record of failing to meet its prevailing wage obligations.

13.7.6 Monitoring and Enforcement by Labor Commissioner

Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE). The Contractor and all subcontractors shall be required to furnish, at least monthly, certified payroll records directly to the Labor Commissioner in accordance with Labor Code section 1771.4. All payroll records shall be furnished in a format required by the Labor Commissioner. The Contractor and all subcontractors must sign up for, and utilize, the Labor Commissioner's electronic certified payroll records submission system. The District will have direct and immediate access to all CPRs for the Project that are submitted through the Labor Commissioner's system. The District can use this information for any appropriate purpose, including monitoring compliance, identifying suspected violations, and responding to Public Records Act requests.

The Labor Commissioner/ DLSE may conduct various compliance monitoring and enforcement activities including, but not limited to, confirming the accuracy of payroll records, conducting worker interviews, conducting audits, requiring submission of itemized statements prepared in accordance with Labor Code section 226, and conducting random in-person inspections of the Project site ("On-Site Visits"). On-Site Visits may include inspections of records, inspections of the Work site and observation of work activities, interviews of workers and others involved with the Project, and any other activities deemed necessary by the Labor Commissioner/DLSE to ensure compliance with prevailing wage requirements. The Labor Commissioner/DLSE shall have free access to any construction site or other place

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of labor and may obtain any information or statistics pertaining to the lawful duties of the Labor Commissioner/DLSE.

Any lawful activities conducted or any requests made by the Labor Commissioner/DLSE shall not be the basis for any delays, claims, costs, damages or liability of any kind against the District by the Contractor. Contractor and all subcontractors shall cooperate and comply with any lawful requests by the Labor Commissioner/ DLSE. The failure of the Labor Commissioner, DLSE, or any other entity related to the Department of Industrial Relations to comply with any requirement imposed by the California Code of Regulations, Title 8, Chapter 8 shall not of itself constitute a defense to the failure to pay prevailing wages or to comply with any other obligation imposed by Division 2, Part 7, Chapter 1 of the Labor Code.

Prior to commencing any Work on the Project, the Contractor shall post the required notice/poster required under the California Code of Regulations and Labor Code section 1771.4 in both English and Spanish at a conspicuous, weatherproof area at the Project site. The required notice/poster is available on the Labor Commissioner's website.

13.8 RECORDS OF WAGES PAID

13.8.1 Payroll Records

- a. Pursuant to §1776 of the Labor Code, the Contractor and each Subcontractor shall keep an accurate payroll record showing the name, address, social security number, work classification and straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker or other employee employed by him or her in connection with the Project.

All payroll records as specified in Labor Code §1776 of the Contractor and all Subcontractors shall be certified and furnished directly to the Labor Commissioner in accordance with Labor Code §1771.4(a)(3) on a monthly basis (or more frequently if required by the District or the Labor Commissioner) and in a format prescribed by the Labor Commissioner. Payroll records as specified in Labor Code §1776 shall be certified and submitted to the District with each application for payment. All payroll records shall be available for inspection at all reasonable hours at the principal office of the Contractor on the following basis:

1. A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request.
2. A certified copy of all payroll records shall be made available for inspection or furnished upon request to a representative of District, the Division of Labor Standards Enforcement or the Division of Apprenticeship Standards of the Department of Industrial Relations.
3. A certified copy of all payroll records shall be made available upon request by the public for inspection or for copies thereof. However, a request by the public shall be made through the District, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement. If the requested payroll records have not been provided

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pursuant to Paragraph (2) above, the requesting party shall, prior to being provided the records, reimburse the costs, according to law for the preparation by the Contractor, Subcontractor(s), and the entity through which the request was made. The public shall not be given access to such records at the principal office of the Contractor.

- b. The certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement or shall contain the same information as the forms provided by the Division of Labor Standards Enforcement.
- c. The Contractor or Subcontractor(s) shall file a certified copy of all payroll records with the entity that requested such records within 10 calendar days after receipt of a written request.
- d. Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the District, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement shall be marked or obliterated to prevent disclosure of an individual's name, address and social security number. The name and address of the Contractor awarded the Contract or the Subcontractor(s) performing the Contract shall not be marked or obliterated. Any copy of records made available for inspection by, or furnished to, a joint labor-management committee established pursuant to the federal Labor Management Cooperation Act of 1978 (Section 175a of Title 29 of the United States Code) shall be marked or obliterated only to prevent disclosure of an individual's name and social security number. Notwithstanding any other provision of law, agencies that are included in the Joint Enforcement Strike Force on the Underground Economy established pursuant to Section 329 of the Unemployment Insurance Code and other law enforcement agencies investigating violations of law shall, upon request, be provided non-redacted copies of certified payroll records.
- e. The Contractor shall inform the District of the location of all payroll records, including the street address, city and county, and shall, within five working days, provide a notice of a change of location and address.
- f. The Contractor or Subcontractor(s) shall have 10 calendar days in which to comply subsequent to receipt of a written notice requesting payroll records. In the event that the Contractor or Subcontractor(s) fails to comply within the 10-day period, the Contractor or Subcontractor(s) shall, as a penalty to the District, forfeit One Hundred Dollars (\$100.00) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due.

Responsibility for compliance with this Article shall rest upon the Contractor.

13.8.2 Withholding of Contract Payments & Penalties

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The District may withhold or delay contract payments to the Contractor and/or any Subcontractor if:

- a. The required prevailing rate of per diem wages determined by the Director of the Department of Industrial Relations is not paid to all workers employed on the Project; or
- b. The Contractor or Subcontractor(s) fail to submit all required certified payroll records with each application for payment, but not less than once per month; or
- c. The Contractor or Subcontractor(s) submit incomplete or inadequate payroll records; or
- d. The Contractor or Subcontractor(s) fail to comply with the Labor Code requirements concerning apprentices; or
- e. The Contractor or Subcontractor(s) fail to comply with any applicable state laws governing workers on public works projects.

13.9 APPRENTICES

13.9.1 Apprentice Wages and Definitions

All apprentices employed by the Contractor to perform services under the Contract shall be paid the standard wage paid to apprentices under the regulations of the craft or trade for which he or she is employed, and as determined by the Director of the Department of Industrial Relations, and shall be employed only at the craft or trade to which he or she is registered. Only apprentices, as defined in §3077 of the Labor Code, who are in training under apprenticeship standards that have been approved by the Chief of the Division of Apprenticeship Standards and who are parties to written apprenticeship agreements under Chapter 4 (commencing with §3070) of Division 3, are eligible to be employed under this Contract. The employment and training of each apprentice shall be in accordance with the apprenticeship standards and apprentice agreements under which he or she is training, or in accordance with the rules and regulations of the California Apprenticeship Council.

13.9.2 Employment of Apprentices

Contractor agrees to comply with the requirements of Labor Code §1777.5. The Contractor awarded the Project, or any Subcontractor under him or her, when performing any of the Work under the Contract or subcontract, employs workers in any apprenticeable craft or trade, the Contractor and Subcontractor shall employ apprentices in the ratio set forth in Labor Code §1777.5. The Contractor or any Subcontractor must apply to any apprenticeship program in the craft or trade that can provide apprentices to the Project site for a certificate approving the contractor or subcontractor under the apprenticeship standards for the employment and training of apprentices in the area or industry affected. However, the decision of the apprenticeship program to approve or deny a certificate shall be subject to review by the Administrator of Apprenticeship. The apprenticeship program or programs, upon approving the Contractor or Subcontractor, shall arrange for the dispatch of apprentices to the Contractor or Subcontractor upon the Contractor's or Subcontractor's request. "Apprenticeable craft or trade" as used in this Article means a craft or trade determined as an apprenticeable occupation in accordance with the rules and regulations prescribed by the California Apprenticeship Council. The ratio of work performed by apprentices to

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journeyman employed in a particular craft or trade on the Project shall be in accordance with Labor Code §1777.5.

13.9.3 Submission of Contract Information

Prior to commencing Work on the Project, the Contractor and Subcontractors shall submit contract award information to the applicable apprenticeship program(s) that can supply apprentices to the Project and make the request for the dispatch of apprentices in accordance with the Labor Code. The information submitted shall include an estimate of journeyman hours to be performed under the Contract, the number of apprentices proposed to be employed, and the approximate dates the apprentices would be employed. A copy of this information shall also be submitted to the District if requested. Within 60 days after concluding Work on the Project, the Contractor and Subcontractors shall submit to the District, if requested, and to the apprenticeship program a verified statement of the journeyman and apprentice hours performed on the Project.

13.9.4 Apprentice Fund

The Contractor or any Subcontractor under him or her, who, in performing any of the Work under the Contract, employs journeymen or apprentices in any apprenticeable craft or trade shall contribute to the California Apprenticeship Council the same amount that the Director determines is the prevailing amount of apprenticeship training contributions in the area of the Project. The Contractor and Subcontractors may take as a credit for payments to the California Apprenticeship Council any amounts paid by the Contractor or Subcontractor to an approved apprenticeship program that can supply apprentices to the Project. The Contractor and Subcontractors may add the amount of the contributions in computing his or her bid for the Contract.

13.9.5 Prime Contractor Compliance

The responsibility of compliance with Article 13 and §1777.5 of the Labor Code for all apprenticeable occupations is with the Prime Contractor. Any Contractor or Subcontractor that knowingly violates the provisions of this Article or Labor Code §1777.5 shall be subject to the penalties set forth in Labor Code §1777.7.

13.10 ASSIGNMENT OF ANTITRUST CLAIMS

13.10.1 Application

Pursuant to Government Code § 4551, in entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the Contractor or Subcontractor offers and agrees to assign to the District all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act, (15 U.S.C. § 15) or under the Cartwright Act (Chapter 2 [commencing with § 16700] of Part 2 of Division 7 of the Business and Professions Code), arising from the purchase of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders Retention Payment to the Contractor, without further acknowledgment by the parties. If the District receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under Chapter 11 (commencing with § 4550) of Division 5 of Title 1 of the Government Code, the assignor shall be entitled to receive reimbursement for actual legal costs incurred and may, upon demand, recover from the District any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but

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were not paid by the District as part of the bid price, less the expenses incurred in obtaining that portion of the recovery.

13.10.2 Assignment of Claim

Upon demand in writing by the assignor, the District shall, within one (1) year from such demand, reassign the cause of action assigned pursuant to this Article if the assignor has been or may have been injured by the violation of law for which the cause of action arose and the District has not been injured thereby or the District declines to file a court action for the cause of action.

13.11 STATE AND DISTRICT CONDUCTED AUDITS

Pursuant to and in accordance with the provisions of Government Code § 10532, or any amendments thereto, all books, records, and files of the District, the Contractor, or any Subcontractor connected with the performance of this Contract involving the expenditure of state funds in excess of Ten Thousand Dollars (\$10,000.00), including, but not limited to, the administration thereof, shall be subject to the examination and audit of the Office of the Auditor General of the State of California for a period of five (5) years after Retention Payment is made or a Notice of Completion is Recorded, whichever occurs first. Contractor shall preserve and cause to be preserved such books, records, hard drives, electronic media, and files for the audit period.

Pursuant to the remedies under Public Contract Code section 9201 and Government Code section 930.2, Contractor, through execution of this Agreement, also agrees the District shall have the right to review and audit, upon reasonable notice, the books and records of the Contractor concerning any monies associated with the Project. The purpose of this "Audit" is to quickly and efficiently resolve Disputes based on the actual costs incurred and to reduce the uncertainty in resolving Disputes with limited information. The District shall perform any audits at its own cost and any such audit shall be performed by an independent auditor, having no direct or indirect relationship with the functions or activities being audited or with the business conducted by the Contractor or District. In the event the independent auditor determines that Change Orders, response to Request for Proposals, Claims, Appeal of Claims, or other requests for payment are in error, or have has any other concerns or questions, the Auditor shall report the results of the Audit findings to the District and provide a copy to the Contractor after giving the District Board the opportunity for at least 10 days review. If the Contractor disputes the findings of the independent auditor, such dispute shall be handled in the manner set forth under Article 4.6.2 entitled Disputes.

If Contractor having agreed to the terms of this Contract fails to produce books or records requested by Auditor, such failure to produce books or records that were required to be preserved for audit, it shall be presumed that the information contained in the withheld books or records were unfavorable to the Contractor and the Auditor shall note this refusal in the results of the Audit findings for further evaluation by the District and the District's Board. The refusal to release records that are concerning monies associated with the Project may be used as a grounds to debar the Contractor under Article 15 for failure to preserve records under Article 13.11 and the failure to produce required audit records may also be used as a grounds for a negative finding against the Contractor depending on the significance of the records that are withheld by Contractor. Failure to produce job cost data tied to job cost categories and budgets shall be presumed an intentional failure to produce key audit records. Similarly, failure to produce Daily Reports (prepared at or near the time of the Work actually took place (See Article 3.16) shall be presumed an intentional failure to produce key audited records.

GENERAL CONDITIONS

If Contractor is seeking costs for inefficiency, home office overhead, or unanticipated increased costs due to delays or acceleration, Contractor shall also produce copies of the original bid tabulation utilized in submitting Contractor's bid for the Project. This document shall be considered confidential and shall not be subject to disclosure through a Public Records Act and shall not be distributed to anyone other than the District and the District's counsel. This bid tabulation shall only be used in litigation, arbitration, evaluation of Claims or Disputes, Audit, and trial. If the records for the bid tabulation are kept on a computer, the Contractor shall also produce all metadata (in native format) that accompanies the bid tabulation for inspection to prove the authenticity of the underlying bid tabulation. Failure to produce the bid tabulation for review of inefficiency, home office overhead, or unanticipated increased costs due to delays or accelerations shall be considered material evidence that the bid tabulation was not favorable to the Contractor. This evidence shall be entered as a jury instruction for trial that the bid tabulation was not produced and the bid tabulation information was unfavorable to the Contractor. The evidence may also be used in debarment proceedings, and noted as an exception to an Audit findings.

Upon notification of Contractor concerning the results of the audit and a reasonable time has passed for Contractor to respond to the Audit findings and if either there is no Dispute of the Audit findings under Article 4.6 or if the result after utilizing the Disputes Clause confirms the Audit findings, the District may seek reimbursement for overstated Claims, Change Orders, or Appeal of Claims and may also undertake debarment proceedings under Article 15 of these General Conditions.

13.12 STORM WATER POLLUTION PREVENTION

13.12.1 Application

This Section addresses the preparation, implementation and monitoring of a Storm Water Pollution Prevention Plan (SWPPP) for the purpose of preventing the discharge of pollutants from the construction site. This includes the elimination of pollution discharges such as improper dumping, spills or leakage from storage tanks or transfer areas. The District will not issue a Notice to Proceed until Contractor has prepared by a qualified individual and obtained approval of the Permit Registration Documents ("PRDs") that include a Notice of Intent, Construction Risk Calculation, Site Map, SWPPP, Annual Fee and any additional required documents from all applicable Local Governing Agencies including the Regional Water Quality Control Board. The Contractor shall also secure a certification that the Project has met all of the conditions of the General Construction Activity Storm Water Permit (GCASP) and comply with all applicable local, state and federal regulations governing storm water pollution prevention.

13.12.2 References and Materials

- California Stormwater Quality Association New Development and Redevelopment Best Management Practice Handbook
- 2009 California Stormwater Quality Association Construction BMP Handbook .
- State Water Resources Control Board (2009). Order 2009-0009-DWQ, NPDES General Permit No. CAS000002: Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction and Land Disturbing Activities. Available on-line at:
- http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml.- Use materials of a class, grade and type needed to meet the performance described in the BMP Handbook.

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13.12.3 Preparation and Approval

The Contractor shall prepare by a qualified individual the PRDs that include a Notice of Intent, Construction Risk Calculation, Site Map, SWPPP, Annual Fee and any additional required documents. The Contractor's Qualified SWPPP Developer ("QSD") shall prepare the Storm Water Pollution Prevention Plan (SWPPP) as required to comply with storm water pollution regulations for project sites with storm water discharges associated with construction activity such as clearing or demolition, grading, excavation and other land disturbances. The SWPPP shall apply to all areas that are directly related to construction activity, including but not limited to staging areas, storage yards, material borrow areas, and access roads.

13.12.3.1 The Contractor shall prepare and submit to the Local Governing Agencies and the District the SWPPP for review and approval if the project sites, new or existing, with land disturbance of 1 or more acres (or less than 1 acres if part of a common plan of development); the construction activity that results in land surface disturbances of less than one acre is part of a larger common plan of development or sale of one or more acres of disturbed land surface; or the construction activity associated with Linear Underground/Overhead Projects ("LUPs") including, but not limited to, those activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities) and include, but are not limited to, underground utility mark-out, potholing, concrete and asphalt cutting and removal, trenching, excavation, boring and drilling, access road and pole/tower pad and cable/wire pull station, substation construction, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and/or pavement repair or replacement, and stockpile/borrow locations.

13.12.3.2 The Contractor shall also pay annual renewal fee(s) until the contract is completed and make all such checks payable to the State Water Resources Control Board. The Notice of Intent must be submitted at least two weeks prior to the commencement of construction activities.

13.12.3.3 The Contractor shall prepare the SWPPP by following the format in Sections 2, 3, 4 and Appendices A through F of the California Stormwater BMP Handbook - Construction, January 2009 edition, published by the California Stormwater Quality Association. The publication is available from:

California Stormwater
Quality Association
P.O. Box 2105
Menlo Park, CA 94026-2105
Phone: (650) 366-1042
E-mail: info@casqa.org

or

<https://www.casqa.org/store/products/tabid/154/p-167-construction-handbookportal-initial-subscription.aspx>

13.12.3.4 Where land disturbance is less than 1 acre, any BMPs indicated in the BMP Handbook needed to prevent or minimize storm water pollution shall be implemented at no extra cost to the District.

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13.12.3.5 Within two weeks after Award of Contract by the District, the Contractor shall submit to the District's Civil Engineer one copy of the PRDs including the SWPPP for review. After the District's approval, the Contractor shall provide approved copies of the SWPPP as follows: one copy each to the Project Inspector, Construction Manager, Architect, Commissioned Architect and District's Civil Engineer.

13.12.4 Implementation

The Contractor shall implement the Storm Water Pollution Prevention Plan by doing the following:

- a. Obtain a Waste Discharger Identification (WDID) number from the SWRCB before beginning construction. This number will be issued once your PRDs are administratively accepted and fee is received.
- b. Keep the SWPPP, REAPs, monitoring data on the construction site.
- c. Employ a Qualified SWPPP Practitioner (QSP) to implement the SWPPP during construction and develop Rain Event Action Plans ("REAPs").
- d. Install, inspect, maintain and monitor BMPs required by the General Permit.
- e. Install perimeter controls prior to starting other construction work at the site.
- f. Contain on-site storm water at the jobsite. Do not drain on-site water directly into the storm drain.
- g. Implement the SWPPP.
- h. Provide SWPPP and BMP implementation training for those responsible for implementing the SWPPP.
- i. Designate trained personnel for the proper implementation of the SWPPP.
- j. Conduct monitoring, as required, and assess compliance with the Numeric Action Levels (NALs) or Numeric Effluent Limitations (NELs) appropriate to your project.
- k. Report monitoring data:
 1. Maintain a paper or electronic copy of all required records for three years from the date generated or date submitted, whichever is last. These records must be available at the construction site until construction is completed.
 2. Have a QSD revise the SWPPP as needed to reflect the phases of construction and to suit changing site conditions and instances when properly installed systems are ineffective.

GENERAL CONDITIONS

3. Assist the District with entering any necessary data or information into the Stormwater Multi-Application and Reporting System (“SMARTS”) system.
1. At the end of Construction Contract:
 1. Submit Notice of Termination (NOT) into the SMARTS when construction is complete and conditions of termination listed in the NOT have been satisfied. A copy of the NOT can be found at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml.
 2. Leave in place storm water pollution prevention controls needed for post-construction storm water management and remove those that are not needed as determined by the District. Thereafter, left-in-place controls will be maintained by the District.
 3. Provide Site Monitoring Reports, SWPPP revisions, Compliance Certifications and related documents to the District. Post-construction storm water operation and management plan as mentioned in the compliance certifications are considered to be in place at the end of the Construction Contract.

13.12.5 Monitoring

The Contractor shall conduct examination of storm water pollution prevention controls as required by the State Water Resources Control Board (2009). Order 2009-0009-DWQ, NPDES General Permit No. CAS000002: Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction and Land Disturbing Activities. This includes properly qualified personnel performing all required monitoring, testing, inspections and monitoring. The Contractor shall also conduct examination of storm water pollution prevention controls, as well as before and after each storm event in compliance with the State Water Resources Control Board Order No. 2009-0009-DWQ, National Pollutant Discharge Elimination System General Permit No. CAS000002, Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities (General Permit) (SWRCB, 2009).and at least once each 24-hour period during extended storm events to identify BMP effectiveness and implement repairs or BMP changes as soon as feasible. All maintenance related to a storm event should be completed within 48 hours of the storm event. The Contractor shall also prepare and maintain, at the jobsite, a log of each inspection using Site Monitoring Report forms.

13.12.6 Liabilities and Penalties

- a. Review of the SWPPP and inspection logs by the District shall not relieve the Contractor from liabilities arising from non-compliance with storm water pollution regulations.
- b. Payment of penalties for non-compliance by the Contractor shall be the sole responsibility of the Contractor and will not be reimbursed by the District.

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- c. Compliance with the Clean Water Act pertaining to construction activity is the sole responsibility of the Contractor. For any fine(s) levied against the District due to non-compliance by the Contractor, the District will deduct from the final payment due the Contractor the total amount of the fine(s) levied on the District, plus legal and associated costs.
- d. The Contractor shall submit to the District a completed NOI for change of information (Construction Site Information and Material Handling/Management Practices).

GENERAL CONDITIONS

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR FOR CAUSE

14.1.1 Grounds for Termination

The Contractor may terminate the Contract if the Work is stopped for a period of thirty (30) consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons performing portions of the Work for whom the Contractor is contractually responsible, for only the following reasons:

- a. Issuance of an order of a court or other public authority having jurisdiction; or
- b. An act of the United State or California government, such as a declaration of national emergency.

14.1.2 Notice of Termination

If one of the above reasons exists, the Contractor may, upon written notice of seven (7) additional days to the District, terminate the Contract and recover from the District payment for Work executed and for reasonable costs verified by the Architect with respect to materials, equipment, tools, construction equipment, and machinery, including reasonable overhead, profit, and damages.

14.2 TERMINATION BY THE DISTRICT FOR CAUSE

14.2.1 Grounds for Termination

The District may terminate the Contractor and/or this Contract for the following reasons:

- a. Persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- b. Persistently or repeatedly is absent, without excuse, from the job site;
- c. Fails to make payment to Subcontractors, suppliers, materialmen, etc.;
- d. Persistently disregards laws, ordinances, rules, regulations, or orders of a public authority having jurisdiction;
- e. Fails to provide a schedule or fails or refuses to update schedules required under the Contract;
- f. Falls behind on the Project and refuses or fails to undertake a Recovery Schedule;
- g. If the Contractor has been debarred from performing Work

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- h. Becomes bankrupt or insolvent, including the filing of a general assignment for the benefit of creditors; or
- i. Otherwise is in substantial breach of a provision of the Contract Documents.

14.2.2 Notification of Termination

When any of the above reasons exist, the District may, without prejudice to any other rights or remedies of the District and after giving the Contractor and the Contractor's Surety written notice of seven (7) days, terminate the Contractor and/or this Contract and may, subject to any prior rights of the Surety:

- a. Take possession of the Project and of all material, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- b. Accept assignment of Subcontracts. Contractor acknowledges and agrees that if the District (in its sole and absolute discretion) decides to takeover completion of the Project, the Contractor agrees to immediately assign all subcontracts to the District which the District has chosen to accept;
- c. Complete the Work by any reasonable method the District may deem expedient, including contracting with a replacement contractor or contractors; and,
- d. Agree to accept a takeover and completion arrangement with Surety that is acceptable to the District Board.

14.2.3 Takeover and Completion of Work after Termination for Cause

A Termination for Cause is an urgent matter which requires immediate radiation since Project Work is open and incomplete, the site is subject to vandalism and theft, the Project site is considered a public nuisance, and there is a possibility of injury and deterioration of the Project Work and materials. Thus, the District shall be entitled to enter a takeover contract to either remediate the unfinished condition or complete the Work for this Project.

14.2.4 Payments Withheld

If the District terminates the Contract for one of the reasons stated in Article 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is complete. All costs associated with the termination and completion of the Project shall be the responsibility of the Contractor and/or its Surety.

14.2.5 Payments upon Completion

If the unpaid balance of the Contract Sum exceeds costs of completing the Work, including compensation for professional services and expenses made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor and its Surety shall pay the difference to the District. The amount to be paid to the Contractor, or District, as the case may be, shall be certified by the Architect upon application. This payment obligation shall survive completion of the Contract.

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14.3 TERMINATION OF CONTRACT BY DISTRICT (CONTRACTOR NOT AT FAULT)

14.3.1 Termination for Convenience

District may terminate the Contract upon fifteen (15) calendar days of written notice to the Contractor and use any reasonable method the District deems expedient to complete the Project, including contracting with replacement contractor or contractors, if it is found that reasons beyond the control of either the District or Contractor make it impossible or against the District's interest to complete the Project. In such a case, the Contractor shall have no Claims against the District except for: (1) the actual cost for approved labor, materials, and services performed in accordance with the Contract Documents which have not otherwise been previously paid for and which are supported and documented through timesheets, invoices, receipts, or otherwise; and (2) profit and overhead of ten percent (10%) of the approved costs in item (1); and (3) termination cost of five percent (5%) of the approved costs in item (1). Contractor acknowledges and agrees that if the District (in its sole and absolute discretion) decides to takeover completion of the Project, the Contractor agrees to immediately assign all subcontracts to the District which the District has chosen to accept.

14.3.2 Non-Appropriation of Funds/ Insufficient Funds

In the event that sufficient funds are not appropriated to complete the Project or the District determines that sufficient funds are not available to complete the Project, District may terminate or suspend the completion of the Project at any time by giving written notice to the Contractor. In the event that the District exercises this option, the District shall pay for any and all work and materials completed or delivered onto the site for which value is received, and the value of any and all work then in progress and orders actually placed which cannot be canceled up to the date of notice of termination. The value of work and materials not otherwise already paid for by the District up to the time of termination under this Paragraph shall include a factor of fifteen percent (15%) for the Contractor's overhead and profit and there shall be no other costs or expenses paid to Contractor. All work, materials and orders paid for pursuant to this provision shall become the property of the District. District may, without cause, order Contractor in writing to suspend, delay or interrupt the Project in whole or in part for such period of time as District may determine. Adjustment shall be made for increases in the cost of performance of the Agreement caused by suspense, delay or interruption.

14.4 REMEDIES OTHER THAN TERMINATION

If a default occurs, the District may, without prejudice to any other right or remedy, including, without limitation, its right to terminate the Contract pursuant to Article 14.2, do any of the following:

- a. Permit the Contractor to continue under this Contract, but make good such deficiencies or complete the Contract by whatever method the District may deem expedient, and the cost and expense thereof shall be deducted from the Contract Price or paid by the Contractor to the District on demand;
- b. If the workmanship performed by the Contractor is faulty or defective materials are provided, erected or installed, then the District may order the Contractor to remove the faulty workmanship or defective materials and to replace the same with work or materials that conform to the Contract Documents, in which event the Contractor, at its sole costs and expense, shall proceed in accordance with the District's order and complete the same within the time period given by the District in its notice to the Contractor; or

GENERAL CONDITIONS

- c. Initiate procedures to declare the Contractor a non-responsible bidder for a period of two (2) to five (5) years thereafter.

All amounts expended by the District in connection with the exercise of its rights hereunder shall accrue interest from the date expended until paid to the District at the maximum legal rate. The District may retain or withhold any such amounts from the Contract Price. If the Contractor is ordered to replace any faulty workmanship or defective materials pursuant to Paragraph (b) above, the Contractor shall replace the same with new work or materials approved by the Architect and the District, and, at its own cost, shall repair or replace, in a manner and to the extent the Architect and the District shall direct, all Work or material that is damaged, injured or destroyed by the removal of said faulty workmanship or defective material, or by the replacement of the same with acceptable work or materials. In no event shall anything in this Article be deemed to constitute a waiver by the District of any other rights or remedies that it may have at law or in equity, it being acknowledged and agreed by the Contractor that the remedies set forth in this Article are in addition to, and not in lieu of, any other rights or remedies that the District may have at law or in equity.

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ARTICLE 15 DEBARMENT

15.1 DEBARMENT MEANS THERE HAS BEEN A FINDING THAT THE CONTRACTOR IS NOT RESPONSIBLE.

During the course of the Project, or if it is determined through Change Orders, Claims, or Audit that a Contractor is not responsible, the District may, in addition to other remedies provided in the Contract, debar the Contractor from bidding or proposing on, or being awarded, and/or performing work on District contracts for a specified period of time, which generally will not exceed five (5) years, but may exceed five (5) years or be permanent if the circumstances warrant such debarment. In addition to the debarment proceeding, a finding that a Contractor is to be debarred shall result in the termination of any or all existing Contracts the Contractor may have with the District.

15.2 BOARD FINDING

The District may debar a Contractor if the Board, or the Board's delegatee, in its discretion, finds the Contractor has done any of the following:

15.2.1 Intentionally or with reckless disregard, violated any term of the Contract with the District

15.2.2 Committed an acts or omission which reflects on the Contractor's quality, fitness or capacity to perform Work for the District;

15.2.3 Committed an act or offense which indicates a lack of business integrity or business honesty; or,

15.2.4 Made or submitted a false claim against the District or any other public entity.

15.3 HEARING AND PRESENTATION OF EVIDENCE

If there is evidence that the Contractor may be subject to debarment, the District shall notify the Contractor in writing of the evidence which is the basis for the proposed debarment and shall advise the Contractor of the scheduled date for a debarment hearing before the District Board or its delegated designee.

The District Board, or designee, shall conduct a hearing where evidence on the proposed debarment is presented. The Contractor or the Contractor's representative shall be given an opportunity to submit evidence at the hearing. The Contractor shall be provided an adequate amount of time to prepare and object to evidence presented. A tentative proposed decision shall be issued as a tentative decision and the District shall be entitled to modify, deny or adopt the proposed decision. The proposed decision shall contain a recommendation regarding whether the Contractor should be debarred, and, if so, the appropriate length of time of the debarment. The Contractor and the District shall be provided an opportunity to object to the tentative proposed decision for a period of 15 days. If additional evidence is presented, the District shall evaluate this evidence and either issue an amended ruling, issue the same ruling, or call a further hearing.

If a Contractor has been debarred for a period of longer than five (5) years, that Contractor may after the debarment has been in effect for at least five (5) years, submit a written request for review of the

GENERAL CONDITIONS

debarment determination to reduce the period of debarment or terminate the debarment. The District may, in its discretion, reduce the period of debarment or terminate the debarment if it finds that the Contractor has adequately demonstrated one or more of the following: (1) elimination of the grounds for which the debarment was imposed; (2) a bona fide change in ownership or management; (3) material evidence discovered after debarment was imposed; or (4) any other reason that is in the best interests of the District.

The District will consider a request for review of a debarment determination only where: (1) the Contractor has been debarred for a period longer than five (5) years; (2) the debarment has been in effect for at least five (5) years; and (3) the request is in writing, states one or more of the grounds for reduction of the debarment period or termination of the debarment, and includes supporting documentation. Upon receiving an appropriate request, the District will provide notice of the hearing on the request. At the hearing, the District shall review evidence on the proposed reduction of debarment period. This hearing shall be conducted and the request for review decided by the District pursuant to the same procedures as for a debarment hearing.

The District's proposed decision shall contain a recommendation on the request to reduce the period of debarment or terminate the debarment.

The terms shall also apply to Subcontractors of Contractor.

SUPPLEMENTARY GENERAL CONDITIONS

CERTIFICATE OF SUBSTANTIAL COMPLETION

PROJECT: _____

TO: _____

As the Architect for the Project described above, the Project has reached Substantial Completion. Substantial Completion is not reached unless and until each of the following three (3) conditions have been met: (1) all contractually required items have been installed with the exception of only minor and Incomplete Punch Items (See Article 9.9 of the General Conditions); (2) All Fire/Life Safety Systems have been installed, and are working and signed off on the DSA Form 152 Inspection Card, all building systems including mechanical, electrical and plumbing are all functioning; and (3) the Project is fit for occupancy and its intended use

I certify that the Project has reached Substantial Completion as defined above on the following date:
_____.

Architect

LIBERTY UNION HIGH SCHOOL DISTRICT

BIDDING DOCUMENTS

FOR THE

LIBERTY UNION HIGH SCHOOL DISTRICT

FOR

BASEBALL BACKSTOP REPLACEMENT PROJECT DEMO, GRADING AND AC PAVING SCOPE OF WORK

AT

LIBERTY HIGH SCHOOL

850 Second Street, Brentwood, CA 94513

Project No. 1923.00

DSA Application No. 01-119543

Bid No: U2123L

LIBERTY UNION HIGH SCHOOL DISTRICT

20 Oak Street, Brentwood, CA 94513

August 2, 2021

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NOTICE INVITING BIDS

LIBERTY UNION HIGH SCHOOL DISTRICT

NOTICE IS HEREBY GIVEN that the Liberty Union High School District, acting by and through its Governing Board, hereinafter referred to as “District”, will receive prior to 11:00 AM on September 14, 2021 sealed bids for the award of a Contract for the following:

BID NO. U2123L

Liberty High School Baseball Backstop Replacement Project

Demo, Grading and AC Paving Scope of Work (as described below):

Provide all labor, equipment and materials to complete the demolition, grading, base at concrete, infield fines, and AC paving scopes of work associated with the new Varsity Baseball and JV Baseball Backstop Replacement Project as shown on the plans, in accordance with the General Conditions, Supplementary Conditions, General Requirements and as required by Specification Sections; 31 1000 – Site Clearing, 31 2200 – Grading, 32 1216 – Asphalt Concrete Paving and Base, and 32 1726 – Tactile Warning Surfaces.

Demo, grading and AC paving specific work inclusions and exclusions are noted in the Bid Form.

Liberty High School Baseball Backstop Replacement Project

Demo, Grading and AC Paving Scope of Work

All bids shall be made and presented only on the forms presented by the District. Bids shall be received in the Office of the LUHSD Maintenance and Transportation Facility, at 19 Oak Street, Brentwood, California 94513 and shall be opened and publicly read aloud at the above state time and place. Any bids received after the time specified above or after any extensions due to material changes shall be returned unopened.

The Contract Time is 92 calendar days (as reflected in the Overall Project Schedule document).

CONTRACTOR should consult the General Conditions, Supplementary Conditions, and General Requirements regarding Milestones and Liquidated Damages.

Additive/ Deductive Bid Alternates (See Section 13 of Instruction to Bidders)

NONE

Miscellaneous Information

Bids shall be received in the place identified above and shall be opened and publicly read aloud at the above-stated time and place.

The bid documents are available on the Liberty Union High School District website at www.luhdsd.net as well as through Lathrop Construction by sending an email to maria.galligan@lathropconstruction.com.

There will be a mandatory Pre-Bid Conference for demo, grading and AC paving subcontractors (Prime Contractors) on September 7, 2021 at 10:00 AM at the LUHSD Maintenance and Transportation Facility, 19 Oak Street, Brentwood. Any Prime Contractor bidding on the Project who fails to attend the entire mandatory job walk and conference will be deemed a non-responsive bidder and will have its bid returned unopened. All attendees are required to wear masks and comply with CDC and Contra Costa County Health Order Requirements.

Each bidder shall be a licensed contractor pursuant to the California Business and Professions Code, and be licensed to perform the work called for in the Contract Documents. The successful bidder must possess a valid and active Type C-13 Fencing Contractor License at the time of bid and throughout the duration of this Contract. The Contractor's California State License number shall be clearly stated on the bidder's proposal

Subcontractors shall be licensed pursuant to California law for the trades necessary to perform the Work called for in the Contract Documents.

Each bid must strictly conform with and be responsive to the Contract Documents as defined in the General Conditions.

The District reserves the right to reject any or all bids or to waive any irregularities or informalities in any bids or in the bidding.

Each bidder shall submit with its bid — on the form furnished with the Contract Documents — a list of the designated subcontractors on this Project as required by the Subletting and Subcontracting Fair Practices Act, California Public Contract Code section 4100 et seq.

In accordance with California Public Contract Code section 22300, the District will permit the substitution of securities for any moneys withheld by the District to ensure performance under the Contract. At the request and expense of the Contractor, securities equivalent to the amount withheld shall be deposited with the District, or with a state or federally chartered bank as the escrow agent, who shall then pay such moneys to the Contractor. Upon satisfactory completion of the Contract, the securities shall be returned to the Contractor.

Each bidder's bid must be accompanied by one of the following forms of bidder's security: (1) cash; (2) a cashier's check made payable to the District; (3) a certified check made payable to the District;

or (4) a bidder's bond executed by a California admitted surety as defined in Code of Civil Procedure section 995.120, made payable to the District in the form set forth in the Contract Documents. Such bidder's security must be in an amount not less than ten percent (10%) of the maximum amount of bid as a guarantee that the bidder will enter into the proposed Contract, if the same is awarded to such bidder, and will provide the required Performance and Payment Bonds, insurance certificates and any other required documents. In the event of failure to enter into said Contract or provide the necessary documents, said security will be forfeited.

The Contractor and all subcontractors shall comply with the requirements set forth in Division 2, Part 7, Chapter 1 of the Labor Code. The District has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this work is to be performed for each craft, classification or type of worker needed to execute the Contract. These per diem rates, including holiday and overtime work, as well as employer payments for health and welfare, pension, vacation, and similar purposes, are on file at the District, and are also available from the Director of the Department of Industrial Relations. Pursuant to California Labor Code section 1720 et seq., it shall be mandatory upon the Contractor to whom the Contract is awarded, and upon any subcontractor under such Contractor, to pay not less than the said specified rates to all workers employed by them in the execution of the Contract.

A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in the Labor Code, unless currently registered and qualified to perform public work pursuant to Labor Code section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

The Contractor and all subcontractors shall furnish certified payroll records as required pursuant Labor Code section 1776 directly to the Labor Commissioner in accordance with Labor Code section 1771.4 on at least on a monthly basis (or more frequently if required by the District or the Labor Commissioner) and in a format prescribed by the Labor Commissioner. Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE).

No bidder may withdraw any bid for a period of ninety (90) calendar days after the date set for the opening of bids.

Separate payment and performance bonds, each in an amount equal to 100% of the total Contract amount, are required, and shall be provided to the District prior to execution of the Contract and shall be in the form set forth in the Contract Documents.

All bonds (Bid, Performance, and Payment) must be issued by a California admitted surety as defined in California Code of Civil Procedure section 995.120.

Where applicable, bidders must meet the requirements set forth in Public Contract Code section 10115 et seq., Military and Veterans Code section 999 et seq. and California Code of Regulations, Title 2, Section 1896.60 et seq. regarding Disabled Veteran Business Enterprise ("DVBE") Programs. Forms are included in this Bid Package.

Any request for substitutions pursuant to Public Contract Code section 3400 must be made at the time of Bid on the Substitution Request Form set forth in the Contract Documents and included with the bid.

No telephone or facsimile machine will be available to bidders on the District premises at any time.

It is each bidder's sole responsibility to ensure its bid is timely delivered and received at the location designated as specified above. Any bid received at the designated location after the scheduled closing time for receipt of bids shall be returned to the bidder unopened.

LIBERTY UNION HIGH SCHOOL DISTRICT

INSTRUCTIONS TO BIDDERS

1. **Preparation of Bid Form.** Proposals under these specifications shall be submitted on the blank forms furnished herewith at the time and place stated in the Notice Inviting Bids. All blanks in the bid form must be appropriately filled in, and all proposed prices must be stated clearly and legibly in both words and numerals. All bids must be signed by the bidder in permanent blue ink and submitted in sealed envelopes, bearing on the outside, the bidder's name, address, telephone number, and California Contractor's License number, and the name of the Project for which the bid is submitted. The District reserves the right to reject any bid if all of the above information is not furnished. It is each bidder's sole responsibility to ensure its bid is timely delivered and received at the location designated as specified above. Any bid received at the designated location after the scheduled closing time for receipt of bids shall be returned to the bidder unopened.

2. **Bid Security.** Each bid must be accompanied by one of the following forms of bidder's security: (1) cash; (2) a cashier's check made payable to the District; (3) a certified check made payable to the District; or (4) a bidder's bond executed by a California admitted surety as defined in Code of Civil Procedure section 995.120, made payable to the District, in the form set forth in the Contract Documents. Such bidder's security must be in an amount not less than ten percent (10%) of the maximum amount of such bidder's bid as a guarantee that the bidder will enter into the Contract, if the same is awarded to such bidder, and will provide the required Performance and Payment Bonds, insurance certificates and any other required documents. In the event that a bidder is awarded the Contract and such bidder fails to enter into said Contract or provide the surety bond or bonds within five (5) calendar days after award of the Contract to bidder, said security will be forfeited.

3. **Signature.** The bid form, all bonds, all designations of subcontractors, the Contractor's Certificate, the Agreement, and all Guarantees must be signed in permanent blue ink in the name of the bidder and must bear the signature in longhand of the person or persons duly authorized to sign the bid.

If bidder is a corporation, the legal name of the corporation shall first be set forth, together with two signatures: one from the President and one from the Secretary or Assistant Secretary. Alternatively, the signature of other authorized officers or agents may be affixed, if a certified copy of the resolution of the corporate board of directors authorizing them to do so is provided to the District. Such documents shall include the title of such signatories below the signature and shall bear the corporate seal.

If bidder is a partnership, the true name of the firm shall first be set forth, together with the names of all persons comprising the partnership or co-partnership. The bid must be signed by all partners comprising the partnership unless proof in the form of a certified copy of a statement of partnership acknowledging the signer to be a general partner is presented to the District, in which case the general partner may sign.

Bids submitted as joint ventures must so state and be signed by each joint venturer.

Bids submitted by individuals must be signed by the bidder unless an up to date power- of-attorney is on file in the District office, in which case, said person may sign for the individual.

The above rules also apply in the case of the use of a fictitious firm name. In addition, however, where a fictitious name is used, it must be so indicated in the signature.

4. Modifications. Changes in or additions to the bid form, recapitulations of the work bid upon, alternative proposals, or any other modification of the bid form which is not specifically called for in the Contract Documents may result in the District's rejection of the bid as not being responsive to the Notice Inviting Bids. **No oral or telephonic modification of any bid submitted will be considered.**

5. Erasures, Inconsistent or Illegible Bids. The bid submitted must not contain any erasures, interlineations, or other corrections unless each such correction creates no inconsistency and is suitably authenticated by affixing in the margin immediately opposite the correction the signature or signatures of the person or persons signing the bid. In the event of inconsistency between words and figures in the bid price, words shall control figures. In the event that the District determines that any bid is unintelligible, inconsistent, or ambiguous, the District may reject such bid as not being responsive to the Notice Inviting Bids.

6. Examination of Site and Contract Documents. Each bidder shall visit the site of the proposed work and become fully acquainted with the conditions relating to the construction and labor so that the facilities, difficulties, and restrictions attending the execution of the work under the Contract are fully understood. Bidders shall thoroughly examine and be familiar with the drawings and specifications and all others documents and requirements that are attached to and/or contained in the Project Manual or other documents issued to bidders. The failure or omission of any bidder to receive or examine any Contract Documents, form, instrument, addendum, or other document or to visit the site and become acquainted with conditions there existing shall not relieve any bidder from obligations with respect to the bid or to the contract. The submission of a bid shall be taken as prima facie evidence of compliance with this Section. Bidders shall not, at any time after submission of the bid, dispute, complain, or assert that there were any misunderstandings with regard to the nature or amount of work to be done.

7. Withdrawal of Bids. Any bid may be withdrawn, either personally or by written request, at any time prior to the scheduled closing time for receipt of bids. The bid security for bids withdrawn prior to the scheduled closing time for receipt of bids, in accordance with this paragraph, shall be returned upon demand therefor.

No bidder may withdraw any bid for a period of ninety (90) calendar days after the date set for the opening of bids.

8. Agreements, Insurance and Bonds. The Agreement form which the successful bidder, as Contractor, will be required to execute, and the forms and amounts of surety bonds and insurance endorsements which Contractor will be required to be furnished at the time of execution of the Agreement, are included in the bid documents and should be carefully examined by the bidder. The number of executed copies of the Agreement, the Performance Bond, and the Payment Bond required is three (3). Payment and Performance bonds must be executed by an admitted surety insurer as defined in Code of Civil Procedure 995.120.

9. Interpretation of Plans and Documents/Pre-Bid Clarification. If any prospective bidder is in doubt as to the true meaning of any part of the Contract Documents, or finds discrepancies in, or omissions, a written request for an interpretation or correction thereof may be submitted to the District. The bidder submitting the request shall be responsible for its prompt delivery. **Any interpretation or correction of the Contract Documents will only be made by Addendum duly issued, and a copy of such Addendum will be made available for each contractor receiving a set of the Contract Documents.** No person is authorized to make any oral interpretation of any provision in the Contract Documents, nor shall any oral interpretation be binding on the District. If discrepancies on drawings, specifications or elsewhere in the

Contract Documents are not covered by addenda, bidder shall include in their bid methods of construction and materials for the higher quality and complete assembly. Each request for clarification shall be submitted in writing, via email, to only the following persons:

TO: Paul Melloni, Facilities Director
mellonip@luhsd.net

Each transmitted request shall contain the name of the person and/or firm filing the request, address, telephone, and fax number, Specifications and/or Drawing number. Bidder is responsible for the legibility of hand written requests. Pre-bid clarification request shall be filed a minimum of **six (6)** days prior to bid opening. Requests received less than **six (6)** days before bid opening shall not be considered or responded to. A written response to timely pre-bid clarifications requests which materially affects the bidders price will be made by Addendum issued by the District not less than seventy-two (72) hours prior to bid opening.

10. Bidders Interested in More Than One Bid. No person, firm, or corporation shall be allowed to make, or file, or be interested in more than one prime bid for the same work unless alternate bids are specifically called for. A person, firm, or corporation that has submitted a proposal to a bidder, or that has quoted prices of materials to a bidder, is not thereby disqualified from submitting a proposal or quoting prices to other bidders or making a prime proposal.

11. Award of Contract. The Contract will be awarded to the lowest responsive responsible bidder by action of the governing Board. The District reserves the right to reject any or all bids, or to waive any irregularities or informalities in any bids or in the bidding. In the event an award is made to bidder, and such bidder fails or refuses to execute the Contract and provide the required documents within five (5) calendar days after award of the Contract to bidder, the District may award the Contract to the next lowest responsible and responsive bidder or release all bidders. **Each bid must conform and be responsive to the Contract Documents as defined in the General Conditions.**

12. Bid Protest Procedure. Any bidder may file a bid protest. The protest shall be filed in writing with the District's Facilities Director not more than five (5) business days after the date of the bid opening. An e-mail address shall be provided and by filing the protest, protesting bidder consents to receipt of e-mail notices for purposes of the protest and protest related questions and protest appeal, if applicable. The protest shall specify the reasons and facts upon which the protest is based.

a. Resolution of Bid Controversy: Once the bid protest is received, the apparent lowest responsible bidder will be notified of the protest and the evidence presented. If appropriate, the apparent low bidder will be given an opportunity to rebut the evidence and present evidence that the apparent low bidder should be allowed to perform the Work. If deemed appropriate by the District, an informal hearing will be held. District will issue a written decision within fifteen (15) calendar days of receipt of the protest, unless factors beyond the District's reasonable control prevent such resolution. The decision on the bid protest will be copied to all parties involved in the protest.

b. Appeal: If the protesting bidder or the apparent low bidder is not satisfied with the decision, the matter may be appealed to the Chief Business Officer or their designee, within three (3) business days after receipt of the District's written decision on the bid protest. The appeal must be in writing and sent via overnight registered mail with all accompanying information relied upon for the appeal and an e-mail address from which questions and responses may be provided to:

**Liberty Union High School District
Business Department
20 Oak Street, Brentwood, CA 94513**

c. Appeal Review: The Chief Business Officer or their designee shall review the decision on the bid protest from the Director of Facilities and issue a written response to the appeal, or if appropriate, appoint a Hearing Office to conduct a hearing and issue a written decision. The written decision of the Chief Business Officer or the Hearing Officer shall be rendered within fifteen (15) calendar days and shall state the basis for the decision. The decision concerning the appeal will be final and not subject to any further appeals.

d. Reservation of Rights to Proceed with Project Pending Appeal. The District reserves the right to proceed to award the Project and commence construction pending an Appeal. If there is State Funding or a critical completion deadline, the District may choose to shorten the time limits set forth in this Section if written notice is provided to the protesting party. E-mailed notice with a written confirmation sent by First Class Mail shall be sufficient to constitute written notice. If there is no written response to a written notice shortening time, the District may proceed with the award.

e. Finality. Failure to comply with this Bid Protest Procedure shall constitute a waiver of the right to protest and shall constitute a failure to exhaust the protesting bidder's administrative remedies.

13. Alternates. If alternate bids are called for, the Contract may be awarded at the election of the Governing Board to the lowest responsible and responsive bidder using the method and procedures outlined in the Notice Inviting Bids and as specified in the section entitled Alternate/Deductive Bid Alternates.

a. Subcontractor Listing for Alternates. If alternate bids are called for and the bidder intends to use different or additional subcontractors, a separate list of subcontractors must be submitted for each such alternate.

14. Evidence of Responsibility. Upon the request of the District, a bidder whose bid is under consideration for the award of the Contract shall submit promptly to the District satisfactory evidence showing the bidder's financial resources, surety and insurance claims experience, construction experience, completion ability, workload, organization available for the performance of the Contract, and other factors pertinent to a Project of the scope and complexity involved.

15. Listing Subcontractors. Each bidder shall submit with his bid, on the form furnished with the Contract Documents, a list of the names, license numbers, scopes of work, locations of the places of business, contact information, and Department of Industrial Relations ("DIR") registration numbers of each subcontractor who will perform work or labor or render service to the bidder in or about the project, or a subcontractor who under subcontract to the bidder, specially fabricates and installs a portion of the work, in an amount in excess of one-half of 1 percent of the bidder's total bid as required by the Subletting and Subcontracting Fair Practices Act (Public Contract Code section 4100, et seq.) Pursuant to Labor Code section 1725.5, all subcontractors (of any tier) performing work on this Project must be properly registered with DIR.

16. Workers' Compensation. In accordance with the provisions of Labor Code section 3700, the successful bidder as the Contractor shall secure payment of compensation to all employees. The Contractor shall sign and file with the District the following certificate prior to performing the work under this contract: "I am aware of the provisions of Section 3700 of the Labor Code, which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the

provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract.” The form of such certificate is included as a part of the Bid Documents.

17. Contractor’s License. To perform the work required by this notice, the Contractor must possess the Contractor’s License as specified in the Notice Inviting Bids, and the Contractor must maintain the license throughout the duration of the contract. If, at the time of bid, bidder is not licensed to perform the Project in accordance with Division 3, Chapter 9, of the Business and Professions Code for the State of California and the Notice to Contractors calling for bids, such bid will not be considered and the Contractor will forfeit its bid security to the District.

18. Anti-Discrimination. It is the policy of the District that in connection with all work performed under contracts, there be no discrimination against any prospective or active employee engaged in the work because of race, color, ancestry, national origin, religious creed, sex, age, or marital status. The Contractor agrees to comply with applicable federal and California laws, including, but not limited to, the California Fair Employment and Housing Act, beginning with Government Code section 12900 and Labor Code section 1735. In addition, the Contractor agrees to require like compliance by any subcontractors employed on the work by such Contractor.

19. Preference for Materials and Substitutions.

a. One Product Specified. Unless the Plans and Specifications state that no Substitution is permitted, whenever the Contract Documents indicate any specific article, device, equipment, product, material, fixture, patented process, form, method, construction, or any specific name, make, trade name, or catalog number, with or without the words, “or equal,” such specification shall be read as if the language “or equal” is incorporated.

b. Request for Substitution. Bidder may, unless otherwise stated, offer any material, process, article, etc., which is materially equal or better in every respect to that so indicated or specified (“Specified Item”) and will completely accomplish the purpose of the Contract Document. If bidder desires to offer a Substitution for a Specified Item, such bidder must make a request in writing on the District’s Substitution Request Form (“Request Form”) and submit the completed Request Form with the bidder’s bid. The Request Form must be accompanied by evidence as to whether the proposed substitution:

- 1) Is equal in quality, service, and ability to the Specified Item as demonstrated by a side by side comparison of key characteristics and performance criteria (CSI comparison chart);
- 2) Will entail no changes in detail, construction and scheduling of related work;
- 3) Will be acceptable in consideration of the required design and artistic effect;
- 4) Will provide no cost disadvantage to the District;
- 5) Will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts; and
- 6) Will require no change in the Contract Time.

In completing the Request Form, bidder must state with respect to each requested substitution whether bidder will agree to provide the Specified Item in the event that the District denies bidder’s request for substitution of a Specified Item. In the event that bidder does not agree in the Request Form to provide the Specified Item and the District denies the requested Substitution, the bidder’s bid shall be considered non-responsive and the District may award the Contract to the next lowest bidder or in its sole discretion, release all bidders. In the event that bidder has agreed in the Request Form to provide the Specified Item and the District denies bidder’s requested substitution for a Specified Item, bidder shall

execute the Agreement and provide the Specified Item without any additional cost or charge to the District, and if bidder fails to execute the Agreement with the Specified Item(s), bidder's bid bond will be forfeited.

After the bids are opened, the apparent lowest bidder shall provide, within five (5) calendar days of opening such bids, any and all Drawings, Specifications, samples, performance data, calculations, and other information as may be required to assist the Architect and the District in determining whether the proposed substitution is acceptable. The burden of establishing these facts shall be upon the bidder.

After the District's receipt of such evidence by bidder, the District will make its final decision as to whether the bidder's request for Substitution for any Specified Items will be granted. The District shall have sole discretion in deciding as to whether a proposed request for Substitution is equal to or better than a Specified Item. Any request for Substitution which is granted by the District shall be documented and processed through a Change Order. The District may condition its approval of any Substitution upon delivery to the District of an extended warranty or other assurances of adequate performance of the Substitution. Any and all risks of delay due to DSA, or any other governmental agency having jurisdiction shall be on the bidder.

20. Disqualification of Bidders and Proposals. More than one proposal for the same work from any individual, firm, partnership, corporation, or association under the same or different names will not be accepted; and reasonable grounds for believing that any bidder is interested in more than one proposal for the work will be cause for rejecting all proposals in which such bidder is interested and the bidder will forfeit their bid security to the District.

21. Unbalanced or Altered Bids. Proposals in which the prices are obviously unbalanced, and those which are incomplete or show any alteration of form, or contain any additions or conditional or alternate bids that are not called for or otherwise permitted, may be rejected. A proposal on which the signature of the bidder has been omitted may be rejected. If, in the District's sole discretion, it determines any pricing, costs or other information submitted by a bidder may result in an unbalanced bid, the District may deem such bid non-responsive. A bid may be determined by the District to be unbalanced if the bid is based on prices significantly less than cost for some work and prices which are significantly overstated in relation to cost for other work, and if there is a reasonable doubt that the bid will result in the lowest overall cost to the District even though it may be the low evaluated bid, or if it is so unbalanced as to be tantamount to allowing an advanced payment.

22. Employment of Apprentices. The Contractor and all Subcontractors shall comply with the provisions of California Labor Code including, but not limited to sections 1777.5, 1777.6, and 1777.7 concerning the employment of apprentices. The Contractor and any Subcontractor under him shall comply with the requirements of said sections, including applicable portions of all subsequent amendments in the employment of apprentices; however, the Contractor shall have full responsibility for compliance with said Labor Code sections, for all apprenticeable occupations, regardless of any other contractual or employment relationships alleged to exist.

23. Non-Collusion Declaration. Public Contract Code section 7106 requires bidders to submit declaration of non-collusion with their bids. This form is included with the bid documents and must be signed and dated by the bidder under penalty of perjury.

24. Wage Rates, Travel and Subsistence.

a. The Contractor and all subcontractors shall comply with the requirements set forth in Division 2, Part 7, Chapter 1 of the Labor Code. Pursuant to Labor Code section 1770 et seq., the District has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this work is to be performed for each craft, classification or type of worker needed to execute the contract. Copies are available from the District to any interested party on request and are also available from the Director of the Department of Industrial Relations. The Contractor shall obtain copies of the above-referenced prevailing wage sheets and post a copy of such wage rates at appropriate, conspicuous, weatherproof points at the Site.

b. Any worker employed to perform work on the Project and such work is not covered by any classification listed in the published general prevailing wage rate determinations or per diem wages determined by the Director of the Department of Industrial Relations, shall be paid not less than the minimum rate of wages specified therein for the classification which most nearly corresponds to the employment of such person in such classification.

c. Holiday and overtime work, when permitted by law, shall be paid for at the rate set forth in the prevailing wage rate determinations issued by the Director of the Department of Industrial Relations or at least one and one-half (1½) times the specified basic rate of per diem wages, plus employer payments, unless otherwise specified in the Contract Documents or authorized by law.

d. These per diem rates, including holiday and overtime work, and employer payments for health and welfare, pension, vacation, and similar purposes, are on file at the administrative office of the District, located as noted above and are also available from the Director of the Department of Industrial Relations. It is the Contractor's responsibility to ensure the appropriate prevailing rates of per diem wages are paid for each classification. It shall be mandatory upon the Contractor to whom the Contract is awarded, and upon any subcontractor under such Contractor, to pay not less than the said specified rates to all workers employed by them in the execution of the Contract.

25. DIR Registration of Contractor and Subcontractors. A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in the Labor Code, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

This Project is a public works project as defined in Labor Code section 1720. Each contractor bidding on this Project and all subcontractors (of any tier) performing any portion of the Work must comply with the Labor Code sections 1725.5 and 1771.1 and must be properly and currently registered with DIR and qualified to perform public works pursuant to Labor Code section 1725.5 throughout the duration of the Project. For more information and up to date requirements, contractors are recommended to periodically review the DIR's website at www.dir.ca.gov. Contractor shall be solely responsible for ensuring compliance with Labor Code section 1725.5 as well as any requirements implemented by DIR applicable to its services or its subcontractors throughout the term of the Agreement and in no event shall contractor be granted increased payment from the District or any time extensions to complete the Project as a result of contractor's efforts to maintain compliance with the Labor Code or any requirements implemented by the DIR. Failure to comply with these requirements shall be deemed a material breach of this Agreement and grounds for termination for cause. The contractor and all subcontractors shall furnish certified payroll

records as required pursuant Labor Code section 1776 directly to the Labor Commissioner in accordance with Labor Code section 1771.4 on at least on a monthly basis (or more frequently if required by the District or the Labor Commissioner) and in a format prescribed by the Labor Commissioner. The District reserves the right to withhold contract payments if the District is notified, or determines as the result of its own investigation, that contractor is in violation of any of the requirements set forth in Labor Code section 1720 et seq. at no penalty or cost to the District. Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE).

26. No Telephone or Facsimile Availability. No telephone or facsimile machine will be available to bidders on the District premises at any time.

27. Obtaining Bidding Documents. Bidding Documents, may be obtained from:

Liberty Union High School District Website – www.luhsd.net

Lathrop Construction – email Maria Galligan at maria.galligan@lathropconstruction.com

Bidder shall utilize a complete set of Bidding Documents in preparing a bid. The failure or omission of bidder to receive any Bidding Document, form, instrument, Addendum, or other document shall not relieve bidder from any obligations with respect to the bid and/or Contract.

28. Addenda. Clarification or any other notice of a change in the Bidding Documents will be issued only by the District and only in the form of a written Addendum, transmitted by fax, e-mail, or available for pick up to all who are known by the issuing office to have received a complete set of Bidding Documents. Any other purported Addenda are void and unenforceable.

Bidder is responsible for ascertaining the disposition of all Addenda issued regardless of District notification and to acknowledge all Addenda in the submitted sealed bid prior to the bid opening. Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for inspection. Each Addendum will be numbered, dated, and identified with the Project number. Oral statements or any instructions in any form, other than Addendum as described above, shall be void and unenforceable. Addenda issued by the District and not noted as being acknowledged by bidder as required in the Bid Form, may result in the bid being deemed non-responsive.

29. Debarment. Bidder may also be subject to debarment, in addition to seeking remedies for False Claims under Government Code section 12650 et seq. and Penal Code section 72, the District may debar a Contractor pursuant to Article 15 of the General Conditions if the Board, or the Board may designate a hearing officer who, in his or her discretion, finds the Contractor has done any of the following:

- a. Intentionally or with reckless disregard, violated any term of a contract with the District
- b. Committed an act or omission which reflects on the Contractor's quality, fitness or capacity to perform work for the District;
- c. Committed an act or offense which indicates a lack of business integrity or business honesty; or,
- d. Made or submitted a false claim against the District or any other public entity (See Government Code section 12650, et seq., and Penal Code section 72)

CHECKLIST OF MANDATORY BID FORMS

(For Contractor's use and reference only. Additional documents may be required so bidders should carefully review all Contract Documents and Bid Documents)

- ☐ Designation of Subcontractors
- ☐ Bid Form
- ☐ Contractor's Certificate Regarding Workers Compensation
- ☐ Non-Collusion Declaration
- ☐ Bid Bond (or Bid Guarantee form if Security is other than Bid Bond)
- ☐ Substitution Request Form (If Substitution Request Form is not submitted then NO Substitutions will be allowed after the bids are opened)
- ☐ Acknowledgment of Bidding Practices Regarding Indemnity
- ☐ DVBE Participation Statement
- ☐ Contractor's Certificate Regarding Drug-Free Work Place
- ☐ Contractor's Certificate Regarding Alcoholic Beverage and Tobacco-Free Campus Policy

PROJECT NAME:	Liberty High School Baseball Backstop Replacement Project Demo, Grading and AC Paving Scope of Work		
PROJECT NUMBER:	1923.00		
TO:	Paul Melloni	EMAIL:	Mellonip@LUHSD.net

DATE:			
FROM:		EMAIL:	
DOCUMENT/DIVISION NUMBER:		DRAWING NUMBER:	

REQUESTED CLARIFICATION:	
RESPONSE TO CLARIFICATION:	

Attach additional numbered sheets as necessary; however, only one (1) request shall be contained on each submitted form.

DESIGNATION OF SUBCONTRACTORS

In compliance with the Subletting and Subcontracting Fair Practices Act (California Public Contract Code section 4100 et seq.) and any amendments thereof, each Bidder shall set forth below: (a) the name, license number, and location of the place of business of each subcontractor who will perform work or labor or render service to the Contractor, who will perform work or labor or work or improvement to be performed under this Contract, or a subcontractor licensed by the State of California who, under subcontract to the Contractor, specially fabricates and installs a portion of the work or improvements according to detailed Drawings contained in the Plans and Specifications in an amount in excess of one-half of one percent of the Contractor's total bid; and (b) the portion and description of the work which will be done by each subcontractor under this Act. The Contractor shall list only one subcontractor for each such portion as is defined by the Contractor in this bid. All subcontractors shall be properly licensed by the California State Licensing Board.

If a Contractor fails to specify a subcontractor, or if a Contractor specifies more than one subcontractor for the same portion of work to be performed under the Contract in excess of one-half of one percent of the Contractor's total bid, the Contractor shall be deemed to have agreed that the Contractor is fully qualified to perform that portion, and that the Contractor alone shall perform that portion.

No Contractor whose bid is accepted shall (a) substitute any subcontractor, (b) permit any subcontractor to be voluntarily assigned or transferred or allow the relevant portion of the work to be performed by anyone other than the original subcontractor listed in the original bid, or (c) sublet or subcontract any portion of the work in excess of one-half of one percent of the Contractor's total bid where the original bid did not designate a subcontractor, except as authorized in the Subletting and Subcontracting Fair Practices Act.

Subletting or subcontracting of any portion of the work in excess of one-half of one percent of the Contractor's total bid where no subcontractor was designated in the original bid shall only be permitted in cases of public emergency or necessity, and then only after a finding, reduced to writing as a public record, of the authority awarding this Contract setting forth the facts constituting the emergency or necessity.

All subcontractors (of any tier) performing any portion of the Work must comply with the Labor Code sections 1725.5 and 1771.1 and must be properly and currently registered with the California Department of Industrial Relations and qualified to perform public works pursuant to Labor Code section 1725.5 throughout the duration of the Project.

NOTE: If alternate bids are called for and bidder intends to use different or additional subcontractors on the alternates, a separate list of subcontractors must be provided for each such Alternate.

DESIGNATION OF SUBCONTRACTORS FORM

Scope of Work	Name of Subcontractor	Location & Place of Business	License Type and Number	DIR Registration Number	<i>E-Mail & Telephone*</i>

Scope of Work	Name of Subcontractor	Location & Place of Business	License Type and Number	DIR Registration Number	E-Mail & Telephone*

* This information must be provided at the time of submission of bid or must be provided within 24 hours after the time set for the opening of bids. Bidders who choose to provide this information within 24 hours after the time set for the opening of bids are solely responsible to ensure the District receives this information in a timely manner. The District is not responsible for any problems or delays associated with emails, faxes, delivery, etc. Absent a verified fax or email receipt date and time by the District, the District's determination of whether the information was received timely shall govern and be determinative. Bidder shall not revise or amend any other information in this form submitted at the time of bid. The information submitted at the time of bid shall govern over any conflicts, discrepancies, ambiguities or other differences in any subsequent Subcontractor Designation Forms submitted by the bidder.

Proper Name of Bidder:

Date: _____

Name: _____

Signature of Bidder _____

Representative: _____

Address: _____

Phone: _____

BID FORM

FOR

**Liberty High School Baseball Backstop Replacement Project
Demo, Grading and AC Paving Scope of Work
850 Second Street, Brentwood, CA 94513**

Project No. 1923.00

Bid No. U2123L

FOR

LIBERTY UNION HIGH SCHOOL DISTRICT

CONTRACTOR
NAME:

ADDRESS:

TELEPHONE:

() _____

FAX:

() _____

EMAIL

TO: Liberty Union High School District, acting by and through its Governing Board, herein called "District".

1. Pursuant to and in compliance with your Notice Inviting Bids and other documents relating thereto, the undersigned bidder, having familiarized himself with the terms of the Contract, the local conditions affecting the performance of the Contract, the cost of the work at the place where the work is to be done, with the Drawings and Specifications, and other Contract Documents, hereby proposes and agrees to perform within the time stipulated, the Contract, including all of its component parts, and everything required to be performed, including its acceptance by the District, and to provide and furnish any and all labor, materials, tools, expendable equipment, and utility and transportation services necessary to perform the Contract and complete all of the Work in a workmanlike manner required in connection with the construction of:

LIBERTY HIGH SCHOOL BASEBALL BACKSTOP REPLACEMENT – DEMO, GRADING AND AC PAVING (as described below):

Provide all labor, equipment, and materials to complete the demolition, grading, base at concrete, infield fines, and AC paving scopes of work associated with the new Varsity Baseball and JV Baseball Backstop Replacement Project as shown on the plans, in accordance with the General Conditions, Supplementary Conditions, General Requirements, and as required by Specification Sections; 31 1000 – Site Clearing, 31 2200 – Grading, 32 1216 – Asphalt Concrete Paving and Base, and 32 1726 – Tactile Warning Surfaces.

Work Includes:

- Comply with "Tree Preservation Standards" on L1.2
- Removal of existing Varsity and JV backstops, fencing, and gates and related backstop and fencing foundations
- All backfill and grading that is related to the demolition of existing backstops, fencing, gate posts, and gate post footings.
- All concrete and asphalt demolition work
- All required grading for new work.
- Subgrade preparation of new concrete and asphalt concrete paving areas
- Aggregate base at new concrete and asphalt concrete paving.
- Excavation/prep for thickened concrete edge per 1/L1.2 (concrete by others).
- AC paving edge where required (see A-1.3).
- All asphalt concrete paving.
- Asphalt plug at edge of new concrete at JV Field.
- All tactile warning surfaces that occur in asphalt concrete paving at Varsity Baseball Field
- Furnish, place and grade 10 cys of new infield fines with mirafi fabric at each baseball diamond (20 cys total) at areas where new backstops have been installed. This work item addresses Key Note #3 on sheet L1.0 and L1.1.
- Construct new bull pen mound with existing soil and new infield fines at JV Baseball Field.
- Load, relocated and spread fence post hole spoils (generated and stockpiled at each baseball diamond by others) at existing dirt area at the North end of LHS Football Stadium.
- Cleanup and removal from site of all debris generated by the scope of this contract. Excess clean spoils maybe placed and spread at the dirt area at the North end of the LHS Football Stadium.
- At each field, provide 1 temporary toilets and 1 wash stations for the work of this contract and other trades working on this project (include 3-month rental).
- SWPPP measures at inlets and perimeter of work areas and removal at end of project.
- Work to be completed based on the dates and durations noted in the Overall Project Schedule document.

LIBERTY HIGH SCHOOL BASEBALL BACKSTROP REPLACEMENT – DEMO, GRADING AND AC PAVING (as described below) (continued from page 20):

Work Excludes:

- Removal and salvage of existing wall padding at Varsity Field.
- All new chain link fencing and gates and backstops.
- Excavation, reinforcing, and concrete for new backstops, fencing and gate posts.
- All irrigation and landscaping.
- All new concrete and concrete reinforcement (this does not exclude subgrade prep and base at new concrete areas).
- All pavement markings and signs.
- Tactile warning surfaces that occur in concrete pavement.
- Temporary removal, relocation, and reinstallation of existing bleachers for work to be completed.
- Surveying the scope of this contract (District furnished surveyor).
- Baseball bases and pitching rubbers.
- Players benches.
- "Tree Protection" and tree arborist per L1.2.

BID NO. U2123L

Liberty High School Baseball Backstop Replacement Project

Demo, Grading and AC Paving Scope of Work

in the District described above, all in strict conformance with the drawings and other Contract Documents on file at the Facilities Office of said District for amounts set forth herein.

2. BIDDER ACKNOWLEDGES THE FOLLOWING ADDENDUM:

Number	Number	Number	Number	Number	Number	Number	Number
_____	_____	_____	_____	_____	_____	_____	_____

Acknowledge the inclusion of all addenda issued prior to bid in the blanks provided above. Your failure to do so may render your bid non-responsive.

3. TOTAL CASH PURCHASE PRICE IN WORDS & NUMBERS:

_____ DOLLARS
(\$ _____)

4. ALTERNATE BIDS: The following amounts shall be added to or deducted from the Base Bid at the District's option. Alternates are fully described in the Specifications. **N/A**

5. TIME FOR COMPLETION: The District may give a notice to proceed within ninety (90) days of the award of the bid by the District. Once the Contractor has received the notice to proceed, the Contractor shall complete the work in the time specified in the Agreement. By submitting this bid, Contractor has thoroughly studied this Project and agrees that the Contract Time for this Project is adequate for the timely and proper completion of the Project. Further, Contractor has included in the analysis of the time required for this Project, Rain Days, Governmental Delays, and the requisite time to complete Punch List.

In the event that the District desires to postpone giving the notice to proceed beyond this ninety (90) day period, it is expressly understood that with reasonable notice to the Contractor, giving the notice to proceed may be postponed by the District. It is further expressly understood by the Contractor, that the Contractor shall not be entitled to any claim of additional compensation as a result of the postponement of giving the notice to proceed.

If the Contractor believes that a postponement will cause a hardship to it, the Contractor may terminate the contract with written notice to the District within ten (10) days after receipt by the Contractor of the District's notice of postponement. Should the Contractor terminate the Contract as a result of a notice of postponement, the District shall have the authority to award the Contract to the next lowest responsible bidder, if applicable.

It is understood that the District reserves the right to reject any or all bids and/or waive any irregularities or informalities in this bid or in the bid process. The Contractor understands that it may not withdraw this bid for a period of ninety (90) days after the date set for the opening of bids.

6. Attached is bid security in the amount of not less than ten percent (10%) of the bid:

Bid bond (10% of the Bid), certified check, or cashier's check (circle one)

7. The required List of Designated Subcontractors is attached hereto.

8. The required Non-Collusion Declaration is attached hereto.

9. The Substitution Request Form, if applicable, is attached hereto.

10. It is understood and agreed that if written notice of the acceptance of this bid is mailed, telegraphed, or delivered to the undersigned after the opening of the bid, and within the time this bid is required to remain open, or at any time thereafter before this bid is withdrawn, the undersigned will execute and deliver to the District a Contract in the form attached hereto in accordance with the bid as accepted, and that he or she will also furnish and deliver to the District the Performance Bond and Payment Bond, all within five (5) calendar days after award of Contract, and that the work under the Contract shall be commenced by the undersigned bidder, if awarded the Contract, by the start date provided in the District's Notice to Proceed, and shall be completed by the Contractor in the time specified in the Contract Documents.

11. The names of all persons interested in the foregoing proposal as principals are as follows:

(IMPORTANT NOTICE: If bidder or other interested person is a corporation, state the legal name of such corporation, as well as the names of the president, secretary, treasurer, and manager thereof; if a co-partnership, state the true names of the firm, as well as the names of all individual co-partners comprising the firm; if bidder or other interested person is an individual, state the first and last names in full.)

12. PROTEST PROCEDURES. If there is a bid protest, the grounds shall be submitted as set forth in the Instructions to Bidders.

13. The undersigned bidder shall be licensed and shall provide the following California Contractor's license information:

License Number: _____

License Expiration Date: _____

Name on License: _____

Class of License: _____

DIR Registration Number: _____

If the bidder is a joint venture, each member of the joint venture must include the above information.

14. Time is of the essence regarding this Contract, therefore, in the event the bidder to whom the Contract is awarded fails or refuses to post the required bonds and return executed copies of the Agreement form within five (5) calendar days from the date of receiving the Notice of Award, the District may declare the bidder's bid deposit or bond forfeited as damages.

15. The bidder declares that he/she has carefully examined the location of the proposed Project, that he/she has examined the Contract Documents, including the Plans, General Conditions, Supplemental Conditions, Addenda, and Specifications, all others documents and requirements that are attached to and/or contained in the Project Manual, all other documents issued to bidders and read the accompanying instructions to bidders, and hereby proposes and agrees, if this proposal is accepted, to furnish all materials and do all work required to complete the said work in accordance with the Contract Documents, in the time and manner therein prescribed for the unit cost and lump sum amounts set forth in this Bid Form.

16. DEBARMENT. In addition to seeking remedies for False Claims under Government Code section 12650 et seq. and Penal Code section 72, the District may debar a Contractor pursuant to Article 15 of the General Conditions if the Board, or the Board may designate a hearing officer who, in his or her discretion, finds the Contractor has done any of the following:

- a. Intentionally or with reckless disregard, violated any term of a contract with the District;
- b. Committed an act or omission which reflects on the Contractor's quality, fitness or capacity to perform work for the District;

c. Committed an act or offense which indicates a lack of business integrity or business honesty; or

d. Made or submitted a false claim against the District or any other public entity. (See Government Code section 12650, et seq., and Penal Code section 72)

17. DESIGNATION OF SUBCONTRACTORS. In compliance with the Subletting and Subcontracting Fair Practices Act (California Public Contract Code section 4100 et seq.) and any amendments thereof, each bidder shall list subcontractors on the District's form Subcontractor list. This subcontractor list shall be submitted with the bid and is a required form

I agree to receive service of notices at the e-mail address listed below.

I the below-indicated bidder, declare under penalty of perjury that the information provided and representations made in this bid are true and correct.

Proper Name of Company

Name of Bidder Representative

Street Address

City, State, and Zip

()

Phone Number

()

Fax Number

E-Mail

By: _____ Date: _____
Signature of Bidder Representative

NOTE: If bidder is a corporation, the legal name of the corporation shall be set forth above together with the signature of authorized officers or agents and the document shall bear the corporate seal; if bidder is a partnership, the true name of the firm shall be set forth above, together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership; and if bidder is an individual, his signature shall be placed above.

All signatures must be made in permanent blue ink.

CONTRACTOR'S CERTIFICATE REGARDING WORKERS' COMPENSATION
FORM

Labor Code section 3700 in relevant part provides:

Every employer except the State shall secure the payment of compensation in one or more of the following ways:

1. By being insured against liability to pay compensation by one or more insurers duly authorized to write compensation insurance in this State.
2. By securing from the Director of Industrial Relations a certificate of consent to self-insure, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to employees.
3. For any county, city, city and county, municipal corporation, public district, public agency, or any political subdivision of the state, including each member of a pooling arrangement under a joint exercise of powers agreement (but not the state itself), by securing from the Director of Industrial Relations a certificate of consent to self-insure against workers' compensation claims, which certificate may be given upon furnishing proof satisfactory to the director of ability to administer workers' compensation claims properly, and to pay workers' compensation claims that may become due to its employees. On or before March 31, 1979, a political subdivision of the state which, on December 31, 1978, was uninsured for its liability to pay compensation, shall file a properly completed and executed application for a certificate of consent to self-insure against workers' compensation claims. The certificate shall be issued and be subject to the provisions of Section 3702.

I am aware of the provisions of Labor Code section 3700 which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provision before commencing the performance of the work of this Contract.

(Signature)

(Print)

(Date)

In accordance with Article 5 (commencing at section 1860), Chapter 1, Part 7, Division 2 of the Labor Code, the above certificate must be signed and submitted with the Contractor's bid.

NON-COLLUSION DECLARATION

The undersigned declares:

I am the _____ [Title] of _____ [Name of Company], the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____ [Date], at _____ [City], _____ [State].

Signed: _____

Typed Name: _____

BID GUARANTEE FORM

(Use only when not using a Bid Bond)

Accompanying this proposal is a cashier's check payable to the order of the Liberty Union High School District or a certified check payable to the order of the Liberty Union High School District in an amount equal to ten percent (10%) of the base bid and alternates (\$_____).

The proceeds of this check shall become the property of said District, if, this proposal shall be accepted by the District through the District's Governing Board, and the undersigned fails to execute a Contract with and furnish the sureties required by the District within the required time; otherwise, said check is to be returned to the undersigned.

Bidder

Note: Use this form, in lieu of Bid Bond form, when a cashier's check or certified check is accompanying the bid

BID BOND FORM

KNOW ALL MEN BY THESE PRESENT that we, the undersigned, (hereafter called "Principal"), and _____ (hereafter called "Surety"), are hereby held and firmly bound unto the Liberty Union High School District (hereafter called "District") in the sum of _____ (\$_____) for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors, and assigns.

SIGNED this _____ day of _____, 20____.

The condition of the above obligation is such that whereas the Principal has submitted to the District a certain Bid, attached hereto and hereby made a part hereof, to enter into a Contract in _____ writing _____ for _____ the _____ construction _____ of _____.

NOW, THEREFORE,

- a. If said Bid is rejected, or
- b. If said Bid is accepted and the Principal executes and delivers a Contract or the attached Agreement form within five (5) calendar days after acceptance (properly completed in accordance with said Bid), and furnishes bonds for his faithful performance of said Contract and for payment of all persons performing labor or furnishing materials in connection therewith,

Then this obligation shall be void; otherwise, the same shall remain in force and effect.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract, or the call for bids, or the work to be performed thereunder, or the specifications accompanying the same, shall in anyway affect its obligation under this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of said Contract, or the call for bids, or the work, or to the specifications.

In the event suit is brought upon this bond by the District and judgment is recovered, the Surety shall pay all costs incurred by the District in such suit, including without limitation, attorneys' fees to be fixed by the court.

IN WITNESS WHEREOF, Principal and Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, on the day and year first set forth above.

(Corporate Seal)

By _____
Principal's Signature

Typed or Printed Name

Principal's Title

(Corporate Seal)

By _____
Surety's Signature

Typed or Printed Name

Title

(Attached Attorney in Fact Certificate)

Surety's Name

Surety's Address

Surety's Phone Number

IMPORTANT:

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code section 105, and if the work or project is financed, in whole or in part, with federal, grant, or loan funds, it must also appear on the Treasury Department's most current list (Circular 570 as amended).

THIS IS A REQUIRED FORM.

Any claims under this bond may be addressed to:

(Name and Address of Surety)

(Name and Address of agent or representative for service of process in California if different from above)

(Telephone Number of Surety and agent or representative for service of process in California).

REQUEST FOR SUBSTITUTION AT TIME OF BID

Pursuant to Public Contract Code section 3400, bidder submits the following request to Substitute with the bid that is submitted. I understand that if the request to substitute is not an “or equal” or is not accepted by District and I answer “no” I will not provide the specified item, then I will be held non-responsive and my bid will be rejected. With this understanding, I hereby request Substitution of the following articles, devices, equipment, products, materials, fixtures, patented processes, forms, methods, or types of construction:

	Specification Section	Specified Item	Requested Substituted Item	Contractor Agrees to Provide Specified Item if request to Substitute is Denied ¹ (circle one)	District Decision (circle one)
1.				Yes No	Grant Deny
2.				Yes No	Grant Deny
3.				Yes No	Grant Deny
4.				Yes No	Grant Deny
5.				Yes No	Grant Deny
6.				Yes No	Grant Deny
7.				Yes No	Grant Deny
8.				Yes No	Grant Deny
9.				Yes No	Grant Deny
10.				Yes No	Grant Deny
11.				Yes No	Grant Deny
12.				Yes No	Grant Deny

This Request Form must be accompanied by evidence as to whether the proposed Substitution (1) is equal in quality, service, and ability to the Specified Item; (2) will entail no change in detail, construction, and scheduling of related work; (3) will be acceptable in consideration of the required design and artistic

¹ Bidder must state whether bidder will provide the Specified Item in the event the Substitution request is evaluate and denied. If bidder states that bidder will not provide the Specified Item the denial of a request to Substitute shall result in the rejection of the bidder as non-responsive. However, if bidder states that bidder will provide the Specified Item in the event that bidder’s request for Substitution is denied, bidder shall execute the Agreement and provide the Specified Item(s). If bidder refuses to execute the Agreement due to the District’s decision to require the Specified Item(s) at no additional cost, bidder’s Bid Bond shall be forfeited.

effect; (4) will provide no cost disadvantage to the District; (5) will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts; (6) will require no change of the construction schedule or milestones for the Project; and, (7) Contractor agrees to pay for any DSA Fees or other Governmental Plan check costs associated with this Substitution Request. (See General Conditions Section 3.6)

The undersigned states that the following paragraphs are correct:

1. The proposed Substitution does not affect the dimensions shown on the Drawings.
2. The undersigned will pay for changes to the building design, including Architect, engineering, or other consultant design, detailing, DSA plan check or other governmental plan check costs, and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse effect on other trades, the Contract Time, or specified warranty requirements.
4. Maintenance and service parts will be available locally for the proposed substitution.
5. In order for the Architect to properly review the substitution request, within five (5) days following the opening of bids, the Contractor shall provide samples, test criteria, manufacturer information, and any other documents requested by Architect or Architect's engineers or consultants, including the submissions that would ordinarily be required under Article 3.7 for Shop Drawings along with a document which provides a side by side comparison of key characteristics and performance criteria (often known as a CSI side by side comparison chart).
6. If Substitution Request is accepted by the District, Contractor is still required to provide a Submittal for the substituted item pursuant to Article 3.7 and shall provide required Schedule information (including schedule fragnets, if applicable) for the substituted item as required under Article 8.3.2.1. The approval of the Architect, Engineer, or District of the substitution request does not mean that the Contractor is relieved of Contractor's responsibilities for Submittals, Shop Drawings, and schedules under Article 3.7 and 8.3.2 if the Contractor is awarded the Project.

Name of Bidder: _____

By: _____

District: _____

By: _____

ACKNOWLEDGMENT OF BIDDING PRACTICES REGARDING INDEMNITY FORM

TO: Liberty Union High School District

RE: Project Number _____

Construction Contract for _____

Please be advised that with respect to the above-referenced Project the undersigned Contractor on behalf of itself and all subcontractors hereby waives the benefits and protection of Labor Code section 3864, which provides:

“If an action as provided in this chapter is prosecuted by the employee, the employer, or both jointly against the third person results in judgment against such third person, the employer shall have no liability to reimburse or hold such third person harmless on such judgment or settlement in the absence of a written agreement to do so executed prior to the injury.”

This Agreement has been signed by an authorized representative of the contracting party and shall be binding upon its successors and assignees. The undersigned further agrees to promptly notify the District of any changes of ownership of the contracting party or any subcontractor while this Agreement is in force.

Contracting Party

Name of Agent/Title

Liberty High School Backstop Replacement Project
Demo, Grading and AC Paving Scope of Work
Liberty Union High School District

Acknowledgment of Bidding Practices
Regarding Indemnity Form

Page 34

DISABLED VETERAN BUSINESS ENTERPRISE (DVBE) PARTICIPATION
STATEMENT

Each bidder must complete this form in order to comply with the Liberty Union High School District ("District") policy for participation of disabled veteran business enterprises (School District projects funded in whole or in part by the State of California pursuant to the Leroy F. Greene School Facilities Act of 1998. (Education Code §17070.10, *et seq.*)

Project Name: _____

Bid No.: _____

DSA No.: _____

The undersigned, on behalf of the Contractor named below, certifies that the Contractor has made reasonable efforts to secure participation by DVBE in the Contract to be awarded for the above-referenced Bid No., including participation by DVBE subcontractors and/or material suppliers. **Check only one of the following:**

- ☐ The Contractor was unable after reasonable efforts to secure DVBE participation in the Contract for the above-referenced Project/Bid No. However, the Contractor will use DVBE services if the opportunity arises at any time during construction of the Project. Upon completion of the Project, the Contractor will report to the District the total dollar amount of DVBE participation in any Contract awarded to Contractor, and in any change orders, for the above-referenced Project.
- ☐ The Contractor has secured DVBE participation in the Contract for the above referenced Project/Bid No., and anticipates that such DVBE participation will equal approximately _____ dollars (\$ _____), which represents approximately _____ percent (____%) of the total Contract for such Project. Upon completion of the Project, Contractor will report to the District the actual total dollar amount of DVBE participation in the Contract awarded to Contractor, and in any change orders, for such Project

Company: _____

Name: _____

Title: _____

Signature: _____

Date: _____

CONTRACTOR'S CERTIFICATE REGARDING DRUG-FREE WORKPLACE

This Drug-Free Workplace Certification form is required from all successful bidders pursuant to the requirements mandated by Government Code section 8350 et seq., the Drug-Free Workplace Act of 1990. The Drug-Free Workplace Act of 1990 requires that every person or organization awarded a contract or grant for the procurement of any property or service from any State agency must certify that it will provide a drug-free workplace by performing certain specified acts. In addition, the Act provides that each contract or grant awarded by a State agency may be subject to suspension of payments or termination of the contract or grant, and the Contractor or grantee may be subject to debarment from future contracting, if the contracting agency determines that specified acts have occurred.

Pursuant to Government Code section 8355, every person or organization awarded a contract or grant from a State agency shall certify that it will provide a drug-free workplace by doing all of the following:

1. Publishing a statement, notifying employees that the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited in the person's or organization's workplace, and specifying actions which will be taken against employees for violations of the prohibition.
2. Establishing a drug-free awareness program to inform employees about all of the following:
 - a. The dangers of drug abuse in the workplace;
 - b. The person's or organization's policy of maintaining a drug-free workplace;
 - c. The availability of drug counseling, rehabilitation and employee-assistance programs; and
 - d. The penalties that may be imposed upon employees for drug abuse violations;
3. Requiring that each employee engaged in the performance of the contract or grant be given a copy of the statement required by subdivision (a) and that, as a condition of employment on the contract or grant, the employee agrees to abide by the terms of the statement.

I, the undersigned, agree to fulfill the terms and requirements of Government Code section 8355 listed above and will (a) publish a statement notifying employees concerning the prohibition of controlled substance at the workplace, (b) establish a drug-free awareness program, and (c) require each employee engaged in the performance of the contract be given a copy of the statement required by section 8355(a) and require such employee agree to abide by the terms of that statement.

I also understand that if the Liberty Union High School District determines that I have either (a) made a false certification herein, or (b) violated this certification by failing to carry out the requirements of Section 8355, that the contract awarded herein is subject to termination, suspension of payments, or both. I further understand that, should I violate the terms of the Drug-Free Workplace Act of 1990, I may be subject to debarment in accordance with the requirements of Section 8350 et seq.

I acknowledge that I am aware of the provisions of Government Code section 8350 et seq. and hereby certify that I will adhere to the requirements of the Drug-Free Workplace Act of 1990.

DATE: _____

CONTRACTOR

By: _____
Signature

**CONTRACTOR’S CERTIFICATE REGARDING ALCOHOLIC BEVERAGE AND
TOBACCO-FREE CAMPUS POLICY**

The Contractor agrees that it will abide by and implement the District’s Alcoholic Beverage and Tobacco-Free Campus Policy, which prohibits the use of alcoholic beverages and tobacco products, of any kind and at any time, in District-owned or leased buildings, on DISTRICT property and in DISTRICT vehicles. The Contractor shall procure signs stating “ALCOHOLIC BEVERAGE AND TOBACCO USE IS PROHIBITED” and shall ensure that these signs are prominently displayed in all entrances to school property at all times.

DATE: _____ CONTRACTOR _____

By: _____
Signature

[End of Bid Documents to be Submitted with Bid]

AGREEMENT FORM

THIS AGREEMENT, entered into this ____ day of _____, 20__ in the County of Contra Costa of the State of California, by and between the Liberty Union High School District, hereinafter called the "District", and _____, hereinafter called the "Contractor".

WITNESSETH that the District and the Contractor for the consideration stated herein agree as follows:

ARTICLE 1 - SCOPE OF WORK: The Contractor shall furnish all labor, materials, equipment, tools, and utility and transportation services, and perform and complete all work required in connection with Liberty High School Baseball Backstop Replacement Project, Demo, Grading and AC Paving Scope of Work ("Project") in strict accordance with the Contract Documents enumerated in Article 7 below. The Contractor shall be liable to the District for any damages arising as a result of a failure to comply with that obligation, and the Contractor shall not be excused with respect to any failure to so comply by an act or omission of the Architect, Engineer, Inspector, Division of the State Architect (DSA), or representative of any of them, unless such act or omission actually prevents the Contractor from fully complying with the Contract Documents and the Contractor protests, in accordance with the Contract Documents, that the act or omission is preventing the Contractor from fully complying with the Contract Documents. Such protest shall not be effective unless reduced to writing and filed with the District office within seven (7) days of the date of occurrence of such act or omission preventing the Contractor from fully complying with the Contract Documents.

ARTICLE 2 - TIME OF COMPLETION: The District may give notice to proceed within ninety (90) days of the award of the bid by the District. Once the Contractor has received a notice to proceed, the Contractor shall reach Substantial Completion (See Article 1.1.46) of the Work within ninety two (92) calendar days from receipt of the Notice to Proceed. This shall be called Contract Time. (See Article 8.1.1). It is expressly understood that time is of the essence.

Contractor has thoroughly studied the Project and has satisfied itself that the time period for this Project was adequate for the timely and proper completion of the Project within each milestone and within the Contract time. Further, Contractor has included in the analysis of the time required for this Project, items set forth in General Conditions Article 8.3.2.1, Submittal Schedules, Rain Day Float, and Governmental Delay Float.

In the event that the District desires to postpone giving the notice to proceed beyond this ninety (90) day period, it is expressly understood that with reasonable notice to the Contractor, giving the notice to proceed may be postponed by the District. It is further expressly understood by the Contractor, that the Contractor shall not be entitled to any claim of additional compensation as a result of the District's postponement of giving the notice to proceed.

If the Contractor believes that a postponement will cause hardship to it, the Contractor may terminate the Contract with written notice to the District within ten (10) days after receipt by the Contractor of the District's notice of postponement. It is further understood by the Contractor that in the event that the Contractor terminates the Contract as a result of postponement by the District, the District shall only be obligated to pay the Contractor for the work performed by the Contractor at the time of notification of

postponement. Should the Contractor terminate the Contract as a result of a notice of postponement, the District shall have the authority to award the Contract to the next lowest responsible bidder.

ARTICLE 3 - LIQUIDATED DAMAGES: It being impracticable and infeasible to determine the amount of actual damage, it is agreed that the Contractor will pay the District the sum of one thousand (\$1,000) per calendar day for each and every day of delay beyond the Contract Time set forth in Article 2 of this Agreement (inclusive of Milestones that are critical on the critical path or noted as critical to the District) as liquidated damages and not as a penalty or forfeiture. In the event Liquidated Damages are not paid, the Contractor further agrees that the District may deduct such amount thereof from any money due or that may become due the Contractor under the Contract (See Article 9.6 and 2.2 of the General Conditions).

ARTICLE 4 - CONTRACT PRICE: The District shall pay to the Contractor as full consideration for the faithful performance of the Contract, subject to any additions or deductions as provided in the Contract Documents, the sum of _____ DOLLARS (\$ _____), said sum being the total amount stipulated in the Bid Contractor submitted. Payment shall be made as set forth in the General Conditions.

Should any Change Order result in an increase in the Contract Price, the cost of such Change Order shall be agreed to in advance by the Contractor and the District, subject to the monetary limitations set forth in Public Contract Code section 20118.4. In the event that the Contractor proceeds with a Change in work without an agreement between the District and Contractor regarding the cost of a Change Order, the Contractor waives any Claim of additional compensation for such additional work.

ARTICLE 5 - HOLD HARMLESS AGREEMENT: Contractor shall defend, indemnify and hold harmless District, Architect, Inspector, the State of California and their officers, employees, agents and independent contractors from all liabilities, claims, actions, liens, judgments, demands, damages, losses, costs or expenses of any kind arising from death, personal injury, property damage or other cause based or asserted upon any act, omission, or breach connected with or arising from the progress of Work or performance of service under this Agreement or the Contract Documents. As part of this indemnity, Contractor shall protect and defend, at its own expense, District, Architect, Construction Manager, Inspector, the State of California and their officers, employees, agents and independent contractors from any legal action including attorney's fees or other proceeding based upon such act, omission, breach or as otherwise required by this Article.

Furthermore, Contractor agrees to and does hereby defend, indemnify and hold harmless District, Architect, Construction Manager, Inspector, the State of California and their officers, employees, agents and independent contractors from every claim or demand made, and every liability, loss, damage, expense or attorney's fees of any nature whatsoever, which may be incurred by reason of:

(a) Liability for (1) death or bodily injury to persons; (2) damage or injury to, loss (including theft), or loss of use of, any property; (3) any failure or alleged failure to comply with any provision of law or the Contract Documents; or (4) any other loss, damage or expense, sustained by any person, firm or corporation or in connection with the Work called for in this Agreement or the Contract Documents, except for liability resulting from the sole or active negligence, or the willful misconduct of the District.

(b) Any bodily injury to or death of persons or damage to property caused by any act, omission or breach of Contractor or any person, firm or corporation employed by Contractor, either directly or by independent contract, including all damages or injury to or death of persons, loss (including theft) or loss

of use of any property, sustained by any person, firm or corporation, including the District, arising out of or in any way connected with Work covered by this Agreement or the Contract Documents, whether said injury or damage occurs either on or off District property, but not for any loss, injury, death or damages caused by the sole or active negligence or willful misconduct of the District.

(c) Any dispute between Contractor and Contractor's subcontractors/supplies/ Sureties, including, but not limited to, any failure or alleged failure of the Contractor (or any person hired or employed directly or indirectly by the Contractor) to pay any Subcontractor or Materialman of any tier or any other person employed in connection with the Work and/or filing of any stop notice or mechanic's lien claims.

(d) Any claims, allegations, penalties, assessments, or liabilities to the extent caused by the Contractor's failure or the failure of any Subcontractor of any tier, to fully comply with the DIR registration requirements under Labor Code section 1725.5 at all times during the performance of any Work on the Project and shall reimburse the District for any penalties assessed against the District arising from any failure by the Contractor or any Subcontractor of any tier from complying with Labor Code sections 1725.5 and 1771.1. Nothing in this paragraph, however, shall require the Contractor or any Subcontractor to be liable to the District or indemnify the District for any penalties caused by the District in accordance with Labor Code section 1773.3 (g).

Contractor, at its own expense, cost, and risk, shall defend any and all claims, actions, suits, or other proceedings that may be brought or instituted against the District, its officers, agents or employees, on account of or founded upon any cause, damage, or injury identified herein Article 5 and shall pay or satisfy any judgment that may be rendered against the District, its officers, agents or employees in any action, suit or other proceedings as a result thereof.

The Contractor's and Subcontractors' obligation to defend, indemnify and hold harmless the Owner, Architect, Inspector, the State of California and their officers, employees, agents and independent contractors hereunder shall include, without limitation, any and all claims, damages, and costs for the following: (1) any damages or injury to or death of any person, and damage or injury to, loss (including theft), or loss of use of, any property; (2) breach of any warranty, express or implied; (3) failure of the Contractor or Subcontractors to comply with any applicable governmental law, rule, regulation, or other requirement; (4) products installed in or used in connection with the Work; and (5) any claims of violation of the Americans with Disabilities Act ("ADA").

ARTICLE 6 - PROVISIONS REQUIRED BY LAW: Each and every provision of law and clause required to be inserted in this Contract shall be deemed to be inserted herein, and this Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted or is not inserted correctly, then upon application of either party the Contract shall forthwith be physically amended to make such insertion or correction.

ARTICLE 7 - COMPONENT PARTS OF THE CONTRACT: The Contract entered into by this Agreement consists of the following Contract Documents, all of which are component parts of the Contract as if herein set out in full or attached hereto.

Notice Inviting Bids
Instructions to Bidders
Designation of Subcontractors
Non-Collusion Declaration

Bid Guarantee Form
Bid Bond
Bid Form
Contractor's Certificate Regarding Worker's Compensation
Acknowledgment of Bidding Practices Regarding Indemnity
DVBE Participation Statement and Close-Out Forms
Agreement Form
Payment Bond
Performance Bond
Guarantee
Escrow Agreement for Security Deposit In Lieu of Retention
Workers' Compensation/Employers Liability Endorsement
General Liability Endorsement
Automobile Liability Endorsement
Contractor's Certificate Regarding Drug-Free Workplace
Contractor's Certificate Regarding Alcohol and Tobacco
Contractor's Certificate Regarding Background Checks
General Conditions
Supplementary and Special Conditions
Specifications
All Addenda as Issued
Drawings/Plans
Substitution Request Form
Requirements, Reports and/or Documents in the Project Manual or Other Documents Issued to Bidders

All of the above named Contract Documents are intended to be complementary. Work required by one of the above named Contract Documents and not by others shall be done as if required by all.

ARTICLE 8 - PREVAILING WAGES: Wage rates for this Project shall be in accordance with the general prevailing rate of holiday and overtime work in the locality in which the work is to be performed for each craft, classification, or type of work needed to execute the Contract as determined by the Director of the Department of Industrial Relations. Copies of schedules of rates so determined by the Director of the Department of Industrial Relations are on file at the administrative office of the District and are also available from the Director of the Department of Industrial Relations. Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE).

The following are hereby referenced and made a part of this Agreement and Contractor stipulates to the provisions contained therein.

1. Chapter 1 of Part 7 of Division 2 of the Labor Code (Section 1720 et seq.)
2. California Code of Regulations, Title 8, Chapter 8, Subchapters 3 through 6 (Section 16000 et seq.)

ARTICLE 9 - RECORD AUDIT: In accordance with Government Code section 8546.7 (and Davis Bacon, if applicable) and Article 13.11 of the General Conditions, records of both the District and

the Contractor shall be subject to examination and audit for a period of five (5) years after a Final Retention Payment or the Recording of a Notice of Completion, whichever occurs first.

ARTICLE 10 - CONTRACTOR'S LICENSE: The Contractor must possess throughout the Project a Class A Contractor's License, issued by the State of California, which must be current and in good standing.

IN WITNESS WHEREOF, this Agreement has been duly executed by the above named parties,
on the day and year first above written.

LIBERTY UNION HIGH SCHOOL DISTRICT: CONTRACTOR:

Type or Printed Name

Typed or Printed Name

Title (Authorized Officers or Agents)

Title

Signature

Signature

Dated: _____

Dated: _____

(CORPORATE SEAL)

PAYMENT BOND
(CALIFORNIA PUBLIC WORK)

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, the LIBERTY UNION HIGH SCHOOL DISTRICT (sometimes referred to hereinafter as "Obligee") has awarded to _____ (hereinafter designated as the "Principal" or "Contractor"), an agreement for the work described as follows: _____ (hereinafter referred to as the "Public Work"); and

WHEREAS, said Contractor is required to furnish a bond in connection with said Contract, and pursuant to California Civil Code section 9550;

NOW, THEREFORE, We, _____, the undersigned Contractor, as Principal; and _____, a corporation organized and existing under the laws of the State of _____, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the LIBERTY UNION HIGH SCHOOL DISTRICT and to any and all persons, companies, or corporations entitled by law to file stop notices under California Civil Code section 9100, or any person, company, or corporation entitled to make a claim on this bond, in the sum of _____ Dollars (\$ _____), such sum being not less than one hundred percent (100%) of the total amount payable by said Obligee under the terms of said Contract, for which payment will and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal, its heirs, executors, administrators, successors, or assigns, or subcontractor, shall fail to pay any person or persons named in Civil Code section 9100; or fail to pay for any materials, provisions, or other supplies, used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code, with respect to work or labor thereon of any kind; or shall fail to deduct, withhold, and pay over to the Employment Development Department, any amounts required to be deducted, withheld, and paid over by Unemployment Insurance Code section 13020 with respect to work and labor thereon of any kind, then said Surety will pay for the same, in an amount not exceeding the amount herein above set forth, and in the event suit is brought upon this bond, also will pay such reasonable attorneys' fees as shall be fixed by the court, awarded and taxed as provided in California Civil Code section 9550 et seq.

This bond shall inure to the benefit of any person named in Civil Code section 9100 giving such person or his/her assigns a right of action in any suit brought upon this bond.

It is further stipulated and agreed that the Surety of this bond shall not be exonerated or released from the obligation of the bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, or specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described; or pertaining or relating to the furnishing of labor, materials, or equipment therefor; nor by any change or modification of any terms of payment or extension of time for payment pertaining or relating to any scheme or work of improvement herein above described;

nor by any rescission or attempted rescission of the contract, agreement or bond; nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond; nor by any fraud practiced by any person other than the claimant seeking to recover on the bond; and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given; and under no circumstances shall the Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the Obligee and the Contractor or on the part of any obligee named in such bond; that the sole condition of recovery shall be that the claimant is a person described in California Civil Code section 9100, and who has not been paid the full amount of his or her claim; and that the Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned.

IN WITNESS WHEREOF this instrument has been duly executed by the Principal and Surety above named, on the _____ day of _____, 20__.

PRINCIPAL/CONTRACTOR:

By: _____

SURETY:

By: _____

Attorney-in-Fact

IMPORTANT: THIS IS A REQUIRED FORM.

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code section 105, and if the work or project is financed, in whole or in part, with federal, grant or loan funds, Surety's name must also appear on the Treasury Department's most current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

(Name and Address of Surety)

(Name and Address of agent or representative for
service for service of process in California)

Telephone: _____

Telephone: _____

A notary public or other office completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
) ss.
COUNTY OF)

On _____, before me, _____,
personally appeared _____, who proved on the basis of satisfactory
evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged
to me that he/she/they executed the same in his/her/their authorized capacity(ies) as the Attorney-in-Fact
of _____ (Surety) and acknowledged to me that by his/her/their signature(s)
on the instrument the person(s), or the entity upon behalf of which the person(s) executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing
paragraph is true and correct.

WITNESS my hand and official seal.

Notary Public in and for said State

(SEAL)

Commission expires: _____

NOTE: A copy of the power-of-attorney to local representatives of the bonding company must be
attached hereto.

PERFORMANCE BOND
(CALIFORNIA PUBLIC WORK)

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, the LIBERTY UNION HIGH SCHOOL DISTRICT (sometimes referred to hereinafter as "Obligee") has awarded to _____ (hereinafter designated as the "Principal" or "Contractor"), an agreement for the work described as follows: _____ (hereinafter referred to as the "Public Work"); and

WHEREAS, the work to be performed by the Contractor is more particularly set forth in that certain contract for said Public Work dated _____, (hereinafter referred to as the "Contract"), which Contract is incorporated herein by this reference; and

WHEREAS, the Contractor is required by said Contract to perform the terms thereof and to provide a bond both for the performance and guaranty thereof.

NOW, THEREFORE, we, _____, the undersigned Contractor, as Principal, and _____, a corporation organized and existing under the laws of the State of _____, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the LIBERTY UNION HIGH SCHOOL DISTRICT in the sum of _____ Dollars (\$ _____), said sum being not less than one hundred percent (100%) of the total amount payable by said Obligee under the terms of said Contract, for which amount well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT, if the bounded Contractor, his or her heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and agreements in said Contract and any alteration thereof made as therein provided, on his or her part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill guarantees of all materials and workmanship; and indemnify, defend and save harmless the Obligee, its officers and agents, as stipulated in said Contract, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exoneration or pro tanto) by any change, extension of time, alteration in or addition to the terms of the contract or to the work to be performed there under or the specifications accompanying the same, nor by any change or modification to any terms of payment or extension of time for any payment pertaining or relating to any scheme of work of improvement under the contract. Surety also stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exoneration or pro tanto) by any overpayment or underpayment by the Obligee that is based upon estimates approved by the Architect. The Surety stipulates and agrees that none of the aforementioned changes, modifications, alterations, additions, extension of time or actions shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, modifications,

alterations, additions or extension of time to the terms of the contract, or to the work, or the specifications as well notice of any other actions that result in the foregoing.

Whenever Principal shall be, and is declared by the Obligee to be, in default under the Contract, the Surety shall promptly either remedy the default, or shall promptly take over and complete the Contract through its agents or independent contractors, subject to acceptance and approval of such agents or independent contractors by Obligee as hereinafter set forth, in accordance with its terms and conditions and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of Liquidated Damages; or, at Obligee's sole discretion and election, Surety shall obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Obligee of the lowest responsible bidder, arrange for a contract between such bidder and the Obligee and make available as Work progresses (even though there should be a default or succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the "balance of the Contract Price" (as hereinafter defined), and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of Liquidated Damages. The term "balance of the Contract Price," as used in this paragraph, shall mean the total amount payable to Principal by the Obligee under the Contract and any modifications thereto, less the amount previously paid by the Obligee to the Principal, less any withholdings by the Obligee allowed under the Contract. Obligee shall not be required or obligated to accept a tender of a completion contractor from the Surety.

Surety expressly agrees that the Obligee may reject any agent or contractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Principal. Unless otherwise agreed by Obligee, in its sole discretion, Surety shall not utilize Principal in completing the Contract nor shall Surety accept a bid from Principal for completion of the work in the event of default by the Principal.

No final settlement between the Obligee and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

The Surety shall remain responsible and liable for all patent and latent defects that arise out of or relate to the Contractor's failure and/or inability to properly complete the Public Work as required by the Contract and the Contract Documents. The obligation of the Surety hereunder shall continue so long as any obligation of the Contractor remains.

Contractor and Surety agree that if the Obligee is required to engage the services of an attorney in connection with enforcement of the bond, Contractor and Surety shall pay Obligee's reasonable attorneys' fees incurred, with or without suit, in addition to the above sum.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including reasonable attorneys' fees to be fixed by the Court.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this ____ day of _____, 20 ____.

PRINCIPAL/CONTRACTOR:

By: _____

SURETY:

By: _____

Attorney-in-Fact

The rate of premium on this bond is _____ per thousand.

The total amount of premium charged: \$ _____ (This must be filled in by a corporate surety).

IMPORTANT: THIS IS A REQUIRED FORM.

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code section 105, and if the work or project is financed, in whole or in part, with federal, grant or loan funds, Surety's name must also appear on the Treasury Department's most current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

(Name and Address of Surety)

(Name and Address of agent or representative for service for service of process in California)

Telephone: _____

Telephone: _____

A notary public or other office completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
) ss.
COUNTY OF)

On _____, before me, _____,
personally appeared _____, who proved on the basis of satisfactory
evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged
to me that he/she/they executed the same in his/her/their authorized capacity(ies) as the Attorney-in-Fact
of _____ (Surety) and acknowledged to me that by his/her/their signature(s)
on the instrument the person(s), or the entity upon behalf of which the person(s) executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing
paragraph is true and correct.

WITNESS my hand and official seal.

Notary Public in and for said State

Commission expires: _____

(SEAL)

NOTE: A copy of the power-of-attorney to local representatives of the bonding company must be
attached hereto.

GUARANTEE

Guarantee for _____ . We hereby guarantee that the _____, which we have installed in _____ has been done in accordance with the Contract Documents, including without limitation, the drawings and specifications, and that the work as installed will fulfill the requirements included in the bid documents. The undersigned and its surety agrees to repair or replace any or all such work, together with any other adjacent work, which may be displaced in connection with such replacement, that may prove to be defective in workmanship or material within a period of One (____1____) year from the date of the Notice of Completion of the above-mentioned structure by the Liberty Union High School District, ordinary wear and tear and unusual abuse or neglect excepted.

In the event the undersigned or its surety fails to comply with the above-mentioned conditions within a reasonable period of time, as determined by the District, but not later than ten (10) days after being notified in writing by the District or within forty eight (48) hours in the case of an emergency or urgent matter, the undersigned and its surety authorizes the District to proceed to have said defects repaired and made good at the expense of the undersigned and its surety, who will pay the costs and charges therefor upon demand. The undersigned and its surety shall be jointly and severally liable for any costs arising from the District's enforcement of this Guarantee.

Countersigned

(Proper Name)

(Proper Name)

By: _____

By: _____

(Signature of Subcontractor or Contractor)

(Signature of General Contractor if for Subcontractor)

Representatives to be contacted for service:

Name: _____

Address: _____

Phone Number: _____

ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

This Escrow Agreement is made and entered into by and between the Liberty Union High School District Oak Street, Brentwood, CA 94513 hereinafter called "Owner", and _____ whose address is _____, hereinafter called "Contractor", and _____ whose address is _____, hereinafter called "Escrow Agent".

For the consideration hereinafter set forth, the Owner, Contractor and Escrow Agent agree as follows:

1. Pursuant to Section 22300 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for Retention earnings required to be withheld by Owner pursuant to the Construction Contract entered into between the Owner and Contractor for _____ in the amount of _____ dated _____ (hereinafter referred to as the "Contract"). Alternatively, on written request of the Contractor, the Owner shall make payments of the Retention earnings directly to the escrow agent. When Contractor deposits the securities as a substitute for Contract earnings, the Escrow Agent shall notify the Owner within ten (10) days of deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as Retention under the terms of the Contract between the Owner and Contractor. Securities shall be held in the name of the Owner, and shall designate the Contractor as beneficial owner.
2. The Owner shall make progress payments to the Contractor for such funds which otherwise would be withheld from progress payments pursuant to the Contract provisions, provided that the Escrow Agent holds securities in the form and amount specified above.
3. When the Owner makes payments of Retentions earned directly to the Escrow Agent, the Escrow Agent shall hold them for the benefit of the Contractor until such time as the escrow created under this Contract is terminated. The Contractor may direct the investment of the payments into securities. All terms and conditions of this Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when the Owner pays the Escrow Agent directly.
4. Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account and all expenses of the Owner. These expenses and payment terms shall be determined by the Owner, Contractor, and Escrow Agent.
5. The interest earned on the securities or the money market accounts held in escrow and all interest earned on that interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to the Owner.
6. Contractor shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from the Owner to the Escrow Agent that Owner consents to the withdrawal of the amount sought to be withdrawn by Contractor.
7. The Owner shall have a right to draw upon the securities in the event of default by the Contractor. Upon seven (7) days' written notice to the Escrow Agent from the Owner of the notice of default under Article 2.2, Article 9.6 or Article 14, the Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by the Owner.

8. Upon receipt of written notification from the Owner certifying that the Contract is final and complete, and that the Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payment of fees and charges.

9. Escrow Agent shall rely on the written notifications from the Owner and the Contractor pursuant to Sections (5) to (8), inclusive, of this Agreement and the Owner and Contractor shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of the securities and interest as set forth above.

10. The names of the persons who are authorized to give written notice or to receive written notice on behalf of the Owner and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of Owner:

Title

Name

Signature

Address

On behalf of Contractor:

Title

Name

Signature

Address

On behalf of Agent:

Title

Name

Signature

Address

At the time the Escrow Account is opened, the Owner and Contractor shall deliver to the Escrow Agent a fully executed counterpart of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement by their proper officers on the date set forth above.

OWNER

CONTRACTOR

Title

Title

Name

Name

Signature

Signature

INSURANCE DOCUMENTS & ENDORSEMENTS

The following insurance endorsements and documents must be provided to the Liberty Union High School District within five (5) calendar days after receipt of notification of award. If the apparent low bidder fails to provide the documents required below, the District may award the Contract to the next lowest responsible and responsive bidder or release all bidders, and the bidder's bid security will be forfeited. All insurance provided by the bidder shall fully comply with the requirements set forth in Article 11 of the General Conditions.

1. **General Liability Insurance:** Certificate of Insurance with all specific insurance coverages set forth in Article 11 of the General Conditions, proper Project description, designation of the District as the Certificate Holder, a statement that the insurance provided is primary to any insurance obtained by the District and minimum of 30 days' cancellation notice. Bidder shall also provide required additional insured endorsement(s) designating all parties required in Article 11 of the General Conditions. The additional insured endorsement shall be an ISO CG 20 10 (04/13), or an ISO CG 20 38 (04/13), or their equivalent as determined by the District in its sole discretion.

Incidents and claims are to be reported to the insurer at:

Attn: _____
(Title) _____ (Department) _____

(Company) _____

(Street Address) _____

(City) _____ (State) _____ (Zip Code) _____
(_____) _____
(Telephone Number)

2. **Workers' Compensation/ Employer's Liability Insurance:** Certificate of Workers' Compensation Insurance meeting the coverages and requirements set forth in Article 11 of the General Conditions, minimum of 30 days' cancellation notice, proper Project description, waiver of subrogation and any applicable endorsements.

3. Automobile Liability Insurance: Certificate of Automobile Insurance meeting the coverages and requirements set forth in Article 11 of the General Conditions, minimum 30 days' cancellation notice, any applicable endorsements and a statement that the insurance provided is primary to any insurance obtained by the District.

Incidents and claims are to be reported to the insurer at:

Attn: _____
(Title) (Department)

(Company)

(Street Address)

(City) (State) (Zip Code)
() _____
(Telephone Number)

DATE: _____ CONTRACTOR _____

By: _____
Signature

**DISABLED VETERAN BUSINESS ENTERPRISE (DVBE) CONTRACTOR CLOSE-
OUT STATEMENT**

The Contractor shall complete this form, as a condition to Final Payment, for purposes of reporting participation by Disabled Veteran Business Enterprises (DVBE) in the Contract for the Project/Bid No. specified below.

Project Name: _____

Bid No.: _____

DSA No.: _____

Name	Address/Phone	Category of Work*	\$ Amount of Contract

* Categories of work include: (1) construction services (specify services that DVBE will provide); (2) architecture and engineering services; (3) procurement of materials, supplies and equipment; and (4) information technology.

The undersigned, on behalf of the Contractor, certifies that DVBE participation on the Contract for Bid No. _____ equaled _____ dollars (\$ _____), which represents approximately _____ percent (____%) of the total Contract price including change orders for the Project.

Company: _____

Name: _____

Title: _____

Signature: _____

Date: _____

CONTRACTOR CERTIFICATION REGARDING BACKGROUND CHECKS

(Modernization Projects)

_____ certifies that it has performed one of the following:
[Name of contractor/consultant]

- ☐ Pursuant to Education Code section 45125.1, Contractor has conducted criminal background checks, through the California Department of Justice, of all employees providing services to the _____ District, pursuant to the contract/purchase order dated _____, and that none have been convicted of serious or violent felonies, as specified in Penal Code sections 1192.7(c) and 667.5(c), respectively.

As further required by Education Code section 45125.1, attached hereto as Attachment "A" is a list of the names of the employees of the undersigned who may come in contact with pupils.

OR

- ☐ Pursuant to Education Code section 45125.2, Contractor will ensure the safety of pupils by one or more of the following methods:
- ☐ 1. The installation of a physical barrier at the worksite to limit contact with pupils.
 - ☐ 2. Continual supervision and monitoring of all employees of the entity by an employee of the entity whom the Department of Justice has ascertained has not been convicted of a violent or serious felony.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Date _____, 20__

[Name of Contractor/Consultant]

By its: _____

ATTACHMENT A:

CONTRACTOR CERTIFICATION REGARDING BACKGROUND CHECKS

(INSERT NAMES OF EMPLOYEES WHO MAY COME IN CONTACT WITH PUPILS)

GENERAL CONDITIONS

ARTICLE 1 DEFINITIONS

1.1 BASIC DEFINITIONS

NOTE: The following shall not be construed as a comprehensive list of all definitions in the Contract Documents and there may be other definitions set forth in the Contract Documents. Additionally, any references to any DSA forms, documents or requirements shall be construed to incorporate any updates, supplements, or additions. The Contractor shall be required to meet the latest DSA requirements applicable to the Project.

1.1.1 Action of the Governing Board is a vote of a majority of the District's Governing Board.

1.1.2 Approval means written authorization through action of the Governing Board. The Governing board has delegated to the Chief Business Officer the authority to approve certain modifications, Change Orders or Immediate Change Directives (Subject to the limits of the Delegation of Authority provided by the Board). In no case shall the Assistant Superintendent have authority to approve total Change Orders or Modifications to the Project exceeding 10% of the Contract Sum.

1.1.3 Architect means the architect, engineer, or other design professional engaged by the District to design and perform general observation of the work of construction and interpret the Drawings and Specifications for the Project. (See ARTICLE 4)

1.1.4 As-Builts are a set of Plans and Specifications maintained by the Contractor clearly showing all changes, revisions, substitutions, field changes, final locations, and other significant features of the Project. The As-Builts shall be maintained continuously throughout the Work for the Project and is both a prerequisite to the issuance of Payment Application and a requirement for Contract Close-Out. (See Article 3.17)

1.1.5 Beneficial Occupancy is the point in time when a building or buildings are fit for occupancy is fit for occupancy and its intended use. Basic requirements are the building is safe, at or near Substantial Completion, and all fire/ life safety items are approved and operational. The fact that a building is occupied does not mean that the building is ready for Beneficial Occupancy if there are elements that are unsafe or if fire/ life safety items are not approved and operational. Taking occupancy on a structure that is under a fire watch is not considered beneficial occupancy. Further, taking of Beneficial Occupancy is not a point in time when retention is due unless the entire school has obtained a Certificate of Substantial Completion that meets the definition of 1.1.46.

1.1.6 Claims. A Claim is a request for payment, supported by back-up documentation which includes, invoices time sheets, or other documents substantiating legitimacy or entitlement that is submitted during the Project or immediately following the Project made prior to the Final Retention Payment Application and prior to Final Completion of the Project. A "Claim" means a separate demand by the Contractor for (1) time extension, (2) payment of money or damages arising from Work done by or on behalf of the Contractor pursuant to the CONTRACT and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or (3) and amount the payment of which is disputed by the District. (See Article 4.6)

GENERAL CONDITIONS

1.1.7 Change Order (CO). A CO is a written instrument prepared by the Architect and signed by the District (as authorized by the District's Governing Board), the Contractor, and the Architect, stating their agreement upon (1) A description of a change in the Work, (2) The amount of the adjustment in the Contract Sum, if any; and (3) The extent of the adjustment in the Contract Time, if any. (See Article 7.2)

1.1.8 Change Order Request (COR). A COR is a written request supported by backup documentation prepared by the Contractor requesting that the District and the Architect issue a CO based upon a proposed change, or a change that results in an adjustment in cost, time or both, or arising from an RFP, CCD or ICD. (See Article 7.6)

1.1.9 Close-Out means the process for Final Completion of the Project, but also includes the requirements for the DSA Certification that the Project is Complete (See DSA Certification Guide). (See Article 9.9)

1.1.10 Construction Change Document (CCD). A Construction Change Document is a DSA term that is utilized to address changes to the DSA approved Plans and Specifications. There are two types of Construction Change Documents. (1) DSA approved CCD Category A for work affecting structural, access or fire/ life safety of the Project which will require a DSA approval; and, (2) CCD Category B for work NOT affecting structural safety, access compliance or fire/ life safety that will not require a DSA approval (except to confirm that no approval is required). Both CCD Category A and Category B shall be set forth in DSA Form 140 and submitted to DSA as required. (See Article 7.3)

1.1.11 Complete/ Completion/ Final Completion means that all Work in the Contract Documents is finished, the requirements of the Contract Documents have been met, the Project has been Closed Out, and all Work has ceased on the Project. This may also be referred to as Final Completion. In most cases, the recording of a Notice of Completion shall represent Completion of the Project. Beneficial Occupancy does not mean the Work is Complete.

1.1.12 Completion Date is the date when all Work for the Project shall be Substantially Complete and is the date assigned at the end of the Contract Time for the Project. (See Article 1.1.46)

1.1.13 Construction Manager. The Construction Manager is a consultant to the District contracted to assist in Project planning, management and construction of the Project. If there is a Construction Manager, they may assist in various aspects of the Project including, but not limited to Monitoring the progress of the construction, reviewing and monitoring the schedule, progress of work, monitoring pay requests, facilitating communications, advising the District and its Board of Education on various aspects of the construction process, monitoring the RFI, COR, CCD, ICD, RFP, Claims, Disputes and other Project related processes.

1.1.14 Contract or Agreement when the terms are used in these General Conditions shall be references to the Contract Documents as defined herein.

1.1.15 Contract Documents (sometimes referred to as Construction Documents) consist of the Agreement between District and Contractor (hereinafter the Agreement or Contract), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to bid, instructions to bidders, notice to bidders, and the requirements contained in the Bid Documents, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is a written amendment to the Contract signed by parties, a Change Order, a Construction Change Document, or a written order for a minor change in the Work issued by the Architect. The Contract

GENERAL CONDITIONS

Documents collectively form the Contract. The Contract represents the entire and integrated Agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a written Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind between the Architect and Contractor, between the District and any Subcontractor or Sub-subcontractor, or between any persons or entities other than the District and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

1.1.16 Contract Time is the time period specified in the Contract Documents in which the Project shall be completed. This is sometimes referred to a Contract Duration, or "time in which the Contractor has to complete the Project". (See Article 8.1.1)

1.1.17 Contractor, District, and Architect are those mentioned as such in the Agreement. They are treated throughout the Contract Documents as if they are of singular number and neuter gender. Any reference to "Owner" shall mean "District" or Liberty Union High School District.

1.1.18 Cure is the act of remedying a material failure to perform under the terms of the Contract Documents during the time provided to correct Contractor's Default. Specific time periods are provided to Cure and Correct a Contractor Default under Article 14 and for a Partial Default under Article 2.2 as well as elsewhere in the Contract Documents.

1.1.19 Days mean calendar days unless otherwise specifically stated.

1.1.20 Default is a material breach of Contract. A Termination for Cause under Article 14 is a declaration of Default of the Contract and shall act as a demand upon the Surety to perform under the terms of the Performance Bond. Partial Defaults may also be tendered to the Surety at District's discretion. (See Article 2.2)

1.1.21 Dispute. A dispute is a disagreement on terms or conditions of the Project where the Contractor's opinion of the Project, Payment, Change Order or Request for Proposal differs from that of the District or Architect. A dispute only rises to the level of a claim once the dispute is assembled with back-up documentation and presented for evaluation. (See Article 4.6)

1.1.22 District Representative is the person designated by the District to represent the District during the Construction for the Project. This District Representative shall have the delegated authority as further defined in Article 1.1.2. This District Representative may be an employee of the District who may have the delegated authority as set forth in Article 1.1.3, and may also include Construction Managers. In some cases, the District and its Board may be assisted by a Construction Manager. When a Construction Manager is assisting the District, the Contractor, Architect, and Inspector shall have a primary contact with the District's Construction Manager who will advise the District.

1.1.23 Drawings/Plans are graphic and pictorial portions of the Contract Documents prepared for the Project and approved changes thereto, wherever located and whenever issued, showing the design, location, and scope of the Work, generally including Plans, elevations, sections, details, schedules, and diagrams as drawn or approved by the Architect. Sometimes Drawings will also be included in Addenda, Change Orders, and Specifications.

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1.1.24 DSA is the Division of State Architect. DSA is the agency that provides design and construction oversight for K-12 Schools, Community Colleges, and State Funded Charter School Projects. DSA is the responsible agency for this Project and Contractor has submitted a bid for the Project since Contractor is familiar with Contractor's responsibilities under the DSA requirements more thoroughly set forth at Title 24 of the California Code of Regulations. Contractor agrees to abide by the jurisdiction of DSA and shall construct the Project to conform with the approved Plans, Specifications, Addenda, and Change Orders (inclusive of approved CCD's and ICD's issued by the District pending CCD approval). See DSA website.

1.1.25 Emergency shall be defined as a sudden, unexpected occurrence, involving a clear and imminent threat to the continuation of school classes, a critical path delay that will result in not being able to occupy the school when students arrive to use the facility, danger from the facility or from outside the facility, Act of God, or other action which requires immediate action to prevent or mitigate loss of, or damage to, life, health, property, or essential public services.

1.1.26 Float the total number of days an activity may be extended or delayed without delaying the Completion Date shown in the schedule. Float will fall into three categories: (1) Rain Days; (2) Governmental Delays; and, (3) Project Float. (See Article 8.1.4)

1.1.27 Immediate Change Directive. (ICD) A written order prepared by the Architect and signed by the District and the Architect, directing a change in the Work where the Work must proceed immediately and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. (See Article 7.3)

1.1.28 Inspector of Record (IOR)/ Project Inspector (PI) is the individual retained by the District in accordance with Title 24 of the California Code of Regulations and who will be assigned to the Project

1.1.29 Notice of Non-Compliance (DSA Form 154) is a document issued by the Inspector if there is a deviation from the DSA approved Plans, Specifications, and Change Orders. (See Article 7.1.2)

1.1.30 Payment Application or Certificate of Payment is the Contractor's certified representation of the actual level of Work performed on the Project. Payment Applications are sometimes also called "Certificate of Payment", "Request for Payment", "Payment Application", or similar terms, and shall follow the Schedule of Values that are approved by the Architect, Inspector and District. (See Article 9.3)

1.1.31 Project is the complete construction of the Work performed in accordance with the Contract Documents.

1.1.32 Project Manual is the volume assembled for the Work which may include, without limitation, the bidding requirements, sample forms, Conditions of the Contract, and Specifications.

1.1.33 Provide shall include "provide complete in place," that is "furnish and install complete."

1.1.34 Punch List/ Punch Item/ Incomplete Punch Item is a list of minor repair items, prepared after the issuance of a Certificate of Substantial Completion, by the Inspector and Architect of Work required in order to complete the Contract Documents and ensure compliance with the DSA Approved

GENERAL CONDITIONS

Plans so the Project may be Closed Out. Issuance of the Retention Payment is dependent of the proper completion of the Punch List. (See Article 9.9)

1.1.34.1 *Contractor's List of Punch Items* is a list of minor repair items the Contractor submits when the Contractor considers the Work Substantially Complete. Submission of this List of Incomplete Punch Items is the Contractor's representation that the Project is Substantially Complete. (See Article 9.9.1.1)

1.1.35 Request for Information (RFI) is a written request prepared by the Contractor requesting the Architect to provide additional information necessary to clarify or amplify an item which the Contractor believes is not clearly shown or called for in the Drawings or Specifications, or to address problems which have arisen under field conditions. (See Article 7.4)

1.1.36 Request for Proposal (RFP) is a written request prepared by the Architect (and/or CM) requesting the Contractor to submit to an estimate of the effect of a proposed change on the Contract Price and (if applicable) the Contract Time. (See Article 7.5)

1.1.37 Safety Orders are those issued by any city, county, state or federal agency having jurisdiction over the Project.

1.1.38 Schedule is the Contractor's view of the practical way in which the Work will be accomplished. In this Agreement there is a requirement for a Baseline Schedule and regular Schedule Updates that show all Work to be completed during the Contract Time and shall include all items listed under Article 8.3.2.9. See Article 8 of the General Conditions.

1.1.39 Schedule of Values is a detailed breakdown of the Contract Price for each Project, building, Phase of Work or Site as determined by the District. This Schedule of Values shall adequately detail the price for the Work so Progress Payments Applications can be meaningfully reviewed by the Inspector, Architect of Record, Engineer of Record, and District. (See Article 9.2)

1.1.40 Separate Contracts are Contracts that the District may have with other Contractors, vendors, suppliers, or entities to perform Work on the Project. This may include, but is not limited to Multi-Prime Trade Contractors, furniture installers, testing agencies, clean-up contractors, or network or low voltage contractors. Contractor shall plan for certain other contractors that may also be working on the Project site and address these other contractors in Contractor's Schedule. (See Article 6)

1.1.41 Site refers to the grounds of the Project as defined in the Contract Documents and such adjacent lands as may be directly affected by the performance of the Work.

1.1.42 Specifications are that portion of the Contract Documents consisting of the written requirements for material, equipment, construction systems, instructions, quality assurance standards, workmanship, and performance of related services.

1.1.43 Standards, Rules, and Regulations referred to are recognized printed standards and shall be considered as one and a part of these Specifications within limits specified. Federal, state and local regulations are incorporated into the Contract Documents by reference.

1.1.44 Stop Work Order, or an Order to Comply, is issued when either (1) the Work proceeds without DSA approval; (2) the Work proceeds without a DSA Inspector of Record, or (3) where DSA

GENERAL CONDITIONS

determines that the Work is not being performed in accordance with applicable rules and regulations, and would compromise the structural integrity of the Project or would endanger lives. If a Stop Work Order is issued, the Work in the affected area shall cease until DSA withdraws the Stop Work Order. Pursuant to Education Code section 17307.5(b), the District shall not be held liable in any action filed against the District for any delays caused by compliance with the Stop Work Order

1.1.45 Subcontractor, as used herein, includes those having direct or indirect contracts with Contractor and ones who furnished labor, material or services for a special design according to Plans, Drawings, and Specifications of this Work.

1.1.46 Substantial Completion/ Substantially Complete(d) is not reached unless and until each of the following four (4) conditions have been met: (1) all contractually required items have been installed with the exception of only minor and Incomplete Punch List Items (See Article 9.9.1.2); (2) All Fire/Life Safety Systems have been installed, and are working and signed off on the DSA Form 152 Inspection Card, and all building systems including mechanical, electrical and plumbing are all functioning; (3) all other items DSA Form 152 Inspection Card for the Project have been approved and signed off; and (4) the Project is fit for occupancy and its intended use. For the purposes of this Contract, any references to Completion Date means Substantial Completion Date.

1.1.47 Substitution is a change in product, material, equipment, or method of construction from those required by the Construction Documents proposed by the Contractor. For this Project, a Substitution is subject to the filing of a Construction Substitution Request Form at the time of bid and meeting the requirements of Article 3.10.

1.1.48 Supplementary Conditions/ Supplementary General Conditions/ Special Conditions are terms that are sometimes used interchangeably and refer to any additional requirements or changes to the General Conditions as noted.

1.1.49 Surety is the person, firm, or corporation that executes as a bid bond, Payment Bond or Performance Bond guarantor on the Contractor's Bid, Contractor's Performance on the Contract and Payment of the Contractor's Subcontractors, material suppliers, vendors and labor on the Project. The Surety is bound to the same extent as the Contractor is bound once a Default occurs. A default includes a Termination for Substantial Failure to Perform under Article 14, but also includes any breach of Contract and is subject to the requirements and responsibilities as set forth in the Performance Bond.

1.1.50 Work shall include all labor, materials, services and equipment necessary for the Contractor to fulfill all of its obligations pursuant to the Contract Documents. It shall include the initial obligation of any Contractor or Subcontractor who performs any portion of the Work, to visit the Site of the proposed Work (a continuing obligation after the commencement of the Work), to fully acquaint and familiarize itself with the conditions as they exist and the character of the operations to be carried out under the Contract Documents, and make such investigation as it may see fit so that it shall fully understand the facilities, physical conditions, and restrictions attending the Work under the Contract Documents. Each such Contractor and its Subcontractors shall also thoroughly examine and become familiar with the Drawings, Specifications, and associated Contract Documents and bid documents before preparing and submitting any bid.

1.1.51 Workers include laborers, workers, and mechanics.

GENERAL CONDITIONS

1.2 EXECUTION, CORRELATION AND INTENT

1.2.1 Correlation and Intent

1.2.1.1 *Documents Complementary and Inclusive.* The Contract Documents are complementary and are intended to include all items required for the proper execution and completion of the Work. All Contract Documents form the Contractor's Contract with the District. Any item of Work mentioned in the Specifications and not shown on the Drawings, or shown on the Drawings and not mentioned in the Specifications, shall be provided by Contractor as if shown or mentioned in both. The Contractor is bound to provide the Work complete and is under a legal duty to carefully study Plans and schedule operations well ahead of time and identify inconsistencies with the Plans and Specifications and call such inconsistencies to the attention of the Architect or Registered Engineer through the Inspector under Section 4-343(b) of Title 24.

1.2.1.2 *Work to be Complete.* Contractor has thoroughly studied the Contract Documents and understands that the District contracted with Contractor to provide a complete Project which means complete systems and buildings. The entire set of Contract Documents shows a complete Project and Contractor agrees that there are multiple disciplines putting together a set of Contract Documents. Thus, if portions of a system are shown on some Drawings and not others, this does not mean the Contractor is to only provide part of a system. For example, if an air conditioning unit is shown on the mechanical Drawings, the plumbing for the air conditioning is shown on another Drawing, and the electrical shown on the electrical Drawings, the Contractor is to provide a complete and working air conditioning system. The only time when an item is supplied incomplete is if the system is shown specifically as incomplete since others will be completing the system. Work includes, but is not limited to materials, workmanship, and manufacture of fabrication of components for the Project.

1.2.1.3 *Coverage of the Drawings and Specifications.* The Drawings and Specifications generally describe the Work to be performed by Contractor. Generally, the Specifications describe Work which cannot be readily indicated on the Drawings and indicate types, qualities, and methods of installation of the various materials and equipment required for the Work. It is not intended to mention every item of Work in the Specifications, which can be adequately shown on the Drawings, or to show on the Drawings all items of Work described or required by the Specifications even if they are of such nature that they could have been shown. All materials or labor for Work, which is shown on either the Drawings or the Specifications (or is reasonably inferable therefrom as being necessary to complete the Work), shall be provided by the Contractor. The Contractor is responsible for the whole Project as contractually set forth as the Contract Documents. It is intended that the Work be of sound, quality construction, and the Contractor shall be responsible for the inclusion of adequate amounts to cover installation of all items indicated, described, or implied in the portion of the Work to be performed by them.

1.2.1.4 *Conflicts.* In the event there is a discrepancy between the various Contract Documents, it is intended that the more stringent, higher quality, and greater quantity of Work shall apply.

1.2.1.5 *Conformance with Laws.* Each and every provision of law required by law to be inserted in this Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though it were included herein, even if through mistake or otherwise any such provision is not inserted, or is not correctly inserted.

Before commencing any portion of the Work, Contractor shall check and review the Drawings and Specifications for such portion for conformance and compliance with all laws,

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ordinances, codes, rules and regulations of all governmental authorities and public and municipal utilities affecting the construction and operation of the physical plant of the Project, all quasi-governmental and other regulations affecting the construction and operation of the physical plant of the Project, and other special requirements, if any, designated in the Contract Documents. Such checking shall include review of Title 24 of the California Code of Regulations, California Building Code, local utility, local water connection, local grading and all other applicable agencies. In the event Contractor observes any violation of any law, ordinance, code, rule or regulation, or inconsistency with the Contract Documents, Contractor shall, within five (5) days, notify the Inspector, Architect and District in writing of same and shall ensure that any such violation or inconsistency shall be corrected in the manner provided hereunder prior to the construction of that portion of the Project. (See Title 24 Section 4-343)

The Contractor shall bear all expenses of correcting Work done contrary to said laws, ordinances, rules, and regulations if the Contractor performed same (1) without first consulting the Architect for further instructions regarding said Work or (2) disregarded the Architect's instructions regarding said Work.

1.2.1.6 *Ambiguity and Inconsistency.* Before commencing any portion of the Work, Contractor shall carefully examine all Drawings and Specifications and other information given to Contractor as to materials and methods of construction and other Project requirements. Prior to commencing any portion of the Work, Contractor shall notify Architect and District in writing of any perceived or alleged error, inconsistency, conflict, ambiguity, or lack of detail or explanation in the Drawings and Specifications in the manner provided herein. If the Contractor or its Subcontractors, material or equipment suppliers, or any of their officers, agents, and employees performs, permits, or causes the performance of any Work under the Contract Documents, which it knows or should have known to be in error, inconsistent, or ambiguous, or not sufficiently detailed or explained, Contractor shall bear any and all costs arising therefrom including, without limitation, the cost of correction thereof without increase or adjustment to the Contract Price or the time for performance. Contractor shall maintain an adequate inspection system and perform personal observations and review work and pre-plan the project to ensure the Work performed under the Contract conforms to Contract requirements. Contractor shall maintain records of such review and observation to ensure strict compliance with the terms of the Contract.

1.2.1.7 *Typical Parts and Sections.* Whenever typical parts or sections of the Work are completely detailed on the Drawings, and other parts or sections which are of the same construction are shown in outline only, the complete or more detailed shall apply to the Work which is shown in outline.

1.2.1.8 *Dimensions.* Dimensions of Work shall not be determined by scale or rule. Figured dimensions shall be followed at all times. If figured dimensions are lacking on Drawings, Architect shall supply them on request. The Architect's decisions on matters relating to aesthetic effect will be final.

1.2.2 Addenda and Deferred Approvals

1.2.2.1 *Addenda* are the changes in Specifications, Drawings, Contract Documents, and Plans which have been authorized in writing by the District or Architect, and which alter, explain, or clarify the Contract Documents. Addenda shall govern over all other Contract Documents. Subsequent addenda issued shall govern over prior addenda unless otherwise specified in the addenda.

1.2.2.2 *Deferred Approvals.* Deferred Approvals are Submittals that are reviewed by the Architect (or Engineer of Record) and submitted to DSA for approval based on thorough detailing of manufacturer and Project specific design. See Article 3.9.1 and 3.9.3. The Deferred Approval item

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cannot be fully detailed on the originally approved Drawings or Specifications because of variations in product design and manufacture. Contract Documents which require Deferred Approval items are meant to be for illustration purposes only. Approval of Plans for such a portion of the Work may be deferred until the material suppliers and Subcontractors are selected. All Deferred Approvals are noted in the Plans and Specifications. Contractor is responsible for all Deferred Approval requirements set forth in the Contract Documents. Contractor is responsible to comply with all laws, building codes, Title 24 and regulations necessary to obtain all necessary approvals, including those required from the Division of the State Architect (“DSA”) and the State Fire Marshall. Contractor shall not be granted an extension of time for failure to plan, schedule for and obtain necessary approvals. Contractor shall Schedule all Deferred Approval items in the Baseline Schedule and Schedule Updates under Article 3.9.6

1.2.3 Specification Interpretation

1.2.3.1 *Titles.* The Specifications are separated into titled sections for convenience only and not to dictate or determine the trade or craft involved.

1.2.3.2 *As Shown, Etc.* Where “as shown,” “as indicated,” “as detailed,” or words of similar import are used, reference is made to the Drawings accompanying the Specifications unless otherwise stated. Where “as directed,” “as required,” “as permitted,” “as authorized,” “as accepted,” “as selected,” or words of similar import are used, the direction, requirement, permission, authorization, approval, acceptance, or selection by Architect is intended unless otherwise stated.

1.2.3.3 *General Conditions.* The General Conditions and Supplementary General Conditions are a part of the Contract Documents which further defines and refines the Contract entered between the Contractor and District.

1.2.3.4 *Abbreviations.* In the interest of brevity, the Specifications are written in an abbreviated form and may not include complete sentences. Omission of words or phrases such as “Contractor shall,” “shall be,” etc., are intentional. Nevertheless, the requirements of the Specifications are mandatory. Omitted words or phrases shall be supplied by inference in the same manner as they are when a “note” occurs on the Drawings. In the interest of brevity, the Contract Documents frequently omit modifying words such as “all” and “any” and articles such as “the” and “an,” but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

1.2.3.5 *Plural.* Words in the singular shall include the plural whenever applicable or the context so indicates.

1.2.3.6 *Metric.* The Specifications may indicate metric units of measurement as a supplement to U.S. customary units. When indicated thus: 1” (25 mm), the U. S. customary unit is specific, and the metric unit is nonspecific. When not shown with parentheses, the unit is specific. The metric units correspond to the “International System of Units” (SI) and generally follow ASTM E 380, “Standard for Metric Practice.”

1.2.3.7 *Standard Specifications.* Any reference to standard specifications of any society, institute, association, or governmental authority is a reference to the organization’s standard specifications, which are in effect at the date of the Contractor’s proposal unless directed otherwise. If applicable specifications are revised prior to completion of any part of the Work, the Contractor may, if acceptable to Architect, perform such Work in accordance with the revised specifications. The standard

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specifications, except as modified in the Specifications for the Project, shall have full force and effect as though printed in the Specifications. Architect will furnish, upon request, information as to how copies of the standard specifications referred to may be obtained.

1.2.4 Rules of Document Interpretation

1.2.4.1 In the event of conflict within the Drawings, the following rules shall apply:

- a. General Notes, when identified as such, shall be incorporated into other portions of Drawings.
- b. Schedules, when identified as such, are complementary with other notes and other portions of Drawings including those identified as General Notes.
- c. Larger scale Drawings shall take precedence over smaller scale Drawings.
- d. At no time shall the Contractor base construction on scaled Drawings.

1.2.4.2 Specifications shall govern as to materials, workmanship, and installation procedures.

1.2.4.3 If Contractor observes that Drawings and Specifications are in conflict, Contractor shall, prior to commencing work, notify the Architect in writing for the purposes of obtaining an interpretation of the Contract Documents.

1.2.4.4 In the case of conflict or inconsistencies, the order of precedence shall be as follows:

- a. General Conditions take precedence over Drawings and Specifications.
- b. Supplemental Conditions take precedence over General Conditions.
- c. The Agreement Form shall take precedence over the Supplemental Conditions.
- d. In the case of disagreement or conflict between or within Specifications, and Drawings, the more stringent, higher quality, and greater quantity of Work shall apply.
- e. Addenda shall take precedence over Drawings and Specifications.
- f. General Conditions shall take precedence over Addenda.
- g. Drawings and Specifications take precedence over the Soils Report.

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1.3 OWNERSHIP AND USE OF ARCHITECT'S DRAWINGS, SPECIFICATIONS AND OTHER DOCUMENTS

The Drawings, Specifications, and other Contract Documents for the Project are the property of the District and/or Architect pursuant Contract requirements between the District and Architect. The Contractor may retain one Contract record set. Neither the Contractor nor any Subcontractor, or material or equipment supplier shall own or claim a Copyright in the Drawings, Specifications, and other documents prepared by the Architect. All copies except the Contractor's record set, shall be returned or properly accounted for upon completion of the Work. The Drawings, Specifications, and other documents prepared by the Architect, and copies thereof furnished to the Contractor are not to be used by the Contractor or any Subcontractor, Sub-subcontractor, or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work. The District and/or Architect hereby grants the Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers a limited license to use applicable portions of the Drawings, Specifications, and other documents prepared for the Project in the execution of their Work under the Contract Documents. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the District's property interest or other reserved right.

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ARTICLE 2 DISTRICT

2.1 INFORMATION AND SERVICES REQUIRED OF THE DISTRICT

2.1.1 Site Survey

The District will furnish, at its expense, a legal description of the Site and a land survey showing the boundaries of the Site. Contractor shall be responsible for all surveys regarding location of construction, grading and site work.

2.1.2 Soils

When required by the scope of the Project, the District will furnish, at its expense, the services of geotechnical engineers or consultants when reasonably required and deemed necessary by the Architect or as required by local or state codes. Such services, with written reports and appropriate written professional recommendations, may include test boring, test pits, soil bearing values, percolation tests, air and water pollution tests, and ground corrosion and resistivity tests, including necessary operations for determining subsoil, air, and water conditions.

2.1.3 Soils Report Part of the Contract Documents: Contractor Reliance

A soils investigation report has been obtained from test holes at the Site, and such report is incorporated into this Contract and made available for the Contractor's use in preparing its bid and Work under this Contract. Where the Plans and Specifications are more specific and provide more significant structure, systems, reinforcing, thicknesses, or construction methods, the Drawings shall control over the soils report. The soils report is available at the Architect's office for review and it is Contractor's responsibility to ensure that Contractor has reviewed the soils investigation report. Any information obtained from such report or any other information given on Drawings as to subsurface soil condition or to elevations of existing grades or elevations of underlying rock is approximate only. If, during the course of Work under this Contract, Contractor encounters subsurface conditions which differ materially from those indicated in the soils report, then Contractor shall notify the District within five (5) calendar days of discovery of the condition, and changes to the Contract Price may be made in accordance with Article 7 entitled "Changes in the Work." Contractor agrees that no claim against District will be made by Contractor for damages and hereby waives any rights to damages in the event the Contractor fails to notify District within the five-day period mentioned above.

WARNING: DISTRICT DOES NOT WARRANT THE SOILS AT THE PROJECT SITE. CONTRACTOR HAS REVIEWED AND IS FAMILIAR WITH THE REQUIREMENTS OF THE SOILS INVESTIGATION REPORT. CONTRACTOR UNDERSTANDS THAT PLANS, DRAWINGS AND SPECIFICATIONS SUPERSEDE THE SOILS REPORT IF THERE ARE CONFLICTS. FURTHER, IN ADDITION TO THE INFORMATION IN THE SOILS REPORT, CONTRACTOR HAS CONDUCTED AN INDEPENDENT INVESTIGATION OF THE PROJECT SITE AND THE SOILS CONDITIONS OF THE SITE. DISTRICT DOES NOT WARRANT THE SOILS CONDITIONS OF THE SITE AND CONTRACTOR IS FULLY RESPONSIBLE TO ASCERTAIN SITE CONDITIONS

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FOR THE PURPOSES OF DETERMINING CONSTRUCTION MEANS AND METHODS PRIOR TO COMMENCING CONSTRUCTION.

2.1.4 Utilities

2.1.4.1 *Location of Point of Connection.* The locations shown for the point of connection are approximate. It shall be the responsibility of the Contractor to determine the exact location of all service connections.

2.1.4.2 *Regional Notification Center.* Contractor, except in an emergency, shall contact the appropriate regional notification center at least two (2) business days prior to commencing any excavation if the excavation will be conducted in an area or in a private easement which is known, or reasonably should be known, to contain subsurface installations other than the underground facilities owned or operated by the District, and obtain an inquiry identification number from that notification center. See Government Code section 4216.3. No excavation shall be commenced and carried out by the Contractor unless such an inquiry identification number has been assigned to the Contractor or any Subcontractor of the Contractor and the District has been given the identification number by the Contractor. Any damages arising from failure to make appropriate regional notification shall be at the sole risk of Contractor. Contractor shall solely be responsible for any fines, penalties or damages for violation of this Article and Government Code section 4216.6 or 4216.7. Any delays caused by failure to make appropriate regional notification shall be at the sole risk of Contractor and shall not be considered for extension of time pursuant to Article 8.4.

2.1.4.3 *Utilities - Removal and Restoration.* The District has endeavored to determine the existence of utilities at the Site of the Work from the records of the District of known utilities in the vicinity of the Work. The positions of these utilities as derived from such records are shown in the Contract Documents. Thus, the locations of the main or trunklines located on the Drawings are approximate locations and not exact.

No excavations were made to verify the locations shown for underground utilities. Other than the main or trunkline, which the District has endeavored to locate on the Plans, service connections or laterals to these utilities may not be shown on the Plans. It shall be the responsibility of the Contractor to determine the exact location of all service connections. The Contractor shall make its own investigations, including exploratory excavations, to determine the locations and type of service connections, prior to commencing work which could result in damage to such utilities. The Contractor shall immediately notify the District's representative as to any utility main or trunkline discovered by Contractor in a different position than provided by the Regional Notification Center. With respect to main or trunklines, Contractor is to immediately notify District if the location is substantially different than as shown in the Contract Documents.

Contractor shall coordinate its Work with all utilities, including, but not limited to electricity, water, gas and telephone and meet with said utilities prior to the start of any work. Contractor shall show timing of all utility coordination activities under the Scheduling requirements of Article 8.

2.1.4.4 *Other Utilities.* In case it should be necessary to remove, relocate, or temporarily maintain a utility because of interference with the Work, the work on the utility shall be performed and paid for as follows:

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When it is necessary to remove, relocate or temporarily maintain a service connection, the cost of which is not required to be borne by the owner of the service connection, the Contractor shall bear all expenses incidental to the work on the service connection. The work on the service connection shall be done in a manner satisfactory to the owner thereof; it being understood that the owner of the service connection has the option of doing such work with his own forces or permitting the work to be done by the Contractor.

When it is necessary to remove, relocate, or temporarily maintain a utility which is in the position shown on the Plans, the cost of which is not required to be borne by the owner thereof, the Contractor shall bear all expenses incidental to the work on the utility. The work on the utility shall be done in a manner satisfactory to the owner thereof; it being understood that the owner of the utility has the option of doing such work with his own forces or permitting the work to be done by the Contractor.

When it is necessary to remove, relocate, or temporarily maintain a utility which is not shown on the Plans or is in a position different from that shown on the Plans and were it in the position shown on the Plans would not need to be removed, relocated, or temporarily maintained, and the cost of which is not required to be borne by the owner thereof, the District will make arrangements with the owner of the utility for such work to be done at no cost to the Contractor, or will require the Contractor to do such work in accordance with Article 7 or will make changes in the alignment and grade of the Work to obviate the necessity to remove, relocate, or temporarily maintain the utility. Changes in alignment and grade will be ordered in accordance with Article 7 herein.

No representations are made that the obligations to move or temporarily maintain any utility and to pay the cost thereof is or is not required to be borne by the owner of such utility, and it shall be the responsibility of the Contractor to investigate to find out whether said cost is required to be borne by the owner of the utility.

The right is reserved to governmental agencies and to owners of utilities to enter at any time upon any street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the Work and for the purpose of maintaining and making repairs to their property.

2.1.5 Existing Utility Lines; Removal, Relocation

2.1.5.1 *Main or Trunkline Facilities.* If the Contractor while performing the Contract discovers utility facilities not identified in the Contract Documents, Contractor shall notify the District and utility in writing prior to commencing work.

The owner of the public utility shall have the sole discretion to perform repairs or relocation work or permit the Contractor to do such repairs or relocation work at a reasonable price.

The Contractor shall exercise reasonable care and shall be compensated by the District for the actual verified field costs of locating, and removing, relocating, protecting or temporarily maintaining such main or trunkline utility facilities located in a substantially different location than in the Plans and Specifications, and for equipment in use on the project necessarily idled during such work. This Work shall be performed in accordance with Article 7 of these General Conditions.

2.1.5.2 *Assessment.* Nothing in these subparagraphs shall be deemed to require the District to indicate the presence of existing service laterals or appurtenances whenever the presence of such

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utilities on the Site can be inferred from the presence of other visible facilities, such as buildings, or meter junction boxes on or adjacent to the Site and could be inferred from the Main or Trunkline shown on the Drawings.

2.1.5.3 *Notification.* If the Contractor, while performing Work under this Contract, discovers utility facilities not identified by the District in the Contract Documents. Contractor shall, within five (5) days, notify the District and the utility in writing. If Contractor fails to notify the District within forty eight hours after discovery of any utility facilities not identified by District in the Contract Documents, Contractor waives all rights to be compensated for any extra Work or damages resulting from such discovered utilities.

2.1.6 Easements

District shall secure and pay for easements for permanent structures or permanent changes in existing facilities, if any, unless otherwise specified in the Contract Documents.

2.2 DISTRICT'S RIGHT TO CARRY OUT THE WORK DUE TO PARTIAL DEFAULT IN A SPECIFIC SEGREGATED AREA OF WORK (48 HOUR NOTICE TO CURE AND CORRECT)

If the Contractor Defaults or neglects to carry out the Work in accordance with the Contract Documents, the District may provide forty-eight (48) hour written notice to cure (a shorter period of time in the case of Emergency or a critical path delay as defined in Article 2.2.1) Contractor's Partial Default in a specific segregated area of work. The District's right to issue a Partial Default of the Contractor's Work and take over that segregated area of Work includes, but is not limited to:

1. Failure to supply adequate workers on the entire Project or any part thereof;
2. Failure to supply a sufficient quantity of materials;
3. Failure to perform any provision of this Contract;
4. Failure to comply with safety requirements, or due to Contractor is creation of an unsafe condition;
5. Cases of bona fide emergency;
6. Failure to order materials in a timely manner;
7. Failure to prepare Deferred Approval items or Shop Drawings in a timely manner;
8. Failure to comply with Contractor's Baseline or Update Schedule, meet critical Milestones which would result in a delay to the critical path, or delay the Contract Time;
9. Failure to comply with the Subletting and Subcontracting Fair Practices, Public Contract Code section 4100, et seq.
10. Failure to meet the requirements of the Americans with Disabilities Act;

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11. Failure to complete Punch List work;
12. Failure to proceed on an Immediate Change Directive
13. Failure to correct a Notice of Deviation

If during the forty eight (48) hour period, the Contractor fails to Cure and correct the deficiency noted in the 48 hour notice of Partial Default with diligence and promptness, the District may correct such deficiencies without prejudice to other remedies the District may have, including a Termination for Cause as set forth in Article 14. If there are inadequate funds remaining the Project balance or in the Retention Escrow to address at least 150% of the costs set forth in the Article 2.2 notice, the District may copy the Surety on the written notice of Partial Default. If a notice to the Surety is provided, except in the cases of emergency or critical path delay, the Surety has the option to take over and complete the Work described in the written notice if Surety personally delivers notice to District that it intends to perform such work. In the case where written notice has been provided, the District shall allow Surety seven (7) days to perform the Work.

2.2.1 Service of Notice of Partial Default with Right to Cure

A written notice of Partial Default and right to cure under Article 2.2 (“Article 2.2 Notice” or “Notice of Partial Default”) shall be served by e-mail (with a copy provided by regular mail) to the e-mail address provided on the Bid submitted and copied to the Project Superintendent.

2.2.2 Shortened Time for Partial Default in the Case of Emergencies.

In an Emergency situation, the District may correct any of the deficiencies described in Article 2.2 without prejudice to other remedies by providing service of written notice of Emergency requiring a shortened time for Partial Default specifying the time given to cure, if any.

2.2.3 Shortened Time for Partial Default in the Case of Critical Path Delay

In the case of critical path delay, the District may correct any of the deficiencies described in Article 2.2 without prejudice to other remedies providing service of written notice of critical path delay to the Contractor with a specific description of the critical path delay items noting the line item or area of Work that is on the critical path and prescribe the length of shortened time to cure, if any.

2.2.4 Written Notice of Partial Default to be Deducted by Deductive Change Order

The District shall have the right to determine the reasonable value of the Article 2.2 Partial Default Work, or if there is an actual value for the Work, shall use that value and issue a Deductive Change Orders under Article 7.7.4

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ARTICLE 3 THE CONTRACTOR

3.1 SUPERVISION AND CONSTRUCTION PROCEDURES

3.1.1 Contractor

The Contractor shall continually supervise and direct the Work using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences, procedures; and shall coordinate all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. The Contractor shall not perform the Work without utilizing the Contract Documents or, where required, approved Submittals, Shop Drawings, or samples for any such portion of the Work. If any of the Work is performed by contractors retained directly by the District, Contractor shall be responsible for the coordination and sequencing of the work of those other contractors so as to avoid any impact on the Project Schedule pursuant to the requirements of Article 6 and Article 8. Specific duties of the Contractor shall include those set out in Section 43 of Title 21 of the California Code of Regulations and Section 4-343 of Title 24 of the California Code of Regulations. These duties include, but are not limited to the following:

3.1.1.1 *Responsibilities.* It is the duty of the Contractor to complete the Work covered by his or her Contract in accordance with the approved Plans and Specifications. The Contractor in no way is relieved of any responsibility by the activities of the Architect, Engineer, Inspector or DSA in the performance of their duties.

3.1.1.2 *Performance of the Work.* The Contractor shall carefully study the approved Plans and Specifications and shall plan its schedule of operations well ahead of time. If at any time it is discovered that work is being done which is not in accordance with the approved Plans and Specifications, the Contractor shall correct the Work immediately.

3.1.2 Contractor Responsibility to Study the Plans and Specifications

All inconsistencies or timing or sequences which appear to be in error in the Plans and Specifications shall promptly be called to the attention of the Architect or, Engineer, for interpretation or correction. Local conditions which may affect the structure shall be brought to the Architect's attention at once. In no case, shall the instruction of the Architect be construed to cause work to be done which is not in conformity with the approved Plans, Specifications, change orders, construction change documents, and as required by law. (See Title 24, Section 4-343)

3.1.3 All Work Under the Direction of Inspector

Pursuant to Title 24 requirements, the Contractor shall not carry on Work except with the knowledge of the Inspector. (See Title 24 generally)

3.1.4 Contractor to Establish Timing and Protocol with Inspector

Contractor shall establish a protocol for requesting inspection with Inspector so as to not delay the Work and provide adequate time for the Inspector to perform inspection. If such a protocol is not established ahead of time, Inspector may utilize the time criteria set by Title 24 of 48 hours in advance of

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submitting form DSA 156 for each new area. DSA requirements under PR 13-01 specifically gives the Special Inspector fourteen (14) days to post to the DSA website. Contractor is responsible for delays and for failure to plan.

For some Projects, there may be a need to incrementally install certain assemblies. It is up to Contractor to identify areas and assemblies that may be constructed incrementally. Contractor must identify and establish incremental areas of construction and establish protocols with Inspector for DSA 152 approvals so they may be presented to DSA. (See PR-13 item 1.17 for further discussion)

3.1.5 Verified Reports

The Contractor shall make and submit to the office from time to time, verified reports as required in Title 24 Section 4-366. As part of the Close-Out of the Project (see Article 9.9), Contractor shall be required to execute a Form 6-C as required under Title 24 Sections 4-343.

Contractor shall fully comply with any and all reporting requirements of Education Code sections 17315, et seq., in the manner prescribed by Title 24, as applicable.

3.1.6 Contractor Responsibility

The Contractor shall be responsible to the District for acts and omissions of the Contractor's employees, Subcontractors, material and equipment suppliers, and their agents, employees, invitees, and other persons performing portions of the Work under direct or indirect contract with the Contractor or any of its Subcontractors.

3.1.7 Obligations not Changed by Architect's Actions

The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract or by tests, inspections, or approvals required or performed by persons other than the Contractor.

3.1.8 Acceptance/Approval of Work

The Contractor shall be responsible to determine when any completed portions of the Work already performed under this Contract or provided pursuant to Article 6 are suitable to receive subsequent Work thereon.

3.2 SUPERVISION

3.2.1 Full Time Supervision

Unless personally present on the Project site where the Work is being performed, the Contractor shall keep on the Work at all times during its progress a competent, English speaking construction Superintendent satisfactory to the District. The Superintendent shall be present on a full-time basis, shall be dedicated exclusively to the Project and shall not share superintendency duties with another project or job. The Superintendent shall not be replaced except with written consent of the District. The Superintendent shall represent the Contractor in its absence and shall be fully authorized to receive and fulfill any instruction from the Architect, the Inspector, the District or any other District Representative

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(including CM in the cases where the District has a CM representative). All Requests for Information shall be originated by the Superintendent and responses thereto shall be given to the Superintendent. No Work shall begin on any day by any Subcontractor or other person on the Project site until the Superintendent has arrived, or shall any Work continue during the day after the Superintendent has departed from the Project site. The Superintendent shall have authority to bind Contractor through the Superintendent's acts. The Superintendent shall represent the Contractor, and communications given to the Superintendent shall be binding on the Contractor. Before commencing the Work, Contractor shall give written notice to District (and CM representative) and Architect of the name and a Statement of Qualifications of such superintendent. Superintendent shall not be changed except with written consent of District, unless a superintendent proves to be unsatisfactory to Contractor and ceases to be in its employ, in which case, Contractor shall notify District and Architect in writing. Contractor shall provide a replacement superintendent approved by the District prior to performing additional work.

3.2.2 Staff

Notwithstanding other requirements of the Contract Documents, the Contractor and each Subcontractor shall: (1) furnish a competent and adequate staff as necessary for the proper administration, coordination, supervision, and superintendence of its portion of the Work; (2) organize the procurement of all materials and equipment so that the materials and equipment will be available at the time they are needed for the Work; and (3) keep an adequate force of skilled and fit workers on the job to complete the Work in accordance with all requirements of the Contract Documents.

3.2.3 Right to Remove

District shall have the right, but not the obligation, to require the removal from the Project of any superintendent, staff member, agent, or employee of any Contractor, Subcontractor, material or equipment supplier.

3.3 LABOR AND MATERIALS

3.3.1 Contractor to Provide

Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, material, equipment, tools, construction equipment and machinery, water, heat, air conditioning, utilities, transportation, and other facilities, services and permits necessary for proper execution and completion of the Work whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

3.3.2 Quality

Unless otherwise specified, all materials and equipment to be permanently installed in the Project shall be new and shall be of the highest quality or as specifically stated in the Contract Documents. The Contractor shall, if requested, furnish satisfactory evidence as to kind and quality of all materials and equipment within ten (10) days of a written request by the District, including furnishing the District with bona fide copies of invoices for materials or services provided on the Project. All labor shall be performed by workers skilled in their respective trades, and shall be of the same or higher quality as with the standards of other school construction.

3.3.3 Replacement

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Any work, materials, or equipment, which do not conform to these requirements or the standards set forth in the Contract Documents, may be disapproved by the District, in which case, they shall be removed and replaced by the Contractor at no additional cost or extension of time to the District.

3.3.4 Discipline

The Contractor shall enforce strict discipline and good order among the Contractor's and Subcontractor's employees, and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them. As used in this subsection, "unfit" includes any person who the District concludes is improperly skilled for the task assigned to that person, who fails to comply with the requirements of this article, or who creates safety hazards which jeopardize other persons and/or property.

3.3.5 Fingerprinting (Applicable at the time Project is Occupied and on all Projects where Workers will come in Contact with Pupils, such as Modernization Projects)

If applicable, Contractor shall comply with the applicable provisions of Education Code section 45125.1 in a method as determined by the District. Pursuant to Education Code section 45125.1, Contractor shall either conduct criminal background checks of all employees of Contractor assigned to the Project site, and shall certify that no employees who have been convicted of serious or violent felonies, as specified in Education Code section 45125.1, will have contact with pupils, by utilizing the Certification Regarding Background Checks and the corresponding Attachment "A" as found in the Contract Documents or shall be separated by a physical barrier from students.

If it is determined that Contractor must provide certification of employees, as part of such certification, Contractor must provide the District with a list of all employees providing services pursuant to this Agreement, and designate which sites such employees will be assigned. In performing the services set forth in this Agreement, Contractor shall not utilize any employees who are not included on the above-referenced list.

At District's sole discretion, District may make a finding, as authorized under Education Code section 45125.1, that Contractor's employees will have only "limited contact" with pupils. Contractor's failure to comply with this law shall be considered a material breach of this Agreement upon where this Agreement may be terminated, at District's sole discretion, without any further compensation to Contractor.

In the case of new construction Projects where there are no students, if the Project Schedule provides for Beneficial Occupancy or portions of the Project or if the Project should be delayed, then Contractor, at no additional costs, shall meet the requirements of either fingerprinting or providing a physical barrier as required by the District.

3.3.6 Noise, Drugs, Tobacco, and Alcohol

Contractor shall take all steps necessary to insure that employees of Contractor or any of its Subcontractors' employees do not use, consume, or work under the influence of any alcohol, tobacco or illegal drugs while on the Project. Contractor shall further prevent any of its employees or its Subcontractor employees from playing any recorded music devices or radios or wearing any radio headphone devices for entertainment while working on the Project. Likewise, Contractor shall prevent its employees or

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Subcontractor's employees from bringing any animal onto the Project. Contractors shall not violate any written school policies.

3.3.7 Delivery of Material

Contractor shall place orders for materials or equipment so that the Work may be completed in accordance with the Construction schedule for the Work as set forth in Article 8 of this Agreement. Contractor shall, upon demand from the Architect, furnish to the Architect documentary evidence including, but not limited to purchase orders, invoices, bills of materials, work orders and bills of lading, showing that orders have been placed. Contractor shall have a system to receive materials and to ensure that the proper materials are being delivered, including in the case of critical materials to the Project, checking the delivery against Shop Drawings and ensuring that the materials meet the requirements of not only the Plans and Specifications, but also the approved Shop Drawings and Submittals and in conformance with Contractor's plan for delivery of materials (including but not limited to Contractor's representations in the Schedules for the Project and Contractor's equipment and materials schedule under Article 3.7.2.2). Contractor shall be responsible for all costs of accepting non-conforming materials delivered to the Project given Contractor's responsibilities and system for acceptance of deliveries. Contractor shall notify Inspector and District Representative (including CM) as early as possible, in writing, of the delivery of materials for the Project. The deliveries shall include documentation identifying the shipment sufficiently so that the Inspector, Architect or District Representative (including CM) may review the materials that are received. Under no circumstances shall materials be delivered to the Project site that are meant for another Project.

3.3.8 Liens and Other Security Interests of Subcontractors and Material Suppliers

No material, supplies, or equipment for the Work shall be purchased subject to any chattel mortgage or under a conditional sale or other agreement by which an interest therein or in any part thereof is retained by seller or supplier. Contractor warrants good title to all material, supplies, and equipment installed or incorporated in Work and agrees upon completion of all Work to deliver premises, together with all improvements and appurtenances constructed or placed thereon by it, to District free from any claims, security interests, liens, or charges. Contractor further agrees that neither it nor any person, firm, or corporation furnishing any materials or labor for any Work covered by this Contract shall have any right to place a lien upon the premises or any improvement or appurtenance thereof, except that Contractor may install metering devices or other equipment of a utility company or political subdivision, title to which is commonly retained by the utility company or political subdivision. In event of installation of any such metering device or equipment, Contractor shall advise District as to its owner within five (5) days of such installation in writing, prior to making the installation.

Contractor agrees to indemnify, defend and hold the District harmless from any liens, stop notices, or assertion of security interests, including judgments and levies. If after written notice Contractor fails to address the lien, stop notice, or other security interest, the District may proceed to address the lien, stop notice or claim and seek reimbursement from Contractor.

3.3.9 Title to Materials

The title to new materials or equipment for the Work of this Contract shall remain with Contractor until incorporated in the Work of this Contract until final acceptance of the Project; no part of said materials shall be removed from its place of storage, and Contractor shall keep an accurate inventory of all said materials and equipment in a manner satisfactory to the District or its authorized representative.

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Responsibility for materials remains with Contractor and Contractor shall replace materials in case of loss. District similarly may pay for materials stored off site, but Contractor shall remain responsible for the materials that are stored off site.

3.3.10 Assemblies

For all material and equipment specified or indicated in the Drawings, the Contractor shall provide all labor, materials, equipment, and services necessary, (including engineering as specifically required with Shop Drawings or Deferred Approvals) for complete assemblies and complete working systems. Incidental items not indicated on the Drawings, nor mentioned in the Specifications, that can legitimately and reasonably be inferred to belong to the Work described, or be necessary in good practice to provide a complete assembly or system, shall be furnished as though itemized in the Contract Documents in every detail. In all instances, material and equipment shall be installed in strict accordance with each manufacturer's most recent published recommendations and Specifications.

3.3.11 Noise Control

The Contractor shall be responsible for the installation of noise reducing devices on construction equipment. Contractor shall comply with the requirements of the city and county having jurisdiction with regard to noise ordinances governing construction sites and activities. Construction equipment noise is subject to the control of the Environmental Protection Agency's Noise Control Program (Part 204 of Title 40, Code of Federal Regulations). If school is in session at any point during the progress of the Project, and, in the District's reasonable discretion, the noise from such Work disrupts or disturbs the students or faculty or the normal operation of the school, at the District's request, the Contractor shall schedule the performance of all such Work around normal school hours or make other arrangements so that the Work does not cause such disruption or disturbance. There are specific periods of testing at operational schools and it is critical that Contractor control noise during periods of testing. In no event shall Contractor have a right to receive additional compensation or an extension to the Contract time as a result of any such rescheduling or the making of such arrangements. These controls shall be implemented during site preparation and construction. All noise related issues, including school operations, and noise during testing should be detailed in the Schedule provided pursuant to Article 8

3.4 WARRANTY

The Contractor warrants to the District and Architect that material and equipment furnished under the Contract will be of the highest quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. Contractor's warranty to District includes, but is not limited to, the following representations:

3.4.1 In addition to any other warranties provided elsewhere, Contractor shall, and hereby does, warrant all Work after the date of Notice of Completion of Work by District and shall repair or replace any or all such Work, together with any other Work, which may be displaced in so doing that may prove defective in workmanship or materials within a one (1) year period from date of Final Completion which shall be no later than the final date of Punch List as noted at Article 9.11) without expense whatsoever to District, ordinary wear and tear, unusual abuse or neglect excepted. District will give notice of observed defects with reasonable promptness. Contractor shall notify District upon completion of repairs.

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3.4.2 In the event of failure of Contractor to comply with above mentioned conditions within one week after being notified in writing, District is hereby authorized to proceed to have defects repaired and made good at expense of Contractor who hereby agrees to pay costs and charges therefore immediately on demand.

3.4.3 If, in the opinion of the District, defective Work creates a dangerous condition or requires immediate correction or attention to prevent further loss to the District, the District will attempt to give the notice required by this Article. If the Contractor cannot be contacted or does not comply with the District's requirements for correction within a reasonable time as determined by the District, the District may, notwithstanding the provisions of this article, proceed to make such correction or attention which shall be charged against Contractor. Such action by the District will not relieve the Contractor of the guarantee provided in this Article or elsewhere in this Contract.

3.4.4 This Article does not in any way limit the guarantee on any items for which a longer warranty is specified or on any items for which a manufacturer gives a guarantee for a longer period. Contractor shall furnish District all appropriate guarantee or warranty certificates upon completion of the project.

3.5 TAXES

Contractor will pay all applicable Federal, State, and local taxes on all materials, labor, or services furnished by it, and all taxes arising out of its operations under the Contract Documents. District is exempt from Federal Excise Tax, and a Certificate of Exemption shall be provided upon request.

3.6 PERMITS, FEES AND NOTICES

3.6.1 Payment

The Contractor shall secure and pay for all permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work which are necessary after execution of the Contract and are legally required by any authority having jurisdiction over the Project, except those required by the Division of the State Architect (DSA). District shall be responsible for all testing and inspection as required by the DSA on-site or within the distance limitations set forth in Article 13.5.2, unless a different mileage range is specified in the Supplemental Conditions.

3.6.1.1 *DSA Fees.* DSA policy is to charge CCD review fees for processing and approval of changes in the Plans and Specifications through the Construction Change Document process. Contractor is specifically directed to the current DSA IR A-30 which provides fee structure and charges that will be incurred for proceeding with respect to the CCD process, a process that must be followed for each change in the Plans and Specifications.

3.6.2 Compliance

The Contractor shall comply with and give notices required by any law, ordinance, rule, regulation, and lawful order of public authorities bearing on performance of the Work. Specifically, the Division of State Architect provides State oversight of the Project and enforcement of Title 24 rules and regulations. Contractor is directed to the DSA website. There will be local governmental oversight from City, County or both. Finally, Regional Water Quality Control Board, State Fire Marshall, local fire marshal, Department of Industrial Relations, Department of Labor Standards Enforcement, and Air Quality

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Management District (Local and State) are some of the agencies that provide oversight and may require specific permits, fees, or provide oversight over the Project. Contractor represents understanding and specialized knowledge of the rules governing school districts and Contractor shall maintain compliance over the applicable rules and will file all documents required in order to ensure compliance with State, local, and other rules that apply to the Project.

3.6.3 Responsibility

The Contractor shall perform all Work in conformance with every law, statute, ordinance, building code, rule or regulation. The Contractor shall assume full responsibility for such Work and shall bear the attributable cost of correction or project delay.

Pursuant to Title 24 Section 4-343(b):

“Contractor shall carefully study the approved Plans and Specifications and shall plan a schedule of operations well ahead of time.... All inconsistencies or items which appear to be in error in the Plans and Specifications shall be promptly called to the attention of the architect or registered engineer, through the inspector, for interpretation or correction.”

To help Contractor plan its operations, Contractor is directed to study the current version of the DSA 152 Inspection Card Manual identifying the exact steps the Inspector is to follow in the review and sign off process for the DSA 152. The DSA 152 Inspection Card Manual provides specific detail as to the order of operations, review items and compliance items beyond the Specifications and Plans which are reviewed for DSA compliance. The most current version of this manual is located on DSA’s website.

Contractor is also specifically directed to the time periods for posting of Special Inspection Reports and Inspector Notifications under DSA PR 13-01 since the timing of Inspection is not a Governmental Entity related delay.

3.7 SUBMITTALS REQUIRED AT THE COMMENCEMENT OF THE PROJECT

3.7.1 Requirements Within Ten (10) Calendar Days

Within ten (10) calendar days after Notice to Proceed, Contractor shall submit the following:

- 3.7.1.1 Detailed Schedule of Values (See Article 9.2)
- 3.7.1.2 Submittal Listing and Schedule for Submittals
- 3.7.1.3 Critical Path Baseline Schedule (See Article 8)

3.7.2 Requirements Within Thirty-Five (35) Calendar Days

Within thirty-five (35) calendar days after Notice to Proceed, Contractor shall submit the following:

3.7.2.1 *All Submittals for the Project* except those specifically agreed upon by District and Architect, in writing, and shall be specifically incorporated into the Submittal section of the

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Schedule so as to not delay the Work. The agreement to allow a later Submittal does not mean that Article 3.3.7 is waived. Contractor shall order materials and ensure prices are honored and secured for the Project.

- a. Structural Steel may be included as a later Submittal than 35 days if Structural Steel is a significant portion of the Work, at least one or some of the Project is a structural steel structural system, or as specifically agreed upon by the Architect or District.
- b. It is specifically agreed that submissions of structural steel Submittals shall not be piecemeal (unless some portion is requested separately by the District or Architect), shall provide complete designs, shall be stamped by the structural steel Subcontractor, Contractor, and structural steel Subcontractor's structural engineer at time of submission and as further addressed in Article 3.9.
- c. In no case shall the submission of structural steel Drawings delay the critical path for the schedule. If a Milestone is provided for submission of complete structural steel Shop Drawings then the date shall be no later than as set forth in the Milestone

3.7.2.2 *Exceptions to Submittal Within Thirty-Five (35) Days by Written Agreement.* A written request detailing the specific reasons for a submission later than 35 days due to complexity of design or non-critical path status of the Submittal shall be submitted at the time the Baseline Schedule is submitted. The Baseline Schedule shall not include a delayed Submittal until written agreement is provided. In addition to the request for providing a Submittal after the thirty-five (35) day period, a copy of the Contract with the Subcontractor who shall be performing the Submittal, a written statement from the Subcontractor verifying that work has commenced on the Submittal and providing Subcontractor's own schedule of Milestones and completion dates, and a corresponding Submittal designation in the Schedule as required under Article 8. Approval of a delayed Submittal shall not result in any increase in the Contract Price or result in an extension of time for the completion of the Project.

3.7.2.3 *Piecemeal Submissions of Submittals.* Piecemeal Submittals mean providing portions of Shop Drawings or Submittals as they are being completed. The submission of piecemeal Submittals results in the appearance of a submission when there is inadequate information for the Architect or Engineer to adequately review a submission. Piecemeal differs from submission of complete buildings or phases of buildings or complete assemblies. The Architect may agree to allow submission of single buildings or areas as long as the Submittals are complete. .

3.8 DOCUMENTS, SAMPLES, AND COMPUTER AT THE SITE

The Contractor shall maintain at the Site for the District one current copy of the California Building Code, Titles 19 and 24 of the California Code of Regulations, any other document required by DSA, and one record copy of the Drawings, Specifications, Addenda, Change Orders, and other Modifications, in good order and marked currently to record changes and selections made during construction. In addition, the Contractor shall maintain at the Site approved Shop Drawings, Product Data, Samples, and similar required Submittals. These documents shall be available to the Architect and shall be delivered to the Architect for delivery to the District upon completion of the Work.

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Contractor shall have an operational computer with internet access so Contractor can review and post documents as required for the Project, including but not limited to the filing and posting of DSA required documents for the Project.

Contractor shall be prepared to review documents posted to the DSA Project website.

3.9 SUBMITTALS INCLUDING SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

3.9.1 Definitions

3.9.1.1 *Deferred Approvals.* Approval of certain aspects of the construction may be deferred until the construction Contract has been awarded. To facilitate the design process, DSA grants Deferred Approval to the design and detailing of certain elements of the Project at the request of the Architect or Engineer of Record. Design elements that may be deferred may include, but are not limited to access floors, bleachers, elevator guide rails and related elevator systems, exterior wall systems - precast concrete, glass fiber reinforced concrete, etc., skylights, window wall systems, storefronts, stage rigging, and other systems as noted in the Contract Documents. (Also see Article 1.2.2.2 and 3.9.3)

3.9.1.2 *Shop Drawings.* The term “Shop Drawings” as used herein means Drawings, diagrams, equipment or product schedules, and other data, which are prepared by Contractor, Subcontractors, manufacturers, suppliers, or distributors illustrating some portion of the Work, and includes: illustrations; fabrication, erection, layout and setting Drawings; manufacturer’s standard Drawings; schedules; descriptive literature, instructions, catalogs, and brochures; performance and test data including charts; wiring and control diagrams; and all other Drawings and descriptive data pertaining to materials, equipment, piping, duct and conduit systems, and methods of construction as may be required to show that the materials, equipment, or systems and their position conform to the requirements of the Contract Documents.

3.9.1.3 *Manufactured* applies to standard units usually mass-produced, and “Fabricated” means items specifically assembled or made out of selected materials to meet individual design requirements. Shop Drawings shall: establish the actual detail of all manufactured or Fabricated items, indicate proper relation to adjoining work, amplify design details of mechanical and electrical systems and equipment in proper relation to physical spaces in the structure, and incorporate minor changes of design or construction to suit actual conditions.

3.9.1.4 *Submittals* is a term used interchangeably and sometimes refers to Shop Drawings, Product Data, and samples since all Subcontractor submissions are tracked in a Submittal Log and may include any of the noted items. However, generally, a Submittal is a manufacturer’s product information and Product Data including description, characteristics, size, physical characteristics, and requirements to prepare the jobsite for receiving of the particular manufactured item.

3.9.1.5 *Samples.* The term “samples” as used herein are physical examples furnished by Contractor to illustrate materials, equipment, or quality and includes natural materials, Fabricated items, equipment, devices, appliances, or parts thereof as called for in the Specifications, and any other samples as may be required by the Architect to determine whether the kind, quality, construction, finish, color, and other characteristics of the materials, etc., proposed by the Contractor conform to the required characteristics of the various parts of the Work. All Work shall be in accordance with the approved samples.

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3.9.2 Shop Drawings.

3.9.2.1 *When Shop Drawings Are Required.* Shop Drawings are required for prefabricated components and for installation and coordination of these prefabricated components into the Project. In addition, Shop Drawings, are prepared to address the actual size and installation of components from various Subcontractors and provides an opportunity for the Contractor to coordinate and address conflicts between the subcontracting trades. In some cases, each Subcontractor or trade will provide Shop Drawings in a BIM format or other format as agreed by District.

3.9.2.2 *Purpose for Shop Drawings.* Shop Drawings are the Contractor's manufacturer, Subcontractor, supplier, vendor or the Contractor's detailed drawings showing particularized method for assembly, specifics to a manufacturer, manufacturer component installation requirements, specifics as to a manufactured item, alterations to a manufactured, a custom created item, or drawn version of more detailed information expanding on the Architect's design shown in the Contract Documents. The Shop Drawings address the appearance, performance, size, weight, characteristics and prescriptive descriptions associated with the Contractor or Contractor's Subcontractor's plan for installation or assembly based on the design in the Specifications and Contract Documents. The Shop Drawing often is more detailed than the information shown in the Contract Documents to give the Architect and Engineer the opportunity to review the fabricator's version of the product (along with particulars specific to that particular product), prior to fabrication. References to the Contract Documents, Construction Documents, Drawings, Plans, and Specifications assist the Architect and Engineer in their review of the Shop Drawings. Attachment of manufacturer's material Specifications, "catalog cut sheets," and other manufacturer's information may be provided to accompany Shop Drawings. Because Shop Drawings facilitate the Architect's and Engineer's approval of the system, they should be as clear and complete as possible so they may be reviewed by Architect or Engineer for the Project.

3.9.2.3 *Shop Drawing Requirements.* The Contractor shall obtain and submit with Shop Drawings all seismic and other calculations and all Product Data from equipment manufacturers. "Product Data" as used herein are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate a material, product, or system for some portion of the Work.

3.9.2.4 *Not a Reproduction of Architectural or Engineering Drawings.* The Shop Drawings are not a reproduction of the architectural or engineering Drawings. Instead, they must show more detail than the Construction Documents and details the fabrication and/or installation of the items to the manufacturer's production crew or Contractor's installation crews.

3.9.2.5 *Shop Drawings Engineering Requirements:* Some Shop Drawings require an engineer stamp to be affixed on the Drawings and calculations. In such cases, a current and valid engineering stamp shall be affixed by a California registered engineer. No out of State engineers shall stamp Shop Drawings. (See DSA IR A-18). In most cases, an engineer means California registered mechanical, structural, electrical or plumbing engineer. California Registered Civil Engineers will not be accepted for structural details unless specifically approved by DSA.

3.9.2.6 *DSA Approvals Required Prior to Work.* No work on a Shop Drawing that requires DSA approval may proceed until DSA approval is received. Contractor has provided DSA approval time and allowed adequate time for corrections in Contractor's Schedule as required pursuant to Article 8.

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3.9.2.7 *Shop Drawing Identification.* All Shop Drawings must be properly identified with the name of the Project and dated, and accompanied by a letter of transmittal referring to the name of the Project and to the Specification section number for identification of each item clearly stating in narrative form, as well as “clouding” all qualifications, departures, or deviations from the Contract Documents. Shop Drawings, for each section of the Work shall be numbered consecutively and the numbering system shall be retained throughout all revisions. All Subcontractor submissions shall be made through the Contractor. Each drawing shall have a clear space for the stamps of Architect and Contractor.

3.9.3 Deferred Approvals

Deferred approvals shall be submitted and processed to ensure all DSA and other governmental approvals are secured so as to not delay the Project. There may be additional requirements for Deferred Approvals at Division 1 of the Specifications. All Deferred Approvals shall be prepared by Contractor or Contractor’s agent early enough so as to not delay the Project. Contractor is aware that Title 24 California Code of Regulations Section 4-317 have specific requirements for Deferred Approval as to governing agencies and as to the Architect and Engineer for the Project. As a result, any delay associated with the time for approval by applicable agencies or by the Architect or Architect’s consultants shall be Contractor’s. Contractor is required to comply with inclusion of Deferred Approvals in the Schedule as required under Article 3.9.6 *DSA Approvals Required Prior to Work*. No work on a Deferred Approval item may proceed on the components until DSA approval is received. Contractor has provided DSA approval time and allowed adequate time for any DSA revisions in Contractor’s Schedule as required pursuant to Article 8.

3.9.4 Submittals and Samples

3.9.4.1 *Information Required With Submittals:* Manufacturer, trade name, model or type number and quantities: Information provided must be of sufficient detail to allow Architect and Engineer to compare the submitted item with the specified products and acceptable products listed, in the Specifications and addenda.

3.9.4.2 *Description of Use and Performance Characteristics:* Information should be furnished describing the normal use and expected performance of the product. The Architect and Contractor review this information to confirm that the product is appropriate for the intended use.

3.9.4.3 *Size and Physical Characteristics:* The size and physical characteristics, such as adjustment capabilities, which is reviewed by both the Contractor and Architect. The Contractor has the most available information for comparing adjoining materials and equipment. The Contractor also needs to know the size and weight of the equipment for lifting and handling considerations.

3.9.4.4 *Finish Characteristics:* The Architect reviews the available finishes and selects the appropriate finish, if the finish was not previously specified in the documents. The Contractor should confirm that finish requirements in the Specifications are being met by the product.

3.9.4.5 *Contractor Responsible for Jobsite Dimensions:* Some material is custom-fabricated to job conditions, requiring dimensions from the jobsite. These jobsite dimensions are provided by the Contractor as part of the Contractor’s responsibilities for the Project and shall be provided prior to release of the product for manufacture. Contractor shall not rely on Architect or Engineers to provide jobsite dimensions.

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3.9.4.6 *Full Range of Samples Required (When Specific Items Not Specified).*

Except in cases where the exact color and type of item is specified since the District is utilizing items Standardized or pre-selected by District, the full range of color, graining, texture, or other characteristics are anticipated for review in finished products, a sufficient number of samples of the specified materials shall be furnished by the Contractor to indicate the full range of characteristics which will be present in the finished products. Products delivered or erected without Submittal and approval without providing a full range of samples shall be subject to rejection. Except for range samples, and unless otherwise called for in the various sections of the Specifications or Specification Section 1, samples shall be submitted in duplicate.

3.9.4.7 *Labeling of Samples.*

All samples shall be marked, tagged, or otherwise properly identified with the name of the submitting party, the name of the Project, the purpose for which the samples are submitted and the date.

3.9.4.8 *Transmittal letter.*

All samples shall be accompanied by a letter of transmittal containing similar information, together with the Specification section number.

3.9.4.9 *Labels and Instructions.*

All samples of materials shall be supplied with the manufacturer's descriptive labels and application instructions. Each tag or sticker shall have clear space for the review stamps of Contractor and Architect.

3.9.4.10 *Architect's Review.*

The Architect will review and, if appropriate, approve submissions and will return them to the Contractor with the Architect's stamp and signature applied thereto, indicating the timing for review and appropriate action in compliance with the Architect's (or District's) standard procedures. In the cases where a CM is hired by the District, CM may be the party that receives and performance logging and initial processing of the Samples. CM may, in some cases, reject samples that are not in conformance with Contract requirements.

3.9.5 Submittal Submission Procedure

3.9.5.1 *Transmittal Letter and Other Requirements.*

All Submittals must be properly identified with the name of the Project and dated, and each lot submitted must be accompanied by a letter of transmittal referring to the name of the Project and to the Specification section number for identification of each item clearly stating in narrative form, as well as "clouding" on the submissions, all qualifications, departures, or deviations from the Contract Documents. Shop Drawings, for each section of the Work shall be numbered consecutively and the numbering system shall be retained throughout all revisions. All Subcontractor submissions shall be made through the Contractor. Each drawing shall have a clear space for the stamps of Architect and Contractor. Refer to Division 1. In the case where a CM is hired on the Project, the CM may be designated to receive the Submittals for the Project, log the Submittals, and in some cases reject Submittals that do not conform to Contract requirements. Submittal Procedures for further information.

3.9.5.2 *Copies Required.*

Each Submittal shall include one (1) legible, reproducible (if electronic is available, electronic copies shall also be provided) and five (5) legible prints of each drawing or schedule, table, cut sheet, etc., including fabrication, erection, layout and setting drawings, and such other drawings as required under the various sections of the Specifications, until final acceptance thereof is obtained. Subcontractor shall submit copies, in an amount as requested by the Contractor, of: (1) manufacturers' descriptive data for materials, equipment, and fixtures, including catalog sheets showing dimensions, performance, characteristics, and capacities; (2) wiring diagrams and controls;

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(3) schedules; (4) all seismic calculations and other calculations; and (5) other pertinent information as required by the District or Architect. (See also Division 1)

3.9.5.3 *Corrections.* The Contractor shall make all corrections required by Architect, District or CM and shall resubmit, as required by Architect or CM, corrected copies of Shop Drawings or new samples until approved. Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections required by the Architect on previous submissions. Professional services required for more than one (1) re-review of required Submittals of Shop Drawings, Product Data, or samples are subject to charge to the Contractor pursuant to Article 4.5.

3.9.5.4 *Approval Prior to Commencement of Work.* No portion of the Work requiring a Shop Drawing or sample submission or other Submittal shall be commenced until the submission has been reviewed by Contractor and Architect (and CM, if applicable) and approved by Architect (and CM where applicable) unless specifically directed in writing by the Architect. All such portions of the Work shall be in accordance with approved Shop Drawings and samples.

3.9.5.5 *District's Property.* All Submittals, Shop Drawings, computer disks, BIM modeling information, clash checks, schedules, annotated Specifications, samples and other Submittals shall become the District's property upon receipt by the District or Architect.

3.9.6 Schedule Requirements for Submittals

Contractor shall obtain and shall submit all required Submittals (i.e. Shop Drawings, Deferred Approvals, Samples, etc.), in accordance with Contractor's "Schedule for Submission of Shop Drawings and Samples" as required in the scheduling portion of the General Conditions at Articles 8 and the Specifications (as long as the Specifications do not conflict with General Conditions. In the case of conflict, the conflicting provision shall be controlled by the General Conditions and the remaining Specifications sections shall be interpreted as if the general conditions language is inserted) with such promptness as to cause no delay in its own Work or in that of any other contractor or subcontractor but in no event later than thirty five (35) days after the Notice to Proceed is issued except in the specific cases noted as an exception under Article 3.7.2.1. No extensions of time will be granted to Contractor or any Subcontractor because of its failure to have Shop Drawings and samples submitted in accordance with Division 1 and the Schedule. Each Subcontractor shall submit all Shop Drawings, samples, and manufacturer's descriptive data for the review of the District, the Contractor, and the Architect through the Contractor.

3.9.6.1 *Consideration of Schedule.* Contractor has considered lead times, DSA or other agency governmental review times, Architect or Engineer review times, manufacturing seasons, and specific long lead procurement concerns for all submittals for the Project.

3.9.7 General Submittal Requirements

3.9.7.1 *Contractor Submittal Representations and Coordination.* By submitting Shop Drawings, Product Data, samples, etc., the Contractor represents that it has determined and verified all materials, field measurements, catalog numbers, related field construction criteria, and other relevant data in connection with each such submission, and that it has checked, verified, and coordinated the information contained within such Submittals with the requirements of the Work and of the Contract Documents, including the construction schedule.

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3.9.7.2 *Contractor Coordination.* Contractor shall stamp, sign, and date each Submittal indicating its representation that the Submittal meets all of the requirements of the Contract Documents and evidence Contractor's review through execution of the following stamp to be placed on each Shop Drawings:

“[Contractor] has reviewed and approved the field dimensions and the construction criteria, and has also made written notation regarding any information in the Shop Drawings and Submittals that does not conform to the Contract Documents. This Shop Drawing or Submittal has been coordinated with all other Shop Drawings and Submittals received to date by me as Contractor and this duty of coordination has not been delegated to Subcontractors, material suppliers, the Architect, or the Engineers on this Project.

Signature of Contractor and date

3.9.7.3 *No Deviation from Contract Documents.* The submission of the Shop Drawings, Product Data, samples, etc., shall not deviate from the *requirements* of the Contract Documents including detailing and design intent which is specifically outlined in Contract Documents except as specifically authorized by the Architect or through an accepted substitution pursuant to Article 3.10.4. All deviations from the Contract Documents shall be narratively described in a transmittal accompanying the Shop Drawings. However, Shop Drawings shall not be used as a means of requesting a substitution, the procedure for which is defined in Article 3.10.4, “Substitutions.”

3.9.7.4 *Contractor Responsibility for Shop Drawings Conformance to Contract Documents.* Review by District and Architect shall not relieve the Contractor or any Subcontractor from its responsibility in preparing and submitting proper Shop Drawings in accordance with the Contract Documents.

3.9.7.5 *Incomplete Submittals.* Any submission, which in Architect's opinion is incomplete, contains errors, or has been checked superficially, will be returned not reviewed by the Architect for resubmission by the Contractor. Refer to Submittal Procedures of the Specifications for additional information. The Contractor shall be responsible for any related delays and shall not be the basis for any Claim.

3.9.7.6 *Shop Drawings and Submittals Shall Not Be Used as a Method to Make a Substitution.* Shop Drawings and Submittals shall not be used as a means of requesting a substitution or to make changes in the Contract Documents. If changes are made to the Contract Documents through the Shop Drawings, the Architect shall have the right to reject the Submittal. If the Architect does not note the deviation from the approved Plans and Specifications, the Contractor is still responsible for the change and the Architect or the District may require the Shop Drawings be revised to properly reflect the approved Contract Documents. The Architect or District may also require that the Contractor bear all costs under Article 4.5 and consequential damages associated with a CCD to revise Plans and Specifications to accommodate the deviation from approved Plans and Specifications.

3.9.7.7 Extent of Review. In reviewing Shop Drawings, the Architect will not verify dimensions and field conditions. The Architect will review and approve Shop Drawings, Product Data, samples, etc., for aesthetics and for conformance with the design concept of the Work and the information in the Contract Documents. The Architect's review shall neither be construed as a complete check which relieves the Contractor, Subcontractor, manufacturer, fabricator, or supplier from responsibility for any

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deficiency that may exist or from any departures or deviations from the requirements of the Contract Documents unless the Contractor has, in writing, called the Architect's attention to the deviations at the time of submission. The Architect's review shall not relieve the Contractor or Subcontractors from responsibility for errors of any sort in Shop Drawings or schedules, for proper fitting of the Work, coordination of the differing Subcontractor trades and Shop Drawings and Work which is not indicated on the Shop Drawings at the time of submission of Shop Drawings. Contractor and Subcontractors shall be solely responsible for any quantities which may be shown on the Submittals or Contract Documents.

3.10 SUBSTITUTIONS

3.10.1 Definition

A Substitution is a change in product, material, equipment, or method of construction from those required by the Construction Documents proposed by the Contractor. For this Project, a Substitution is subject to the filing of a Construction Substitution Request Form at the time of bid and meeting the requirements of this Article.

3.10.2 One Product Specified

Unless the Specifications state that no substitution is permitted, whenever the Contract Documents indicate any specific article, device, equipment, product, material, fixture, patented process, form, method, or type of construction or any specific name, make, trade name, or catalog number, with or without the words "or equal," such specification shall be deemed to be used for the purpose of facilitating description of the material, process, or article desired and shall be deemed to be followed by the words "or equal." Subject to the requirements of properly submitting a Substitution Request for as Addressed in Article 3.10.4, the Contractor may, unless otherwise stated, offer any material, process, article, etc., which shall be materially equal or better in every respect to that so indicated or specified ("Specified Item") and will completely accomplish the purpose of the Contract Documents.

3.10.3 Products Specified Which Are Commercially Unavailable

If the Contractor fails to make a request for substitutions for products, prior to the submission of its bid, and such products subsequently become commercially unavailable, the Contractor may request a substitution for such commercially unavailable item. The decision to grant this request is solely at the District's discretion. The written approval of the District, consistent with the procedure for Change Orders, shall be required for the use of a proposed substitute material. The District may condition its approval of the substitution upon the delivery to District of an extended warranty or other assurances of adequate performance of the substitution as well as an equitable deduction in the Contract Price should the substituted item cost less than the Specified Item. All risks of delay due the approval of a requested substitution by the DSA, or any other governmental agency having jurisdiction, shall be on the requesting party. All additional costs, DSA review costs, all procurement and construction delays, and all costs for review by the Architect or its consultants shall be the responsibility of the Contractor and will be deducted from Contractor's pay request.

3.10.4 Substitution Request Form

Requests for substitutions of products, materials, or processes in place of a Specified Item must be in writing on the District's Substitution Request Form ("Request Form") at the time of submitting bids to the District, except as provided for in Article 3.10.3.

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The Request Form must be accompanied by evidence as to whether the proposed substitution:

- a. Is equal in quality/service/ability to the Specified Item;
- b. Will entail no changes in detail, construction, and scheduling of related work;
- c. Will be acceptable in consideration of the required design and artistic effect;
- d. Will provide no cost disadvantage to the District;
- e. Will require no excessive or more expensive maintenance, including adequacy and availability of replacement parts; and
- f. Will required no change of the construction schedule.

In completing the Request Form, the bidder must state, with respect to each requested substitution, whether the bidder will agree to provide the Specified Item in the event that the District denies the bidder's request for such requested substitution. In the event that the bidder has agreed in the Request Form to provide the Specified Item and the District denies the bidder's requested substitution for a Specified Item, the bidder shall provide the Specified Item without any additional cost or charge to the District.

After bids are opened, the apparent lowest bidder shall provide, within five (5) days of opening such bids, any and all Drawing, Specifications, samples, performance data, calculations, and other information, as may be required to assist the Architect, CM and the District in determining whether the proposed substitution is acceptable. The burden of establishing these facts shall be upon the bidder.

After the District's receipt of such evidence by the bidder, the District will make its final decision as to whether the bidder's request for substitution for any Specified Items will be granted. The decision as to whether a proposed request for substitution is equal to a Specified Item shall be at the sole discretion of the District. Any request for substitution that is granted by the District shall be documented and processed through a Change Order. Contractor must submit a complete Submittal of the requested substitution and a Shop Drawing showing configuration, dimensions, and other critical information associated with the substitution that meets the requirements of Article 3.9. The District may condition its approval of any substitution upon delivery to the District of an extended warranty or other assurances of adequate performance of the substitution. Any and all risks of delay due to approval by the DSA or any other governmental agency having jurisdiction shall be on the bidder.

If the Architect and District accept a proposed substitution, the Contractor agrees to pay for all DSA review costs, engineering and design services, including, without limitation, compensation to the Architect and affected engineers for their required time to process such substitution through the Division of the State Architect, if required, and to make all changes and adjustments in materials or the work of all trades directly or indirectly affected by the substituted item or items at no cost to the District.

3.10.5 Substitution Requests After Bid

The District, in its sole discretion, may accept a request for substitution by the Contractor or may request Contractor substitute a specified item. Any substitutions requested after bids are opened shall be subject to the same conditions and requirements set forth in Article 3.10.4 above. If any

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substitutions, that in the District or Architect's determination, results in a credit to the District, the credit amount shall be agreed upon in writing, otherwise, the request for substitution shall be deemed denied.

3.11 INTEGRATION OF WORK

3.11.1 Scope

The Contractor shall be responsible for cutting, fitting, or patching to complete the Work and to make all parts fit together properly. Contractor shall be responsible for ensuring that all trades are coordinated and scheduled so as to ensure the timely and proper execution of the work. When modifying existing work or installing new Work adjacent to existing work, Contractor shall match, as closely as conditions of Site and materials will allow, the finishes, textures, and colors of the original work, refinishing existing work at no additional cost to District. All cost caused by defective or ill-timed work shall be borne by Contractor. Contractor shall be solely responsible for protecting existing work on adjacent properties and shall obtain all required permits for shoring and excavations near property lines.

3.11.2 Structural Members

New or existing structural members and elements, including reinforcing bars and seismic bracing, shall not be cut, bored, or drilled except by written authority of the Architect. Work done contrary to such authority is at the Contractor's risk and subject to replacement at its own expense without reimbursement under the Contract. Schedule delays resulting from Agency approvals for unauthorized work shall be the Contractor's responsibility.

3.11.3 Subsequent Removal

Permission to patch any areas or items of the Work shall not constitute a waiver of the District's or the Architect's right to require complete removal and replacement of the areas or items of the Work if, in the opinion of the Architect or the District, the patching does not satisfactorily restore quality and appearance of the Work or does not otherwise conform to the Contract Documents.

3.12 CLEANING UP

3.12.1 Contractor's Responsibility to Clean Up

Contractor at all times shall keep premises free from debris such as waste, dust, excess water, storm water runoffs, rubbish, and excess materials and equipment. Contractor shall not leave debris under, in, or about the premises, but shall promptly remove same from the premises and dispose of it in a lawful manner. Disposal receipts or dump tickets shall be furnished to the Architect within five (5) days of request.

Contractor shall remove rubbish and debris resulting from the Work on a daily basis. Contractor shall maintain the structures and Site in a clean and orderly condition at all times until acceptance of the Project by the District. Contractor shall keep its access driveways and adjacent streets, sidewalks, gutters and drains free of rubbish, debris and excess water by cleaning and removal each day. All concrete, sidewalks, and paths of travel shall be broom cleaned daily.

3.12.2 General Final Clean-Up

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Upon completion of Work, Contractor shall employ experience workers or professional cleaners for final cleaning. Contractor shall clean each surface to the condition expected in a normal, commercial, building cleaning and maintenance program including, but not limited to, the performed of the following:

- a. Clean interior and exterior of buildings, including fixtures, equipment, walls, floors, ceilings, roofs, window sills and ledges, horizontal projections, and any areas where debris has collected, so surfaces are free from foreign material or discoloration;
- b. Clean the Project site. The grounds should be cleared of any Contractor equipment, raked clean of debris and trash removed. Sweep paved areas broom clean;
- c. Repair or replace any damaged materials. Replace any chipped or broken glass;
- d. Remove any and all stains;
- e. Remove labels that aren't permanent labels;
- f. Clean and polish all glass, plumbing fixtures, equipment, finish hardware and similar finish surfaces. Remove any glazing compounds;
- g. Remove temporary utilities, fencing, barricades, planking, sanitary facilities and similar temporary facilities from Site;
- h. Remove temporary film that remains on any hardware, doors or other surfaces; and
- i. Seal the bottom and tops of all doors.

3.12.3 Special Clean-Up.

In addition to the general cleaning, the following special cleaning shall be done at the completion of the Work in accordance with the Specifications including, but not limited to:

- a. Remove putty stains from glazing, then wash and polish glazing;
- b. Remove marks, stains, fingerprints and other soil or dirt from painted, stained or decorated work;
- c. Remove temporary protection and clean and polish floors and waxed surfaces;
- d. Clean and polish hardware and plumbing trim; remove stains, dust, dirt, plaster and paint;
- e. Wipe surfaces of mechanical and electrical equipment;
- f. Remove spots, soil, plaster and paint from tile work, and wash tile;

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- g. Clean all fixtures and equipment, remove excess lubrication, clean light fixtures and lamps, polish metal surfaces;
- h. Vacuum-clean carpeted surfaces; and
- i. Remove debris from roofs, down spout and drainage system.

3.12.4 Failure to Cleanup

If the Contractor fails to clean up as provided in the Contract Documents, the District may do so, and the cost thereof shall be the responsibility of the Contractor pursuant to Article 2.2 and seek a Deductive Change Order.

3.13 ACCESS TO WORK

The Contractor shall provide the District, the Architect, Engineers and the Inspector of Record, access to the Work in preparation and progress wherever located. Contractor shall provide safe and proper facilities for such access so that District's representatives may perform their functions.

CONTRACTOR IS AWARE THAT THIS CONTRACT MAY BE SPLIT INTO SEVERAL PHASES AS ADDRESSED IN ARTICLE 6.

3.13.1 Special Inspection, Inspections or Tests Out of State, Out of Country or Remote from Project

If Contractor has a Subcontractor or supplier that requires in plant or special inspections or inspections or tests that are out of the country, out of the state, or a distance of more than 200 miles from the Project site, the Special Inspector or Inspector shall be provided access so the special inspection or inspection may occur in the remote location. In some cases, the DSA Inspector may also require access in addition to Special Inspectors and individuals performing tests. Inspections/tests shall occur during normal work hours. (See also Article 4.3.6)

3.14 ROYALTIES AND PATENTS

3.14.1 Payment and Indemnity for Infringement

Contractor shall hold and save the District and its officers, agents, and employees, the Construction Manager, the Architect, and the Architect's consultants harmless from liability of any nature or kind, including cost and expense, for or on account of any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the District, unless otherwise specifically provided in the Contract Documents, and unless such liability arises from the sole negligence, or active negligence, or willful misconduct of the District, the Architect, or the Architect's consultants.

3.14.2 Review

The review by the Architect of any method of construction, invention, appliance, process, article, device, or material of any kind shall be for its adequacy for the Work and shall not be an approval for the use by the Contractor in violation of any patent or other rights of any person or entity.

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3.15 INDEMNIFICATION

3.15.1 Contractor

See Agreement Form. Contractor shall ensure that its contract with each of its Subcontractors contains provisions requiring the Subcontractors to defend, indemnify and hold harmless the District, Architect, Inspector, the State of California to a minimum level as set forth in this Article and consistent with the indemnity and hold harmless language in the Agreement Form.

The Contractor's and Subcontractors' obligation to defend, indemnify and hold harmless the District, Architect, Inspector, the State of California and their officers, employees, agents and independent contractors hereunder shall include, without limitation, any and all claims, damages, and costs for the following: (1) any damages or injury to or death of any person, and damage or injury to, loss (including theft), or loss of use of, any property; (2) breach of any warranty, express or implied; (3) failure of the Contractor or Subcontractors to comply with any applicable governmental law, rule, regulation, or other requirement; (4) products installed in or used in connection with the Work; and (5) any claims of violation of the Americans with Disabilities Act ("ADA")

3.16 SUBMISSION OF DAILY REPORTS

3.16.1 General

By 10:00 a.m. on the following business day, the Contractor shall submit a Daily Report to the Inspector and copy the Architect for the previous day's Work. If there is a Construction Manager, the original Daily Report is to be provided to the Construction Manager and copies sent to the Architect and the Inspector. Daily Reports shall be prepared on forms approved by the District, together with applicable delivery tickets, listing all labor, materials, and equipment involved for that day. The District reserves the right to note inconsistencies or inaccuracies in the Daily Reports. In such cases, pertinent notes shall be entered by each party to explain points which cannot be resolved that day. Each party shall retain a signed copy of the report. Daily Reports by Subcontractors or others shall be submitted through the Contractor.

3.16.2 Labor

The Daily Report shall show names of workers, classifications, hours worked and hourly rate. The locations where work occurred shall also be identified in the Daily Report. Project superintendent expenses are not allowed.

3.16.3 Materials

The Daily Report required shall describe and list quantities of materials used and unit costs.

3.16.4 Equipment

The Daily Report required shall show type of equipment, size, identification number, and hours of operation, including loading and transportation, if applicable, and hourly/daily cost. Move-on and move-off fees shall be noted.

3.16.5 Other Services and Expenditures

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Other services and expenditures shall be described in the Daily Report in detail as the District requires.

3.16.6 Failure to Submit Daily Report

If Contractor does not submit its Daily Report by 10 am the next business day, the Inspector of Record shall prepare a Daily Report addressing each of the above items. The cost for the Inspector's services to prepare the Daily Report shall be addressed through a Deductive Change Order under Article 7.7.4.

3.17 AS-BUILT DRAWINGS AND ANNOTATED SPECIFICATIONS

Throughout the duration of the Project, Contractor shall maintain on a current basis an accurate and complete set of As-Built Drawings (and Annotated Specifications) clearly showing all changes, revisions to Specifications and substitutions during construction, including, without limitation, field changes and the final location of all electrical and mechanical equipment, utility lines, ducts, outlets, structural members, walls, partitions, and other significant features. In case a Specification allows Contractor to elect one of several brands, makes, or types of material or equipment, the annotations shall show which of the allowable items the Contractor has furnished. The Contractor will update the As-Built Drawings and Annotated Specifications as often as necessary to keep them current, but no less often than weekly.

Contractor shall update As-Built Drawings with complete information on an area of Work at or near the time when the Work is being performed and prior to any DSA 152 sign off and prior to any Work being covered.

The As-Built Drawings and Annotated Specifications shall be kept at the Site and available for review and inspection by the District and the Architect. Failure to maintain and update the As-Built Drawings is a basis to withhold Progress Payments pursuant to Article 9.6.

3.17.1 Upon Beneficial Occupancy

Contractor shall obtain and pay for reproducible Plans upon Beneficial Occupancy. Contractor shall deliver Plans to District Representative (Construction Manager if one is hired for the Project).

3.17.2 As-Built at Completion of Work

Upon completion of the Work and prior to and as a condition precedent to Application for Retention Payment, the Contractor will provide one neatly prepared and complete set of As-Built Drawings and Annotated Specifications to the District. Contractor shall certify the As-Built as a complete and accurate reflection of the actual construction conditions of the Work by affixing a stamp indicating the Drawings are As-Built and certifying accuracy on the final set of As-Built. Failure to deliver a complete As-Built set of Drawings may result in significant withholdings to ensure Work is properly documented. (See Article 9.9.2)

3.17.3 Log of Control and Survey Documentation

Contractor shall complete and maintain an accurate log or all control and survey documentation for the Project as the Work progresses. All reference and control points shall be recorded

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on the As-Built Drawings. The basis of elevations shall be one of the established benchmarks that must be maintained on the As-Built.

3.17.4 Record Coordinates for Key Items

Contractor shall record, by coordinates, all utilities on-site with top of pipe elevations, major grade and alignment changes, rim, grate or top of curb and flow line elevations of all drainage structures and sewer manholes. Contractor shall update record information at or near the time when work is occurring in an area and prior to DSA 152 sign off on any category of Work and prior to covering the Work.

3.17.5 BIM As-Built Drawings

If BIM is utilized for the Project, then an electronic version of such As-Built Drawings and Annotated Specifications will be delivered to District (in an acceptable format to District).

3.18 EQUIPMENT MANUALS

Contractor shall obtain and furnish three (3) complete sets of manuals containing the manufacturers' instructions for maintenance and operation of each item of equipment and apparatus furnished under the Contract Documents and any additional data specifically requested under the various sections of the Specifications for each division of the Work. The manuals shall be arranged in logical, sequential order, labeled, indexed, and placed in three-ring binders. At the completion of its Work, the Contractor shall certify, by endorsement thereon, that each of the manuals is complete, accurate, and covers all of its Work. Prior to submittal of Contractor's Application for Retention Payment, and as a further condition to its approval by the Architect, each Subcontractor shall deliver the manuals, arranged in logical, sequential order, labeled, indexed, endorsed, and placed in three-ring binders, to the Contractor, who shall assemble these manuals for all divisions of the Work, review them for completeness, and submit them to the District through the Architect.

3.19 DIR REGISTRATION

Strict compliance with all DIR registration requirements in accordance with Labor Code sections 1725.5 and 1771.1 is a material obligation of the Contractor and all of its subcontractors (of any tier) under the Contract Documents. The foregoing includes, without limitation, compliance with DIR registration requirements at all times during performance of the Work by the Contractor and all of its subcontractors of any tier. The failure of the Contractor and all subcontractors of any tier to be properly registered with DIR at all times during performance of the Work is a material breach of the Contract and subject to termination for cause.

An affirmative and ongoing obligation of the Contractor under the Contract Documents is the verification that all subcontractors of any tier are at all times during performance of the Work are in full and strict compliance with the DIR registration requirements. The Contractor shall not permit or allow any subcontractor of any tier to perform any Work without the Contractor's verification that all subcontractors are in full and strict compliance with the DIR registration requirements. Any subcontractors of any tier not properly registered with DIR shall be substituted in accordance with Labor Code section 1771.1. Contractor or its subcontractors of any tier shall not be entitled to any additional costs or time arising from or in any way related to compliance with the DIR registration requirements.

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ARTICLE 4 ADMINISTRATION OF THE CONTRACT AND CLAIMS

4.1 ARCHITECT

4.1.1 Replacement of Architect

In the case of the termination of the Architect, the District may appoint an Architect or another construction professional or may perform such functions with its own licensed professional personnel. The status of the replacement Architect under the Contract Documents shall be the same as that of the former Architect.

4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

4.2.1 Status

Pursuant to Titles 2 of the California Code of Regulations and as required pursuant to the Field Act, Education Code 17280 et seq., the Architect will provide administration of the Contract Documents and the Work, and will be the District's representative during construction, as well as during the one (1) year period following the commencement of any warranties. The Architect will have authority to act on behalf of the District only to the extent provided in the Contract Documents.

4.2.2 Site Visits

The Architect will visit the Site at intervals necessary in the judgment of the Architect to become generally familiar with the progress and quality of the Work and to determine in general if the Work is being performed in accordance with the Contract Documents and as otherwise required by DSA.

4.2.3 Limitations of Construction Responsibility

The Architect, District and CM shall not have control over, charge of, or be responsible for construction means, methods, techniques, schedules, sequences or procedures, fabrication, procurement, shipment, delivery, receipt, installation, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility under the Contract Documents. The Architect, District and CM shall not be responsible for the Contractor's, Subcontractors', material or equipment suppliers', or any other person's schedules or failure to carry out the Work in accordance with the Contract Documents. The Architect, District and CM shall not have control over or charge of acts or omissions of the Contractor, Subcontractors, their agents or employees, or any other persons or entities performing or supplying portions of the Work. The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect, District or CM in the Architect, District or CM's administration of the Contract Documents, or by tests, inspections, or approvals required or performed by persons other than the Contractor.

4.2.4 Communications Facilitating Contract Administration

Except where a CM is on the Project, or as otherwise provided in the Contract Documents or when direct communications are warranted by special circumstances, the District and the Contractor shall communicate through the Architect. In the cases where a CM is hired for the Project, all

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communication shall be through the CM (unless otherwise directed) with copies to the District, Architect and Inspector. Where direct communication is necessary between the District and the Contractor, the District's communication shall be through the District's authorized designated person. The Architect and CM shall be promptly informed, and shall receive copies of all written communications. Contractor shall not rely upon any communications from the District that is not from the District's Representative. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material or equipment suppliers shall be through the Contractor. In the case where a CM is hired for the Project, the CM shall be the main point of contact for communication of information. Copies should be sent to the Architect, District Representative and Inspector.

4.2.5 Payment Applications

The Architect will review and make recommendations to the District regarding the amounts due the Contractor on the Certificates for Payment pursuant to Article 9.3.4 and subject to the Inspector's review, (CM review, if applicable) and Architect's observation. This review of Payment Applications is sometimes called a "Pencil Draft." Return of a Pencil Draft shall constitute the District's dispute of the Payment Application that has been submitted. Contractor shall promptly respond to Pencil Drafts or Contractor's Payment Applications may be delayed. Contractor's failure to promptly respond to a Pencil Draft shall qualify as a delay in the Prompt Payment of a Request for Payment or Request for Retention.

4.2.6 Rejection of Work

In addition to the rights, duties, and obligations of the Inspector under this Article, the Architect may recommend to the District that the District reject Work which does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable to achieve the intent of the Contract Documents, the Architect (and/or CM) may recommend to the District that the District require additional inspection or testing of the Work in accordance with Article 13.5, whether or not such Work is Fabricated, installed, or completed. District may have Non-conforming Work removed and replaced pursuant to Article 9.7. However, neither this authority of the Architect (or CM) nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect (or CM) to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing portions of the Work.

Contractor shall, without charge, replace or correct Work found by the District to not be in conformance to Contract requirements. Contractor shall promptly segregate and remove rejected materials from the Project site.

This section is does not address a Notice of Non-Compliance and the remedies associated with a Notice of Non-Compliance which are addressed at Article 7.1.2

4.2.7 Warranties upon Completion

The Architect (and where applicable CM), in conjunction with the Inspector will conduct field reviews of the Work to determine the date of Substantial Completion and of Final Completion, shall receive and forward to the District for the District's review written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment when the Architect believes the Work has been completed in compliance with the requirements of the Contract Documents (See Article 9.11 for Close-Out). The handling by the Architect (or where applicable CM) of such warranties, maintenance manuals, or similar documents shall not diminish or transfer to the

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Architect any responsibilities or liabilities required by the Contract Documents of the Contractor or other entities, parties, or persons performing or supplying the Work.

On some Projects, the District will take a phased occupancy of the Project. In those cases, the District may commence the running of warranties on the buildings, or phases that are accepted after Punch List is completed and the District has accepted Completion of the separate phase. A separate Notice of Completion may be filed for the separate building or phase of work and warranties shall commence for the separate phase only to the extent that warranties do not require coordination or connection to other buildings or other parts of the site and only if the warranted item is completed to its entirety in the segregated building or phased area.

If written warranties are not provided at the time the Punch List is nearing completion, Architect (with recommendations from the CM and Inspector) shall determine the dollar value of the warranties and shall make recommendation for withholdings necessary to effectuate the transfer of such warranties to the District for future use as part of the Punch List for the Project pursuant to Article 9.6.

Warranties are not commenced through utilizing of equipment for testing and operation as necessary to acclimate buildings or where necessary to test systems.

4.2.8 Interpretation

The Architect will interpret and decide matters concerning performance and requirements of the Contract Documents. Architect shall make clarifications as necessary to interpret the Contract Documents.

4.3 PROJECT INSPECTOR

4.3.1 General

One or more Project Inspectors employed by the District and approved by the Division of the State Architect will be assigned to the Work in accordance with the requirements of Title 24 of the California Code of Regulations. The Inspector(s) duties are as specifically defined in Title 24 Section 4-333 and 4-342 and in DSA IR A-8.

4.3.2 Inspector's Duties and DSA Noted Timelines for Inspection

All Work shall be under the observation of the Inspector. Contractor shall establish a protocol for requesting inspection with Inspector so as to not delay the Work and provide adequate time for the Inspector to perform inspection. If such a protocol is not established ahead of time, Inspector may utilize the time criteria set by Title 24 of 48 hours in advance of submitting form DSA 156 for each new area. The Inspector shall have free access to any or all parts of the Work at any time. The Contractor shall furnish the Inspector such information as may be necessary to keep the Inspector fully informed regarding progress and manner of Work and character of materials. Such observations shall not, in any way, relieve the Contractor from responsibility for full compliance with all terms and conditions of the Contract, or be construed to lessen to any degree the Contractor's responsibility for providing efficient and capable superintendence. The Inspector is not authorized to make changes in the Drawings or Specifications nor shall the Inspector's approval of the Work and methods relieve the Contractor of responsibility for the correction of subsequently discovered defects, or from its obligation to comply with the Contract Documents.

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Inspector shall electronically post DSA required documents on the DSA electronic posting website. It is the Contractor's responsibility to determine the status of posting and determine if all the criteria for sign off of a category of Work on the Project Inspection Card (Form DSA 152) as defined more thoroughly in the most current version of the DSA 152 manual posted on the DSA website.

Inspector may collaborate with Contractor about approval of areas that may be constructed and approved incrementally under the DSA 152 card pursuant to the guidelines of PR-13 at Article 1.17. Inspector shall work with Contractor to present incremental approval proposals to DSA.

4.3.3 Inspector's Authority to Reject or Stop Work

The Inspector shall have the authority to reject Work whenever provisions of the Contract Documents are not being complied with, and Contractor shall instruct its Subcontractors and employees accordingly. In addition, the Inspector may stop any Work that poses a probable risk of harm to persons or property. The Contractor shall instruct its employees, Subcontractors, material and equipment suppliers, etc., accordingly. The absence of any Stop Work Order or rejection of any portion of the Work shall not relieve the Contractor from any of its obligations pursuant to the Contract Documents.

4.3.4 Inspector's Facilities

Within seven (7) days after the notice to proceed, the Contractor shall provide the Inspector with the temporary facilities as required. More specific requirements for the Inspector facilities may be further described under Division 1 of the Specifications.

4.3.5 Testing Times

The District will provide inspection and testing at its cost during the normal eight (8) hour day Monday through Friday (except holidays). Work by the Contractor outside of the normal eight (8) hour day shall constitute an authorization from the Contractor to the District to provide inspection and testing as required outside of the normal eight (8) hour day. Contractor shall provide adequate time for inspections so as to not delay the Work. An advanced timing protocol may be established pursuant to Article 4.3.2. If the Contractor is behind Schedule then it is incumbent on the Contractor to provide advance forecast through look ahead of the anticipated date for inspection so the Inspector may plan their activities so as to not delay the Project. Contractor shall reimburse District for any additional costs associated with inspection and testing (including re-inspection and re-testing) outside the normal eight-hour day and for any retests caused by the Contractor.

It is the Contractor's responsibility to request special inspections with sufficient time so all testing may be timely completed and posted so work may proceed and the Inspector's signature is attached to the Project Inspection Card (Form 152). Specifically, timely request for special inspection under the DSA Verified Report Forms 291 (laboratory), DSA Verified Report Form 292 (Special Inspection), and DSA Verified Report 293 (geotechnical) since DSA requirements under PR 13-01 specifically gives the Special Inspections 14 days to post to the DSA website. Failure to plan and pay (if applicable) for quicker delivery of Special Inspections may be counted as Float, but is not considered Governmental Delay Float under Article 8.1.4.

4.3.6 Special Inspections, Inspections or Tests Out of State, Out of Country or Remote from Project

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If Contractor has a Subcontractor or supplier that requires in plant or special inspections, inspections or tests that are out of the country, out of the state or a distance of more than 200 miles from the Project Site, the District shall provide the Special Inspector or individual performing tests time for inspection and testing during normal work hours. Contractor, however, is responsible for the cost of travel, housing, food, out of area premiums that may be in the Inspector/Testing Agreement with District, or other expenses necessary to ensure proper inspection, special inspection or testing is provided by a DSA Certified Inspector, Special Inspector, or individual performing tests. In some cases all three (DSA Inspector, Special Inspector, and Tester) may be required. In addition, if the DSA Certified Inspector, Special Inspector, or individual performing test has contractual travel clauses or special rates for out of town inspection, Contractor is responsible for all costs associated with the contractual travel costs in addition to all other costs. Arrangements for inspection and/or testing shall be made far enough in advance so as to not delay the Work.

4.4 STOP WORK ORDER

DSA may issue a Stop Work Order, or an Order to Comply, when either (1) the Work proceeds without DSA approval; (2) the Work proceeds without a DSA Inspector of Record, or (3) where DSA determines that the Work is not being performed in accordance with applicable rules and regulations, and would compromise the structural integrity of the Project or would endanger lives. If a Stop Work Order is issued, the Work in the affected area shall cease until DSA withdraws the Stop Work Order. Pursuant to Education Code section 17307.5(b), the District shall not be held liable in any action filed against the District for any delays caused by compliance with the Stop Work Order, except to the extent that an error or omission by the District is the basis for the issuance of the Stop Work Order.

Examples of Stop Work Orders that may be issued by DSA include DSA Bulletin 07-04 and Policy 10-01, the installation of automatic fire sprinkler systems without approved Plans, covering Work that has not been approved by Inspector on DSA Project Inspection Card (Form 152).

4.5 RESPONSIBILITY FOR ADDITIONAL CHARGES INCURRED BY THE DISTRICT FOR PROFESSIONAL SERVICES

If at any time prior to the completion of the requirements under the Contract Documents, the District is required to provide or secure additional professional services (including CM, Inspection, Architect, Engineering and Special Consultant Services) for any reason by any act of the Contractor, the District may seek a Deductive Change Order for any costs incurred for any such additional services, which costs shall be deducted from the next progress payment. A Deductive Change Order shall be independent from any other District remedies and shall not be considered a waiver of any District rights or remedies. If payments then or thereafter due to the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the District. Additional services shall include, but shall not be limited to, the following:

- a. Services made necessary by the default of the Contractor (Article 14 or Article 2.2).
- b. Services made necessary due to the defects or deficiencies in the Work of the Contractor (Article 2.2 and Article 9.6).
- c. Spurious or frivolous RFI's issued that do not conform to the requirements of Article 7.4. Issuance of the same RFI after receiving an answer from the Architect or Engineer

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- d. Review of Schedules that are provided by Contractor that do not Conform with the Requirements of Article 8.
- e. Preparation of a CCD or ICD to correct a Contractor Deficiency, or Contractor Caused Notice of Non-Compliance (See Article 7.3).
- f. Review of Incomplete Shop Drawings or Submittals, including the submission of Piecemeal Shop Drawings or Submittals unless piecemeal Submittals are specifically agreed upon by District (See Article 3.9)
- g. Services required by failure of the Contractor to perform according to any provision of the Contract Documents.
- h. Services in connection with evaluating substitutions of products, materials, equipment, Subcontractors' proposed by the Contractor, and making subsequent revisions to Drawings, Specifications, obtaining DSA approvals, DSA costs for review of CCD's, other governmental agency review costs, and providing other documentation required (except for the situation where the specified item is no longer manufactured or available). (See Article 3.10)
- i. Services for evaluating and processing Claims or Disputes submitted by the Contractor in connection with the Work outside the established Change Order process.
- j. Services required by the failure of the Contractor to prosecute the Work in a timely manner in compliance within the specified time of completion.
- k. Services in conjunction with the testing, adjusting, balancing and start-up of equipment other than the normal amount customarily associated for the type of Work involved.
- l. Services in conjunction with more than one (1) re-review of Submittals of Shop Drawings, Product Data, samples, RFI's etc.

4.6 DISPUTES AND CLAIMS

4.6.1 Decision of Architect

"Disputes" or "Claims" as defined in Article 4.6.9.1 between District and Contractor involving money or time, including those alleging an error or omission by the Architect shall be referred initially to the Architect for action as provided in Article 4.6.2 within ten (10) days after Contractor's Article 7 request for Change is denied. If there is a CM, the CM shall receive the Dispute and may review and also assemble opinions and documents to assist the Architect. A decision by the Architect, as provided in Article 4.6.5, shall be required as a condition precedent to proceeding with remedies set forth in Article 4.6.9 as to all such matters arising prior to the date Retention Payment Application is due, regardless of whether such matters relate to execution and progress of the Work, or the extent to which the Work has reached Final Completion.

The condition precedent of an Architect decision shall be waived if: (1) the position of Architect is vacant; (2) the Architect has failed to take action required under Article 4.6.5 within the time

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periods required therein; or (3) the Dispute or Claim relates to a stop notice claim not arising from any extra Change Order or Immediate Change Directive for which approval has not been provided.

4.6.2 Architect's Review

The Architect (and CM) will review the Dispute and take one or more of the following preliminary actions upon receipt of a Dispute: (1) request additional supporting data from the claimant; (2) submit a schedule to the parties indicating when the Architect expects to take action; (3) reject the Dispute in whole or in part, stating reasons for rejection; (4) recommend approval of the Dispute; or (5) suggest a compromise. The Architect may also, but is not obligated to, notify the Surety, if any, of the nature and amount of the Dispute.

4.6.2.1 *Architectural Immunity.* Architect review of Disputes and Claims shall be impartial and meant to resolve Disputes and Claims. Pursuant to the case, Huber, Hunt & Nichols, Inc. v. Moore (1977) 67 Cal.App.3d 278, the Architect is provided a quasi-judicial immunity for interpreting and deciding Disputes and Claims between the District and Contractor.

4.6.3 Documentation if Resolved

If a Dispute has been resolved, the Architect (and/or CM) will prepare a Change Order or obtain appropriate documentation to document the terms for Board approval.

4.6.4 Actions if Not Resolved

If a Dispute has not been resolved and all documentation requested pursuant to Article 4.6.2 has been provided, the Contractor shall, within ten (10) days after the Architect's initial response, assemble all the documents involved in the Dispute including copies of all back-up documentation of costs and the basis for the Dispute and take one or more of the following actions: (1) modify the initial Dispute; (2) notify the Architect that the initial Dispute stands; or (3) supplement with additional supporting data and re-submit to the Architect under Article 4.6.2.

4.6.5 Architect's Written Decision

If a Dispute has not been resolved after consideration of the foregoing and of other evidence presented by the parties or requested by the Architect, the Architect (or Architect through CM) shall provide a written decision twenty (20) days after compliance with Article 4.6.4. Upon expiration of such time period, the Architect (or Architect through CM) will render to the parties its written decision relative to the Dispute, including any change in the Contract Sum or Contract Time or both. The Architect may also request reasonable additional time to complete Architect's written decision.

If the resolution of the Dispute by the Architect is not satisfactory to the Contractor and copies of all back-up documentation of costs and the basis for the Dispute is fully articulated in a package of material that is complete, the Contractor may then submit a Claim to the District under Article 4.6.9.

4.6.6 Continuing Contract Performance

Pending final resolution of a Dispute or Claim, including, negotiation, mediation, arbitration, or litigation, the Contractor shall proceed diligently with performance of the Contract, and the District shall continue to make any undisputed payments in accordance with the Contract (less any

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withholdings or offsets). If the Claim is not resolved, Contractor agrees it will neither rescind the Contract nor stop the progress of the work, but Contractor's sole remedy shall be to submit such controversy to determination by a court of competent jurisdiction in the county where the Project is located, after the Project has been completed, and not before.

4.6.6.1 *District's Option to Submit Individual Disputes to Arbitration during Claims and Disputes Process.* At the District's sole option, in order to more efficiently resolve Claims during the Project and prior to the completion of the Claims Process, pursuant to Government Code section 9201, the District may submit individual Disputes or Claims for binding arbitration and Contractor agrees to the resolution of for each individual Dispute or Claim by an Arbitrator, including resolution of time and delays. If binding arbitration is utilized for individual Disputes or Claims, such resolution is full and final as to that particular Dispute or Claim. THIS INDIVIDUAL DISPUTE ARBITRATION PROCESS IS NOT AN ARBITRATION CLAUSE AND SHALL NOT BE CONSTRUED AS AN AGREEMENT TO ARBITRATE. THIS INDIVIDUAL DISPUTES ARBITRATION PROCESS IS FOR THE SOLE PURPOSE OF STREAMLINING AND RESOLVING DISPUTES OR CLAIMS DURING CONSTRUCTION AND SHALL BE REQUESTED ON SPECIFIC INDIVIDUAL ITEMS BY THE DISTRICT PRIOR TO RETENTION PAYMENT (EVEN IF THERE ARE DEDUCTIONS MADE FROM RETENTION PAYMENT) WHICH REPRESENTS THE FINAL COMPLETION OF THE PROJECT.

- a. If there is no Retention remaining on the Project, individual Disputes initiated prior to Project Final Completion shall continue until a final disposition of the Arbitration or resolution of the individual Claim or Dispute.
- b. No Tolling. The Arbitration process shall not toll the Disputes or Claims process under Article 4.6 or the requirement to submit Claims to Court under Article 4.6.9.5.

4.6.7 Claims for Concealed Trenches or Excavations Greater Than Four Feet Below the Surface

When any excavation or trenching extends greater than four feet below the surface or if any condition involving hazardous substances are encountered:

- a. Immediately upon discovery, The Contractor shall promptly, and before the following conditions are disturbed, notify the District, by telephone and in writing, of the condition except:
 1. If such condition is a hazardous waste condition, Contractor's bid includes removal or disposal of hazardous substances. Material that the Contractor believes may be a material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, is required to be removed to a Class I, Class II, or Class III disposal site in accordance with the provisions of existing law. In such case, the notice bulletin procedures of Article 7 apply.

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2. Subsurface or latent physical conditions at the Site differing from those indicated in the Drawings, Specifications, Soils Report, and from Contractor's own investigation under Article 2.1.
 3. Unknown physical conditions at the Site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in Work of the character provided for in the Contract.
- b. The District shall investigate the conditions, and if District finds that the conditions do materially so differ, do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the Work shall issue a Change Order or Construction Change Document under the procedures described in the Contract.
 - c. In the event that a dispute arises between the public entity or District and the Contractor whether the conditions materially differ, involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the Work, the Contractor shall not be excused from any scheduled Completion Date provided for by the Contract, but shall proceed with all Work to be performed under the Contract. The Contractor shall retain any and all rights provided either by Contract or by law which pertain to the resolution of disputes and protests between the contracting parties.

4.6.8 Dispute Concerning Extension of Time.

If Contractor and District cannot agree upon an extension of time, whether compensable or not, then Contractor must have first completed the procedures set forth in Article 8.4. Upon completion of the procedures set forth under Article 8.4, Contractor must then comply with the requirements in this Article including those set forth under Article 4.6.9.

4.6.9 Claims Procedures

Pursuant to the remedies under Public Contract Code section 9201 and Government Code section 930.2, Contractor, through execution of this Agreement, also agrees to comply with the Claims requirements of Article 4.6 to quickly and efficiently resolve Disputes and Claims. Further, to provide a level of accuracy to the records submitted, the District shall have the right to audit books and records pursuant to Article 13.11 based on the actual costs incurred and to reduce the uncertainty in resolving Disputes and Claims with limited information.

4.6.9.1 *Procedure Applicable to All Claims*

- a. Definition of Claim: A "Claim" is where a Dispute between the parties rises to the level where backup documentation is assembled and provided to the District as a separate demand by the Contractor for: (1) a time extension, including, without limitation, for relief from damages or penalties for delay assessed by the District under the Contract; (2) payment by the District of money or damages arising from Work done by, or on behalf of, the Contractor pursuant to the Contract and payment for which is not otherwise expressly provided for or to which the Contractor is not

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otherwise entitled to; or (3) an amount of payment disputed by the District. If the Claim is for damages associated with a DSA Stop Work Order, the Contractor shall not be entitled to a request for Compensation, but shall be entitled to utilize Governmental Delay Float (See Article 8.1.4.1.)

- b. Filing Claim Is Not Basis to Discontinue Work: The Contractor shall promptly comply with Work under the Contract or Work requested by the District even though a written Claim has been filed. The Contractor and the District shall make good faith efforts to resolve any and all Claims that may arise during the performance of the Work covered by this Contract.
- c. Claim Notification: The Contractor shall within seven (7) calendar days after the written decision of the Architect, or if the time period for Architect's decision has passed under Article 4.6.5, submit a notification in writing sent by registered mail or certified mail with return receipt requested, with the District (and the District's CM) stating clearly the basis for the Claim and including all relevant and required documents. If the notification is not submitted within seven (7) days after the written decision of the Architect or the passage of time under Article 4.6.5, the Contractor shall be deemed to have waived all right to assert the Claim, and the Claim shall be denied. Claims submitted after the Retention Payment date shall also be considered null and void by the District. All Claims shall be reviewed pursuant to Articles 4.6.1 through 4.6.5.

The Formal Notification of Claim must be presented as follows:

- (1) The term "Claim" must be at the top of the page in no smaller than 20 point writing.
 - (2) All documentation submitted pursuant to Article 4.6 to the Architect shall be submitted with the "Claim."
 - (3) A stack of documents, copy of all Project documents, or the submission of random documents shall not constitute an adequate reference to supporting documentation.
 - (4) Any additional or supporting documentation that Contractor believes is relevant should be submitted at this time.
- d. Reasonable Documents to Support Claim: The Contractor shall furnish reasonable documentation to support the Claim. The Contractor shall provide all written detailed documentation which supports the Claim, including but not limited to: arguments, justifications, cost, estimates, Schedule analysis and detailed documentation. The format of the required reasonable documentation to support the Claim shall include, without limitation:
 - 1. Cover letter.

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2. Summary of factual basis of Claim and amount of Claim.
3. Summary of the basis of the Claim, including the specific clause and section under the Contract under which the Claim is made.
4. Documents relating to the Claim, including:
 - a. Specifications sections in question.
 - b. Relevant portions of the Drawings
 - c. Applicable Clarifications (RFI's)
 - d. Other relevant information, including responses that were received.
 - e. Contractor Analysis of Claim merit.
 - (a) Contractor's analysis of any Subcontractor vendor Claims that are being passed through.
 - (b) Any analysis performed by outside consultants
 - (c) Any legal analysis that Contractor deems relevant
 - f. Break down of all costs associated with the Claim.
 - g. For Claims relating to time extensions, an analysis and supporting documentation evidencing any effect upon the critical path in conformance with the requirements of Article 8.4 chronology of events and related correspondence.
 - h. Applicable Daily Reports and logs.
 - (a) If the Daily Reports or Logs are not available, lost or destroyed, there shall be a presumption that the lost documentation was unfavorable to the Contractor. See California Civil Jury Instruction 204.
 - i. For Claims involving overhead, cost escalation, acceleration, disruption or increased costs, a full version of job costs reports organized by category of work or Schedule of Values with budget information tracked against actual costs. Any and all supporting back-up data, including the original bid (and associated original unaltered metadata).
 - (a) The metadata and bid information shall be provided confidentially and subject to a protective order to prevent dissemination to other contractors or to the public. However, the bid documentation should remain intact and available for review and inspection in case of this type of increased cost Claim.
 - (b) This data on the bid shall be made available to any District attorneys or experts and shall also be utilized as evidence for any legal proceedings.
 - (c) If the bid documentation is not available, lost or destroyed, there shall be a presumption that the lost bid documentation was unfavorable to the

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Contractor. See California Civil Jury Instruction 204.

- e. Certification: The Contractor (and Subcontractors, if applicable) shall submit with the Claim a certification under penalty of perjury:
 - 1. That the Contractor has reviewed the Claim and that such Claim is made in good faith;
 - 2. Supporting data are accurate and complete to the best of the Contractor's knowledge and belief;
 - 3. The amount requested accurately reflects the amount of compensation for which the Contractor believes the District is liable.
 - 4. That the Contractor is familiar with Government Code sections 12650 et seq. and Penal Code section 72 and that false claims can lead to substantial fines and/or imprisonment.
- f. Signature of Certification: If the Contractor is not an individual, the certification shall be executed by an officer or general partner of the Contractor having overall responsibility for the conduct of the Contractor's affairs.
- g. Upon receipt of a Claim and all supporting documents as required above, the District shall conduct a reasonable review of the Claim and, within a period not to exceed 45 days, shall provide the Contractor a written statement identifying what portion of the Claim is disputed and what portion is undisputed. Upon receipt of a Claim, the District and Contractor may, by mutual agreement, extend the time period provided in this paragraph.
- h. If the District needs approval from its governing Board to provide the Contractor a written statement identifying the disputed portion and the undisputed portion of the Claim, and the governing Board does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a Claim sent by registered mail or certified mail, return receipt requested, the District shall have up to three days following the next duly publicly noticed meeting of the governing Board after the 45-day period, or extension, expires to provide the Contractor a written statement identifying the disputed portion and the undisputed portion.
- i. Any payment due on an undisputed portion of the Claim shall be processed and made within 60 days after the District issues its written statement. If the District fails to issue a written statement, paragraph o below shall apply.

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- j. If the Contractor disputes the District's written response, or if the District fails to respond to a Claim issued pursuant to this Article 4.6.9 within the time prescribed, the Contractor may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the District shall schedule a meet and confer conference within 30 days for settlement of the Claim.
- k. Within 10 business days following the conclusion of the meet and confer conference, if the Claim or any portion of the Claim remains in dispute, the District shall provide the Contractor a written statement identifying the portion of the Claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the Claim shall be processed and made within 60 days after the District issues its written statement. Any disputed portion of the Claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation, with the District and the Contractor sharing the associated costs equally. The District and Contractor shall mutually agree to a mediator within 10 business days after the disputed portion of the Claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the Claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the Claim remaining in dispute shall be subject to applicable procedures in Article 4.6.9.5.
- l. For purposes of this Article 4.6.9, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.
- m. Unless otherwise agreed to by the District and the Contractor in writing, the mediation conducted pursuant to this Article 4.6.9 shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.
- n. This Claims process does not preclude the District from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this Article 4.6.9 does not resolve the parties' Claim. This Claims process does not preclude the District from submitting individual Disputes or Claims to binding arbitration pursuant to Article 4.6.9.4 below.
- o. Failure by the District to respond to a Claim from the Contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this Article 4.6.9 shall result in the Claim being deemed

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rejected in its entirety. A Claim that is denied by reason of the District's failure to have responded to a Claim, or its failure to otherwise meet the time requirements of this Article 4.6.9, shall not constitute an adverse finding with regard to the merits of the Claim or the responsibility or qualifications of the Contractor.

- p. If a subcontractor or a lower tier subcontractor lacks legal standing to assert a Claim against a District because privity of contract does not exist, the Contractor may present to the District a Claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that the Contractor present a Claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the Claim be presented to the District shall furnish reasonable documentation to support the Claim. Within 45 days of receipt of this written request, the Contractor shall notify the subcontractor in writing as to whether the Contractor presented the Claim to the District and, if the Contractor did not present the Claim, provide the subcontractor with a statement of the reasons for not having done so.
- q. Upon receipt of a Claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable.
- r. The Contractor's Claim shall be denied if it fails to follow the requirements of this Article.

4.6.9.2 *District (through CM or District's Agent or Attorney) May Request Additional Information.* Within thirty (30) days of receipt of the Claim and the information under this Article, the District may request in writing any additional documentation supporting the Claim or documentation relating to defenses to the Claim which the District may assert. If additional documents are required, the time in which the Claim is evaluated may be extended by a reasonable time so the Claim and additional documents may be reviewed.

4.6.9.3 *Claims Procedures in Addition to Government Code Claim.* Nothing in the Claims procedures set forth in this Article 4 of the General Conditions shall act to waive or relieve the Contractor from meeting the requirements set forth in Government Code section 900 et seq.

4.6.9.4 *Binding Arbitration of Individual Claim Issues.* To expedite resolution of Claims pursuant to Public Contract Code section 9201, at the District's sole option, the District may submit individual Claims to Arbitration prior to Retention Payment consistent with the requirements of Article 4.6.6.1.

4.6.9.5 *Resolution of Claims in Court of Competent Jurisdiction.* If Claims are not resolved under the procedure set forth and pursuant to Article 4.6.9, such Claim or controversy shall be submitted to a court in the County of the location of the Project after the Project has been completed, and not before.

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4.6.9.6 *Warranties, Guarantees and Obligations.* The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon Contractor by the General Conditions and amendments thereto; and all of the rights and remedies available to District and Architect thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by laws or regulations by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this Article will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply.

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ARTICLE 5 SUBCONTRACTORS

5.1 DEFINITIONS

5.1.1 Subcontractual Relations Bound to Same Contract Terms at General Contractor

By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the same obligations and responsibilities, assumed by Contractor pursuant to the Contract Documents. Each subcontract agreement shall preserve and protect the rights of the District and the Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound. Upon written request of the Subcontractor, the Contractor shall identify to the Subcontractor the terms and conditions of the proposed subcontract agreement, which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

5.1.2 Subcontractor Licenses and DIR Registration

All Subcontractors shall be properly licensed by the California State Licensing Board. All Subcontractors (of any tier) performing any portion of the Work must comply with the Labor Code sections 1725.5 and 1771.1 and must be properly and currently registered with the California Department of Industrial Relations and qualified to perform public works pursuant to Labor Code section 1725.5 throughout the duration of the Project. No portion of the Work is permitted to be performed by a Subcontractor of any tier unless the subcontractor is properly registered with DIR. Any Subcontractors of any tier not properly registered with DIR shall be substituted in accordance with Labor Code section 1771.1.

5.1.3 Substitution of Subcontractor

Substitution of Subcontractors shall be permitted only as authorized under Public Contract Code §§ 4107 et seq. Any substitutions of Subcontractors shall not result in any increase in the Contract Price or result in the granting of any extension of time for the completion of the Project.

5.1.4 Contingent Assignment of Subcontracts and Other Contracts

Each subcontract, purchase order, vendor contract or agreement for any portion of the Work is hereby assigned by the Contractor to the District provided that:

- a. Such assignment is effective only after Termination of this Contract with the Contractor by the District as provided under Article 14 and only for those subcontracts and other contracts and agreements that the District accepts by notifying the Subcontractor or Materialman (as may be applicable) in writing; and

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- b. Such assignment is subject to the prior rights of the Surety(ies) obligated under the Payment Bond and Performance Bond.
- c. The Contractor shall include adequate provisions for this contingent assignment of subcontracts and other contracts and agreements in each such document.

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ARTICLE 6 CONSTRUCTION BY DISTRICT OR BY SEPARATE CONTRACTORS

6.1 DISTRICT'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

6.1.1 Separate Contracts.

6.1.1.1 District reserves the right to let other contracts in connection with this Work. Contractor shall afford other contractors reasonable opportunity for (1) introduction and storage of their materials; (2) access to the Work; and (3) execution of their work. Contractor shall properly connect and coordinate its work with that of other Contractors.

6.1.1.2 If any part of Contractor's Work depends on proper execution or results of any other contractor, the Contractor shall inspect and within seven (7) days or less, report to Architect, in writing, any defects in such work that render it unsuitable for proper execution of Contractor's Work. Contractor will be held accountable for damages to District for that Work which it failed to inspect or should have inspected. Contractor's failure to inspect and report shall constitute its acceptance of other contractors' Work as fit and proper for reception of its Work, except as to defects which may develop in other contractors' work after execution of Contractor's work.

6.1.1.3 To ensure proper execution of its subsequent Work, Contractor shall measure and inspect Work already in place and shall at once report to the Architect in writing any discrepancy between executed Work as built and the Contract Documents.

6.1.1.4 Contractor shall ascertain to its own satisfaction the scope of the Project and nature of any other contracts that have been or may be awarded by District in prosecution of the Project and the potential impact of such Work on the Baseline Schedule or Schedule updates.

6.1.1.5 Nothing herein contained shall be interpreted as granting to Contractor the exclusive occupancy at the site of Project. Contractor shall not cause any unnecessary hindrance or delay to any other contractor working on the Project Site. If execution of any contract by the District is likely to cause interference with Contractor's performance of this Contract, once Contractor provides District timely written notice and identifies the Schedule Conflict, District shall decide which contractor shall cease work temporarily and which contractor shall continue, or whether Work can be coordinated so that contractors may proceed simultaneously.

6.1.1.6 District shall not be responsible for any damages suffered or extra costs incurred by Contractor resulting directly or indirectly from award or performance or attempted performance of any other contract or contracts at the Project necessary for the performance of the Project (examples include Electrical Utility Contractor, separate offsite contractor, a separate grading contractor, furniture installation etc.)

CONTRACTOR IS AWARE THAT THIS CONTRACT MAY BE SPLIT INTO SEVERAL PHASES BASED ON DOCUMENTATION PROVIDED WITH THIS BID OR DISCUSSED AT THE JOB WALK. CONTRACTOR HAS MADE ALLOWANCE FOR ANY DELAYS OR DAMAGES WHICH MAY ARISE FROM COORDINATION WITH CONTRACTORS REQUIRED FOR OTHER PHASES.

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IF ANY DELAYS SHOULD ARISE FROM ANOTHER CONTRACTOR WORKING ON A DIFFERENT PHASE, CONTRACTOR'S SOLE REMEDY FOR DAMAGES, INCLUDING DELAY DAMAGES, SHALL BE AGAINST THE CONTRACTOR WHO CAUSED SUCH DAMAGE AND NOT THE DISTRICT. CONTRACTOR SHALL PROVIDE ACCESS TO OTHER CONTRACTORS FOR OTHER PHASES AS NECESSARY TO PREVENT DELAYS AND DAMAGES TO OTHER CONTRACTORS WORKING ON OTHER PHASES OF CONSTRUCTION.

6.1.2 District's Right to Carry Out the Work

(See Article 2.2)

6.1.3 Designation as Contractor

When separate contracts are awarded to contractors on the Project Site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate District/Contractor Agreement.

6.1.4 District Notice to the Contractor of Other Contractors

The Contractor shall have overall responsibility to reasonably coordinate and schedule Contractor's activities with the activities of the District's forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the District in reviewing their construction schedules when:

- a. Notice is provided in the Contract Documents of other scope of Work,
- b. In the case where there is known Work to be performed by other Contractors
- c. For outside contractors hired by utilities
- d. Where the Contract Document provides "Work by Others" or "By Others"
- e. Where specifically noted during the Pre-Bid Conference
- f. Where specifically noted in the Mandatory Job Walk
- g. By CO or ICD,
- h. With respect to the installation of :
 - 1. Furniture,
 - 2. Electronics and networking equipment,
 - 3. Cabling,
 - 4. Low voltage,
 - 5. Off-site work,
 - 6. Grading (when by a separate contractor),

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7. Environmental remediation when excluded by the Contract Documents (i.e. asbestos, lead or other hazardous waste removal)
8. Deep cleaning crews,
9. Commissioning and testing,
10. Keying and re-keying,
11. Programming

6.1.4.1 Exception where no Coordination is Required on the Part of the Contractor for Turn Key Operations. If the Contractor has specifically outlined a “Turn Key” or “Complete Delivery” of a final completed operational school in writing as part of the Baseline Schedule..

6.1.4.2 The Contractor shall make any revisions to the Baseline Schedule (or Schedule Update) and Contract Sum deemed necessary after a joint review and mutual agreement. The Baseline Schedule (or Schedule Update) shall then constitute the Schedules to be used by the Contractor, separate contractors, and the District until subsequently revised. Additionally, Contractor shall coordinate with Architect, District, and Inspector to ensure timely and proper progress of Work.

6.2 CONSTRUCTIVE OWNERSHIP OF PROJECT SITE AND MATERIAL

Upon commencement of Work, the Contractor becomes the constructive owner of the entire site, improvements, material and equipment on Project site. Contractor must ensure proper safety and storage of all materials and assumes responsibility as if Contractor was the owner of the Project site. All risk of loss or damage shall be borne by Contractor during the Work until the date of Completion. As constructive owner of the Project site, Contractor must carry adequate insurance in case of calamity and is not entitled to rely on the insurance requirements as set forth in this Agreement as being adequate coverage in case of calamity.

6.3 DISTRICT’S RIGHT TO CLEAN UP

If a dispute arises among the Contractor, separate contractors, and the District as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Article 3.12, the District may clean up and allocate the cost among those it deems responsible.

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ARTICLE 7 CHANGES IN THE WORK

7.1 CHANGES

7.1.1 No Changes Without Authorization

There shall be no change whatsoever in the Drawings, Specifications, or in the Work without an executed Change Order, Change Order Request, Immediate Change Directive, or order by the Architect for a minor change in the Work as herein provided. District shall not be liable for the cost of any extra work or any substitutions, changes, additions, omissions, or deviations from the Drawings and Specifications unless the District's Governing Board or designated representative with delegated authority (subject to Board ratification) has authorized the same and the cost thereof approved in writing by Change Order or executed Construction Change Document. No extension of time for performance of the Work shall be allowed hereunder unless claim for such extension is made at the time changes in the Work are ordered, and such time duly adjusted in writing in the Change Order. The provisions of the Contract Documents shall apply to all such changes, additions, and omissions with the same effect as if originally embodied in the Drawings and Specifications. Notwithstanding anything to the contrary in this Article 7, all Change Orders shall be prepared and issued by the Architect and shall become effective when executed by the District's Governing Board, the Architect, and the Contractor.

Should any Change Order result in an increase in the Contract Price, the cost of such Change Order shall be agreed to, in writing, in advance by Contractor and District and be subject to the monetary limitations set forth in Public Contract Code section 20118.4 (Please check with the District since there are different interpretations of the limitations of Public Contract Code section 20118.4 depending on the County the Project is located). In the event that Contractor proceeds with any change in Work without first notifying District and obtaining the Architect's and District's consent to a Change Order, Contractor waives any Claim of additional compensation for such additional work and Contractor takes the risk that a Notice of Non-Compliance may issue, a critical path Project delay may occur, and the Contractor will also be responsible for the cost of preparation and DSA CCD review fees for a corrective DSA approved Construction Change Document.

CONTRACTOR UNDERSTANDS, ACKNOWLEDGES, AND AGREES THAT THE REASON FOR THIS NOTICE REQUIREMENT IS SO THAT DISTRICT MAY HAVE AN OPPORTUNITY TO ANALYZE THE WORK AND DECIDE WHETHER THE DISTRICT SHALL PROCEED WITH THE CHANGE ORDER OR ALTER THE PROJECT SO THAT SUCH CHANGE IN WORK BECOMES UNNECESSARY AND TO AVOID THE POSSIBLE DELAYS ASSOCIATED WITH THE ISSUANCE OF A NOTICE OF NON-COMPLIANCE.

7.1.2 Notices of Non-Compliance

Contractor deviation or changes from approved Plans and Specifications may result in the issuance of a Notice of Non-Compliance (See DSA Form 154). Contractor is specifically notified that deviations from the Plans and Specifications, whether major or minor, may result in the requirement to obtain a DSA Construction Change Document to correct the Notice of Non-Compliance. (See Article 7.3.1 for Definition of CCD). In some cases, the lack of a DSA approved CCD AND verification from the Inspector that a Notice of Non-Compliance has been corrected may result in a critical path delay to the next

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stage of Work on the Project. Specifically, a deviation from approved Plans and Specifications may prevent approval of the category of Work listed in the DSA 152 Project Inspection Card. Any delays that are caused by the Contractor's deviation from approved Plans and Specifications shall be the Contractor's responsibility.

7.1.3 Architect Authority

The Architect will have authority to order minor changes in the Work that do not involve DSA Approval not involving any adjustment in the Contract Sum, or an extension of the Contract Time.

7.2 CHANGE ORDERS ("CO")

A CO is a written instrument prepared by the Architect and signed by the District (as authorized by the District's Governing Board), the Contractor, and the Architect stating their agreement upon all of the following:

- a. A description of a change in the Work;
- b. The amount of the adjustment in the Contract Sum, if any; and
- c. The extent of the adjustment in the Contract Time, if any.

A CO may be comprised of ICD's, Response to RFP's and COR's

7.3 CONSTRUCTION CHANGE DOCUMENT (CCD Category A, and CCD Category B) and IMMEDIATE CHANGE DIRECTIVE (ICD)

7.3.1 Definitions

7.3.1.1 *Construction Change Document (CCD)*. A Construction Change Document is a DSA term that is utilized to address changes to the DSA approved Plans and Specifications. There are two types of Construction Change Documents. (1) DSA approved CCD Category A for Work affecting structural, access compliance or fire/ life safety of the Project which will require a DSA approval; and, (2) CCD Category B for work NOT affecting structural safety, access compliance or fire/ life safety that will not require a DSA approval (except to confirm that no approval is required). Both CCD Category A and Category B shall be set forth in DSA Form 140 and submitted to DSA as required.

7.3.1.2 *Immediate Change Directive (ICD)*. An Immediate Change Directive is a written order to the Contractor prepared by the Architect and signed by the District (and CM if there is a CM on the Project) and the Architect, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract Time, or both. The District may by ICD, without invalidating the Contract, direct immediate changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions within. If applicable, the Contract Sum and Contract Time will be adjusted accordingly.

In the case of an Immediate Change Directive being issued, Contractor must commence Work immediately or delays from failure to perform the ICD shall be the responsibility of Contractor and the failure to move forward with Work immediately shall also be grounds for Termination under Article 14.

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An ICD does not automatically trigger an Article 7.6 Dispute or Claim. Contractor must timely follow the procedures outlined at Article 7.6 and 4.6 where applicable.

Refer to Division 1 and Supplementary General Conditions for a copy of the proposed Immediate Change Directive form.

7.3.2 Use to Direct Change

An ICD shall be used to move work forward immediately and to avoid delay. In some cases, an ICD shall be issued in the absence of agreement on the terms of a CO, COR, or RFP. A copy of an ICD form is provided in the Supplementary General Conditions and Division 1. The anticipated not to exceed price for the Work will be inserted into the ICD. In the case of an ICD issued to correct Contractor Deficiencies or to correct a Contractor caused Notice of Non-Compliance, the ICD may be issued with \$0 and no additional time. Contract may prepare a COR associated with the ICD pursuant to Article 7. However, Contractor shall proceed with all Work required under an Approved ICD immediately upon issuance. Failure to proceed with the Work under an ICD shall be grounds for Termination for Cause under Article 14 or take over the Work under Article 2.2.

If adequate time exists, an ICD may be subject of an RFP for pricing and determination if any time that may be required. However, if an RFP is not completed, Contractor shall immediately commence Work when an ICD is issued. If the RFP is incomplete, it may still be completed to be submitted for pricing purposes as long as the RFP is submitted within the timeline provided by the RFP, or within 10 days following issuance of the ICD.

7.3.3 ICD Issued Over a Notice of Non-Compliance or to Cover Work Subject to a DSA 152 Sign Off

In some cases, an ICD shall be for the purpose of proceeding with Work to keep the Project on Schedule and as an acknowledgement by the District that Contractor is proceeding with Work contrary to a Notice of Non-Compliance, prior to issuance of a DSA approved CCD Category A, or to direct the covering of Work which has not yet received a DSA 152 Inspection Approval to move forward.

7.3.3.1 *Contractor Compliance with all Aspects of an ICD.* Contractor is to undertake the ICD and comply with all aspects of the Work outlined in the ICD. Inspector is to inspect the Work pursuant to the ICD. Failure to follow the ICD may result in deduction of the ICD Work under Article 2.2 or Termination of the Contractor pursuant to Article 14.

7.3.3.2 *Exception in the Case of DSA Issued Stop Work Order.* Contractor must proceed with an ICD even if a CCD has not been approved by DSA except in the case of a DSA issued Stop Work Order. If a DSA Stop Work Order is issued, Contractor must stop work and wait further direction from the District.

7.3.3.3 *ICD Due to Contractor Deficiency or Contractor Caused Notice of Non-Compliance.* If an ICD is issued to correct a Contractor Deficiency or a Contractor caused notice of Non-Compliance, Contractor specifically acknowledges responsibility for all consequential damages associated with the Contractor Deficiency or Contractor caused Notice of Non-Compliance and all consequential damages and costs incurred to correct the deficiency under Article 4.5

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7.4 REQUEST FOR INFORMATION ("RFI")

7.4.1 Definition

A RFI is a written request prepared by the Contractor requesting the Architect to provide additional information necessary to clarify or amplify an item which the Contractor believes is not clearly shown or called for in the Drawings or Specifications, or to address problems which have arisen under field conditions.

7.4.1.1 A RFI shall not be used as a vehicle to generate time extensions.

7.4.1.2 Resubmission of the same or similar RFI is not acceptable. RFI's that are similar should be addressed in Project meetings where the requestor (Contractor, Subcontractor or vendor) is able to address the particular issue with the Architect or Engineer and a resolution addressed in the minutes.

7.4.1.3 A RFI response applicable to a specific area cannot be extended to other situations unless specifically addressed in writing within the RFI or in a separate RFI.

7.4.1.4 RFI's should provide a proposed solution and should adequately describe the problem that has arisen.

7.4.2 Scope

The RFI shall reference all the applicable Contract Documents including Specification section, detail, page numbers, Drawing numbers, and sheet numbers, etc. The Contractor shall make suggestions and interpretations of the issue raised by the RFI. An RFI cannot modify the Contract Cost, Contract Time, or the Contract Documents.

7.4.3 Response Time

The Architect must respond to a RFI within a reasonable time after receiving such request. If the Architect's response results in a change in the Work, then such change shall be effected by a written CO, COR RFP or ICD, if appropriate. If the Architect cannot respond to the RFI within a reasonable time, the Architect shall notify the Contractor, with a copy to the Inspector and the District, of the amount of time that will be required to respond.

7.4.4 Costs Incurred

The Contractor shall be responsible for any costs incurred for professional services as more fully set forth in Article 4.5, which shall be subject to a Deductive Change Order, if an RFI requests an interpretation or decision of a matter where the information sought is equally available to the party making such request. District, at its sole discretion, shall issue a Deductive Change Order to Contractor for all such professional services arising from this Article.

7.5 REQUEST FOR PROPOSAL ("RFP")

7.5.1 Definition

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A RFP is a written request prepared by the Architect (and/or CM) requesting the Contractor to submit to the District and the Architect an estimate of the effect of a proposed change on the Contract Price and (if applicable) the Contract Time. If Architect issues a Bulletin, the Changed items in the Bulletin shall be addressed as an RFP and all responses shall be prepared to a Bulletin as addressed in this Article 7.5. A form RFP is included in the Division 1 documents.

7.5.2 Scope

A RFP shall contain adequate information, including any necessary Drawings and Specifications, to enable Contractor to provide the cost breakdowns required by Article 7.7. The Contractor shall not be entitled to any Additional Compensation for preparing a response to an RFP, whether ultimately accepted or not.

7.5.3 Response Time

Contractor shall respond to an RFP within ten (10) days or the time period otherwise set forth in the RFP.

7.6 CHANGE ORDER REQUEST (“COR”)

7.6.1 Definition

A COR is a written request prepared by the Contractor supported by backup documentation requesting that the District and the Architect issue a CO based upon a proposed change, cost, time, or cost and time that may be incurred on the Project or arising from an RFP, ICD, or CCD.

7.6.2 Changes in Price

A COR shall include breakdowns per Article 7.7 to validate any change in Contract Price due to proposed change or Claim.

7.6.3 Changes in Time

A COR shall also include any additional time required to complete the Project only if the delay is a critical path delay. Any additional time requested shall not be the number of days to make the proposed change, but must be based upon the impact to the Project Schedule as defined in Article 8. A schedule fragnet showing the time delay must be submitted with the COR. Any changes in time will be granted only if there is an impact to the critical path. If Contractor fails to request a time extension in a COR, then the Contractor is thereafter precluded from requesting or claiming a delay.

7.7 COST OF CHANGE ORDERS

7.7.1 Scope

Within ten (10) days after a request is made for a change that impacts the Contract Sum as defined in Article 9.1, the critical path, or the Contract Time as defined in Article 8.1.1, the Contractor shall provide the District and the Architect, with a written estimate of the effect of the proposed CO upon the Contract Sum and the actual cost of construction, which shall include a complete itemized cost breakdown of all labor and material showing actual quantities, hours, unit prices, and wage rates required for the

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change, and the effect upon the Contract Time of such CO. Changes may be made by District by an appropriate written CO, or, at the District's option, such changes shall be implemented immediately upon the Contractor's receipt of an appropriate written Construction Change Document.

District may, as provided by law and without affecting the validity of this Agreement, order changes, modification, deletions and extra work by issuance of written CO or CCD from time to time during the progress of the Project, Contract Sum being adjusted accordingly. All such Work shall be executed under conditions of the original Agreement except that any extension of time caused thereby shall be adjusted at time of ordering such change. District has discretion to order changes on a "time and material" basis with adjustments to time made after Contractor has justified through documentation the impact on the critical path of the Project.

7.7.1.1 *Time and Material Charges.* If the District orders Work on a "time and material" basis, timesheets shall be signed daily by the Inspector or District Representative at or near the time the Work is actually undertaken and shall show the hours worked, and the Work actually completed. No time sheets shall be signed the next day. A copy shall be provided to the Person signing the document at the time the document is signed, but not before 10 am the following day.

7.7.2 Determination of Cost

The amount of the increase or decrease in the Contract Price from a CO or COR, if any, shall be determined in one or more of the following ways as applicable to a specific situation:

- a. Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation. If an agreement cannot be reached within fifteen (15) days after submission and negotiation of Contractor's proposal, Contractor may submit pursuant to Article 7.7.3. Submission of sums which have no basis in fact are at the sole risk of Contractor and may be a violation of the False Claims Act set forth under Government Code section 12650 et seq.);
 1. If the District objects to 7.7.2(a) as a method for submission due to inaccuracies in the submitted amount, overstatement of manpower or time required to perform the CO, or unreliability of the data provided, the District may either have the Architect or a professional estimator determine the cost for the CO, and the applicable time extension, or the Contractor shall utilize Article 7.7.2(d) or 7.7.3.
 2. Once the District provides a written objection to use of Article 7.7.2(a) due to unreliability of the estimated price, the Contractor shall no longer utilize mutual acceptance of a lump sum as a method for submission of CO's and shall provide a breakdown of estimated or actual costs pursuant to Article 7.7.2(d) or 7.7.3
- b. By unit prices contained in Contractor's original bid and incorporated in the Project documents or fixed by subsequent agreement between District and Contractor;

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- c. Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee. However, in the case of disagreement, Contractor must utilize the procedure under Article 7.7.3; or
- d. By cost of material and labor and percentage of overhead and profit. If the value is determined by this method the following requirements shall apply:

1. *Basis for Establishing Costs*

- (1) Labor will be the cost for wages prevailing locally for each craft or type of workers at the time the extra Work is done, plus employer payments of payroll taxes and workers compensation insurance (exclude insurance costs as part of the overhead and profit mark-up), health and welfare, pension, vacation, apprenticeship funds, and other direct costs resulting from Federal, State, or local laws, as well as assessments or benefits required by lawful collective bargaining agreements. In no case shall the total labor costs exceed the applicable prevailing wage rate for that particular classification. The use of a labor classification which would increase the extra Work cost will not be permitted unless the Contractor establishes the necessity for such additional costs. Labor costs for equipment operators and helpers shall be reported only when such costs are not included in the invoice for equipment rental.
- (2) Materials shall be at invoice or lowest current price at which such materials are locally available and delivered to the Site in the quantities involved, plus sales tax, freight, and delivery. The District reserves the right to approve materials and sources of supply or to supply materials to the Contractor if necessary for the progress of the Work. No markup shall be applied to any material provided by the District.
- (3) Tool and Equipment Rental. No payment will be made for the use of tools which have a replacement value of \$250 or less.

Regardless of ownership, the rates to be used in determining equipment rental costs shall not exceed listed rates prevailing locally at equipment rental agencies or distributors at the time the Work is performed. Rates applied shall be appropriate based on actual equipment need and usage. Monthly, weekly or other extended use rates that results in the lowest cost shall be applied if equipment is used on site for extended periods.

The rental rates paid shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals.

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Necessary loading and transportation costs for equipment used on the extra Work shall be included. If equipment is used intermittently and, when not in use, could be returned to its rental source at less expense to the District than holding it at the Work Site, it shall be returned unless the Contractor elects to keep it at the Work Site at no expense to the District.

All equipment shall be acceptable to the Inspector, in good working condition, and suitable for the purpose for which it is to be used. Manufacturer's ratings and modifications shall be used to classify equipment, and equipment shall be powered by a unit of at least the minimum rating recommended by the manufacturer.

If tool and equipment charges are part of a Dispute, Claim, or Appeal, the District reserves the right to utilize actual costs for tools and equipment or a depreciation rate for equipment based on audit finding under Article 13.11 and deduct any rental charges that exceed actual or depreciated costs.

- e. Other Items. The District may authorize other items which may be required on the extra work. Such items include labor, services, material, and equipment which are different in their nature from those required by the Work, and which are of a type not ordinarily available from the Contractor or any of the Subcontractors. Invoices covering all such items in detail shall be submitted with the request for payment.
- f. Invoices. Vendors' invoices for material, equipment rental, and other expenditures shall be submitted with the COR. If the request for payment is not substantiated by invoices or other documentation, the District may establish the cost of the item involved at the lowest price which was current at the time of the Daily Report.
- g. Overhead. Overhead, including direct and indirect costs, shall be submitted with the COR and include: field overhead, home office overhead, off-site supervision, CO preparation/negotiation/research, time delays, Project interference and disruption, additional guaranty and warranty durations, on-site supervision, additional temporary protection, additional temporary utilities, additional material handling costs, liability and property damage insurance, and additional safety equipment costs.

7.7.3 Format for COR or CO's

The following format shall be used as applicable by the District and the Contractor to communicate proposed additions to the Contract. All costs submitted shall be actual costs and labor shall be unburdened labor. Refer to Division 1 for a copy of the Construction Change Order form.

	<u>EXTRA</u>	<u>CREDIT</u>
(a) Material (attach itemized quantity and unit cost plus sales tax)	_____	_____

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		<u>EXTRA</u>	<u>CREDIT</u>
(b)	Labor Not to Exceed Applicable Prevailing Wage Rates (attach itemized hours and rates)		
(c)	Equipment (attach invoices)		
(d)	Subtotal		
(e)	If Subcontractor performed work, add Subcontractor's overhead and profit to portions performed by Subcontractor, not to exceed 10% of item (d).		
(f)	Subtotal		
(g)	Contractor's Overhead and Profit: Not to exceed 10% of Item (d) if Contractor performed the work. No more than 5% of Item (d) if Subcontractor performed the work. If work was performed by Contractor and Subcontractors, portions performed by Contractor shall not exceed 10% of Item (d), and portions performed by Subcontractor shall not exceed 10% of Item (d).		
(h)	Subtotal		
(i)	Bond not to exceed one percent (1%) of Item (h)		
(k)	TOTAL		
(l)	Time/ Days		

The undersigned Contractor approves the foregoing Change Order or Immediate Change Directive as to the changes, if any, and the Contract price specified for each item and as to the extension of time allowed, if any, for completion of the entire Work on account of said Change Order or Immediate Change Directive, and agrees to furnish all labor, materials and service and perform all Work necessary to complete any additional Work specified therein, for the consideration stated herein. It is understood that said Change Order or Immediate Change Directive shall be effective when approved by the Governing Board of the District.

It is expressly understood that the value of such extra Work or changes, as determined by any of the aforementioned methods, expressly includes any and all of the Contractor's costs and expenses, both direct and indirect, resulting from additional time required on the Project or resulting from delay to the Project. Any costs, expenses, damages or time extensions not included are deemed waived.

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The Contractor expressly acknowledges and agrees that any change in the Work performed shall not be deemed to constitute a delay or other basis for claiming additional compensation based on theories including, but not limited to, acceleration, suspension or disruption to the Project.

7.7.3.1 *Adjustment for Time and Compensable Delay.* A CO shall also include any additional time required to complete the Project. Any additional time requested shall not be the number of days to make the proposed change, but must be based upon the impact to the Project Schedule as defined in Article 8 of the General Contract. A schedule fragnet showing the time delay must be submitted with the CO. Any changes in time will be granted only if there is an impact to the critical path. If Contractor fails to request a time extension in a CO, then the Contractor is thereafter precluded from requesting or claiming a delay.

7.7.4 Deductive Change Orders

All Deductive Change Order(s) must be prepared utilizing the form under Article 7.7.3 (a) – (d) only, setting forth the actual costs incurred. Except in the case of an Article 2.2 or 9.6 Deductive Change Order where no mark-up shall be allowed, Contractor will be allowed a maximum of 5% total profit and overhead.

For unilateral Deductive Change Orders, or where credits are due from Contractor for Allowances, Deductive Items, Inspection, Damage, DSA CCD review costs, Architect or Inspector costs for after hours or corrective services, Work removed from the Agreement under Article 2.2 or Article 9.6, there shall be no mark-up.

District may, any time after a Deductive Change Order is presented to Contractor by District for items under Article 2.2 or Article 9.6 or if there is disagreement as to the Deductive Change Order, issue a unilateral Deductive Change Order on the Project and deduct the Deductive Change Order from a Progress Payment, Final Payment, or Retention.

7.7.5 Discounts, Rebates, and Refunds

For purposes of determining the cost, if any, of any change, addition, or omission to the Work hereunder, all trade discounts, rebates, refunds, and all returns from the sale of surplus materials and equipment shall accrue and be credited to the Contractor, and the Contractor shall make provisions so that such discounts, rebates, refunds, and returns may be secured, and the amount thereof shall be allowed as a reduction of the Contractor's cost in determining the actual cost of construction for purposes of any change, addition, or omissions in the Work as provided herein. All CO's are subject to Audit under Article 13.11 for discounts, rebates and refunds.

7.7.6 Accounting Records

With respect to portions of the Work performed by CO's and CCD's on a time-and-materials, unit-cost, or similar basis, the Contractor shall keep and maintain cost-accounting records in a format consistent with accepted accounting standards and satisfactory to the District, which shall be available to the District on the same terms as any other books and records the Contractor is required to maintain under the Contract Documents.

Any time and material charges shall require Inspector's signature on time and material cards showing the hours worked and the Work actually completed. (See Article 7.7.1.1)

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7.7.7 Notice Required

If the Contractor desires to initiate a Dispute for an increase in the Contract Price, or any extension in the Contract Time for completion, Contractor shall notify the applicable party responsible for addressing the Dispute or Claim pursuant to Article 4.6. No Claim or Dispute shall be considered unless made in accordance with this subparagraph. Contractor shall proceed to execute the Work even though the adjustment may not have been agreed upon. Any change in the Contract Price or extension of the Contract Time resulting from such Claim shall be authorized by a CO.

7.7.8 Applicability to Subcontractors

Any requirements under this Article 7 shall be equally applicable to CO's, COR's or ICD's issued to Subcontractors by the Contractor to the same extent required by the Contractor.

7.7.9 Alteration to Change Order Language

Contractor shall not alter or reserve time in COR's, CO's or ICD's. Contractor shall execute finalized CO's and proceed under Article 7.7.7 and Article 4.6 with proper notice. If Contractor intends to reserve time without an approved CPM schedule prepared pursuant to Article 8 or without submitting a fragnet showing delay to critical path, then Contractor may be prosecuted pursuant to the False Claim Act.

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ARTICLE 8 TIME AND SCHEDULE

8.1 DEFINITIONS

8.1.1 Contract Time

Contractor shall perform and reach Substantial Completion (See Article 1.1.46) within the time specified in the Agreement Form. Moreover, Contractor shall perform its Work in strict accordance with the Project Milestones in the Contract Documents and shall proceed on a properly developed and approved Baseline Schedule, which represents the Contractor's view of the practical way in which the Work will be accomplished. Note that Contract Time includes and incorporates all Float and other Baseline inclusions as noted in Article 8.3.2.1 and as otherwise specifically noted in Article 8.

8.1.2 Notice to Proceed

District may give a Notice to Proceed within ninety (90) days of the award of the bid by District. Once Contractor has received the notice to proceed, Contractor shall complete the Work in the period of time referenced in the Contract Documents.

In the event that District desires to postpone the giving of the Notice to Proceed beyond this three-month period, it is expressly understood that with reasonable notice to the Contractor, the giving of the date to proceed may be postponed by District. It is further expressly understood by Contractor, that Contractor shall not be entitled to any claim of additional compensation as a result of the postponement of the giving of the notice to proceed

If the Contractor believes that a postponement will cause a hardship to Contractor, Contractor may terminate the Contract with written notice to District within 10 days after receipt by Contractor of District's notice of postponement. It is further understood by Contractor that in the event that Contractor terminates the Contract as a result of postponement by the District, the District shall only be obligated to pay Contractor for the Work that Contractor had performed at the time of notification of postponement and the grounds for notification and hardship shall be subject to Audit pursuant to Article 13.11. Should Contractor terminate the Contract as a result of a notice of postponement, District may award the Contract to the next lowest responsible bidder.

8.1.3 Computation of Time

The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

8.1.4 Float

Float is time the total number of days an activity may be extended or delayed without delaying the Completion Date shown in the schedule. Float will fall into three categories: (1) Rain Days; (2) Governmental Delays; and, (3) Project Float. Project Float and Rain Days are owned by the Project and may be utilized as necessary for critical path delays once the days become available for consumption (i.e. the Rain Day arrives and is not utilized since rain did not occur or Work was performed on the interior of

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a building). However, Governmental Delay float shall not be utilized for purposes other than to address critical path delays that arise due to approvals, Inspector approvals or verifications on governmental forms.

8.1.4.1 *Governmental Delay Float.* It is anticipated that there will be governmental generated delays. Specific to DSA approvals, it is anticipated that no less than twelve (12) days per calendar year shall be set aside as Governmental Float to be utilized on critical path delays. A pro-rated number of days shall be calculated based on length of Contract Time. (For example, a two (2) year Contract Time shall require twenty-four (24) days of Governmental Float. If the Contract Time is 182 days, then the Contract Time shall require six (6) days of Governmental Float) This Governmental Delay float must be incorporated into the schedule and should be incorporated in each critical activity as Contractor deems fit. Specifically, major categories of Work under the DSA 152 (Project Inspection Card) should be allocated Governmental Delay Float at the Contractor's discretion. Governmental Delay Float on the Project may exceed 12 days per one (1) year period, but Contractor is required to include not be less than 12 days of Governmental Delay Float during each one (1) year period.

Contractor's failure to establish a protocol for requesting inspections is not grounds to utilize Governmental Delay Float. As noted in Article 3.1.4, 48 hours advance notice of commencing Work on a new area is required after submitting form DSA 156 and under PR 13-01 Special Inspection reports are not required to be posted until at least 14 days after the Work was inspected. Failure to plan, and pay (if applicable) for quicker delivery of Special Inspections is not Governmental Delay Float under Article 8.1.4.1. If Governmental Delay Float is not utilized, this float is carried through to other DSA 152 categories of inspection and consumed over the course of the Project

Governmental Delay Float may be utilized for a DSA Stop Work Order regardless of fault as defined under Education Code section 17307.5(b).

8.1.4.2 *Inclement Weather (Rain Days).* The Contractor will only be allowed a time extension for unusually severe weather if it results in precipitation or other conditions which in the amount, frequency, or duration is in excess of the norm at the location and time of year in question as established by NOAA weather data. No less than 22 calendar days for each calendar year for Southern California will be allotted for in the Contractor's schedule for each winter weather period or carried at the end of the schedule as Rain Float. Float for weather days in other geographical regions shall be adjusted based on NOAA weather data for the geographical location. Contractor has anticipated all the days it takes to dry out and re-prepare areas that may be affected by weather delays which extend beyond the actual weather days. The weather days shall be shown on the schedule and if not used will become float for the Project's use. The Contractor will not be allowed a day-for-day weather delay for periods noted as float in the Schedule. The Contractor is expected to work seven (7) days per week (if necessary, irrespective of inclement weather), to maintain access, and to protect the Work under construction from the effects of inclement weather. Additional days beyond the NOAA shall be considered under the same criteria that weather days are granted below.

A Rain Day shall be granted by Architect or CM if the weather prevents the Contractor from beginning Work at the usual daily starting time, or prevents the Contractor from proceeding with seventy-five (75%) of the normal labor and equipment force towards completion of the day's current controlling item on the accepted schedule for a period of at least five hours, and the crew is dismissed as a result thereof, the Architect will designate such time as unavoidable delay and grant one (1) critical path activity calendar-day extension if there is no available float for the calendar year.

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8.1.4.3 *Project Float.* The Contractor may determine some activities require a lesser duration than allocated and may set aside float in the Project Schedule. There shall be no early completion. Instead, to the extent float is either addressed at the end of the Project or throughout each category of critical path work, Project float may be used as necessary during the course of the Project and allocated on a first, come first serve basis. However, the use of float does not extend to Governmental Delay Float, which shall only be used for Governmental Delays.

8.2 HOURS OF WORK

8.2.1 Sufficient Forces

Contractors and Subcontractors shall continuously furnish sufficient forces to ensure the prosecution of the Work in accordance with the Construction Schedule.

8.2.2 Performance During Working Hours

Work shall be performed during regular working hours as permitted by the appropriate governmental agency except that in the event of an emergency, or when required to complete the Work in accordance with job progress, Work may be performed outside of regular working hours with the advance written consent of the District and approval of any required governmental agencies.

8.2.3 Costs for After Hours Inspections

If the Work done after hours is required by the Contract Documents, a Recovery Schedule, or as a result of the Contractor's failure to plan, and inspection must be conducted outside the Inspector's regular working hours, the costs of any after hour inspections, shall be borne by the Contractor.

If the District allows the Contractor to do Work outside regular working hours for the Contractor's convenience, the costs of any inspections required outside regular working hours shall be invoiced to the Contractor by the District and a Deductive Change Order shall be issued from the next Progress Payment.

If the Contractor elects to perform Work outside the Inspector's regular working hours, costs of any inspections required outside regular working hours shall be invoiced to the Contractor by the District and a Deductive Change Order from the next Progress Payment as a Deductive Change Order.

8.3 PROGRESS AND COMPLETION

8.3.1 Time of the Essence

Time limits stated in the Contract Documents are of the essence to the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

8.3.2 Baseline Schedule Requirements

8.3.2.1 *Timing:* Within ten (10) calendar days after Notice to Proceed, Contractor shall submit a practical schedule showing the order in which the Contractor proposes to perform the Work, and the dates on which the Contractor contemplates starting and completing the salient categories of the Work.

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This first schedule which outlines the Contractor's view of the practical way in which the Work will be accomplished is the Baseline Schedule. If the Contractor Fails to submit the Baseline Schedule within the ten (10) days noted, then District may withhold processing and approval of progress payments pursuant to Article 9.4 and 9.6.

8.3.2.2 *District Review and Approval:* District, Architect and CM will review both a paper and electronic copy of Baseline Schedule and may provide comments as noted in this Article and either approve or disapprove the Baseline Schedule. All Schedules shall be prepared using an electronic scheduling program acceptable to District. All Schedules shall be delivered in an electronic format usable by the District. All logic ties and electronic information shall be included in the electronic copy of the Baseline Schedule that is delivered to the District.

8.3.2.3 *Schedule Must Be Within the Given Contract Time.* The Baseline Schedule shall not exceed time limits set forth in the Contract Documents and shall comply with all of the scheduling requirements as set forth in the Specifications and Contract Documents.

8.3.2.4 *Submittals Must Be Incorporated (See Articles 3.7 and 3.9):* Contractor shall include Submittals as line items in the Baseline Schedule as required under Article 3.7.2 and 3.9.6. Submittals shall not delay the Work, Milestones, or the Completion Date. Failure to include Submittals in the Baseline Schedule shall be deemed a material breach by the Contractor.

8.3.2.5 *Float Must Be Incorporated.* The Baseline Schedule must indicate the beginning and completion of all phases of construction and shall use the "critical path method" (commonly called CPM) for the value reporting, planning and scheduling, of all Work required under the Contract Documents. The Baseline Schedule must incorporate all Milestones in the Project and apply Governmental Float at each Milestone in the Contractor's discretion. The Baseline Schedule shall incorporate any Schedule provided by the District as part of the bid and shall note durations that will not be adequate or should be shortened based on Contractor's review. These changes shall be identified and incorporated into Contractor's Baseline Schedule as long as requested changes are made within 10 days after the District chooses to move forward with the Project. Scheduling is necessary for the District's adequate monitoring of the progress of the Work and shall be prepared in accordance with the time frame described in this Article 8. The Architect may disapprove of any Schedule or require modification to it if, in the opinion of the Architect or District, adherence to the any Schedule prepared by the Contractor will not cause the Work to be completed in accordance with the Agreement.

8.3.2.6 *No Early Completion.* Contractor shall not submit any Schedule showing early completion without indicating float time through the date set for Project completion by District. Contractor's Baseline Schedule shall account for all days past early completion as float which belongs to the Project. Usage of float shall not entitle Contractor to any delay Claim or damages due to delay.

8.3.2.7 *Use of Schedule Provided in Bid Documents.* In some cases, the bid will include a preliminary schedule indicating Milestones and construction sequences for the Project along with general timing for the Project. The preliminary schedule is not intended to serve as the Baseline Schedule utilized for construction. It is up to the Contractor to study and develop a Baseline Schedule to address the actual durations and sequences of Work that is anticipated while maintaining the Milestones provided by the District. Contract shall obtain information from Contractor's Subcontractors and vendors on the planning, progress, delivery of equipment, coordination, and timing of availability of Subcontractors so a practical plan of Work is fully developed and represented in the Baseline Schedule.

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8.3.2.8 *Incorrect Logic, Durations, Sequences, or Critical Path.* The District may reject or indicate durations, sequences, critical path or logic are not acceptable and request changes. The electronic copy of the Baseline Schedule shall have adequate information so logic ties, duration, sequences and critical path may be reviewed electronically. Contractor is to diligently rebuild and resubmit the Baseline Schedule to represent the Contractor's plan to complete the Work and maintain Milestones at the next progress meeting, or before the next progress meeting. If Contractor is not able to build a Baseline Schedule that is acceptable to the District or Architect, the District reserves the right to utilize the unapproved originally submitted Baseline Schedule (See Article 8.3.2.12) and the comments submitted to hold Contractor accountable for timely delivery of Work and maintenance of Milestones. Furthermore, Contractor's representations in the Baseline Schedule, if unacceptable, may also be used as a basis for termination of the Contract under Article 14 if Contractor fails to adequately maintain the Schedule and falls significantly behind without undertaking the efforts to either submit and follow a Recovery Schedule or fail to submit a Recovery Schedule and make no effort toward recovery on the Project.

8.3.2.9 *Contractor Responsibility Even if Schedule Issues Are Not Discovered.* Failure on the Part of the District to discover errors or omissions in any Schedules submitted shall not be construed to be an approval of the error or omission and any flawed Schedule is not grounds for a time extension.

8.3.2.9 Inclusions in Baseline Schedule. In addition to scheduling requirements set forth at Article 8.3.2, Contractor is specifically directed to include (broken out separately) in Contractor's Baseline Schedule and all Schedule updates, the following items required pursuant to these General Conditions, including but not limited to:

1. Rain Day Float (excluding inclement weather) as required under Article 8.1.4.2. For example, if the NOAA provides 22 days of Rain Days, all 22 days must be incorporated and noted in the Baseline Schedule. Further, any days required to clean-up or dry out shall be included for operations that are likely to require a clean-up or dry out period. Days that are not utilized shall be considered float owned by the Project.
2. Governmental Delay Float under Article 8.1.4.1. This Governmental Delay Float shall only be utilized for Governmental Delays and shall not be considered available float owned by the Project. This float shall only be distributed to the Project upon the completion of the Project and shall be used to offset Liquidated Damages and shall not generate compensable delays.
3. Submittal and Shop Drawing schedule under Article 3.9.
4. Deferred Approvals under Article 3.9.
5. Time for separate contractors, including furniture installation and start up activities, under Article 6.1.
6. Coordination and timing of any Drawings, approvals, notifications, permitting, connection, and testing for all utilities for the Project. (See Article 2.1.4).

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7. Testing, special events, or school activities

8.3.2.10 *Failure to include Mandatory Schedule Items.* District may withhold payment pursuant to Articles 9.3, 9.4 and 9.6. In lieu of withholding payment for failure to include Mandatory Schedule Items, after the District or Architect has notified the Contractor of failure to meet the Baseline Schedule or Updated Schedule requirements and provided a written notification of this failure and provided a written notice of Schedule preparation errors, and the Contractor fails to correct the noted deficiencies or the Contractor does not provide an updated Baseline Schedule correcting the deficiencies, then Contractor shall not be granted an extension of time for failure to obtain necessary items and approvals under Article 8.3.2 and for the time required for failure to comply with laws, building codes, and other regulations (including Title 24 of the California Code of Regulations). Contractor shall maintain all required Article 8.3.2 Schedule items in the Baseline Schedule and indicate any days that have been used as allowed in Article 8. If Contractor fails to include all Article 8.3.2 items in its Baseline Schedule or Schedule Updates and the District either utilizes an Unapproved Schedule under Article 8.3.2.12 or does not object to the inclusion of required scheduling items, then all mandatory Schedule inclusions, including float, shall be utilized in the District's discretion. If the Contract Time is exceeded, then Contractor shall be subject to the assessment of Liquidated Damages pursuant to Article 8.4.

8.3.2.11 *Failure to Meet Requirements.* Failure of the Contractor to provide proper Schedules as required by this Article and Article 9 is a material breach of the Contract and grounds for Termination pursuant to Article 14. The District, at its sole discretion, may choose, instead, to withhold, in whole or in part, any Progress Payments or Retention amounts otherwise payable to the Contractor.

8.3.2.12 *Use of an Unapproved Baseline Schedule.* If the Baseline Schedule submitted by the Contractor is unacceptable to the District (i.e. failing to meet the requirements of Article 8.3.2) and Contractor does not incorporate or address the written comments to the Baseline Schedule and a Baseline Schedule is not approved, but due to extreme necessity, the District moves forward without an approved Baseline Schedule, Contractor shall diligently revise and meet Schedule update requirements of Article 8 and incorporate all Article 8.3.2 comments in all updates). However, for purposes of Termination pursuant to Article 14, the unapproved Baseline Schedule initially submitted shall be treated as the Baseline Schedule with durations shortened or revised to accommodate all float, all mandatory Schedule requirements under Article 8.3.2, any requirements in the Contract Documents, and all revisions by the District or Architect.

8.3.3 Update Schedules

8.3.3.1 *Updates Shall Be Based on Approved Baseline Schedule.* Except in the case where there has not been agreement as to a Baseline Schedule, the approved Baseline Schedule shall be used to build future Schedule updates. Schedule updates shall be a CPM based Schedule consistent with the Baseline Schedule requirements of 8.3.2

In the case that no Baseline has been approved, Schedule updates shall be provided monthly and each update shall incorporate all comments and revisions noted as not complying with the requirements of Article 8.3.2. Contractor shall be held to the Article 8.3.2.12 unapproved Baseline Schedule, inclusive of all Milestones, float, comments and revisions by the District and Architect, all required Baseline Schedule Inclusions under Article 8.3.2, and any requirements in the Contract Documents.

8.3.3.2 *Schedule Updates.* Contractor shall update the approved Schedule each month to address actual start dates and durations, the percent complete on activities, actual completion dates,

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estimated remaining duration for the Work in progress, estimated start dates for Work scheduled to start at future times and changes in duration of Work items

8.3.3.3 *Listing of Items Causing Delays.* Schedule updates shall provide a listing of activities which are causing delay in the progress of Work and a narrative shall be provided showing a description of problem areas, anticipated delays, and impacts on the Construction Schedule. Simply stating "District Delay" or "Architect Delay" shall be an inadequate listing. Delays shall only be listed if they meet the requirements of Article 8.4.

8.3.3.4 *Recovery Schedule.* In addition to providing a schedule update every thirty (30) days, the Contractor, if requested by the Architect or District, shall take the steps necessary to improve Contractor's progress and demonstrate to the District and Architect that the Contractor has seriously considered how the lost time, the Completion Date, or the Milestones that are required to be met within the terms of the Contract. Contractor shall immediately provide a Recovery Schedule showing how Milestones and the Completion Date will be met. In no case, shall a Recovery Schedule be provided later than ten (10) days following the request for a Recovery Schedule from the Architect or District.

- a. Failure to Provide a Recovery Schedule. Shall subject Contractor to the assessment of Liquidated Damages for failure to meet the Contract Time. Refusal or failure to provide a Recovery Schedule shall be considered a substantial failure of performance and a material breach of Contract and may result in Termination of the Contract pursuant to Article 14.
- b. Recovery Schedule Acceleration without Additional Cost. The District may require Contractor prepare a Recovery Schedule showing how the Project shall be accelerated, without any additional cost to the District. The District may order, without additional cost, the following:
 1. Increase the number of shifts;
 2. Utilize overtime to recover the approved Schedule; and/or
 3. Increase the days when Work occurs, including weekends, at the Project and at any manufacturer's plant.
- c. Recovery Schedule Acceleration without Additional Cost. If Contractor disputes that the Recovery Schedule acceleration shall be issued without additional costs, the Contractor shall submit concurrent with Recovery Schedule acceleration notice pursuant to Articles 8.4.3 and 8.4.4.

8.4 EXTENSIONS OF TIME - LIQUIDATED DAMAGES

8.4.1 Liquidated Damages

CONTRACTOR AND DISTRICT HEREBY AGREE THAT THE EXACT AMOUNT OF DAMAGES FOR FAILURE TO COMPLETE THE WORK WITHIN THE TIME SPECIFIED IS EXTREMELY DIFFICULT OR IMPOSSIBLE TO DETERMINE. IF THE WORK IS NOT SUBSTANTIALLY COMPLETED IN THE TIME SET FORTH IN THE AGREEMENT, IT IS UNDERSTOOD THAT THE DISTRICT WILL SUFFER DAMAGES. IT BEING IMPRACTICAL AND

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UNFEASIBLE TO DETERMINE THE AMOUNT OF ACTUAL DAMAGE, IT IS AGREED THE CONTRACTOR SHALL PAY TO THE DISTRICT THE AMOUNT LIQUIDATED DAMAGES SET FORTH IN THE AGREEMENT, FOR EACH CALENDAR DAY OF DELAY IN REACHING SUBSTANTIAL COMPLETION (SEE ARTICLE 1.1.46). CONTRACTOR AND ITS SURETY SHALL BE LIABLE FOR THE AMOUNT THEREOF PURSUANT TO GOVERNMENT CODE SECTION 53069.85.

8.4.2 Delay

Except and only to the extent provided under Article 7 and Article 8, by signing the Agreement, Contractor agrees to bear the risk of delays to Completion of the Work and that Contractor's bid for the Project was made with full knowledge of this risk.

In agreeing to bear the risk of delays to complete the Work, Contractor understands that, except and only to the extent provided otherwise in Article 7 and 8, the occurrence of events that delay the Work shall not excuse Contractor from its obligation to achieve Completion of the Project within the Contract Time, and shall not entitle the Contractor to an adjustment to the Contract time.

8.4.3 Excusable Delay

Contractor shall not be charged for Liquidated Damages because of any delays in completion of Work which are not the fault or negligence of Contractor or its Subcontractors, arising from Rain Float or Project Float, including acts of God, as defined in Public Contract Code section 7105, acts of enemy, epidemics and quarantine restrictions. Contractor shall within five (5) calendar days of beginning of any such delay notify District in writing of causes of delay; thereupon District shall ascertain the facts and extent of delay and grant extension of time for completing Work when, in its judgment, the findings of fact justify such an extension. Extensions of time shall apply only to that portion of Work affected by delay, and shall not apply to other portions of Work not so affected. An extension of time may only be granted after proper compliance with Article 8.3 requiring preparation and submission of a properly prepared CPM schedule.

8.4.3.1 *Excusable Delay Is Not Compensable.* No extended overhead, general conditions costs, impact costs, out-of-sequence costs or any other type of compensation, by any name or characterization, shall be paid to the Contractor for any delay to any activity not designated as a critical path item on the latest approved Project schedule.

8.4.3.2 *Notification.* The Contractor shall notify the Architect in writing of any anticipated delay and its cause, in order that the Architect may take immediate steps to prevent, if possible, the occurrence or continuance of delay, and may determine whether the delay is to be considered avoidable or unavoidable, how long it continues, and to what extent the prosecution and completion of the Work might be delayed thereby.

8.4.3.3 *Extension Request.* In the event the Contractor requests an extension of Contract time for unavoidable delay, such request shall be submitted in accordance with the provisions in the Contract Documents governing changes in Work (See Article 7). When requesting time, i.e., extensions, for proposed Change Orders, they must be submitted with the proposed Change Order with full justification and documentation. If the Contractor fails to submit justification with the proposed Change Order it waives its right to a time extension at a later date. Such justification must be based on the official Contract schedule as updated at the time of occurrence of the delay or execution of Work related to any changes to the scope

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of Work. Blanket or general claims for extra days without specific detailed information as required herein or a blanket or general reservation of rights do not fulfill the requirements of this Article and shall be denied. The justification must include, but is not limited to, the following information:

- a. The duration of the activity relating to the changes in the Work and the resources (manpower, equipment, material, etc.) required to perform these activities within the stated duration.
- b. Logical ties to the official Baseline Schedule or Approved Updated Schedule for the proposed changes and/or delay showing the activity/activities in the schedule whose start or completion dates are affected by the change and/or delay. (A fragnet of any delay of over ten (10) days must be provided.)

The Contractor and District understand and expressly agree that insofar as Public Contract Code section 7102 may apply to changes in the Work or delays under this Contract, the actual delays and damages, if any, and time extensions are intended to, and shall provide, the exclusive and full method of compensation for changes in the Work and construction delays.

8.4.4 Notice by Contractor Required

The Contractor shall within five (5) calendar days of beginning of any such delay notify the District in writing of causes of delay with justification and supporting documentation. In the case of a Recovery Schedule pursuant to Article 8.3.3.4, Contractor shall submit written notice concurrent with the Recovery Schedule. District will then ascertain the facts and extent of the delay and grant an extension of time for completing the Work when, in its judgment, the findings of fact justify such an extension. Extensions of time shall apply only to that portion of the Work affected by the delay and shall not apply to other portions of the Work not so affected.

Claims relating to time extensions shall be made in accordance with applicable provisions of Article 7.

8.4.4.1 *Adjustment for Compensable Delays.* The Schedule may be adjusted for a delay if, and only if, Contractor undertakes the following:

- a. Contractor submits a timely COR or CO pursuant to the requirements of Article 7.
- b. Contractor submits a fragnet showing the critical path delay caused by the COR, CO, Changed Condition, CCD, or ICD
- c. Contractor has addressed all required float days in the Fragnet.
- d. Contractor submits a complete breakdown of all costs incurred utilizing the format of Article 7.3.3

8.4.5 No Additional Compensation for Coordinating Governmental Submittals and the Resulting Work

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CONTRACTOR HAS PLANNED ITS WORK AHEAD OF TIME AND IS AWARE THAT GOVERNMENTAL AGENCIES, SUCH AS THE GAS COMPANIES, ELECTRICAL UTILITY COMPANIES, WATER DISTRICTS AND OTHER AGENCIES MAY HAVE TO APPROVE CONTRACTOR PREPARED DRAWINGS OR APPROVE A PROPOSED INSTALLATION. CONTRACTOR HAS INCLUDED DELAYS AND DAMAGES WHICH MAY BE CAUSED BY SUCH AGENCIES IN CONTRACTOR'S BID AND HAS INCLUDED ADEQUATE TIME IN THE CONTRACTOR'S BASELINE SCHEDULE. FAILURE TO ADEQUATELY PLAN AND SCHEDULE IS NOT A BASIS TO USE GOVERNMENTAL DELAY FLOAT.

8.4.6 District Right to Accelerate the Work

The District may direct the Contractor to meet schedule requirements when the Work has been delayed. The District shall compensate the Contractor for the additional costs incurred by acceleration to the extent that such costs are directly attributable to the acceleration and are incurred through no fault or negligence of the Contractor.

8.4.6.1 *Management of Acceleration.* Contractor acceleration shall not include Work that is part of the scope of Work detailed in the Plans and Specifications. Instead, the acceleration costs shall be premium or overtime and quantifiable additional work added to the Project meant to accelerate the Project. Contractor is directed to keep consistent crews on the Project so time can be tracked. If crews are circulated off the Project or crews brought in only for overtime, the District may be charged for Contract Work and not accelerated time. In such case, the District may object to the costs submitted.

8.4.6.2 *Costs for Acceleration.* Cost for Acceleration shall be supported by backup documentation, and time sheets signed by the Inspector for each day work has been performed, at or near the time when the Work was performed. A listing on the time sheet shall document all labor, materials and services utilized that day and provide areas of work, and amount of work performed. Contractor shall comply with submission requirements of Article 7.7.

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ARTICLE 9 PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

The Contract Sum or Contract Price is stated in the Agreement and, including authorized adjustments, is the total amount payable by the District to the Contractor for performance of the Work under the Contract Documents.

9.2 COST BREAKDOWN

9.2.1 Required Information

Contractor shall furnish the following:

- a. Within ten (10) days after Notice to Proceed, a detailed breakdown of the Contract Price (hereinafter "Schedule of Values") for each Project, Site, building, Milestone or other meaningful method to measure the level of Project Completion as determined by the District shall be submitted as a Submittal for the Project.;
- b. Within ten (10) days after the date of the Notice to Proceed, a schedule of estimated monthly payment requests due the Contractor showing the values and construction time of the various portions of the Work to be performed by it and by its Subcontractors or material and equipment suppliers containing such supporting evidence as to its correctness as the District may require;
- c. Within ten (10) days after the date of the Notice to Proceed, address, telephone number, telecopier number, California State Contractors License number, classification and monetary value of all subcontracts for parties furnishing labor, material, or equipment for completion of the Project.

9.2.2 Information and Preparation of Schedule of Values

9.2.2.1 *Break Down of Schedule of Values.* Schedule of Values shall be broken down by Project, site, building, Milestone, or other meaningful method to measure the level of Project Completion as determined by the District.

9.2.2.2 *Based on Contractor Bid Costs.* The Schedule of Values shall be based on the costs from Contractor's bid to the District. However, the submission of the Schedule of Values shall not be front loaded so the Contractor is paid a greater value than the value of the Work actually performed and shall not shift funds from parts of the Project that are later to Work that is performed earlier.

9.2.2.3 *Largest Dollar Value for Each Line Item.* Identify Subcontractors and materials suppliers proposed to provide portions of Work equal to or greater than ten thousand dollars (\$10,000) or one-half of one percent (0.5%) of their Contract Price, whichever is less.

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9.2.2.4 *Allowances.* Any Allowances provided for in the Contract shall be a line item in the Schedule of Values.

9.2.2.5 *Labor and Materials Shall Be Separate.* Labor and Materials shall be broken into two separate line items unless specifically agreed in writing by the District.

9.2.3 District Approval Required

The District shall review all submissions received pursuant to Article 9.2 in a timely manner. All submissions must be approved by the District before becoming the basis of any payment.

9.3 PROGRESS PAYMENTS

9.3.1 Payments to Contractor

Unless there is a resolution indicating that the Work for the Project is substantially complex, within thirty-five (35) days after approval of the Request for Payment, Contractor shall be paid a sum equal to ninety-five percent (95%) of the value of the Work performed (as certified by Architect and Inspector and verified by Contractor) up to the last day of the previous month, less the aggregate of previous payments. In the case of a Project designated substantially complex, the sum paid to the Contractor shall be equal to ninety percent (90%) of the value of the Work performed (as certified by the Architect and Inspector and verified by Contractor). The value of the Work completed shall be the Contractor's best estimate. Work completed as estimated shall be an approximation or estimate only and no mistake, inaccuracy, error or falsification in said any approved estimate shall operate to release the Contractor, or any Surety upon any bond, from damages arising from such Work, or from the District's enforcement of each and every provision of this Contract including but not limited to the Performance Bond and Payment Bond. The District shall have the right to subsequently to correct any mistake, inaccuracy, error or falsification made or otherwise set forth in any approved Request for Payment and such correction may occur in any future Payment Application or in the Retention Payment to the Contractor. No Surety upon any bond shall be relieved, released or exonerated of its obligations under this Contract or any applicable bond when the District is unable to correct an overpayment to the Contractor due to any abandonment by the Contractor or termination by the District.

The Contractor shall not be entitled to have any payment requests processed, or be entitled to have any payment made for Work performed, so long as any lawful or proper direction given by the District concerning the Work, or any portion thereof, remains incomplete.

Notwithstanding anything to the contrary stated above, the Contractor may include in its Request for Payment the value of any structural steel, glue laminated beams, trusses, bleachers and other such custom-made materials prepared specifically for the Project and unique to the Project so long as all of the following requirements are satisfied:

- a. The aggregate cost of materials stored off-site shall not exceed Twenty Five Thousand Dollars (\$25,000) at any time or as otherwise agreed to be District in writing;
- b. Title to such materials shall be vested in the District as evidenced by documentation satisfactory in form and substance to the District, including, without limitation, recorded financing statements, UCC filings and UCC searches;

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- c. With each Contractor Request for Payment, the Contractor shall submit to the District a written list identifying each location where materials are stored off-site (which must be a bonded warehouse) and the value of the materials at each location. The Contractor shall procure insurance satisfactory to the District (in its reasonable discretion) for materials stored off-site in an amount not less than the total value thereof;
- d. The consent of any Surety shall be obtained to the extent required prior to payment for any materials stored off-site;
- e. Representatives of the District shall have the right to make inspections of the storage areas at any time; and
- f. Such materials shall be: (1) protected from diversion, destruction, theft and damage to the reasonable satisfaction of the District; (2) specifically marked for use on the Project; and (3) segregated from other materials at the storage facility.

9.3.2 Purchase of Materials and Equipment and Cost Fluctuations

The Contractor is required to order, obtain, and store materials and equipment sufficiently in advance of its Work at no additional cost or advance payment from District to assure that there will be no delays. Contractor understands that materials fluctuate in value and shall have adequately addressed market fluctuations through agreements with Contractor vendors or by other means. Contractor further understands and incorporates into Contractor's bid cost any wage rate increases during the Project for the Contractor's labor force as well as all other Subcontractor and vendor labor forces. District shall not be responsible for market fluctuations in costs or labor rate increases during the Project. Contractor further has incorporated any and all cost increases in areas of Work where there may be schedule variations so that cost increases are not passed through to the District.

9.3.3 No Waiver

No payment by District hereunder shall be interpreted so as to imply that District has inspected, approved, or accepted any part of the Work. Contractor specifically understands that Title 24 Section 4-343 which states:

"It is the duty of the contractor to complete the work covered by his or her contract in accordance with the approved Plans and Specifications therefore. The contractor in no way is relieved of any responsibility by the activities of the Architect, Engineer, Inspector or DSA in the performance of such duties... In no case, however, shall the instruction of the Architect or registered Engineer be construed to cause work to be done with is not in conformity with the approved Plans, Specifications, and change orders..."

Notwithstanding any payment, the District may enforce each and every provision of this Contract which includes, but is not limited to, the Performance Bond and Payment Bond. The District may correct any error subsequent to any payment. In no event shall the Contractor or the Surety be released or exonerated from performance under this Contract when the District overpays the Contractor based upon any mistake, inaccuracy, error or falsification in any estimate that is included in any Request for Payment.

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9.3.4 Issuance of Certificate of Payment

The Architect shall, within seven (7) days after receipt of the Contractor's Application for Payment, either approve such payment or notify the Contractor in writing of the Architect's reasons for withholding approval in whole or in part as provided in Article 9.6. The review of the Contractor's Application for Payment by the Architect is based on the Architect's observations at the Project and the data comprising the Application for Payment that the Work has progressed to the point indicated and that, to the best of the Architect's knowledge, information, and belief, the quality of the Work is in accordance with the Contract Documents. In some cases, the Architect may act upon or rely on the evaluation of the Work by the Inspector. This review of Payment Applications is sometimes called a "Pencil Draft." District's return of a Pencil Draft shall constitute the District's dispute of the Payment Application that has been submitted. Contractor shall promptly respond to Pencil Drafts or Contractor's Payment Applications may be delayed. Contractor's failure to promptly respond to a Pencil Draft shall qualify as a delay in the prompt payment of a Request for Payment or Request for Retention. The foregoing representations are subject to: (1) an evaluation of the Work for conformance with the Contract Documents, (2) results of subsequent tests and inspections, (3) minor deviations from the Contract Documents correctable prior to completion, and (4) specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute the Contractor's verified representation that the Contractor is entitled to payment in the amount certified.

9.3.5 Payment of Undisputed Contract Payments

In accordance with Public Contract Code section 7100, payments by the District to the Contractor for any and all undisputed amounts (including all Progress Payments, Final Payments or Retention Payment) is contingent upon submission of a proper and accurate Payment Application and the Contractor furnishing the District with a release of all Claims against the District related to such undisputed amounts. Disputed Contract Claims in stated amounts may be specifically excluded by the Contractor from the operation of the release. If, however, the Contractor specifically excludes any Claims, the Contractor shall provide details such as a specific number of disputed days or costs of any such exclusion in accordance with Articles 4.6 and 7.7.

9.4 APPLICATIONS FOR PROGRESS PAYMENTS

9.4.1 Procedure

9.4.1.1 *Application for Progress.* On or before the fifth (5th) day of each calendar month during the progress of the Work, Contractor shall submit to the Architect an itemized Application for Progress Payment for operations completed. Such application shall be notarized, if required, and supported by the following or such portion thereof as Architect requires:

1. The amount paid to the date of the Payment Application to the Contractor, to all its Subcontractors, and all others furnishing labor, material, or equipment for its Contract;
2. The amount being requested under the Payment Application by the Contractor on its own behalf and separately stating the amount requested on behalf of each of the Subcontractors and all others furnishing labor, material, and equipment under the Contract;

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3. The balance that will be due to each of such entities after said payment is made;
4. A certification that the As-Built Drawings and Annotated Specifications are current;
5. Itemized breakdown of Work done for the purpose of requesting partial payment;
6. An updated or approved Baseline Schedule or other Schedule updates in conformance with Article 8;
7. Failure to submit an updated Schedule for the month or any previous month;
8. The additions to and subtractions from the Contract Price and Contract Time;
9. A summary of the Retention held;
10. Material invoices, evidence of equipment purchases, rentals, and other support and details of cost as the District may require from time to time;
11. The percentage of completion of the Contractor's Work by line item;
12. An updated Schedule of Values from the preceding Application for Payment;
13. Prerequisites for Progress Payments; and
14. Any other information or documents reasonably requested by the District, Architect, Inspector or CM (if applicable).

9.4.1.2 *First Payment Request.* The following items, if applicable, must be completed before the first payment request will be accepted for processing:

1. Installation of the Project sign;
2. Receipt by Architect of Submittals;
3. Installation of field office;
4. Installation of temporary facilities and fencing;
5. Submission of documents listed in the Article 9.2 relating to Contract Price breakdown;
6. Preliminary schedule analysis, due within 10 days after Notice to Proceed;

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7. Contractor's Baseline Schedule (to be CPM based in conformance with Article 8);
8. Schedule of unit prices, if applicable;
9. Submittal Schedule;
10. Copies of necessary permits;
11. Copies of authorizations and licenses from governing authorities;
12. Initial progress report;
13. Surveyor qualifications;
14. Written acceptance of District's survey of rough grading, if applicable;
15. List of all Subcontractors, with names, license numbers, telephone numbers, and scope of work;
16. All bonds and insurance endorsements; and
17. Resumes of General Contractor's Project Manager, and if applicable, job site secretary, record documents recorder, and job site Superintendent.

9.4.1.3 *Second Payment Request.* The second payment request will not be processed until all Submittals and Shop Drawings have been accepted for review by the Architect.

9.4.1.4 *All Payment Requests.* No payment requests will be processed unless Contractor has submitted copies of the certified payroll records for the Work which correlates to the payment request and a proper CPM schedule pursuant to Article 8 is submitted.

9.4.1.5 *Final Payment Application (90% or 95%).* See Article 9.11.1

9.4.1.6 *Final Payment Application (100%).* See Article 9.11.3

9.5 STOP NOTICE CLAIMS AND WARRANTY OF TITLE

The Contractor warrants title to all Work. The Contractor further warrants that all Work is free and clear of liens, claims, security interests, stop notices, or encumbrances in favor of the Contractor, Subcontractors, material and equipment suppliers, or other persons or entities making a claim by reason of having provided labor, materials, and equipment relating to the Work. Failure to keep work free of liens, stop notices, claims, security interests or encumbrances is grounds to make a claim against Contractor's Payment and Performance Bond to immediately remedy and defend.

If a lien or stop notice of any nature should at any time be filed against the Work or any District property, by any entity which has supplied material or services at the request of the Contractor, Contractor and Contractor's Surety shall promptly, on demand by District and at Contractor's and Surety's own

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expense, take any and all action necessary to cause any such lien or stop notice to be released or discharged immediately therefrom.

If the Contractor fails to furnish to the District within ten (10) calendar days after written demand by the District, satisfactory evidence that a lien or stop notice has been so released, discharged, or secured, then District may discharge such indebtedness and deduct the amount required therefor, together with any and all losses, costs, damages, and attorney's fees and expense incurred or suffered by District from any sum payable to Contractor under the Contract. In addition, any liens, stop notices, claims, security interests or encumbrances shall trigger the indemnification requirements under Article 3.15 and the Agreement Form, and shall act as a trigger under Civil Code section 2778 and 2779 requiring reimbursement for any and all costs following the District's written demand has been made. Any withholdings by the District for stop notices in accordance with Civil Code section 9358 shall not be a basis by the Contractor to make a Claim for interest penalties under Public Contract Code sections 7107 or 20104.50.

9.6 DECISIONS TO WITHHOLD PAYMENT

9.6.1 Reasons to Withhold Payment

The District may withhold payment in whole, or in part, to the extent reasonably necessary to protect the District if, in the District's opinion, the representations to the District required by Article 9.4 cannot be made. The District may withhold payment, in whole, or in part, to such extent as may be necessary to protect the District from loss because of, but not limited to:

- a. Defective Work not remedied;
- b. Stop notices served upon the District;
- c. Liquidated Damages assessed against the Contractor;
- d. The cost of Completion of the Contract if there exists reasonable doubt that the Work can be Completed for the unpaid balance of any Contract Price or by the completion date;
- e. Damage to the District or other contractor;
- f. Unsatisfactory prosecution of the Work by the Contractor;
- g. Failure to store and properly secure materials;
- h. Failure of the Contractor to submit on a timely basis, proper and sufficient documentation required by the Contract Documents, including, without limitation, acceptable monthly progress schedules, Shop Drawings, Submittal schedules, Schedule of Values, Product Data and samples, proposed product lists, executed Change Order, Construction Change Documents, and verified reports;
- i. Failure of the Contractor to maintain As-Built Drawings;
- j. Erroneous estimates by the Contractor of the value of the Work performed, or other false statements in an Payment Application;

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- k. Unauthorized deviations from the Contract Documents (including but not limited to Unresolved Notices of Deviations (DSA Form 154));
- l. Failure of the Contractor to prosecute the Work in a timely manner in compliance with established progress schedules and completion dates.
- m. Failure to properly pay prevailing wages as defined in Labor Code section 1720, et seq.;
- n. Failure to properly maintain or clean up the Site;
- o. Payments to indemnify, defend, or hold harmless the District;
- p. Any payments due to the District including but not limited to payments for failed tests, or utilities changes or permits;
- q. Failure to submit an acceptable Baseline Schedule or any Schedule or Schedule update in accordance with Article 8;
- r. Failure to pay Subcontractor or suppliers as required by Article 9.8.1
- s. Failure to secure warranties, including the cost to pay for warranties;
- t. Failure to provide releases from material suppliers or Subcontractors when requested to do so;
- u. Items deducted pursuant to Article 2.2;
- v. Incomplete Punch List items under Article 9.9.1.1 which have gone through the Article 2.2 process; or
- w. Allowances that have not been used.

9.6.2 Reallocation of Withheld Amounts

District may, in its discretion, apply any withheld amount to payment of outstanding claims or obligations as defined in Article 9.6.1 and 9.5. In so doing, District shall make such payments on behalf of Contractor. If any payment is so made by District, then such amount shall be considered as a payment made under Contract by District to Contractor and District shall not be liable to Contractor for such payments made in good faith. Such payments may be made without prior judicial determination of claim or obligation. District will render Contractor an accounting of such funds disbursed on behalf of Contractor.

If Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents or fails to perform any provision thereof, District may, after ten (10) calendar days written notice to the Contractor and without prejudice to any other remedy make good such deficiencies. The District shall adjust the total Contract price by reducing the amount thereof by the cost of making good such deficiencies. If District deems it inexpedient to correct Work which is damaged, defective, or not done in accordance with Contract provisions, an equitable reduction in the Contract Price (of at least 150% of the estimated reasonable value of the nonconforming Work) shall be made therefor.

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9.6.3 Payment After Cure

When the grounds for declining approval are removed, payment shall be made for amounts withheld because of them. No interest shall be paid on any retainage or amounts withheld due to the failure of the Contractor to perform in accordance with the terms and conditions of the Contract Documents.

9.7 NONCONFORMING WORK

Contractor shall promptly remove from premises all Work identified by District as failing to conform to the Contract whether incorporated or not. Contractor shall promptly replace and re-execute its own Work to comply with the Contract without additional expense to District and shall bear the expense of making good all Work of other contractors destroyed or damaged by such removal or replacement.

If Contractor does not remove such Work which has been identified by District as failing to conform to the Contract Documents within a reasonable time, fixed by written notice, District may remove it and may store the material at Contractor's expense. If Contractor does not pay expenses of such removal within ten (10) calendar days' time thereafter, District may, upon ten (10) calendar days' written notice, sell such materials at auction or at private sale and shall account for net proceeds thereof, after deducting all costs and expenses that should have been borne by Contractor.

9.8 SUBCONTRACTOR PAYMENTS

9.8.1 Payments to Subcontractors

No later than ten (10) days after receipt, or pursuant to Business and Professions Code section 7108.5, the Contractor shall pay to each Subcontractor, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

9.8.2 No Obligation of District for Subcontractor Payment

The District shall have no obligation to pay, or to see to the payment of, money to a Subcontractor except as may otherwise be required by law.

9.8.3 Payment Not Constituting Approval or Acceptance

An approved Request for Payment, a progress payment, a Certificate of Substantial Completion, or partial or entire use or occupancy of the Project by the District shall not constitute acceptance of Work that is not in accordance with the Contract Documents.

9.8.4 Joint Checks

District shall have the right, if necessary for the protection of the District, to issue joint checks made payable to the Contractor and Subcontractors and material or equipment suppliers. The joint check payees shall be responsible for the allocation and disbursement of funds included as part of any such joint payment. In no event shall any joint check payment be construed to create any contract between the District and a Subcontractor of any tier, any obligation from the District to such Subcontractor, or rights in such Subcontractor against the District. The District may choose to issue joint checks at District's sole

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discretion and only after all the requirements of that particular school district and county are specifically met. Some school districts cannot issue joint checks, so the ability to issue joint checks depends on the school district and the specific circumstances.

9.9 COMPLETION OF THE WORK

9.9.1 Close-Out Procedures

9.9.1.1 *Incomplete Punch Items.* When the Contractor considers the Work Substantially Complete (See Article 1.1.46 for definition of Substantially Complete), the Contractor shall prepare and submit to the District a comprehensive list of minor items to be completed or corrected (hereinafter “Incomplete Punch Items” or “Punch List”). The Contractor and/or its Subcontractors shall proceed promptly to complete and correct the Incomplete Punch Items listed. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Contractor is aware that Title 24 Section 4-343(a) provides:

“RESPONSIBILITIES. IT IS THE DUTY OF THE CONTRACTOR TO COMPLETE THE WORK COVERED BY HIS OR HER CONTRACT IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS THEREFOR. THE CONTRACTOR IN NO WAY IS RELIEVED OF ANY RESPONSIBILITY BY THE ACTIVITIES OF THE ARCHITECT, ENGINEER, INSPECTOR OR DSA IN THE PERFORMANCE OF SUCH DUTIES.

9.9.1.2 *Punch List Is Prepared Only After the Project Is Substantially Complete.* If any of the conditions noted in Article 1.1.46 as defining Substantial Completion are not met, the Inspector, Architect or District may reject Contractor’s Incomplete Punch Items as premature. If the Architect and Inspector commence review of Incomplete Punch Items, all rights are reserved until the Project actually meets the definition of Substantially Complete. Liquidated Damages, warranties, and other contractual rights are not affected by Incomplete Punch Items unless otherwise addressed in these General Conditions.

Once the Inspector and the Architect determine the Project is Substantially Complete, a Certificate of Substantial Completion shall be issued. The Inspector and Architect shall prepare a Punch List of items which is an inspection report of the Work, if any, required in order to complete the Contract Documents and ensure compliance with the DSA Approved Plans so the Project may be Completed by the Contractor and a final DSA Close-Out is approved. When all Work for the Project is Complete, including Punch Lists and all Work complies with the approved Contract Documents and Change Orders, the Project has reached Final Completion.

9.9.1.3 *Time for Completion of Punch List.* Contractor shall only be given a period of no more than thirty (30) days to complete the Punch List for the Project. During the Punch List period, the Contractor’s Superintendent and Project Manager shall remain engaged in the Project and shall not be removed or replaced. If the Punch List is not completed at the end of the Punch List time then Contractor shall issue a valued Punch List within 5 days after the date the Punch List time ends. If Contractor does not issue such a list, the District or Architect may issue a valued Punch List to the Contractor and withhold up to 150% of the value of the Punch List Work pursuant to Article 2.2 of this Agreement.

Failure to issue a timely written request for additional time to complete Punch List shall result in the deletion of the remaining Punch List Work pursuant to Article 2.2 and the issuance of a Deductive Change Order.

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- a. Extension of Time to Complete Punch List. If Contractor cannot finish the Punch List Work during the time period allotted under Article 9.9.1.3, the Contractor may make a written request for a Non-Compensable Punch List time extension accompanied by an estimate of the number of additional days it will take to complete the Punch List Work for a written consent from the District to allow continued Punch List Work. Punch List time extensions are a maximum of thirty (30) days for each request and must be accompanied by an itemized valued Punch List.
- b. If there is no valued Punch List accompanying any request or if Contractor intends to undertake Punch List without the continued support and supervision of its Superintendent and Project Manager (as required under Article 3.2), the District, Construction Manager or Architect may issue a valued Punch List, reject the Punch List Time Extension and deduct 150% of the valued Punch List pursuant to Article 2.2 and proceed to Close-Out the Project. Contractor shall cease work on the Project and proceed to complete Contractor's Retention Payment Application and complete the Work for the Project required pursuant to Article 9.11.3.

9.9.1.4 *District Rejection of Written Request for Punch List Time Extensions.* Following sixty (60) Days of Punch List under Article 9.9.1.3, the District has the option of rejecting Punch List Time Extension requests. The District may proceed under Article 2.2 and deduct the value of remaining Punch List Work pursuant to Article 2.2. If the District rejects the Punch List Time Extension request then Contractor shall cease Work on the Project and proceed to Final Inspection pursuant to Article 9.11.2.

9.9.1.5 *Punch List Liquidated Damages to Compensate for Added District Project Costs.* If the total time utilized for Punch List exceeds sixty (60) days [the thirty (30) day period under Article 9.9.1.3 plus an additional thirty (30) day period that has been requested in writing], and the District grants an additional written Punch List Time Extension that exceeds sixty (60) days of Punch List, then Contractor shall be charged Liquidated Damages of at least \$750 per day for continued Punch List Work to partially compensate the Inspector, Architect, and Construction Manager's extended time on the Project. This Punch List Liquidated Damage number is based on anticipated cost for an Inspector on site and additional costs for the Architect and Construction Manager to reinspect Punch List items and perform the administration of the Close-out.

Contractor received thirty (30) days without any charges for Punch List Liquidated Damages and is placed on notice pursuant to this Article 9.9.1.5 that \$750 is due for each day of Punch List that exceeds sixty (60) days at \$750, a cost much lower than typical (and actual) costs for Inspection, Architect and Construction Manager time required during Punch List. Starting at ninety (90) days of Punch List (an excessive number of days to complete Punch List), the District shall be entitled to adjust Punch List Liquidated Damages to an estimate of the actual costs incurred to oversee, monitor and inspect the Punch List. If costs exceed \$750 per day, the anticipated extended contract charges for Inspection, Architect, Construction Manager, and any other costs that will be incurred due to the extended Punch List shall be itemized and a daily rate of Punch List Liquidated Damages shall be presented in writing to the Contractor within five (5) days following the receipt of a written request for Punch List Time Extension by the Contractor that extends the Punch List time beyond ninety (90) days. This written notice of actual Punch List Liquidated Damages may be provided to the Contractor at any time following the first written request for Punch List Time extension requested under Article 9.9.1.3. The adjusted actual Punch List Liquidated

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Damage amount shall be applicable as Punch List Liquidated Damages commencing on the ninetieth (90th) day of Punch List.

9.9.2 Close-Out Requirements for Final Completion of the Project

- a. Utility Connections. Buildings shall be connected to water, gas, sewer, and electric services, complete and ready for use. Service connections shall be made and existing services reconnected
- b. As-Built Up to Date and Complete. The intent of this procedure is to obtain an exact "As-Built" record of the Work upon completion of the project. The following information shall be carefully and correctly drawn on the prints and all items shall be accurately located and dimensioned from finished surfaces of building walls on all As-Built Drawings
 1. The exact location and elevations of all covered utilities, including valves, cleanouts, etc. must be shown on As-Built Drawings
 2. Contractor is liable and responsible for inaccuracies in As-Built Drawings, even though they become evident at some future date.
 3. Upon completion of the Work and as a condition precedent to approval of Retention Payment, Contractor shall obtain the Inspector's approval of the "As-Built" information. When completed, Contractor shall deliver corrected sepias and/or a Diskette with an electronic file in a format acceptable to the District.
 4. District may withhold the cost to hire a draftsman and potholing and testing service to complete Record As-Built Drawings at substantial cost if the Contractor does not deliver a complete set of Record As-Built Drawings. This shall result in withholding of between \$10,000 to \$20,000 per building that does not have a corresponding Record As Built Drawing.
- c. Any Work not installed as originally indicated on Drawings
- d. All DSA Close-Out requirements (See DSA Certification Guide) Contractor is also specifically directed to Item 3.2 in the DSA Certification Guide and the applicable certificates for the DSA-311 form.
- e. Submission of Form 6-C. Contractor shall be required to execute a Form 6-C as required under Title 24 Sections 4-343. The Contractor understands that the filing with DSA of a Form 6-C is a requirement to obtain final DSA Approval of the construction by Contractor and utilized to verify under penalty of perjury that the Work performed by Contractor complies with the DSA approved Contract Documents. The failure to file a DSA Form 6C has two consequences. First, the Construction of the Project will not comply with the design immunity provisions of Government Code section 830.6 and exposes the District and the individual Board members to personal liability for injuries that occur on the Project.

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Secondly , under DSA IR A-20, since the Project cannot be Certified by DSA, no future or further Projects will be authorized so Contractor will have essentially condemned the campus from any future modernization or addition of new classrooms through their failure to file the DSA Form 6C.

1. *Execution of the DSA Form 6-C is Mandatory.* Refusal to execute the Form 6-C, which is a Final DSA Verified Report that all Work performed complies with the DSA approved Contract Documents is a violation of Education Code section 17312 and shall be referred to the Attorney General for Prosecution.
 2. *Referral to the District Attorney for Extortion.* If the Contractor's refusal to execute the DSA Form 6C is to leverage a Dispute, Claim or Litigation, then the matter shall also be referred to the District Attorney for prosecution for extortion.
 3. *Contractor shall be Responsible for All Costs to Certify the Project.* The District may certify the Project complies with Approved Plans and Specifications by utilizing the procedures under the Project Certification Guide (located at the DSA website). All costs for professionals, inspection, and testing required for an alternate Project Certification shall be the Contractor's responsibility and the District reserves its right to institute legal action against the Contractor and Contractor's Surety for all costs to certify the Project and all costs to correct Non-Compliant Work that is discovered during the Alternate Certification Process.
- f. ADA Work that must be corrected to receive DSA certification. See Article 12.2.
- g. Maintenance Manuals. At least thirty (30) days prior to final inspection, three (3) copies of complete operations and maintenance manuals, repair parts lists, service instructions for all electrical and mechanical equipment, and equipment warranties shall be submitted. All installation, operating, and maintenance information and Drawings shall be bound in 8½" x 11" binders. Provide a table of contents in front and all items shall be indexed with tabs. Each manual shall also contain a list of Subcontractors, with their addresses and the names of persons to contact in cases of emergency. Identifying labels shall provide names of manufactures, their addresses, ratings, and capacities of equipment and machinery.
1. Maintenance manuals shall also be delivered in electronic media for the Project. Any demonstration videos shall also be provided on electronic media.
- h. Inspection Requirements. Before calling for final inspection, Contractor shall determine that the following Work has been performed:
1. The Work has been completed;
 2. All fire/ life safety items are completed and in working order;

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3. Mechanical and electrical Work complete, fixtures in place, connected and tested;
4. Electrical circuits scheduled in panels and disconnect switches labeled;
5. Painting and special finishes complete;
6. Doors complete with hardware, cleaned of protective film relieved of sticking or binding and in working order;
7. Tops and bottoms of doors sealed;
8. Floors waxed and polished as specified;
9. Broken glass replaced and glass cleaned;
10. Grounds cleared of Contractor's equipment, raked clean of debris, and trash removed from Site;
11. Work cleaned, free of stains, scratches, and other foreign matter, replacement of damaged and broken material;
12. Finished and decorative work shall have marks, dirt and superfluous labels removed;
13. Final cleanup, as in Article 3.12;
14. All Work pursuant to Article 9.11.2; and
15. Furnish a letter to District stating that the District's Representative or other designated person or persons have been instructed in working characteristics of mechanical and electrical equipment.

9.9.3 Costs of Multiple Inspections

More than two (2) requests of the District to make inspections required under Article 9.9.1 shall be considered an additional service of Architect, Inspector, Engineer or other consultants shall be the Contractor's responsibility pursuant to Article 4.5 and all subsequent costs will be prepared as a Deductive Change Order.

9.10 PARTIAL OCCUPANCY OR USE

9.10.1 District's Rights

The District may occupy or use any completed or partially completed portion of the Work at any stage. The District and the Contractor shall agree in writing to the responsibilities assigned to each of them for payments, security, maintenance, heat, utilities, damage to the Work, insurance, the period for correction of the Work, and the commencement of warranties required by the Contract Documents. If District and Contractor cannot agree as to responsibilities such disagreement shall be resolved pursuant to

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Article 4.6. When the Contractor considers a portion complete, the Contractor shall prepare and submit a Punch List to the District as provided under Article 9.9.1.

9.10.2 Inspection Prior to Occupancy or Use

Immediately prior to such partial occupancy or use, the District, the Contractor, and the Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

9.10.3 No Waiver

Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

9.11 COMPLETION AND FINAL PAYMENT

9.11.1 Final Payment (90% Billing if Substantially Complex Finding and 95% Billing If No Finding Is Made)

The following items must be completed before the Final Payment Application will be accepted for processing at Substantial Completion of the Project:

- a. Inspector sign-off of each item in the DSA 152 Project Inspection Card;
- b. The Project has reached the Punch List items under Article 9.9.1.2 and the Project has been determined to be Substantially Complete under Article 1.1.46;
- c. Removal of temporary facilities and services;
- d. Testing, adjusting and balance records are complete;
- e. Removal of surplus materials, rubbish, and similar elements;
- f. Changeover of door locks;
- g. Deductive items pursuant to Article 9.6 and Article 2.2; and
- h. Completion and submission of all final Change Orders for the Project.

9.11.2 Final Inspection (Punch List Completion)

Contractor shall comply with Punch List procedures under Article 9.9.1.1, and maintain the presence of Project Superintendent and Project Manager (not replacement project superintendent or project manager) until the Punch List is complete to ensure proper and timely completion of the Punch List. Under no circumstances shall Contractor demobilize its forces prior to completion of the Punch List.

Upon completion of the Work under Article 9.9.1, the Contractor shall notify the District and Architect, who shall again inspect such Work. If the Architect and the District find the Work contained in the Punch List acceptable under the Contract Documents, the Work shall have reached Final Completion.

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Architect shall notify Contractor, who shall then submit to the Architect its Application for Retention Payment. This Application for Retention Payment shall contain any deductions under Article 9.6, including but not limited to incomplete Punch List items under Article 9.9.1.

Upon receipt and approval of Application for Retention Payment, the Architect shall issue a Form 6 stating that to the best of its knowledge, information, and belief, and on the basis of its observations, inspections, and all other data accumulated or received by the Architect in connection with the Work, such Work has been completed in accordance with the Contract Documents. The District shall thereupon inspect such Work and either accept the Work as complete or notify the Architect and the Contractor in writing of reasons why the Work is not complete. Upon acceptance of the Work of the Contractor as fully complete (which, absent unusual circumstances, will occur when the Punch List items have been satisfactorily completed), the District shall record a Notice of Completion with the County Recorder, and the Contractor shall, upon receipt of payment from the District, pay the amounts due Subcontractors.

If the Architect and the District find that the Work contained in the Punch List is unacceptable, then Contractor shall issue a valued Punch List within 5 days after the date the Punch List time ends. If Contractor does not issue such a list, the District or Architect may issue a valued Punch List to the Contractor and withhold up to 150% of the value of the Punch List Work pursuant to Article 2.2 of this Agreement.

9.11.3 Retainage (100% Billing for the Entire Project)

The retainage, less any amounts disputed by the District or which the District has the right to withhold pursuant to the Contract Documents (including but not limited to incomplete Punch List items under Article 9.9.1), shall be paid after approval by the District of the Application for Retention Payment, after the satisfaction of the conditions set forth in Article 9, the Final Inspection under Article 9.11.2 is completed, and after thirty-five (35) days after the acceptance of the Work and recording of the Notice of Completion by District. No interest shall be paid on any retainage, or on any amounts withheld due to a failure of the Contractor to perform, in accordance with the terms and conditions of the Contract Documents, except as provided to the contrary in any escrow agreement between the District and the Contractor.

- a. Procedures for Application for Retention Payment. The following conditions must be fulfilled prior to release of Retention Payment:
 1. A full and final waiver or release of all stop notices in connection with the Work shall be submitted by Contractor, including a release of stop notice in recordable form, together with (to the extent permitted by law) a copy of the full and final release of all Stop Notice rights.
 2. The Contractor shall have made all corrections, including all Punch List Items, to the Work which are required to remedy any defects therein, to obtain compliance with the Contract Documents or any requirements of applicable codes and ordinances, or to fulfill any of the orders or directions of District required under the Contract Documents.

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3. Each Subcontractor shall have delivered to the Contractor all written guarantees, warranties, applications, releases from the Surety and warranty bonds (if applicable) required by the Contract Documents for its portion of the Work.
4. Contractor must have completed all requirements set forth in Article 9.9
5. Contractor must have issued a Form 6C for the Project.
6. The Contractor shall have delivered to the District all manuals and materials required by the Contract Documents.
7. The Contractor shall have completed final clean up as required by Article 3.12
8. Contractor shall have all deductive items under Article 9.6 and Article 2.2 submitted as part of the Retention Payment.

9.11.4 Recording of a Notice of Completion After Punch List Period and Final Inspection.

When the Work, or designated portion thereof, is complete or the District has completed the Article 9.6 and/or the Article 2.2 process, whichever occurs first, the District will file either a Notice of Completion or a Notice of Completion noting valued Punch List items. Valued Punch List items will be deducted from the Retention Payment.

During the time when Work is being performed on the Punch List, the Project does not meet the definition of "Complete" under Public Contract Code section 7107(c)(1) even if there is "beneficial occupancy" of the Project since that has been no "cessation of labor" on the Project. Completion of Punch List under this Article is not "testing, startup, or commissioning by the public entity or its agent." In other words, the continuing Punch List Work is Contractor labor on the Project until each and every item of Punch List Work is complete or the time periods under Article 9.9.1 have expired.

9.11.5 Warranties

Warranties required by the Contract Documents shall commence on the date of Completion of the entire Work. Warranty periods DO NOT commence at Substantial Completion or when a particular Subcontractor work is complete. No additional charges, extras, Change Orders, or Claims may be sought for warranties commencing from the Notice of Completion.

District shall have the right to utilize equipment, test, and operate as necessary for acclimation, or testing without voiding or starting warranties. Taking beneficial occupancy shall not start warranties except in the case where the District agrees, in writing, that warranties shall commence running or where the District is taking phased occupancy of specific buildings or areas and completes separate Punch Lists as further addressed in Article 4.2.7.

9.11.6 Time for Submission of Application for Final Payment and Retention Payment (Unilateral Processing of Final and Retention Payment Application).

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If Contractor submits a Final Payment Application which fails to include deductive items under Article 9.6, the District or Architect shall note this defective request for Final Payment Application. The Contractor shall be notified that specific deductive items shall be included in the Final Payment Application. If Contractor either continues to submit the Final Payment Application without deductive items under Article 9.6, or a period of 14 calendar days passes after Contractor is provided written notice of deductive items for inclusion in Final Payment Application, then District may either alter the Final Payment Application and recalculate the math on the Final Payment Application to address the Article 9.6 deductive items or process a unilateral Final Payment Application.

9.11.7 Unilateral Release of Retention

After the recordation of the Notice of Completion, or within sixty (60) days following the completion of the Punch List or the expiration of the time for completion of Punch List under Article 9.9.1, if Contractor does not make an Application for Release of Retention, the District may unilaterally release retention less any deducts under Article 9.6 and/or Article 2.2, withholds due to stop notices, or withholdings due to other defective Work on the Project. District may also choose to unilaterally release Retention after deduction of 150% of any disputed items, which may also include items under Article 9.6 and 2.2. If a deduction pursuant to Article 9.6 is made from Retention, a letter deducting specific valued items shall be considered a notice of Default under the terms of the Escrow Agreement.

9.12 SUBSTITUTION OF SECURITIES

The District will permit the substitution of securities in accordance with the provisions of Public Contract Code section 22300 as set forth in the form contained in the Bid Documents.

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ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 Contractor Responsibility

The Contractor shall be responsible for all damages to persons or property that occur as a result of its fault or negligence in connection with the prosecution of this Contract and shall take all necessary measures and be responsible for the proper care and protection of all materials delivered and Work performed until completion and final acceptance by the District. All Work shall be solely at the Contractor's risk, with the exception of damage to the Work caused by "acts of God" as defined in Public Contract Code section 7105(b)(2).

Contractor shall take, and require Subcontractor to take, all necessary precautions for safety of workers on the Work and shall comply with all applicable federal, state, local and other safety laws, standards, orders, rules, regulations, and building codes to prevent accidents or injury to persons on, about, or adjacent to premises where Work is being performed and to provide a safe and healthful place of employment. In addition to meeting all requirements of OSHA, Cal-OSHA, state, and local codes, Contractor shall furnish, erect and properly maintain at all times, as directed by District or Architect or required by conditions and progress of Work, all necessary safety devices, safeguards, construction canopies, signs, audible devices for protection of the blind, safety rails, belts and nets, barriers, lights, and watchmen for protection of workers and the public, and shall post danger signs warning against hazards created by such features in the course of construction. Contractor shall designate a responsible member of its organization on the Work, whose duty shall be to post information regarding protection and obligations of workers and other notices required under occupational safety and health laws, to comply with reporting and other occupational safety requirements, and to protect the life, safety and health of workers. The name and position of person so designated shall be reported to District by Contractor. Contractor shall correct any violations of safety laws, rules, orders, standards, or regulations. Upon the issuance of a citation or notice of violation by the Division of Occupational Safety and Health, such violation shall be corrected promptly.

10.1.2 Subcontractor Responsibility

Contractor shall require that Subcontractors participate in, and enforce, the safety and loss prevention programs established by the Contractor for the Project, which will cover all Work performed by the Contractor and its Subcontractors. Each Subcontractor shall designate a responsible member of its organization whose duties shall include loss and accident prevention, and who shall have the responsibility and full authority to enforce the program. This person shall attend meetings with the representatives of the various Subcontractors employed to ensure that all employees understand and comply with the programs.

10.1.3 Cooperation

All Subcontractors and material or equipment suppliers shall cooperate fully with Contractor, the District, and all insurance carriers and loss prevention engineers.

10.1.4 Accident Reports

GENERAL CONDITIONS

Subcontractors shall immediately, within two (2) days, report in writing to the Contractor all accidents whatsoever arising out of, or in connection with, the performance of the Work, whether on or off the Site, which caused death, personal injury, or property damage, giving full details and statements of witnesses. In addition, if death or serious injuries or serious damages are caused, the accident shall be reported within four (4) days by telephone or messenger. Contractor shall thereafter immediately, within two (2) days, report the facts in writing to the District and the Architect giving full details of the accident.

10.1.5 First-Aid Supplies at Site

The Contractor will provide and maintain at the Site first-aid supplies which complies with the current Occupational Safety and Health Regulations.

10.1.6 Material Safety Data Sheets and Compliance with Proposition 65

Contractor is required to have material safety data sheets available in a readily accessible place at the job site for any material requiring a material safety data sheet per the Federal "hazard communication" standard, or employees' "right-to-know law." The Contractor is also required to properly label any substance brought into the job site, and require that any person working with the material, or within the general area of the material, is informed of the hazards of the substance and follows proper handling and protection procedures.

Contractor is required to comply with the provisions of California Health and Safety Code section 25249, et seq., which requires the posting and giving of notice to persons who may be exposed to any chemical known to the State of California to cause cancer. The Contractor agrees to familiarize itself with the provisions of this Section, and to comply fully with its requirements.

10.1.7 Non-Utilization of Asbestos Material

NO ASBESTOS OR ASBESTOS-CONTAINING PRODUCTS SHALL BE USED IN THIS CONSTRUCTION OR IN ANY TOOLS, DEVICES, CLOTHING, OR EQUIPMENT USED TO EFFECT THIS CONSTRUCTION.

Asbestos and/or asbestos-containing products shall be defined as all items containing, but not limited to, chrysotile, amosite, anthophyllite, tremolite, and antinolite.

Any or all material containing greater than one-tenth of one percent (>.1%) asbestos shall be defined as asbestos-containing material.

All Work or materials found to contain asbestos or Work or material installed with asbestos-containing equipment will be immediately rejected and this Work will be removed at no additional cost to the District.

Decontamination and removal of Work found to contain asbestos or Work installed with asbestos-containing equipment shall be done only under supervision of a qualified consultant, knowledgeable in the field of asbestos abatement and accredited by the Environmental Protection Agency.

The asbestos removal contractor shall be an EPA accredited contractor qualified in the removal of asbestos and shall be chosen and approved by the asbestos consultant, who shall have sole discretion and final determination in this matter.

GENERAL CONDITIONS

The asbestos consultant shall be chosen and approved by the District, who shall have sole discretion and final determination in this matter.

The Work will not be accepted until asbestos contamination is reduced to levels deemed acceptable by the asbestos consultant.

Interface of Work under this Contract with Work containing asbestos shall be executed by the Contractor at his risk and at his discretion, with full knowledge of the currently accepted standards, hazards, risks, and liabilities associated with asbestos work and asbestos-containing products. By execution of this Contract, the Contractor acknowledges the above and agrees to hold harmless District and its assigns for all asbestos liability which may be associated with this work and agrees to instruct his employees with respect to the above-mentioned standards, hazards, risks, and liabilities.

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 The Contractor

The Contractor shall take reasonable precautions for the safety of, and shall provide reasonable protection to prevent damage, injury, or loss to:

- a. Employees on the Work and other persons who may be affected thereby;
- b. The Work, material, and equipment to be incorporated therein, whether in storage on or off the Site, under the care, custody, or control of the Contractor or the Contractor's Subcontractors or Sub-subcontractors; and
- c. Other property at the Site or adjacent thereto such as trees, shrubs, lawns, walks, pavement, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

Contractor is constructive owner of Project site as more fully discussed in Article 6.2.

10.2.2 Contractor Notices

The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on the safety of persons or property or their protection from damage, injury, or loss.

10.2.3 Safety Barriers and Safeguards

The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.

10.2.4 Use or Storage of Hazardous Material

When use or storage of explosives, other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on

GENERAL CONDITIONS

such activities under supervision of properly qualified personnel. The Contractor shall notify the District any time that explosives or hazardous materials are expected to be stored on Site. Location of storage shall be coordinated with the District and local fire authorities.

10.2.5 Protection of Work

The Contractor and Subcontractors shall continuously protect the Work, the District's property, and the property of others, from damage, injury, or loss arising in connection with operations under the Contract Documents. The Contractor and Subcontractors, at their own expense, shall make good any such damage, injury, or loss, except such as may be solely due to, or caused by, agents or employees of the District.

The Contractor, at Contractor's expense, will remove all mud, water, or other elements as may be required for the proper protection and prosecution of its Work.

Contractor shall take adequate precautions to protect existing roads, sidewalks, curbs, pavements, utilities, adjoining property and structures (including, without limitation, protection from settlement or loss of lateral support), and to avoid damage thereto, and repair any damage thereto caused by construction operations. All permits, licenses, or inspection fees required for such repair Work shall be obtained and paid for by Contractor.

10.2.6 Requirements for Existing Sites

Contractor shall (unless waived by the District in writing):

- a. When performing construction on existing sites, become informed and take into specific account the maturity of the students on the Site; and perform Work which may interfere with school routine before or after school hours, enclose working area with a substantial barricade, and arrange Work to cause a minimum amount of inconvenience and danger to students and faculty in their regular school activities. The Contractor shall comply with Specifications and directives of the District regarding the timing of certain construction activities in order to avoid unnecessary interference with school functioning.
- b. Avoid performing any Work that will disturb students during testing.
- c. Provide substantial barricades around any shrubs or trees indicated to be preserved.
- d. Deliver materials to building area over route designated by Architect.
- e. Take preventive measures to eliminate objectionable dust, noise, or other disturbances.
- f. Confine apparatus, the storage of materials, and the operations of workers to limits indicated by law, ordinances, permits or directions of Architect; and not interfere with the Work or unreasonably encumber premises or overload any structure with materials; and enforce all instructions of District and Architect regarding signs, advertising, fires, and smoking and require that all workers comply with all regulations while on the Project site.

GENERAL CONDITIONS

- g. Take care to prevent disturbing or covering any survey markers, monuments, or other devices marking property boundaries or corners. If such markers are disturbed by accident, they shall be replaced by an approved land surveyor or civil engineer and all maps and records required therefrom shall be filed with county and local authorities, at no cost to the District. All filing and plan check fees shall be paid by Contractor.
- h. Provide District on request with Contractor's written safety program and safety plan for each site.

10.2.7 Shoring and Structural Loading

The Contractor shall not impose structural loading upon any part of the Work under construction or upon existing construction on or adjacent to the Site in excess of safe limits, or loading such as to result in damage to the structural, architectural, mechanical, electrical, or other components of the Work. The design of all temporary construction equipment and appliances used in construction of the Work and not a permanent part thereof, including, without limitation, hoisting equipment, cribbing, shoring, and temporary bracing of structural steel, is the sole responsibility of the Contractor. All such items shall conform with the requirements of governing codes and all laws, ordinances, rules, regulations, and orders of all authorities having jurisdiction. The Contractor shall take special precautions, such as shoring of masonry walls and temporary tie bracing of structural steel Work, to prevent possible wind damage during construction of the Work. The installation of such bracing or shoring shall not damage the Work in place or the Work installed by others. Any damage which does occur shall be promptly repaired by the Contractor at no cost to the District.

10.2.8 Conformance within Established Limits

The Contractor and Subcontractors shall confine their construction equipment, the storage of materials, and the operations of workers to the limits indicated by laws, ordinances, permits, and the limits established by the District or the Contractor, and shall not unreasonably encumber the premises with construction equipment or materials.

10.2.9 Subcontractor Enforcement of Rules

Subcontractors shall enforce the District's and the Contractor's instructions, laws, and regulations regarding signs, advertisements, fires, smoking, the presence of liquor, and the presence of firearms by any person at the Site.

10.2.10 Site Access

The Contractor and the Subcontractors shall use only those ingress and egress routes designated by the District, observe the boundaries of the Site designated by the District, park only in those areas designated by the District, which areas may be on or off the Site, and comply with any parking control program established by the District, such as furnishing license plate information and placing identifying stickers on vehicles.

10.2.11 Security Services.

GENERAL CONDITIONS

The Contractor shall be responsible for providing security services for the Site as needed for the protection of the Site and as determined in the District's sole discretion.

10.3 EMERGENCIES

10.3.1 Emergency Action

In an emergency affecting the safety of persons or property, the Contractor shall take any action necessary, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 7.

10.3.2 Accident Reports

The Contractor shall promptly report in writing to the District all accidents arising out of or in connection with the Work, which caused death, personal injury, or property damage, giving full details and statements of any witnesses in conformance with Article 10.1.4. In addition, if death, serious personal injuries, or serious property damages are caused, the accident shall be reported in accordance with Article 10.1.4, immediately by telephone or messenger to the District.

10.4 HAZARDOUS MATERIALS

10.4.1 Discovery of Hazardous Materials

In the event the Contractor encounters or suspects the presence on the job site of material reasonably believed to be asbestos, polychlorinated biphenyl (PCB), or any other material defined as being hazardous by § 25249.5 of the California Health and Safety Code, which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the District and the Architect in writing, whether or not such material was generated by the Contractor or the District. The Work in the affected area shall not thereafter be resumed, except by written agreement of the District and the Contractor, if in fact the material is asbestos, polychlorinated biphenyl (PCB), or other hazardous material, and has not been rendered harmless. The Work in the affected area shall be resumed only in the absence of asbestos, polychlorinated biphenyl (PCB), or other hazardous material, or when it has been rendered harmless by written agreement of the District and the Contractor.

10.4.2 Hazardous Material Work Limitations

In the event that the presence of hazardous materials is suspected or discovered on the Site (except in cases where asbestos and other hazardous material Work in the Contractor's responsibility), the District shall retain an independent testing laboratory to determine the nature of the material encountered and whether corrective measures or remedial action is required. The Contractor shall not be required pursuant to Article 7 to perform without consent any Work in the affected area of the Site relating to asbestos, polychlorinated biphenyl (PCB), or other hazardous material, until any known or suspected hazardous material has been removed, or rendered harmless, or determined to be harmless by District, as certified by an independent testing laboratory and approved by the appropriate government agency.

10.4.3 Indemnification by Contractor for Hazardous Material Caused by Contractor

GENERAL CONDITIONS

In the event the hazardous materials on the Project Site is caused by the Contractor, the Contractor shall pay for all costs of testing and remediation, if any, and shall compensate the District for any additional costs incurred as a result of Contractor's generation of hazardous material on the Project Site. In addition, the Contractor shall defend, indemnify and hold harmless District and its agents, officers, and employees from and against any and all claims, damages, losses, costs and expenses incurred in connection with, arising out of, or relating to, the presence of hazardous material on the Project Site.

10.4.4 Terms of Hazardous Material Provision

The terms of this Hazardous Material provision shall survive the completion of the Work and/or any termination of this Contract.

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ARTICLE 11 INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.1 Insurance Requirements

Before the commencement of the Work, the Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in California with a financial rating of at least an A-VIII status as rated in the most recent edition of Best's Insurance Reports or as amended by the Supplementary General Conditions, such insurance as will protect the District from claims set forth below, which may arise out of or result from the Contractor's Work under the Contract and for which the Contractor may be legally liable, whether such Work are by the Contractor, by a Subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. Any required insurance shall not contain any exclusion that applies to the type of work performed by the Contractor under the Contract Documents.

- a. Claims for damages because of bodily injury, sickness, disease, or death of any person District would require indemnification and coverage for employee claim;
- b. Claims for damages insured by usual personal injury liability coverage, which are sustained by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor or by another person;
- c. Claims for damages because of injury or destruction of tangible property, including loss of use resulting therefrom, arising from operations under the Contract Documents;
- d. Claims for damages because of bodily injury, death of a person, or property damage arising out of the ownership, maintenance, or use of a motor vehicle, all mobile equipment, and vehicles moving under their own power and engaged in the Work;
- e. Claims involving contractual liability applicable to the Contractor's obligations under the Contract Documents, including liability assumed by and the indemnity and defense obligations of the Contractor and the Subcontractors; and
- f. Claims involving Completed Operations, Independent Contractors' coverage, and Broad Form property damage, without any exclusions for collapse, explosion, demolition, underground coverage, and excavating. (XCU)
- g. Claims involving sudden or accidental discharge of contaminants or pollutants.

11.1.2 Specific Insurance Requirements

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Contractor shall take out and maintain and shall require all Subcontractors, if any, whether primary or secondary, to take out and maintain:

Comprehensive General Liability Insurance with a combined single limit per occurrence of not less than \$2,000,000.00 or Commercial General Liability Insurance which provides limits of not less than:

- | | | |
|-------|--|----------------|
| (a) | Per occurrence (combined single limit) | \$2,000,000.00 |
| | | |
| (b) | Project Specific Aggregate (for this Project only) | \$2,000,000.00 |
| | | |
| (c) | Products and Completed Operations (aggregate) | \$2,000,000.00 |
| | | |
| (d) | Personal and Advertising Injury Limit | \$1,000,000.00 |
| | | |

Insurance Covering Special Hazards

The following Special hazards shall be covered by riders or riders to above mentioned public liability insurance or property damage insurance policy or policies of insurance, in amounts as follows:

- | | | |
|-------|--|----------------|
| (a) | Automotive and truck where operated in amounts | \$1,000,000.00 |
| | | |
| (b) | Material Hoist where used in amounts | \$1,000,000.00 |
| | | |
| (c) | Explosion, Collapse and Underground (XCU coverage) | \$1,000,000.00 |
| | | |
| (d) | Hazardous Materials | \$1,000,000.00 |
| | | |

In addition, provide Excess Liability Insurance coverage in the amount of Four Million Dollars (\$4,000,000.00).

11.1.3 Subcontractor Insurance Requirements

The Contractor shall require its Subcontractors to take out and maintain public liability insurance and property damage insurance required under Article 11.1 in like amounts. A “claims made” or modified “occurrence” policy shall not satisfy the requirements of Article 11.1 without prior written approval of the District.

11.1.4 Additional Insured Endorsement Requirements

GENERAL CONDITIONS

The Contractor shall name, on any policy of insurance required under Article 11.1, the District, CM, Architect, Inspector, the State of California, their officers, employees, agents, volunteers and independent contractors as additional insureds. Subcontractors shall name the Contractor, the District, Architect, Inspector, the State of California, their officers, employees, agents, volunteers and independent contractors as additional insureds. The Additional Insured Endorsement included on all such insurance policies shall be an ISO CG 20 10 (04/13), or an ISO CG 20 38 (04/13), or their equivalent as determined by the District in its sole discretion, and must state that coverage is afforded the additional insured with respect to claims arising out of operations performed by or on behalf of the insured. If the additional insureds have other insurance which is applicable to the loss, such other insurance shall be on an excess or contingent basis. The insurance provided by the Contractor pursuant to 11.1 must be designated in the policy as primary to any insurance obtained by the District. The amount of the insurer's liability shall not be reduced by the existence of such other insurance.

11.2 WORKERS' COMPENSATION INSURANCE

During the term of this Contract, the Contractor shall provide workers' compensation and employer's liability insurance for all of the Contractor's employees engaged in Work under this Contract on or at the Site of the Project and, in case any of the Contractor's Work is subcontracted, the Contractor shall require the Subcontractor to provide workers' compensation insurance for all the Subcontractor's employees engaged in Work under the subcontract. Any class of employee or employees not covered by a Subcontractor's insurance shall be covered by the Contractor's insurance. In case any class of employees engaged in Work under this Contract on or at the Site of the Project is not protected under the Workers' Compensation laws, the Contractor shall provide or cause a Subcontractor to provide insurance coverage for the protection of those employees not otherwise protected. The Contractor shall file with the District certificates of insurance as required under Article 11.6 and in compliance with Labor Code § 3700.

Workers' compensation limits as required by the Labor Code, but not less than \$1,000,000 and employers' liability limits of \$1,000,000 per accident for bodily injury or disease.

11.3 BUILDER'S RISK/ "ALL RISK" INSURANCE

11.3.1 Course-of-Construction Insurance Requirements

The Contractor, during the progress of the Work and until final acceptance of the Work by District upon completion of the entire Contract, shall maintain Builder's Risk, Course of Construction or similar first party property coverage issued on a replacement cost value basis consistent with the total replacement cost of all insurable Work and the Project included within the Contract Documents. Coverage is to insure against all risks of accidental direct physical loss, and must include, by the basic grant of coverage or by endorsement, the perils of vandalism, malicious mischief (both without any limitation regarding vacancy or occupancy), fire, sprinkler leakage, civil authority, sonic boom, earthquake, flood, collapse, wind, lightning, smoke and riot. The coverage must include debris removal, demolition, increased costs due to enforcement of building ordinance and law in the repair and replacement of damage and undamaged portions of the property, and reasonable costs for the Architect's and engineering services and expenses required as a result of any insured loss upon the Work and Project which is the subject of the Contract Documents, including completed Work and Work in progress, to the full insurable value thereof. Such insurance shall include the District and the Architect as additional named insureds, and any other person with an insurable interest as designated by the District.

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The Contractor shall submit to the District for its approval all items deemed to be uninsurable. The risk of the damage to the Work due to the perils covered by the “Builder’s Risk/All Risk” Insurance, as well as any other hazard which might result in damage to the Work, is that of the Contractor and the Surety, and no Claims for such loss or damage shall be recognized by the District nor will such loss or damage excuse the complete and satisfactory performance of the Contract by the Contractor.

11.4 FIRE INSURANCE

Before the commencement of the Work, the Contractor shall procure, maintain, and cause to be maintained at the Contractor’s expense, fire insurance on all Work subject to loss or damage by fire. The amount of fire insurance shall be sufficient to protect the Project against loss or damage in full until the Work is accepted by the District. This requirement may be waived upon confirmation by the District that such coverage is provided under the Builder’s Risk Insurance being provided.

11.5 AUTOMOBILE LIABILITY

11.5.1 The District, Architect and Construction Manager, Inspectors, their directors, officers, employees, agents and volunteers shall be covered as additional insureds with respect to the ownership, operation, maintenance, use, loading or unloading of any auto owned, leased, hired or borrowed by the Contractor or for which the Contractor is responsible. Such insurance coverage shall be primary and non-contributory insurance as respects the District, Architect, Construction Manager, Project Inspector, their directors, officers, employees, agents and volunteers, or if excess, shall stand in an unbroken chain of coverage excess of the Contractor’s scheduled underlying coverage. Any insurance or self-insurance maintained by the District, Architect, Construction Manager, Project Inspector, their directors, officers, employees, agents and volunteers shall be excess of the Contractor’s insurance and shall not be called upon to contribute with it. The insurer shall agree to waive all rights of subrogation against the District, Architect, Construction Manager, Project Inspector, their directors, officers, employees, agents and volunteers for losses paid under the terms of the insurance policy that arise from Work performed by the Contractor.

11.5.2 Insurance Services Office Business Auto Coverage Form Number CA 0001, Code 1 (any auto) is required. Comprehensive Automobile Liability insurance to include all autos, owned, non-owned, and hired, with limits of \$1,000,000 per accident for bodily injury and property damage.

11.6 OTHER INSURANCE

The Contractor shall provide all other insurance required to be maintained under applicable laws, ordinances, rules, and regulations.

11.7 PROOF OF INSURANCE

The Contractor shall not commence Work nor shall it allow any Subcontractor to commence Work under this Contract until all required insurance and certificates have been obtained and delivered in duplicate to the District for approval subject to the following requirements:

a. Certificates and insurance policies shall include the following clause:

“This policy and any coverage shall not be suspended, voided, non-renewed, canceled, or reduced in required limits of liability or amounts of insurance or coverage

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until notice has been mailed via certified mail to the District. Date of cancellation or reduction may not be less than thirty (30) days after the date of mailing notice.”

- b. Certificates of insurance shall state in particular those insured, the extent of insurance, location and operation to which the insurance applies, the expiration date, and cancellation and reduction notices.
- c. Certificates of insurance shall clearly state that the District and the Architect are named as additional insureds under the policy described and that such insurance policy shall be primary to any insurance or self-insurance maintained by District.
- d. The Contractor and its Subcontractors shall produce a certified copy of any insurance policy required under this Section upon written request of the District.

11.8 COMPLIANCE

In the event of the failure of Contractor to furnish and maintain any insurance required by this Article 11, the Contractor shall be in default under the Contract. Compliance by Contractor with the requirement to carry insurance and furnish certificates or policies evidencing the same shall not relieve the Contractor from liability assumed under any provision of the Contract Documents, including, without limitation, the obligation to defend and indemnify the District and the Architect.

11.9 WAIVER OF SUBROGATION

Contractor waives (to the extent permitted by law) any right to recover against the District for damages to the Work, any part thereof, or any and all claims arising by reason of any of the foregoing, but only to the extent that such damages and/or claims are covered by property insurance and only to the extent of such coverage (which shall exclude deductible amounts) by insurance actually carried by the District.

The provisions of this Article are intended to restrict each party to recovery against insurance carriers only to the extent of such coverage and waive fully and for the benefit of each, any rights and/or claims which might give rise to a right of subrogation in any insurance carrier. The District and the Contractor shall each obtain in all policies of insurance carried by either of them, a waiver by the insurance companies thereunder of all rights of recovery by way of subrogation for any damages or claims covered by the insurance.

11.10 PERFORMANCE AND PAYMENT BONDS

11.10.1 Bond Requirements

Unless otherwise specified in the Supplemental Conditions, prior to commencing any portion of the Work, the Contractor shall furnish separate Payment and Performance Bonds for its portion of the Work which shall cover 100% faithful performance of and payment of all obligations arising under the Contract Documents and/or guaranteeing the payment in full of all claims for labor performed and materials supplied for the Work. All bonds shall be provided by a corporate Surety authorized and admitted to transact business in California as sureties.

GENERAL CONDITIONS

To the extent, if any, that the Contract Price is increased in accordance with the Contract Documents, the Contractor shall, upon request of the District, cause the amount of the bonds to be increased accordingly and shall promptly deliver satisfactory evidence of such increase to the District. To the extent available, the bonds shall further provide that no change or alteration of the Contract Documents (including, without limitation, an increase in the Contract Price, as referred to above), extensions of time, or modifications of the time, terms, or conditions of payment to the Contractor will release the Surety. If the Contractor fails to furnish the required bonds, the District may terminate the Contract for cause.

11.10.2 Surety Qualification

Only bonds executed by admitted Surety insurers as defined in Code of Civil Procedure § 995.120 shall be accepted. Surety must be a California-admitted Surety and listed by the U.S. Treasury with a bonding capacity in excess of the Project cost.

11.10.3 Alternate Surety Qualifications

If a California-admitted Surety insurer issuing bonds does not meet these requirements, the insurer will be considered qualified if it is in conformance with § 995.660 of the California Code of Civil Procedure and proof of such is provided to the District.

GENERAL CONDITIONS

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

12.1 COMPLIANCE WITH TITLE 24 INSTALLATION REQUIREMENTS

Contractor is aware of the requirements governing Contractor's Work under title 24 Section 4-343 which provides, in pertinent part:

4-343. Duties of the Contractor.

(a) **Responsibilities.** It is the duty of the contractor to complete the Work covered by his or her contract in accordance with the approved Plans and Specifications therefore. The contractor in no way is relieved of any responsibility by the activities of the architect, engineer, Inspector or DSA in the performance of such duties.

(b) **Performance of the Work.** The contractor shall carefully study the approved Plans and Specifications and shall plan a schedule of operations well ahead of time. If at any time it is discovered that Work is being done which is not in accordance with the approved Plans and Specifications, the contractor shall correct the Work immediately. All inconsistencies or items which appear to be in error in the Plans and Specifications shall be promptly called to the attention of the architect or registered engineer, through the Inspector, for interpretation or correction. In no case, however, shall the instruction of the architect or registered engineer be construed to cause Work to be done which is not in conformity with the approved Plans, Specifications, and Change Orders. The contractor must notify the Project Inspector, in advance, of the commencement of construction of each and every aspect of the Work.

12.1.1 Issuance of Notices of Non-Compliance

The Inspector may issue a Notice of Non-Compliance on the Project indicating deviation from Plans and Specifications. It is Contractor's responsibility to correct all deviations from the approved Plans and Specifications unless the District has issued an Immediate Change Directive. In such case, the Contractor shall proceed with the Work with the understandings of the District as set forth in the ICD and as specifically noted in Article 7.3.

12.2 SPECIAL NOTICE OF AMERICAN'S WITH DISABILITIES ACT

Some of the requirements in the Plans and Specifications are meant to comply with the Americans with Disabilities Act ("ADA"). The requirements of the ADA are technical in nature and may appear to be minor in nature (i.e. whether a walkway or ramp has a 2% cross-slope). Contractor is warned that even the slightest deviation from the specific requirements from the ADA is considered a Civil Rights violation and subjects the District to fines of three times actual damages sustained by a handicap individual or up to \$4,000 per violation and attorney's fees required to enforce the ADA violation. As a result of the significant liability and exposure associated with ADA aspects of the Contract, Contractor shall take special care to meet all ADA requirements detailed in the Plans and Specifications. Failure to comply with ADA rules that results in a Notice of Non-Compliance shall be repaired to meet ADA requirements promptly. In addition, any ADA violations that are not identified by Inspector or Architect that are later identified shall be repaired and charged back to the Contractor through a Deductive Change Order.

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12.2.1 Indemnification of ADA Claims

Contractor shall indemnify, hold harmless and defend the District from ADA claims arising from the failure to comply with the Plans and Specifications. Further, any withholdings for ADA violations under Article 9.6 shall include potential redesign costs and an accelerated repair costs due to the potential for ADA claims arising from DSA posting of ADA violations on the Project.

12.3 UNCOVERING OF WORK

12.3.1 Uncovering Work for Required Inspections

Work shall not be covered without the Inspector's review and the Architect's knowledge that the Work conforms with the requirements of the approved Plans and Specifications (except in the case of an ICD under Article 7.3). Inspector must be timely notified of inspections and of new areas so Work can be inspected at least 48 hours before opening a new area (For example, see DSA Form 156 for Commencement/Completion of Work Notification which requires "at least 48 hour" advance notification of a new area). An Inspector must comply with DSA protocols for signing each category or phase of Work under DSA Form 152 (in compliance with the Form 152 Manual) or a Notice of Deviation (DSA Form 154) will be issued requiring the Work that was not inspected be uncovered for inspection. Thus, if a portion of the Work is covered without inspection or Architect approval, is subject to a Notice of Non-Compliance for being undertaken without inspection, or otherwise not in compliance with the Contract Documents, after issuance of a Written Notice of Non-Compliance (Form 154) or a written notice to uncover Work, Contractor shall promptly uncover all Work (which includes furnishing all necessary facilities, labor, and material) for the Inspector's or the Architect's observation and such Work shall be replaced at the Contractor's expense without change in the Contract Sum or Time.

12.3.2 Costs for Inspections Not Required

If a portion of the Work has been covered is believed to be Non-Conforming to the Plans and Specifications, even if the Form 152 for the category of Work has been signed by the Inspector, the Inspector or the Architect may request to see such Work, and it shall be promptly uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncover and replacement shall, by appropriate Change Order and shall, be charged to the District. If such Work is not in accordance with Contract Documents, the Contractor shall be responsible for all costs to uncover the Work, delays incurred to uncover the Work, and Contractor shall pay all costs to correct the Non-Conforming construction condition unless the condition was caused by the District or a separate contractor, in which event the District shall be responsible for payment of such costs to the Contractor.

12.4 CORRECTION OF WORK

12.4.1 Correction of Rejected Work

The Contractor shall promptly correct the Work rejected by the Inspector or the District upon recommendation of the Architect as failing to conform to the requirements of the Contract Documents, whether observed before or after Completion and whether or not Fabricated, installed, or completed. The Contractor shall bear costs of correcting the rejected Work, including cost for delays that may be incurred by Contractor or Subcontractors, the cost for additional testing, inspections, and compensation for the Inspector's or the Architect's services and expenses made necessary thereby (including costs for preparing a CCD, DSA CCD review fees, and additional inspection and special inspection costs).

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12.4.2 One-Year Warranty Corrections

If, within one (1) year after the date of Completion of the Work or a designated portion thereof, or after the date for commencement of warranties established under Article 9.9.1, or by the terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the District to do so unless the District has previously given the Contractor a written acceptance of such condition. This period of one (1) year shall be extended with respect to portions of the Work first performed after Completion by the period of time between Completion and the actual performance of the Work. This obligation under this Article 12.4.2 shall survive acceptance of the Work under the Contract and termination of the Contract. The District shall give such notice promptly after discovery of the condition.

12.4.3 District's Rights if Contractor Fails to Correct

If the Contractor fails to correct nonconforming Work within a reasonable time, the District may correct the Work and seek a Deductive Change Order, pursuant to Article 9.6 or Article 2.2.

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ARTICLE 13 MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located.

13.2 SUCCESSORS AND ASSIGNS

The District and the Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to the other party hereto and to partners, successors, assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

13.3 WRITTEN NOTICE

In the absence of specific notice requirements in the Contract Documents, written notice shall be deemed to have been duly served if delivered in person to the individual, member of the firm or entity, or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

13.4 RIGHTS AND REMEDIES

13.4.1 Duties and Obligations Cumulative

Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

13.4.2 No Waiver

No action or failure to act by the Inspector, the District, or the Architect shall constitute a waiver of a right or duty afforded them under the Contract Documents, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed in writing.

13.5 TESTS AND INSPECTIONS

13.5.1 Compliance

Tests, inspections, and approvals of portions of the Work required by the Contract Documents will comply with Division 1, Title 24, and with all other laws, ordinances, rules, regulations, or orders of public authorities having jurisdiction.

13.5.2 Independent Testing Laboratory

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The District will select and pay an independent testing laboratory to conduct all tests and inspections. Selection of the materials required to be tested shall be made by the laboratory or the District's representative and not by the Contractor. See Articles 3.13.1 and 4.3.6 regarding costs or expenses of inspection or testing outside of the Project Site.

13.5.3 Advance Notice to Inspector

The Contractor shall notify the Inspector a sufficient time in advance of its readiness for required observation or inspection so that the Inspector may arrange for same. The Contractor shall notify the Inspector a sufficient time in advance of the manufacture of material to be supplied under the Contract Documents which must, by terms of the Contract Documents, be tested in order that the Inspector may arrange for the testing of the material at the source of supply.

13.5.4 Testing Off-Site

Any material shipped by the Contractor from the source of supply, prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice from said Inspector that such testing and inspection will not be required, shall not be incorporated in the Work.

13.5.5 Additional Testing or Inspection

If the Inspector, the Architect, the District, or public authority having jurisdiction determines that portions of the Work require additional testing, inspection, or approval not included under Article 13.5.1, the Inspector will, upon written authorization from the District, make arrangements for such additional testing, inspection, or approval. The District shall bear such costs except as provided in Articles 13.5.6 and 13.5.7.

13.5.6 Costs for Retesting

If such procedures for testing, inspection, or approval under Articles 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs arising from such failure, including those of re-testing, re-inspection, or re-approval, including, but not limited to, compensation for the Architect's services and expenses. Any such costs shall be paid by the District, invoiced to the Contractor, and deducted from the next Progress Payment.

13.5.7 Costs for Premature Test

In the event the Contractor requests any test or inspection for the Project and is not completely ready for the inspection, the Contractor shall be invoiced by the District for all costs and expenses resulting from that testing or inspection, including, but not limited to, the Inspector's and Architect's fees and expenses, and the amount of the invoice shall be deducted from the next Progress Payment.

13.6 TRENCH EXCAVATION

13.6.1 Trenches Greater Than Five Feet

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Pursuant to Labor Code section 6705, if the Contract Price exceeds \$25,000 and involves the excavation of any trench or trenches five (5) feet or more in depth, the Contractor shall, in advance of excavation, submit to the District or a registered civil or structural engineer employed by the District or Architect, a detailed plan showing the design of shoring for protection from the hazard of caving ground during the excavation of such trench or trenches.

13.6.2 Excavation Safety

If such plan varies from the Shoring System Standards established by the Construction Safety Orders, the plan shall be prepared by a registered civil or structural engineer, but in no case shall such plan be less effective than that required by the Construction Safety Orders. No excavation of such trench or trenches shall be commenced until said plan has been accepted by the District or by the person to whom authority to accept has been delegated by the District.

13.6.3 No Tort Liability of District

Pursuant to Labor Code § 6705, nothing in this Article shall impose tort liability upon the District or any of its employees.

13.6.4 No Excavation without Permits

The Contractor shall not commence any excavation Work until it has secured all necessary permits including the required CAL OSHA excavation/shoring permit. Any permits shall be prominently displayed on the Site prior to the commencement of any excavation.

13.7 WAGE RATES, TRAVEL, AND SUBSISTENCE

13.7.1 Wage Rates

Pursuant to the provisions of Article 2 (commencing at § 1720), Chapter 1, Part 7, Division 2, of the Labor Code, the District has obtained the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this public works project is to be performed for each craft, classification, or type of worker needed for this Project from the Director of the Department of Industrial Relations ("Director"). These rates are on file at the administrative office of the District and are also available from the Director of the Department of Industrial Relations. Copies will be made available to any interested party on request. The Contractor shall post a copy of such wage rates at appropriate, conspicuous, weatherproof points at the Site.

Any worker employed to perform Work on the Project, but such Work is not covered by any classification listed in the published general prevailing wage rate determinations or per diem wages determined by the Director of the Department of Industrial Relations, shall be paid not less than the minimum rate of wages specified therein for the classification which most nearly corresponds to the employment of such person in such classification.

13.7.2 Holiday and Overtime Pay

Holiday and overtime work, when permitted by law, shall be paid for at the rate set forth in the prevailing wage rate determinations issued by the Director of the Department of Industrial Relations

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or at least one and one-half (1½) times the specified basic rate of per diem wages, plus employer payments, unless otherwise specified in the Contract Documents or authorized by law.

13.7.3 Wage Rates Not Affected by Subcontracts

The Contractor shall pay and shall cause to be paid each worker engaged in the execution of the Work on the Project not less than the general prevailing rate of per diem wages determined by the Director, regardless of any contractual relationship which may be alleged to exist between the Contractor or any Subcontractor and such workers.

13.7.4 Per Diem Wages

The Contractor shall pay and shall cause to be paid to each worker needed to execute the Work on the Project per diem wages including, but not limited to, employer payments for health and welfare, pensions, vacation, travel time and subsistence pay as provided for in Labor Code §1773.1.

13.7.5 Forfeiture and Payments

Pursuant to Labor Code §1775, the Contractor shall forfeit to the District, not more than Two Hundred Dollars (\$200.00) for each calendar day, or portion thereof, for each worker paid less than the prevailing wages rates as determined by the Director of the Department of Industrial Relations, for the work or craft in which the worker is employed for any Work done under the Agreement by the Contractor or by any Subcontractor under it. The amount of the penalty shall be determined by the Labor Commissioner and shall be based on consideration of: (1) whether the Contractor or Subcontractor's failure to pay the correct rate of per diem wages was a good faith mistake and, if so, the error was promptly and voluntarily correct upon being brought to the attention of the Contractor or Subcontractor; and (2) whether the Contractor or Subcontractor has a prior record of failing to meet its prevailing wage obligations.

13.7.6 Monitoring and Enforcement by Labor Commissioner

Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE). The Contractor and all subcontractors shall be required to furnish, at least monthly, certified payroll records directly to the Labor Commissioner in accordance with Labor Code section 1771.4. All payroll records shall be furnished in a format required by the Labor Commissioner. The Contractor and all subcontractors must sign up for, and utilize, the Labor Commissioner's electronic certified payroll records submission system. The District will have direct and immediate access to all CPRs for the Project that are submitted through the Labor Commissioner's system. The District can use this information for any appropriate purpose, including monitoring compliance, identifying suspected violations, and responding to Public Records Act requests.

The Labor Commissioner/ DLSE may conduct various compliance monitoring and enforcement activities including, but not limited to, confirming the accuracy of payroll records, conducting worker interviews, conducting audits, requiring submission of itemized statements prepared in accordance with Labor Code section 226, and conducting random in-person inspections of the Project site ("On-Site Visits"). On-Site Visits may include inspections of records, inspections of the Work site and observation of work activities, interviews of workers and others involved with the Project, and any other activities deemed necessary by the Labor Commissioner/DLSE to ensure compliance with prevailing wage requirements. The Labor Commissioner/DLSE shall have free access to any construction site or other place

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of labor and may obtain any information or statistics pertaining to the lawful duties of the Labor Commissioner/DLSE.

Any lawful activities conducted or any requests made by the Labor Commissioner/DLSE shall not be the basis for any delays, claims, costs, damages or liability of any kind against the District by the Contractor. Contractor and all subcontractors shall cooperate and comply with any lawful requests by the Labor Commissioner/ DLSE. The failure of the Labor Commissioner, DLSE, or any other entity related to the Department of Industrial Relations to comply with any requirement imposed by the California Code of Regulations, Title 8, Chapter 8 shall not of itself constitute a defense to the failure to pay prevailing wages or to comply with any other obligation imposed by Division 2, Part 7, Chapter 1 of the Labor Code.

Prior to commencing any Work on the Project, the Contractor shall post the required notice/poster required under the California Code of Regulations and Labor Code section 1771.4 in both English and Spanish at a conspicuous, weatherproof area at the Project site. The required notice/poster is available on the Labor Commissioner's website.

13.8 RECORDS OF WAGES PAID

13.8.1 Payroll Records

- a. Pursuant to §1776 of the Labor Code, the Contractor and each Subcontractor shall keep an accurate payroll record showing the name, address, social security number, work classification and straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker or other employee employed by him or her in connection with the Project.

All payroll records as specified in Labor Code §1776 of the Contractor and all Subcontractors shall be certified and furnished directly to the Labor Commissioner in accordance with Labor Code §1771.4(a)(3) on a monthly basis (or more frequently if required by the District or the Labor Commissioner) and in a format prescribed by the Labor Commissioner. Payroll records as specified in Labor Code §1776 shall be certified and submitted to the District with each application for payment. All payroll records shall be available for inspection at all reasonable hours at the principal office of the Contractor on the following basis:

1. A certified copy of an employee's payroll record shall be made available for inspection or furnished to the employee or his or her authorized representative on request.
2. A certified copy of all payroll records shall be made available for inspection or furnished upon request to a representative of District, the Division of Labor Standards Enforcement or the Division of Apprenticeship Standards of the Department of Industrial Relations.
3. A certified copy of all payroll records shall be made available upon request by the public for inspection or for copies thereof. However, a request by the public shall be made through the District, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement. If the requested payroll records have not been provided

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pursuant to Paragraph (2) above, the requesting party shall, prior to being provided the records, reimburse the costs, according to law for the preparation by the Contractor, Subcontractor(s), and the entity through which the request was made. The public shall not be given access to such records at the principal office of the Contractor.

- b. The certified payroll records shall be on forms provided by the Division of Labor Standards Enforcement or shall contain the same information as the forms provided by the Division of Labor Standards Enforcement.
- c. The Contractor or Subcontractor(s) shall file a certified copy of all payroll records with the entity that requested such records within 10 calendar days after receipt of a written request.
- d. Any copy of records made available for inspection as copies and furnished upon request to the public or any public agency by the District, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement shall be marked or obliterated to prevent disclosure of an individual's name, address and social security number. The name and address of the Contractor awarded the Contract or the Subcontractor(s) performing the Contract shall not be marked or obliterated. Any copy of records made available for inspection by, or furnished to, a joint labor-management committee established pursuant to the federal Labor Management Cooperation Act of 1978 (Section 175a of Title 29 of the United States Code) shall be marked or obliterated only to prevent disclosure of an individual's name and social security number. Notwithstanding any other provision of law, agencies that are included in the Joint Enforcement Strike Force on the Underground Economy established pursuant to Section 329 of the Unemployment Insurance Code and other law enforcement agencies investigating violations of law shall, upon request, be provided non-redacted copies of certified payroll records.
- e. The Contractor shall inform the District of the location of all payroll records, including the street address, city and county, and shall, within five working days, provide a notice of a change of location and address.
- f. The Contractor or Subcontractor(s) shall have 10 calendar days in which to comply subsequent to receipt of a written notice requesting payroll records. In the event that the Contractor or Subcontractor(s) fails to comply within the 10-day period, the Contractor or Subcontractor(s) shall, as a penalty to the District, forfeit One Hundred Dollars (\$100.00) for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due.

Responsibility for compliance with this Article shall rest upon the Contractor.

13.8.2 Withholding of Contract Payments & Penalties

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The District may withhold or delay contract payments to the Contractor and/or any Subcontractor if:

- a. The required prevailing rate of per diem wages determined by the Director of the Department of Industrial Relations is not paid to all workers employed on the Project; or
- b. The Contractor or Subcontractor(s) fail to submit all required certified payroll records with each application for payment, but not less than once per month; or
- c. The Contractor or Subcontractor(s) submit incomplete or inadequate payroll records; or
- d. The Contractor or Subcontractor(s) fail to comply with the Labor Code requirements concerning apprentices; or
- e. The Contractor or Subcontractor(s) fail to comply with any applicable state laws governing workers on public works projects.

13.9 APPRENTICES

13.9.1 Apprentice Wages and Definitions

All apprentices employed by the Contractor to perform services under the Contract shall be paid the standard wage paid to apprentices under the regulations of the craft or trade for which he or she is employed, and as determined by the Director of the Department of Industrial Relations, and shall be employed only at the craft or trade to which he or she is registered. Only apprentices, as defined in §3077 of the Labor Code, who are in training under apprenticeship standards that have been approved by the Chief of the Division of Apprenticeship Standards and who are parties to written apprenticeship agreements under Chapter 4 (commencing with §3070) of Division 3, are eligible to be employed under this Contract. The employment and training of each apprentice shall be in accordance with the apprenticeship standards and apprentice agreements under which he or she is training, or in accordance with the rules and regulations of the California Apprenticeship Council.

13.9.2 Employment of Apprentices

Contractor agrees to comply with the requirements of Labor Code §1777.5. The Contractor awarded the Project, or any Subcontractor under him or her, when performing any of the Work under the Contract or subcontract, employs workers in any apprenticeable craft or trade, the Contractor and Subcontractor shall employ apprentices in the ratio set forth in Labor Code §1777.5. The Contractor or any Subcontractor must apply to any apprenticeship program in the craft or trade that can provide apprentices to the Project site for a certificate approving the contractor or subcontractor under the apprenticeship standards for the employment and training of apprentices in the area or industry affected. However, the decision of the apprenticeship program to approve or deny a certificate shall be subject to review by the Administrator of Apprenticeship. The apprenticeship program or programs, upon approving the Contractor or Subcontractor, shall arrange for the dispatch of apprentices to the Contractor or Subcontractor upon the Contractor's or Subcontractor's request. "Apprenticeable craft or trade" as used in this Article means a craft or trade determined as an apprenticeable occupation in accordance with the rules and regulations prescribed by the California Apprenticeship Council. The ratio of work performed by apprentices to

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journeyman employed in a particular craft or trade on the Project shall be in accordance with Labor Code §1777.5.

13.9.3 Submission of Contract Information

Prior to commencing Work on the Project, the Contractor and Subcontractors shall submit contract award information to the applicable apprenticeship program(s) that can supply apprentices to the Project and make the request for the dispatch of apprentices in accordance with the Labor Code. The information submitted shall include an estimate of journeyman hours to be performed under the Contract, the number of apprentices proposed to be employed, and the approximate dates the apprentices would be employed. A copy of this information shall also be submitted to the District if requested. Within 60 days after concluding Work on the Project, the Contractor and Subcontractors shall submit to the District, if requested, and to the apprenticeship program a verified statement of the journeyman and apprentice hours performed on the Project.

13.9.4 Apprentice Fund

The Contractor or any Subcontractor under him or her, who, in performing any of the Work under the Contract, employs journeymen or apprentices in any apprenticeable craft or trade shall contribute to the California Apprenticeship Council the same amount that the Director determines is the prevailing amount of apprenticeship training contributions in the area of the Project. The Contractor and Subcontractors may take as a credit for payments to the California Apprenticeship Council any amounts paid by the Contractor or Subcontractor to an approved apprenticeship program that can supply apprentices to the Project. The Contractor and Subcontractors may add the amount of the contributions in computing his or her bid for the Contract.

13.9.5 Prime Contractor Compliance

The responsibility of compliance with Article 13 and §1777.5 of the Labor Code for all apprenticeable occupations is with the Prime Contractor. Any Contractor or Subcontractor that knowingly violates the provisions of this Article or Labor Code §1777.5 shall be subject to the penalties set forth in Labor Code §1777.7.

13.10 ASSIGNMENT OF ANTITRUST CLAIMS

13.10.1 Application

Pursuant to Government Code § 4551, in entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the Contractor or Subcontractor offers and agrees to assign to the District all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act, (15 U.S.C. § 15) or under the Cartwright Act (Chapter 2 [commencing with § 16700] of Part 2 of Division 7 of the Business and Professions Code), arising from the purchase of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders Retention Payment to the Contractor, without further acknowledgment by the parties. If the District receives, either through judgment or settlement, a monetary recovery for a cause of action assigned under Chapter 11 (commencing with § 4550) of Division 5 of Title 1 of the Government Code, the assignor shall be entitled to receive reimbursement for actual legal costs incurred and may, upon demand, recover from the District any portion of the recovery, including treble damages, attributable to overcharges that were paid by the assignor but

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were not paid by the District as part of the bid price, less the expenses incurred in obtaining that portion of the recovery.

13.10.2 Assignment of Claim

Upon demand in writing by the assignor, the District shall, within one (1) year from such demand, reassign the cause of action assigned pursuant to this Article if the assignor has been or may have been injured by the violation of law for which the cause of action arose and the District has not been injured thereby or the District declines to file a court action for the cause of action.

13.11 STATE AND DISTRICT CONDUCTED AUDITS

Pursuant to and in accordance with the provisions of Government Code § 10532, or any amendments thereto, all books, records, and files of the District, the Contractor, or any Subcontractor connected with the performance of this Contract involving the expenditure of state funds in excess of Ten Thousand Dollars (\$10,000.00), including, but not limited to, the administration thereof, shall be subject to the examination and audit of the Office of the Auditor General of the State of California for a period of five (5) years after Retention Payment is made or a Notice of Completion is Recorded, whichever occurs first. Contractor shall preserve and cause to be preserved such books, records, hard drives, electronic media, and files for the audit period.

Pursuant to the remedies under Public Contract Code section 9201 and Government Code section 930.2, Contractor, through execution of this Agreement, also agrees the District shall have the right to review and audit, upon reasonable notice, the books and records of the Contractor concerning any monies associated with the Project. The purpose of this "Audit" is to quickly and efficiently resolve Disputes based on the actual costs incurred and to reduce the uncertainty in resolving Disputes with limited information. The District shall perform any audits at its own cost and any such audit shall be performed by an independent auditor, having no direct or indirect relationship with the functions or activities being audited or with the business conducted by the Contractor or District. In the event the independent auditor determines that Change Orders, response to Request for Proposals, Claims, Appeal of Claims, or other requests for payment are in error, or have any other concerns or questions, the Auditor shall report the results of the Audit findings to the District and provide a copy to the Contractor after giving the District Board the opportunity for at least 10 days review. If the Contractor disputes the findings of the independent auditor, such dispute shall be handled in the manner set forth under Article 4.6.2 entitled Disputes.

If Contractor having agreed to the terms of this Contract fails to produce books or records requested by Auditor, such failure to produce books or records that were required to be preserved for audit, it shall be presumed that the information contained in the withheld books or records were unfavorable to the Contractor and the Auditor shall note this refusal in the results of the Audit findings for further evaluation by the District and the District's Board. The refusal to release records that are concerning monies associated with the Project may be used as a grounds to debar the Contractor under Article 15 for failure to preserve records under Article 13.11 and the failure to produce required audit records may also be used as a grounds for a negative finding against the Contractor depending on the significance of the records that are withheld by Contractor. Failure to produce job cost data tied to job cost categories and budgets shall be presumed an intentional failure to produce key audit records. Similarly, failure to produce Daily Reports (prepared at or near the time of the Work actually took place (See Article 3.16) shall be presumed an intentional failure to produce key audited records.

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If Contractor is seeking costs for inefficiency, home office overhead, or unanticipated increased costs due to delays or acceleration, Contractor shall also produce copies of the original bid tabulation utilized in submitting Contractor's bid for the Project. This document shall be considered confidential and shall not be subject to disclosure through a Public Records Act and shall not be distributed to anyone other than the District and the District's counsel. This bid tabulation shall only be used in litigation, arbitration, evaluation of Claims or Disputes, Audit, and trial. If the records for the bid tabulation are kept on a computer, the Contractor shall also produce all metadata (in native format) that accompanies the bid tabulation for inspection to prove the authenticity of the underlying bid tabulation. Failure to produce the bid tabulation for review of inefficiency, home office overhead, or unanticipated increased costs due to delays or accelerations shall be considered material evidence that the bid tabulation was not favorable to the Contractor. This evidence shall be entered as a jury instruction for trial that the bid tabulation was not produced and the bid tabulation information was unfavorable to the Contractor. The evidence may also be used in debarment proceedings, and noted as an exception to an Audit findings.

Upon notification of Contractor concerning the results of the audit and a reasonable time has passed for Contractor to respond to the Audit findings and if either there is no Dispute of the Audit findings under Article 4.6 or if the result after utilizing the Disputes Clause confirms the Audit findings, the District may seek reimbursement for overstated Claims, Change Orders, or Appeal of Claims and may also undertake debarment proceedings under Article 15 of these General Conditions.

13.12 STORM WATER POLLUTION PREVENTION

13.12.1 Application

This Section addresses the preparation, implementation and monitoring of a Storm Water Pollution Prevention Plan (SWPPP) for the purpose of preventing the discharge of pollutants from the construction site. This includes the elimination of pollution discharges such as improper dumping, spills or leakage from storage tanks or transfer areas. The District will not issue a Notice to Proceed until Contractor has prepared by a qualified individual and obtained approval of the Permit Registration Documents ("PRDs") that include a Notice of Intent, Construction Risk Calculation, Site Map, SWPPP, Annual Fee and any additional required documents from all applicable Local Governing Agencies including the Regional Water Quality Control Board. The Contractor shall also secure a certification that the Project has met all of the conditions of the General Construction Activity Storm Water Permit (GCASP) and comply with all applicable local, state and federal regulations governing storm water pollution prevention.

13.12.2 References and Materials

- California Stormwater Quality Association New Development and Redevelopment Best Management Practice Handbook
- 2009 California Stormwater Quality Association Construction BMP Handbook .
- State Water Resources Control Board (2009). Order 2009-0009-DWQ, NPDES General Permit No. CAS000002: Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction and Land Disturbing Activities. Available on-line at:
- http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml.- Use materials of a class, grade and type needed to meet the performance described in the BMP Handbook.

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13.12.3 Preparation and Approval

The Contractor shall prepare by a qualified individual the PRDs that include a Notice of Intent, Construction Risk Calculation, Site Map, SWPPP, Annual Fee and any additional required documents. The Contractor's Qualified SWPPP Developer ("QSD") shall prepare the Storm Water Pollution Prevention Plan (SWPPP) as required to comply with storm water pollution regulations for project sites with storm water discharges associated with construction activity such as clearing or demolition, grading, excavation and other land disturbances. The SWPPP shall apply to all areas that are directly related to construction activity, including but not limited to staging areas, storage yards, material borrow areas, and access roads.

13.12.3.1 The Contractor shall prepare and submit to the Local Governing Agencies and the District the SWPPP for review and approval if the project sites, new or existing, with land disturbance of 1 or more acres (or less than 1 acres if part of a common plan of development); the construction activity that results in land surface disturbances of less than one acre is part of a larger common plan of development or sale of one or more acres of disturbed land surface; or the construction activity associated with Linear Underground/Overhead Projects ("LUPs") including, but not limited to, those activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities) and include, but are not limited to, underground utility mark-out, potholing, concrete and asphalt cutting and removal, trenching, excavation, boring and drilling, access road and pole/tower pad and cable/wire pull station, substation construction, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and/or pavement repair or replacement, and stockpile/borrow locations.

13.12.3.2 The Contractor shall also pay annual renewal fee(s) until the contract is completed and make all such checks payable to the State Water Resources Control Board. The Notice of Intent must be submitted at least two weeks prior to the commencement of construction activities.

13.12.3.3 The Contractor shall prepare the SWPPP by following the format in Sections 2, 3, 4 and Appendices A through F of the California Stormwater BMP Handbook - Construction, January 2009 edition, published by the California Stormwater Quality Association. The publication is available from:

California Stormwater
Quality Association
P.O. Box 2105
Menlo Park, CA 94026-2105
Phone: (650) 366-1042
E-mail: info@casqa.org

or

<https://www.casqa.org/store/products/tabid/154/p-167-construction-handbookportal-initial-subscription.aspx>

13.12.3.4 Where land disturbance is less than 1 acre, any BMPs indicated in the BMP Handbook needed to prevent or minimize storm water pollution shall be implemented at no extra cost to the District.

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13.12.3.5 Within two weeks after Award of Contract by the District, the Contractor shall submit to the District's Civil Engineer one copy of the PRDs including the SWPPP for review. After the District's approval, the Contractor shall provide approved copies of the SWPPP as follows: one copy each to the Project Inspector, Construction Manager, Architect, Commissioned Architect and District's Civil Engineer.

13.12.4 Implementation

The Contractor shall implement the Storm Water Pollution Prevention Plan by doing the following:

- a. Obtain a Waste Discharger Identification (WDID) number from the SWRCB before beginning construction. This number will be issued once your PRDs are administratively accepted and fee is received.
- b. Keep the SWPPP, REAPs, monitoring data on the construction site.
- c. Employ a Qualified SWPPP Practitioner (QSP) to implement the SWPPP during construction and develop Rain Event Action Plans ("REAPs").
- d. Install, inspect, maintain and monitor BMPs required by the General Permit.
- e. Install perimeter controls prior to starting other construction work at the site.
- f. Contain on-site storm water at the jobsite. Do not drain on-site water directly into the storm drain.
- g. Implement the SWPPP.
- h. Provide SWPPP and BMP implementation training for those responsible for implementing the SWPPP.
- i. Designate trained personnel for the proper implementation of the SWPPP.
- j. Conduct monitoring, as required, and assess compliance with the Numeric Action Levels (NALs) or Numeric Effluent Limitations (NELs) appropriate to your project.
- k. Report monitoring data:
 1. Maintain a paper or electronic copy of all required records for three years from the date generated or date submitted, whichever is last. These records must be available at the construction site until construction is completed.
 2. Have a QSD revise the SWPPP as needed to reflect the phases of construction and to suit changing site conditions and instances when properly installed systems are ineffective.

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3. Assist the District with entering any necessary data or information into the Stormwater Multi-Application and Reporting System (“SMARTS”) system.
1. At the end of Construction Contract:
 1. Submit Notice of Termination (NOT) into the SMARTS when construction is complete and conditions of termination listed in the NOT have been satisfied. A copy of the NOT can be found at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml.
 2. Leave in place storm water pollution prevention controls needed for post-construction storm water management and remove those that are not needed as determined by the District. Thereafter, left-in-place controls will be maintained by the District.
 3. Provide Site Monitoring Reports, SWPPP revisions, Compliance Certifications and related documents to the District. Post-construction storm water operation and management plan as mentioned in the compliance certifications are considered to be in place at the end of the Construction Contract.

13.12.5 Monitoring

The Contractor shall conduct examination of storm water pollution prevention controls as required by the State Water Resources Control Board (2009). Order 2009-0009-DWQ, NPDES General Permit No. CAS000002: Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction and Land Disturbing Activities. This includes properly qualified personnel performing all required monitoring, testing, inspections and monitoring. The Contractor shall also conduct examination of storm water pollution prevention controls, as well as before and after each storm event in compliance with the State Water Resources Control Board Order No. 2009-0009-DWQ, National Pollutant Discharge Elimination System General Permit No. CAS000002, Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities (General Permit) (SWRCB, 2009).and at least once each 24-hour period during extended storm events to identify BMP effectiveness and implement repairs or BMP changes as soon as feasible. All maintenance related to a storm event should be completed within 48 hours of the storm event. The Contractor shall also prepare and maintain, at the jobsite, a log of each inspection using Site Monitoring Report forms.

13.12.6 Liabilities and Penalties

- a. Review of the SWPPP and inspection logs by the District shall not relieve the Contractor from liabilities arising from non-compliance with storm water pollution regulations.
- b. Payment of penalties for non-compliance by the Contractor shall be the sole responsibility of the Contractor and will not be reimbursed by the District.

GENERAL CONDITIONS

- c. Compliance with the Clean Water Act pertaining to construction activity is the sole responsibility of the Contractor. For any fine(s) levied against the District due to non-compliance by the Contractor, the District will deduct from the final payment due the Contractor the total amount of the fine(s) levied on the District, plus legal and associated costs.
- d. The Contractor shall submit to the District a completed NOI for change of information (Construction Site Information and Material Handling/Management Practices).

GENERAL CONDITIONS

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR FOR CAUSE

14.1.1 Grounds for Termination

The Contractor may terminate the Contract if the Work is stopped for a period of thirty (30) consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons performing portions of the Work for whom the Contractor is contractually responsible, for only the following reasons:

- a. Issuance of an order of a court or other public authority having jurisdiction; or
- b. An act of the United State or California government, such as a declaration of national emergency.

14.1.2 Notice of Termination

If one of the above reasons exists, the Contractor may, upon written notice of seven (7) additional days to the District, terminate the Contract and recover from the District payment for Work executed and for reasonable costs verified by the Architect with respect to materials, equipment, tools, construction equipment, and machinery, including reasonable overhead, profit, and damages.

14.2 TERMINATION BY THE DISTRICT FOR CAUSE

14.2.1 Grounds for Termination

The District may terminate the Contractor and/or this Contract for the following reasons:

- a. Persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- b. Persistently or repeatedly is absent, without excuse, from the job site;
- c. Fails to make payment to Subcontractors, suppliers, materialmen, etc.;
- d. Persistently disregards laws, ordinances, rules, regulations, or orders of a public authority having jurisdiction;
- e. Fails to provide a schedule or fails or refuses to update schedules required under the Contract;
- f. Falls behind on the Project and refuses or fails to undertake a Recovery Schedule;
- g. If the Contractor has been debarred from performing Work

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- h. Becomes bankrupt or insolvent, including the filing of a general assignment for the benefit of creditors; or
- i. Otherwise is in substantial breach of a provision of the Contract Documents.

14.2.2 Notification of Termination

When any of the above reasons exist, the District may, without prejudice to any other rights or remedies of the District and after giving the Contractor and the Contractor's Surety written notice of seven (7) days, terminate the Contractor and/or this Contract and may, subject to any prior rights of the Surety:

- a. Take possession of the Project and of all material, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- b. Accept assignment of Subcontracts. Contractor acknowledges and agrees that if the District (in its sole and absolute discretion) decides to takeover completion of the Project, the Contractor agrees to immediately assign all subcontracts to the District which the District has chosen to accept;
- c. Complete the Work by any reasonable method the District may deem expedient, including contracting with a replacement contractor or contractors; and,
- d. Agree to accept a takeover and completion arrangement with Surety that is acceptable to the District Board.

14.2.3 Takeover and Completion of Work after Termination for Cause

A Termination for Cause is an urgent matter which requires immediate radiation since Project Work is open and incomplete, the site is subject to vandalism and theft, the Project site is considered a public nuisance, and there is a possibility of injury and deterioration of the Project Work and materials. Thus, the District shall be entitled to enter a takeover contract to either remediate the unfinished condition or complete the Work for this Project.

14.2.4 Payments Withheld

If the District terminates the Contract for one of the reasons stated in Article 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is complete. All costs associated with the termination and completion of the Project shall be the responsibility of the Contractor and/or its Surety.

14.2.5 Payments upon Completion

If the unpaid balance of the Contract Sum exceeds costs of completing the Work, including compensation for professional services and expenses made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor and its Surety shall pay the difference to the District. The amount to be paid to the Contractor, or District, as the case may be, shall be certified by the Architect upon application. This payment obligation shall survive completion of the Contract.

GENERAL CONDITIONS

14.3 TERMINATION OF CONTRACT BY DISTRICT (CONTRACTOR NOT AT FAULT)

14.3.1 Termination for Convenience

District may terminate the Contract upon fifteen (15) calendar days of written notice to the Contractor and use any reasonable method the District deems expedient to complete the Project, including contracting with replacement contractor or contractors, if it is found that reasons beyond the control of either the District or Contractor make it impossible or against the District's interest to complete the Project. In such a case, the Contractor shall have no Claims against the District except for: (1) the actual cost for approved labor, materials, and services performed in accordance with the Contract Documents which have not otherwise been previously paid for and which are supported and documented through timesheets, invoices, receipts, or otherwise; and (2) profit and overhead of ten percent (10%) of the approved costs in item (1); and (3) termination cost of five percent (5%) of the approved costs in item (1). Contractor acknowledges and agrees that if the District (in its sole and absolute discretion) decides to takeover completion of the Project, the Contractor agrees to immediately assign all subcontracts to the District which the District has chosen to accept.

14.3.2 Non-Appropriation of Funds/ Insufficient Funds

In the event that sufficient funds are not appropriated to complete the Project or the District determines that sufficient funds are not available to complete the Project, District may terminate or suspend the completion of the Project at any time by giving written notice to the Contractor. In the event that the District exercises this option, the District shall pay for any and all work and materials completed or delivered onto the site for which value is received, and the value of any and all work then in progress and orders actually placed which cannot be canceled up to the date of notice of termination. The value of work and materials not otherwise already paid for by the District up to the time of termination under this Paragraph shall include a factor of fifteen percent (15%) for the Contractor's overhead and profit and there shall be no other costs or expenses paid to Contractor. All work, materials and orders paid for pursuant to this provision shall become the property of the District. District may, without cause, order Contractor in writing to suspend, delay or interrupt the Project in whole or in part for such period of time as District may determine. Adjustment shall be made for increases in the cost of performance of the Agreement caused by suspense, delay or interruption.

14.4 REMEDIES OTHER THAN TERMINATION

If a default occurs, the District may, without prejudice to any other right or remedy, including, without limitation, its right to terminate the Contract pursuant to Article 14.2, do any of the following:

- a. Permit the Contractor to continue under this Contract, but make good such deficiencies or complete the Contract by whatever method the District may deem expedient, and the cost and expense thereof shall be deducted from the Contract Price or paid by the Contractor to the District on demand;
- b. If the workmanship performed by the Contractor is faulty or defective materials are provided, erected or installed, then the District may order the Contractor to remove the faulty workmanship or defective materials and to replace the same with work or materials that conform to the Contract Documents, in which event the Contractor, at its sole costs and expense, shall proceed in accordance with the District's order and complete the same within the time period given by the District in its notice to the Contractor; or

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- c. Initiate procedures to declare the Contractor a non-responsible bidder for a period of two (2) to five (5) years thereafter.

All amounts expended by the District in connection with the exercise of its rights hereunder shall accrue interest from the date expended until paid to the District at the maximum legal rate. The District may retain or withhold any such amounts from the Contract Price. If the Contractor is ordered to replace any faulty workmanship or defective materials pursuant to Paragraph (b) above, the Contractor shall replace the same with new work or materials approved by the Architect and the District, and, at its own cost, shall repair or replace, in a manner and to the extent the Architect and the District shall direct, all Work or material that is damaged, injured or destroyed by the removal of said faulty workmanship or defective material, or by the replacement of the same with acceptable work or materials. In no event shall anything in this Article be deemed to constitute a waiver by the District of any other rights or remedies that it may have at law or in equity, it being acknowledged and agreed by the Contractor that the remedies set forth in this Article are in addition to, and not in lieu of, any other rights or remedies that the District may have at law or in equity.

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ARTICLE 15 DEBARMENT

15.1 DEBARMENT MEANS THERE HAS BEEN A FINDING THAT THE CONTRACTOR IS NOT RESPONSIBLE.

During the course of the Project, or if it is determined through Change Orders, Claims, or Audit that a Contractor is not responsible, the District may, in addition to other remedies provided in the Contract, debar the Contractor from bidding or proposing on, or being awarded, and/or performing work on District contracts for a specified period of time, which generally will not exceed five (5) years, but may exceed five (5) years or be permanent if the circumstances warrant such debarment. In addition to the debarment proceeding, a finding that a Contractor is to be debarred shall result in the termination of any or all existing Contracts the Contractor may have with the District.

15.2 BOARD FINDING

The District may debar a Contractor if the Board, or the Board's delegatee, in its discretion, finds the Contractor has done any of the following:

15.2.1 Intentionally or with reckless disregard, violated any term of the Contract with the District

15.2.2 Committed an acts or omission which reflects on the Contractor's quality, fitness or capacity to perform Work for the District;

15.2.3 Committed an act or offense which indicates a lack of business integrity or business honesty; or,

15.2.4 Made or submitted a false claim against the District or any other public entity.

15.3 HEARING AND PRESENTATION OF EVIDENCE

If there is evidence that the Contractor may be subject to debarment, the District shall notify the Contractor in writing of the evidence which is the basis for the proposed debarment and shall advise the Contractor of the scheduled date for a debarment hearing before the District Board or its delegated designee.

The District Board, or designee, shall conduct a hearing where evidence on the proposed debarment is presented. The Contractor or the Contractor's representative shall be given an opportunity to submit evidence at the hearing. The Contractor shall be provided an adequate amount of time to prepare and object to evidence presented. A tentative proposed decision shall be issued as a tentative decision and the District shall be entitled to modify, deny or adopt the proposed decision. The proposed decision shall contain a recommendation regarding whether the Contractor should be debarred, and, if so, the appropriate length of time of the debarment. The Contractor and the District shall be provided an opportunity to object to the tentative proposed decision for a period of 15 days. If additional evidence is presented, the District shall evaluate this evidence and either issue an amended ruling, issue the same ruling, or call a further hearing.

If a Contractor has been debarred for a period of longer than five (5) years, that Contractor may after the debarment has been in effect for at least five (5) years, submit a written request for review of the

GENERAL CONDITIONS

debarment determination to reduce the period of debarment or terminate the debarment. The District may, in its discretion, reduce the period of debarment or terminate the debarment if it finds that the Contractor has adequately demonstrated one or more of the following: (1) elimination of the grounds for which the debarment was imposed; (2) a bona fide change in ownership or management; (3) material evidence discovered after debarment was imposed; or (4) any other reason that is in the best interests of the District.

The District will consider a request for review of a debarment determination only where: (1) the Contractor has been debarred for a period longer than five (5) years; (2) the debarment has been in effect for at least five (5) years; and (3) the request is in writing, states one or more of the grounds for reduction of the debarment period or termination of the debarment, and includes supporting documentation. Upon receiving an appropriate request, the District will provide notice of the hearing on the request. At the hearing, the District shall review evidence on the proposed reduction of debarment period. This hearing shall be conducted and the request for review decided by the District pursuant to the same procedures as for a debarment hearing.

The District's proposed decision shall contain a recommendation on the request to reduce the period of debarment or terminate the debarment.

The terms shall also apply to Subcontractors of Contractor.

SUPPLEMENTARY GENERAL CONDITIONS

CERTIFICATE OF SUBSTANTIAL COMPLETION

PROJECT: _____

TO: _____

As the Architect for the Project described above, the Project has reached Substantial Completion. Substantial Completion is not reached unless and until each of the following three (3) conditions have been met: (1) all contractually required items have been installed with the exception of only minor and Incomplete Punch Items (See Article 9.9 of the General Conditions); (2) All Fire/Life Safety Systems have been installed, and are working and signed off on the DSA Form 152 Inspection Card, all building systems including mechanical, electrical and plumbing are all functioning; and (3) the Project is fit for occupancy and its intended use

I certify that the Project has reached Substantial Completion as defined above on the following date:
_____.

Architect



GEOTECHNICAL INVESTIGATION REPORT
AND GEOLOGIC HAZARD ASSESSMENT

LIBERTY HIGH SCHOOL
CAMPUS EXPANSION

BSK PROJECT NO. G17-238-11L

PREPARED FOR:

LIBERTY UNION SCHOOL DISTRICT
20 OAK STREET
BRENTWOOD, CALIFORNIA 94513

April 11, 2018



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April 11, 2018

BSK Project Number G17-238-11L

Liberty Union School District
20 Oak Street
Brentwood, California 94513

Attention: Liz Robbins (robbinsl@lUSD.net)
Chief Business Officer

Subject: Geotechnical Investigation Report and Geologic Hazards Assessment
Campus Expansion
Liberty High School
Brentwood, California

Dear Ms. Robbins:

We are pleased to submit our geotechnical investigation report and geologic hazards assessment for the planned expansion of Liberty High School within the Liberty Union School District in Brentwood, California. The enclosed report describes the geotechnical investigation performed and presents our geotechnical recommendations for foundations, retaining walls, pools, tennis courts, utilities, storm water management, earthwork and pavements. A geologic and seismic hazards assessment is included as Appendix D to this report.

In summary, it is our opinion that the site does not pose significant geotechnical concerns that would preclude the planned development provided the recommendations presented in our report are incorporated in design and construction. The main geotechnical concerns for the project site are the presence of moderately expansive surface clays and soils subject to moderate collapse potential. The buildings can be supported on spread footings, deepened to mitigate the moderately expansive soils at the site. Depending on the sensitivity of the buildings to soil collapse settlement, the affected buildings could instead be supported on mat foundations. The building floor slabs will need to be supported on "non-expansive" or lime-treated soils to reduce the impact of expansive soils at the site.

These and other geotechnical recommendations pertaining to the proposed project are discussed in the report. The apparent geologic hazard for the project, other than those mentioned above, is the potential for strong ground shaking, which is typical of the entire San Francisco Bay Area. A summary of the geologic hazards is presented in the main text of this report and a detailed Geologic and Seismic Hazards Assessment that complies with Title 24 of the California Building Code is included in Appendix D.

Conclusions and recommendations presented in the enclosed report are based on limited subsurface investigation and laboratory testing programs. Consequently, variations between anticipated and actual subsurface soil conditions may be found in localized areas during construction. If significant variation in the subsurface conditions is encountered during construction, BSK should review the recommendations presented herein and provide supplemental recommendations, if necessary.

Additionally, design plans should be reviewed by our office prior to their issuance for conformance with the general intent of our recommendations presented in the enclosed report.

We appreciate the opportunity of providing our services to you on this project and trust this report meets your needs at this time. If you have any questions concerning the information presented, please contact us at (925) 315-3151.

Respectfully Submitted,
BSK Associates, Inc.



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Senior Staff Engineer



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Senior Geotechnical Engineer



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Figure 2 – Site Exploration Plan

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APPENDIX A – Boring Logs

Figure A-1 – Unified Soil Classification System (ASTM D2487/D2488)

Figure A-2 – Soil Description Key

Figure A-3 – Log Key

Log of Borings B-1 through B-9

APPENDIX B – Laboratory Test Results

Figure B-1 – Atterberg Limits

Figure B-2 – Unconsolidated-Undrained Triaxial Compression

Figure B-3 – Unconsolidated-Undrained Triaxial Compression

Figure B-4 – Consolidated Undrained Direct Shear

Figure B-5 – Collapse Potential of Soils

Figure B-6 – Collapse Potential of Soils

Figure B-7 – Collapse Potential of Soils

Figure B-8 – Resistance (R) Value

Corrosivity Test Results by CERCO Analytical

APPENDIX C – OPT-1 through OPT-5 Logs and Liquefaction Analysis Results

APPENDIX D – Geologic and Seismic Hazards Assessment

APPENDIX E – Summary of Compaction Requirements



1. INTRODUCTION

This report presents the results of our geotechnical investigation for the planned expansion of the Liberty High School campus within the Liberty Union School District. A Vicinity Map showing the location of the project site is presented on Figure 1. Our investigation has been performed for the Liberty Union School District (LUSD) and was coordinated with Ms. Liz Robbins of LUSD. This report contains a description of our site investigation methods and findings, including field and limited laboratory data. It provides geotechnical recommendations for the project and also presents a geologic and seismic hazards assessment for the campus. This report supersedes previous geotechnical investigation report(s), if any, issued by BSK for this specific project.

1.1 Project Description

The proposed project will include construction of two new maintenance and operations buildings with new paving and chain link fencing; a concessions/ticket booth building and restrooms; new home bleachers; an aquatic center including a new pool, bleachers, locker rooms, a score board, and chain link fencing; new tennis courts; new relocatables; and new asphalt paving. In addition, backstops, foul ball netting, dugouts, bullpens and batting cages will be constructed in the current baseball field area. We have based our services on the conceptual site plans¹, provided by Quattrocchi Kwok Architects, dated December 14, 2017. The Site Exploration Plan, Figure 2, shows the approximate locations of planned improvements and the approximate location of our exploration points overlain on a Google Earth image of the existing campus.

We anticipate that the new buildings will be one-story high and will be either prefabricated or will consist of wood frame construction supported on a shallow foundation system. Exterior and interior wall loads are anticipated to be about 1 to 2 kips per lineal foot and column loads less than 30 kips.

Although a grading plan is not currently available for the project, we anticipate that site grades will remain close to existing elevations and that cuts and fills during construction will be limited to less than 3 feet. However, we anticipate that the area of the new home bleachers may have to be cut about 5 feet to match surrounding grades. Excavations for the removal of existing and installation of new underground utilities are expected to be up to 5 feet deep. Excavation/backfill for the existing and new pools is expected to be up to 15 feet deep.

If the actual project description differs significantly from that anticipated above, we should be notified so that we may review our scope of services and recommendations for applicability.

¹Plans entitled "M&O/Transportation Site Plan – Option 2, Ball Fields – Option 2, and Aquatics & Tennis Conceptual Site Plan", dated December 14, 2017.



1.2 Approach and Scope of Services

The purpose of this investigation was to explore and evaluate the subsurface conditions at the site in order to provide geotechnical input for the design and construction of the planned improvements for this project. The scope of services, as outlined in our October 17, 2017 proposal (File Number: GL17-15819), consisted of field exploration, laboratory testing, engineering analysis, and preparation of this report. A geologic and seismic hazards evaluation for the entire school campus was also performed concurrently and is presented in Appendix D.

This investigation specifically excludes the assessment of site environmental characteristics, particularly those involving hazardous substances.



2. SITE INVESTIGATION

2.1 Field Exploration

Exploration locations and frequency were chosen to meet the requirements of the Division of State Architect (DSA) and the 2016 California Building Code, which require a minimum of two borings per building and at least one per every 5,000 square feet of foundation footprint area.

Our field investigation was performed on February 5, 2018 to evaluate the subsurface conditions at the site for the planned construction. The field investigation consisted of drilling nine (9) borings and advancing five (5) Cone Penetrometer Tests (CPTs) at the approximate locations shown on Figure 2. Middle Earth Geo Testing of Hayward, California was subcontracted to provide CPT services and Exploration GeoServices of San Jose was subcontracted to provide drilling services. Two bulk samples were obtained in future pavement areas for Resistance (R)-value testing for use in pavement design.

Prior to subsurface exploration, Underground Service Alert (USA) was contacted to provide utility clearance and each exploration location was cleared for detectable underground utilities by GeoTech Utility Locating of Moraga, California. A drilling permit was obtained from Contra Costa County Environmental Health Department (County). Upon completion of the field investigation, the borings and CPTs were backfilled with grout and capped with Quikrete in paved areas. Excess cuttings generated during drilling were disposed of at the site in unimproved areas near the locations of the borings.

The locations of the borings and CPTs were estimated by our field representative based on rough measurements from existing features at the site. Elevations shown on the boring logs were estimated using the elevation information available on Google Earth Pro. As such the elevations and locations of the borings and CPTs should be considered approximate to the degree implied by the methods used.

2.1.1 Auger Borings

The borings were drilled, using a truck-mounted drill rig, to depths of approximately 5 to 25 feet below the existing ground surface (BGS). The borings were logged by an engineer of BSK Associates (BSK) in accordance with the ASTM Standard D2488, 2017, "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)."

Relatively undisturbed samples of the subsurface materials were obtained using a split spoon sampler fitted with stainless steel (SS) liners. The general diameter measurements of the sampler are 3-inches outside diameter (O.D.), and about 2.5-inches inside diameter (I.D.). A Standard Penetration Test (SPT) sampler (1.4-inch I.D and 2-inch O.D.), which produces disturbed samples, was also used to sample the subsurface materials. The samplers were driven by the force of a 140-pound, semi-automatic trip hammer, dropping 30-inches. The successive blow counts were recorded for 6-inch penetration intervals until the sampler advanced 18-inches. The blow counts for each interval are reported on the final boring logs. After the sampler was withdrawn from the borehole, the soil samples, each contained by the



approximately 6-inch long SS liners, were removed from the sampler, sealed to reduce moisture loss, labeled, and returned to our laboratory. Prior to sealing the samples, strength characteristics of the cohesive soil samples recovered were evaluated using a hand-held pocket penetrometer. The results of these tests are shown on the boring logs.

Laboratory testing and review of the field soil characterizations were completed after the subsurface investigation. Final soil classification was determined through the judgement of a responsible Geotechnical Engineer supplemented with laboratory testing at various intervals, in general accordance with the ASTM Standard D2487, 2011, "Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)."

A summary of the Unified Soil Classification System (USCS), adapted by ASTM D2487 and D2488 is presented in Appendix A, Figure A-1. The Soil Description Key and Log Key are presented on Figures A-2 and A-3. Sample classifications, blow counts recorded during sampling, and other related information are presented on the boring logs within Appendix A. Strength, collapse potential, and indexing laboratory test results appear on the final boring logs. Discussion of the subsurface conditions encountered at the site is presented in the "Subsurface Conditions" section of this report.

2.1.2 Cone Penetration Tests

We advance five (5) CPTs to approximately 50 feet BGS. The CPTs were performed using an integrated electronic cone system in accordance with ASTM D3441, 2016, "Standard Test Method for Mechanical Cone Penetration Testing of Soils." The cone has a tip area of 15 square centimeters, a friction sleeve area of 150 square centimeters, and a ratio of end area friction sleeve to tip end area equal to 0.80. The cone bearing (Q_c) and sleeve friction (F_s) were measured and recorded during the tests at 5 centimeters (about 2 inch) depth intervals.

The cone system was pushed using a 50,000-pound, all-wheel drive, CPT rig, having a down pressure capacity of approximately 20 tons. The information gathered from the CPTs was used for identifying potential liquefiable and soft soils and for foundation design. The CPT data (cone resistance, friction ratio, pore pressure, and soil behavior type) versus penetration depth below the existing ground surface, generated with CPT Liquefaction Assessment Software (Clq)², are presented in Appendix C.

The stratigraphic interpretation of the CPT data was performed based on relationships between cone bearing and sleeve friction versus penetration depth. The friction ratio (R_f), which is sleeve friction divided by cone bearing, is a calculated parameter which is used to infer soil behavior type. Generally, cohesive soils (clays) have high friction ratios, low cone bearing and generate large excess pore water pressures. Cohesionless soils (sands) have lower friction ratios, high cone bearing and generate small excess pore water pressures. The interpretation of soil properties from the cone data has been carried out using

² Clq v2.0 by Geologismiki



correlations developed by Robertson et al, 1990³, and Lunne, Robertson & Powell, 1997⁴. It should be noted that it is not always possible to clearly identify a soil type based on cone bearing (Qc) and sleeve friction (Fs). In these situations, experience and judgment and an assessment of the pore pressure dissipation data should be used to infer the soil behavior type.

2.2 Laboratory Testing

Laboratory tests were performed on selected soil samples to evaluate their physical characteristics and engineering properties. The laboratory testing program included dry density and moisture content, Atterberg Limits, unconsolidated-undrained triaxial compression (TXUU), direct shear, collapse potential, and R-value tests. Most of the laboratory test results are presented on the individual boring logs. The results of the Atterberg limits, TXUU, direct shear, collapse potential, and R-Value tests are also presented graphically in Appendix B.

Analytical testing was performed on samples of near-surface soils in borings B-1 and B-9 to assist in evaluating the corrosion potential of the on-site soils. The corrosivity testing was performed by CERCO Analytical of Concord, California using ASTM methods as described in CERCO Analytical's report. The corrosion results are presented at the end of Appendix B.

³ Robertson P.K., 1990. Soil classification using the cone penetration test. Canadian Geotechnical Journal, 27(1): 151-158

⁴ Lunne, T., Robertson, P.K., and Powell, J.J.M 1997. Cone penetration testing in geotechnical practice, E & FN Spon Routledge, 352 p, ISBN 0-7514-0393-8.



3. SITE CONDITIONS

3.1 Site Description

Liberty High School is located at 850 2nd Street in Brentwood, California. The campus is located within a mixed-use area of residential and commercial retail. The site occupies three separate parcels. The main school buildings, tennis courts, swimming pool, and parking lots within the southern and western side of the campus occupy one parcel. The athletic fields and parking lots which take up the northeastern portion of the campus occupy a second parcel. The unimproved field on the far eastern side of the campus that is bounded by Larkspur Lane and Oak Street, occupy a third parcel. This field has been covered with well compacted gravel. The three parcels have a combined area of approximately 46 acres. The site is essentially flat at an elevation of about 71 feet according to Google Earth Pro. The ground surface at the bleachers is approximately 5 feet above the surrounding ground surface.

3.2 Subsurface Conditions

The underlying stratigraphy of the campus is interbedded fine-grained, alluvial soils. Based on our exploration, this alluvium consists of alternating layers of clays, silts and clayey/silty sands. The clays and silts are typically firm to hard and exhibit low to medium plasticity. The clayey/silty sands are generally medium dense with a high clay and silt content. The laboratory test results are indicative of soils with medium expansion potential when subjected to changes in moisture content. The near surface soils are also moderately susceptible to collapse upon saturation according to our test results.

Free groundwater was observed at depths between about 15 and 22 feet BGS in our borings and CPTs. According to geologic mapping by the California Geological Survey, historic high groundwater is about 15 feet BGS along the east edge of the campus and deepens to about 20 feet BGS on the west edge of the campus. It should be noted that groundwater levels can fluctuate several feet depending on factors such as seasonal rainfall, groundwater withdrawal, and construction activities on this or adjacent properties.

The above is a general description of soil and groundwater conditions encountered at the campus. For a more detailed description of the soils encountered, refer to the boring logs in Appendix A and CPT logs in Appendix B.

It should be noted that subsurface conditions can deviate from those conditions encountered at the boring and CPT locations. If significant variation in the subsurface conditions is encountered during construction, it may be necessary for BSK to review the recommendations presented herein and recommend adjustments as necessary.



4. DISCUSSION AND CONCLUSIONS

4.1 General

Based on the results of our field investigation, it is our opinion that the proposed improvements are geotechnically feasible and that the site may be developed as presently planned. This conclusion is based on the assumption that the recommendations presented in this report will be incorporated in the design and construction of this project. The main geotechnical concerns for the project site are the presence of moderately expansive surface clays and soils subject to moderate collapse potential. While these soils pose additional challenges to the proposed improvements, there are conventional methods which can aid in mitigating the effects of these existing conditions.

4.2 Anticipated Settlements

The subsections below present our estimated elastic, collapse-induced, liquefaction-induced, and dynamic compaction settlement estimates for the project. For design purposes, these settlements should be assumed to be cumulative.

4.2.1 Elastic Settlement

We estimate elastic settlement will be up to approximately ½-inch. However, most of this settlement is expected to occur during construction. Differential elastic settlement is expected to be about half of the total estimated elastic settlement over a horizontal distance of approximately 30 feet.

4.2.2 Soil Collapse Potential

Soil samples obtained within the upper approximately 6 feet below ground surface consisted primarily of lean clay with varying amounts of sand. Some of the samples were observed to be porous. This can be indicative of the soil having a collapse potential, meaning the soil can undergo immediate settlement upon saturation. Saturation could occur due to many reasons such as a flooded adjacent landscaping area, a leaky pool, or a leaking underground utility. Therefore, we performed collapse potential testing on three samples obtained from depths of about 3 to 6 feet in borings B-2, B-6, and B-7. According to our test results, the surficial soils at the site have negligible to moderate collapse potential, with estimated settlements as shown in the table below. Mitigation measures are discussed in the "Foundations" section of this report.



BORING NO. (AREA OF CAMPUS)	ESTIMATED SETTLEMENT	DIFFERENTIAL SETTLEMENT*
B-2 (Aquatic Center/Relocatables)	2¼inches	1½inches
B-6 (Concession/Ticket Booth & Restroom)	negligible	negligible
B-7 (Maintenance & Ops Buildings)	1¼inches	¾inch
* Over an approximate horizontal distance of 30 feet.		

4.2.3 Soil Liquefaction

Liquefaction is a condition where saturated, granular soils undergo a substantial loss of strength and deformation due to pore pressure increase, resulting from cyclic stress application induced by earthquakes. In the process, the soil acquires mobility sufficient to permit both horizontal and vertical movements if the soil is not confined. Soils most susceptible to liquefaction are loose, clean, uniformly graded, silt and fine sand, as well as some lean clay deposits. Based on the subsurface exploration performed for the investigation, the site is underlain by interbedded alluvial soils consisting primarily of firm to hard sandy and silty clays, and medium dense clayey sand.

We evaluated liquefaction potential across the site in our current CPTs for the project (CPT-1 through CPT-5) using the methods proposed by Boulanger and Idriss (2014)⁵. For our analyses, we used peak ground accelerations of 0.50g associated with an earthquake magnitude of M6.52. These values were obtained from the mapped 2016 CBC seismic parameters and deaggregation analysis as presented in Appendix D. As discussed above, historically high groundwater is anticipated to be about 15 feet BGS, so we used a conservative groundwater level in our analyses of 14 feet BGS to account for fluctuations in the groundwater table. All 5 CPTs predicted magnitudes of potential liquefaction-induced settlement of less than ½-inch based on the design level event. The results of these analyses are presented in Appendix C.

As noted in Special Publication 117A⁶, "Guidelines for Evaluating and Mitigating Seismic Hazards in California, 2008", CGS states that "it is very difficult to reliably estimate the amount of localized differential settlement likely to occur as part of the overall predicted settlement: localized differential settlements on the order of up to two-thirds of the total settlements anticipated should be assumed unless more precise predictions of differential settlements can be made". This would approximate our predicted differential settlement to less than 1/3 inch. Based on Youd and Garris (1995)⁷, we believe that the potential for ground surface disruption (such as sand boils, ground fissures, etc.) to occur at site is low due to at least

⁵ Boulanger, R. W., and Idriss, I. M. (2014). "CPT and SPT based liquefaction triggering procedures." Report No. UCD/CGM-14/01, Center for Geotechnical Modeling, Department of Civil and Environmental Engineering, University of California, Davis, CA, 134 pp.

⁶ California Geological Survey (2008), Guidelines for Evaluation and Mitigating Seismic Hazards in California, Special Publication 117A.

⁷ Youd, T. L. and Garris, C. T. (1995), Liquefaction-Induced Ground-Surface Disruption, Journal of Geotechnical Engineering, ASCE, Vol. 121, No. 11, November, pp. 805-809.



18 feet of non-liquefiable clayey soils above the thin (less than 1 foot thick) sandy layers and the lateral discontinuity of the liquefiable layers.

4.2.4 Dynamic Compaction/Seismic Settlement

Another type of seismically induced ground failure, which can occur as a result of seismic shaking, is dynamic compaction, or seismic settlement. Such phenomena typically occur in unsaturated, loose granular material or uncompacted fill soils. Due to the composition and apparent relative density of the soils above the water table within the maximum depth of our exploration, we estimate settlements on the order of less than ¼ inch due to dynamic compaction/seismic settlement. These settlements are shown on the CPT liquefaction plots in Appendix C.

4.3 Geologic and Seismic Hazards Summary

As required by the State of California in Title 24 of the California Building Code, a geologic and seismic hazard evaluation is needed for school developments. BSK has provided an evaluation of the campus, along with a discussion of the geology of the site and its vicinity in a separate geologic and seismic hazards assessment report presented in Appendix D. In this assessment, we conclude that the planned structures are free of most geologic and seismic hazards except for those discussed above and the potential for strong ground shaking, which is typical of the entire San Francisco Bay Area.

4.3.1 Faulting and Seismic Shaking

The San Francisco Bay Area is seismically dominated by the active San Andreas Fault system. This fault system movement is distributed across a complex system of generally strike-slip, right-lateral parallel and sub-parallel faults including, among others, the Greenville, Concord, and Hayward faults.

The site is not located within an Alquist-Priolo Earthquake Fault Zone and no mapped active fault traces are known to transverse the site. Nevertheless, the site is located in a seismically active area of California. We expect the site to be subjected to substantial ground shaking due to a major seismic event on the active faults in the Bay Area and surrounding regions during the design life of the project.

In 2015, scientists and engineers released a new earthquake forecast for the State of California⁸. It updates the earthquake forecast made for the greater San Francisco Bay Area by the 2007 Working Group for California Earthquake Probabilities. According to this recent study, there is a 72 percent probability that one or more magnitude M6.7 or greater earthquakes will occur in the San Francisco Bay Area in the next 30 years (2014 to 2044).

⁸ Field, E.H., and 2014 Working Group on California Earthquake Probabilities (2015), UCERF3: A new earthquake forecast for California's complex fault system: U.S Geological Survey 2015-3009, 6 p., <https://dx.doi.org/10.3133/fs20153009>.



As has been demonstrated recently by the 1989 (M6.9) Loma Prieta, the 1994 (M6.7) Northridge, and the 1995 (M6.9) Kobe earthquakes, earthquakes of this magnitude range can cause severe ground shaking and significant damage to modern urban environments. Therefore, the design of the campus expansion should incorporate the seismic design parameters presented in the “2016 CBC Seismic Design Parameters” section of this report.

4.3.2 Expansive Soils

We performed Atterberg limits tests on near surface samples obtained from approximate depths ranging from 1½ to 9 feet BGS from borings B-1, 2, 4, 5, 6, and 7 which resulted in liquid limits ranging of 31 to 45 and plasticity indexes ranging from 14 to 26. These results are consistent with our visual observation of the near surface soils in the nine borings drilled for this project and are indicative of soils having a moderate expansion potential when subjected to change in moisture content.



5. RECOMMENDATIONS

Presented below are recommendations for foundations, seismic considerations, slabs-on-grade, pools, tennis courts, retaining walls, earthwork, construction considerations, site drainage, and pavements for this project.

5.1 Foundations

In general, the proposed buildings and bleachers can be supported on shallow foundations and the tennis court lighting and fences can be supported on drilled piers. If desired, the bleachers can also be supported on drilled piers as recommended below. Depending on the sensitivity of the buildings to soil collapse settlement, the affected buildings could instead be supported on mat foundations as discussed below.

5.1.1 Shallow Footings

Based on our investigation, the loads for the proposed buildings and bleacher footings can be supported by continuous perimeter footings and isolated interior footings bearing on native undisturbed soil or engineered fill provided that the bottom of the footing excavations have been checked by a BSK representative. The recommended allowable soil bearing pressures in pounds per square foot (psf) are presented below.

STRUCTURE FOUNDATION	ALLOWABLE BEARING CAPACITY
Bleacher Footings	2,500 psf
Concession/ Ticket Booth & Restroom Footings	2,500 psf
Maintenance & Operations Buildings Footings	3,500 psf
Aquatics Building & Portables Footings	3,500 psf

These values include a factor of safety of at least 3. Footings should be embedded a minimum of 18 inches and be a minimum of 12 inches wide. The minimum footing embedment depth should be measured below lowest adjacent grade which is defined as the bottom of slab on the interior or finished grade on the exterior. Allowable soil bearing pressures may be increased by one-third for transient loads such as wind and seismic loads.

Minimum bearing pressure on footings should be 1,500 psf. If the bearing pressure is less than 1,500 psf, the footing should be overexcavated at least 6 inches and the resulting excavation should then be replaced with "non-expansive" fill or a 2-sack sand-cement slurry.

Where footings are located adjacent to below-grade structures or near major underground utilities, the footings should extend 9 inches below a 2H:1V (horizontal to vertical) plane projected upward from the structure footing or bottom of the underground utility to avoid surcharging the below grade structure and



underground utility with building loads. If it is not possible to deepen footings below this influence zone, the utility should be backfilled with a 1-sack sand-cement slurry mix within the influence zone. Also, where utilities cross under the perimeter footings line and enter "interior" space, the trench backfill should consist of a vertical barrier of impervious type material as explained in the "Earthwork" section of this report. In addition, where utilities cross through footings, flexible waterproof caulking should be provided between the sleeve and the pipe. Utility plans should be reviewed by BSK prior to trenching for conformance to these requirements.

Concrete for footings should be placed neat against firm native soil or engineered fill. The footing excavations should not be allowed to dry before placing concrete. If shrinkage cracks appear in the footing excavations, the excavations should be thoroughly moistened to close all cracks prior to concrete placement. The footing excavations should be monitored by a representative of BSK for compliance with appropriate moisture control and to confirm the adequacy of the bearing materials. If soft or loose materials are encountered at the bottom of the footing excavations, they should be removed and replaced with lean concrete or engineered fill. BSK should also be present during the overexcavation. Unit prices for such overexcavation and backfilling should be obtained during contractor bidding for this project.

5.1.2 Drilled Piers

New drilled piers to support bleachers (if applicable), tennis court lighting, backstops, fencing, etc. should be at least 18 inches in diameter, spaced at least three pier diameters apart (center to center) or axial capacity reductions may be necessary, and extend at least 5 feet below grade. The piers should be designed using the allowable skin friction values shown in the table below. These values include a factor of safety of 2 and may be increased by one-third for resisting total loads, including wind and seismic. For resistance to uplift loads, the weight of the piers and the skin friction between the piers and supporting soils may be used. Uplift loads for short-term conditions should not exceed 2/3 of the allowable downward skin friction. The upper 1 foot of soil should be ignored for calculation of skin friction unless the ground surface is confined by paving or a slab.

STRUCTURE FOUNDATION	ALLOWABLE PIER SKIN FRICTION
Bleacher, Backstops, Chain Link Fencing, Foul Ball Netting, & Misc. Ball Field Improvements	300 psf, 1' to 10' BGS 500 psf, 10' to 50' BGS
Tennis Court Lighting Piers, Aquatic Center Bleachers, Fencing & Score Board	500 psf

We recommend steel reinforcement and concrete be placed within about 4 to 6 hours upon completion of each drilled pier hole; as a minimum, the holes should be poured the same day they are drilled. The steel reinforcement should be centered in the drilled hole. Concrete used for pier construction should be discharged vertically into the holes to reduce aggregate segregation. Under no circumstances should concrete be allowed to free-fall against either the steel reinforcement or the sides of the excavation during construction. Our borings indicate that shallow drilled piers can be drilled with a standard flight



auger using a standard rig with Kelly bar, subject to access restrictions. The bottom of the drilled holes should be cleaned such that no more than 2 inches of loose soil remains in the hole prior to placement of concrete. A representative from BSK should be present to observe drilled holes to confirm bottom conditions prior to placing steel reinforcement.

If groundwater is encountered within the drilled pier holes, no more than 6 inches of standing water should be present during concrete placement. Otherwise, the water needs to be pumped out or the concrete needs to be placed into the hole using tremie methods. If tremie methods are used, the end of the tremie pipe must remain below the surface of the in-place concrete at all times. In order to develop the design skin friction value previously provided, concrete used for pier construction should have a slump of 6 to 8 inches.

If groundwater is present within the depth of the sandy layers encountered in some of our borings during installation of the piers, such layers could be subjected to caving. This could require the use of temporary casing or the slurry displacement method during installation of the piers. If temporary casing is used during construction in lieu of the slurry displacement method, it should consist of smooth-walled steel casing. Corrugated metal pipe (CMP) should not be permitted as casing because it results in excessive voids and/or disturbance of the surrounding soil during removal of the casing. If the piers are installed using slurry, then the concrete should be placed using tremie methods and the end of the tremie pipe must remain a minimum of 5 feet below the surface of the in-place concrete at all times.

5.1.3 Mat Foundations

If the settlements discussed in the "Anticipated Settlements" section above are too large for conventional shallow footings for the planned structures, consideration should be given to supporting the pertinent structures on mat foundations. The mats should have a minimum depth at the edges of 18 inches. It is anticipated that the mat foundations will impose a modest bearing pressure (less than 500 psf). If isolated areas of imposed stress concentrations occur, the mats may be designed for an allowable bearing pressure of 1,500 psf within these isolated areas. The allowable bearing pressure value may be increased by 1/3 for short term seismic and wind loads. The bearing capacity value includes a factor of safety of at least 3. We recommend that the mat be underlain by at least 6 inches of compacted Caltrans Class 2 aggregate base. This underlayment material would serve as a leveling course and would reduce the risk for the exposed soils at the bottom of the mat excavation to dry out prior to concrete placement.

5.1.4 Resistance to Lateral Loads

Lateral loads applied against footings may be resisted by a combination of friction between the foundation bottoms and the supporting subgrade, and by passive resistance acting against the vertical faces of the foundation. The frictional and passive resistance may be assumed in design to act concurrently. An allowable friction coefficient of 0.30 between the foundations and supporting subgrade soils may be used. For passive resistance at this site, an allowable equivalent fluid pressure (unit weight) of 300 pounds per cubic foot (pcf) may be used against the sides of foundations. The friction coefficient and passive pressure



values include factors of safety of about 1½. We based these lateral load resistance values on the assumption that the concrete for footings are either placed directly against undisturbed soils or that the voids created from the use of forms are backfilled with material such as flowable fill or lean concrete.

Resistance to lateral loads for drilled piers can be provided by passive resistance against the piers using an allowable rectangular pressure of 1,000 psf. The passive resistance may be applied to a width of twice the diameter of the piers. Piers should be spaced at least 6 diameters apart (center to center) or lateral resistance capacity reductions may be necessary. The passive pressure value includes a factor of safety of about 1½.

The passive pressure may be increased by one-third for wind and/or seismic loading. Passive resistance in the upper foot of soil cover below finished grades should be neglected unless the ground surface is confined by concrete slabs, pavements, or other such positive protection.

5.1.5 Modulus of Subgrade Reaction

A modulus of subgrade reaction, K_{v1} , of 115 pounds per square inch per inch (pci) of deflection (based on a one square foot bearing plate) is considered applicable to the new footings, grade beams or mat foundations. The modulus of subgrade reaction is typically reduced for foundation or slab sizes larger than 1 square foot. For various slab sizes, the subgrade modulus may be calculated using the following formulas:

Square:
$$K_S = (K_{v1}) \times \left(\frac{1 \text{ foot}}{B} \right)$$

Rectangular:
$$K_R = (K_{v1}) \times \left(\frac{m+0.5}{1.5 \times m} \right)$$

Where:

- K_{v1} is the modulus of subgrade reaction for a 1 square foot plate (in units of pci);
- B is the width of the foundation or slab (in units of feet);
- m is the ratio of the foundation or slab length divided by its width (unitless); and
- K_S and K_R are the adjusted modulus of subgrade reaction based on the actual dimensions of the foundation or slab (in units of pci).

If a computer program is used to design the foundations for this project and it requires the input of a modulus of subgrade reaction for the site, the designer should check whether the program requires input of the unadjusted (i.e., K_{v1}) or adjusted (i.e., K_S or K_R) modulus of subgrade reaction.

5.2 2016 Seismic Design Criteria

The seismicity of the region surrounding the site is discussed in the "Faulting and Seismicity" section of this report. From that discussion, it is important to note that the site is in a region of high seismic activity



and will likely be subjected to major shaking during the life of the project. As a result, structures to be constructed on the site should be designed in accordance with applicable seismic provisions of the building codes. For details about the seismic design criteria to be used for this project and how it was developed, please refer to the geologic and seismic hazards assessment report in Appendix D.

5.3 Slabs-on-Grade

Slabs-on-grade for this project will consist of concrete floor slabs and exterior flatwork. The near-surface soils are moderately expansive and will be subject to shrink/swell cycles with fluctuations in moisture content. To reduce these potentially adverse effects, we recommend that interior concrete slabs and exterior flatwork be underlain by 18 inches and 6 inches (12 inches for the pool deck) of “non-expansive” engineered fill, respectively, placed on subgrade prepared as described in the “Earthwork” section of this report. The properties of this “non-expansive” fill should also meet the criteria listed in the “Earthwork” section of this report. See below for additional criteria for interior floor slabs.

High calcium quicklime treatment of the in-situ soils is recommended as an alternative to “non-expansive” fill. If this alternative is utilized, extensive quality control is needed as well as laboratory testing to evaluate the appropriate lime treatment mixture. The client needs to understand the risk of this approach if selected, as quicklime treatment requires extensive quality control. For estimating purposes, approximately 12 inches (the upper 6 inches of the 18-inch “non-expansive” fill needs to consist of crushed drain rock as discussed in the next section of this report) and 6 inches (12 inches for pool deck) of soil would need to be treated for interior slabs and exterior flatwork, respectively, provided that the moisture content of the soils below that is at least 3 percent over optimum moisture. Our experience has indicated that about 5 percent high calcium quicklime by weight is typically needed for treatment. We may elect to perform additional laboratory tests to refine this estimate prior to lime-treatment operations at the site. The negative impact of quicklime treatment on future vegetation should be considered in whether it should be used, and what mitigation measures are needed.

The “non-expansive” fill or quicklime-treated soil should extend a minimum horizontal distance of 5 feet beyond all building areas, where feasible, including the outer edge of perimeter footings and footings extending beyond perimeter walls, where flatwork is planned. The horizontal limits of treatment can be reduced to 3 feet elsewhere, such as for exterior flatwork. The over-build of the quicklime-treatment can be eliminated where landscaping is planned; however, it is important that the lime-treatment extends to the edge of the structural improvements. Therefore, special care should be exercised during surveying and staking of the building limits during construction. It is important that placement of this material be done as soon as possible after compaction of the subgrade to prevent drying of the native subgrade soils and that slabs be constructed as soon as possible after “non-expansive” material or lime-treated soil is placed, as subgrades will dry out even through “non-expansive” fills or quicklime-treated soil. A representative of BSK should be present to observe the condition of the subgrade and observe and test the installation of the “non-expansive” engineered fill or quicklime-treated soil prior to slab construction.



Where “non-expansive” fill or quicklime-treated soil is removed to install utilities inside the building or underneath exterior flatwork, this layer should be replaced with new imported “non-expansive” fill or flowable fill.

5.3.1 Interior Floor Slabs

Concrete floor slabs should be supported on at least 6 inches of crushed drain rock to enhance subgrade support for the slab. This material should be considered part of the required minimum of 18 inches of “non-expansive” fill. If this material is desired to be used as a capillary break, it should be $\frac{3}{4}$ inch maximum size with no more than 10 percent by weight passing the #4 sieve. It is important that placement of this material and concrete be done as soon as possible after compaction of the “non-expansive” or lime-treated subgrade materials to reduce drying of the subgrade.

Floor slabs should have a minimum thickness of 5 inches. A Structural Engineer should design reinforcing and slab thickness. Special care should be taken so that reinforcement is placed at the slab mid-height. The floor slab should be separated from footings, structural walls, and utilities and provisions made to allow for settlement or swelling movements at these interfaces. If this is not possible from a structural or architectural design standpoint, it is recommended that the slab connection to footings be reinforced such that there will be resistance to potential differential movement.

5.3.2 Floor Slab Moisture

Subsurface moisture and moisture vapor naturally migrate upward through the soil and, where the soil is covered by a building or pavement, this subsurface moisture will collect. To reduce the impact of the subsurface moisture and potential impact of future introduced moisture (such as landscape irrigation or precipitation) the current industry standard is to place a vapor retarder on the compacted crushed rock layer. This membrane typically consists of visqueen or polyvinyl plastic sheeting at least 15 mils in thickness. It should be noted that although vapor barrier systems are currently the industry standard, this system may not be completely effective in preventing floor slab moisture problems. These systems typically will not necessarily assure that floor slab moisture transmission rates will meet floor-covering manufacturer standards and that indoor humidity levels be appropriate to inhibit mold growth. The design and construction of such systems are totally dependent on the proposed use and design of the proposed building and all elements of building design and function should be considered in the slab-on-grade floor design. Building design and construction have a greater role in perceived moisture problems since sealed buildings/rooms or inadequate ventilation may produce excessive moisture in a building and affect indoor air quality.

Various factors such as surface grades, adjacent planters, the quality of slab concrete and the permeability of the on-site soils affect slab moisture and can control future performance. In many cases, floor moisture problems are the result of either improper curing of floors slabs or improper application of flooring adhesives. We recommend contacting a flooring consultant experienced in the area of concrete slab-on-grade floors for specific recommendations regarding your proposed flooring applications.



Special precautions must be taken during the placement and curing of all concrete slabs. Excessive slump (high water-cement ratio) of the concrete and/or improper curing procedures used during either hot or cold weather conditions could lead to excessive shrinkage, cracking, or curling of the slabs. High water-cement ratio and/or improper curing also greatly increase the water vapor permeability of concrete. We recommend that all concrete placement and curing operations be performed in accordance with the American Concrete Institute (ACI) manual.

It is emphasized that we are not floor moisture proofing experts. We make no guarantee nor provide any assurance that use of capillary break/vapor retarder system will reduce concrete slab-on-grade floor moisture penetration to any specific rate or level, particularly those required by floor covering manufacturers. The builder and designers should consider all available measures for floor slab moisture protection.

Exterior grading will have an impact on potential moisture beneath the floor slab. Recommendations for exterior drainage are provided in the "Site Drainage and Storm Water Infiltration" section of this report.

5.3.3 Exterior Concrete Flatwork

Exterior concrete flatwork for this project will consist of the pool deck and other sidewalk and flatwork areas surrounding the new buildings. As previously discussed, the near-surface soils exhibit a moderate expansion potential and can be subject to shrink/swell cycles with fluctuations in moisture content. Some of the adverse effect of swelling and shrinking can be reduced with proper moisture treatment. The intent is to reduce the fluctuations in moisture content by moisture conditioning the soils, sealing the moisture in, and controlling it. Near-surface soils should be moisture conditioned according to the recommendations in Appendix E. In addition, all exterior concrete slabs should be supported on a minimum of 6 inches (12 inches for pool deck) of "non-expansive" imported soil, quicklime-treated on-site soils, Class 2 Aggregate Sub-Base (ASB), or Class 2 Aggregate Base (AB). Even with the 6 to 12 inches of "non-expansive" material, some movement of exterior slabs may occur. Where concrete flatwork is to be exposed to vehicle traffic, the upper 6 inches of fill should be Class 2 Aggregate Base as specified in the current California Department of Transportation Standard Specifications. This may need to be increased if concrete flatwork is to be exposed to heavy truck traffic.

Pedestrian concrete flatwork should have a minimum thickness of 4 inches and minimum reinforcing of #4 bars at 18 inches on center along expansion joints. Vehicular concrete should be designed as discussed in the "Concrete Pavements" section of this report. Final design of exterior concrete flatwork is the responsibility of the civil or structural engineer for the project.

Exterior flatwork will be subjected to edge effects due to the drying out of subgrade soils. To protect against edge effects adjacent to unprotected areas, such as vacant or landscaped areas, lateral cutoffs, such as inverted curbs that extend at least 2 inches below the aggregate base or "non-expansive" layer into the subgrade soils, are recommended. Alternatively, a moisture barrier at least 80 mils thick extending at least 6 inches below the aggregate base or "non-expansive" layer into the subgrade soils



could be installed at the edge of the flatwork. Because of the expansive soils, flatwork should have control joints on no greater than 8 feet centers.

Prior to construction of the flatwork, the upper 12 inches of “non-expansive” fill, quicklime-treated soil, ASB or AB, should be moisture conditioned to near optimum moisture content. If the “non-expansive” fill, ASB or AB is not covered within 30 days after placement, the soils below this material will need to be checked for appropriate moisture of at least optimum. If the moisture is found to be below this level, the flatwork areas will need to be moisture conditioned until the proper moisture content is reached. Where flatwork is adjacent to curbs, reinforcing bars should be placed between the flatwork and the curbs. Expansion joint material should be used between flatwork and curbs, and flatwork and buildings.

5.3.4 Effect of Plants on Foundation and Flatwork Performance

Because of the moderately expansive nature of the on-site soils, trees and other large plants can significantly contribute to differential settlement of a foundation, flatwork and other paved areas. The roots of trees and large plants can absorb the moisture from the soil, causing the soil to shrink much faster than other soil areas exposed to the weather. The soil where the moisture is lost more rapidly will sink lower than the surrounding soil, causing differential settlement in overlying or adjacent improvements. Certain trees and plants are known to be more hydrophilic (water-loving) than others. Research studies indicate that a tree should be at least as far away from a building as the mature height of the tree to minimize the effect of drying caused by the tree. If this is not possible, consideration should be given to installing a root barrier between areas planted with trees and nearby foundations and flatwork.

If lime-treatment is used at the site in lieu of imported “non-expansive” fill, consideration should be given to installing a vertical barrier, such as a moisture or root barrier, along the boundaries between lime-treated soil and landscaping to reduce the risk that lime-treated soil would have a long-term adverse effect on the nearby landscaping.

A plant and tree specialist should be consulted to avoid the issues described above.

5.4 Retaining Walls

It is our understanding that short retaining walls less than 6 feet high may be used at the site. These walls may also be supported on continuous spread footings as discussed in the “Foundations” section above.

The retaining walls should be designed to resist static earth pressures due to the adjacent soil, and any surcharge effects caused by loads adjacent to the walls. It is recommended that the walls be designed for the lateral earth pressures presented in the table below, which are expressed as equivalent fluid pressures.



LATERAL EARTH PRESSURES FOR MODERATELY EXPANSIVE ON-SITE SOILS WITH BACKFILL SLOPES OF 6 TO 1 (HORIZONTAL TO VERTICAL) OR LESS	
Earth Pressures	Equivalent Fluid Density, pcf
Active	45
At-rest	65
Passive (allowable)	300

The passive pressure includes a factor of safety of about 1½.

Walls whose tops are not free to deflect (such as elevator pits) should be designed for an at-rest earth pressure condition, while an active case can be applied for walls that are free to deflect at the top. These values are unfactored, apply to horizontal backfill, and do not include hydrostatic pressures that might be caused by groundwater or water trapped behind the walls.

5.4.1 Retaining Wall Drainage

Retaining walls higher than 2 feet should be either designed to resist hydrostatic pressures or be well-drained to reduce the potential for hydrostatic pressures to develop behind the walls. A typical drainage system for a cantilevered wall may consist of a 1- to 2-foot wide zone of Caltrans Class 2 Permeable material immediately behind the wall with a perforated pipe at the base of the wall discharging to a storm drain or other appropriate discharge facility via gravity flow. As an alternative, a prefabricated drainage board may be used in lieu of the Class 2 Permeable material. Where conditions allow for the use of weep holes, they may be used in lieu of the perforated pipe. The holes should be a minimum of 3 inches in diameter and spaced at 4 feet or less on-center. Filter fabric or wire mesh should be placed over the holes at the backside of the wall to inhibit the permeable material, if used in lieu of a drainage board, from washing through the holes. The drainage zone behind retaining walls should be capped with a minimum 12-inch thick layer of properly compacted onsite clayey soil to reduce the risk of surface runoff discharging into the wall drain.

5.4.2 Surcharge Loads

Surcharge loads caused by vehicular and/or construction traffic adjacent to the walls may be assumed to consist of a rectangular distributed uniform pressure of 100 psf acting over a depth of 10 feet below the ground surface of the retained soil. A rectangular distribution with a uniform pressure equal to one-third of the surcharge pressure should be used for unrestrained walls (active earth pressure condition), while a uniform pressure equal to one-half of the surcharge pressure should be used for restrained walls (at-rest earth pressure condition). The wall designer should evaluate whether this surcharge is appropriate for the expected traffic loading. Additional analyses during design may be needed to evaluate the effects of non-uniform surcharge loads such as point loads, line loads, or other such presently undefined surcharge loads. In that case, we should be consulted for supplemental geotechnical recommendations.



5.5 Swimming Pool

5.5.1 Lateral Earth Pressures

The expansion potential of the near surface soils will need to be considered in the design of the pool. From a geotechnical viewpoint, a pool with rigid side walls to be constructed at an expansive soil site should be designed for two different loading conditions. The first condition is the pool filled with water and no surrounding earth support. This will enable the structure to function where loss of lateral support due to possible soil shrinkage occurs. Under this condition, the pool walls should be designed to resist the full hydrostatic pressures imposed by the pool water without lateral support in the upper 5 feet below the deck grade.

The second loading condition will occur when the pool is empty, such as when the pool is first constructed or when it is drained for maintenance. An equivalent fluid pressure of 65 pcf for a restrained condition (at-rest condition) is recommended for this case due to the expansive soils. This equivalent fluid pressure does not include hydrostatic pressure. If a drainage system similar to that recommended in the "Retaining Wall Drainage" section above is not installed behind the pool walls, then hydrostatic pressures should be included in the design of the pool walls. Any surcharge pressures due to adjacent foundation footings, structures, landscape mounds, etc., should be added to the lateral earth pressures. Passive pressure and a friction coefficient are provided in the "Resistance to Lateral Loads" section above.

Free groundwater was observed between depths of about 15 to 23 feet below existing grade during our investigation. However, local groundwater levels can fluctuate depending on factors such as seasonal rainfall, groundwater withdrawal, and construction activities on this or adjacent properties. The effect of these time dependent factors could not be determined at the time of our investigation, but the groundwater may impact the proposed pool. Because of the potential for variation in the groundwater table, we conservatively recommend that high groundwater design level be assumed at a depth of 10 feet BGS when considering potential hydrostatic uplift forces on the pool.

Prior to placement of the concrete or gunite, the exposed subgrade should be moisture conditioned to at least 2 percent over optimum moisture content. The sides and bottom of the pool excavation should be wetted several times a day to reduce drying and shrinkage. If shrinkage cracks develop on the sides of the excavation, they will be difficult to mitigate without removing and replacing the soil.

5.5.2 Subdrains and Dewatering Systems

Because the pool may extend below the groundwater design level or leaking water from the pool may be trapped below the bottom of the pool long-term, we recommend that an under-drain system be installed below the bottom of the pool. It should consist of a minimum 6-inch thick layer of Caltrans Class 2 Permeable Material (graded filter rock) without fabric. A pressure relief valve should be installed in the low point of the pool to allow discharge from the under-drain if the pool is drained. As an alternative to a pressure relief valve, a perforated PVC drain pipe (Schedule 40 or greater and at least 4 inches in diameter)



can be installed (with the perforations facing down) along the bottom of the low point of the under-drain. The perforated pipe should discharge to a sump or vertical relief well located within the pool deck area outside of the pool footprint. The water discharged to the relief well or sump should be pumped to the storm drain system to prevent buildup of hydrostatic pressures when the pool is drained.

5.6 Demolition

5.6.1 Existing Improvements

As part of the demolition process, existing foundations and other improvements should be removed. Excavations from removal of foundations, the pool, underground utilities or other below ground obstructions should be cleaned of loose soil and deleterious material and backfilled with properly compacted fill. As discussed in the "Earthwork" section of this report, following stripping and removal of deleterious materials, areas of the site to receive fill should be scarified to a minimum depth of 12 inches, moisture-conditioned, and recompacted as indicated in Appendix E. This process should be observed and tested by a BSK representative.

5.6.2 Existing Utilities

Active or inactive utilities within the construction area should be protected, relocated, or abandoned. Pipelines that are 2 inches in diameter or less may be left in place beneath improvements provided they are cut off and capped at the perimeter of the improvement. Pipelines larger than 2 inches in diameter within the planned improvements should be removed or filled with a 1-sack sand-cement slurry mix. Active utilities to be reused should be carefully located and protected during demolition and during construction.

5.7 Earthwork

Earthwork at the site will generally consist of subgrade preparation and placement of concrete slabs and pavements (including possible lime treatment), excavation and backfill of demolished foundations, backfill of the existing pool, excavation of the new pool, and excavation, removal, and backfill for existing and new underground utility line trenches. We anticipate that the required grading will consist of cuts and fills up to 3 feet to create building pads and grade the site to drain. However, we anticipate that the area of the new home bleachers may have to be cut about 5 feet to match surrounding grades. Excavations for the removal of existing underground utilities and installation of new ones are expected to be up to 5 feet deep and excavation/backfill for the existing and new pools is anticipated to be up to 15 feet deep. BSK should review the final grading plans for conformance to our design recommendations prior to construction bidding. In addition, it is important that a representative of BSK observe and evaluate the competency of existing soils or new fill underlying structures, the pool, concrete flatwork, and pavements. In general, soft/loose or unsuitable materials encountered should be overexcavated, removed, and replaced with compacted engineered fill material.



5.7.1 Site Preparation and Grading

Prior to the start of grading and subgrade preparation operations, where appropriate, the site should first be cleared and stripped (minimum of 3 inches deep) to remove all surface vegetation, organic laden topsoil and debris generated during the demolition of existing pavements, concrete slabs and flatwork, foundations, the pool, and landscaping located within the site. Stripped topsoil from landscaped areas may be stockpiled for later use in landscaping areas; however, this material should not be reused for engineered fill.

Following stripping, removal of deleterious materials, and overexcavation (if required), the site should be scarified to a minimum depth of 12 inches, moisture conditioned, and recompactd as indicated in Appendix E. Scarification and recompaction should extend laterally a minimum of 5 feet beyond the limits of structures and 3 feet beyond flatwork and pavement, where achievable.

All fills should be compacted in lifts of 8-inch maximum uncompacted thickness. A summary of compaction requirements of the projects is presented in Appendix E. Laboratory maximum dry density and optimum moisture content relationships should be evaluated based on ASTM Test Designation D1557 (latest edition).

All site preparation and fill placement should be observed by a BSK representative. It is important that, during the stripping and scarification process, our representative be present to observe whether any undesirable material is encountered in the construction area and whether exposed soils are similar to those encountered during our field investigation.

5.7.2 Lime Treatment

Lime-treatment of the in-situ soils (if used) should be performed using high calcium quicklime. Extensive quality control is needed as well as laboratory testing to evaluate the appropriate lime treatment mixture. Our experience has indicated that about 5 percent high calcium quicklime by dry unit weight of the soil is typically needed for treatment. For design purposes, an insitu dry unit weight of 105 pcf may be assumed. The negative impact of lime-treatment on future vegetation should be considered.

The high calcium quicklime treatment operation should be conducted in general accordance with Section 24 of the Caltrans Standard Specifications, 2015 edition. Quicklime-treatment typically consists of spreading the required amount of quicklime over the area to be treated, followed by initial mixing of the quicklime and water within the soil section to be treated. This initial mixing is then allowed to sit for a period of about 24 hours or longer to permit the resulting chemical reaction to break down the material and change it chemically. Following this "mellowing" period, the soil-quicklime section is re-mixed and additional water, if needed, is added. It is important that adequate water be added before final mixing to ensure complete hydration of the quicklime and to bring the soil moisture content to at least 3 percent above the optimum moisture content before compaction takes place.



After the quicklime-treated pad/subgrade is compacted, it should be allowed to harden (cure) until loaded dump trucks and other construction equipment can operate on it without rutting the surface. Throughout this curing period, the surface of the quicklime-treated soil should be kept moist to aid in strength gain. Alternatively, the quicklime-treated surface can be covered with 4 to 6 inches of capillary break or aggregate base material.

It is very important that the general steps outlined above be performed in a manner that introduces sufficient water to the soil-quicklime mix to allow the quicklime to thoroughly hydrate and react chemically with the soil subgrade. Likewise, it is equally important that proper curing of the quicklime-treated section take place.

5.7.3 Fill Material

Except for organic laden soil, the on-site soil is suitable for use as general engineered fill if it is free of deleterious matter. Maximum particle size for fill material should be limited to 3 inches, with at least 90 percent by weight passing the 1-inch sieve. Proper granular bedding and shading should be used beneath and around new utilities (if applicable). Where imported "non-expansive" material is required, it is recommended that it be granular in nature, adhere to the above gradation recommendations and conform to the following minimum criteria:

IMPORTED "NON-EXPANSIVE" FILL CRITERIA	
Plasticity Index	15 or less
Liquid Limit	Less than 30%
% Passing #200 Sieve	8 %– 40%

Highly pervious materials such as pea gravel or clean sands are not recommended for use as general fill because they permit transmission of water to the underlying soils. Imported fill material should not be any more corrosive than the on-site soils and should not be classified as being more corrosive than "moderately corrosive." Prior to transporting proposed import material to the site, the contractor should make representative samples of the material available to BSK at least 10 working days in advance to allow us enough time to confirm the material meets the above requirements. All on-site or import fill material should be compacted to the recommendations provided for engineered fill in Appendix E.

Due to the expansive soil content within the on-site soils, proper moisture conditioning is important. The moisture conditioning should be performed in accordance with Appendix E. Where low expansion potential soils or aggregate base in paved areas is used, it should immediately be placed over the prepared subgrade to avoid drying of the subgrade. Prior to placement of the capillary break or crushed rock material over the "non-expansive" or lime-treated fill subgrade for the building pads, the subgrade should be moisture conditioned to the moisture content indicated in Appendix E. The subgrade for exterior concrete flatwork should be conditioned to the required moisture content prior to their construction and may require additional conditioning if allowed to dry.



5.7.4 Weather/Moisture Considerations

If earthwork operations and construction for this project are scheduled to be performed during the rainy season (usually November to May) or in areas containing saturated soils, provisions may be required for drying of soil or providing admixtures, such as lime-treatment, to the soil prior to compaction. Conversely, additional moisture may be required during dry months. Water trucks should be made available in sufficient numbers to provide adequate water during earthwork operations.

Since portions of the site are currently capped with concrete slabs or AC pavement, the moisture content of the subgrade soils in these areas may be significantly above the optimum moisture content. This occurrence is usually caused by the migration of irrigation water from landscaped areas into the aggregate base material and/or the entrapment of subsurface moisture underneath slab and pavement areas. As a result, the subgrade soils may need to be dried prior to undergoing recompaction. It is recommended that any landscape watering in the area be turned off at least two weeks prior to the start of grading activities at the site. If site grading is performed during the rainy months, the site soils could become very wet and difficult to compact without undergoing significant drying. This may not be feasible without delaying the construction schedule. For this reason, drier import soils could be required or lime treating may be needed if construction takes place during winter months.

5.7.5 Excavation and Backfill

We anticipate that excavation for the foundations, the pool, and utility trenches can be made with either a backhoe or trencher, or similar earthwork equipment. Where trenches or other excavations are extended deeper than 5 feet, the excavation may become unstable and should be evaluated to monitor stability prior to personnel entering the trenches. Shoring or sloping of any trench wall may be necessary to protect personnel and to provide stability. All trenches should conform to the current OSHA requirements for work safety. It is the contractor's responsibility to follow OSHA temporary excavation guidelines and grade the slopes with adequate layback or provide adequate shoring and underpinning of existing structures and improvements, as needed. Slope layback and/or shoring measures should be adjusted as necessary in the field to suit the actual conditions encountered, in order to protect personnel and equipment within excavations.

Care should be taken during construction to reduce the impact of trenching on adjacent structures and pavements (if applicable). Excavations should be located so that no structures, foundations, and slabs, existing or new, are located above a plane projected 2:1 (horizontal to vertical) upward from any point in an excavation, regardless of whether it is shored or unshored, unless the adjacent surcharge loads are accounted for in the shoring design.

At the time of this geotechnical investigation, free groundwater was observed in some of our borings and CPTs at depths of approximately 15 and 23 feet BGS. However, the actual depth at which groundwater may be encountered in trenches and excavations may vary. As a minimum, provisions should be made to ensure that conventional sump pumps used in typical trenching and excavation projects are available



during construction in case groundwater is found to be higher than observed during our investigation, and/or if substantial runoff water accumulates within the excavations as a result of wet weather conditions.

Backfill for trenches and other small excavations beneath slabs should be compacted as noted in Appendix E. Special care should be taken in the control of utility trench backfilling under structures and flatwork/slab areas. Poor compaction may cause excessive settlements resulting in damage to overlying structures and slabs.

Where utility trenches extend from the exterior into the interior limits of a building, lean concrete or a 2-sack sand-cement slurry should be used as backfill material for a distance of 2 feet laterally on each side of the perimeter footing centerline to reduce the potential for the trench to act as a conduit to exterior surface water. In addition, where utilities cross through exterior footings, flexible waterproof caulking should be provided between the sleeve and the pipe. Utility trenches located in landscaped areas should be capped with a minimum of 12 inches of compacted on-site clayey soils.

5.8 Site Drainage

Proper site drainage is important for the long-term performance of the planned structure. The site should be graded so as to carry surface water away from the building foundations at a minimum of 2 percent in paved areas and 5 percent in landscaped areas to a minimum of 10 feet laterally from the buildings, as required by the 2016 CBC. In addition, all roof gutters should be connected directly into the storm drainage system or drain onto impervious surfaces provided that a safety hazard is not created.

5.9 Pavements and Tennis Courts

5.9.1 Asphalt Concrete Pavements

Pavements for this project will consist of asphalt-paved parking and driveways. We have developed our pavement designs assuming the pavement subgrade soil will be similar to the near surface soils described in the boring logs. If site grading exposes soil other than that assumed, or import fill is used to construct pavement subgrades, we should perform additional tests to confirm or revise the recommended pavement sections for actual field conditions.

Asphalt pavement sections for this project have been calculated using Caltrans Flexible Pavement Design Method. Based on our R-value testing in the area of the planned parking, we have used an R-value of 5 in our analyses and we have developed the pavement sections presented in the table below. Various alternative pavement sections for various different Traffic Indices (TIs) are presented. Each TI represents a different level of use. The owner or designer should determine which level of use best reflects the project and select appropriate pavement sections. Three alternative pavement sections are given for the various TIs in the following table. They include 1) asphalt over aggregate base, 2) asphalt over aggregate base over aggregate subbase, and 3) asphalt over aggregate base over lime-treated soils.



ASPHALT CONCRETE PAVEMENT DESIGN Design R-Value = 5								
	Alternative 1		Alternative 2			Alternative 3		
Traffic index	AC	AB	AC	AB	ASB	AC	AB	LTS
4.0	2.5	7.5	2.5	4.0	4.0	2.5	4.0	12.0
4.5	2.5	9.0	2.5	4.5	5.0	2.5	4.0	12.0
5.0	2.5	11.0	2.5	5.0	6.5	2.5	4.0	12.0
5.5	3.0	12.0	3.0	5.5	7.0	3.0	4.5	12.0
6.0	3.0	13.5	3.0	6.5	8.0	3.0	4.5	12.0
6.5	3.5	14.5	3.5	6.5	9.0	3.0	6.0	12.0
Note: Thicknesses shown are in inches. AC = Type B Asphalt Concrete AB = Class 2 Aggregate Base (Minimum R-Value = 78) ASB = Class 2 Aggregate Subbase (Minimum R-Value = 50) LTS = Lime-Treated Subgrade (Minimum R-Value = 50)								

If the lime-treating alternative of the building pads and flatwork is considered, the third alternative may be the most cost effective for the asphalt-paved areas. This alternative, shown above, would consist of lime-treating the existing subgrade prior to placement of the pavement section. This would result in a reduced asphalt concrete and aggregate base sections, as shown in Alternative 3 in the above table.

5.9.2 Tennis Courts

Subgrade soils underlying the tennis courts should be scarified to a minimum depth of 12 inches, moisture conditioned, and recompacted as indicated in Appendix E. Scarification and recompaction should extend laterally a minimum of 3 feet beyond the court surface, where achievable. The tennis court surfacing should be a minimum of 2 inches of asphalt concrete underlain by at least 8 inches of aggregate base that is moisture conditioned and compacted as indicated in Appendix E. If landscaping is placed immediately adjacent to the tennis courts, a vertical barrier should be installed between the courts and the landscaping as discussed in the Exterior Flatwork section of this report.

If the ground surface of the tennis courts is to be raised above the surrounding grade, consideration should be given to installing a continuous reinforced concrete band along the perimeter of the courts to provide lateral confinement and lower the potential for soil creep and vertical soil movement along the edges of the courts.

5.9.3 Concrete Pavements

If used, Portland Cement Concrete (PCC) pavement should have a minimum thickness of 6 inches supported over 6 inches of Caltrans Class 2 aggregate base over subgrade prepared per Appendix E. The aggregate base and subgrade for PCC pavements should be properly moisture conditioned and compacted. Construction joints should be located no more than 12 feet apart in both directions. Concrete



compressive strength should be tested in lieu of third point loading for rupture strength. A minimum 28-day compressive strength of 3,000 pounds per cubic foot (psi) should be specified for the concrete mix design. The POC pavement should be continuously reinforced using No. 4 bars (or larger) spaced no more than 18 inches on center in both directions. Steel reinforcement should be located near the mid-thickness of the concrete slab. Final design of the POC pavement is the responsibility of the civil or structural engineer for the project.

5.9.4 Pavement Drainage

Similar to slabs-on-grade, pavement subgrades will require mitigation of the expansive surface soils. We recommend that pavement subgrades be scarified to a depth of at least 12 inches, moisture conditioned and recompact per Appendix E.

Paved areas should be sloped and drainage gradients maintained to carry all surface water to appropriate collection points. Surface water ponding should not be allowed anywhere on the site during or after construction. We recommend that the pavement section be isolated from non-developed areas and areas of intrusion of irrigation water from landscaped areas, unless these areas are located at least 10 feet laterally from the pavement. Concrete curbs should extend a minimum of 2 inches below the base rock and into the subgrade to provide a barrier against drying of the subgrade soils, or reduction of migration of landscape water, into the pavement section. Alternatively, a moisture barrier at least 80 mils thick that extends at least 6 inches below the aggregate base or "non-expansive" layer into the subgrade soils could be installed immediately behind concrete curbs.

In addition, we recommend that all pavements conform to the following criteria:

- All trench backfills, including utility and sprinkler lines, should be properly placed and adequately compacted to provide a stable subgrade, in accordance with the compaction recommendations in Appendix E.
- If Alternative 3 above is selected for the pavement section, wherever lime-treated soil is removed to install utilities inside paved areas, this layer should be backfilled with aggregate base.
- An adequate drainage system should be provided to prevent surface water or subsurface seepage from saturating the subgrade soil.
- The asphalt concrete, aggregate base, and aggregate subbase materials should conform to Caltrans Specifications, latest edition.
- Placement and compaction of pavements should be performed in accordance to appropriate Caltrans procedures.



5.10 Storm Water Runoff Mitigation

Storm water runoff regulations require pretreatment of runoff and infiltration of storm water to the extent feasible. Typically, this results in the use of bioretention areas, vegetated swales, infiltration trenches, buried storm water detention/infiltration galleries, or permeable pavement near or within parking lots and at the location of roof run-off collection. These features are not well-suited to the moderately expansive clay soils present at this site due to their relatively low permeability⁹, which does not allow significant infiltration over short time periods. In addition, allowing water to pond on expansive clay soils can cause the soils to swell, which can cause distress to pavements, slabs, and lightly loaded structures.

Implementation of storm water infiltration criteria will likely result in increased distress and reduced service life of pavement and flatwork if not carefully designed in clay soils. In general, bioretention areas, vegetated swales and infiltration areas should be located in landscaped areas and well away from pavements, buildings, and slopes.

If it is not possible to locate these infiltration systems at least 10 feet away from buildings and pavements, alternatives that isolate the infiltrated water, such as flow-through planters with underdrains, should be considered. Improvements should be located such that there is at least 1 foot of horizontal distance between the edge of improvements and the top edge of the bioswale excavation for every 1 foot of vertical bioswale depth. If this is not possible, then concrete curbs for pavements or lateral restraint for exterior flatwork located directly adjacent to a vertical bioswale cut should be designed to resist lateral earth pressure per the recommendations in the "Retaining Walls" section of this report, or they should be adequately keyed into the native soil or should be engineered to reduce the potential for rotation or lateral movement of the curbs.

Due to the potential adverse effects on project performance, we should review the geotechnical aspects of the storm water infiltration system and its location prior to issuing the plans to bidding.

5.11 Corrosivity Results

Soil samples were collected during our field investigation at depths of approximately 2 and 2½ feet below the ground surface in borings B-1 and B-9, respectively, and were submitted for corrosion testing. The samples were tested by CERCO Analytical, a State-certified laboratory in Concord, California, for redox potential, pH, resistivity, chloride content, and sulfate content in accordance with ASTM test methods. The test results are presented at the end of Appendix B. Also included is the evaluation by CERCO Analytical of the corrosion test results. Because we are not corrosion specialists, we recommend that a corrosion specialist be consulted for advice on proper corrosion protection for underground piping which will be in contact with the soils and other design details.

⁹ Infiltration testing and/or laboratory permeability testing was not performed due to the dominant presence of moderately expansive clays blanketing the site.



Based upon the resistivity measurements, the samples tested classified as "corrosive" by CERCO Analytical. They recommend that all buried iron, steel, cast iron, ductile iron, galvanized steel, and dielectric coated steel or iron be properly protected against corrosion depending upon the critical nature of the structure. They also recommend all buried metallic pressure piping, such as ductile iron firewater pipelines, should be protected against corrosion.

CERCO also indicated that the sulfate ion concentrations in the test results are sufficient to potentially be detrimental to reinforced concrete structures and cement mortar-coated steel. Therefore, they recommend that concrete that comes into contact with the site soils use sulfate resistant cement such as Type II, with a maximum water-to-cement ratio of 0.55.

The above are general discussions. A more detailed investigation may include more or fewer concerns and should be directed by a corrosion expert. BSK does not practice corrosion engineering. Consideration should also be given to soils in contact with concrete that will be imported to the site during construction, such as topsoil and landscaping materials. For instance, any imported soil materials should not be any more corrosive than the onsite soils and should not be classified as being more corrosive than "moderately corrosive." Also, onsite cutting and filling may result in soils contacting concrete that were not anticipated at the time of this investigation.

5.12 Plan Review and Construction Observation

We recommend that BSK be retained by the Client to review the final foundation and grading plans and specifications before they go out to bid. It has been our experience that this review provides an opportunity to detect misinterpretation or misunderstandings prior to the start of construction.

Variations in soil types and conditions are possible and may be encountered during construction. To permit correlation between the soil data obtained during this investigation and the actual soil conditions encountered during construction, we recommend that BSK be retained to provide observation and testing services during site earthwork and foundation construction. This will allow us the opportunity to compare actual conditions exposed during construction with those encountered in our investigation and to provide supplemental recommendations if warranted by the exposed conditions. Earthwork should be performed in accordance with the recommendations presented in this report, or as recommended by BSK during construction. BSK should be notified at least two weeks prior to the start of construction and prior to when observation and testing services are needed.



6. ADDITIONAL SERVICES AND LIMITATIONS

Our services were performed in a manner consistent with that level of care and skill ordinarily exercised by other members of BSK's profession practicing in the same locality, under similar conditions and at the date the services are provided. Our conclusions, opinions and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. BSK makes no other representation, guarantee or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

This report may be used only by the District (Client) and the registered design professional in responsible charge and only for the purposes stated for this specific engagement within a reasonable time from its issuance, but in no event later than two (2) years from the date of the report.

Our services were performed based on project information provided by the Client. If the Client does not retain BSK to review any plans and specifications, including any revisions or modifications to the plans and specifications, BSK assumes no responsibility for the suitability or misinterpretation of our recommendations. In addition, if there are any changes in the field to the plans and specifications, the Client must obtain written approval from BSK's engineer that such changes do not affect our recommendations. Failure to do so will vitiate BSK's recommendations.

The scope of services was limited to drilling and sampling nine borings and advancing five CPTs at the site, laboratory testing, and preparation of this recommendations report. It should be recognized that definition and evaluation of subsurface conditions are difficult. Judgments leading to conclusions and recommendations are generally made with incomplete knowledge of the subsurface conditions present due to the limitations of data from field studies. The conclusions of this assessment are based on subsurface exploration including 9 borings drilled to a maximum depth of 25 feet BGS, 5 CPTs advanced to a depth of 50 feet BGS, laboratory testing, and engineering analyses.

Recommendations contained in this report are based on our field observations and subsurface explorations, limited laboratory tests, and our present knowledge of the proposed construction. It is possible that soil or groundwater conditions could vary beyond the point explored. If soil or groundwater conditions are encountered during construction that differ from those described herein, the Client is responsible for ensuring that BSK is notified immediately so that we may reevaluate the recommendations of this report. If the scope of the proposed construction, including the estimated structure loads, and the design depths or locations of the foundations, changes from that described in this report, the conclusions and recommendations contained in this report are not considered valid unless the changes are reviewed, and the conclusions of this report are modified or approved in writing, by BSK.

As the geotechnical engineering firm that performed the geotechnical evaluation for this project, BSK should be retained to confirm that the recommendations of this report are properly incorporated in the design of this project, and properly implemented during construction. This may avoid misinterpretation of the information by other parties and will allow us to review and modify our recommendations if



variations in the soil conditions are encountered. As a minimum BSK should be retained to provide the following continuing services for the project:

- Review the project plans and specifications, including any revisions or modifications;
- Observe and evaluate the site earthwork operations to confirm subgrade soils are suitable for construction of foundations, slabs-on-grade, pavements and placement of engineered fill;
- Confirm engineered fill for the structures and other improvements is placed and compacted per the project specifications; and
- Observe shallow foundation and drilled pier excavations to confirm conditions are as anticipated.

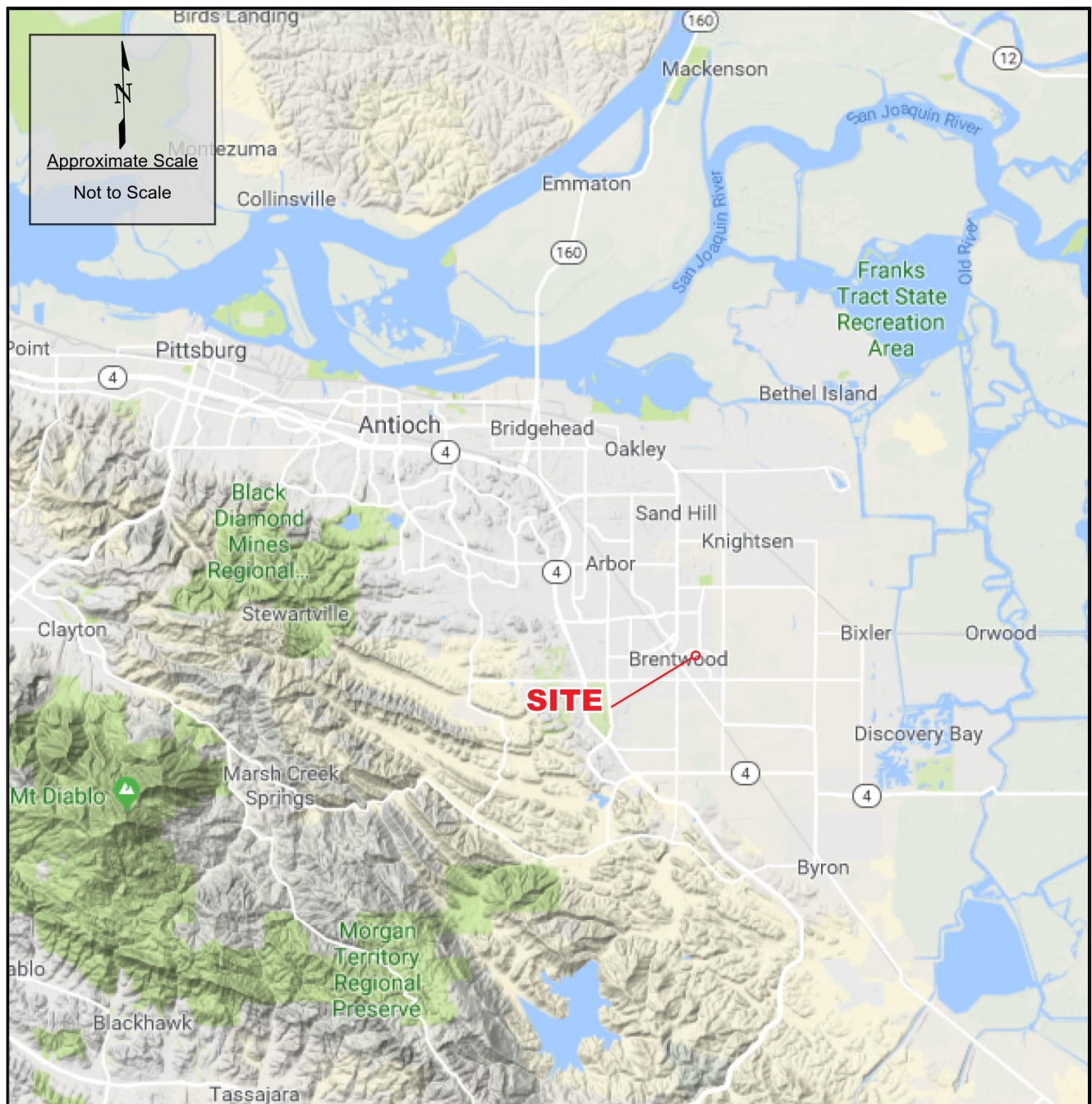
The scope of services for this subsurface exploration and geotechnical report did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous substances in the soil, surface water, or groundwater at this site.

This report, and any future addenda or reports regarding this site, may be made available to bidders to supply them with only the data contained in the report regarding subsurface conditions and laboratory test results at the point and time noted. Bidders may not rely on interpretations, opinion, recommendations, or conclusions contained in the report. Because of the limited nature of any subsurface study, the contractor may encounter conditions during construction which differ from those presented in this report. In such event, the contractor should promptly notify the owner so that BSK's geotechnical engineer can be contacted to confirm those conditions. We recommend the contractor describe the nature and extent of the differing conditions in writing and that the construction contract include provisions for dealing with differing conditions. Contingency funds should be reserved for potential problems that may arise during earthwork and foundation construction.



FIGURES





References: 1. <https://maps.google.com>, 2018

Note: Locations are approximate

The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. BSK makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or misusing the information.



PROJECT NO. G17-238-11L

DRAWN: 2/5/18

DRAWN BY: D. Tower

CHECKED BY: C. Foulk

FILE NAME:
SitePlan.indd

VICINITY MAP

**Campus Expansion
Liberty High School
850 2nd Street
Brentwood, California**

FIGURE

1



References

1. <http://earth.google.com>, 2017
2. "Campus Plan" by Quattrocchi Kwok Architects dated 12/14/17

Legend

- B-1** | Approximate Boring Location (with approximate depth), BSK (2018)
- CPT-1** | Approximate Cone Penetrometer Test Location (with approximate depth), BSK (2018)

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PROJECT NO. G17-238-11L
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 DRAWN BY: D. Tower
 CHECKED BY: C. Foulk
 FILE NAME: SitePlan.indd

SITE EXPLORATION PLAN

Campus Expansion
 Liberty High School
 850 2nd Street
 Brentwood, California

FIGURE





















2

APPENDIX A

BORING LOGS



UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487/2488)

MAJOR DIVISIONS		GRAPHIC LOG		TYPICAL DESCRIPTIONS		
COARSE GRAINED SOILS (More than half of material is larger than the #200 sieve)	GRAVELS (More than half of coarse fraction is larger than the #4 sieve)	CLEAN GRAVELS WITH <5% FINES	Cu ≥4 and 1 ≤ Cc ≤3		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			Cu <4 and/or 1 > Cc >3		GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		GRAVELS WITH 5 to 12% FINES	Cu ≥4 and 1 ≤ Cc ≤3		GW-GM	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
					GW-GC	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
			Cu <4 and/or 1 > Cc >3		GP-GM	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE FINES
					GP-GC	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE CLAY FINES
		GRAVELS WITH >12% FINES			GM	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES
					GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
					GC-GM	CLAYEY GRAVELS, GRAVEL-SAND-CLAY-SILT MIXTURES
	SANDS (More than half of coarse fraction is smaller than the #4 sieve)	CLEAN SANDS WITH <5% FINES	Cu ≥6 and 1 ≤ Cc ≤3		SW	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
			Cu <6 and/or 1 > Cc >3		SP	POORLY-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
		SANDS WITH 5 to 12% FINES	Cu ≥6 and 1 ≤ Cc ≤3		SW-SM	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
					SW-SC	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
			Cu <6 and/or 1 > Cc >3		SP-SM	POORLY-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE FINES
					SP-SC	POORLY-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE CLAY FINES
		SANDS WITH >12% FINES			SM	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES
					SC	CLAYEY SANDS, SAND-GRAVEL-CLAY MIXTURES
					SC-SM	CLAYEY SANDS, SAND-SILT-CLAY MIXTURES
FINE GRAINED SOILS (More than half of material is smaller than the #200 sieve)	SILTS AND CLAYS (Liquid limit less than 50)			ML	INORGANIC SILTS AND VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, SILTS WITH SLIGHT PLASTICITY,	
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
				CL-ML	INORGANIC CLAYS-SILTS OF LOW PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
				OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	SILTS AND CLAYS (Liquid limit greater than 50)			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT	
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
				OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY	



PROJECT NO. G17-238-11L
 DRAWN: 2/5/18
 DRAWN BY: D. Tower
 CHECKED BY: C. Foulk
 FILE NAME: Legend.indd

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D 2487/2488)

Liberty Union High School
 Campus Expansion
 850 2nd Street
 Brentwood, California

FIGURE

A-1

SOIL DESCRIPTION KEY

MOISTURE CONTENT

DESCRIPTION	ABBR	FIELD TEST
Dry	D	Absence of moisture, dusty, dry to the touch
Moist	M	Damp but no visible water
Wet	W	Visible free water, usually soil is below water table

CEMENTATION

DESCRIPTION	FIELD TEST
Weakly	Crumbles or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

PLASTICITY

DESCRIPTION	ABBR	FIELD TEST
Non-plastic	NP	A 1/8-in. (3 mm) thread cannot be rolled at any water content.
Low (L)	LP	The thread can barely be rolled and the lump or thread cannot be formed when drier than the plastic limit.
Medium (M)	MP	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump or thread crumbles when drier than the plastic limit
High (H)	HP	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump or thread can be formed without crumbling when drier than the plastic limit

STRUCTURE

DESCRIPTION	CRITERIA
Stratified	Alternating layers of varying material or color with layers at least 1/4 in. thick, note thickness
Laminated	Alternating layers of varying material or color with the layer less than 1/4 in. thick, note thickness
Fissured	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided	Fracture planes appear polished or glossy, sometimes striated
Blocky	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay; note thickness
Homogeneous	Same color and appearance throughout

CONSISTENCY - FINE-GRAINED SOIL

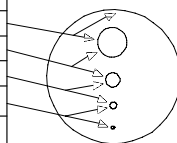
CONSISTENCY	ABBR	FIELD TEST
Very Soft	VS	Thumb will penetrate soil more than 1 in. (25 mm)
Soft	S	Thumb will penetrate soil about 1 in. (25 mm)
Firm	F	Thumb will indent soil about 1/4 in. (6 mm)
Hard	H	Thumb will not indent soil but readily indented with thumbnail
Very Hard	VH	Thumbnail will not indent soil

GRAIN SIZE

DESCRIPTION	SIEVE SIZE	GRAIN SIZE	APPROXIMATE SIZE
Boulders	>12"	>12"	Larger than basketball-sized
Cobbles	3 - 12'	3 - 12"	Fist-sized to basketball-sized
Gravel	coarse	3/4 - 3"	Thumb-sized to fist-sized
	fine	#4 - 3/4"	Pea-sized to thumb-sized
Sand	coarse	#10 - #4	Rock salt-sized to pea-sized
	medium	#40 - #10	Sugar-sized to rock salt-sized
	fine	#200 - #10	Flour-sized to sugar-sized
Fines	Passing #200	<0.0029	Flour-sized and smaller

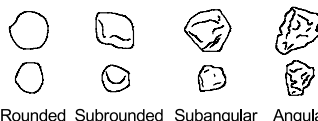
REACTION WITH HCL

DESCRIPTION	FIELD TEST
None	No visible reaction
Weak	Some reaction, with bubbles forming slowly
Strong	Violent reaction, with bubbles forming immediately



ANGULARITY

DESCRIPTION	ABBR	CRITERIA
Angular	A	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular	SA	Particles are similar to angular description but have rounded edges
Subrounded	SR	Particles have nearly plane sides but have well-rounded corners and edges
Rounded	R	Particles have smoothly curved sides and no edges



APPARENT / RELATIVE DENSITY - COARSE-GRAINED SOIL

APPARENT DENSITY	ABBR	SPT (# blows/ft)	MODIFIED CA SAMPLER (# blows/ft)	CALIFORNIA SAMPLER (# blows/ft)	RELATIVE DENSITY (%)	FIELD TEST
Very Loose	VL	<4	<4	<5	0 - 15	Easily penetrated with 1/2-inch reinforcing rod by hand
Loose	L	4 - 10	5 - 12	5 - 15	15 - 35	Difficult to penetrate with 1/2-inch reinforcing rod pushed by hand
Medium Dense	MD	10 - 30	12 - 35	15 - 40	35 - 65	Easily penetrated a foot with 1/2-inch reinforcing rod driven with 5-lb. hammer
Dense	D	30 - 50	35 - 60	40 - 70	65 - 85	Difficult to penetrate a foot with 1/2-inch reinforcing rod driven with 5-lb. hammer
Very Dense	VD	>50	>60	>70	85 - 100	Penetrated only a few inches with 1/2-inch reinforcing rod driven with 5-lb. hammer



PROJECT NO. G17-238-11L
 DRAWN: 2/5/18
 DRAWN BY: D. Tower
 CHECKED BY: C. Foulk
 FILE NAME: Legend.indd











SOIL DESCRIPTION KEY

Liberty Union High School
 Campus Expansion
 850 2nd Street
 Brentwood, California

FIGURE

A-2

LOG SYMBOLS

	BULK / BAG SAMPLE	-4	PERCENT FINER THAN THE NO. 4 SIEVE (ASTM Test Method C 136)
	SPLIT BARREL SAMPLER (2-1/2 inch outside diameter)	-200	PERCENT FINER THAN THE NO. 200 SIEVE (ASTM Test Method C 117)
	SPLIT BARREL SAMPLER (3 inch outside diameter)	LL	LIQUID LIMIT (ASTM Test Method D 4318)
	STANDARD PENETRATION SPLIT SPOON SAMPLER (2 inch outside diameter)	PI	PLASTICITY INDEX (ASTM Test Method D 4318)
	CONTINUOUS CORE	TXUU	UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION (EM 1110-1-1906)/ASTM Test Method D 2850
	SHELBY TUBE	EI	EXPANSION INDEX (UBC STANDARD 18-2)
	ROCK CORE	COL	COLLAPSE POTENTIAL
	GROUNDWATER LEVEL (encountered at time of drilling)	UC	UNCONFINED COMPRESSION (ASTM Test Method D 2166)
	GROUNDWATER LEVEL (measured after drilling)		
	SEEPAGE	MC	MOISTURE CONTENT (ASTM Test Method D 2216)

GENERAL NOTES

Boring log data represents a data snapshot.

This data represents subsurface characteristics only to the extent encountered at the location of the boring.

The data inherently cannot accurately predict the entire subsurface conditions to be encountered at the project site relative to construction or other subsurface activities.

Lines between soil layers and/or rock units are approximate and may be gradual transitions.

The information provided should be used only for the purposes intended as described in the accompanying documents.

In general, Unified Soil Classification System designations presented on the logs were evaluated by visual methods.

Where laboratory tests were performed, the designations reflect the laboratory test results.



PROJECT NO. G17-238-11L

DRAWN: 2/5/18

DRAWN BY: D. Tower

CHECKED BY: C. Foulk

FILE NAME:
Legend.indd

LOG KEY

Liberty Union High School
Campus Expansion
850 2nd Street
Brentwood, California

FIGURE

A-3



BSK Associates
399 Lindbergh Avenue
Livermore, CA 94551
Telephone: (925)-315-3515
Fax: (925)-315-3512

LOG OF BORING NO. B-1

Project Name: **Liberty High School**
Project Number: **G17-238-11L**
Project Location: **850 Second Street, Brentwood**
Logged by: **D. Tower**
Checked by: **M. Romero**

Plate

Depth, feet	Graphic Log	Surface El.: 72 ft. Location: Southern Bus Parking Lot	Samples	Sample Number	Penetration Blows / Foot	Pocket Penetro- meter, TSF	% Passing No. 200 Sieve	In-Situ Dry Weight (pcf)	In-Situ Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
MATERIAL DESCRIPTION												
		ASPHALT: approximately 5 1/2-inches of asphalt										
		GRAVEL: approximately 12-inches of possible aggregate baserock										
		Sandy Lean CLAY (CL): yellowish brown, moist, medium plasticity, fine to coarse grained sand, high silt content R-Value =5 (see plate B-8)								39	18	21
5		Boring terminated at approximately 5 feet. No free groundwater observed. Boring backfilled with cement grout and topped with 6 inches of Quikrete.										
10												
15												
20												
Completion Depth: 5.0 Date Started: 2/5/18 Date Completed: 2/5/18			Drilling Equipment: Exploration GeoServices Mobile B-53 Drilling Method: Hollow Stem Remarks:									



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Livermore, CA 94551
Telephone: (925)-315-3515
Fax: (925)-315-3512

LOG OF BORING NO. B-2

Project Name: **Liberty High School**
Project Number: **G17-238-11L**
Project Location: **850 Second Street, Brentwood**
Logged by: **D. Tower**
Checked by: **M. Romero**

Plate

Depth, feet	Graphic Log	Surface El.: 72 ft. Location: Between Maintenance Facility Buildings	Samples	Sample Number	Penetration Blows / Foot	Pocket Penetrometer, TSF	% Passing No. 200 Sieve	In-Situ Dry Weight (pcf)	In-Situ Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
MATERIAL DESCRIPTION												
		ASPHALT: approximately 2 inches of asphalt										
		GRAVEL: approximately 6 inches of possible aggregate baserock										
		Sandy Lean CLAY (CL): brown, moist, firm, low plasticity, fine grained sand, high silt content										
		Collapse Potential (see Plate B-5)		1A 1B 1C	3 3 4	2.5		96	17	31	17	14
		Clayey SILT with Sand (ML): brown, moist, firm, low plasticity, fine grained sand										
5		Sandy Lean CLAY (CL): yellowish brown, moist, firm, low plasticity, fine grained sand, high silt content, slightly porous		2A 2B 2C	2 3 4	2.0 4.0	60	91	18			
10		TXUU (see plate B-2) c=1,300 psf		3A 3B 3C	3 4 5	1.0		96	18	35	21	14
15		Lean CLAY (CL): yellowish brown, moist, hard, medium plasticity, silt present, calcium carbonate present		4A 4B 4C	6 12 16	4.5						
20		very moist to wet, increased fine grained sand, high silt content		5A 5B 5C	5 7 8	2.0						
		Boring terminated at approximately 20 feet. No free groundwater observed. Boring backfilled with cement grout and topped with 6 inches of Quikrete.										

GEO. LIBERTY HS BORING LOGS.GPJ GEOTECHNICAL 08.GDT 3/7/18

Completion Depth: 20.0
Date Started: 2/5/18
Date Completed: 2/5/18

Drilling Equipment: Exploration GeoServices Mobile B-53
Drilling Method: Hollow Stem
Remarks:



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LOG OF BORING NO. B-3

Project Name: **Liberty High School**
Project Number: **G17-238-11L**
Project Location: **850 Second Street, Brentwood**
Logged by: **D. Tower**
Checked by: **M. Romero**

Plate

Depth, feet	Graphic Log	Surface El.: 73 ft. Location: South side of Classroom Portables	Samples	Sample Number	Penetration Blows / Foot	Pocket Penetrometer, TSF	% Passing No. 200 Sieve	In-Situ Dry Weight (pcf)	In-Situ Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
MATERIAL DESCRIPTION												
		ASPHALT: approximately 1 inch of asphalt										
		GRAVEL: approximately 4 inches of possible aggregate baserock										
		Lean CLAY with Sand (CL): dark gray, moist, firm, medium plasticity, fine to medium grained sand										
		Sandy Lean CLAY (CL): yellowish brown, moist, firm to hard, low plasticity, fine grained sand, high silt content TXUU (see plate B-2) c=1,830 psf		1A 1B 1C	5 4 4	3.5 2.0		104	17			
5		increased fine to coarse grained sand content		2A 2B 2C	3 3 3	3.5		107	17			
		Poorly Graded GRAVEL with Sand and Clay (GP-GC): brown, loose to medium dense, fine to coarse grained sand, fine to coarse subrounded gravel up to 1.5 inches diameter		3A 3B 3C	10 7 5		6.8	113	3			
10		Silty SAND (SM): yellowish brown, moist, loose to medium dense, fine grained sand										
		Poorly Graded SAND with Silt and Gravel (SP-SM): brown, moist, medium dense, fine to coarse grained sand, fine to coarse subrounded gravel up to 1.5 inches diameter		4	7 8 9		7.3					
15		Lean CLAY (CL): yellowish brown, moist, firm, medium plasticity, trace fine grained sand, calcium carbonate present, silt present		5	6 9 10	3.0						
20		Boring terminated at approximately 20 feet. No free groundwater observed. Boring backfilled with cement grout and topped with 6 inches of Quikrete.										
Completion Depth: 20.0 Date Started: 2/5/18 Date Completed: 2/5/18				Drilling Equipment: Exploration GeoServices Mobile B-53 Drilling Method: Hollow Stem Remarks:								

GEO. LIBERTY HS BORING LOGS.GPJ GEOTECHNICAL 08.GDT 3/7/18



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Livermore, CA 94551
Telephone: (925)-315-3515
Fax: (925)-315-3512

LOG OF BORING NO. B-4

Project Name: **Liberty High School**
Project Number: **G17-238-11L**
Project Location: **850 Second Street, Brentwood**
Logged by: **D. Tower**
Checked by: **M. Romero**

Plate

Depth, feet	Graphic Log	Surface El.: 73 ft. Location: Northern Side of Classroom Portables	Samples	Sample Number	Penetration Blows / Foot	Pocket Penetrometer, TSF	% Passing No. 200 Sieve	In-Situ Dry Weight (pcf)	In-Situ Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
MATERIAL DESCRIPTION												
		ASPHALT: approximately 4-inch of asphalt										
		GRAVEL: approximately 4 inches of possible aggregate baserock										
		Sandy Lean CLAY (CL): yellowish brown, moist, firm, low to medium plasticity, fine grained sand, trace coarse grained sand, high silt content		1A 1B 1C	3 5 5	2.5	64	88	17			
5		Clayey SAND (SC): brown, moist, loose, fine to coarse grained sand, medium plasticity, high silt content		2A 2B 2C	3 4 5			106	17	32	18	14
		Direct Shear (see plate B-4) c=350 psf, $\phi=23^\circ$										
10		Silty SAND (SM): brown, moist, loose, fine to coarse grained sand fine to coarse gravel up to 1 inch		3A 3B 3C	4 5 5		22					
		Poorly Graded SAND with Gravel (SP): brown, moist, medium dense, fine to coarse grained sand, fine to coarse gravel up to 1-inch diameter, trace silt content		4	6 8 9		4					
15		Boring terminated at approximately 15 feet. No free groundwater observed. Boring backfilled with cement grout and topped with 6 inches of Quikrete.										
20												
Completion Depth: 15.0 Date Started: 2/5/18 Date Completed: 2/5/18			Drilling Equipment: Exploration GeoServices Mobile B-53 Drilling Method: Hollow Stem Remarks:									

GEO. LIBERTY HS BORING LOGS.GPJ GEOTECHNICAL 08.GDT 3/7/18



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Livermore, CA 94551
Telephone: (925)-315-3515
Fax: (925)-315-3512

LOG OF BORING NO. B-5

Project Name: **Liberty High School**
Project Number: **G17-238-11L**
Project Location: **850 Second Street, Brentwood**
Logged by: **D. Tower**
Checked by: **M. Romero**

Plate

Depth, feet	Graphic Log	Surface El.: 72 ft Location: Southeastern Section of Bleachers	Samples	Sample Number	Penetration Blows / Foot	Pocket Penetrometer, TSF	% Passing No. 200 Sieve	In-Situ Dry Weight (pcf)	In-Situ Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
MATERIAL DESCRIPTION												
		Lean CLAY with Sand (CL): brown, moist, firm, medium plasticity, fine grained, silt present										
		olive brown		1A 1B 1C	3 4 6	3.0		104	21			
5		yellowish brown, increased fine grained sand content		2A 2B 2C	3 4 6	1.0				31	14	17
		roots present TXUU (see plate B-2) c=965 psf		3A 3B 3C	3 3 4	1.0		100	23			
15		TXUU (see plate B-2) c= 3,234 psf		4A 4B 4C	8 13 20	2.5 3.5		108	21			
		Sandy Lean CLAY (CL): yellowish brown, moist, firm, low to medium plasticity, fine grained sand, high silt content										
20				5A 5B 5C	4 5 8	1.5		104	24			
Completion Depth: 25.0 Date Started: 2/5/18 Date Completed: 2/5/18			Drilling Equipment: Exploration GeoServices Mobile B-53 Drilling Method: Hollow Stem Remarks:									

GEO. LIBERTY HS BORING LOGS.GPJ GEOTECHNICAL 08.GDT 3/7/18



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Livermore, CA 94551
Telephone: (925)-315-3515
Fax: (925)-315-3512

LOG OF BORING NO. B-5

Project Name: **Liberty High School**
Project Number: **G17-238-11L**
Project Location: **850 Second Street, Brentwood**
Logged by: **D. Tower**
Checked by: **M. Romero**

Plate

Depth, feet	Graphic Log	Surface El.: 72 ft Location: Southeastern Section of Bleachers	Samples	Sample Number	Penetration Blows / Foot	Pocket Penetrometer, TSF	% Passing No. 200 Sieve	In-Situ Dry Weight (pcf)	In-Situ Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
		MATERIAL DESCRIPTION										
		Lean CLAY (CL): yellowish brown, moist, hard, medium plasticity, fine grained sand, high silt		6A 6B 6C	6 12 13	3.0						
25		Boring terminated at approximately 25 feet. Free groundwater was observed at 23 feet. Boring backfilled with cement grout and topped with 6 inches of Quikrete.										
30												
35												
40												

Completion Depth: 25.0 Date Started: 2/5/18 Date Completed: 2/5/18	Drilling Equipment: Exploration GeoServices Mobile B-53 Drilling Method: Hollow Stem Remarks:
---	--



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Fax: (925)-315-3512

LOG OF BORING NO. B-6

Project Name: **Liberty High School**
Project Number: **G17-238-11L**
Project Location: **850 Second Street, Brentwood**
Logged by: **D. Tower**
Checked by: **M. Romero**

Plate

Depth, feet	Graphic Log	Surface El.: 68 ft. Location: Eastern Side of Grassy Playfield	Samples	Sample Number	Penetration Blows / Foot	Pocket Penetro- meter, TSF	% Passing No. 200 Sieve	In-Situ Dry Weight (pcf)	In-Situ Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
MATERIAL DESCRIPTION												
		ASPHALT: approximately 2 inches of asphalt										
		GRAVEL: approximately 6 inches of possible aggregate baserock										
		Lean CLAY (CL): yellowish brown, slightly moist, firm, medium plasticity, trace fine grained sand, high silt content										
		Collapse Potential (see plate B-6)		1A 1B 1C	2 4 6	1.5			96	23	41	20
5		TXUU (see plate B-3) c= 1,944 psf		2A 2B 2C	3 4 7	1-2			100	25		
		slightly porous		3A 3B 3C	4 10 10	3.0			105	23		
10		hard		4A 4B 4C	9 14 19	4.5						
15		Boring terminated at approximately 15 feet. Free groundwater was observed at approximately 15 feet. Boring backfilled with cement grout and topped with 6 inches of Quikrete.										
20												
Completion Depth: 15.0 Date Started: 2/5/18 Date Completed: 2/5/18			Drilling Equipment: Exploration GeoServices Mobile B-53 Drilling Method: Hollow Stem Remarks:									

GEO. LIBERTY HS BORING LOGS.GPJ GEOTECHNICAL 08.GDT 3/7/18



BSK Associates
399 Lindbergh Avenue
Livermore, CA 94551
Telephone: (925)-315-3515
Fax: (925)-315-3512

LOG OF BORING NO. B-7

Project Name: **Liberty High School**
Project Number: **G17-238-11L**
Project Location: **850 Second Street, Brentwood**
Logged by: **D. Tower**
Checked by: **M. Romero**

Plate

Depth, feet	Graphic Log	Surface El.: 66 ft. Location: Grassy Unimproved Lot, East of School	Samples	Sample Number	Penetration Blows / Foot	Pocket Penetro- meter, TSF	% Passing No. 200 Sieve	In-Situ Dry Weight (pcf)	In-Situ Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
MATERIAL DESCRIPTION												
		Lean CLAY with Sand (CL): brown, slightly moist, firm, medium plasticity, fine grained sand, high silt content										
		hard, increased silt content		1A 1B 1C	5 8 8	>4.5		92	12	45	19	26
		yellowish brown										
5		olive yellow, porous, manganese oxide staining, calcium carbonate present		2A 2B 2C	4 5 7	3.0	85			39	19	20
		Collapse Potential (see plate B-7)						87	14			
		dark brown, increased silt content, calcium carbonate present		3A 3B 3C	12 17 24	>4.5		107	13			
		yellowish brown, firm to hard		4A 4B 4C	9 10 13	2.5						
15		very moist		5A 5B 5C	4 6 6	1.0						
20		Boring terminated at approximately 20 feet. Free groundwater was observed at approximately 19 feet. Boring backfilled with cement grout.										
Completion Depth: 20.0 Date Started: 2/5/18 Date Completed: 2/5/18			Drilling Equipment: Exploration GeoServices Mobile B-53 Drilling Method: Hollow Stem Remarks:									

GEO. LIBERTY HS BORING LOGS.GPJ GEOTECHNICAL 08.GDT 3/7/18



BSK Associates
399 Lindbergh Avenue
Livermore, CA 94551
Telephone: (925)-315-3515
Fax: (925)-315-3512

LOG OF BORING NO. B-8

Project Name: **Liberty High School**
Project Number: **G17-238-11L**
Project Location: **850 Second Street, Brentwood**
Logged by: **D. Tower**
Checked by: **M. Romero**

Plate

Depth, feet	Graphic Log	Surface El.: 69 ft. Location: Grassy Unimproved Lot, East of School	Samples	Sample Number	Penetration Blows / Foot	Pocket Penetrometer, TSF	% Passing No. 200 Sieve	In-Situ Dry Weight (pcf)	In-Situ Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
MATERIAL DESCRIPTION												
		Lean CLAY with Sand (CL): dark brown, moist, firm to hard, medium plasticity, fine to coarse grained sand, sand content decreasing with depth, high silt content										
		TXUU (see plate B-3) c=2,568 psf		1A 1B 1C	4 5 5	3.0		103	17			
5		Silty SAND (SM): brown, slightly moist, loose, fine to coarse grained sand, fine subrounded gravel up to ¾ inch diameter		2A 2B 2C	4 5 5		39					
10		Lean CLAY (CL): yellowish brown, slightly moist, hard, medium plasticity, high silt content, trace fine grained sand		3A 3B 3C	6 12 16	>4.5		112	20			
15				4A 4B 4C	7 15 21	3.5 4.5						
		Boring terminated at approximately 15 feet. Free groundwater was observed at approximately 15 feet. Boring backfilled with cement grout.										
20												
Completion Depth: 15.0 Date Started: 2/5/18 Date Completed: 2/5/18			Drilling Equipment: Exploration GeoServices Mobile B-53 Drilling Method: Hollow Stem Remarks:									

GEO. LIBERTY HS BORING LOGS.GPJ GEOTECHNICAL 08.GDT 3/7/18



BSK Associates
399 Lindbergh Avenue
Livermore, CA 94551
Telephone: (925)-315-3515
Fax: (925)-315-3512

LOG OF BORING NO. B-9

Project Name: **Liberty High School**
Project Number: **G17-238-11L**
Project Location: **850 Second Street, Brentwood**
Logged by: **D. Tower**
Checked by: **M. Romero**

Plate

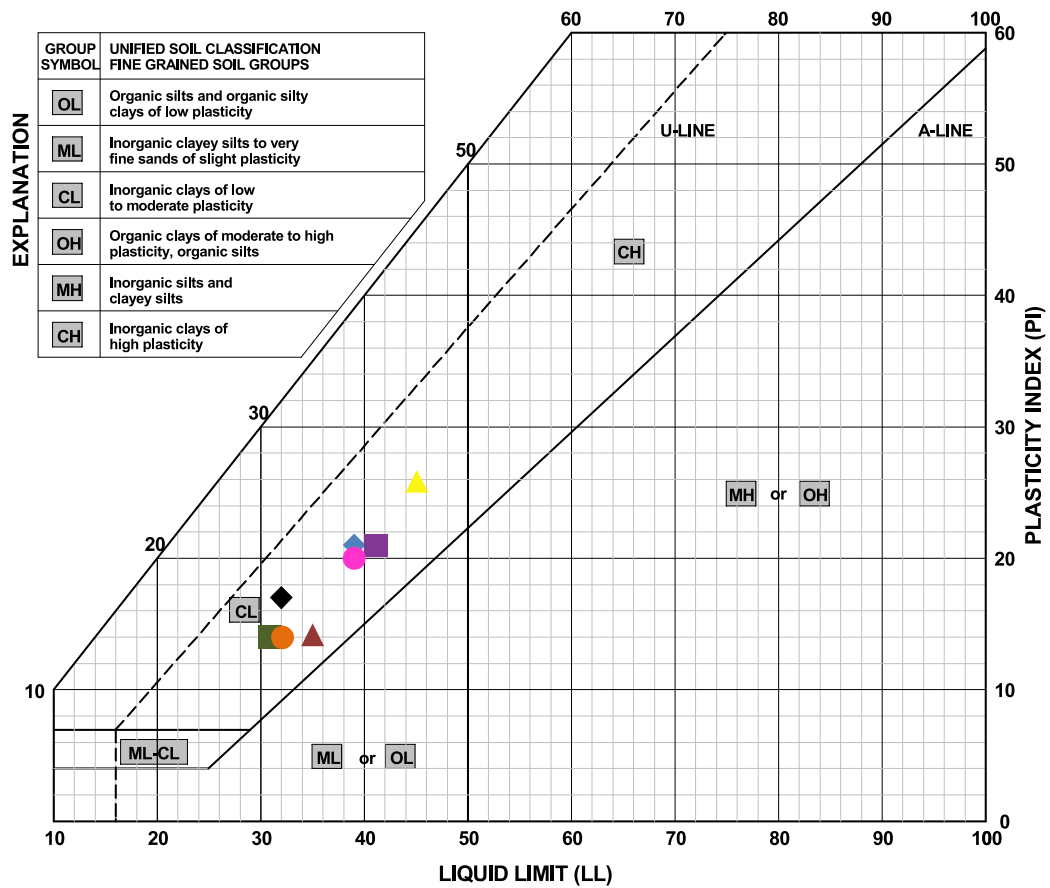
Depth, feet	Graphic Log	Surface El.: 68 ft. Location: Grassy Unimproved Lot, East of School	Samples	Sample Number	Penetration Blows / Foot	Pocket Penetrometer, TSF	% Passing No. 200 Sieve	In-Situ Dry Weight (pcf)	In-Situ Moisture Content (%)	Liquid Limit	Plastic Limit	Plasticity Index
MATERIAL DESCRIPTION												
		Lean CLAY with Sand (CL): yellowish brown, moist, firm, medium plasticity, fine grained sand, high silt content		1A 1B 1C	3 5 7	3.0						
5		Sandy SILT (ML): yellowish brown, moist, firm, low plasticity, fine grained sand		2A 2B 2C	3 4 5	3.5 4.5	86	92	18			
		TXUU (see plate B-3) c= 2,043 psf										
10		Lean CLAY (CL): yellowish brown, slightly moist, hard, low plasticity, calcium carbonate present, high silt content, trace fine grained sand		3A 3B 3C	8 14 21	>4.5		108	19			
15		firm to hard, medium plasticity, decreased silt content		4A 4B 4C	7 10 18	2.5						
20		very moist to wet, low plasticity, increased sand content seam of silty/clayey sand		5A 5B 5C	6 7 8							
		Boring terminated at approximately 20 feet. No free groundwater observed. Boring backfilled with cement grout.										
Completion Depth: 20.0 Date Started: 2/5/18 Date Completed: 2/5/18			Drilling Equipment: Exploration GeoServices Mobile B-53 Drilling Method: Hollow Stem Remarks:									

GEO. LIBERTY HS BORING LOGS.GPJ GEOTECHNICAL 08.GDT 3/7/18

APPENDIX B

LABORATORY TEST RESULTS





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PROJECT NO. G17-238-11L
 DRAWN: 2/28/18
 DRAWN BY: D. Tower
 CHECKED BY: C. Foulk
 FILE NAME: SitePlan.indd

ATTERBERG LIMITS

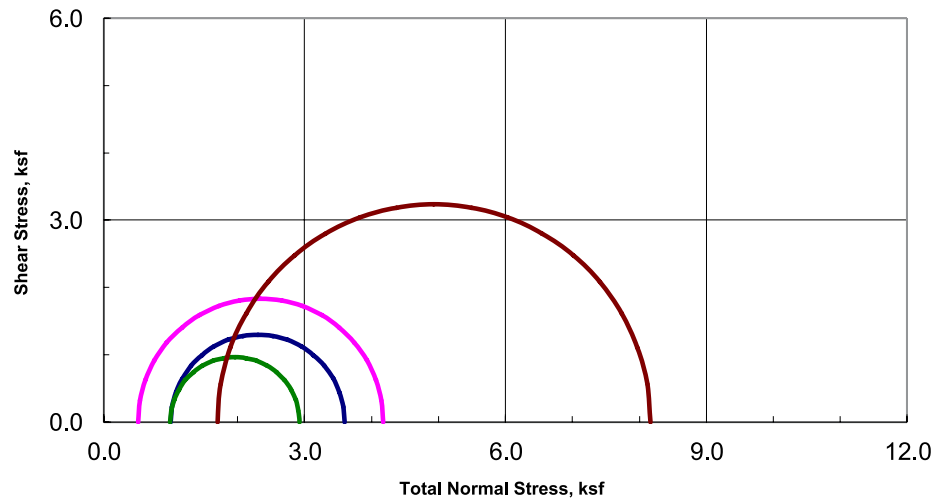
Campus Expansion
 Liberty High School
 850 2nd Street
 Brentwood, California

FIGURE

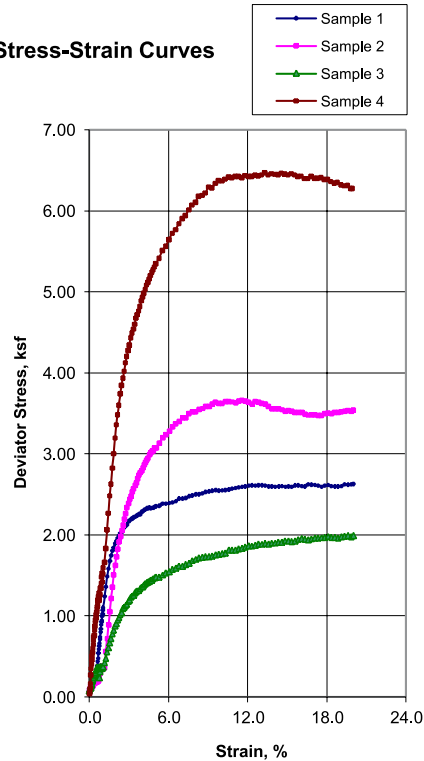
B-1



Unconsolidated-Undrained Triaxial Test ASTM D2850



Stress-Strain Curves



Sample Data

	1	2	3	4
Moisture %	18.4	17.1	23.2	20.9
Dry Den,pcf	96.2	103.6	100.2	107.8
Void Ratio	0.752	0.627	0.683	0.563
Saturation %	65.9	73.6	91.9	100.0
Height in	5.04	5.02	5.00	5.04
Diameter in	2.41	2.39	2.39	2.42
Cell psi	7.0	3.6	6.9	11.8
Strain %	15.00	11.57	15.00	13.29
Deviator, ksf	2.597	3.662	1.930	6.469
Rate %/min	1.00	1.00	1.00	0.99
in/min	0.050	0.050	0.050	0.050
Job No.:	664-178a			
Client:	BSK Associates			
Project:	G17-238-11L			
Boring:	B-2	B-3	B-5	B-5
Sample:	3C	1C	3C	4C
Depth ft:	9.5	3.0	9.5	14.5

Visual Soil Description

Sample #	Description
1	Sandy Lean Clay (CL)
2	Sandy Lean Clay (CL)
3	Lean Clay with Sand (CL)
4	Lean Clay with Sand (CL)

Remarks:

Note: Strengths are picked at the peak deviator stress or 15% strain which ever occurs first per ASTM D2850.

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PROJECT NO. G17-238-11L

DRAWN: 2/27/18

DRAWN BY: D. Tower

CHECKED BY: C. Foulk

FILE NAME:
SitePlan.indd

UNCONSOLIDATED-UNDRAINED TRIAxIAL COMPRESSION

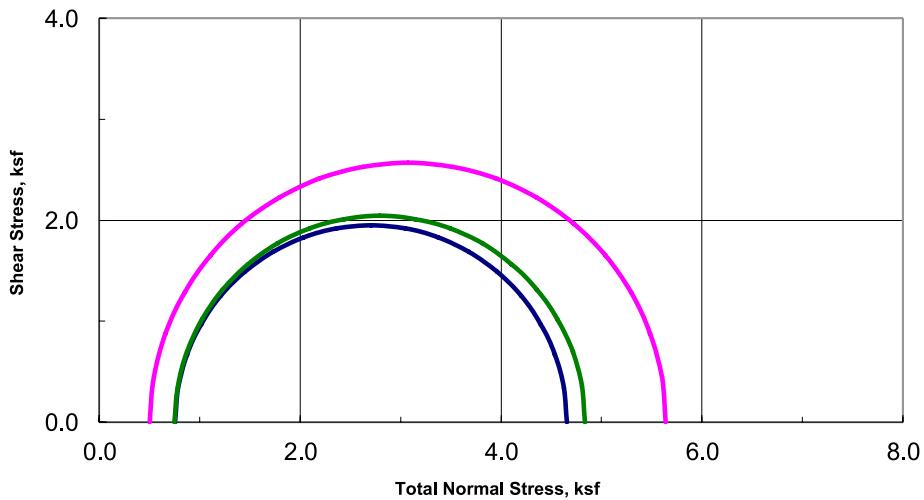
Campus Expansion
Liberty High School
850 2nd Street
Brentwood, California

FIGURE

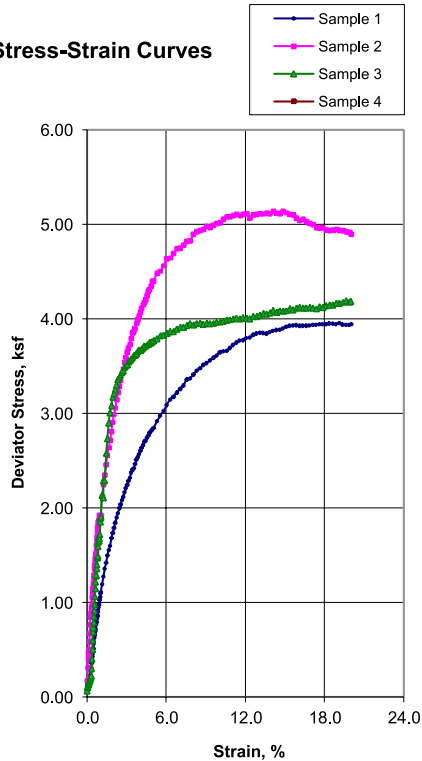
B-2



Unconsolidated-Undrained Triaxial Test ASTM D2850



Stress-Strain Curves



Sample Data

	1	2	3	4
Moisture %	25.0	17.1	17.7	
Dry Den,pcf	100.2	102.9	92.3	
Void Ratio	0.683	0.639	0.825	
Saturation %	99.1	72.2	57.9	
Height in	5.05	5.20	5.02	
Diameter in	2.40	2.39	2.43	
Cell psi	5.2	3.5	5.2	
Strain %	15.00	14.87	15.00	
Deviator, ksf	3.899	5.137	4.086	
Rate %/min	1.00	1.00	1.00	
in/min	0.051	0.052	0.050	

Job No.:	664-178b			
Client:	BSK Associates			
Project:	G17-238-11L			
Boring:	B-6	B-8	B-9	
Sample:	2C	1C	2C	
Depth ft:	6.0	3.0	6.0	

Visual Soil Description

Sample #	
1	Lean Clay (CL)
2	Lean Clay with Sand (CL)
3	Sandy Silt (ML)
4	

Remarks:

Note: Strengths are picked at the peak deviator stress or 15% strain whichever occurs first per ASTM D2850.

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PROJECT NO. G17-238-11L

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CHECKED BY: C. Foulk

FILE NAME:
SitePlan.indd

UNCONSOLIDATED-UNDRAINED TRIAxIAL COMPRESSION

Campus Expansion
Liberty High School
850 2nd Street
Brentwood, California

FIGURE

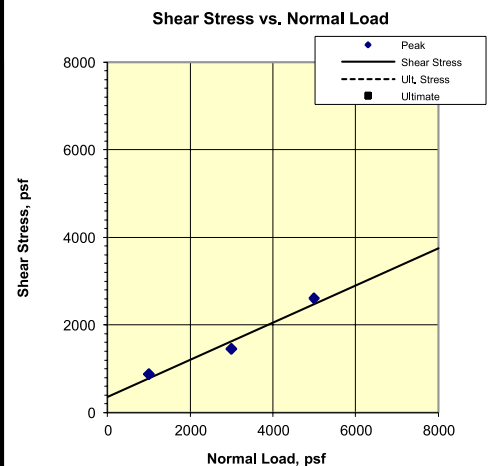
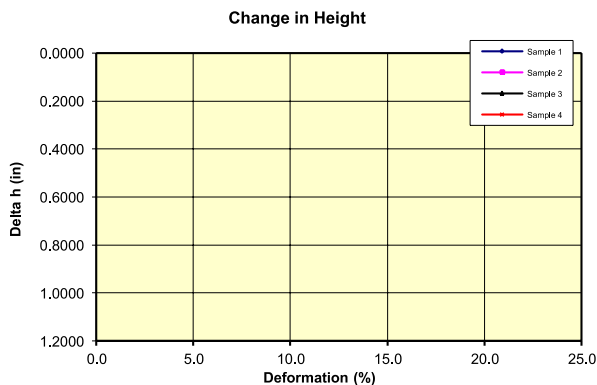
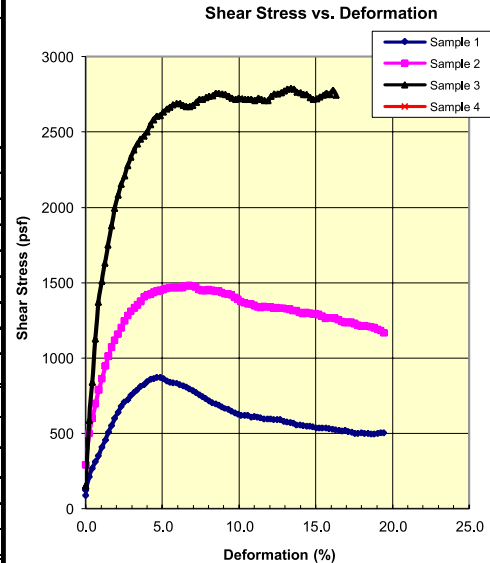
B-3



Consolidated Undrained Direct Shear (ASTM D3080M)

CTL Job #: 664-178 Project #: G17-238-11L By: MD
Client: BSK Associates Date: 3/1/2018 Checked: PJ
Project Name: Liberty Union HS Remolding Info:

Specimen Data				Phi (deg)	23.0	Ult. Phi (deg)	
	1	2	3	4	Cohesion (psf)	350	Ult. Cohesion (psf)
Boring:	B-4	B-4	B-4				
Sample:	2C	2C	2C				
Depth (ft):	6.0	6.0	6.0				
Visual Description:	Clayey SAND	Clayey SAND	Clayey SAND				
Normal Load (psf)	1000	3000	5000				
Dry Mass of Specimen (g)	130.4	123.1	132.0				
Initial Height (in)	1.02	1.01	1.01				
Initial Diameter (in)	2.42	2.42	2.42				
Initial Void Ratio	0.585	0.664	0.552				
Initial Moisture (%)	17.0	17.7	15.8				
Initial Wet Density (pcf)	124.4	119.3	125.7				
Initial Dry Density (pcf)	106.3	101.3	108.6				
Initial Saturation (%)	78.6	72.0	77.3				
ΔHeight Consol (in)	0.0138	0.0296	0.0350				
At Test Void Ratio	0.564	0.615	0.499				
At Test Moisture (%)	19.2	21.1	17.4				
At Test Wet Density (pcf)	128.4	126.4	132.0				
At Test Dry Density (pcf)	107.8	104.4	112.5				
At Test Saturation (%)	91.8	92.8	94.0				
Strain Rate (%/min)	1.1	1.1	1.1				
Strengths Picked at	5%	5%	5%				
Shear Stress (psf)	871	1449	2612				
ΔHeight (in) at 5%							
Ultimate Stress (psf)							



Remarks: *DS-CU* A fully undrained condition may not be attained in this test. ΔH is not measured during undrained direct shear tests.

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PROJECT NO. G17-238-11L
DRAWN: 3/1/18
DRAWN BY: D. Tower
CHECKED BY: C. Foulk
FILE NAME: SitePlan.indd

CONSOLIDATED UNDRAINED DIRECT SHEAR

Campus Expansion
Liberty High School
850 2nd Street
Brentwood, California

FIGURE

B-4

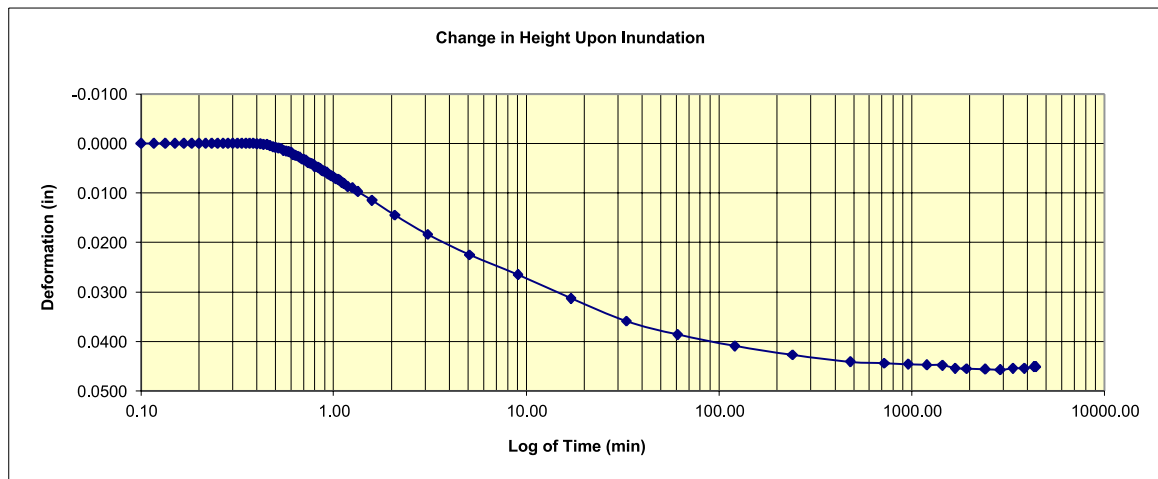
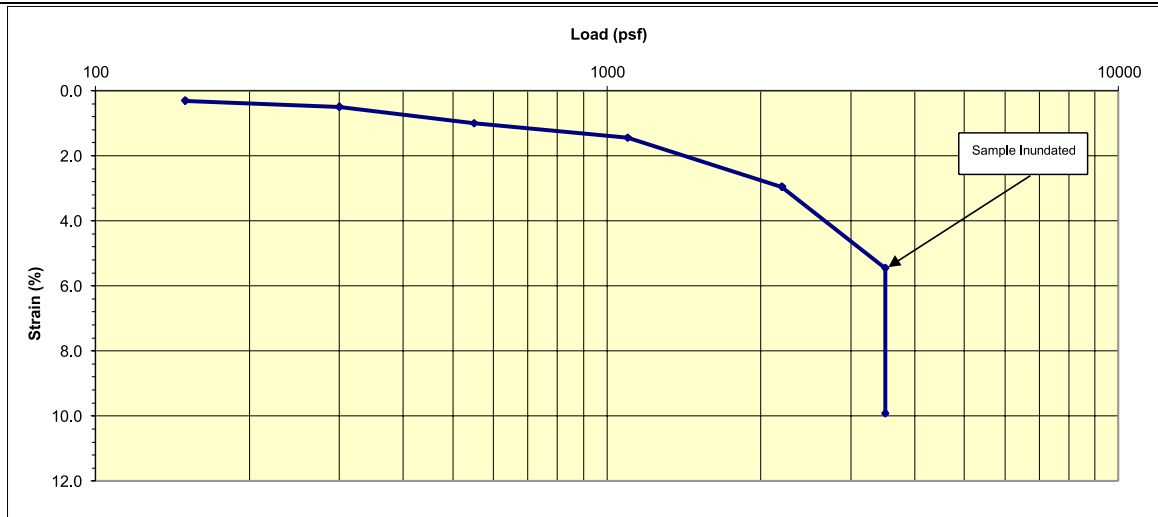


Collapse Potential of Soils ASTM D5333-03

Job No.: 664-178	Boring: B-2	Date: 2/26/2018
Client: BSK Associates	Sample: 1C	Tested By: MD
Project: Liberty Union HS	Proj. No.: G17-238-11L	Depth, ft.: 3
Soil Description: Sandy Lean Clay (CL)		Checked: PJ/DC

Load, psf	150	300	550	1100	2200	3500	Inundation		
Deformation, in.:	0.0031	0.0019	0.0051	0.0045	0.0152	0.0253	0.0451		

	Initial	Final	Vertical Stress at Inundation (psf)	Collapse Potential (%)
Moisture Content %	17.4	21.0		
Dry Density, pcf	96.3	106.9	3500	4.72
Void Ratio	0.750	0.577		
Saturation %	62.6	98.1		
Assumed Specific Gravity	2.70			



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PROJECT NO. G17-238-11L
 DRAWN: 2/28/18
 DRAWN BY: D. Tower
 CHECKED BY: C. Foulk
 FILE NAME: SitePlan.indd

COLLAPSE POTENTIAL OF SOILS

Campus Expansion
 Liberty High School
 850 2nd Street
 Brentwood, California

FIGURE

B-5

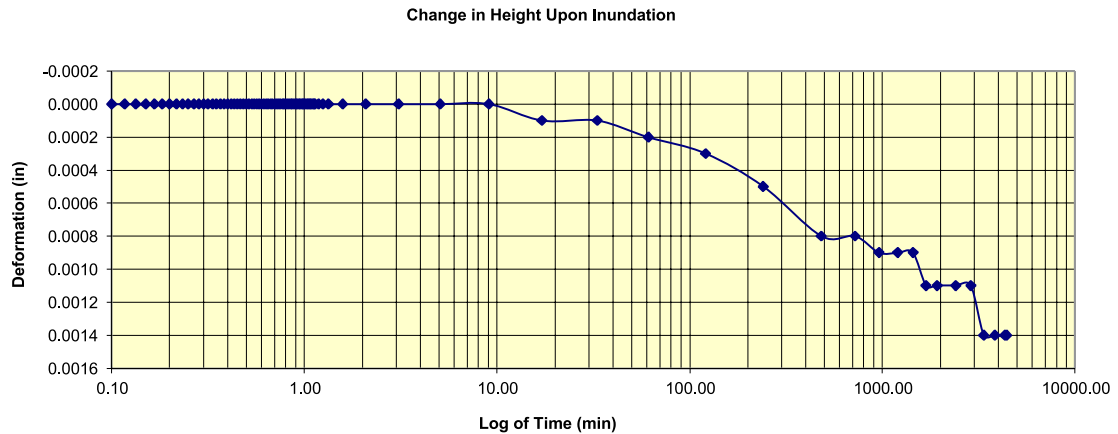
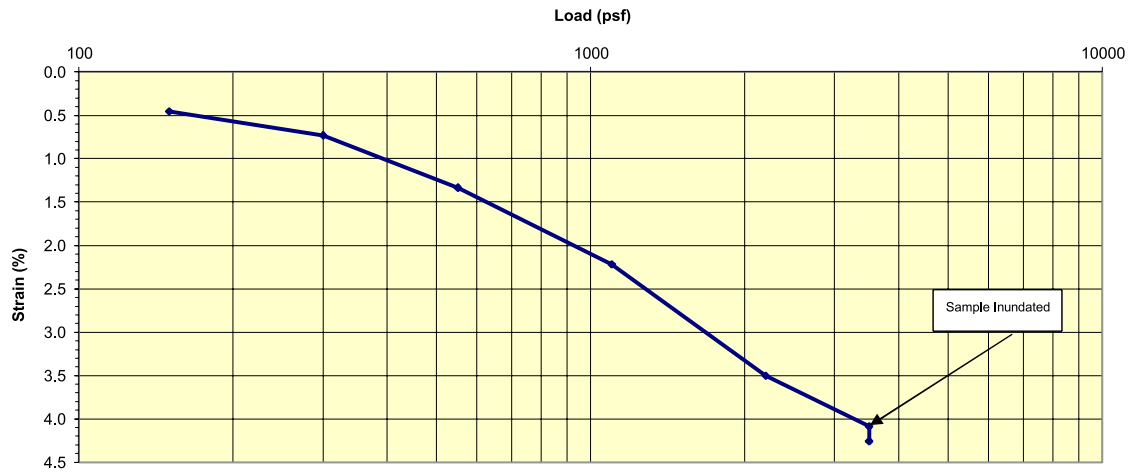


Collapse Potential of Soils ASTM D5333-03

Job No.: 664-178	Boring: B-6	Date: 2/26/2018
Client: BSK Associates	Sample: 1C	Tested By: MD
Project: Liberty Union HS	Proj. No.: G17-238-11L	Depth, ft.: 3
Soil Description: Lean Clay (CL)		Checked: PJ/DC

Load, psf	150	300	550	1100	2200	3500	Inundation		
Deformation, in.:	0.0046	0.0028	0.0061	0.0089	0.013	0.0059	0.0017		

	Initial	Final		
Moisture Content %	23.4	25.2	Vertical Stress at Inundation (psf)	Collapse Potential (%)
Dry Density, pcf	95.7	100.1	3500	0.18
Void Ratio	0.759	0.685		
Saturation %	83.2	99.5		
Assumed Specific Gravity	2.70			



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 CHECKED BY: C. Foulk
 FILE NAME: SitePlan.indd

COLLAPSE POTENTIAL OF SOILS

Campus Expansion
 Liberty High School
 850 2nd Street
 Brentwood, California

FIGURE

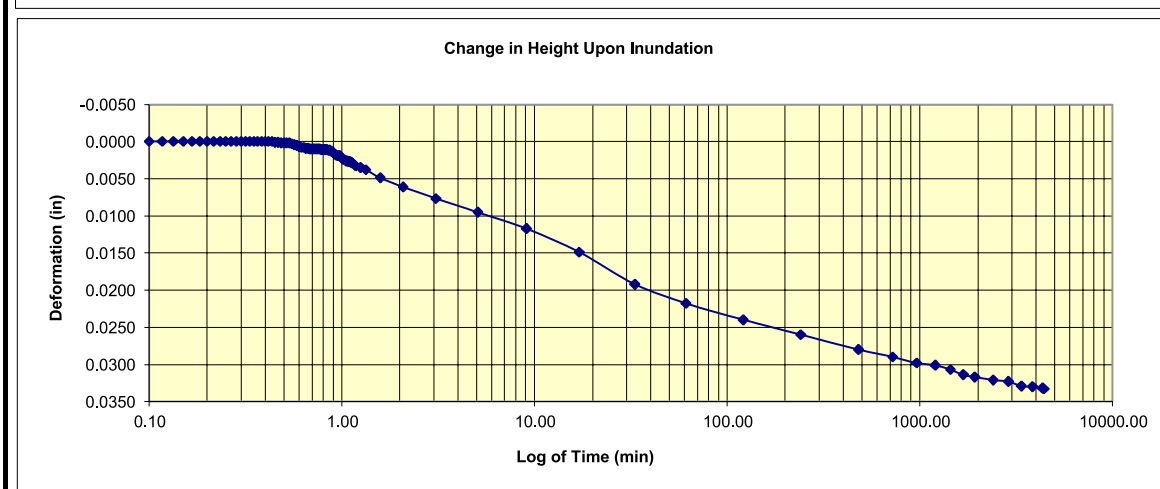
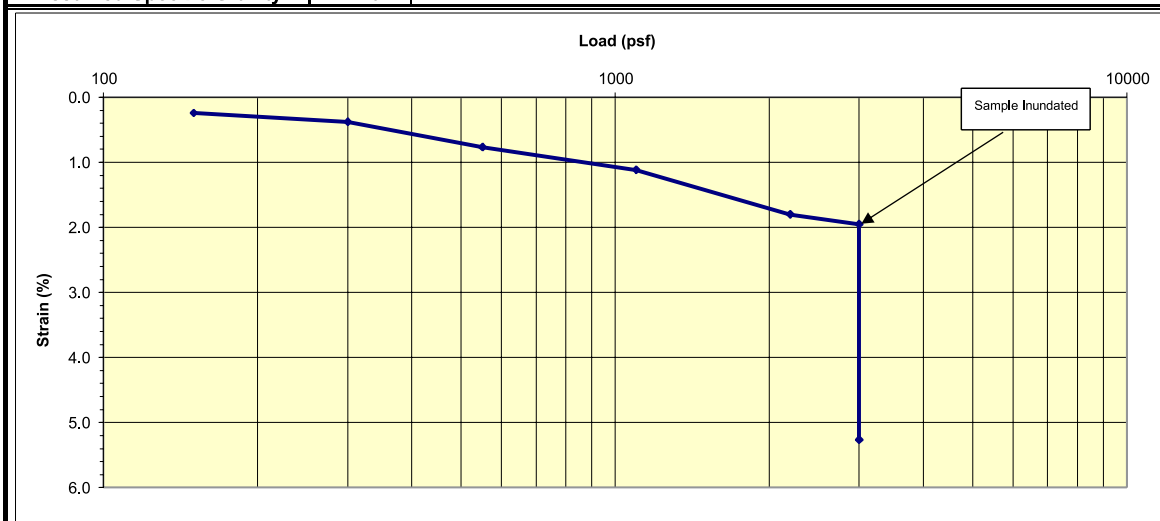
B-6



Collapse Potential of Soils ASTM D5333-03

Job No.: 664-178 **Boring:** B-7 **Date:** 2/26/2018
Client: BSk Associates **Sample:** 2C **Tested By:** MD
Project: Liberty Union HS **Proj. No.:** G17-238-11L **Depth, ft.:** 6 **Checked:** PJ/DC
Soil Description: Lean Clay with Sand (CL)

Load, psf	150	300	550	1100	2200	3000	Inundation		
Deformation, in.:	0.0024	0.0014	0.0039	0.0035	0.0069	0.0015	0.0333		
	Initial	Final	Vertical Stress at Inundation (psf)				Collapse Potential (%)		
Moisture Content %	13.9	30.6	3000				3.38		
Dry Density, pcf	87.1	91.9							
Void Ratio	0.936	0.834							
Saturation %	40.2	99.2							
Assumed Specific Gravity		2.70							



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PROJECT NO. G17-238-11L
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DRAWN BY: D. Tower
CHECKED BY: C. Foulk
FILE NAME: SitePlan.indd

COLLAPSE POTENTIAL OF SOILS

Campus Expansion
 Liberty High School
 850 2nd Street
 Brentwood, California

FIGURE

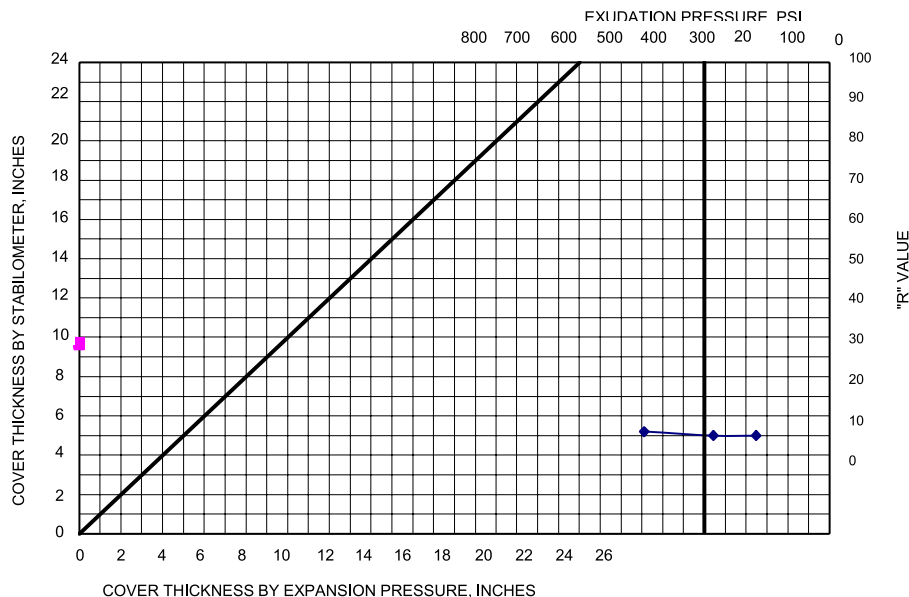
B-7

R-Value Test

Caltrans Test Method 301

Project Name: Liberty Union High School Campus
Project Number: G17-238-11L
Sample Source:
Lab Tracking ID: L18-089
Sample Location: Bulk B1@1-5

Sample Date: 2/8/2018
Sample By: DT
Test Date: 2/14/2018
Report Date: 2/15/2018
Tested By: RC



Sample Description: Yellowish brown silty/sandy lean clay

SPECIMEN	A	B	C
EXUDATION PRESSURE, LOAD (lb)	5584	3498	2210
EXUDATION PRESSURE, PSI	445	279	176
EXPANSION, * 0.0001 IN	0.0009	0.0004	0.0004
EXPANSION PRESSURE, PSF	0	0	0
STABILOMETER PH AT 2000 LBS	144	146	147
DISPLACEMENT	4.36	4.41	4.42
RESISTANCE VALUE "R"	6	5	5
"R" VALUE CORRECTED FOR HEIGHT	6	5	5
% MOISTURE AT TEST	16.1	17.8	19.4
DRY DENSITY AT TEST, PCF	115.3	113.9	111.9
"R" VALUE AT 300 PSI	5		
EXUDATION PRESSURE			
"R" VALUE BY EXPANSION	N/A		
PRESSURE T1 = 4.0, GF=1.50			

Remark:

Reviewed By: JKA

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PROJECT NO. G17-238-11L
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DRAWN BY: D. Tower
CHECKED BY: C. Foulk
FILE NAME: SitePlan.indd

RESISTANCE VALUE TEST

Campus Expansion
 Liberty High School
 850 2nd Street
 Brentwood, California

FIGURE

B-8



16 February, 2018

Job No. 1802053
Cust. No. 12667

1100 Willow Pass Court, Suite A
Concord, CA 94520-1006
925 462 2771 Fax. 925 462 2775
www.cercoanalytical.com

Ms. Danaige Tower
BSK Associates Engineers & Laboratories
399 Lindbergh Avenue
Livermore, CA 94551

Subject: Project No.: G17-238-11L
Project Name: 850 Second Street, Brentwood
Corrosivity Analysis – ASTM Test Methods

Dear Ms. Tower:

Pursuant to your request, CERCO Analytical has analyzed the soil samples submitted on February 12, 2018. Based on the analytical results, this brief corrosivity evaluation is enclosed for your consideration.

Based upon the resistivity measurements, both samples are classified as "corrosive". All buried iron, steel, cast iron, ductile iron, galvanized steel and dielectric coated steel or iron should be properly protected against corrosion depending upon the critical nature of the structure. All buried metallic pressure piping such as ductile iron firewater pipelines should be protected against corrosion.

The chloride ion concentrations are 17 mg/kg & 46 mg/kg and are determined to be insufficient to attack steel embedded in a concrete mortar coating.

The sulfate ion concentrations are 66 mg/kg & 220 mg/kg and are determined to be sufficient to potentially be detrimental to reinforced concrete structures and cement mortar-coated steel at these locations. Therefore, concrete that comes into contact with this soil should use sulfate resistant cement such as Type II, with a maximum water-to-cement ratio of 0.55.

The pH of the soils are 7.96 & 7.26, which does not present corrosion problems for buried iron, steel, mortar-coated steel and reinforced concrete structures.


The redox potentials are 430-mV & 420-mV, which is indicative of aerobic soil conditions.

This corrosivity evaluation is based on general corrosion engineering standards and is non-specific in nature. For specific long-term corrosion control design recommendations or consultation, please call *JDH Corrosion Consultants, Inc.* at (925) 927-6630.

We appreciate the opportunity of working with you on this project. If you have any questions, or if you require further information, please do not hesitate to contact us.

Very truly yours,

CERCO ANALYTICAL, INC.


J. Darby Howard, Jr., P.E.
President

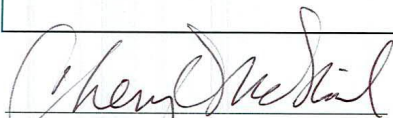
JDH/jdl
Enclosure

Client: BSK Associates Engineers & Laboratories
 Client's Project No.: G17-238-11L
 Client's Project Name: 850 Second Street, Brentwood
 Date Sampled: 12-Feb-18
 Date Received: 12-Feb-18
 Matrix: Soil
 Authorization: Signed Chain of Custody

Date of Report: 16-Feb-2018

Job/Sample No.	Sample I.D.	Redox (mV)	pH	Conductivity (umhos/cm)*	Resistivity (100% Saturation) (ohms-cm)	Sulfide (mg/kg)*	Chloride (mg/kg)*	Sulfate (mg/kg)*
1802053-001	B-1 @ 2.0'	430	7.96	-	1,200	-	46	66
1802053-002	B-9 @ 2.5'	420	7.29	-	710	-	17	220

Method:	ASTM D1498	ASTM D4972	ASTM D1125M	ASTM G57	ASTM D4658M	ASTM D4327	ASTM D4327
Reporting Limit:	-	-	10	-	50	15	15
	13-Feb-2018	13-Feb-2018	-	15-Feb-2018	-	13-Feb-2018	13-Feb-2018



Cheryl McMillen
 Laboratory Director

* Results Reported on "As Received" Basis
 N.D. - None Detected

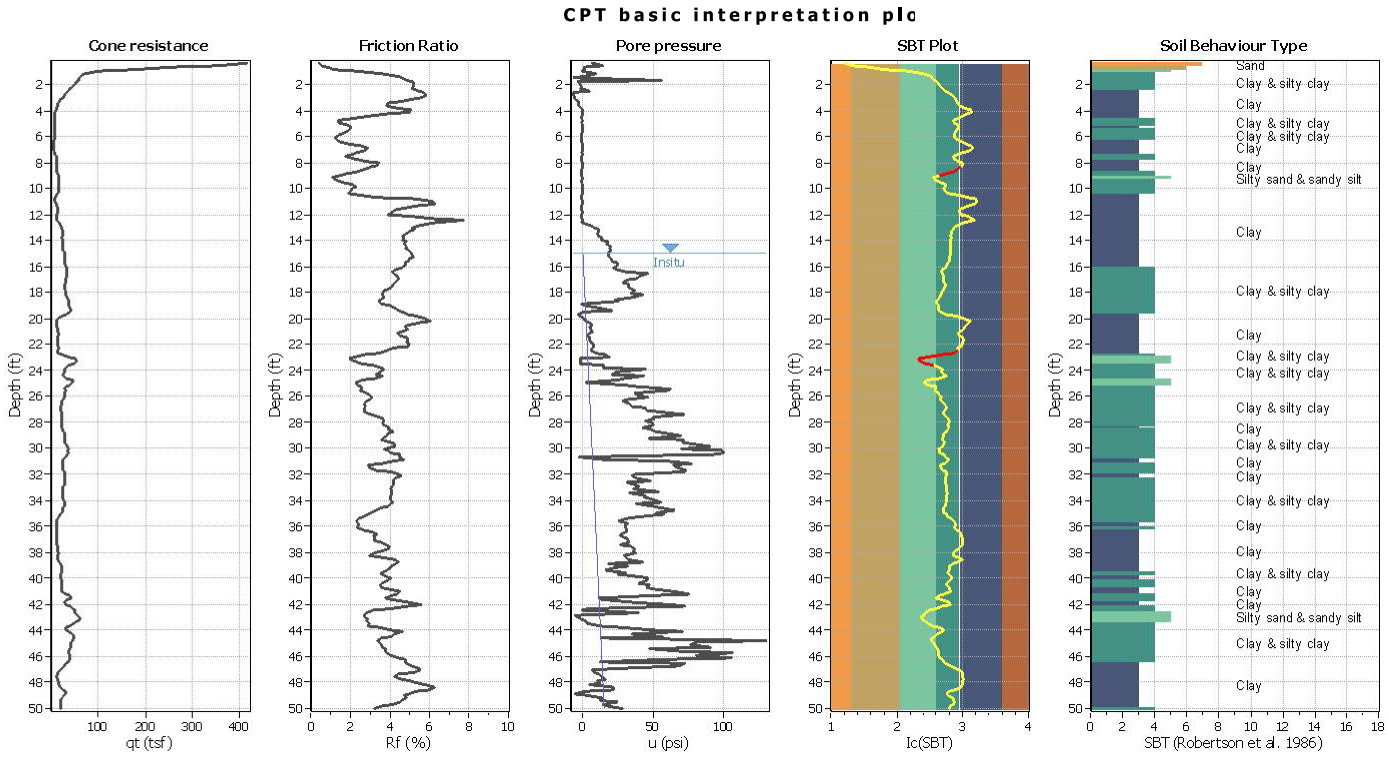
Quality Control Summary - All laboratory quality control parameters were found to be within established limits

Page No. 1

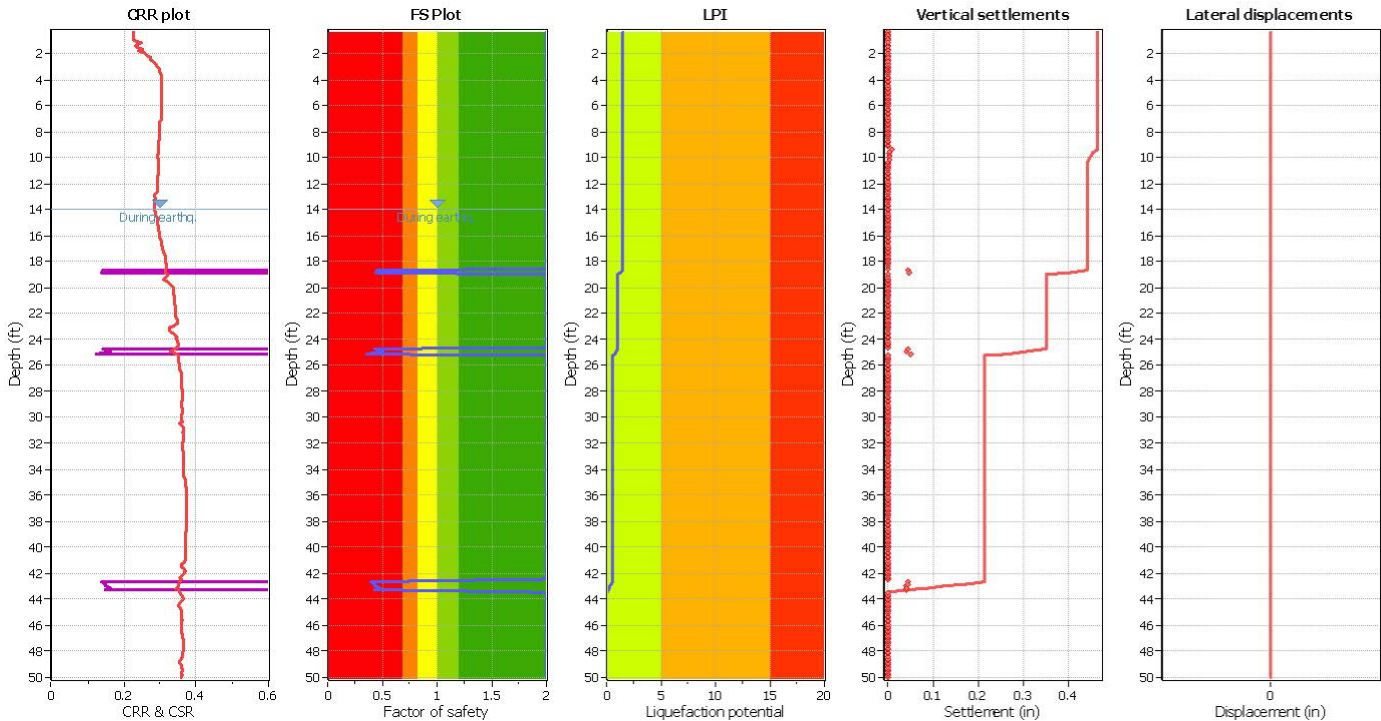
APPENDIX C

CONE PENETROMETER TEST RESULTS AND LIQUEFACTION ANALYSES





Liquefaction analysis overall plot



Input parameters and analysis data

Analysis method: B&I (2014)
Fines correction method: B&I (2014)
Points to test: Based on I_c value
Earthquake magnitude M_w : 6.52
Peak ground acceleration: 0.50
Depth to water table (insitu): 15.00 ft

Depth to GWT (earthq.): 14.00 ft
Average results interval: 3
 I_c cut-off value: 2.60
Unit weight calculation: Based on SBT
Use fill: No
Fill height: N/A

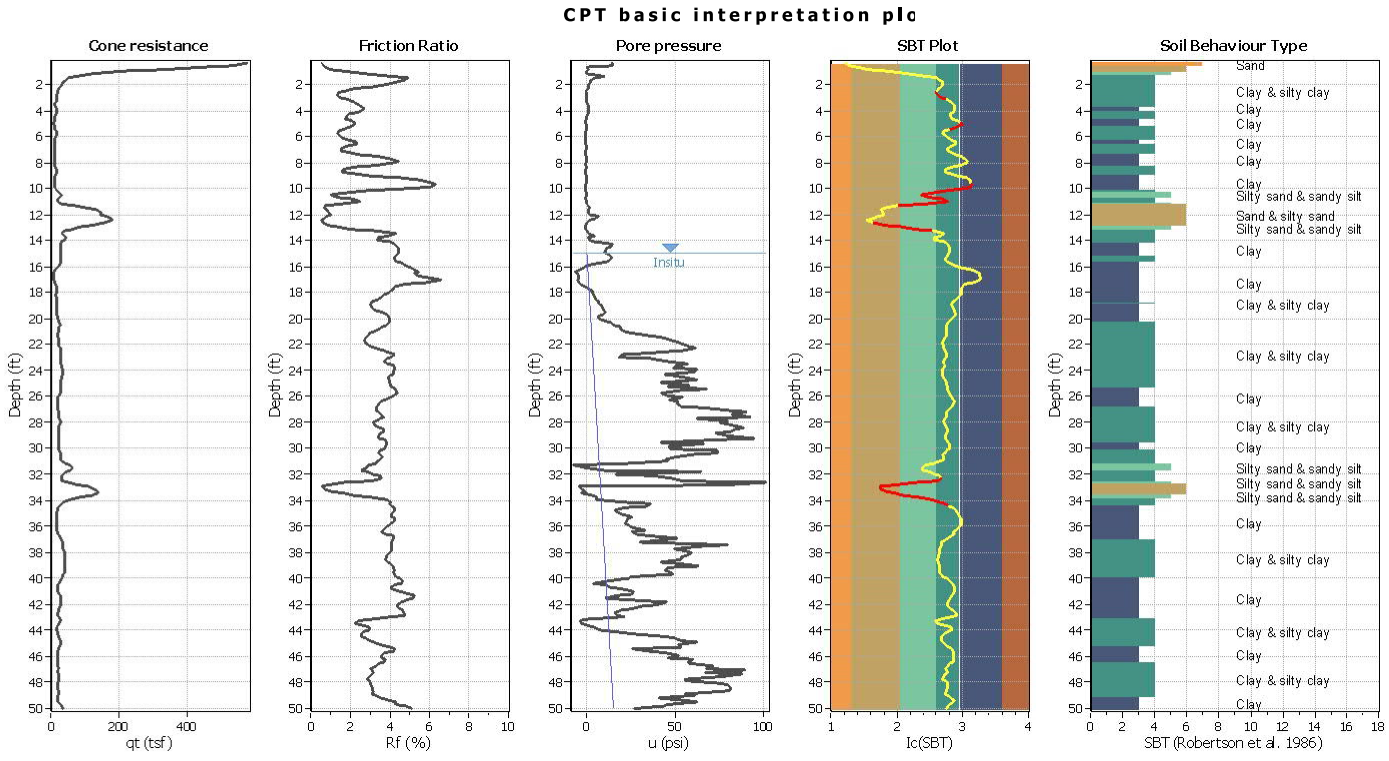
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Transition detect. applied: Yes
 K_s applied: Yes
Clay like behavior applied: Sands only
Limit depth applied: No
Limit depth: N/A

F.S. color scheme

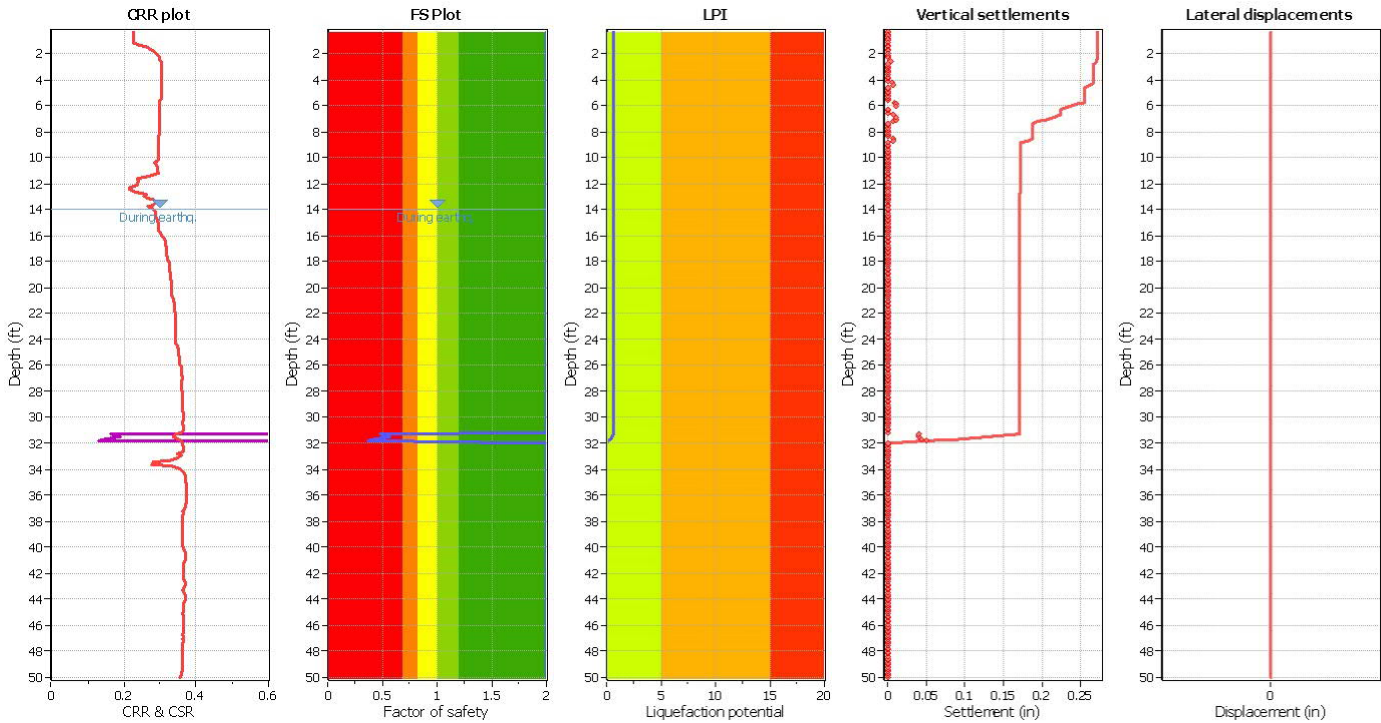
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk



Liquefaction analysis overall plot



Input parameters and analysis data

Analysis method: B&I (2014)
Fines correction method: B&I (2014)
Points to test: Based on Ic value
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Fill height: N/A

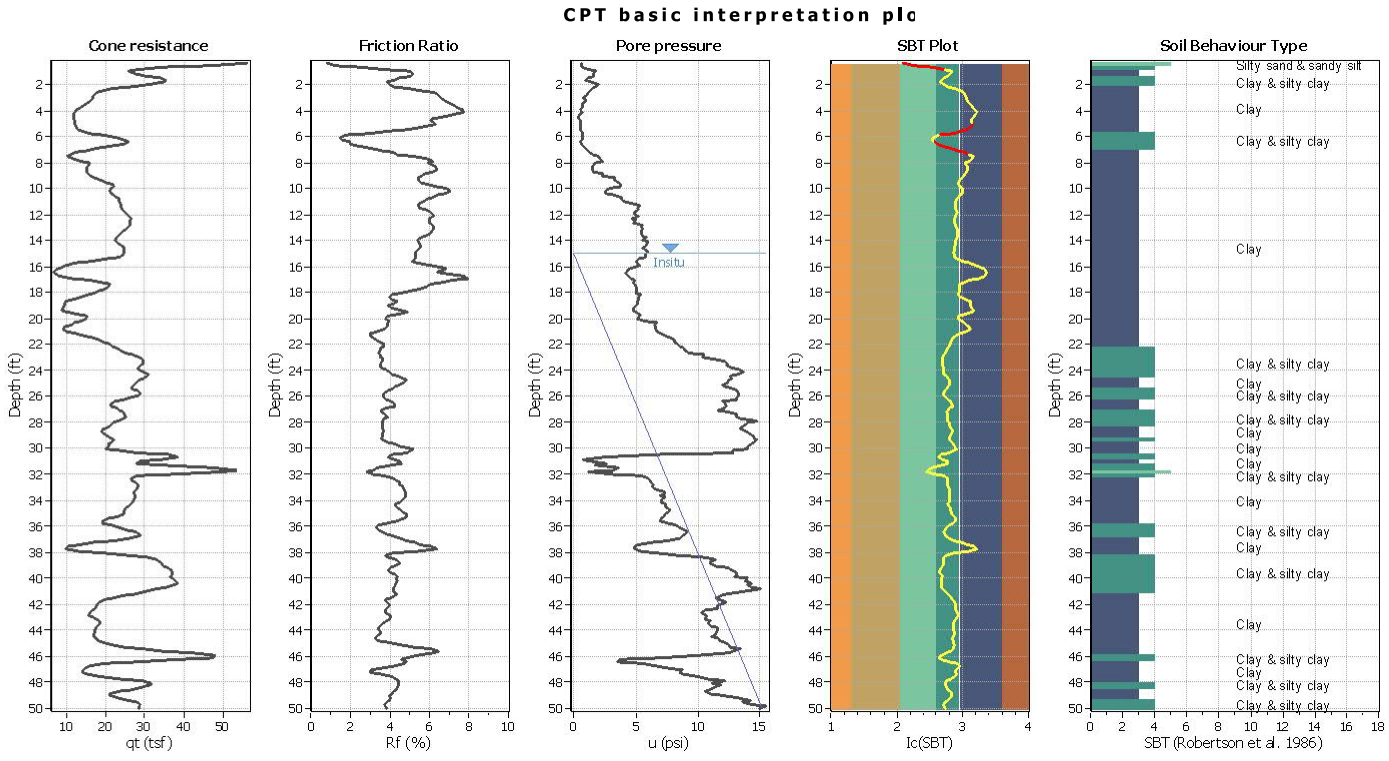
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F.S. color scheme

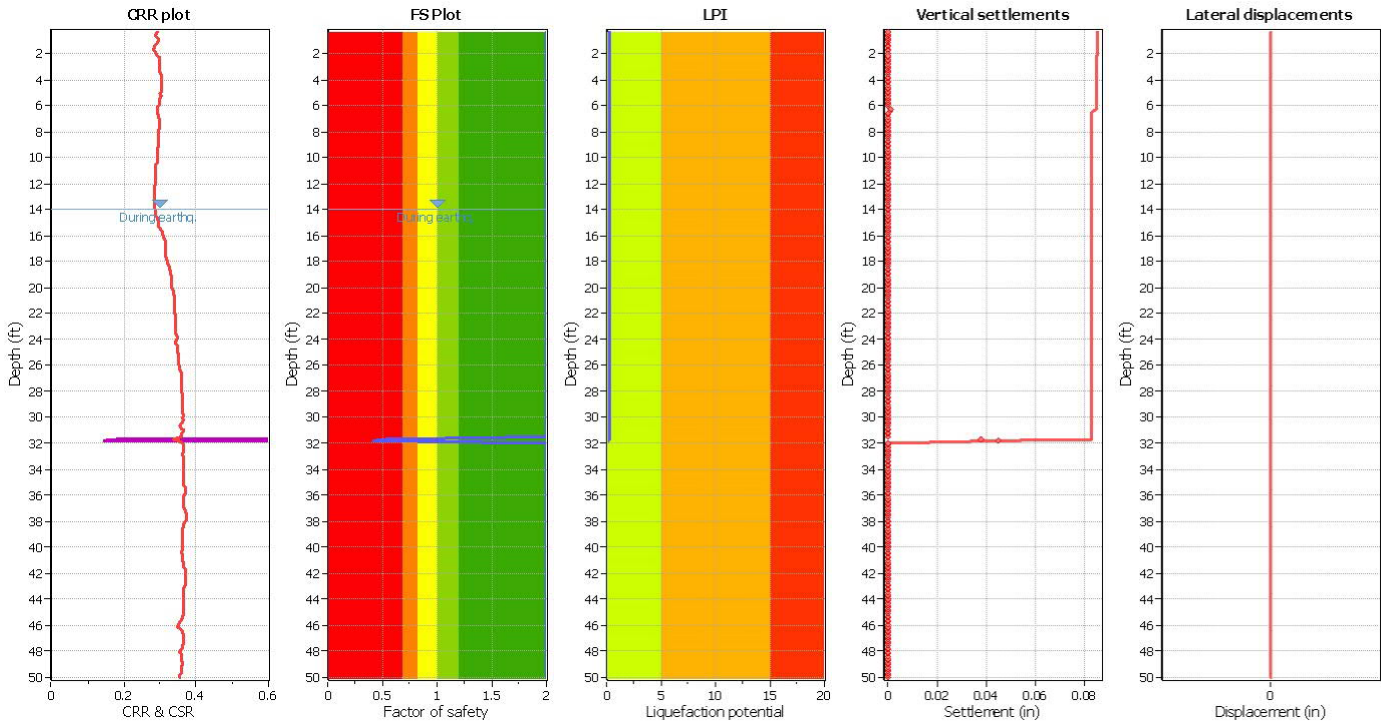
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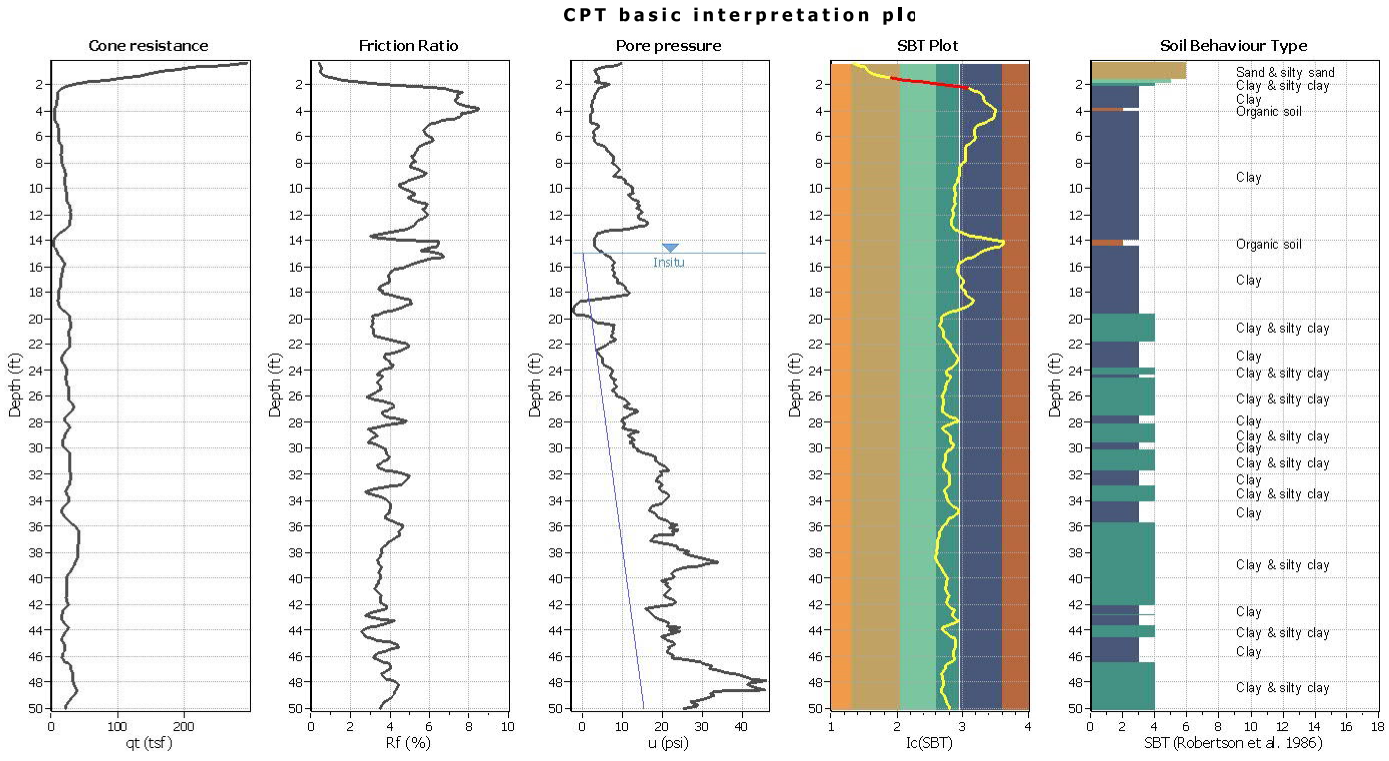
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Clay like behavior applied: Sands only
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Limit depth: N/A

F.S. color scheme

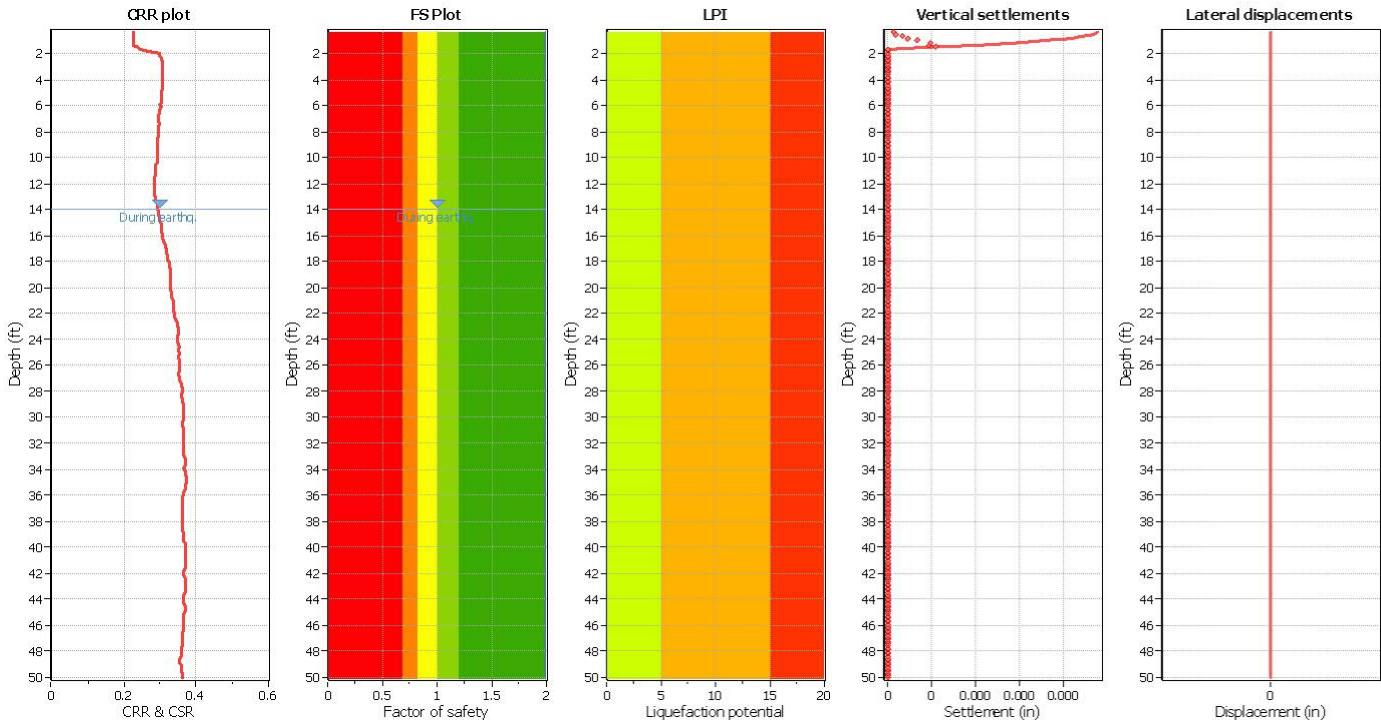
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Liquefaction analysis overall plot



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Earthquake magnitude M_w : 6.52
Peak ground acceleration: 0.50
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 I_c cut-off value: 2.60
Unit weight calculation: Based on SBT
Use fill: No
Fill height: N/A

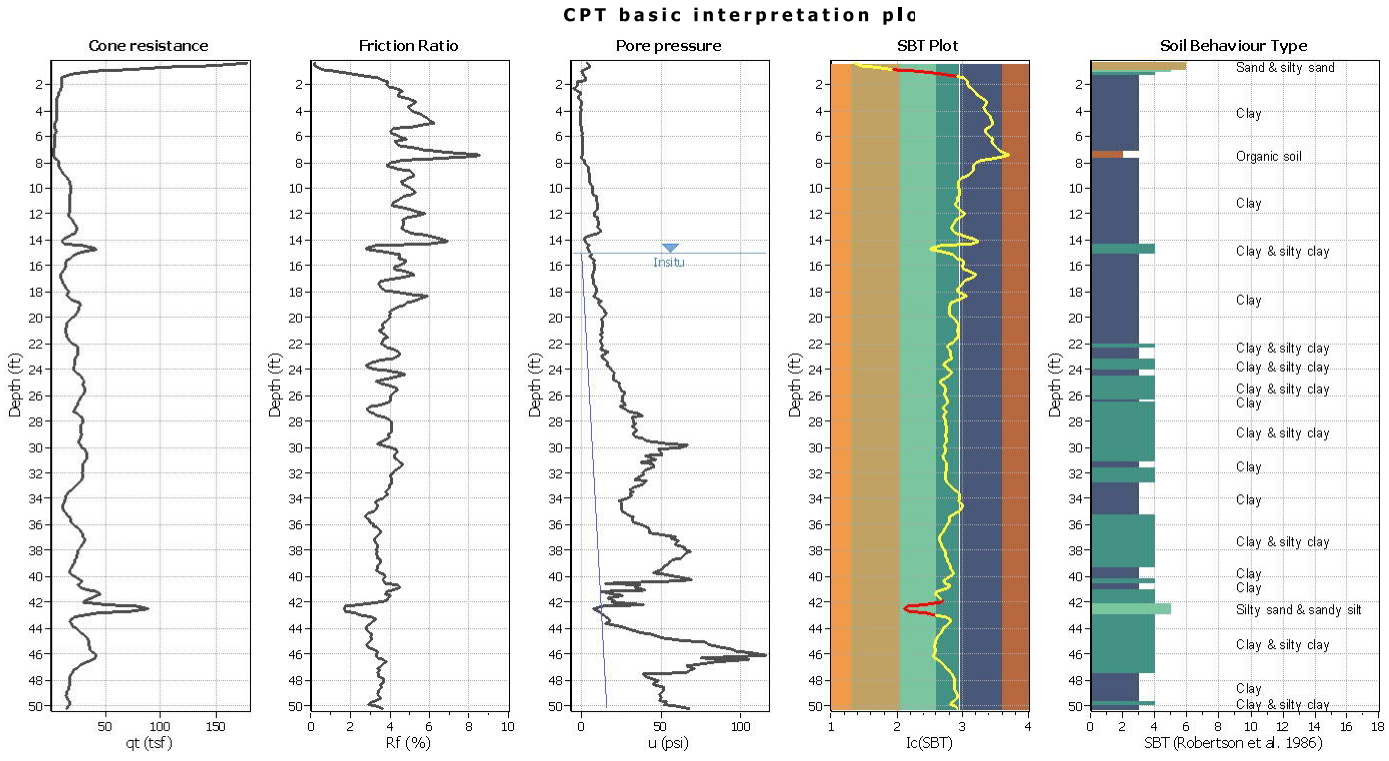
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Clay like behavior applied: Sands only
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Limit depth: N/A

F.S. color scheme

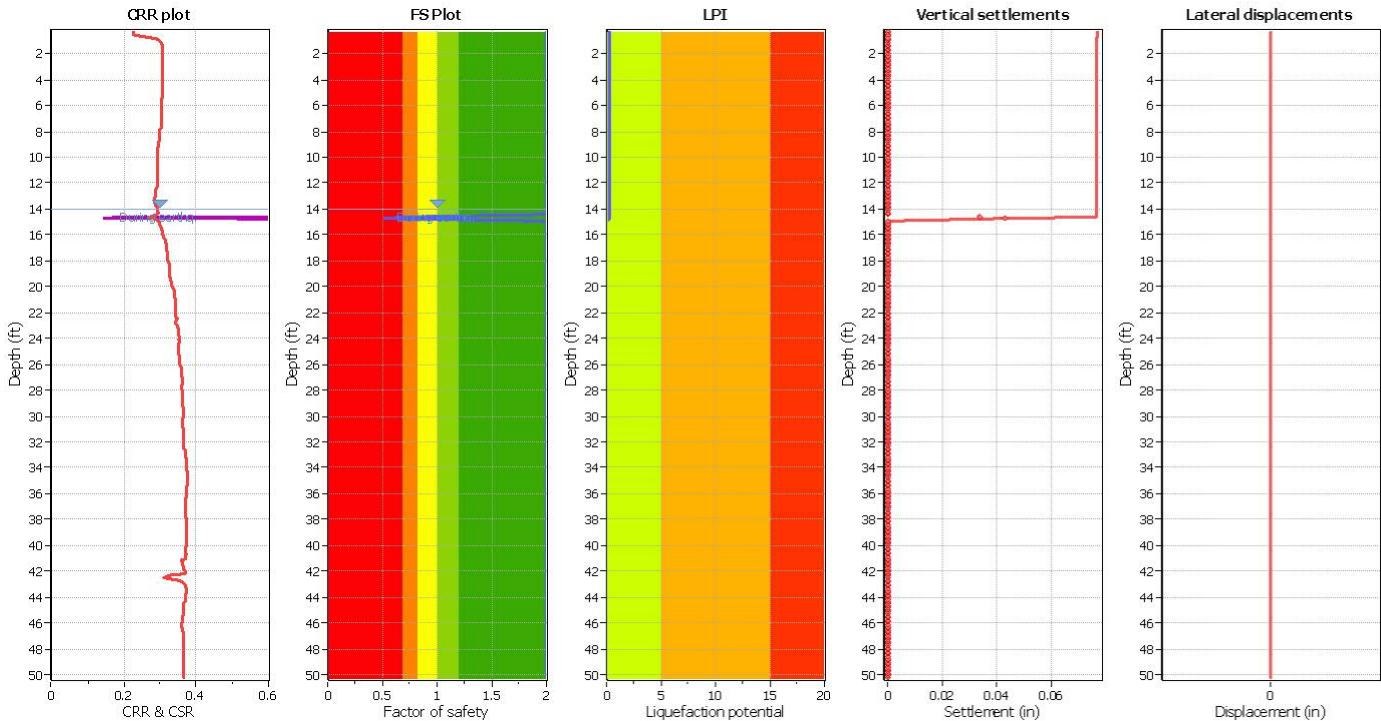
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APPENDIX D

GEOLOGIC AND SEISMIC HAZARDS ASSESSMENT



GEOLOGIC AND SEISMIC HAZARDS ASSESSMENT REPORT
CAMPUS EXPANSION
LIBERTY HIGH SCHOOL
850 2nd STREET
BRENTWOOD, CALIFORNIA

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Figure D-6	Landslide Hazard Map
Figure D-7	FEMA Flood Hazard Map
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Supporting Calculations

Shear wave velocity calculations for CPT-1 through CPT-5

D1.0 INTRODUCTION

This report presents the geologic and seismic hazards assessment prepared in accordance with the 2016 California Building Code (CBC), CBC Title 24, Chapters 16A and 18A requirements for a Geotechnical/Engineering Geologic Report. The assessment was performed in conformance with the California Geological Survey (CGS) Note 48 (2013).

D1.1 Purpose and Scope of Services

The purpose of the geologic and seismic hazards assessment is to provide the Client with an evaluation of potential geologic or seismic hazards that may be present at the site or due to regional influences. BSK Associate's (BSK) scope of services for this assessment included the following:

1. Review of published geologic literature, and current investigation at the site;
2. Evaluation of the data collected and preparation of geologic cross sections;
3. Evaluation of potential geologic hazards affecting the site; and
4. Determination of Site Class and code-based seismic design parameters.

The observations and conclusions presented in this report specifically exclude the assessment of environmental characteristics, particularly those involving hazardous substances, and a high-pressure pipeline risk evaluation.

D1.2 Site Location

As shown on the Area Topographic Map, Figure D-1, Liberty High School (Site) is located at 850 2nd Street in Brentwood, Contra Costa County, California. A map of the Site is shown on the Site Plan, Figure D-2.

The Site coordinates are approximately:

Latitude 37.9358°N

Longitude 121.6914°W

The school is located in an area with residential and commercial properties.

D1.3 Site Topography

The project area is generally low relief with an elevation of approximately 70 to 75 feet.

D1.4 Groundwater Conditions

The Site is located within the Tracy sub-basin of the San Joaquin groundwater basin (CDWR, 2003). Free groundwater was observed in the borings performed for our concurrent geotechnical investigation for the campus expansion between depths of approximately 15 and 23 feet below the ground surface (BGS). The



estimated groundwater depth measured in the cone penetration test (CPT) probes advanced at the Site concurrently with our recent borings ranged from about 15 to 20 feet BGS. According to the Seismic Hazard Zone Report for the Brentwood Quadrangle (CGS 2018b), historic high ground water at the Site is between 10 and 20 feet. It should be noted that groundwater levels can fluctuate several feet depending on factors such as seasonal rainfall, groundwater withdrawal, and construction activities on this or adjacent properties.



D2.0 GEOLOGIC SETTING

The Site is located in the California Delta region of the Great Valley geomorphic province near the eastern boundary of the Coastal Ranges geomorphic province. The Great Valley is a 400-mile long, low-relief, alluvial plain which runs north-south through California. The valley contains alluvial sediments which have been deposited almost continuously for the past 160 million years. The Site is located in the upland region of the southwest portion of the San Joaquin River Delta complex. To the west, the area transitions to the Coastal Ranges province that is characterized by northwest trending ridges and valleys that are typically highly folded with numerous faults (OGS 2002).

As shown on the Geologic Map, Figure D-3, the Site is mapped as Quaternary alluvium, which includes alluvial gravel, sand, silt, and clay of valley areas; specifically, the authors map the area as alluvial loam (Dibblee and Minch, 2006).

Nearby active faults include the Greenville Fault zone located approximately 9 miles southwest of the Site, the Concord Fault located approximately 16 miles west of the Site, the Las Positas Fault located approximately 17 miles south of the Site, and the Green Valley Fault zone located approximately 24 miles northwest of the Site.

D2.1 Subsurface Conditions

Subsurface conditions are described in the 2018 geotechnical investigation report prepared by BSK and to which this geologic and seismic hazards report is appended. The Site was the subject of a current field investigation of nine hollow-stem auger borings which ranged in depth from approximately 5 to 25 feet BGS and five CPTs completed to a depth of approximately 50 feet BGS. The underlying stratigraphy consists predominantly of clay and silty clay. Minor silty sand (loose to medium dense) and sandy silt (firm to hard) layers were observed in the upper 20 feet in borings.

The Geologic Cross Sections, shown on Figure D-4, present the current surface topography and the subsurface conditions inferred from the current borings and CPTs performed at the Site.



D3.0 GEOLOGIC/SEISMIC HAZARDS

The types of geologic and seismic hazards assessed include surface ground fault rupture, liquefaction, seismically induced settlement, slope failure, flood hazards, and inundation hazards.

D3.1 Fault Rupture Hazard Zones in California

The purpose of the Alquist-Priolo Geologic Hazards Zones Act, as summarized in CDMG Special Publication 42 (SP 42) (Bryant and Hart, 2007), is to "prohibit the location of most structures for human occupancy across the traces of active faults and to mitigate thereby the hazard of fault-rupture." As indicated by SP 42, "the State Geologist is required to delineate 'Earthquake Fault Zones' along known active faults in California. Cities and counties affected by the zones must regulate certain development 'projects' within the zones. They must withhold development permits for sites within the zones until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting."

The Site is within the Brentwood 7.5 Minute Quadrangle in Contra Costa County. Alquist-Priolo Earthquake Fault Zones have not been prepared for this quadrangle. As shown on the Alquist-Priolo Earthquake Fault Zone Map, Figure D-5, the closest Fault-Rupture Hazard Zone is associated with the Greenville fault zone located approximately 9¼ miles southwest of the Site (CDMG, 1982).

D3.2 State of California Seismic Hazard Zones (Liquefaction and Landslides)

Zones of Required Investigation, referred to as "Seismic Hazard Zones" in CCR Article 10, Section 3722, are areas shown on Seismic Hazard Zone Maps where site investigations are required to determine the need for mitigation of potential liquefaction and/or earthquake-induced landslide ground displacements.

The Site is not located in an Earthquake-Induced Landslide Hazard Zone. The Site is, however, partially located in a state-delineated Liquefaction Hazard Zone, as shown on the Liquefaction Hazard Zone Map, Figure D-6 (OGS, 2018).

The results of our liquefaction analyses are presented in the section titled "Soil Liquefaction" of the geotechnical report.

D3.3 Slope Stability and Potential for Slope Failure

The Site and surrounding area are of low relief; therefore, we conclude that the risk of landsliding within the Site is negligible.



D3.4 Flood and Inundation Hazards

An evaluation of flooding at the Site includes review of potential hazards from flooding during periods of heavy precipitation and flooding due to a catastrophic dam breach from up-gradient surface impoundments.

D3.4.1 Flood Hazards

Federal Emergency Management Agency (FEMA) flood hazard data was obtained to present information regarding the potential for flooding at the Site. As shown on the FEMA Flood Hazard Map, Figure D-7, according to FEMA Flood Hazard Map Layer (Panel 0601300362G), dated 3/21/2017, the Site lies in Zone X outside of the 100-year floodplain.

D3.4.2 Inundation Hazards- Dams

According to GIS data obtained from California Emergency Management Agency (Cal-EMA), the Los Vaqueros Reservoir is located near the Site; however, the Site is outside of the inundation zone (Dam Inundation GIS data from Cal-EMA, dated 2013).

D3.5 Volcanic Hazards

According to the United States Geological Survey (USGS) Bulletin 1847, the Site is not located in an area that would be subject to hazards from volcanic eruptions (Miller, 1989).

D3.6 Corrosion

Please refer to the section titled "Corrosivity Results" in the geotechnical report for discussion of the corrosivity of the Site soils.

D3.7 Expansive Soils

As discussed in the geotechnical report, the near-surface soils encountered within the current borings at the Site consist of lean clay which exhibits a moderate expansion potential.

D3.8 Contra Costa County General Plan and Safety Element

The Safety Element of the Contra Costa County General Plan (2004) maps the Site as in an area of generally moderate to low liquefaction potential.



D3.9 Tsunami Hazard

According to the Tsunami Inundation Map for Emergency Planning (Cal-EMA, 2009), the Site is not located in a California State Tsunami Hazard Zone.

D4.0 SEISMIC HAZARD ASSESSMENT

D4.1 Seismic Source Deaggregation

Figures D-8 and D-9, Regional Fault Map and Local Fault Map, respectively, present the major faults that may impact the Site in the future. Seismically-induced ground motion at a site can be caused by earthquakes on any of the sources surrounding the site. Deaggregation of the seismic hazard was performed using the USGS Unified Hazard Tool. The deaggregation determination, at the maximum considered earthquake hazard level, results in distance, magnitude, and epsilon (ground-motion uncertainty) for each source that contributes to the hazard.

Results of the deaggregation based on a probabilistic model developed by the USGS (Dynamic: Conterminous U.S. 2008 (v3.3.1)) indicates that the most extreme seismic source that contributes to the peak ground acceleration is from a rupture of multiple segments of the Calaveras fault. The modal magnitude of 6.52 at a distance of 23 km is consistent with the general design earthquake ground motion. For liquefaction and seismic settlement calculations, a magnitude of 6.52 should be used.

D4.2 Historical Seismicity

The project Site and its vicinity are located in an area characterized by high seismic activity. A number of large earthquakes have occurred within the Site region during historic time (since 1800). The Historical Earthquake Map, Figure D-10, presents earthquake magnitudes of significant earthquakes based on the National Seismic Hazard Model (NSHM) Earthquake Catalogs. This earthquake catalog is for the Western United States and provides a listing for all known $M \geq 2.5$ earthquakes. Some of the significant regional earthquake events include the 1980 M5.8 Livermore earthquake located approximately 7 miles southwest of the Site, the 1868 M6.8 earthquake that originated on the Hayward Fault approximately 28 miles southwest of the Site, and the 1892 M6.6 Dunnigan Hills earthquake located approximately 36 miles north of the Site.

In March 2015, scientists and engineers released a new earthquake forecast for the State of California which was compiled by the USGS, the Southern California Earthquake Center, and the CGS with support from the California Earthquake Authority (Field et al., 2014). It updates the earthquake forecast made for the greater San Francisco Bay Area by the 2007 Working Group for California Earthquake Probabilities. According to this recent study, there is a 72 percent probability that one or more magnitude M6.7 or greater earthquakes will occur in the San Francisco Bay Area within the next approximately 30 years (between 2014 and 2044). As has been demonstrated recently by the 1989 (M6.9) Loma Prieta, the 1994



(M6.7) Northridge, and the 1995 (M6.9) Kobe earthquakes, earthquakes of this magnitude range can cause severe ground shaking and significant damage to modern urban environments.

D4.3 Earthquake Ground Motion, 2016 California Building Code

D4.3.1 Site Class

Based on Section 1613A.3.2 of the 2016 CBC, the Site shall be classified as Site Class A, B, C, D, E or F based on the site soil properties and in accordance with Chapter 20 of ASCE 7-10. The average shear wave velocity of the upper 50 feet was interpreted from the CPT test hole data using CPeT-IT v.2.0 developed by GeoLogismiki. This program correlates CPT data to shear wave velocity using correlations based on Lunne, Robertson, and Powell (1997). The time-weighted average of the shear wave velocity of the upper 50 feet for each CPT test hole was calculated as per ASCE 7-10 equation 20.4-1, and then extrapolated to a depth of 100 feet following Boore (2004) as presented in Wair et al. (2012). The average shear wave velocity of the upper 100 feet for the 5 CPT test holes is 623 feet per second. Therefore, as per Table 20.3-1 of ASCE 7-10, the Site is Class D (Stiff soil). See attached supporting calculations which present the CPeT-IT output spreadsheets with the time-weighted averaging columns added (yellow highlighting).

D4.3.2 Seismic Design Criteria

The 2016 CBC utilizes ground motion based on the Risk-Targeted Maximum Considered Earthquake (MCE). The Risk-Targeted MCE is defined in the 2016 CBC as the most severe earthquake effects considered by this code, determined for the orientation that results in the largest maximum response to horizontal ground motions and with an adjustment for targeted risk. Ground motion parameters in the 2016 CBC are based on ASCE 7-10, Chapter 11.

The USGS has prepared maps presenting the Risk-Targeted MCE spectral acceleration (5% damping) for periods of 0.2 seconds (S_s) and 1.0 seconds (S_1). The values of S_s and S_1 can be obtained from the USGS Ground Motion Parameter Application available at:

<http://earthquake.usgs.gov/designmaps/us/application.php>.

Table D-1 presents the spectral acceleration parameters produced for Site Class D by the USGS Ground Motion Parameter Application and Chapter 16 of the 2016 CBC based on ASCE 7-10.



TABLE D-1 SPECTRAL ACCELERATION PARAMETERS RISK TARGETED MAXIMUM CONSIDERED EARTHQUAKE			
Criteria	Value		Reference
MCE Mapped Spectral Acceleration (g)	$S_B = 1.500$	$S_1 = 0.510$	USGS Mapped Value
Site Coefficients (Site Class D)	$F_a = 1.000$	$F_v = 1.500$	ASCE Table 11.4
Site Adjusted MCE Spectral Acceleration (g)	$S_{MS} = 1.500$	$S_{M1} = 0.764$	ASCE Equations 11.4.1-2
Design Spectral Acceleration (g)	$S_{DS} = 1.000$	$S_{D1} = 0.510$	ASCE Equations 11.4.3-4

D4.3.3 Seismic Design Category

The long period spectral response acceleration coefficient, S_1 , is less than 0.750g. Therefore, as per Table 11.6-1 of ASCE 7-10, the Site lies in Seismic Design Category D, based on Risk Category III.

D4.3.4 Geometric Mean Peak Ground Acceleration

As per Section 1803A.5.12 of the CBC, peak ground acceleration (PGA) utilized for dynamic lateral earth pressures and liquefaction, shall be based on a site-specific study (ASCE 7-10, Section 21.5) or ASCE 7-10, Section 11.8.3. The USGS Ground Motion Parameter Application, based on ASCE 7-10, Section 11.8.3, produced the values shown in Table D-2 based on Site Class D.

TABLE D-2 GEOMETRIC MEAN PEAK GROUND ACCELERATION MAXIMUM CONSIDERED EARTHQUAKE		
Criteria	Value	Reference
Mapped PGA (g)	$PGA = 0.500$	USGS Mapped Value
Site Coefficients (Site Class D)	$F_{PGA} = 1.000$	ASCE Table 11.8-1
Geometric Mean PGA (g)	$PGA_M = 0.500$	ASCE Equation 11.8-1

D4.4 Seismically Induced Ground Failure

D4.4.1 Liquefaction

Liquefaction is a condition where saturated, granular soils undergo a substantial loss of strength and deformation due to pore pressure increase as a result of cyclic stress application induced by earthquakes. It is generally accepted that the four following conditions need to be met in order for liquefaction to occur during ground shaking:

- The subsurface soils are in a relatively loose state,



- The soils are saturated,
- The soils have low plasticity, and
- Ground shaking is of sufficient intensity to act as a triggering mechanism.

When liquefied, the soil acquires mobility sufficient to permit both horizontal and vertical movements if the soil is not confined. Soils most susceptible to liquefaction are loose, clean, uniformly-graded silt and fine sand, as well as some lean clay deposits. In addition, after soil liquefies, dissipation of the excess pore pressures can produce volume changes within the liquefied soil layer, which can result in ground surface settlement.

The Site is underlain by alluvial soils consisting of primarily of lean clay with layers of silt and sand (sometimes loose) throughout the observed depth. Based on our analysis, we conclude that liquefaction-induced settlement of some of the sand and silt layers to be a minor hazard at the Site. The results and discussion of our liquefaction analyses are presented in the "Soil Liquefaction" section of the geotechnical report.

D4.4.2 Lateral Spreading

Lateral spreading is a potential seismic hazard commonly associated with liquefaction where extensional ground cracking and settlement occur as a response to lateral migration of subsurface liquefiable material. This phenomenon typically occurs adjacent to free faces, such as slopes and creek channels. Liquefaction-induced settlement is considered to be a minor hazard at the Site (see above section for additional discussion). In addition, there are no free faces in the vicinity of the Site and the depth to the potentially liquefiable layers identified in our CPTs (refer to Appendix C of the geotechnical report) is significant; therefore, the potential for lateral spread to occur at the Site is considered to be low.

D4.4.3 Dynamic Compaction (Seismic Settlement)

Another type of seismically-induced ground failure, which can occur as a result of seismic shaking, is dynamic compaction (seismic settlement). This phenomenon typically occurs in unsaturated, loose granular material or uncompacted fill soils. Due to the composition and apparent relative density of the soils above the water table within the maximum depth of our exploration, we estimate settlements on the order of less than ¼ inch due to dynamic compaction/seismic settlement. These settlements are shown on the CPT liquefaction plots in Appendix C of the geotechnical report.



D5.0 REFERENCES

- ASCE 7-10 (2010), Minimum Design Loads for Buildings and Other Structures, ASCE Standard ASCE/SEI 7-10.
- Boore, D.M. (2004), Estimating $V_s(30)$ (or NEHRP Site Classes) from Shallow Velocity Models (Depths < 30 m), Bulletin of the Seismological Society of America, Vol. 94, No. 2, pp. 591-597.
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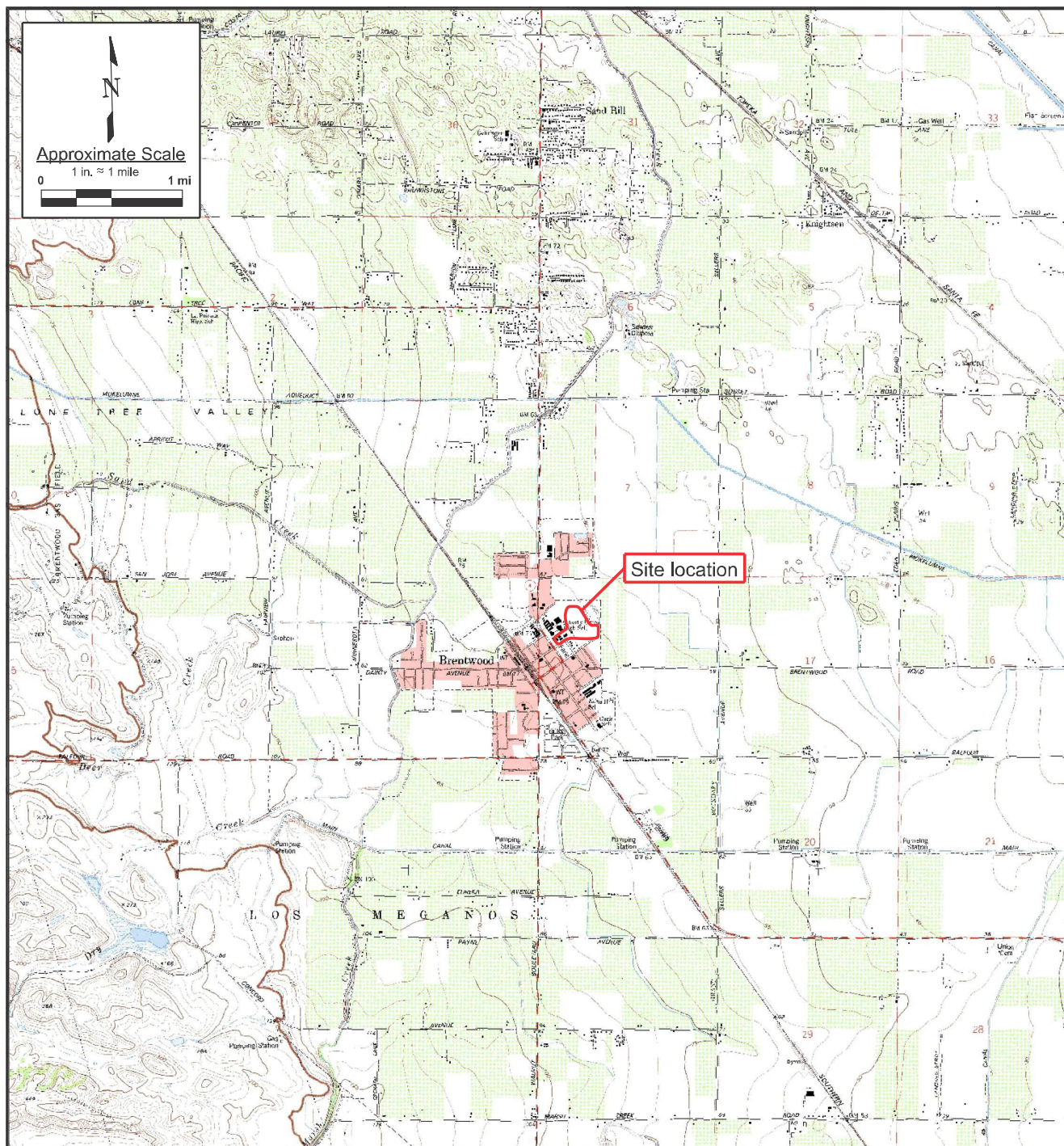
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1:24,000.

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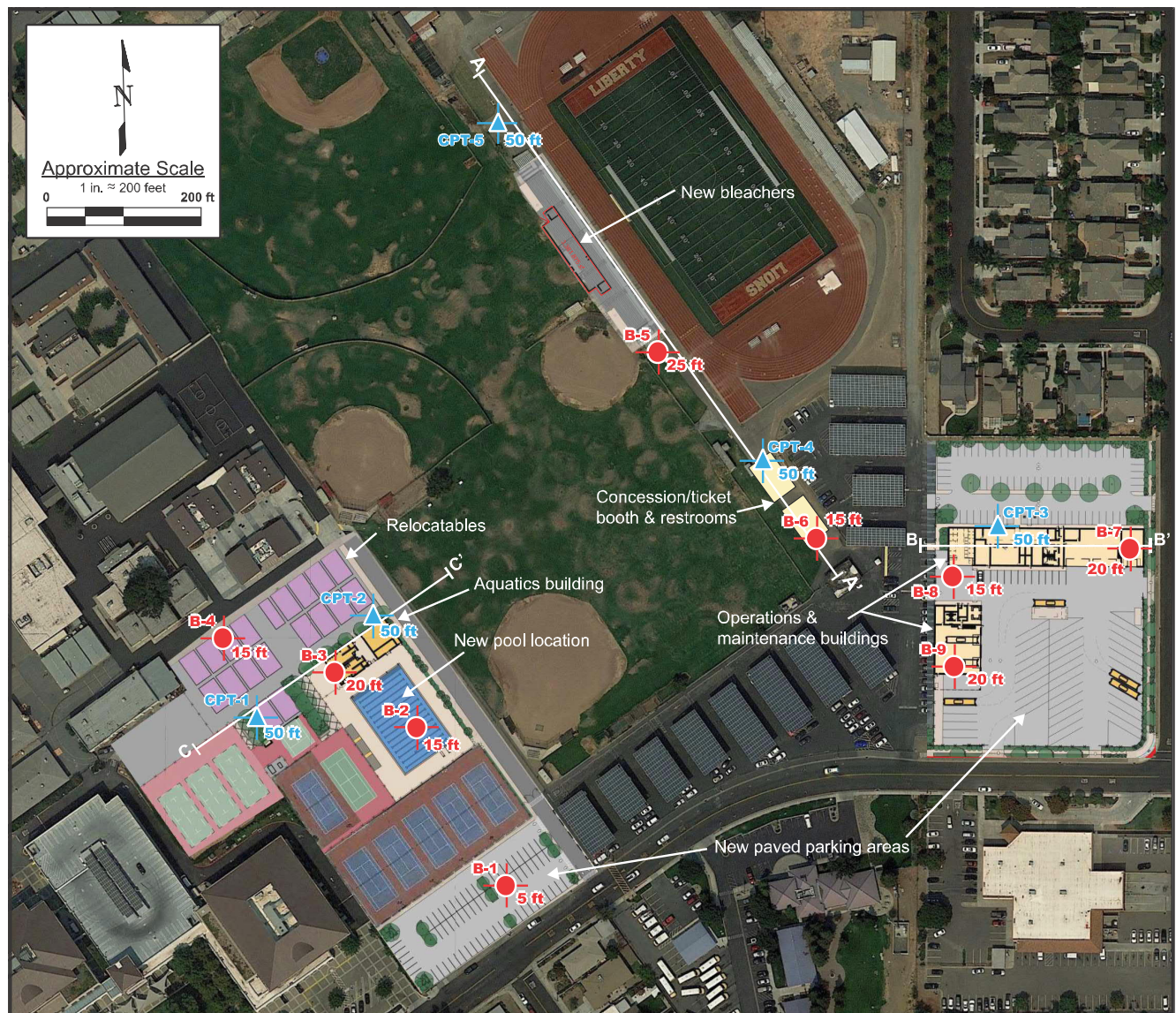
FILE NAME: Topo Map

AREA TOPOGRAPHIC MAP

Campus Expansion
Liberty High School
850 2nd Street
Brentwood, California

FIGURE

D-1



References: 1. <https://www.google.com/earth>, 2018. 2. "Campus Plan" by Quattrocchi Kwok Architects, dated 12/14/17

LEGEND

- B-1 | Approximate Boring Location (with approximate depth), BSK (2018)
- CPT-1 | Approximate Cone Penetrometer Test Location (with approximate depth), BSK (2018)
- A-A' | Cross section line (see Figure D-4)

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ASSOCIATES

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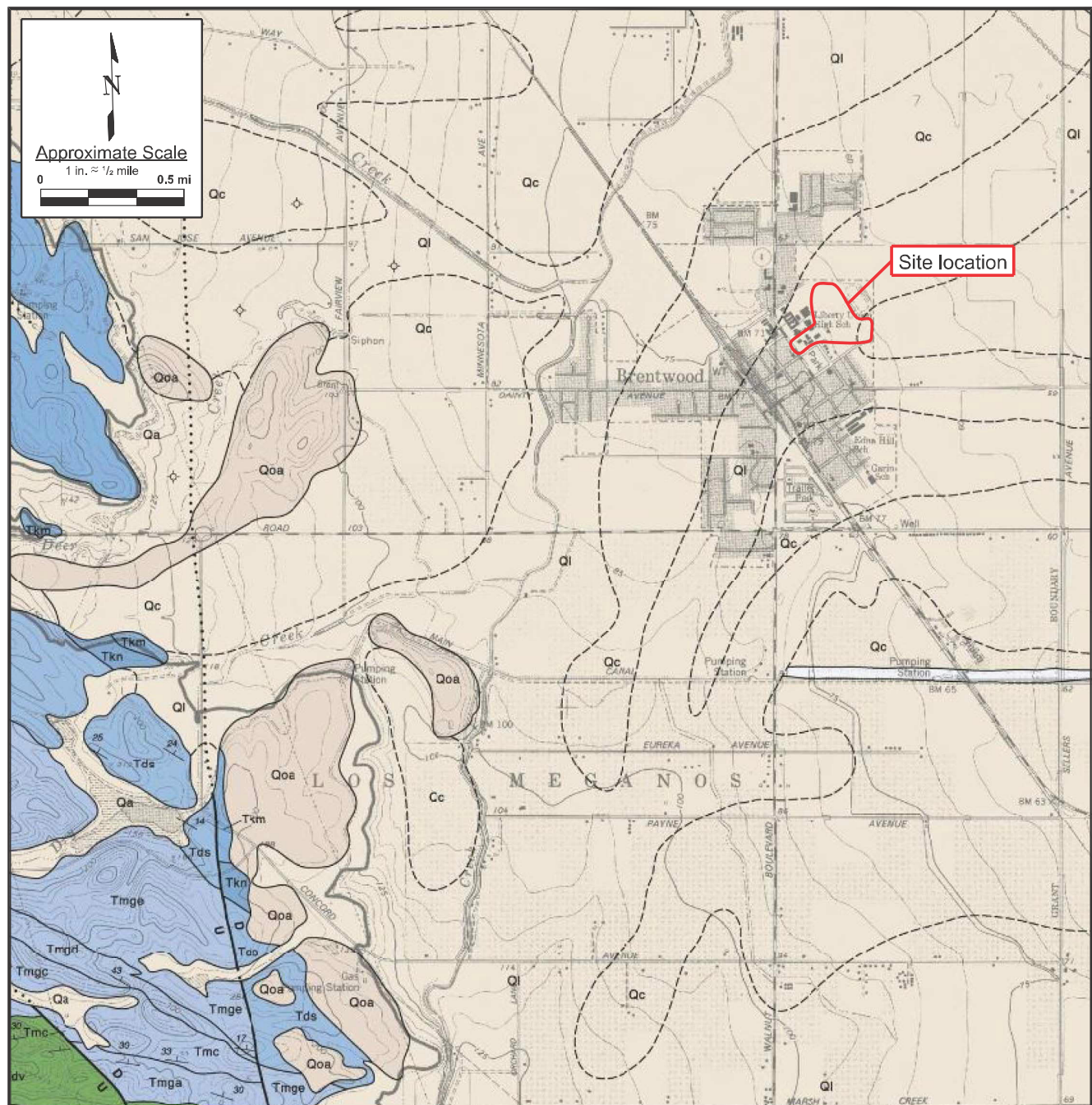
FILE NAME: Site Plan

SITE PLAN

Campus Expansion
Liberty High School
850 2nd Street
Brentwood, California

FIGURE

D-2



Reference: Dibblee, T.W., and Minch, J.A., 2006, Geologic map of the Antioch South & Brentwood quadrangles, Contra Costa County, California: Dibblee Geological Foundation, Dibblee Foundation Map DF-193, scale 1:24,000.

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LEGEND

- af** - Surficial sediments - Manmade artificial fill for dam (Holocene)
- Qa** - Surficial sediments - Alluvial gravel, sand and silt/clay of valley areas and flood plains (Holocene)
- Ql** - Surficial sediments - Alluvial loam of valley areas (Holocene)
- Qc** - Surficial sediments - Alluvial clay of valley areas (Holocene)
- Qoa** - Older surficial sediments - Dissected older alluvial deposits (late Pleistocene)
- Tkm/Tkn** - Kreyenhagen Formation - marine clastic, lithified sandstone and shale (middle Eocene)
- Tds** - Domingine Sandstone - marine clastic, lithified sandstone (middle Eocene)
- Tmge/Tmgd/Tmgc/Tmga** - Meganos Formation - marine clastic, lithified sandstone and shale (middle to early Eocene)



PROJECT NO. G17-238-11L
DRAWN: 2/23/2018
DRAWN BY: R. Renedo
CHECKED BY: M. Cline
FILE NAME: Geologic Map

GEOLOGIC MAP

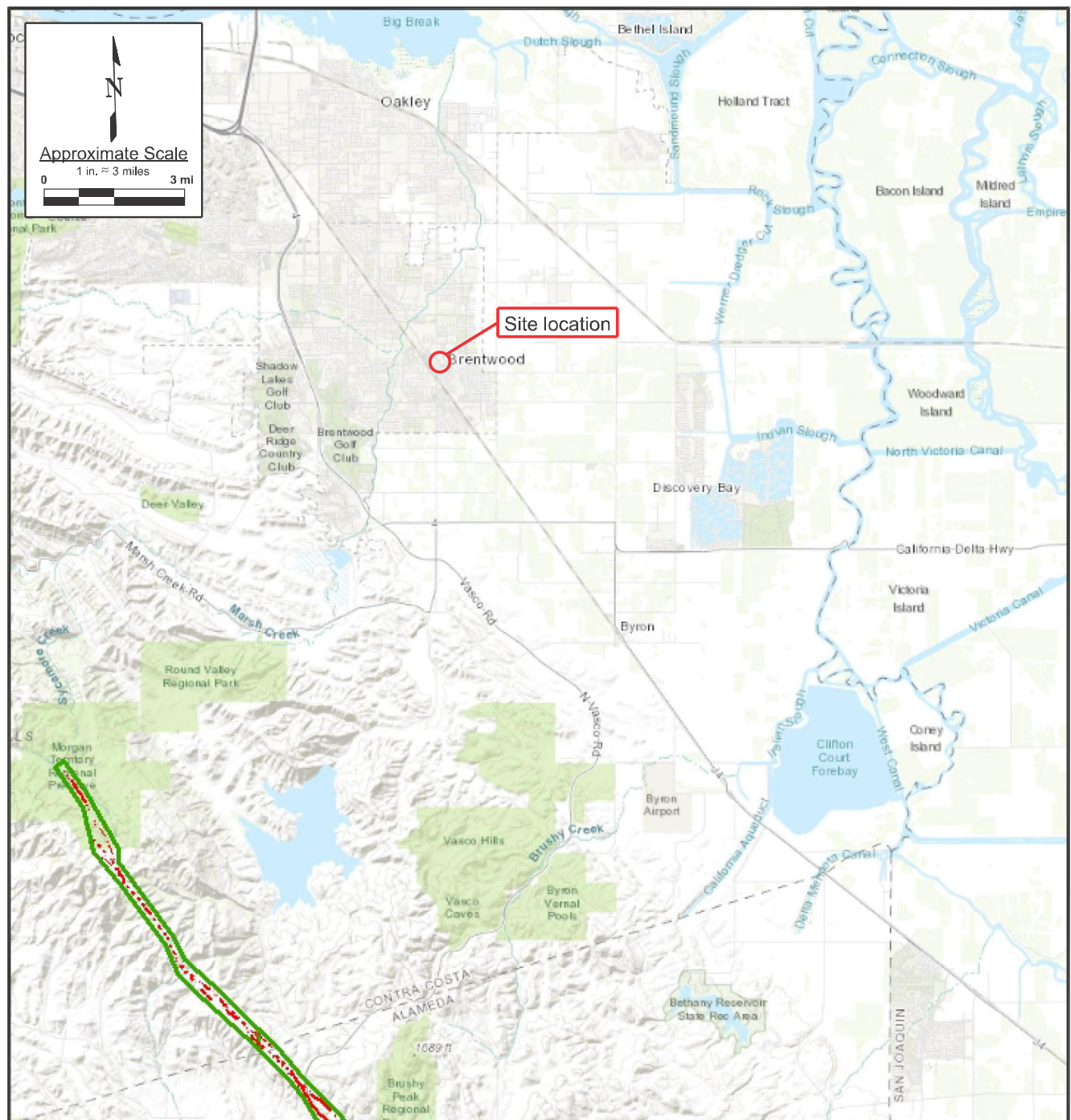
Campus Expansion
 Liberty High School
 850 2nd Street
 Brentwood, California

FIGURE

D-3

FIGURE

D-4



References: 1. California Division of Mines and Geology, 1982, Official map of Alquist-Priolo Earthquake Fault Hazard Zones, San Juan Bautista Quadrangle: California Division of Mines and Geology, scale 1:24,000. 2. California Division of Mines and Geology, 1982, Official map of Alquist-Priolo Earthquake Fault Hazard Zones, Hollister Quadrangle: California Division of Mines and Geology, scale 1:24,000.

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LEGEND

- Accurately located
- - - Approximately located
- . . . Concealed
- - - Inferred
- Earthquake Fault Zone



PROJECT NO. G17-238-11L

DRAWN: 2/19/2018

DRAWN BY: R. Renedo

CHECKED BY: M. Cline

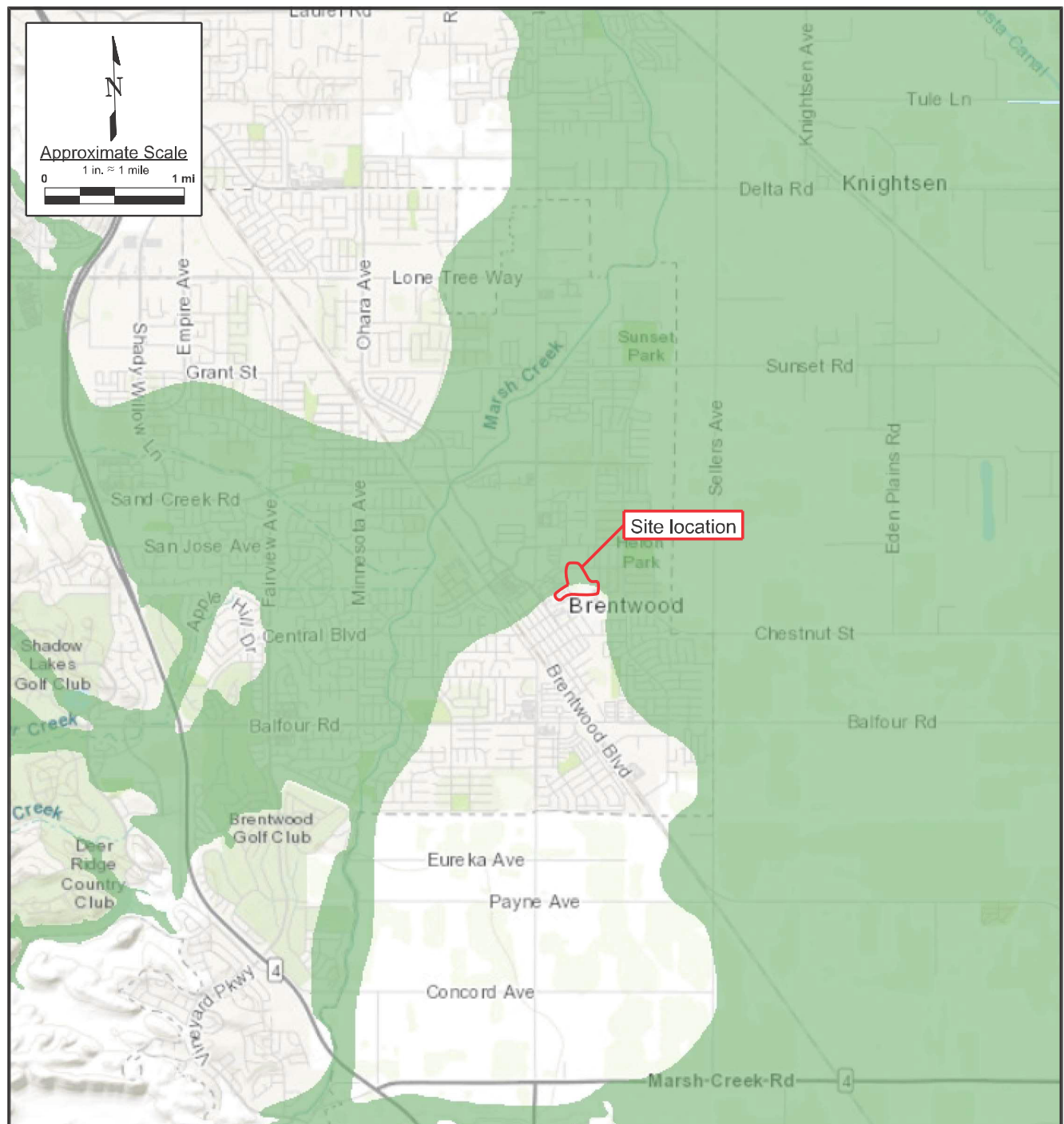
FILE NAME: APFZ Map

ALQUIST-PRIOLO EARTHQUAKE FAULT ZONE MAP

Campus Expansion
Liberty High School
850 2nd Street
Brentwood, California

FIGURE

D-5



Reference: California Geological Survey, 2018, Earthquake Zones of Required Investigation, Brentwood Quadrangle, scale 1:24,000.

LEGEND

Liquefaction Hazard Zone

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DRAWN: 2/23/2018
DRAWN BY: R. Renedo
CHECKED BY: M. Cline
FILE NAME: Landslide Map

LIQUEFACTION HAZARD MAP

Campus Expansion
 Liberty High School
 850 2nd Street
 Brentwood, California

FIGURE

D-6



Reference: FEMA National Flood Hazard Layer, Panels 06013C0354G and 06013C0362G, 3/21/2017.

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LEGEND

- Zone AE. Areas with a 1% annual chance of flooding. Base flood elevations determined.
- Zone AE. Areas with a 1% annual chance of flooding. Regulatory floodway.
- Zone X. Areas with 0.2% annual chance of flooding, areas with 1% annual chance of flooding with average depth less than 1 ft or with drainage areas of less than 1 mi².



PROJECT NO. G17-238-11L

DRAWN: 2/28/2018

DRAWN BY: R. Renedo

CHECKED BY: M. Cline

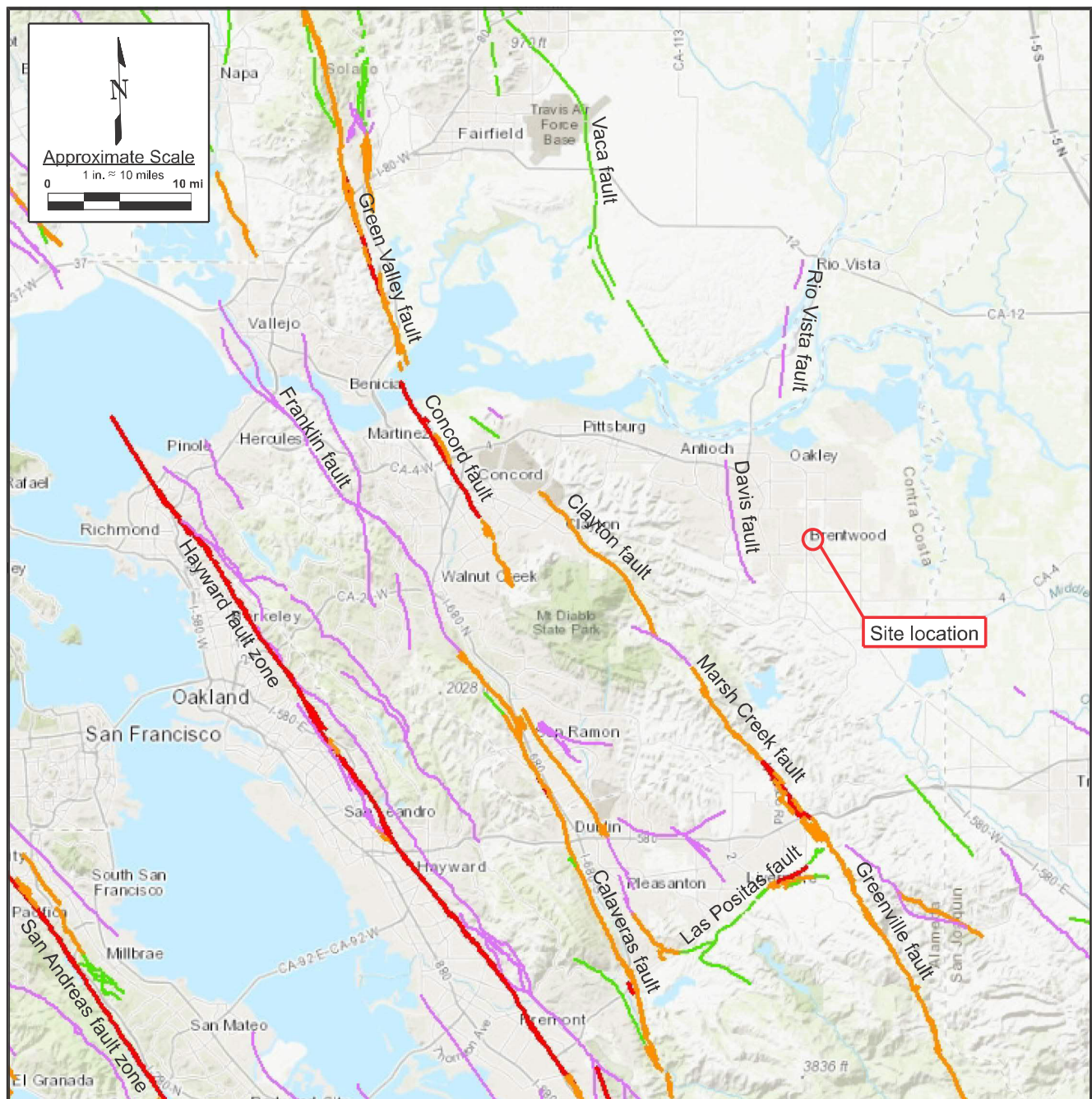
FILE NAME: FEMA Flood Map

FEMA FLOOD HAZARD MAP

Campus Expansion
Liberty High School
850 2nd Street
Brentwood, California

FIGURE

D-7



Reference: Jennings, C.W., and Bryant, W.A., 2010, Fault Activity Map of California, California Geological Survey, scale 1:750,000.

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LEGEND

Quaternary Faults (Age)

— <200 years (Historic)

— <11,700 years (Holocene)

— <700,000 years (Late Quaternary)

— <1,600,000 years (Quaternary)



PROJECT NO. G17-238-11L

DRAWN: 2/19/2018

DRAWN BY: R. Renedo

CHECKED BY: M. Cline

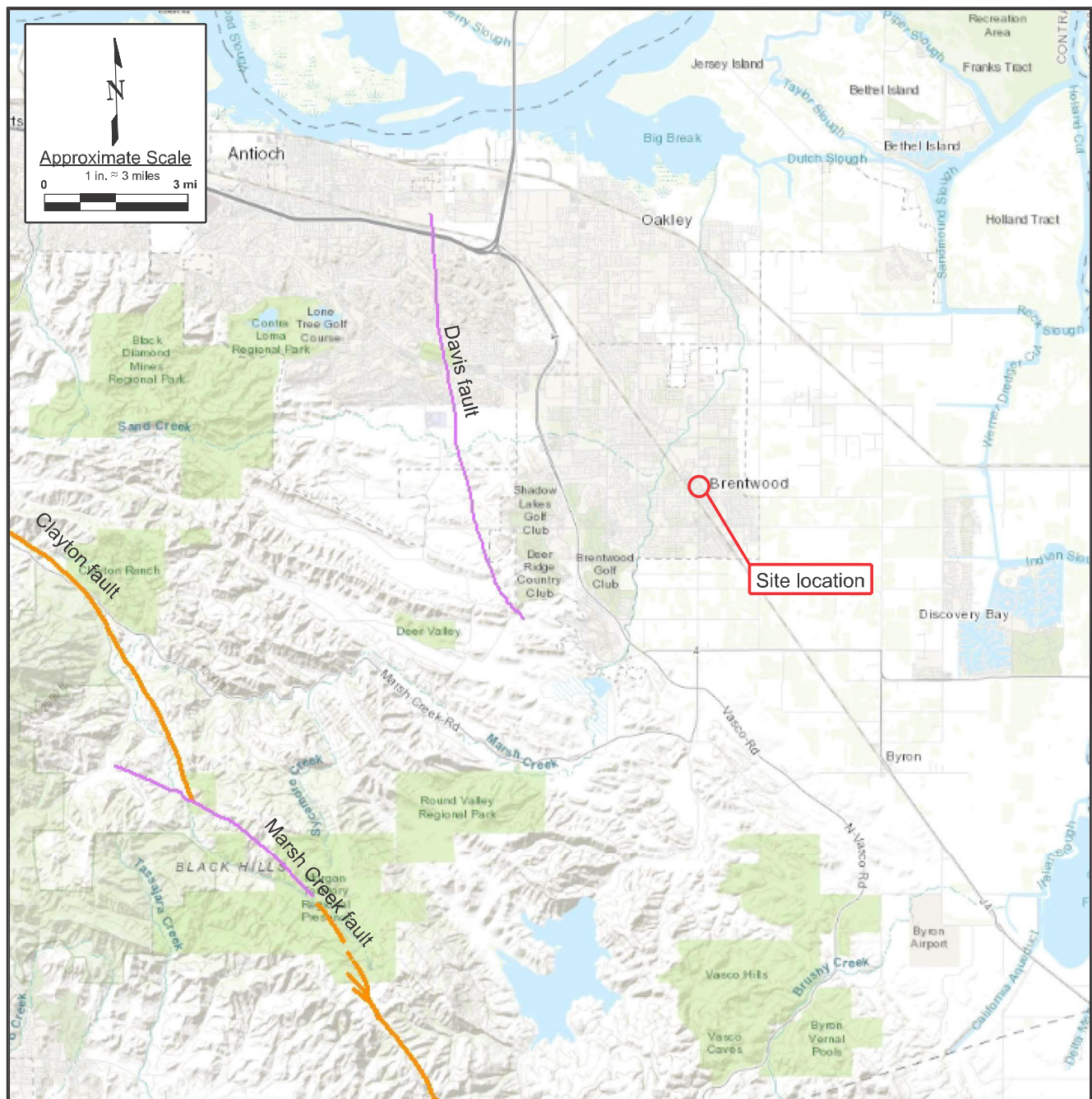
FILE NAME: Regional Fault Map

REGIONAL FAULT MAP

Campus Expansion
Liberty High School
850 2nd Street
Brentwood, California

FIGURE

D-8



Reference: Jennings, C.W., and Bryant, W.A., 2010, Fault Activity Map of California, California Geological Survey, scale 1:750,000.

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LEGEND

Quaternary Faults (Age)

— <200 years (Historic)

— <11,700 years (Holocene)

— <700,000 years (Late Quaternary)

— <1,600,000 years (Quaternary)



PROJECT NO. G17-238-11L

DRAWN: 2/19/2018

DRAWN BY: R. Renedo

CHECKED BY: M. Cline

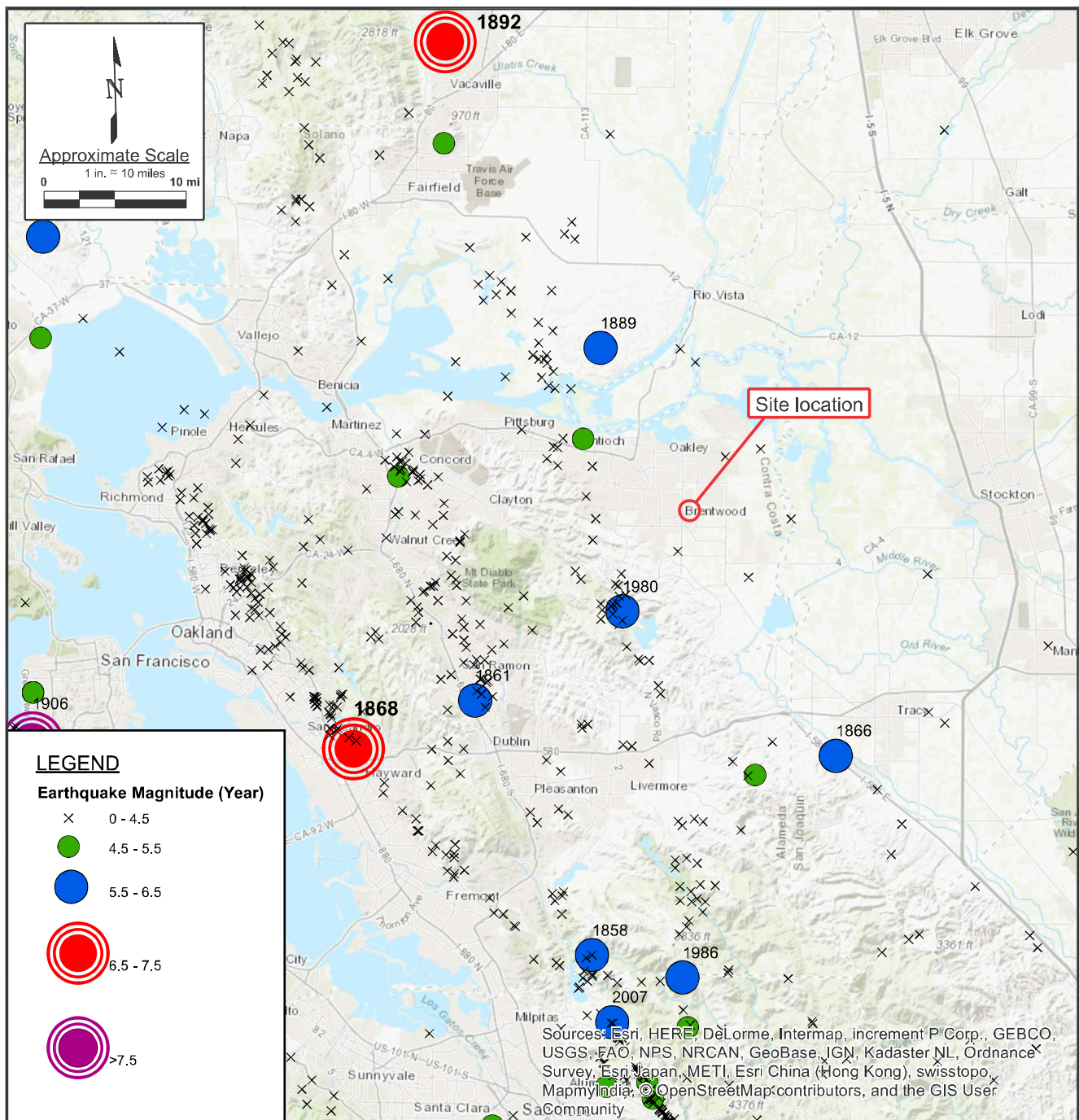
FILE NAME: Local Fault Map

LOCAL FAULT MAP

Campus Expansion
Liberty High School
850 2nd Street
Brentwood, California

FIGURE

D-9



Reference: National Seismic Hazard Model (NSHM)
Earthquake Catalogs, 2014 NSHM Catalogs, USGS,
<https://github.com/usgs/nshmp-haz-catalogs>.

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BSK
ASSOCIATES

PROJECT NO. G17-238-11L

DRAWN: 2/27/2018

DRAWN BY: M. Cline

CHECKED BY: R. Renedo

FILE NAME: Historic EQ
Map

HISTORICAL EARTHQUAKE MAP

Campus Expansion
Liberty High School
850 2nd Street
Brentwood, California

FIGURE

D-10

CPT-1 Estimations

In situ data										Estimations									
No	Depth (ft)	Thickness (ft)	qc (tsf)	fs (tsf)	SBTn	Ksbt (ft/s)	Cv (ft2/s)	SPT N60 (blows/ft)	Con. Mod. (tsf)	Es (tsf)	Go (tsf)	Su (tsf)	Su ratio	Thickness/Vs (s)	Vs (ft/s)	Ko	Sensitivity	Peak phi (°)	
1	0.33	0.33	451.8	1.5	7	0.00E+00	0.00E+00	54	1215.64	969.93	1215.64	0	0	0.00041019	804.51	0	0	20	
2	0.49	0.16	343.5	1.9	7	1.92E-02	3.70E-01	49	1202.86	959.73	1202.86	0	0	0.00019993	800.27	0	0	20	
3	0.66	0.17	268.8	2.1	7	4.90E-03	8.78E-02	41	1119.29	893.05	1119.29	0	0	0.00022022	771.97	0	0	20	
4	0.82	0.16	161	2.3	6	1.20E-03	1.86E-02	31	966.49	771.13	966.49	0	0	0.00022305	717.34	0	0	20	
5	0.98	0.16	88.4	2	8	1.71E-04	2.24E-03	22	821.98	655.84	821.98	0	0	0.00024186	661.55	0	0	20	
6	1.15	0.17	60	2.8	8	4.09E-05	4.79E-04	17	731.11	583.33	731.11	0	0	0.00027248	623.91	0	0	20	
7	1.31	0.16	64.2	2.7	8	1.97E-05	2.33E-04	17	739.75	590.23	739.75	0	0	0.00025494	627.59	0	0	20	
8	1.48	0.17	64.4	2.9	8	1.69E-05	2.01E-04	16	742.72	592.59	742.72	0	0	0.00027034	628.84	0	0	20	
9	1.64	0.16	54.9	2.8	9	1.33E-05	1.60E-04	16	754.18	601.74	754.18	4.26	88.84	0.0002525	633.67	3	1.44	20	
10	1.8	0.16	59.2	3	9	9.83E-06	1.15E-04	15	729.69	582.2	729.69	3.9	74.17	0.0002567	623.3	3	1.35	20	
11	1.97	0.17	49.4	2.7	9	8.62E-06	9.62E-05	15	696.84	555.99	696.84	3.64	63.2	0.0002791	609.11	3	1.35	20	
12	2.13	0.16	44.7	2.2	9	7.02E-06	7.18E-05	13	638.66	509.57	638.66	3.21	51.61	0.00027438	583.13	3	1.35	20	
13	2.3	0.17	41.3	2.1	9	6.23E-06	6.04E-05	12	604.95	482.67	604.95	2.98	44.31	0.00029954	567.53	3	1.37	20	
14	2.46	0.16	39.5	2.1	9	4.64E-06	4.00E-05	12	538.56	469.66	588.64	2.75	38.21	0.0002858	559.83	2.95	1.28	20	
15	2.62	0.16	35.1	2.1	9	3.49E-06	2.69E-05	11	482.6	443.16	555.43	2.46	32.15	0.00029422	543.81	2.84	1.23	20	
16	2.79	0.17	29.4	1.7	9	2.52E-06	1.66E-05	9	412.2	401.41	503.1	2.1	25.79	0.00032846	517.56	2.69	1.19	20	
17	2.95	0.16	24.6	1.4	9	2.10E-06	1.17E-05	8	348.17	350.44	439.22	1.78	20.6	0.00033087	483.58	2.52	1.24	20	
18	3.12	0.17	21.4	1.1	9	1.86E-06	8.81E-06	7	295.98	304.52	381.66	1.51	16.56	0.00037712	450.78	2.37	1.35	20	
19	3.28	0.16	18.2	0.8	9	1.88E-06	7.72E-06	6	256.87	263.86	330.7	1.31	13.67	0.00038131	419.61	2.23	1.54	20	
20	3.45	0.17	16.2	0.6	4	1.94E-06	7.06E-06	5	226.61	231.27	289.85	1.16	11.46	0.00043275	392.84	2.1	1.79	20	
21	3.61	0.16	14.9	0.5	4	1.56E-06	5.08E-06	5	203.25	215.87	270.56	1.04	9.83	0.00042156	379.54	2.02	1.79	20	
22	3.77	0.16	13.2	0.6	4	9.29E-07	2.64E-06	5	177.6	207.16	259.64	0.91	8.22	0.00043034	371.8	1.95	1.57	20	
23	3.94	0.17	10.7	0.6	4	5.29E-07	1.30E-06	4	153.35	198.09	248.27	0.78	6.79	0.00046759	363.57	1.88	1.35	20	
24	4.1	0.16	9.7	0.5	4	4.43E-07	9.81E-07	4	138.35	184.55	231.3	0.71	5.89	0.00045593	350.93	1.8	1.38	20	
25	4.27	0.17	10	0.4	4	6.46E-07	1.44E-06	4	139.57	173.86	217.91	0.71	5.71	0.00049909	340.62	1.76	1.74	20	
26	4.43	0.16	11	0.3	4	1.07E-06	2.42E-06	4	141.74	161.29	202.15	0.72	5.58	0.0004877	328.07	1.72	2.36	20	
27	4.59	0.16	10.2	0.2	5	1.84E-06	4.11E-06	3	139.27	143.53	179.9	0	0	0.00051698	309.49	0	0	20	
28	4.76	0.17	9.5	0.1	5	2.59E-06	5.41E-06	3	130.75	126.73	158.83	0	0	0.00058459	290.8	0	0	20	
29	4.92	0.16	9.2	0.1	5	2.29E-06	4.68E-06	3	127.84	126.69	158.78	0	0	0.00055028	290.76	0	0	20	
30	5.09	0.17	9.6	0.2	5	1.56E-06	3.20E-06	3	127.69	135.55	169.89	0	0	0.00056525	300.75	0	0	20	
31	5.25	0.16	9.5	0.2	5	1.35E-06	2.92E-06	3	134.58	146.64	183.79	0	0	0.00051149	312.81	0	0	20	
32	5.41	0.16	10.7	0.2	5	1.44E-06	3.19E-06	3	138.66	149.47	187.33	0	0	0.00050662	315.82	0	0	20	
33	5.58	0.17	10.5	0.2	5	1.50E-06	3.42E-06	4	142.24	152.14	190.68	0	0	0.00053355	318.62	0	0	20	
34	5.74	0.16	10.3	0.2	5	1.71E-06	3.77E-06	3	137.88	144.07	180.57	0	0	0.00051603	310.06	0	0	20	
35	5.91	0.17	9.8	0.1	5	1.71E-06	3.47E-06	3	126.98	132.67	166.28	0	0	0.00057135	297.54	0	0	20	
36	6.07	0.16	8.2	0.1	5	1.61E-06	2.90E-06	3	112.37	118.62	148.67	0	0	0.00056869	281.35	0	0	20	
37	6.23	0.16	7.2	0.1	5	1.10E-06	1.78E-06	3	101.5	114.89	144	0	0	0.00057785	276.89	0	0	20	
38	6.4	0.17	7.5	0.1	5	8.34E-07	1.27E-06	3	94.84	112.81	141.39	0	0	0.00061958	274.38	0	0	20	
39	6.56	0.16	6.8	0.1	4	4.77E-07	7.02E-07	3	91.92	120.97	151.62	0.47	2.45	0.00056314	284.12	1.37	3.45	20	
40	6.73	0.17	6.6	0.2	4	2.73E-07	3.84E-07	3	87.59	0	159.77	0.45	2.27	0.00058287	291.66	1.36	2.63	20	
41	6.89	0.16	6.6	0.2	4	2.19E-07	3.17E-07	3	90.26	0	171.34	0.46	2.29	0.00052973	302.04	1.37	2.26	20	
42	7.05	0.16	7.4	0.2	4	2.78E-07	4.34E-07	3	97.57	0	177.44	0.5	2.42	0.00052056	307.36	1.39	2.44	20	
43	7.22	0.17	8.2	0.2	4	4.60E-07	8.39E-07	3	113.77	150.69	188.86	0.58	2.75	0.00053611	317.1	1.43	2.84	20	
44	7.38	0.16	10.1	0.2	5	8.06E-07	1.74E-06	4	134.63	161.13	201.95	0	0	0.00048794	327.91	0	0	20	
45	7.55	0.17	11.9	0.2	5	1.22E-06	2.99E-06	4	152.68	169.44	212.37	0	0	0.00050556	336.26	0	0	20	
46	7.71	0.16	12.1	0.2	5	8.99E-07	2.32E-06	4	160.92	188.82	236.66	0	0	0.00045074	354.97	0	0	20	
47	7.87	0.16	11.9	0.4	4	5.87E-07	1.50E-06	4	159.87	202.61	253.94	0.82	3.55	0.00043514	367.7	1.56	2.4	20	
48	8.04	0.17	11.7	0.4	4	4.01E-07	1.02E-06	4	158.36	215.07	269.55	0.81	3.44	0.00044874	378.84	1.56	1.98	20	
49	8.2	0.16	11.8	0.4	4	3.96E-07	1.01E-06	4	159.17	216.64	271.52	0.81	3.39	0.00042082	380.21	1.56	1.99	20	
50	8.37	0.17	12.1	0.4	4	4.73E-07	1.23E-06	4	161.78	213.19	267.19	0.83	3.37	0.00045073	377.17	1.55	2.21	20	
51	8.53	0.16	12.3	0.3	4	6.16E-07	1.66E-06	5	167.68	210.66	264.03	0.86	3.43	0.00042675	374.93	1.55	2.52	20	
52	8.69	0.16	13.1	0.3	5	8.92E-07	2.55E-06	5	178.26	209.46	262.53	0	0	0.00042796	373.87	0	0	20	
53	8.86	0.17	14.4	0.3	5	1.58E-06	5.05E-06	5	199.61	211.51	265.09	0	0	0.0004525	375.69	0	0	20	
54	9.02	0.16	16.9	0.2	5	3.26E-06	1.21E-05	5	231.69	215.29	269.83	0	0	0.00042213	379.03	0	0	20	
55	9.19	0.17	20	0.2	5	5.56E-06	2.26E-05	6	253.94	214.3	268.59	0	0	0.00044955	378.16	0	0	20	
56	9.35	0.16	19.2	0.2	5	4.24E-06	1.72E-05	6	252.87	224.1	280.88	0	0	0.00041375	386.71	0	0	20	

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57	9.51	0.16	16.7	0.3	5	2.27E-06	8.68E-06	6	239.2	237.45	297.6	0	0	0.00040195	398.06	0	0	20
58	9.68	0.17	17.1	0.4	5	1.48E-06	5.57E-06	6	234.88	251.81	315.6	0	0	0.00041472	409.92	0	0	20
59	9.84	0.16	18.3	0.4	5	1.36E-06	5.22E-06	6	240.37	261.82	328.15	0	0	0.00038278	417.99	0	0	20
60	10.01	0.17	17.9	0.4	5	1.55E-06	6.00E-06	6	241.18	256.37	321.31	0	0	0.00041102	413.61	0	0	20
61	10.17	0.16	17.3	0.3	5	1.34E-06	4.79E-06	6	223.31	243.8	305.56	0	0	0.00039668	403.35	0	0	20
62	10.34	0.17	14.5	0.3	5	1.06E-06	3.23E-06	5	190.92	217.53	272.64	0	0	0.00044619	381	0	0	20
63	10.5	0.16	11	0.2	4	4.32E-07	1.04E-06	4	150.63	201.84	252.97	0.77	2.5	0.00043597	367	1.42	2.82	20
64	10.66	0.16	8.7	0.3	4	1.43E-07	2.73E-07	4	118.74	0	243.44	0.61	1.94	0.00044442	360.02	1.34	1.98	20
65	10.83	0.17	7.7	0.4	3	5.66E-08	1.04E-07	4	114.9	0	278.67	0.59	1.85	0.00044134	385.19	1.35	1.23	20
66	10.99	0.16	10.2	0.7	3	5.02E-08	1.02E-07	4	126.91	0	314.54	0.65	2.02	0.00039098	409.23	1.39	1.06	20
67	11.16	0.17	11.3	0.7	3	6.40E-08	1.51E-07	5	147.3	0	349.38	0.75	2.3	0.00039416	431.3	1.45	1.05	20
68	11.32	0.16	12.1	0.7	3	1.06E-07	2.88E-07	5	169.52	0	366.98	0.86	2.61	0.00036197	442.03	1.5	1.21	20
69	11.48	0.16	15	0.7	4	1.88E-07	5.96E-07	6	198.28	0	387.17	1.01	3.01	0.00035241	454.02	1.55	1.42	20
70	11.65	0.17	17.5	0.7	4	2.57E-07	8.93E-07	6	216.81	0	399.91	1.11	3.25	0.00036841	461.44	1.58	1.55	20
71	11.81	0.16	16.1	0.7	4	2.46E-07	8.07E-07	6	205.03	0	381.31	1.05	3.03	0.0003551	450.58	1.55	1.62	20
72	11.98	0.17	12.5	0.5	4	2.04E-07	5.90E-07	5	180.64	0	347.42	0.92	2.63	0.00039527	430.09	1.48	1.69	20
73	12.14	0.16	12.3	0.4	3	9.88E-08	2.52E-07	5	159.03	0	348.74	0.81	2.29	0.00037131	430.91	1.43	1.33	20
74	12.3	0.16	11.5	0.9	3	6.53E-08	1.70E-07	6	162.18	0	383.29	0.83	2.3	0.00035418	451.75	1.45	1.06	20
75	12.47	0.17	13.2	1	3	4.66E-08	1.28E-07	6	171.38	0	430.48	0.87	2.4	0.00035509	478.75	1.48	0.86	20
76	12.63	0.16	14.3	1.1	3	1.31E-07	4.97E-07	7	237.03	0	494.03	1.21	3.28	0.00031197	512.87	1.62	1.08	20
77	12.8	0.17	25.5	1.2	3	2.44E-07	1.15E-06	9	293.45	0	546.32	1.5	4	0.00031521	539.33	1.71	1.22	20
78	13.06	0.26	25.2	1.3	4	3.59E-07	1.94E-06	9	336.47	0	584.15	1.72	4.5	0.00046621	557.69	1.77	1.33	20
79	13.12	0.06	23.4	1.3	4	3.47E-07	1.88E-06	10	338.67	0	591.69	1.73	4.51	0.0001069	561.28	1.77	1.3	20
80	13.29	0.17	25.9	1.3	4	3.68E-07	2.01E-06	10	340.98	470.22	589.34	1.74	4.48	0.00030348	560.16	1.77	1.35	20
81	13.45	0.16	25.7	1.2	4	4.04E-07	2.24E-06	10	346.01	469.23	588.1	1.77	4.49	0.00028593	559.57	1.77	1.4	20
82	13.62	0.17	24.5	1.2	4	4.10E-07	2.22E-06	9	338.97	458.56	574.72	1.73	4.34	0.00030732	553.17	1.75	1.45	20
83	13.78	0.16	24.4	1.1	4	3.86E-07	2.07E-06	9	335.35	458.58	574.76	1.71	4.25	0.00028923	553.19	1.74	1.44	20
84	13.94	0.16	24.9	1.2	4	3.99E-07	2.17E-06	9	339.84	461.91	578.92	1.73	4.26	0.00028819	555.19	1.74	1.46	20
85	14.11	0.17	25.4	1.2	4	3.81E-07	2.12E-06	10	347.42	476.13	596.75	1.77	4.3	0.00030159	563.67	1.75	1.41	20
86	14.27	0.16	26	1.3	4	4.04E-07	2.29E-06	10	354.25	480.41	602.11	1.81	4.33	0.00028259	566.2	1.75	1.44	20
87	14.44	0.17	26.3	1.2	4	3.87E-07	2.21E-06	10	356.99	487.88	611.48	1.82	4.32	0.00029794	570.58	1.75	1.41	20
88	14.6	0.16	26	1.3	4	3.92E-07	2.26E-06	10	359.84	490.55	614.82	1.84	4.3	0.00027965	572.14	1.75	1.42	20
89	14.76	0.16	26.6	1.3	4	3.70E-07	2.17E-06	10	365.64	503.85	631.49	1.87	4.32	0.00027594	579.84	1.76	1.37	20
90	14.93	0.17	27.6	1.4	4	3.71E-07	2.24E-06	11	377.1	519.41	651	1.92	4.41	0.00028876	588.73	1.77	1.35	20
91	15.09	0.16	28.5	1.5	4	3.70E-07	2.30E-06	11	388.07	534.58	670	1.98	4.49	0.00026789	597.27	1.78	1.32	20
92	15.26	0.17	29	1.5	4	3.76E-07	2.38E-06	11	395.97	543.99	681.8	2.02	4.53	0.00028216	602.5	1.79	1.32	20
93	15.42	0.16	29.3	1.5	4	3.99E-07	2.55E-06	11	398.82	542.13	679.47	2.03	4.51	0.00026601	601.47	1.78	1.36	20
94	15.58	0.16	29.1	1.4	4	4.13E-07	2.64E-06	11	399.09	539.14	675.73	2.04	4.47	0.00026675	599.81	1.78	1.39	20
95	15.75	0.17	29	1.4	4	4.35E-07	2.83E-06	11	406.3	543.6	681.31	2.07	4.5	0.00028226	602.28	1.78	1.42	20
96	15.91	0.16	30.8	1.5	4	4.71E-07	3.22E-06	12	426.29	562.25	704.69	2.17	4.68	0.00026121	612.53	1.8	1.42	20
97	16.08	0.17	33.4	1.6	4	5.77E-07	4.21E-06	12	455.96	579.7	726.56	2.33	4.95	0.00027333	621.97	1.83	1.49	20
98	16.24	0.16	35.4	1.5	4	6.93E-07	5.26E-06	13	473.98	582.94	730.62	2.42	5.09	0.00025653	623.7	1.85	1.58	20
99	16.4	0.16	34.6	1.4	4	7.78E-07	5.96E-06	12	478.29	576.12	722.07	2.44	5.09	0.00025805	620.04	1.85	1.67	20
100	16.57	0.17	34	1.4	4	7.12E-07	5.35E-06	12	469.51	574.71	720.3	2.4	4.95	0.00027451	619.28	1.83	1.64	20
101	16.73	0.16	33.3	1.5	4	6.14E-07	4.52E-06	12	459.52	577.67	724.01	2.34	4.79	0.0002577	620.87	1.82	1.57	20
102	16.9	0.17	32.4	1.5	4	5.54E-07	3.99E-06	12	449.48	575.68	721.51	2.29	4.64	0.00027428	619.8	1.8	1.53	20
103	17.06	0.16	32.1	1.4	4	5.32E-07	3.72E-06	12	435.9	562.34	704.8	2.22	4.46	0.00026119	612.58	1.78	1.56	20
104	17.23	0.17	30.6	1.3	4	5.25E-07	3.57E-06	12	425.12	549.88	689.18	2.17	4.31	0.00028064	605.76	1.76	1.59	20
105	17.39	0.16	30.2	1.3	4	5.14E-07	3.40E-06	11	413.36	536.72	672.69	2.11	4.15	0.00026735	598.46	1.74	1.63	20
106	17.55	0.16	29.6	1.2	4	5.08E-07	3.32E-06	11	408.09	530.97	665.48	2.08	4.06	0.00026879	595.25	1.73	1.65	20
107	17.72	0.17	29.4	1.2	4	5.58E-07	3.64E-06	11	407.81	521.64	653.79	2.08	4.02	0.00028814	589.99	1.72	1.75	20
108	17.88	0.16	30.1	1.1	4	6.24E-07	4.15E-06	11	414.85	520.02	651.76	2.12	4.05	0.00027161	589.08	1.72	1.83	20
109	18.05	0.17	31.1	1.1	4	6.76E-07	4.60E-06	11	424.96	524.99	657.99	2.17	4.11	0.00028722	591.89	1.73	1.87	20
110	18.21	0.16	31.5	1.2	4	7.08E-07	4.97E-06	12	437.83	536.37	672.25	2.23	4.2	0.00026744	598.27	1.74	1.88	20
111	18.37	0.16	32.9	1.2	4	7.26E-07	5.28E-06	12	454.65	554.56	695.05	2.32	4.32	0.00026302	608.33	1.76	1.84	20
112	18.54	0.17	34.9	1.3	4	9.68E-07	7.71E-06	13	497.23	575.65	721.49	2.54	4.68	0.00027429	619.79	1.8	1.96	20
113	18.7	0.16	40.9	1.3	4	1.09E-06	9.19E-06	13	527.27	597.72	749.14	2.69	4.92	0.00025334	631.55	1.83	1.98	20
114	18.87	0.17	39.9	1.4	4	9.90E-07	8.29E-06	13	523.32	603.48	756.37	2.67	4.84	0.00026789	634.59	1.83	1.91	20
115	19.03	0.16	34.4	1.4	4	7.66E-07	6.34E-06	14	516.67	624.13	782.24	2.64	4.74	0.00024792	645.36	1.82	1.72	20

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116	19.19	0.16	39.7	1.7	4	7.71E-07	6.92E-06	15	560.03	675.66	846.82	2.86	5.09	0.00023828	671.47	1.87	1.62	20
117	19.36	0.17	48.9	2.1	4	7.90E-07	7.58E-06	16	599	719.53	901.81	3.06	5.4	0.00024534	692.93	1.9	1.55	20
118	19.52	0.16	42.8	2	4	6.16E-07	5.52E-06	15	559.57	703.13	881.26	2.85	5	0.00023358	684.98	1.86	1.47	20
119	19.69	0.17	31.5	1.6	4	3.27E-07	2.27E-06	12	433.29	0	765.2	2.21	3.84	0.00026634	638.29	1.71	1.38	20
120	19.85	0.16	22.2	1.1	3	1.29E-07	6.20E-07	10	300.73	0	628.7	1.53	2.64	0.00027654	578.57	1.53	1.25	20
121	20.01	0.16	14.4	0.9	3	5.00E-08	1.69E-07	7	210.47	0	522.04	1.07	1.84	0.00030348	527.21	1.36	1.13	20
122	20.18	0.17	12.1	0.8	3	2.61E-08	7.01E-08	6	167.38	0	466.84	0.85	1.45	0.00034098	498.56	1.26	1.05	20
123	20.34	0.16	12.9	0.7	3	2.84E-08	7.30E-08	6	160.6	0	441.37	0.82	1.38	0.00033005	484.77	1.24	1.15	20
124	20.51	0.17	12.9	0.6	3	3.74E-08	9.84E-08	6	164.36	0	429.73	0.84	1.4	0.0003554	478.33	1.24	1.3	20
125	20.67	0.16	12.9	0.6	3	4.07E-08	1.10E-07	6	168.49	0	433.87	0.86	1.42	0.0003329	480.63	1.25	1.33	20
126	20.83	0.16	13.8	0.7	3	4.50E-08	1.31E-07	7	181.87	0	459.88	0.93	1.52	0.00032334	494.83	1.28	1.3	20
127	21	0.17	15.8	0.8	3	6.80E-08	2.25E-07	7	206.94	0	485.49	1.06	1.72	0.00033437	508.42	1.33	1.41	20
128	21.16	0.16	18.3	0.7	3	8.03E-08	2.78E-07	7	216.42	0	492.76	1.1	1.79	0.00031237	512.21	1.34	1.48	20
129	21.33	0.17	15.9	0.7	3	6.95E-08	2.33E-07	7	209.64	0	489.95	1.07	1.72	0.00033284	510.75	1.33	1.43	20
130	21.49	0.16	14.4	0.8	3	4.97E-08	1.54E-07	7	193.66	0	480.89	0.99	1.57	0.00031621	506	1.29	1.32	20
131	21.65	0.16	14.9	0.7	3	4.67E-08	1.43E-07	7	191.37	0	480.66	0.98	1.54	0.00031628	505.88	1.28	1.3	20
132	21.82	0.17	15.4	0.7	3	4.78E-08	1.48E-07	7	193.29	0	483.35	0.99	1.55	0.00033511	507.3	1.28	1.32	20
133	21.98	0.16	14.8	0.8	3	4.85E-08	1.55E-07	7	198.89	0	496.03	1.01	1.58	0.00031134	513.91	1.29	1.3	20
134	22.15	0.17	16.1	0.8	3	5.63E-08	1.91E-07	7	211.42	0	513.23	1.08	1.67	0.00032521	522.74	1.32	1.32	20
135	22.31	0.16	18.1	0.8	3	7.94E-08	2.76E-07	7	216.76	0	494.44	1.11	1.7	0.00031184	513.08	1.32	1.55	20
136	22.47	0.16	16	0.5	3	8.59E-08	2.91E-07	7	211.62	0	475.95	1.08	1.64	0.00031785	503.39	1.31	1.67	20
137	22.64	0.17	15	0.6	4	1.03E-07	3.49E-07	7	211.16	0	459.39	1.08	1.63	0.00034374	494.56	1.3	1.86	20
138	22.8	0.16	17.9	0.6	4	4.03E-07	2.07E-06	9	319.7	433.67	543.53	1.63	2.45	0.00029743	537.95	1.48	2.4	20
139	22.97	0.17	39.1	0.8	5	1.98E-06	1.67E-05	13	526.94	535.9	671.66	0	0	0.00028428	598	0	0	20
140	23.13	0.16	59.6	1.1	5	4.74E-06	5.51E-05	16	725.29	629.89	789.46	0	0	0.00024679	648.33	0	0	20
141	23.3	0.17	60.7	1.2	5	4.06E-06	4.96E-05	17	762.97	681.62	854.3	0	0	0.00025206	674.43	0	0	20
142	23.46	0.16	47.5	1.4	5	2.25E-06	2.39E-05	16	662.25	658.19	824.93	0	0	0.00024143	662.73	0	0	20
143	23.62	0.16	37.8	1.1	4	7.97E-07	6.49E-06	13	508.28	609.49	763.9	2.59	3.76	0.00025089	637.74	1.7	2.12	20
144	23.79	0.17	27.5	1.1	4	4.55E-07	3.20E-06	12	438.43	581.86	729.27	2.24	3.22	0.00027282	623.12	1.62	1.88	20
145	23.95	0.16	31.9	1.3	4	3.54E-07	2.31E-06	12	407.59	0	709.63	2.08	2.97	0.0002603	614.67	1.58	1.8	20
146	24.12	0.17	31.1	1	4	3.72E-07	2.36E-06	11	395.77	544.67	682.66	2.02	2.86	0.00028198	602.88	1.56	1.92	20
147	24.28	0.16	24.9	0.8	4	3.07E-07	1.71E-06	10	347.95	0	621.56	1.78	2.5	0.00027813	575.27	1.5	2.01	20
148	24.44	0.16	21.7	0.8	4	2.33E-07	1.26E-06	10	337.97	0	634.71	1.72	2.41	0.00027524	581.32	1.48	1.81	20
149	24.61	0.17	28.9	1.2	4	5.18E-07	3.64E-06	12	439.39	569.7	714.03	2.24	3.12	0.00027571	616.58	1.61	2.06	20
150	24.77	0.16	46.6	1.2	5	1.64E-06	1.60E-05	15	609.59	641.34	803.82	0	0	0.00024457	654.2	0	0	20
151	24.94	0.17	58.8	1.1	5	2.29E-06	2.33E-05	15	634.7	628.7	787.97	0	0	0.00026246	647.72	0	0	20
152	25.1	0.16	34.3	0.9	5	1.52E-06	1.32E-05	13	540.18	576.36	722.37	0	0	0.00025799	620.17	0	0	20
153	25.26	0.16	26.2	0.8	4	6.69E-07	4.42E-06	11	412.56	510.64	640.01	2.1	2.85	0.00027409	583.74	1.56	2.58	20
154	25.43	0.17	30.6	0.7	4	6.28E-07	4.02E-06	11	399.43	500.14	626.84	2.04	2.74	0.00029427	577.71	1.76	2.6	40
155	25.59	0.16	31.1	0.8	4	6.81E-07	4.46E-06	11	408.58	504.11	631.81	2.08	2.79	0.00027587	579.99	1.78	2.66	40
156	25.76	0.17	28.2	0.8	4	4.63E-07	2.87E-06	11	387.79	513.14	643.13	1.98	2.63	0.00029051	585.17	1.52	2.33	20
157	25.92	0.16	26.5	0.9	4	3.73E-07	2.25E-06	11	376.06	517.27	648.31	1.92	2.53	0.00027233	587.52	1.5	2.17	20
158	26.08	0.16	28.8	0.9	4	3.48E-07	2.07E-06	11	370.8	0	647.36	1.89	2.48	0.00027253	587.09	1.5	2.14	20
159	26.25	0.17	27.2	0.8	4	3.58E-07	2.07E-06	10	360.55	0	626.42	1.84	2.4	0.00029436	577.52	1.48	2.25	20
160	26.41	0.16	24.5	0.7	4	3.04E-07	1.59E-06	10	326.85	0	584.74	1.67	2.16	0.00028675	557.97	1.43	2.33	20
161	26.58	0.17	21.8	0.6	4	2.44E-07	1.13E-06	9	289.7	0	539.46	1.48	1.9	0.00031721	535.93	1.37	2.41	20
162	26.74	0.16	19.2	0.5	4	1.84E-07	7.79E-07	8	264.47	0	518.22	1.35	1.73	0.0003046	525.28	1.33	2.33	20
163	26.9	0.16	18.9	0.6	4	1.81E-07	7.46E-07	8	257.19	0	505.43	1.31	1.67	0.00030843	518.75	1.33	2.41	37.85
164	27.07	0.17	20.1	0.5	4	1.95E-07	8.45E-07	8	269.98	0	523.34	1.38	1.74	0.00032206	527.86	1.35	2.38	39.06
165	27.23	0.16	21.7	0.6	4	2.36E-07	1.10E-06	9	290.81	0	544.77	1.48	1.86	0.00029709	538.56	1.4	2.42	40
166	27.4	0.17	23	0.7	4	2.11E-07	1.03E-06	9	304.52	0	582.02	1.55	1.94	0.00030539	556.67	1.44	2.18	40
167	27.56	0.16	23	0.8	4	1.65E-07	8.09E-07	10	306.07	0	611.62	1.56	1.94	0.00028038	570.65	1.44	1.91	40
168	27.72	0.16	22.1	0.9	4	1.39E-07	6.66E-07	10	299.95	0	618.64	1.53	1.89	0.00027878	573.92	1.43	1.8	39.37
169	27.89	0.17	22.1	0.8	4	1.25E-07	5.85E-07	10	293.25	0	616.57	1.5	1.84	0.0002967	572.96	1.41	1.76	39.19
170	28.05	0.16	21.6	0.8	4	1.27E-07	6.01E-07	10	295.37	0	618.99	1.51	1.84	0.00027871	574.08	1.41	1.77	39.09
171	28.22	0.17	22.6	0.9	4	1.28E-07	6.22E-07	10	302.55	0	632.77	1.54	1.87	0.00029289	580.43	1.43	1.75	39.01
172	28.38	0.16	23.7	0.9	4	1.23E-07	6.24E-07	10	316.34	0	666.52	1.61	1.95	0.00026859	595.71	1.46	1.64	39.07
173	28.54	0.16	24.6	1.1	4	1.41E-07	7.54E-07	11	333.17	0	684.73	1.7	2.04	0.00026499	603.79	1.5	1.67	39.35
174	28.71	0.17	26.2	1	4	1.47E-07	8.46E-07	11	358.35	0	730.99	1.83	2.18	0.0002725	623.86	1.56	1.58	40

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175	28.87	0.16	28.9	1.3	4	1.96E-07	1.21E-06	12	384.86	0	745.28	1.96	2.33	0.000254	629.93	1.62	1.7	40
176	29.04	0.17	30	1.1	4	2.14E-07	1.37E-06	12	399.28	0	761.58	2.04	2.4	0.00026697	636.78	1.66	1.71	40
177	29.2	0.16	29.4	1.1	4	2.31E-07	1.45E-06	12	390.73	0	734.66	1.99	2.34	0.00025583	625.42	1.63	1.83	40
178	29.36	0.16	26.9	1	4	2.15E-07	1.30E-06	12	379.01	0	722.34	1.93	2.25	0.000258	620.15	1.59	1.83	40
179	29.53	0.17	27.5	1	4	1.66E-07	1.01E-06	12	378.99	0	756.51	1.93	2.24	0.00026786	634.65	1.59	1.62	40
180	29.69	0.16	29	1.5	4	1.85E-07	1.23E-06	13	416.06	0	814.44	2.12	2.45	0.00024298	658.5	1.68	1.56	40
181	29.86	0.17	34.6	1.5	4	2.33E-07	1.73E-06	14	462.03	0	867.28	2.36	2.7	0.00025017	679.53	1.79	1.58	40
182	30.02	0.16	37.4	1.4	4	3.38E-07	2.65E-06	14	488.63	0	857.55	2.49	2.84	0.00023679	675.71	1.84	1.79	40
183	30.19	0.17	34.4	1.2	4	2.85E-07	2.18E-06	14	476.06	0	861.61	2.43	2.75	0.00025099	677.31	1.81	1.7	40
184	30.35	0.16	31.8	1.6	4	2.74E-07	2.12E-06	14	483.62	0	881.71	2.47	2.78	0.00023352	685.16	1.82	1.65	40
185	30.51	0.16	38.7	1.6	4	1.98E-07	1.47E-06	14	463.56	0	896.56	2.37	2.65	0.00023158	690.91	1.77	1.48	40
186	30.68	0.17	31.6	1.5	4	1.61E-07	1.09E-06	13	423.2	0	850.02	2.16	2.41	0.0002527	672.74	1.49	1.48	20
187	30.84	0.16	24.4	1.2	3	9.24E-08	5.18E-07	12	350.29	0	777.52	1.79	1.98	0.00024868	643.41	1.4	1.38	20
188	31.01	0.17	23.6	1.1	3	1.07E-07	5.71E-07	11	334.51	0	723.5	1.71	1.88	0.00027391	620.65	1.44	1.57	38.87
189	31.17	0.16	27.1	0.9	4	1.55E-07	8.55E-07	11	344.15	0	695.53	1.76	1.93	0.00026292	608.54	1.45	1.84	40
190	31.33	0.16	25.8	0.8	4	2.42E-07	1.39E-06	11	357.12	0	665.82	1.82	1.99	0.00026873	595.4	1.47	2.23	40
191	31.5	0.17	26.3	0.7	4	2.26E-07	1.27E-06	11	352.1	0	664.91	1.8	1.95	0.00028572	594.99	1.46	2.2	40
192	31.66	0.16	26.1	0.9	4	1.87E-07	1.07E-06	11	356.29	0	696.32	1.82	1.96	0.00026278	608.88	1.46	1.98	40
193	31.83	0.17	26.6	1.1	4	1.29E-07	7.54E-07	12	364.85	0	762.42	1.86	2	0.00026682	637.13	1.48	1.61	40
194	31.99	0.16	28.6	1.4	3	1.16E-07	6.97E-07	12	376.11	0	801.51	1.92	2.05	0.00024493	653.26	1.42	1.48	20
195	32.15	0.16	29.1	1.3	3	1.13E-07	6.96E-07	12	384.43	0	822.67	1.96	2.09	0.00024175	661.83	1.43	1.44	20
196	32.32	0.17	28.9	1.3	3	1.30E-07	8.12E-07	12	388.81	0	810.83	1.98	2.1	0.00025874	657.04	1.43	1.53	20
197	32.48	0.16	29.4	1.2	3	1.32E-07	8.13E-07	12	385.59	0	802.78	1.97	2.07	0.00024473	653.77	1.42	1.56	20
198	32.65	0.17	28.5	1.2	3	1.26E-07	7.60E-07	12	377.44	0	792.3	1.93	2.02	0.00026174	649.49	1.41	1.57	20
199	32.81	0.16	27.2	1.2	3	1.13E-07	6.60E-07	12	364.1	0	779.03	1.86	1.94	0.00024844	644.03	1.39	1.56	20
200	32.97	0.16	26.7	1.1	3	1.09E-07	6.23E-07	12	356.81	0	768.6	1.82	1.89	0.00025011	639.71	1.38	1.57	20
201	33.14	0.17	26.9	1.1	3	1.09E-07	6.15E-07	12	352.6	0	759.66	1.8	1.86	0.00026731	635.97	1.37	1.6	20
202	33.3	0.16	26.1	1.1	3	1.05E-07	5.91E-07	12	350.6	0	760.07	1.79	1.84	0.00025152	636.14	1.37	1.59	20
203	33.47	0.17	26.4	1.1	3	9.89E-08	5.49E-07	12	346.36	0	759.42	1.77	1.81	0.00026735	635.88	1.36	1.57	20
204	33.63	0.16	25.9	1.1	3	1.01E-07	5.59E-07	11	344.16	0	751.23	1.76	1.79	0.00025299	632.44	1.35	1.61	20
205	33.79	0.16	25.8	1	3	1.00E-07	5.54E-07	11	344.25	0	752.66	1.76	1.78	0.00025275	633.04	1.35	1.61	20
206	33.96	0.17	26.2	1.1	3	1.01E-07	5.70E-07	12	350.95	0	766.01	1.79	1.8	0.00026619	638.63	1.42	1.6	37.85
207	34.12	0.16	27.2	1.2	3	1.06E-07	6.23E-07	12	365.81	0	791.61	1.87	1.87	0.00024645	649.21	1.37	1.57	20
208	34.29	0.17	29.1	1.2	3	1.15E-07	6.88E-07	12	373.58	0	796.94	1.91	1.9	0.00026098	651.39	1.38	1.6	20
209	34.45	0.16	27.9	1.1	4	1.21E-07	7.12E-07	12	368.23	0	778.78	1.88	1.87	0.00024847	643.93	1.37	1.67	20
210	34.61	0.16	26.1	1	4	1.22E-07	6.83E-07	11	348.49	0	735.23	1.78	1.76	0.00025573	625.66	1.39	1.8	38.55
211	34.78	0.17	24.5	0.8	4	1.23E-07	6.42E-07	11	326.57	0	688.48	1.67	1.64	0.00028078	605.45	1.33	1.96	38.32
212	34.94	0.16	23.2	0.7	4	1.15E-07	5.46E-07	10	297.68	0	635.5	1.52	1.49	0.00027507	581.68	1.26	2.13	37.97
213	35.11	0.17	19.9	0.6	4	8.76E-08	3.67E-07	9	261.7	0	586.51	1.34	1.3	0.00030421	558.82	1.18	2.18	36.06
214	35.27	0.16	17.2	0.5	4	6.65E-08	2.35E-07	8	220.55	0	519.6	1.13	1.09	0.00030419	525.98	1.09	2.36	34.06
215	35.43	0.16	14.7	0.3	3	4.51E-08	1.18E-07	7	163.84	0	460.86	0.93	0.9	0.000323	495.35	1.07	2.49	20
216	35.6	0.17	12.2	0.3	3	2.98E-08	5.47E-08	6	114.48	0	416.13	0.78	0.75	0.00036116	470.7	1.01	2.55	20
217	35.76	0.16	11	0.3	3	2.24E-08	3.60E-08	6	100.13	0	410.66	0.73	0.7	0.00034217	467.6	0.98	2.39	20
218	35.93	0.17	12.7	0.3	3	2.26E-08	3.64E-08	6	100.51	0	411.97	0.73	0.7	0.00036298	468.34	0.91	2.4	28.91
219	36.09	0.16	12.3	0.3	3	2.44E-08	4.09E-08	6	104.43	0	414.88	0.75	0.71	0.00034043	469.99	0.92	2.45	28.92
220	36.26	0.17	11.7	0.3	3	1.73E-08	2.67E-08	6	96.63	0	425.98	0.72	0.68	0.00035696	476.24	0.9	2.13	28.68
221	36.42	0.16	11.6	0.4	3	1.33E-08	1.98E-08	6	92.66	0	438.01	0.71	0.67	0.00033132	482.91	0.9	1.9	28.27
222	36.58	0.16	11.8	0.4	3	1.02E-08	1.44E-08	6	87.95	0	448.84	0.69	0.65	0.0003273	488.85	0.96	1.7	20
223	36.75	0.17	11.1	0.4	3	1.04E-08	1.38E-08	6	82.62	0	434.4	0.67	0.63	0.00035349	480.92	0.95	1.8	20
224	36.91	0.16	10.8	0.3	3	8.77E-09	1.07E-08	6	76.21	0	431.4	0.65	0.6	0.00033385	479.26	0.86	1.73	27.54
225	37.08	0.17	10.7	0.4	3	9.05E-09	1.12E-08	6	77.37	0	433.28	0.65	0.6	0.00035395	480.3	0.86	1.75	28.19
226	37.24	0.16	11.3	0.4	3	8.95E-09	1.27E-08	6	88.68	0	465.78	0.7	0.64	0.00032129	497.99	0.88	1.59	28.09
227	37.4	0.16	12.9	0.5	3	1.03E-08	1.76E-08	7	107.11	0	500.23	0.77	0.71	0.00031003	516.08	0.99	1.51	20
228	37.57	0.17	13.7	0.6	3	1.22E-08	2.54E-08	7	129.59	0	534.52	0.85	0.78	0.00031867	533.47	1.02	1.47	20
229	37.73	0.16	14.6	0.6	3	1.60E-08	3.97E-08	8	154.8	0	557.42	0.93	0.85	0.0002937	544.78	0.98	1.52	30.71
230	37.9	0.17	16.2	0.6	3	2.42E-08	6.94E-08	8	178.83	0	557.21	1.01	0.91	0.00031212	544.67	1.01	1.74	31.34
231	38.06	0.16	16.7	0.5	3	2.90E-08	8.56E-08	8	184.58	0	549.29	1.02	0.92	0.00029586	540.79	1.08	1.88	20
232	38.22	0.16	15.5	0.5	3	2.77E-08	7.16E-08	8	161.33	0	518.78	0.96	0.86	0.00030444	525.56	1.05	2.01	20
233	38.39	0.17	13.6	0.4	3	1.58E-08	3.34E-08	7	131.68	0	519.69	0.87	0.77	0.00032318	526.02	1.02	1.7	20

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234	38.55	0.16	13	0.6	3	1.00E-08	1.99E-08	8	124.42	0	550.15	0.85	0.75	0.00029563	541.21	0.93	1.38	29.74
235	38.72	0.17	14.4	0.8	3	1.86E-08	6.40E-08	9	215.1	0	648.03	1.11	0.98	0.00028942	587.39	1.1	1.37	20
236	38.88	0.16	25.1	1	3	3.33E-08	1.44E-07	10	269.17	0	718.52	1.37	1.21	0.00025869	618.51	1.18	1.44	20
237	39.04	0.16	23.9	1	3	5.54E-08	2.78E-07	11	313.48	0	763.34	1.6	1.4	0.00025098	637.51	1.25	1.57	20
238	39.21	0.17	24.2	1	3	5.20E-08	2.54E-07	11	304.85	0	750.86	1.56	1.36	0.00026887	632.28	1.23	1.58	20
239	39.37	0.16	23.3	0.9	3	5.17E-08	2.44E-07	11	295.25	0	728.04	1.51	1.31	0.00025699	622.6	1.22	1.64	20
240	39.54	0.17	21.9	0.8	3	5.21E-08	2.35E-07	10	281.2	0	692.21	1.43	1.24	0.00028003	607.08	1.2	1.76	20
241	39.7	0.16	21.2	0.7	3	4.41E-08	1.88E-07	10	265.93	0	674.66	1.36	1.17	0.00026696	599.34	1.17	1.73	20
242	39.86	0.16	19.7	0.8	3	3.60E-08	1.49E-07	10	258.97	0	681.77	1.32	1.13	0.00026556	602.49	1.16	1.62	20
243	40.03	0.17	20.2	0.9	3	3.39E-08	1.44E-07	10	265.37	0	706.29	1.35	1.16	0.00027722	613.23	1.13	1.53	33.62
244	40.19	0.16	22.3	0.9	3	5.04E-08	2.40E-07	11	296.84	0	735.29	1.51	1.29	0.00025572	625.69	1.21	1.65	20
245	40.36	0.17	26.5	0.9	3	6.37E-08	3.15E-07	11	308.85	0	733.15	1.58	1.34	0.0002721	624.78	1.23	1.78	20
246	40.52	0.16	22.8	0.8	3	6.20E-08	3.00E-07	11	302.14	0	720.86	1.54	1.3	0.00025826	619.52	1.22	1.81	20
247	40.68	0.16	20.9	0.8	3	4.64E-08	2.07E-07	10	277.93	0	698.8	1.42	1.19	0.00026231	609.97	1.14	1.74	34.09
248	40.85	0.17	21.2	0.8	3	4.12E-08	1.85E-07	11	280.84	0	721.54	1.43	1.2	0.00027428	619.81	1.14	1.62	35
249	41.01	0.16	23.2	1	3	3.81E-08	1.88E-07	12	308.43	0	803.44	1.57	1.31	0.00024463	654.04	1.18	1.4	36.77
250	41.18	0.17	26.4	1.5	3	8.87E-08	6.05E-07	14	425.56	0	951.59	2.17	1.8	0.00023883	711.79	1.42	1.48	38.24
251	41.34	0.16	46.3	1.8	4	1.69E-07	1.44E-06	17	531.49	0	1057.65	2.71	2.24	0.00021322	750.41	1.47	1.59	20
252	41.5	0.16	46.7	1.7	4	2.28E-07	2.04E-06	17	558.88	0	1053.83	2.85	2.35	0.0002136	749.06	1.49	1.75	20
253	41.67	0.17	33.2	1.3	3	1.22E-07	8.89E-07	15	455.37	0	961.26	2.32	1.91	0.00023763	715.4	1.39	1.63	20
254	41.83	0.16	24.4	1.2	3	4.79E-08	2.86E-07	13	372.41	0	930.82	1.9	1.55	0.00022728	703.98	1.29	1.3	20
255	42	0.17	28.2	1.8	3	4.34E-08	2.78E-07	14	399.63	0	1017.12	2.04	1.66	0.00023101	735.89	1.32	1.15	20
256	42.16	0.16	38.2	2.2	3	1.10E-07	9.30E-07	17	527.65	0	1134.66	2.69	2.18	0.00020585	777.25	1.45	1.34	20
257	42.32	0.16	52.3	1.9	4	2.38E-07	2.34E-06	18	614.25	0	1149.1	3.13	2.53	0.00020456	782.18	1.53	1.65	20
258	42.49	0.17	47.7	1.5	4	4.87E-07	5.25E-06	19	672.54	881.63	1104.98	3.43	2.76	0.00022164	767.02	1.58	2.1	20
259	42.65	0.16	51.2	1.4	4	6.91E-07	7.74E-06	19	699.76	861.21	1079.38	3.57	2.86	0.00021106	758.08	1.6	2.39	20
260	42.82	0.17	58.3	1.5	4	8.80E-07	1.07E-05	20	756.78	891.4	1117.23	3.86	3.08	0.00022042	771.26	1.65	2.47	20
261	42.98	0.16	60	1.7	5	1.07E-06	1.41E-05	21	824.87	937.97	1175.59	0	0	0.00020224	791.15	0	0	20
262	43.15	0.17	66.4	1.8	4	9.16E-07	1.21E-05	22	828.03	968.32	1213.63	4.22	3.35	0.00021148	803.85	1.69	2.3	20
263	43.31	0.16	58.9	1.9	4	8.34E-07	1.05E-05	21	782.18	930.27	1165.94	3.99	3.15	0.00020307	787.89	1.66	2.35	20
264	43.47	0.16	50.1	1.3	4	5.23E-07	5.54E-06	18	662.49	857.53	1074.77	3.38	2.66	0.00021151	756.46	1.56	2.26	20
265	43.64	0.17	40.6	1.2	4	3.22E-07	2.75E-06	16	533.9	0	945.6	2.72	2.14	0.00023959	709.55	1.45	2.29	20
266	43.8	0.16	31	1	4	1.22E-07	8.35E-07	14	428.6	0	905.18	2.19	1.71	0.00023047	694.22	1.34	1.84	20
267	43.97	0.17	26.9	1.3	3	7.93E-08	5.15E-07	14	404.9	0	923.84	2.07	1.61	0.00024239	701.34	1.31	1.6	20
268	44.13	0.16	34.7	1.5	3	8.82E-08	6.76E-07	16	478.04	0	1069.96	2.44	1.89	0.00021199	754.77	1.38	1.41	20
269	44.29	0.16	46.6	2.3	4	1.78E-07	1.71E-06	19	598.3	0	1178.94	3.05	2.36	0.00020195	792.27	1.5	1.55	20
270	44.46	0.17	52.6	2	4	2.43E-07	2.54E-06	20	653.54	0	1218.1	3.33	2.57	0.0002111	805.32	1.54	1.63	20
271	44.62	0.16	47.4	1.7	4	3.06E-07	3.15E-06	19	643.5	0	1150.05	3.28	2.52	0.00020447	782.51	1.53	1.86	20
272	44.79	0.17	43.1	1.5	4	2.88E-07	2.76E-06	18	599.33	0	1083.18	3.06	2.34	0.00022386	759.41	1.49	1.95	20
273	44.95	0.16	42.8	1.4	4	2.54E-07	2.34E-06	17	577.33	0	1067.57	2.95	2.24	0.00021222	753.92	1.62	1.92	40
274	45.11	0.16	41.8	1.6	4	2.28E-07	2.09E-06	17	570.8	0	1075.55	2.91	2.21	0.00021143	756.74	1.61	1.86	40
275	45.28	0.17	42.3	1.6	4	1.92E-07	1.69E-06	17	549.65	0	1069	2.8	2.12	0.00022534	754.43	1.44	1.79	20
276	45.44	0.16	38.8	1.4	4	1.52E-07	1.25E-06	16	511.77	0	1037.6	2.61	1.97	0.00021526	743.27	1.4	1.74	20
277	45.61	0.17	33.8	1.4	4	1.26E-07	9.65E-07	16	480.03	0	1008.05	2.45	1.84	0.00023205	732.61	1.43	1.71	38.75
278	45.77	0.16	35.3	1.4	4	1.23E-07	9.53E-07	16	484.02	0	1020.2	2.47	1.85	0.00021709	737.01	1.43	1.69	39.8
279	45.93	0.16	39.2	1.5	4	1.28E-07	1.05E-06	17	515.16	0	1078.66	2.63	1.96	0.00021113	757.83	1.48	1.61	40
280	46.1	0.17	40	1.9	3	1.10E-07	9.29E-07	17	528.1	0	1136.05	2.69	2	0.00021858	777.73	1.5	1.47	39.67
281	46.26	0.16	38.8	2	3	8.82E-08	7.30E-07	17	516.85	0	1156.88	2.64	1.95	0.00020387	784.83	1.4	1.36	20
282	46.43	0.17	37.8	1.8	3	7.21E-08	5.52E-07	16	477.65	0	1108.83	2.44	1.8	0.00022125	768.35	1.36	1.35	20
283	46.59	0.16	32.1	1.5	3	5.32E-08	3.62E-07	15	425.43	0	1043.48	2.17	1.59	0.00021466	745.37	1.3	1.33	20
284	46.75	0.16	27.5	1.5	3	3.09E-08	1.76E-07	14	356.43	0	964.51	1.82	1.33	0.00022327	716.61	1.22	1.24	20
285	46.92	0.17	22.9	1.3	3	1.52E-08	7.06E-08	12	289.28	0	889.61	1.48	1.08	0.00024701	688.23	1.14	1.11	20
286	47.08	0.16	18.7	1.1	3	8.61E-09	2.74E-08	10	198.64	0	789.22	1.18	0.86	0.00024683	648.23	1.05	1.09	20
287	47.25	0.17	16	0.8	3	5.44E-09	1.12E-08	9	128.14	0	690.1	0.95	0.69	0.00028045	606.16	0.98	1.12	20
288	47.41	0.16	13.4	0.6	3	4.61E-09	6.87E-09	8	93.09	0	607.14	0.81	0.59	0.00028141	568.56	0.92	1.26	20
289	47.57	0.16	12.8	0.5	3	4.10E-09	5.25E-09	8	80.05	0	576.1	0.75	0.54	0.0002889	553.83	0.9	1.3	20
290	47.74	0.17	13.5	0.6	3	4.06E-09	5.71E-09	8	87.8	0	605.41	0.79	0.57	0.00029943	567.75	0.91	1.22	20
291	47.9	0.16	15	0.8	3	4.77E-09	8.55E-09	9	112.01	0	665.31	0.89	0.64	0.00026883	595.17	0.95	1.14	20
292	48.07	0.17	17.2	0.9	3	5.15E-09	1.11E-08	9	134.14	0	719.14	0.98	0.7	0.00027473	618.78	0.98	1.07	20

CPT-1 Estimations

293	48.23	0.16	17.3	1	3	5.62E-09	1.42E-08	10	158.33	0	770.56	1.07	0.76	0.0002498	640.52	1.01	1.01	20
294	48.39	0.16	18.5	1.2	3	7.81E-09	2.86E-08	11	228.45	0	873.36	1.28	0.91	0.00023464	681.91	1.07	0.97	20
295	48.56	0.17	26.2	1.7	3	1.64E-08	8.61E-08	13	327.34	0	993.16	1.67	1.18	0.00023378	727.18	1.17	1.04	20
296	48.72	0.16	33.6	1.8	3	3.51E-08	2.29E-07	15	407.04	0	1076.12	2.08	1.46	0.00021138	756.94	1.26	1.2	20
297	48.89	0.17	36	1.6	3	4.03E-08	2.64E-07	15	408.88	0	1054.74	2.09	1.46	0.00022685	749.38	1.26	1.28	20
298	49.05	0.16	26.9	1.4	3	3.37E-08	1.97E-07	14	364.75	0	971.82	1.86	1.3	0.00022243	719.32	1.21	1.33	20
299	49.22	0.17	24	1.1	3	1.89E-08	8.97E-08	12	296.72	0	877.79	1.51	1.05	0.00024867	683.64	1.13	1.27	20
300	49.38	0.16	21.2	1	3	1.52E-08	5.99E-08	11	245.53	0	810.46	1.34	0.93	0.00024357	656.89	1.08	1.32	20
301	49.54	0.16	19.5	0.9	3	1.36E-08	4.74E-08	11	218.49	0	782.18	1.27	0.88	0.00024794	645.33	1.06	1.33	20
302	49.71	0.17	20.9	0.9	3	1.47E-08	4.83E-08	10	205.19	0	748.25	1.23	0.85	0.00026934	631.18	1.05	1.45	20
303	49.87	0.16	19.6	0.7	3	1.81E-08	5.87E-08	10	202.36	0	716.64	1.23	0.84	0.00025903	617.7	1.05	1.64	20
304	50.04	0.17	19.2	0.6	3	2.07E-08	6.29E-08	10	189.89	0	678.87	1.19	0.81	0.00028277	601.2	1.03	1.84	20

Sum 0.09316587

Vs of CPT 537.1065 (ft/s)
163.752 (m/s)

Extrapolated Vs 633.999 (ft/s)
Following Boore (2004) 193.2924 (m/s)

CPT-2 Estimations

In situ data										Estimations									
No	Depth (ft)	Thickness (ft)	qc (tsf)	fs (tsf)	SBTn	Ksbt (ft/s)	Cv (ft2/s)	SPT N60 (blows/ft)	Con. Mod. (tsf)	Es (tsf)	Go (tsf)	Su (tsf)	Su ratio	Thickness/ Vs (s)	Vs (ft/s)	Ko	Sensitivity	Peak phi (°)	
1	0.33	0.33	584.7	3.1	7	2.53E-02	7.58E-01	79	1867.32	1489.88	1867.32	0	0	0.00033096	997.1	0	0	20	
2	0.49	0.16	567	3.7	7	1.65E-02	4.95E-01	76	1868.76	1491.04	1868.76	0	0	0.000160403	997.49	0	0	20	
3	0.66	0.17	457.2	3.6	7	9.07E-03	2.55E-01	67	1754.19	1399.62	1754.19	0	0	0.000175905	966.43	0	0	20	
4	0.82	0.16	330.6	3.1	6	3.30E-03	8.05E-02	54	1522.85	1215.04	1522.85	0	0	0.000177689	900.45	0	0	20	
5	0.98	0.16	192.1	3.4	8	7.64E-04	1.57E-02	40	1284.96	1025.23	1284.96	0	0	0.00019344	827.13	0	0	20	
6	1.15	0.17	111.9	3.6	8	1.20E-04	1.99E-03	27	1035.42	826.14	1035.42	0	0	0.000228959	742.49	0	0	20	
7	1.31	0.16	61.8	3.1	8	2.83E-05	3.71E-04	19	818.73	653.24	818.73	0	0	0.000242336	660.24	0	0	20	
8	1.48	0.17	49	2.4	9	1.19E-05	1.25E-04	14	657.91	524.93	657.91	3.64	84.15	0.000287235	591.85	3	1.43	20	
9	1.64	0.16	42.1	2	9	9.86E-06	8.93E-05	12	565.8	451.44	565.8	3.03	63.15	0.000291513	548.86	3	1.48	20	
10	1.8	0.16	36.2	1.6	8	8.87E-06	7.02E-05	10	493.79	393.98	493.79	0	0	0.000312043	512.75	0	0	20	
11	1.97	0.17	30.8	1.2	8	8.96E-06	6.06E-05	9	422.42	337.04	422.42	0	0	0.000358461	474.25	0	0	20	
12	2.13	0.16	26.6	0.8	8	1.06E-05	5.99E-05	8	353.97	282.42	353.97	0	0	0.000368562	434.12	0	0	20	
13	2.3	0.17	23.5	0.5	5	1.47E-05	6.95E-05	6	294.7	235.14	294.7	0	0	0.000429163	396.12	0	0	20	
14	2.46	0.16	21.5	0.3	5	1.82E-05	7.40E-05	6	254	202.66	254	0	0	0.00043509	367.74	0	0	20	
15	2.62	0.16	19.2	0.3	6	1.99E-05	7.15E-05	5	224.24	178.92	224.24	0	0	0.000463057	345.53	0	0	20	
16	2.79	0.17	17	0.2	5	1.63E-05	5.48E-05	5	209.6	167.23	209.6	0	0	0.000508891	334.06	0	0	20	
17	2.95	0.16	15.9	0.2	5	1.15E-05	3.75E-05	4	204.26	162.97	204.26	0	0	0.000485187	329.77	0	0	20	
18	3.12	0.17	14.8	0.3	5	6.87E-06	2.29E-05	4	208.25	166.16	208.25	0	0	0.000510541	332.98	0	0	20	
19	3.28	0.16	13.7	0.3	5	4.38E-06	1.35E-05	4	191.85	169.01	211.83	0	0	0.000476432	335.83	0	0	20	
20	3.45	0.17	13.2	0.3	5	3.69E-06	1.10E-05	4	185.69	168.73	211.47	0	0	0.000506631	335.55	0	0	20	
21	3.61	0.16	13.5	0.3	5	2.92E-06	8.69E-06	4	185.61	175.94	220.51	0	0	0.000466962	342.64	0	0	20	
22	3.77	0.16	13.7	0.4	5	2.43E-06	7.30E-06	4	187.38	183.64	230.16	0	0	0.000457065	350.06	0	0	20	
23	3.94	0.17	13.6	0.4	5	2.44E-06	7.43E-06	4	190.5	186.66	233.94	0	0	0.000481682	352.93	0	0	20	
24	4.1	0.16	14.2	0.3	5	2.74E-06	8.37E-06	4	190.82	183.03	229.4	0	0	0.00045781	349.49	0	0	20	
25	4.27	0.17	13.8	0.3	5	3.47E-06	1.04E-05	4	186.45	171.34	214.75	0	0	0.00050275	338.14	0	0	20	
26	4.43	0.16	12.7	0.2	5	3.36E-06	9.48E-06	4	176	162.66	203.86	0	0	0.000485643	329.46	0	0	20	
27	4.59	0.16	12	0.2	5	2.75E-06	6.89E-06	4	156.66	150.2	188.25	0	0	0.000505386	316.59	0	0	20	
28	4.76	0.17	9.7	0.2	5	1.61E-06	3.51E-06	3	135.93	143.52	179.88	0	0	0.000549326	309.47	0	0	20	
29	4.92	0.16	8.3	0.2	5	1.08E-06	2.13E-06	3	122.74	139.22	174.49	0	0	0.000524934	304.8	0	0	20	
30	5.09	0.17	9.2	0.2	5	9.90E-07	1.92E-06	3	121.25	139.82	175.24	0	0	0.000556538	305.46	0	0	20	
31	5.25	0.16	9.4	0.2	5	1.49E-06	3.31E-06	3	138.42	148.2	185.75	0	0	0.000508776	314.48	0	0	20	
32	5.41	0.16	12	0.2	5	2.84E-06	7.69E-06	4	169.05	161.08	201.89	0	0	0.000488013	327.86	0	0	20	
33	5.58	0.17	15.8	0.2	5	4.37E-06	1.36E-05	4	194.04	171.03	214.36	0	0	0.000503212	337.83	0	0	20	
34	5.74	0.16	14.8	0.2	5	4.81E-06	1.56E-05	4	201.79	174.8	219.08	0	0	0.00046848	341.53	0	0	20	
35	5.91	0.17	13.7	0.2	5	3.79E-06	1.16E-05	4	190.44	172.27	215.91	0	0	0.000501401	339.05	0	0	20	
36	6.07	0.16	13.4	0.2	5	2.87E-06	8.18E-06	4	177.72	169.01	211.82	0	0	0.000476432	335.83	0	0	20	
37	6.23	0.16	12.1	0.2	5	1.68E-06	4.45E-06	4	164.99	172.84	216.63	0	0	0.000471115	339.62	0	0	20	
38	6.4	0.17	11	0.3	5	1.08E-06	2.71E-06	4	156.44	177.5	222.46	0	0	0.000493956	344.16	0	0	20	
39	6.56	0.16	11.6	0.3	5	1.04E-06	2.61E-06	4	156.35	178.63	223.89	0	0	0.000463419	345.26	0	0	20	
40	6.73	0.17	12.1	0.2	5	1.60E-06	4.30E-06	4	167.9	177.53	222.5	0	0	0.000493913	344.19	0	0	20	
41	6.89	0.16	13.5	0.2	5	2.34E-06	6.63E-06	4	176.64	174.27	218.42	0	0	0.000469181	341.02	0	0	20	
42	7.05	0.16	13.5	0.2	5	2.28E-06	6.46E-06	4	176.92	175.44	219.88	0	0	0.000467631	342.15	0	0	20	
43	7.22	0.17	12.2	0.2	5	1.50E-06	4.07E-06	4	169.74	181.61	227.62	0	0	0.000488323	348.13	0	0	20	
44	7.38	0.16	12	0.3	4	8.56E-07	2.25E-06	4	164.48	194.74	244.07	0.84	3.89	0.00044384	360.49	1.59	2.74	20	
45	7.55	0.17	12.4	0.4	4	4.75E-07	1.23E-06	4	161.58	212.82	266.74	0.82	3.74	0.000451108	376.85	1.6	2.02	20	
46	7.71	0.16	11.6	0.5	4	3.14E-07	7.87E-07	5	156.8	0	279.01	0.8	3.55	0.000415121	385.43	1.59	1.68	20	
47	7.87	0.16	11	0.5	4	2.37E-07	5.74E-07	4	151.53	0	283.7	0.77	3.36	0.000411681	388.65	1.57	1.52	20	
48	8.04	0.17	11.3	0.5	4	2.73E-07	6.72E-07	4	153.69	0	280.38	0.78	3.34	0.000439993	386.37	1.57	1.65	20	
49	8.2	0.16	12.1	0.4	4	4.82E-07	1.30E-06	5	168.03	220.69	276.59	0.86	3.58	0.000416938	383.75	1.58	2.1	20	
50	8.37	0.17	14.1	0.3	5	1.03E-06	2.99E-06	5	182.34	208.93	261.86	0	0	0.000455288	373.39	0	0	20	
51	8.53	0.16	14.4	0.2	5	1.86E-06	5.77E-06	5	193.85	199.45	249.98	0	0	0.00043856	364.83	0	0	20	
52	8.69	0.16	14.6	0.2	5	1.88E-06	5.91E-06	5	196.03	201.25	252.23	0	0	0.00043661	366.46	0	0	20	
53	8.86	0.17	14.6	0.3	5	1.06E-06	3.20E-06	5	188.45	214.66	269.03	0	0	0.000449177	378.47	0	0	20	
54	9.02	0.16	12.8	0.4	4	4.62E-07	1.28E-06	5	172.94	228.91	286.9	0.88	3.35	0.000409375	390.84	1.56	2.16	20	
55	9.19	0.17	11.3	0.5	4	2.06E-07	5.32E-07	5	161.15	0	309.32	0.82	3.06	0.000418905	405.82	1.54	1.51	20	
56	9.35	0.16	12.1	0.7	3	1.30E-07	3.35E-07	5	160.54	0	334.84	0.82	3	0.00037894	422.23	1.55	1.2	20	
57	9.51	0.16	12.7	0.8	3	1.15E-07	3.08E-07	5	167.85	0	358.38	0.86	3.08	0.000366284	436.82	1.57	1.09	20	

CPT-2 Estimations

58	9.68	0.17	12.9	0.8	3	1.06E-07	2.89E-07	5	169.54	0	366.85	0.86	3.06	0.000384659	441.95	1.57	1.06	20
59	9.84	0.16	12.5	0.8	3	1.11E-07	3.00E-07	5	168.92	0	362.73	0.86	3	0.000364083	439.46	1.56	1.1	20
60	10.01	0.17	12.6	0.7	3	1.58E-07	4.52E-07	6	178.55	0	359.6	0.91	3.11	0.000388518	437.56	1.57	1.28	20
61	10.17	0.16	15	0.6	5	1.23E-06	5.34E-06	7	271.79	301.44	377.81	0	0	0.000356745	448.5	0	0	20
62	10.34	0.17	32.5	0.3	5	6.04E-06	3.70E-05	8	382.77	305.4	382.77	0	0	0.000376573	451.44	0	0	20
63	10.5	0.16	33.1	0.3	5	1.35E-05	7.89E-05	8	364.82	291.08	364.82	0	0	0.000363034	440.73	0	0	20
64	10.66	0.16	23.1	0.3	5	5.84E-06	3.18E-05	7	339.53	283.98	355.92	0	0	0.000367546	435.32	0	0	20
65	10.83	0.17	18.5	0.4	5	1.56E-06	6.49E-06	6	259.61	275.67	345.51	0	0	0.000396363	428.9	0	0	20
66	10.99	0.16	16	0.5	5	9.48E-07	3.60E-06	6	237.1	275.56	345.37	0	0	0.000373126	428.81	0	0	20
67	11.16	0.17	18.3	0.4	5	8.39E-06	5.84E-05	9	434.73	346.86	434.73	0	0	0.000353335	481.11	0	0	20
68	11.32	0.16	62.6	0.5	6	1.12E-04	1.02E-03	15	565.47	451.18	565.47	0	0	0.000291598	548.7	0	0	20
69	11.48	0.16	118.5	0.6	6	3.62E-04	4.33E-03	22	747.22	596.19	747.22	0	0	0.000253666	630.75	0	0	20
70	11.65	0.17	143.2	1.1	6	4.17E-04	6.07E-03	27	908.38	724.77	908.38	0	0	0.000244446	695.45	0	0	20
71	11.81	0.16	142.3	1.5	6	3.59E-04	5.73E-03	29	995.76	794.49	995.76	0	0	0.000219741	728.13	0	0	20
72	11.98	0.17	145.5	1.3	6	2.85E-04	4.76E-03	30	1043.98	832.96	1043.98	0	0	0.00022802	745.55	0	0	20
73	12.14	0.16	145.4	1.6	6	5.29E-04	8.77E-03	31	1033.73	824.78	1033.73	0	0	0.000215668	741.88	0	0	20
74	12.3	0.16	188.7	1	6	9.08E-04	1.51E-02	33	1039.7	829.55	1039.7	0	0	0.000215048	744.02	0	0	20
75	12.47	0.17	197.5	1	6	1.54E-03	2.37E-02	32	962.65	768.07	962.65	0	0	0.000237457	715.92	0	0	20
76	12.63	0.16	155.4	0.8	6	8.73E-04	1.29E-02	29	921.16	734.97	921.16	0	0	0.000228467	700.32	0	0	20
77	12.8	0.17	115.2	1	6	2.57E-04	3.62E-03	25	879.58	701.79	879.58	0	0	0.000248418	684.33	0	0	20
78	12.96	0.16	88.3	1.3	6	5.82E-05	7.88E-04	21	845.03	674.23	845.03	0	0	0.000238535	670.76	0	0	20
79	13.12	0.16	60.7	1.3	5	1.33E-05	1.65E-04	17	776.29	619.38	776.29	0	0	0.000248872	642.9	0	0	20
80	13.29	0.17	37.5	1.2	5	2.33E-06	2.08E-05	13	557.23	550.34	689.76	0	0	0.000280523	606.01	0	0	20
81	13.45	0.16	23.6	1.4	4	7.92E-07	5.52E-06	11	434.71	521.89	654.11	2.22	5.64	0.000271122	590.14	1.89	1.59	20
82	13.62	0.17	34.4	1.5	4	1.28E-06	1.05E-05	13	512.99	564.85	707.95	2.62	6.57	0.000276896	613.95	1.97	1.75	20
83	13.78	0.16	54.3	1.5	5	2.06E-06	1.90E-05	14	575.42	581.24	728.49	0	0	0.000256908	622.79	0	0	20
84	13.94	0.16	37	1.3	5	1.96E-06	1.72E-05	13	549.03	559.61	701.37	0	0	0.000261827	611.09	0	0	20
85	14.11	0.17	28.8	1.2	4	8.00E-07	5.31E-06	11	414.48	496.75	622.6	2.11	5.13	0.000295267	575.75	1.83	1.73	20
86	14.27	0.16	25.3	1.1	4	5.18E-07	3.00E-06	10	361.49	468.59	587.3	1.84	4.42	0.000286128	559.19	1.76	1.59	20
87	14.44	0.17	25.5	1.1	4	4.59E-07	2.59E-06	10	352.1	466.51	584.69	1.8	4.26	0.000304692	557.94	1.74	1.55	20
88	14.6	0.16	26.7	1.2	4	4.56E-07	2.62E-06	10	358.26	475.36	595.78	1.83	4.28	0.000284086	563.21	1.74	1.54	20
89	14.76	0.16	26.7	1.2	4	4.50E-07	2.62E-06	10	363.97	484	606.62	1.86	4.3	0.000281536	568.31	1.75	1.52	20
90	14.93	0.17	26.8	1.2	4	4.49E-07	2.62E-06	10	365.32	486.1	609.24	1.86	4.27	0.000298486	569.54	1.74	1.52	20
91	15.09	0.16	27	1.2	4	4.71E-07	2.80E-06	10	371.46	489.96	614.08	1.9	4.3	0.000279818	571.8	1.75	1.55	20
92	15.26	0.17	28	1.2	4	5.25E-07	3.23E-06	10	383.66	496.17	621.87	1.96	4.39	0.000295442	575.41	1.76	1.6	20
93	15.42	0.16	29.4	1.2	4	5.59E-07	3.55E-06	11	397	507.68	636.3	2.03	4.49	0.00027489	582.05	1.77	1.61	20
94	15.58	0.16	29.9	1.3	4	5.20E-07	3.26E-06	11	391.35	507.04	635.49	2	4.38	0.000275065	581.68	1.76	1.59	20
95	15.75	0.17	26.9	1.2	4	3.62E-07	2.05E-06	10	353.45	0	612.73	1.8	3.92	0.000297635	571.17	1.7	1.47	20
96	15.91	0.16	21.5	1.1	4	2.17E-07	1.00E-06	9	288.44	0	548.79	1.47	3.16	0.000295995	540.55	1.6	1.4	20
97	16.08	0.17	16.2	0.8	3	1.02E-07	3.51E-07	7	214.7	0	468.05	1.1	2.33	0.000340545	499.2	1.46	1.29	20
98	16.24	0.16	11.3	0.6	3	4.46E-08	1.06E-07	5	148.79	0	376.74	0.76	1.6	0.000357247	447.87	1.3	1.24	20
99	16.4	0.16	7.5	0.4	3	1.80E-08	3.07E-08	4	106.43	0	317.6	0.54	1.13	0.000389086	411.22	1.16	1.14	20
100	16.57	0.17	7.2	0.4	3	1.35E-08	1.98E-08	4	91.41	0	292.82	0.48	0.98	0.000430543	394.85	1.1	1.16	20
101	16.73	0.16	8.5	0.4	3	1.36E-08	2.12E-08	4	97.35	0	305.57	0.5	1.02	0.000396678	403.35	1.12	1.12	20
102	16.9	0.17	8.4	0.5	3	1.03E-08	1.63E-08	4	98.17	0	323.86	0.5	1.01	0.000409392	415.25	1.12	0.98	20
103	17.06	0.16	7.4	0.6	3	1.32E-08	2.41E-08	5	113.92	0	359.53	0.58	1.17	0.000365698	437.52	1.17	0.95	20
104	17.23	0.17	11.9	0.7	3	2.68E-08	5.95E-08	5	138.58	0	384.78	0.71	1.4	0.000375591	452.62	1.25	1.09	20
105	17.39	0.16	13.7	0.6	3	6.02E-08	1.64E-07	6	170.49	0	408.88	0.87	1.71	0.000342921	466.58	1.32	1.35	20
106	17.55	0.16	14.2	0.6	3	8.73E-08	2.56E-07	6	183.36	0	411.18	0.94	1.82	0.000341961	467.89	1.34	1.53	20
107	17.72	0.17	14.6	0.6	3	9.25E-08	2.77E-07	6	186.95	0	414.85	0.95	1.84	0.000361725	469.97	1.35	1.56	20
108	17.88	0.16	14.4	0.6	3	9.18E-08	2.68E-07	6	182.4	0	405.34	0.93	1.78	0.000344412	464.56	1.33	1.61	20
109	18.05	0.17	13.2	0.5	3	8.64E-08	2.43E-07	6	175.39	0	394.08	0.89	1.7	0.00037113	458.06	1.31	1.64	20
110	18.21	0.16	13.1	0.5	3	9.05E-08	2.51E-07	6	173	0	385.42	0.88	1.66	0.000353201	453	1.3	1.73	20
111	18.37	0.16	13.9	0.5	4	1.05E-07	3.04E-07	6	180.49	0	391.32	0.92	1.71	0.000350531	456.45	1.32	1.8	20
112	18.54	0.17	14.8	0.5	4	1.39E-07	4.33E-07	6	194.53	0	401.05	0.99	1.83	0.000367894	462.09	1.34	1.95	20
113	18.7	0.16	16.1	0.5	4	1.82E-07	6.08E-07	7	209	0	410.54	1.07	1.95	0.000342224	467.53	1.37	2.09	20
114	18.87	0.17	17	0.5	4	2.07E-07	7.19E-07	7	216.96	0	416.21	1.11	2.01	0.000361126	470.75	1.38	2.17	20
115	19.03	0.16	16.5	0.5	4	1.97E-07	6.79E-07	7	215.14	0	416.43	1.1	1.97	0.000339797	470.87	1.37	2.15	20
116	19.19	0.16	15.7	0.5	4	1.81E-07	6.13E-07	7	211.49	0	415.62	1.08	1.92	0.000340129	470.41	1.36	2.11	20
117	19.36	0.17	16.2	0.5	4	1.61E-07	5.48E-07	7	212.43	0	426.4	1.08	1.92	0.000356791	476.47	1.36	1.99	20

CPT-2 Estimations

118	19.52	0.16	16.7	0.6	4	1.42E-07	4.98E-07	7	218.36	0	448.24	1.11	1.95	0.00032752	488.52	1.37	1.82	20
119	19.69	0.17	17	0.7	4	1.33E-07	4.81E-07	7	226.42	0	470.69	1.16	2.01	0.000339586	500.61	1.39	1.7	20
120	19.85	0.16	18	0.7	4	1.50E-07	5.89E-07	8	245.2	0	498.6	1.25	2.16	0.000310535	515.24	1.42	1.67	20
121	20.01	0.16	20.8	0.8	4	1.89E-07	8.40E-07	9	277.35	0	540.76	1.42	2.42	0.000298185	536.58	1.47	1.66	20
122	20.18	0.17	23.9	1	4	2.38E-07	1.19E-06	9	311.68	0	582.76	1.59	2.7	0.00030519	557.03	1.53	1.67	20
123	20.34	0.16	25.3	1	4	2.73E-07	1.46E-06	10	334.48	0	610.46	1.71	2.87	0.000280648	570.11	1.56	1.67	20
124	20.51	0.17	25.6	1	4	3.00E-07	1.62E-06	10	338.15	0	606.51	1.73	2.88	0.000299159	568.26	1.56	1.75	20
125	20.67	0.16	24.6	0.9	4	3.00E-07	1.57E-06	10	327.66	0	587.73	1.67	2.77	0.000286026	559.39	1.54	1.82	20
126	20.83	0.16	23	0.8	4	2.98E-07	1.48E-06	9	310.25	0	557.01	1.58	2.6	0.000293804	544.58	1.51	1.94	20
127	21	0.17	21.8	0.7	4	2.95E-07	1.38E-06	9	291.5	0	524.38	1.49	2.42	0.000321732	528.39	1.47	2.08	20
128	21.16	0.16	20.5	0.6	4	2.97E-07	1.33E-06	8	279.46	0	502.33	1.43	2.31	0.000309382	517.16	1.45	2.21	20
129	21.33	0.17	20.2	0.6	4	3.05E-07	1.35E-06	8	275.51	0	492.71	1.41	2.25	0.000331915	512.18	1.44	2.3	20
130	21.49	0.16	20.7	0.6	4	3.28E-07	1.48E-06	8	281.43	0	496.83	1.44	2.29	0.00031109	514.32	1.56	2.35	40
131	21.65	0.16	21.5	0.6	4	3.00E-07	1.48E-06	8	294.94	402.5	504.47	1.5	2.38	0.000308725	518.26	1.6	2.46	40
132	21.82	0.17	22.9	0.6	4	3.98E-07	1.94E-06	9	304.96	414.68	519.74	1.56	2.44	0.000323169	526.04	1.62	2.41	40
133	21.98	0.16	22.7	0.7	4	3.94E-07	1.97E-06	9	312.56	425.78	533.65	1.59	2.48	0.000300165	533.04	1.64	2.34	40
134	22.15	0.17	23	0.7	4	3.66E-07	1.89E-06	9	321.93	0	557.12	1.64	2.54	0.000312133	544.64	1.67	2.19	40
135	22.31	0.16	24.8	0.8	4	3.54E-07	1.93E-06	10	340.46	0	592.56	1.74	2.66	0.000284855	561.69	1.72	2.04	40
136	22.47	0.16	26.7	1	4	3.06E-07	1.76E-06	10	359.72	0	642.91	1.84	2.79	0.000273472	585.07	1.78	1.8	40
137	22.64	0.17	27.5	1.2	4	2.71E-07	1.62E-06	11	372.68	0	680.67	1.9	2.87	0.000282392	602	1.57	1.64	20
138	22.8	0.16	28.2	1.2	4	2.48E-07	1.49E-06	11	376.2	0	698.38	1.92	2.88	0.00026239	609.78	1.57	1.57	20
139	22.97	0.17	28	1.2	4	2.62E-07	1.56E-06	11	371.99	0	683.57	1.9	2.83	0.000281793	603.28	1.56	1.64	20
140	23.13	0.16	26.6	1	4	2.83E-07	1.67E-06	11	368.78	0	668.68	1.88	2.78	0.00026815	596.68	1.55	1.73	20
141	23.3	0.17	27.2	1	4	3.05E-07	1.82E-06	11	371.27	0	663.82	1.89	2.78	0.000285955	594.5	1.55	1.8	20
142	23.46	0.16	28	1.1	4	3.00E-07	1.86E-06	11	387.99	0	695.91	1.98	2.89	0.000262855	608.7	1.83	1.71	40
143	23.62	0.16	30	1.3	4	2.91E-07	1.90E-06	12	408.21	0	736.17	2.08	3.02	0.000255567	626.06	1.88	1.61	40
144	23.79	0.17	31.5	1.4	4	3.21E-07	2.24E-06	13	435.48	0	771.79	2.22	3.2	0.000265198	641.03	1.95	1.59	40
145	23.95	0.16	33.8	1.4	4	3.43E-07	2.50E-06	13	454.68	0	796.16	2.32	3.31	0.000245749	651.07	2	1.59	40
146	24.12	0.17	34	1.5	4	3.64E-07	2.69E-06	13	462.68	0	801.53	2.36	3.35	0.000260229	653.27	1.65	1.61	20
147	24.28	0.16	33.3	1.4	4	3.50E-07	2.55E-06	13	454.25	0	792.42	2.32	3.27	0.000246328	649.54	1.64	1.62	20
148	24.44	0.16	32.2	1.3	4	3.41E-07	2.38E-06	13	436.21	0	764.49	2.23	3.12	0.000250788	637.99	1.61	1.68	20
149	24.61	0.17	30.2	1.2	4	3.05E-07	2.00E-06	12	409.26	0	731.86	2.09	2.9	0.000272336	624.23	1.84	1.71	40
150	24.77	0.16	27.3	1.1	4	2.50E-07	1.52E-06	11	380.11	0	704.79	1.94	2.68	0.00026119	612.58	1.75	1.68	40
151	24.94	0.17	26.1	1.1	4	2.20E-07	1.26E-06	11	358.93	0	680.96	1.83	2.51	0.000282331	602.13	1.69	1.68	40
152	25.1	0.16	25.7	1	4	1.96E-07	1.10E-06	11	350.21	0	678.17	1.79	2.44	0.000266267	600.9	1.66	1.64	40
153	25.26	0.16	25.7	1.1	4	1.90E-07	1.06E-06	11	348.51	0	678.81	1.78	2.41	0.000266143	601.18	1.65	1.63	40
154	25.43	0.17	25.4	1.1	4	1.67E-07	9.34E-07	11	348.95	0	695.79	1.78	2.4	0.000279307	608.65	1.64	1.54	40
155	25.59	0.16	25.9	1.2	4	1.64E-07	9.18E-07	11	348.59	0	697.12	1.78	2.38	0.000262627	609.23	1.64	1.54	40
156	25.76	0.17	25.7	1.1	4	1.44E-07	7.72E-07	11	333.95	0	683.69	1.7	2.26	0.000281765	603.34	1.59	1.52	40
157	25.92	0.16	22.6	1	3	1.26E-07	6.15E-07	10	304.51	0	638.84	1.55	2.05	0.000274344	583.21	1.49	1.58	40
158	26.08	0.16	19.6	0.8	3	9.89E-08	4.25E-07	9	268.26	0	588.17	1.37	1.8	0.000285919	559.6	1.38	1.61	39.67
159	26.25	0.17	17.9	0.7	3	8.49E-08	3.25E-07	8	239.06	0	538.81	1.22	1.59	0.000317395	535.61	1.28	1.71	39.37
160	26.41	0.16	16.3	0.6	3	7.85E-08	2.83E-07	8	224.73	0	513.7	1.15	1.49	0.000305939	522.98	1.24	1.77	38.88
161	26.58	0.17	16.6	0.6	3	8.26E-08	2.94E-07	8	222.69	0	504.44	1.14	1.46	0.000328033	518.24	1.22	1.86	39.1
162	26.74	0.16	17.4	0.6	4	9.33E-08	3.44E-07	8	230.09	0	509.83	1.17	1.5	0.000307096	521.01	1.23	1.92	39.9
163	26.9	0.16	17.7	0.6	4	1.07E-07	4.19E-07	8	244.49	0	528.52	1.25	1.59	0.000301619	530.47	1.27	1.93	40
164	27.07	0.17	19.3	0.7	4	1.40E-07	6.13E-07	9	273.9	0	564.17	1.4	1.77	0.000310179	548.07	1.36	1.96	40
165	27.23	0.16	23.2	0.8	4	1.59E-07	7.67E-07	10	301.42	0	606.61	1.54	1.93	0.000281536	568.31	1.44	1.88	40
166	27.4	0.17	23.4	0.9	4	1.71E-07	8.73E-07	10	319.37	0	634.43	1.63	2.03	0.000292498	581.2	1.49	1.84	40
167	27.56	0.16	23	0.9	4	1.58E-07	8.12E-07	10	320.19	0	644.74	1.63	2.03	0.000273084	585.9	1.49	1.78	40
168	27.72	0.16	23.8	0.9	4	1.81E-07	9.48E-07	10	325.98	0	640.36	1.66	2.05	0.00027402	583.9	1.5	1.88	40
169	27.89	0.17	24.7	0.8	4	2.12E-07	1.13E-06	10	333.07	0	636.36	1.7	2.08	0.000292056	582.08	1.51	2	40
170	28.05	0.16	24.8	0.8	4	2.23E-07	1.19E-06	10	331.92	0	628.1	1.69	2.07	0.000276678	578.29	1.5	2.07	40
171	28.22	0.17	23.3	0.8	4	1.95E-07	1.00E-06	10	322.1	0	624.81	1.64	1.99	0.000294745	576.77	1.47	2.01	40
172	28.38	0.16	22.5	0.8	4	1.53E-07	7.64E-07	10	310.9	0	629.59	1.59	1.91	0.000276353	578.97	1.43	1.87	40
173	28.54	0.16	22.3	0.9	4	1.30E-07	6.35E-07	10	305.09	0	636.73	1.56	1.87	0.000274796	582.25	1.41	1.76	40
174	28.71	0.17	22.1	0.9	4	1.30E-07	6.39E-07	10	306.23	0	638.72	1.56	1.86	0.000291515	583.16	1.41	1.77	40
175	28.87	0.16	23	0.8	4	1.52E-07	7.62E-07	10	312.83	0	634.55	1.6	1.89	0.000275269	581.25	1.42	1.88	40
176	29.04	0.17	23.8	0.8	4	1.63E-07	8.35E-07	10	319.16	0	639.07	1.63	1.92	0.00029144	583.31	1.44	1.91	40
177	29.2	0.16	23.3	0.9	4	1.67E-07	8.74E-07	10	327.49	0	653.38	1.67	1.96	0.000271274	589.81	1.46	1.89	40

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178	29.36	0.16	24.8	0.9	4	1.37E-07	7.11E-07	10	324.37	0	670.59	1.65	1.93	0.000267769	597.53	1.44	1.74	40
179	29.53	0.17	23.7	1	4	1.24E-07	6.31E-07	10	317.69	0	668.65	1.62	1.88	0.000284919	596.66	1.42	1.7	40
180	29.69	0.16	22.3	0.9	3	1.06E-07	5.12E-07	10	301.7	0	653.15	1.54	1.77	0.00027132	589.71	1.38	1.68	39.04
181	29.86	0.17	21.8	0.8	3	9.74E-08	4.46E-07	10	286.01	0	628.78	1.46	1.67	0.000293813	578.6	1.33	1.72	38.98
182	30.02	0.16	20.3	0.8	3	9.58E-08	4.30E-07	9	280.32	0	618.08	1.43	1.63	0.000278911	573.66	1.31	1.75	39.19
183	30.19	0.17	21	0.8	4	1.28E-07	6.32E-07	10	307.22	0	642.44	1.57	1.78	0.000290673	584.85	1.37	1.84	40
184	30.35	0.16	27.2	0.9	4	1.67E-07	9.07E-07	11	339.71	0	677.69	1.73	1.95	0.000266365	600.68	1.46	1.89	40
185	30.51	0.16	27.1	1	4	1.93E-07	1.13E-06	11	364.61	0	708.45	1.86	2.09	0.000260514	614.17	1.52	1.89	40
186	30.68	0.17	26.7	1	4	1.67E-07	9.63E-07	11	359.24	0	716.05	1.83	2.04	0.000275326	617.45	1.51	1.8	39.43
187	30.84	0.16	26.5	1	4	1.78E-07	1.02E-06	11	359.52	0	708.87	1.83	2.03	0.000260438	614.35	1.41	1.86	20
188	31.01	0.17	27.4	0.9	4	2.54E-07	1.65E-06	12	404.96	0	748.45	2.07	2.28	0.000269298	631.27	1.46	1.96	20
189	31.17	0.16	36.9	1.2	4	5.64E-07	5.07E-06	15	560.93	716.05	897.45	2.86	3.14	0.000231465	691.25	1.63	2.05	20
190	31.33	0.16	60.7	2	5	1.40E-06	1.71E-05	19	761.61	824.41	1033.25	0	0	0.000215718	741.71	0	0	20
191	31.5	0.17	71.1	1.7	5	1.82E-06	2.44E-05	20	836.33	863.53	1082.3	0	0	0.000223946	759.11	0	0	20
192	31.66	0.16	53.1	1.5	5	1.70E-06	2.05E-05	18	750.49	784.53	983.28	0	0	0.000221132	723.55	0	0	20
193	31.83	0.17	41.3	1.1	4	8.12E-07	7.74E-06	16	594.68	710.71	890.75	3.03	3.26	0.000246853	688.67	1.65	2.35	20
194	31.99	0.16	37.5	1.2	4	4.33E-07	3.42E-06	14	493.77	661.25	828.76	2.52	2.69	0.000240866	664.27	1.55	2.12	20
195	32.15	0.16	31.1	1.2	4	2.56E-07	1.79E-06	13	437.01	0	806.81	2.23	2.37	0.000244122	655.41	1.49	1.87	20
196	32.32	0.17	29.4	1.1	4	2.13E-07	1.39E-06	12	408.15	0	778.63	2.08	2.2	0.000264033	643.86	1.45	1.86	20
197	32.48	0.16	30.8	1	4	2.95E-07	1.96E-06	12	415.55	0	747.64	2.12	2.23	0.000253598	630.92	1.59	2.15	40
198	32.65	0.17	31.8	0.8	5	2.86E-06	3.05E-05	16	665.65	633.66	794.18	0	0	0.000261434	650.26	0	0	20
199	32.81	0.16	82.6	0.7	6	3.07E-05	4.06E-04	20	825.5	658.65	825.5	0	0	0.000241342	662.96	0	0	20
200	32.97	0.16	116.9	0.5	6	1.65E-04	2.31E-03	24	873.18	696.69	873.18	0	0	0.000234659	681.84	0	0	20
201	33.14	0.17	132.1	0.6	6	1.51E-04	2.46E-03	28	1015	809.84	1015	0	0	0.000231252	735.13	0	0	20
202	33.3	0.16	130.9	1.5	6	7.38E-05	1.47E-03	32	1244.67	993.09	1244.67	0	0	0.000196546	814.06	0	0	20
203	33.47	0.17	145.7	2.3	6	3.08E-05	7.18E-04	34	1456.54	1162.14	1456.54	0	0	0.000193044	880.63	0	0	20
204	33.63	0.16	131.6	2.8	5	1.12E-05	2.73E-04	33	1517.61	1210.86	1517.61	0	0	0.000177995	898.9	0	0	20
205	33.79	0.16	77.8	2.8	5	2.95E-06	5.53E-05	27	1168.94	1106.05	1386.25	0	0	0.000186239	859.11	0	0	20
206	33.96	0.17	47	2	4	5.87E-07	6.79E-06	20	721.99	915.04	1146.85	3.68	3.71	0.000217553	781.42	1.73	1.75	20
207	34.12	0.16	35.6	1.4	4	2.23E-07	1.76E-06	15	491.5	0	930.02	2.51	2.51	0.000227376	703.68	1.52	1.64	20
208	34.29	0.17	28	1.1	4	1.28E-07	7.86E-07	12	383.13	0	801.54	1.95	1.95	0.000260229	653.27	1.39	1.64	20
209	34.45	0.16	23.4	1	3	7.26E-08	3.63E-07	11	312.51	0	724.63	1.59	1.58	0.000257591	621.14	1.3	1.56	20
210	34.61	0.16	20.5	0.9	3	4.67E-08	2.01E-07	10	269.01	0	675.5	1.37	1.36	0.000266796	599.71	1.23	1.49	20
211	34.78	0.17	19	0.8	3	3.22E-08	1.21E-07	9	234.23	0	629.15	1.2	1.18	0.000293726	578.77	1.17	1.46	20
212	34.94	0.16	16.2	0.7	3	2.65E-08	8.95E-08	8	211.11	0	587.53	1.08	1.05	0.000286072	559.3	1.13	1.51	20
213	35.11	0.17	15.6	0.6	3	1.92E-08	5.41E-08	8	175.45	0	553.85	0.96	0.93	0.000313058	543.03	1.08	1.48	20
214	35.27	0.16	13.9	0.6	3	1.61E-08	3.98E-08	8	154.01	0	536.99	0.9	0.87	0.000299233	534.7	1.06	1.47	20
215	35.43	0.16	13.7	0.6	3	1.33E-08	2.99E-08	7	140.71	0	532.82	0.86	0.83	0.000300402	532.62	1.04	1.41	20
216	35.6	0.17	14	0.6	3	1.30E-08	2.90E-08	7	139.33	0	533.61	0.86	0.83	0.000318937	533.02	1.04	1.4	20
217	35.76	0.16	13.9	0.6	3	1.39E-08	3.05E-08	7	136.92	0	523.55	0.85	0.82	0.000303048	527.97	1.04	1.48	20
218	35.93	0.17	13.5	0.5	3	1.41E-08	3.12E-08	7	137.89	0	525.33	0.86	0.82	0.000321446	528.86	1.04	1.49	20
219	36.09	0.16	14.2	0.6	3	1.89E-08	4.78E-08	8	158.04	0	534.85	0.92	0.87	0.000299828	533.64	1.06	1.6	20
220	36.26	0.17	16.4	0.6	3	2.68E-08	8.41E-08	8	196	0	560.3	1.03	0.97	0.000311247	546.19	1.1	1.68	20
221	36.42	0.16	18	0.6	3	3.37E-08	1.18E-07	8	218.58	0	582.31	1.12	1.05	0.000287351	556.81	1.13	1.73	20
222	36.58	0.16	17.8	0.7	3	3.29E-08	1.20E-07	9	227.85	0	609.56	1.16	1.09	0.000280854	569.69	1.14	1.63	20
223	36.75	0.17	18.4	0.8	3	4.29E-08	1.87E-07	10	272.37	0	694.56	1.39	1.29	0.000279555	608.11	1.21	1.51	20
224	36.91	0.16	27.2	1.2	3	7.35E-08	4.00E-07	12	339.66	0	785.86	1.73	1.61	0.000247353	646.85	1.31	1.54	20
225	37.08	0.17	32.1	1.3	3	1.25E-07	8.48E-07	14	422.33	0	887.03	2.15	1.99	0.00024737	687.23	1.41	1.58	20
226	37.24	0.16	36.2	1.5	4	1.57E-07	1.16E-06	15	461.43	0	930.92	2.35	2.16	0.000227266	704.02	1.45	1.61	20
227	37.4	0.16	35.2	1.5	4	1.66E-07	1.27E-06	15	478.99	0	956.4	2.44	2.24	0.000224218	713.59	1.46	1.6	20
228	37.57	0.17	35.5	1.5	4	1.67E-07	1.29E-06	15	481.07	0	958.95	2.45	2.24	0.000237915	714.54	1.61	1.6	39.94
229	37.73	0.16	36.4	1.5	4	1.71E-07	1.33E-06	15	484.54	0	962	2.47	2.24	0.000223564	715.68	1.47	1.62	20
230	37.9	0.17	36.3	1.5	4	1.81E-07	1.43E-06	15	491.95	0	966.83	2.51	2.27	0.000236944	717.47	1.47	1.64	20
231	38.06	0.16	37.2	1.5	4	1.87E-07	1.49E-06	15	496.94	0	970.49	2.54	2.28	0.000222584	718.83	1.47	1.66	20
232	38.22	0.16	37.4	1.5	4	2.05E-07	1.66E-06	15	503.11	0	966.38	2.57	2.3	0.000223056	717.31	1.48	1.72	20
233	38.39	0.17	37.7	1.4	4	2.13E-07	1.74E-06	15	508.64	0	970.3	2.6	2.31	0.000236518	718.76	1.48	1.73	20
234	38.55	0.16	38.5	1.5	4	2.22E-07	1.82E-06	16	514.09	0	974.06	2.62	2.33	0.000222176	720.15	1.49	1.75	20
235	38.72	0.17	38.8	1.5	4	2.05E-07	1.70E-06	16	517.1	0	993.49	2.64	2.33	0.000233741	727.3	1.49	1.69	20
236	38.88	0.16	38.4	1.6	4	1.92E-07	1.59E-06	16	515.75	0	1002.64	2.63	2.32	0.000218986	730.64	1.48	1.65	20
237	39.04	0.16	38.1	1.6	4	1.78E-07	1.48E-06	16	518.18	0	1021.34	2.64	2.32	0.000216973	737.42	1.48	1.59	20

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238	39.21	0.17	39.3	1.7	4	1.73E-07	1.43E-06	16	515.67	0	1021.95	2.63	2.3	0.000230465	737.64	1.48	1.58	20
239	39.37	0.16	38	1.6	4	1.66E-07	1.36E-06	16	511.73	0	1021.84	2.61	2.27	0.00021692	737.6	1.47	1.57	20
240	39.54	0.17	37.5	1.6	4	1.57E-07	1.24E-06	16	495.93	0	1000.61	2.53	2.19	0.000232909	729.9	1.45	1.58	20
241	39.7	0.16	35.9	1.5	4	1.36E-07	1.04E-06	15	476.31	0	985.44	2.43	2.09	0.000220888	724.35	1.43	1.55	20
242	39.86	0.16	34.1	1.5	3	1.07E-07	7.57E-07	15	441.85	0	955.05	2.25	1.93	0.000224376	713.09	1.39	1.51	20
243	40.03	0.17	30.5	1.4	3	7.51E-08	4.80E-07	14	399.14	0	919.85	2.04	1.74	0.00024292	699.82	1.34	1.43	20
244	40.19	0.16	27.3	1.3	3	5.20E-08	2.92E-07	13	350.46	0	863.11	1.79	1.52	0.000236023	677.9	1.28	1.38	20
245	40.36	0.17	24	1.1	3	3.78E-08	1.84E-07	11	305.08	0	796.19	1.56	1.32	0.000261101	651.09	1.22	1.39	20
246	40.52	0.16	21	0.9	3	2.97E-08	1.25E-07	10	263.46	0	718.26	1.34	1.13	0.000258732	618.4	1.16	1.46	20
247	40.68	0.16	18.4	0.7	3	2.41E-08	9.04E-08	9	234.01	0	662.27	1.19	1	0.000269446	593.81	1.11	1.53	20
248	40.85	0.17	17.5	0.7	3	2.13E-08	7.59E-08	9	221.97	0	659.51	1.16	0.97	0.000286886	592.57	1.1	1.49	20
249	41.01	0.16	19.5	0.9	3	2.40E-08	9.86E-08	10	256.61	0	726.94	1.31	1.09	0.000257181	622.13	1.14	1.37	20
250	41.18	0.17	24.4	1.2	3	2.98E-08	1.45E-07	12	303.93	0	827.91	1.55	1.29	0.000256051	663.93	1.21	1.27	20
251	41.34	0.16	27.7	1.5	3	3.81E-08	2.14E-07	13	350.81	0	914.13	1.79	1.48	0.000229345	697.64	1.27	1.22	20
252	41.5	0.16	29.8	1.6	3	4.39E-08	2.61E-07	13	371.33	0	943.08	1.89	1.56	0.000225797	708.6	1.29	1.24	20
253	41.67	0.17	28.9	1.4	3	4.79E-08	2.85E-07	13	371.68	0	928.97	1.9	1.56	0.000241724	703.28	1.29	1.3	20
254	41.83	0.16	27.4	1.3	3	5.34E-08	3.12E-07	13	364.64	0	893.65	1.86	1.52	0.000231958	689.78	1.28	1.4	20
255	42	0.17	27.9	1.2	3	5.55E-08	3.20E-07	13	359.64	0	875.37	1.83	1.49	0.000249015	682.69	1.27	1.46	20
256	42.16	0.16	27.7	1.2	3	4.98E-08	2.77E-07	13	346.97	0	861.11	1.77	1.44	0.000236298	677.11	1.26	1.45	20
257	42.32	0.16	25	1.2	3	3.78E-08	1.92E-07	12	317.47	0	828.16	1.62	1.31	0.000240953	664.03	1.22	1.4	20
258	42.49	0.17	21.9	1	3	2.44E-08	1.08E-07	11	275.18	0	777.15	1.4	1.13	0.000264283	643.25	1.16	1.33	20
259	42.65	0.16	18.9	0.9	3	1.67E-08	6.35E-08	10	237.48	0	728.59	1.23	0.99	0.000256892	622.83	1.11	1.29	20
260	42.82	0.17	17.8	0.9	3	1.40E-08	4.73E-08	10	211.46	0	711.48	1.16	0.93	0.000276212	615.47	1.08	1.27	20
261	42.98	0.16	19.1	0.9	3	2.97E-08	1.30E-07	11	272.25	0	741.85	1.39	1.11	0.000254582	628.48	1.15	1.51	20
262	43.15	0.17	28.7	0.9	4	1.18E-07	6.82E-07	12	362.18	0	769.57	1.85	1.47	0.000265579	640.11	1.27	2.17	20
263	43.31	0.16	37.4	0.7	4	1.78E-07	1.06E-06	12	369.78	0	728.66	1.89	1.49	0.00025688	622.86	1.28	2.64	20
264	43.47	0.16	21.1	0.5	4	1.32E-07	6.71E-07	11	316.16	0	657.47	1.61	1.27	0.00027043	591.65	1.21	2.79	20
265	43.64	0.17	17.2	0.5	3	3.48E-08	1.08E-07	9	194.32	0	583.85	1.12	0.88	0.000304911	557.54	1.06	2.2	20
266	43.8	0.16	16.8	0.5	3	2.28E-08	5.82E-08	8	159.4	0	571.77	1.02	0.8	0.000289986	551.75	1.03	2	20
267	43.97	0.17	16.6	0.5	3	2.32E-08	5.96E-08	8	160.66	0	573.53	1.03	0.8	0.000307637	552.6	1.03	2.01	20
268	44.13	0.16	17.3	0.5	3	3.44E-08	1.07E-07	9	193.62	0	587.28	1.13	0.88	0.000286133	559.18	1.06	2.21	20
269	44.29	0.16	20.8	0.5	3	5.63E-08	2.31E-07	10	255.86	0	621.19	1.31	1.01	0.000278212	575.1	1.11	2.4	20
270	44.46	0.17	23.5	0.6	4	8.04E-08	3.77E-07	10	292.59	0	665.99	1.49	1.15	0.000285489	595.47	1.17	2.44	20
271	44.62	0.16	24.7	0.7	4	8.37E-08	4.24E-07	11	316.15	0	714.44	1.61	1.24	0.000259424	616.75	1.2	2.26	20
272	44.79	0.17	25.5	0.8	4	8.22E-08	4.32E-07	11	328.33	0	744.35	1.68	1.28	0.000270043	629.53	1.18	2.14	34.89
273	44.95	0.16	25.9	0.8	3	7.52E-08	4.03E-07	12	334.44	0	770.57	1.71	1.3	0.000249793	640.53	1.19	2.01	35.06
274	45.11	0.16	26	0.9	3	5.49E-08	2.84E-07	12	322.62	0	786.89	1.65	1.25	0.000247192	647.27	1.17	1.79	34.83
275	45.28	0.17	23	1	3	3.49E-08	1.68E-07	11	300.44	0	795.15	1.53	1.16	0.000261273	650.66	1.17	1.55	20
276	45.44	0.16	21.7	1	3	2.29E-08	9.85E-08	11	268.47	0	766.88	1.37	1.03	0.000250395	638.99	1.12	1.44	20
277	45.61	0.17	19.4	0.8	3	1.86E-08	6.75E-08	10	226.86	0	722.28	1.24	0.93	0.000274136	620.13	1.08	1.46	20
278	45.77	0.16	17.8	0.7	3	1.88E-08	5.89E-08	10	195.52	0	670.4	1.16	0.86	0.000267809	597.44	0.99	1.62	31.05
279	45.93	0.16	17.7	0.6	3	1.89E-08	5.67E-08	9	187.72	0	657.69	1.13	0.84	0.000270384	591.75	0.97	1.67	31.46
280	46.1	0.17	18.4	0.7	3	1.85E-08	5.52E-08	9	186.19	0	658.41	1.13	0.84	0.000287123	592.08	0.96	1.66	32.25
281	46.26	0.16	17.5	0.7	3	1.73E-08	5.21E-08	9	188.21	0	671.4	1.14	0.84	0.000267608	597.89	0.96	1.6	32.48
282	46.43	0.17	18	0.7	3	1.86E-08	5.81E-08	10	194.96	0	675.47	1.16	0.86	0.000283475	599.7	0.96	1.63	33.1
283	46.59	0.16	19.2	0.7	3	2.67E-08	9.90E-08	10	231.2	0	690.05	1.27	0.93	0.000263965	606.14	1	1.77	33.99
284	46.75	0.16	21.8	0.7	3	3.26E-08	1.32E-07	10	253.67	0	698.73	1.33	0.97	0.000262325	609.93	1.01	1.86	34.63
285	46.92	0.17	20.5	0.7	3	4.08E-08	1.76E-07	10	269.65	0	693.91	1.38	1	0.000279683	607.83	1.02	2.02	35.96
286	47.08	0.16	20.7	0.6	3	3.46E-08	1.39E-07	10	250.35	0	689.07	1.33	0.96	0.000264153	605.71	1	1.95	35.57
287	47.25	0.17	19.8	0.7	3	3.31E-08	1.30E-07	10	245.51	0	688.9	1.32	0.95	0.000280699	605.63	0.98	1.93	36.22
288	47.41	0.16	19.8	0.7	3	4.01E-08	1.77E-07	11	275.89	0	712.21	1.41	1.02	0.000259829	615.79	1.02	1.97	36
289	47.57	0.16	24.8	0.7	3	5.29E-08	2.50E-07	11	295.05	0	724.33	1.51	1.08	0.000257645	621.01	1.06	2.11	35.85
290	47.74	0.17	24.1	0.7	3	5.48E-08	2.56E-07	11	291.83	0	712.02	1.49	1.07	0.000276104	615.71	1.07	2.19	34.5
291	47.9	0.16	19.6	0.6	3	3.76E-08	1.50E-07	10	249.68	0	683.79	1.34	0.95	0.000265173	603.38	1.01	2.07	33.88
292	48.07	0.17	18.4	0.6	3	2.67E-08	8.71E-08	10	203.32	0	657.34	1.21	0.86	0.000287356	591.6	0.95	1.97	34.34
293	48.23	0.16	18.4	0.6	3	2.75E-08	9.08E-08	10	206.16	0	659.62	1.22	0.86	0.000269988	592.62	0.94	1.99	35.31
294	48.39	0.16	19.7	0.6	3	2.70E-08	9.25E-08	10	214.07	0	675.59	1.24	0.88	0.000266778	599.75	0.94	1.92	35.57
295	48.56	0.17	19.4	0.7	3	3.15E-08	1.21E-07	10	240.65	0	697.8	1.32	0.93	0.000278903	609.53	0.97	1.94	35.73
296	48.72	0.16	21.7	0.7	3	3.23E-08	1.31E-07	10	253.96	0	714.9	1.36	0.95	0.00025934	616.95	1	1.9	34.9
297	48.89	0.17	21.7	0.7	3	3.75E-08	1.64E-07	11	272.81	0	722.18	1.41	0.99	0.000274154	620.09	1.03	1.97	34.24

CPT-2 Estimations

298	49.05	0.16	21.9	0.7	3	2.73E-08	1.03E-07	10	235.03	0	711.23	1.31	0.91	0.000260006	615.37	1.01	1.84	32.13
299	49.22	0.17	18.1	0.7	3	1.91E-08	6.09E-08	10	198.92	0	699.1	1.21	0.84	0.000278643	610.1	0.97	1.69	31.7
300	49.38	0.16	17.4	0.7	3	1.28E-08	3.65E-08	10	178.39	0	713.21	1.15	0.79	0.000259648	616.22	0.94	1.47	31.45
301	49.54	0.16	19.3	0.9	3	1.54E-08	5.53E-08	11	224.42	0	774.73	1.29	0.89	0.000249124	642.25	0.99	1.4	32.25
302	49.71	0.17	24	1.1	3	2.67E-08	1.35E-07	12	314.9	0	874.86	1.61	1.11	0.000249088	682.49	1.15	1.43	20
303	49.87	0.16	31	1.3	3	3.69E-08	2.29E-07	15	388.44	0	1018.18	1.98	1.36	0.000217309	736.28	1.23	1.32	20
304	50.04	0.17	35.6	2	3	4.32E-08	3.05E-07	16	441.19	0	1123.52	2.25	1.54	0.0002198	773.43	1.29	1.25	20

Sum 0.093098709

Vs of CPT 537.494 (ft/s)
163.8701 (m/s)

Extrapolated Vs 634.4684 (ft/s)
Following Boore (2004) 193.4355 (m/s)

CPT-3 Estimations

No	In situ data					Estimations												
	Depth (ft)	Thickness (ft)	qc (tsf)	fs (tsf)	SBTn	Ksbt (ft/s)	Cv (ft2/s)	SPT N60 (blows/ft)	Con. Mod. (tsf)	Es (tsf)	Go (tsf)	Su (tsf)	Su ratio	Thickness /Vs (s)	Vs (ft/s)	Ko	Sensitivity	Peak phi (°)
1	0.33	0.33	61.9	0.4	6	1.08E-03	5.52E-03	10	319.38	254.82	319.38	0	0	0.0008003	412.36	0	0	20
2	0.49	0.16	44.1	0.6	6	3.24E-04	1.71E-03	9	329.62	263	329.62	0	0	0.0003819	418.93	0	0	20
3	0.66	0.17	33.4	0.8	8	5.80E-05	3.10E-04	8	334.33	266.75	334.33	0	0	0.0004029	421.91	0	0	20
4	0.82	0.16	26.1	1.1	8	1.54E-05	8.38E-05	7	340.9	272	340.9	0	0	0.0003756	426.03	0	0	20
5	0.98	0.16	23.6	1.3	9	7.46E-06	4.29E-05	7	359.37	286.73	359.37	1.83	63.83	0.0003658	437.42	3	1.41	20
6	1.15	0.17	27.2	1.4	9	6.42E-06	4.08E-05	8	397	316.76	397	1.97	58.48	0.0003698	459.76	3	1.34	20
7	1.31	0.16	31.9	1.6	9	6.99E-06	4.84E-05	9	432.49	345.08	432.49	2.17	56.79	0.0003334	479.87	3	1.39	20
8	1.48	0.17	32.4	1.6	8	9.07E-06	6.68E-05	10	459.78	366.85	459.78	0	0	0.0003436	494.77	0	0	20
9	1.64	0.16	37.7	1.4	8	1.03E-05	7.68E-05	10	465.08	371.07	465.08	0	0	0.0003215	497.61	0	0	20
10	1.8	0.16	35.5	1.4	8	1.13E-05	8.20E-05	10	452.99	361.43	452.99	0	0	0.0003258	491.1	0	0	20
11	1.97	0.17	31.4	1.2	8	8.39E-06	5.72E-05	9	426.2	340.06	426.2	0	0	0.0003569	476.36	0	0	20
12	2.13	0.16	26.4	1.1	8	5.52E-06	3.23E-05	8	364.88	308.29	386.39	0	0	0.0003528	453.57	0	0	20
13	2.3	0.17	20.7	1	9	2.94E-06	1.43E-05	7	303.56	287.39	360.19	1.55	23.04	0.0003882	437.92	2.52	1.42	20
14	2.46	0.16	18.3	1.1	9	1.68E-06	7.06E-06	6	262.32	274.85	344.48	1.34	18.61	0.0003736	428.26	2.43	1.23	20
15	2.62	0.16	17.6	1.1	9	1.18E-06	4.63E-06	6	245.36	274.12	343.57	1.25	16.35	0.0003741	427.7	2.37	1.12	20
16	2.79	0.17	17.1	1.1	9	9.76E-07	3.70E-06	6	236.78	273.72	343.06	1.21	14.81	0.0003978	427.38	2.33	1.08	20
17	2.95	0.16	16.5	1.1	9	8.56E-07	3.18E-06	6	231.96	274.6	344.16	1.18	13.73	0.0003738	428.07	2.29	1.05	20
18	3.12	0.17	16.6	1.1	9	7.59E-07	2.77E-06	6	228.08	275.94	345.85	1.16	12.76	0.0003962	429.11	2.25	1.04	20
19	3.28	0.16	16.3	1.1	9	6.52E-07	2.32E-06	6	221.88	275.91	345.81	1.13	11.81	0.0003729	429.09	2.22	1.01	20
20	3.45	0.17	15.2	1.1	9	5.46E-07	1.84E-06	6	210.52	270.34	338.83	1.07	10.65	0.0004002	424.74	2.17	0.99	20
21	3.61	0.16	14.2	1	9	4.37E-07	1.38E-06	5	197.29	263.82	330.65	1.01	9.54	0.0003813	419.58	2.11	0.95	20
22	3.77	0.16	13.5	1	9	3.48E-07	1.03E-06	5	184.07	0	321.43	0.94	8.52	0.0003868	413.69	2.05	0.92	20
23	3.94	0.17	12.4	1	9	2.91E-07	8.10E-07	5	174.13	0	314.13	0.89	7.71	0.0004157	408.96	2	0.9	20
24	4.1	0.16	12.1	0.9	9	2.46E-07	6.51E-07	5	165.12	0	306.94	0.84	7.03	0.0003958	404.26	1.96	0.88	20
25	4.27	0.17	11.6	0.9	9	2.49E-07	6.43E-07	5	161.23	0	299.14	0.82	6.59	0.000426	399.08	1.92	0.93	20
26	4.43	0.16	11.6	0.8	9	2.71E-07	6.95E-07	5	160.14	0	292.59	0.82	6.31	0.0004054	394.7	1.89	1	20
27	4.59	0.16	11.9	0.7	9	3.31E-07	8.67E-07	5	163.74	0	288.58	0.84	6.23	0.0004082	391.98	1.87	1.12	20
28	4.76	0.17	12.4	0.7	3	3.33E-07	8.88E-07	5	166.4	0	292.82	0.85	6.1	0.0004305	394.85	1.86	1.13	20
29	4.92	0.16	12.2	0.8	9	3.01E-07	8.08E-07	5	167.67	0	300.6	0.86	5.95	0.0003999	400.06	1.85	1.09	20
30	5.09	0.17	12.2	0.8	3	2.73E-07	7.21E-07	5	165.19	0	301.48	0.84	5.66	0.0004243	400.64	1.83	1.08	20
31	5.25	0.16	11.9	0.7	4	3.36E-07	9.08E-07	5	168.79	0	296.63	0.86	5.61	0.0004026	397.41	1.82	1.21	20
32	5.41	0.16	13	0.6	4	4.62E-07	1.31E-06	5	177.06	234.4	293.78	0.9	5.71	0.0004046	395.49	1.81	1.4	20
33	5.58	0.17	14	0.6	4	7.23E-07	2.22E-06	5	191.87	234.17	293.5	0.98	6	0.0004301	395.3	1.81	1.69	20
34	5.74	0.16	15.1	0.5	5	1.60E-06	5.63E-06	5	219.28	231.77	290.48	0	0	0.0004068	393.27	0	0	20
35	5.91	0.17	18.9	0.3	5	5.54E-06	2.37E-05	6	267.67	226.05	283.32	0	0	0.0004377	388.39	0	0	20
36	6.07	0.16	24.4	0.2	5	9.10E-06	4.39E-05	6	301.29	240.39	301.29	0	0	0.0003995	400.52	0	0	20
37	6.23	0.16	24.5	0.5	5	9.12E-06	4.84E-05	7	331.26	264.31	331.26	0	0	0.000381	419.97	0	0	20
38	6.4	0.17	25.6	0.5	5	6.73E-06	3.90E-05	7	361.22	288.21	361.22	0	0	0.0003876	438.55	0	0	20
39	6.56	0.16	26.8	0.5	5	5.54E-06	2.99E-05	7	337.57	285.1	357.32	0	0	0.0003668	436.17	0	0	20
40	6.73	0.17	21.1	0.5	5	3.70E-06	1.80E-05	7	304.33	276.49	346.54	0	0	0.0003958	429.54	0	0	20
41	6.89	0.16	18.5	0.5	5	1.41E-06	5.51E-06	6	243.1	262.8	329.37	0	0	0.0003821	418.77	0	0	20
42	7.05	0.16	13.7	0.6	4	6.91E-07	2.22E-06	5	201	247.38	310.05	1.03	4.98	0.0003938	406.3	1.73	1.88	20
43	7.22	0.17	12.1	0.5	4	3.53E-07	9.21E-07	5	163.1	0	284.12	0.83	3.94	0.0004371	388.94	1.64	1.63	20
44	7.38	0.16	10.4	0.4	4	2.48E-07	5.74E-07	4	144.35	0	267.9	0.74	3.41	0.0004237	377.67	1.58	1.55	20
45	7.55	0.17	9.7	0.5	3	1.57E-07	3.44E-07	4	137.26	0	276.96	0.7	3.17	0.0004427	384.01	1.56	1.29	20
46	7.71	0.16	10.6	0.7	3	1.57E-07	4.02E-07	5	159.57	0	321.64	0.81	3.61	0.0003866	413.82	1.63	1.14	20
47	7.87	0.16	15.2	0.9	3	1.91E-07	5.79E-07	6	189.75	0	369.48	0.97	4.21	0.0003607	443.53	1.71	1.09	20
48	8.04	0.17	16.2	1	3	2.48E-07	8.49E-07	6	213.84	0	397.06	1.09	4.64	0.0003697	459.79	1.76	1.15	20
49	8.2	0.16	15.8	0.9	3	2.22E-07	7.58E-07	6	213.18	0	403.77	1.09	4.54	0.0003451	463.66	1.75	1.1	20
50	8.37	0.17	15.1	1	3	1.93E-07	6.40E-07	6	206.96	0	402.03	1.06	4.32	0.0003674	462.66	1.73	1.07	20
51	8.53	0.16	14.9	1	3	1.80E-07	5.88E-07	6	204.49	0	402.5	1.04	4.18	0.0003456	462.93	1.72	1.06	20
52	8.69	0.16	15.3	0.9	3	1.97E-07	6.52E-07	6	207.21	0	401.23	1.06	4.16	0.0003462	462.19	1.71	1.11	20
53	8.86	0.17	15.7	0.9	3	2.22E-07	7.54E-07	6	211.79	0	401.03	1.08	4.17	0.0003679	462.08	1.71	1.18	20
54	9.02	0.16	15.9	0.9	3	2.46E-07	8.64E-07	6	219.24	0	407.58	1.12	4.24	0.0003435	465.84	1.71	1.22	20
55	9.19	0.17	16.9	0.9	4	2.72E-07	1.01E-06	7	231.29	0	422.29	1.18	4.39	0.0003585	474.17	1.73	1.24	20
56	9.35	0.16	18.3	1	4	3.13E-07	1.26E-06	7	250.84	0	446.47	1.28	4.68	0.0003282	487.56	1.77	1.25	20

CPT-3 Estimations

57	9.51	0.16	20.1	1.1	4	3.40E-07	1.50E-06	8	275.93	0	483.93	1.41	5.06	0.0003152	507.6	1.81	1.22	20
58	9.68	0.17	22.3	1.3	4	3.39E-07	1.60E-06	8	294.95	0	517.38	1.5	5.32	0.0003239	524.85	1.84	1.16	20
59	9.84	0.16	22.4	1.4	9	2.86E-07	1.37E-06	9	299.43	0	541.88	1.53	5.31	0.0002979	537.13	1.85	1.07	20
60	10.01	0.17	21.1	1.5	9	2.28E-07	1.06E-06	9	291.28	0	549.04	1.49	5.08	0.0003144	540.67	1.84	0.99	20
61	10.17	0.16	20.6	1.5	9	2.03E-07	9.22E-07	8	284.07	0	546.98	1.45	4.88	0.0002965	539.65	1.82	0.97	20
62	10.34	0.17	20.9	1.4	3	2.19E-07	1.01E-06	8	288.15	0	547.15	1.47	4.86	0.000315	539.74	1.81	1.01	20
63	10.5	0.16	22	1.4	3	2.53E-07	1.21E-06	9	297.43	0	550.06	1.52	4.94	0.0002957	541.17	1.82	1.06	20
64	10.66	0.16	22.6	1.4	3	2.88E-07	1.43E-06	9	309.51	0	559.24	1.58	5.07	0.0002932	545.67	1.83	1.11	20
65	10.83	0.17	23.5	1.4	4	3.20E-07	1.62E-06	9	315.96	0	560.18	1.61	5.09	0.0003113	546.13	1.83	1.16	20
66	10.99	0.16	23.4	1.3	4	3.42E-07	1.75E-06	9	319.16	0	558.98	1.63	5.07	0.0002933	545.54	1.83	1.2	20
67	11.16	0.17	23.3	1.3	4	3.70E-07	1.92E-06	9	323.32	445.44	558.28	1.65	5.06	0.0003118	545.2	1.82	1.24	20
68	11.32	0.16	24.4	1.3	4	3.64E-07	1.89E-06	9	323.71	0	560.62	1.65	4.99	0.0002929	546.34	1.82	1.25	20
69	11.48	0.16	23.5	1.3	4	3.57E-07	1.88E-06	9	328.27	0	570.49	1.67	4.99	0.0002903	551.13	1.82	1.23	20
70	11.65	0.17	24.3	1.4	4	3.16E-07	1.66E-06	9	328.1	0	583.15	1.67	4.92	0.0003051	557.21	1.82	1.17	20
71	11.81	0.16	24.4	1.5	3	2.95E-07	1.59E-06	10	336.35	0	605.24	1.72	4.97	0.0002819	567.67	1.83	1.12	20
72	11.98	0.17	25.3	1.6	3	2.86E-07	1.58E-06	10	343.67	0	621.71	1.75	5.01	0.0002955	575.34	1.83	1.1	20
73	12.14	0.16	25.9	1.6	3	2.96E-07	1.67E-06	10	352.39	0	633.77	1.8	5.07	0.0002754	580.89	1.84	1.1	20
74	12.3	0.16	26.3	1.6	3	3.21E-07	1.84E-06	10	357.86	0	633.92	1.83	5.08	0.0002754	580.96	1.84	1.14	20
75	12.47	0.17	26.5	1.5	3	3.08E-07	1.76E-06	10	355.82	0	635.15	1.82	4.98	0.0002923	581.53	1.83	1.14	20
76	12.63	0.16	25.5	1.6	3	3.02E-07	1.72E-06	10	355.75	0	637.3	1.82	4.92	0.0002747	582.51	1.83	1.14	20
77	12.8	0.17	26.3	1.6	3	2.73E-07	1.54E-06	10	352.36	0	642.88	1.8	4.81	0.0002906	585.05	1.82	1.1	20
78	12.96	0.16	25.8	1.6	3	2.64E-07	1.48E-06	10	350.88	0	644.24	1.79	4.73	0.0002732	585.67	1.81	1.1	20
79	13.12	0.16	25.2	1.6	3	2.46E-07	1.35E-06	10	342.33	0	636.54	1.75	4.55	0.0002748	582.16	1.79	1.09	20
80	13.29	0.17	24.5	1.5	3	2.34E-07	1.25E-06	10	331.92	0	622.61	1.69	4.36	0.0002953	575.76	1.77	1.11	20
81	13.45	0.16	23.6	1.4	3	2.22E-07	1.14E-06	9	321.05	0	608.03	1.64	4.17	0.0002812	568.98	1.74	1.12	20
82	13.62	0.17	22.9	1.4	3	2.29E-07	1.15E-06	9	313.01	0	589.47	1.6	4.01	0.0003035	560.22	1.72	1.17	20
83	13.78	0.16	22.8	1.2	3	2.31E-07	1.14E-06	9	306.82	0	576.86	1.57	3.89	0.0002887	554.2	1.7	1.21	20
84	13.94	0.16	22.3	1.2	3	2.37E-07	1.15E-06	9	301.58	0	564.47	1.54	3.78	0.0002919	548.22	1.68	1.26	20
85	14.11	0.17	21.8	1.2	3	2.33E-07	1.14E-06	9	306.1	0	574.73	1.56	3.79	0.0003073	553.17	1.69	1.24	20
86	14.27	0.16	23.8	1.3	3	2.36E-07	1.20E-06	9	317.18	0	594.16	1.62	3.88	0.0002845	562.45	1.7	1.22	20
87	14.44	0.17	24.7	1.4	3	2.48E-07	1.32E-06	10	331.48	0	615.33	1.69	4.01	0.000297	572.38	1.72	1.21	20
88	14.6	0.16	24.9	1.4	3	2.52E-07	1.35E-06	10	334.14	0	618.74	1.7	3.99	0.0002788	573.96	1.72	1.22	20
89	14.76	0.16	24.4	1.3	4	2.57E-07	1.37E-06	10	333.08	0	614.44	1.7	3.94	0.0002797	571.96	1.71	1.25	20
90	14.93	0.17	24.5	1.3	4	2.64E-07	1.41E-06	10	332.49	0	610.39	1.7	3.89	0.0002982	570.08	1.7	1.28	20
91	15.09	0.16	24.8	1.3	4	2.51E-07	1.32E-06	10	329.55	0	610.69	1.68	3.81	0.0002806	570.22	1.69	1.27	20
92	15.26	0.17	23.8	1.3	3	2.25E-07	1.13E-06	9	313.48	0	592.21	1.6	3.59	0.0003027	561.52	1.66	1.27	20
93	15.42	0.16	21.1	1.1	3	1.71E-07	7.45E-07	8	272.23	0	540.68	1.39	3.08	0.0002982	536.54	1.59	1.28	20
94	15.58	0.16	16	0.8	3	1.11E-07	3.83E-07	7	216.04	0	464.1	1.1	2.42	0.0003219	497.09	1.47	1.3	20
95	15.75	0.17	11.8	0.6	3	5.44E-08	1.41E-07	6	162.24	0	396.33	0.83	1.8	0.0003701	459.36	1.34	1.22	20
96	15.91	0.16	9.6	0.6	3	2.35E-08	4.74E-08	5	125.68	0	357.3	0.64	1.38	0.0003668	436.16	1.24	1.05	20
97	16.08	0.17	8.2	0.6	3	1.10E-08	1.82E-08	4	103.09	0	336.07	0.53	1.12	0.0004019	423	1.15	0.91	20
98	16.24	0.16	7	0.5	3	7.55E-09	1.04E-08	4	85.82	0	312	0.46	0.96	0.0003926	407.57	1.1	0.89	20
99	16.4	0.16	6.7	0.4	3	6.40E-09	7.12E-09	4	69.46	0	290.67	0.41	0.86	0.0004067	393.39	1.05	0.93	20
100	16.57	0.17	6.4	0.4	3	6.19E-09	7.27E-09	4	73.35	0	302.06	0.43	0.88	0.0004239	401.03	1.06	0.89	20
101	16.73	0.16	7.6	0.6	3	7.23E-09	1.16E-08	4	100.6	0	354.08	0.51	1.05	0.0003685	434.19	1.13	0.79	20
102	16.9	0.17	10.4	0.9	3	1.61E-08	3.73E-08	6	144.83	0	441.07	0.74	1.5	0.0003508	484.6	1.27	0.8	20
103	17.06	0.16	15.9	1.2	3	4.20E-08	1.39E-07	7	205.86	0	526.87	1.05	2.11	0.0003021	529.64	1.43	0.91	20
104	17.23	0.17	20.7	1.3	3	7.83E-08	3.21E-07	9	256.13	0	585.86	1.31	2.59	0.0003044	558.51	1.52	1.01	20
105	17.39	0.16	21.2	1.3	3	1.09E-07	4.86E-07	9	279.34	0	602.15	1.43	2.8	0.0002826	566.22	1.55	1.1	20
106	17.55	0.16	20.9	1.2	3	1.11E-07	4.86E-07	9	274.08	0	588.82	1.4	2.73	0.0002858	559.91	1.54	1.14	20
107	17.72	0.17	19.6	1.1	3	1.13E-07	4.70E-07	8	260.41	0	557.66	1.33	2.57	0.000312	544.9	1.51	1.22	20
108	17.88	0.16	18.3	0.9	3	1.09E-07	4.24E-07	8	242.54	0	522.47	1.24	2.37	0.0003034	527.42	1.47	1.3	20
109	18.05	0.17	17.1	0.8	3	1.15E-07	4.14E-07	7	224.23	0	478.24	1.14	2.17	0.0003369	504.61	1.42	1.46	20
110	18.21	0.16	15.7	0.6	3	1.09E-07	3.54E-07	7	202.64	0	436.43	1.03	1.94	0.0003319	482.04	1.37	1.6	20
111	18.37	0.16	13.7	0.5	3	7.92E-08	2.20E-07	6	173.12	0	395.08	0.88	1.64	0.0003489	458.64	1.3	1.62	20
112	18.54	0.17	10.8	0.5	3	4.62E-08	1.05E-07	5	142.62	0	358.91	0.73	1.34	0.0003889	437.14	1.22	1.53	20
113	18.7	0.16	9.2	0.4	3	2.81E-08	5.51E-08	5	122.41	0	337	0.62	1.14	0.0003777	423.59	1.16	1.41	20
114	18.87	0.17	9.4	0.4	3	2.71E-08	5.10E-08	5	117.59	0	325.9	0.6	1.09	0.0004081	416.55	1.14	1.47	20
115	19.03	0.16	9.8	0.4	3	2.86E-08	5.28E-08	5	115.1	0	315.76	0.59	1.06	0.0003902	410.02	1.13	1.57	20

CPT-3 Estimations

116	19.19	0.16	8.7	0.3	3	2.26E-08	3.93E-08	4	108.74	0	313.23	0.56	0.99	0.0003918	408.38	1.11	1.49	20
117	19.36	0.17	8.2	0.4	3	1.54E-08	2.43E-08	4	98.51	0	320.83	0.53	0.94	0.0004113	413.3	1.09	1.31	20
118	19.52	0.16	8.8	0.5	3	2.13E-08	4.28E-08	5	125.43	0	363.09	0.64	1.12	0.0003639	439.68	1.15	1.25	20
119	19.69	0.17	13.2	0.6	3	5.32E-08	1.42E-07	6	166.85	0	409.21	0.85	1.48	0.0003642	466.77	1.26	1.47	20
120	19.85	0.16	17.1	0.6	3	9.32E-08	2.96E-07	7	197.99	0	438.78	1.01	1.74	0.000331	483.34	1.33	1.65	20
121	20.01	0.16	15.5	0.6	3	9.08E-08	2.80E-07	6	192.29	0	428.15	0.98	1.68	0.0003351	477.45	1.31	1.7	20
122	20.18	0.17	12	0.5	3	6.22E-08	1.70E-07	6	170.77	0	407.22	0.87	1.48	0.0003651	465.63	1.26	1.6	20
123	20.34	0.16	12.5	0.5	3	4.74E-08	1.14E-07	6	150.66	0	377.38	0.77	1.29	0.0003569	448.25	1.21	1.61	20
124	20.51	0.17	11.2	0.4	3	3.69E-08	8.13E-08	5	137.51	0	360.28	0.7	1.17	0.0003881	437.98	1.17	1.59	20
125	20.67	0.16	9.2	0.4	3	2.55E-08	4.75E-08	5	116.19	0	328.54	0.6	0.99	0.0003826	418.24	1.11	1.6	20
126	20.83	0.16	8.2	0.3	3	2.14E-08	3.36E-08	4	98.3	0	313.35	0.55	0.91	0.0003917	408.46	1.07	1.62	20
127	21	0.17	9.3	0.3	3	3.60E-08	7.10E-08	5	123.13	0	324.12	0.63	1.02	0.0004092	415.42	1.12	1.85	20
128	21.16	0.16	12.4	0.4	3	6.77E-08	1.64E-07	5	151.04	0	354.64	0.77	1.25	0.0003682	434.53	1.19	2.06	20
129	21.33	0.17	14.2	0.4	4	1.08E-07	3.18E-07	6	183.63	0	396.1	0.94	1.5	0.0003702	459.23	1.26	2.12	20
130	21.49	0.16	16.3	0.5	4	1.43E-07	4.82E-07	7	210.64	0	432.12	1.07	1.71	0.0003336	479.66	1.32	2.11	20
131	21.65	0.16	18.2	0.6	4	1.61E-07	6.10E-07	7	236.68	0	475.21	1.21	1.91	0.0003181	503	1.36	1.97	20
132	21.82	0.17	19.8	0.7	4	1.71E-07	7.07E-07	8	258.98	0	514.53	1.32	2.07	0.0003248	523.4	1.4	1.85	20
133	21.98	0.16	21.1	0.8	4	1.77E-07	7.76E-07	9	273.81	0	540.33	1.4	2.17	0.0002983	536.36	1.43	1.79	20
134	22.15	0.17	21.4	0.8	4	1.93E-07	8.83E-07	9	286.32	0	556.46	1.46	2.26	0.0003123	544.31	1.44	1.79	20
135	22.31	0.16	22.5	0.8	4	2.30E-07	1.11E-06	9	300.23	0	564.93	1.53	2.35	0.0002917	548.44	1.46	1.88	20
136	22.47	0.16	24.1	0.8	4	2.52E-07	1.27E-06	9	314.14	0	581.41	1.6	2.44	0.0002876	556.38	1.48	1.88	20
137	22.64	0.17	24.4	0.9	4	2.93E-07	1.56E-06	10	333.24	0	600.29	1.7	2.57	0.0003007	565.34	1.51	1.92	20
138	22.8	0.16	26.6	0.9	4	3.22E-07	1.83E-06	10	354.67	0	627.93	1.81	2.72	0.0002767	578.21	1.53	1.9	20
139	22.97	0.17	28.7	1	4	3.62E-07	2.19E-06	11	378.44	0	656.26	1.93	2.88	0.0002876	591.11	1.56	1.89	20
140	23.13	0.16	29.5	1.1	4	3.54E-07	2.21E-06	11	389.62	0	678.37	1.99	2.94	0.0002662	600.98	1.58	1.83	20
141	23.3	0.17	29	1.1	4	3.54E-07	2.22E-06	11	391.01	0	680.62	1.99	2.93	0.0002824	601.98	1.57	1.83	20
142	23.46	0.16	29	1	4	3.78E-07	2.37E-06	11	392.36	538.54	674.97	2	2.92	0.0002669	599.48	1.57	1.9	20
143	23.62	0.16	29.8	1	4	3.55E-07	2.17E-06	11	381.52	0	663.69	1.95	2.82	0.0002692	594.45	1.55	1.91	20
144	23.79	0.17	26.7	1	4	3.20E-07	1.91E-06	11	373.04	0	661.38	1.9	2.74	0.0002865	593.41	1.54	1.87	20
145	23.95	0.16	27.2	1	4	2.85E-07	1.71E-06	11	375.33	0	679.52	1.91	2.74	0.000266	601.5	1.54	1.76	20
146	24.12	0.17	30.3	1.2	4	2.89E-07	1.83E-06	12	394.82	0	712.95	2.01	2.86	0.0002759	616.11	1.57	1.69	20
147	24.28	0.16	30.9	1.3	4	2.82E-07	1.85E-06	12	410.03	0	743.65	2.09	2.95	0.0002543	629.24	1.58	1.62	20
148	24.44	0.16	30.5	1.3	4	2.37E-07	1.53E-06	12	404.23	0	756.8	2.06	2.89	0.0002521	634.78	1.57	1.52	20
149	24.61	0.17	29.1	1.4	4	1.93E-07	1.21E-06	12	390.51	0	758.82	1.99	2.77	0.0002675	635.62	1.55	1.43	20
150	24.77	0.16	28	1.4	3	1.64E-07	9.86E-07	12	376.36	0	753.33	1.92	2.65	0.0002526	633.32	1.53	1.38	20
151	24.94	0.17	27.5	1.3	3	1.61E-07	9.47E-07	11	366.84	0	736.31	1.87	2.57	0.0002715	626.12	1.52	1.41	20
152	25.1	0.16	27.1	1.2	4	1.66E-07	9.50E-07	11	356.42	0	711.16	1.82	2.48	0.00026	615.34	1.5	1.49	20
153	25.26	0.16	25.8	1.1	4	1.76E-07	9.91E-07	11	352.12	0	695.78	1.8	2.43	0.0002629	608.65	1.49	1.55	20
154	25.43	0.17	26.6	1.1	4	1.91E-07	1.09E-06	11	355.31	0	691.42	1.81	2.44	0.0002802	606.74	1.49	1.62	20
155	25.59	0.16	27.8	1.1	4	2.25E-07	1.34E-06	11	370.65	0	700.38	1.89	2.53	0.000262	610.65	1.51	1.68	20
156	25.76	0.17	29.1	1.1	4	2.60E-07	1.58E-06	11	379.4	0	698.28	1.94	2.57	0.0002788	609.74	1.52	1.78	20
157	25.92	0.16	28.5	1	4	2.51E-07	1.49E-06	11	371.34	0	688.02	1.89	2.5	0.0002644	605.24	1.5	1.8	20
158	26.08	0.16	26.1	1	4	2.15E-07	1.20E-06	11	347.4	0	661.92	1.77	2.33	0.0002695	593.65	1.47	1.8	20
159	26.25	0.17	24	0.9	4	1.59E-07	8.13E-07	10	318.7	0	641.06	1.63	2.12	0.000291	584.22	1.42	1.71	20
160	26.41	0.16	22.4	0.9	3	1.14E-07	5.27E-07	9	289.56	0	619.05	1.48	1.91	0.0002787	574.11	1.38	1.61	20
161	26.58	0.17	19.9	0.9	3	9.44E-08	4.20E-07	9	277.69	0	614	1.42	1.82	0.0002973	571.76	1.36	1.54	20
162	26.74	0.16	21.5	0.9	3	8.92E-08	3.93E-07	9	274.77	0	613.74	1.4	1.79	0.0002799	571.64	1.35	1.53	20
163	26.9	0.16	21.8	0.9	4	1.31E-07	6.23E-07	10	297	0	618.86	1.52	1.93	0.0002787	574.02	1.38	1.71	20
164	27.07	0.17	24.7	0.8	4	1.58E-07	7.77E-07	10	306.2	0	616.46	1.56	1.97	0.0002967	572.9	1.39	1.84	20
165	27.23	0.16	23.5	0.8	4	1.68E-07	8.55E-07	10	317.33	0	632	1.62	2.03	0.0002758	580.08	1.4	1.83	20
166	27.4	0.17	24.2	1	4	1.53E-07	7.92E-07	10	322.42	0	652.89	1.64	2.05	0.0002883	589.59	1.41	1.73	20
167	27.56	0.16	25.8	1	4	1.49E-07	7.80E-07	10	326.55	0	664.63	1.67	2.07	0.000269	594.86	1.41	1.69	20
168	27.72	0.16	24.4	0.9	4	1.52E-07	7.76E-07	10	318.12	0	645.05	1.62	2	0.000273	586.04	1.4	1.77	20
169	27.89	0.17	22.4	0.8	4	1.38E-07	6.62E-07	10	300.29	0	620.21	1.53	1.88	0.0002958	574.65	1.37	1.8	20
170	28.05	0.16	22	0.8	4	1.18E-07	5.39E-07	9	284.78	0	604.68	1.45	1.77	0.000282	567.41	1.34	1.78	20
171	28.22	0.17	21.1	0.8	4	1.08E-07	4.76E-07	9	274.29	0	591.59	1.4	1.7	0.0003029	561.23	1.32	1.79	20
172	28.38	0.16	20.2	0.7	3	9.28E-08	3.86E-07	9	259.66	0	575.9	1.32	1.6	0.0002889	553.74	1.3	1.77	20
173	28.54	0.16	18.9	0.7	3	8.19E-08	3.25E-07	8	247.4	0	561.18	1.26	1.51	0.0002927	546.61	1.28	1.77	20
174	28.71	0.17	18.5	0.7	3	7.17E-08	2.76E-07	8	240.29	0	558.44	1.23	1.46	0.0003118	545.28	1.26	1.72	20

CPT-3 Estimations

175	28.87	0.16	18.7	0.7	3	7.85E-08	3.09E-07	9	246.28	0	563.07	1.26	1.49	0.0002922	547.53	1.27	1.76	20
176	29.04	0.17	20.2	0.7	3	9.04E-08	3.78E-07	9	261.11	0	581.82	1.33	1.57	0.0003054	556.57	1.29	1.78	20
177	29.2	0.16	21.7	0.8	4	1.04E-07	4.61E-07	9	276.42	0	600.46	1.41	1.65	0.000283	565.42	1.31	1.8	20
178	29.36	0.16	22	0.8	3	1.02E-07	4.60E-07	9	281.43	0	613.42	1.44	1.67	0.00028	571.49	1.32	1.76	20
179	29.53	0.17	21.3	0.8	3	8.37E-08	3.68E-07	9	274.27	0	619.77	1.4	1.62	0.0002959	574.44	1.31	1.65	20
180	29.69	0.16	20.2	0.9	3	6.51E-08	2.75E-07	9	263.82	0	623.83	1.35	1.55	0.0002776	576.32	1.29	1.52	20
181	29.86	0.17	19.8	0.9	3	5.62E-08	2.38E-07	9	264.57	0	642.42	1.35	1.55	0.0002907	584.84	1.29	1.42	20
182	30.02	0.16	21.5	1	3	3.91E-08	1.60E-07	9	255.47	0	662.44	1.3	1.49	0.0002694	593.89	1.27	1.24	20
183	30.19	0.17	18.3	1.2	3	5.91E-08	2.84E-07	10	299.58	0	720.84	1.53	1.73	0.0002744	619.51	1.34	1.28	20
184	30.35	0.16	29.3	1.3	3	1.02E-07	6.04E-07	12	369.43	0	805.27	1.88	2.12	0.0002444	654.79	1.43	1.35	20
185	30.51	0.16	36.6	1.6	4	2.50E-07	1.92E-06	14	479.68	0	889.09	2.45	2.74	0.0002326	688.02	1.56	1.6	20
186	30.68	0.17	42.1	1.6	4	3.24E-07	2.66E-06	15	511.39	0	904.42	2.61	2.91	0.000245	693.93	1.59	1.7	20
187	30.84	0.16	36.3	1.3	4	1.99E-07	1.42E-06	14	446.48	0	862.47	2.28	2.53	0.0002361	677.64	1.52	1.56	20
188	31.01	0.17	22.8	1.4	3	1.18E-07	7.11E-07	12	376.81	0	800.38	1.92	2.12	0.0002604	652.8	1.43	1.45	20
189	31.17	0.16	27.2	1.2	3	1.04E-07	6.04E-07	12	362.27	0	786.85	1.85	2.03	0.0002472	647.25	1.41	1.43	20
190	31.33	0.16	33.2	1.2	4	2.07E-07	1.49E-06	14	448.62	0	860.62	2.29	2.5	0.0002364	676.92	1.51	1.6	20
191	31.5	0.17	41.3	1.8	4	6.87E-07	6.95E-06	17	631.45	777.82	974.86	3.22	3.5	0.000236	720.45	1.69	2.02	20
192	31.66	0.16	66.4	1.7	4	1.04E-06	1.20E-05	18	719.94	822.58	1030.96	3.67	3.97	0.000216	740.89	1.77	2.16	20
193	31.83	0.17	52.2	1.5	5	1.12E-06	1.21E-05	17	673.57	759.48	951.88	0	0	0.0002388	711.9	0	0	20
194	31.99	0.16	31.4	1	4	4.05E-07	3.15E-06	14	485.99	658.79	825.68	2.48	2.65	0.0002413	663.03	1.54	2.08	20
195	32.15	0.16	26.2	1	4	1.51E-07	8.83E-07	12	364.38	0	739.76	1.86	1.98	0.0002549	627.59	1.4	1.76	20
196	32.32	0.17	26.1	1.1	3	1.01E-07	5.53E-07	11	342.04	0	747.12	1.75	1.85	0.0002695	630.7	1.37	1.55	20
197	32.48	0.16	26.6	1.2	3	9.49E-08	5.28E-07	12	347.55	0	767.7	1.77	1.87	0.0002503	639.33	1.37	1.49	20
198	32.65	0.17	27.4	1.2	3	9.52E-08	5.46E-07	12	358.17	0	790.67	1.83	1.91	0.000262	648.83	1.38	1.45	20
199	32.81	0.16	28.4	1.3	3	9.89E-08	5.81E-07	12	366.9	0	804.5	1.87	1.95	0.0002445	654.47	1.39	1.45	20
200	32.97	0.16	28.5	1.3	3	9.31E-08	5.48E-07	12	367.25	0	813.99	1.87	1.94	0.000243	658.32	1.39	1.41	20
201	33.14	0.17	27.5	1.3	3	8.48E-08	4.89E-07	12	360.17	0	811.92	1.84	1.9	0.0002586	657.49	1.38	1.39	20
202	33.3	0.16	26.9	1.3	3	7.76E-08	4.39E-07	12	353.58	0	809.96	1.8	1.85	0.0002436	656.69	1.37	1.36	20
203	33.47	0.17	27.1	1.3	3	7.58E-08	4.28E-07	12	352.53	0	810.99	1.8	1.84	0.0002587	657.11	1.37	1.36	20
204	33.63	0.16	27.3	1.3	3	7.75E-08	4.41E-07	12	355.2	0	813.89	1.81	1.84	0.0002431	658.28	1.37	1.37	20
205	33.79	0.16	27.5	1.3	3	7.66E-08	4.35E-07	12	355.05	0	815.3	1.81	1.83	0.0002428	658.85	1.37	1.37	20
206	33.96	0.17	27.1	1.3	3	7.76E-08	4.38E-07	12	352.58	0	807.74	1.8	1.81	0.0002592	655.79	1.36	1.39	20
207	34.12	0.16	26.8	1.2	3	7.95E-08	4.41E-07	12	346.38	0	789.95	1.77	1.77	0.0002467	648.53	1.35	1.44	20
208	34.29	0.17	26.2	1.1	3	8.18E-08	4.46E-07	12	340.19	0	771.83	1.74	1.73	0.0002652	641.05	1.34	1.5	20
209	34.45	0.16	25.8	1.1	3	7.54E-08	3.98E-07	11	329.81	0	759.45	1.68	1.67	0.0002516	635.89	1.32	1.5	20
210	34.61	0.16	24.6	1.1	3	6.68E-08	3.44E-07	11	321.3	0	756.34	1.64	1.62	0.0002521	634.58	1.31	1.46	20
211	34.78	0.17	24.4	1.1	3	5.94E-08	3.02E-07	11	317.9	0	764.3	1.62	1.6	0.0002665	637.91	1.3	1.4	20
212	34.94	0.16	25.1	1.2	3	5.53E-08	2.82E-07	11	317.76	0	773.83	1.62	1.59	0.0002493	641.88	1.3	1.36	20
213	35.11	0.17	24.6	1.2	3	4.97E-08	2.47E-07	11	310.58	0	771.35	1.58	1.54	0.0002653	640.85	1.29	1.33	20
214	35.27	0.16	22.9	1.1	3	3.98E-08	1.83E-07	11	287.55	0	743.29	1.47	1.42	0.0002543	629.08	1.25	1.31	20
215	35.43	0.16	20.2	1	3	3.21E-08	1.33E-07	10	257.99	0	693.37	1.32	1.27	0.0002633	607.59	1.21	1.33	20
216	35.6	0.17	18.3	0.8	3	3.05E-08	1.17E-07	9	238.74	0	647.38	1.22	1.17	0.0002896	587.1	1.17	1.43	20
217	35.76	0.16	18.8	0.7	3	4.10E-08	1.59E-07	9	241.94	0	621.93	1.23	1.18	0.000278	575.44	1.18	1.65	20
218	35.93	0.17	20.9	0.7	3	6.24E-08	2.68E-07	10	267.57	0	637.56	1.37	1.3	0.0002918	582.62	1.21	1.82	20
219	36.09	0.16	23.8	0.8	3	8.85E-08	4.21E-07	10	296.92	0	664.17	1.51	1.44	0.0002691	594.66	1.26	1.94	20
220	36.26	0.17	25.1	0.8	4	1.05E-07	5.48E-07	11	327.18	0	710.12	1.67	1.57	0.0002765	614.89	1.3	1.89	20
221	36.42	0.16	27.4	1	4	1.15E-07	6.51E-07	12	352.74	0	752.21	1.8	1.69	0.0002528	632.85	1.33	1.82	20
222	36.58	0.16	29.3	1.1	3	1.07E-07	6.36E-07	12	369.39	0	797.78	1.88	1.76	0.0002455	651.74	1.35	1.68	20
223	36.75	0.17	28.7	1.2	3	9.58E-08	5.69E-07	12	370.61	0	817.27	1.89	1.76	0.0002577	659.65	1.35	1.59	20
224	36.91	0.16	27.7	1.2	3	5.99E-08	3.19E-07	12	333.04	0	799.53	1.7	1.57	0.0002452	652.45	1.3	1.43	20
225	37.08	0.17	21.3	1.1	3	3.23E-08	1.43E-07	11	277.2	0	744.11	1.41	1.3	0.0002701	629.43	1.22	1.3	20
226	37.24	0.16	16.8	0.9	3	1.30E-08	4.22E-08	9	202.32	0	657.22	1.06	0.97	0.0002705	591.54	1.1	1.15	20
227	37.4	0.16	12.9	0.7	3	5.31E-09	9.39E-09	7	110.37	0	572.24	0.78	0.72	0.0002899	551.97	0.99	1.05	20
228	37.57	0.17	9.8	0.6	3	2.59E-09	2.54E-09	6	61.24	0	509.95	0.59	0.53	0.0003263	521.06	0.9	0.91	20
229	37.73	0.16	8.5	0.6	3	2.28E-09	1.96E-09	6	53.65	0	503.53	0.55	0.5	0.000309	517.78	0.88	0.85	20
230	37.9	0.17	11.4	0.7	3	5.50E-09	9.49E-09	7	107.71	0	565.47	0.78	0.7	0.0003098	548.7	0.99	1.09	20
231	38.06	0.16	19.5	0.8	3	2.79E-08	1.06E-07	9	237.96	0	655.87	1.21	1.09	0.0002708	590.94	1.14	1.49	20
232	38.22	0.16	26.7	0.9	3	7.64E-08	4.02E-07	11	328.69	0	755.17	1.68	1.5	0.0002523	634.09	1.28	1.7	20
233	38.39	0.17	30.8	1.2	3	1.10E-07	6.86E-07	13	390.93	0	841.39	1.99	1.78	0.000254	669.31	1.35	1.68	20

CPT-3 Estimations

234	38.55	0.16	32.8	1.4	3	1.09E-07	7.42E-07	14	426.44	0	919.12	2.18	1.93	0.0002287	699.55	1.39	1.52	20
235	38.72	0.17	34.3	1.6	3	1.09E-07	7.73E-07	14	442.21	0	952.47	2.26	1.99	0.0002387	712.12	1.41	1.47	20
236	38.88	0.16	34.2	1.5	3	1.08E-07	7.72E-07	15	446.74	0	964.12	2.28	2.01	0.0002233	716.47	1.41	1.46	20
237	39.04	0.16	33.8	1.5	3	1.23E-07	8.92E-07	15	451.83	0	951.84	2.31	2.02	0.0002248	711.89	1.41	1.54	20
238	39.21	0.17	35.4	1.4	4	1.44E-07	1.07E-06	15	464.4	0	950.81	2.37	2.07	0.0002389	711.5	1.43	1.62	20
239	39.37	0.16	36.9	1.4	4	1.65E-07	1.27E-06	15	479.79	0	959	2.45	2.13	0.0002239	714.56	1.44	1.67	20
240	39.54	0.17	37.1	1.5	4	1.56E-07	1.21E-06	15	485.3	0	979.65	2.48	2.14	0.0002354	722.21	1.44	1.62	20
241	39.7	0.16	36.6	1.6	4	1.39E-07	1.07E-06	15	483.31	0	996.65	2.47	2.12	0.0002196	728.45	1.44	1.54	20
242	39.86	0.16	36.5	1.6	3	1.23E-07	9.41E-07	15	476.23	0	1003.09	2.43	2.09	0.0002189	730.8	1.43	1.49	20
243	40.03	0.17	35.6	1.6	3	1.31E-07	1.01E-06	15	483.59	0	1008.04	2.47	2.11	0.0002321	732.6	1.44	1.51	20
244	40.19	0.16	38.2	1.6	3	1.34E-07	1.05E-06	16	491.95	0	1021.31	2.51	2.14	0.000217	737.41	1.44	1.51	20
245	40.36	0.17	38.3	1.7	4	1.42E-07	1.14E-06	16	500.21	0	1026.6	2.55	2.16	0.0002299	739.32	1.45	1.53	20
246	40.52	0.16	37.4	1.6	3	1.32E-07	1.03E-06	16	487.5	0	1014.55	2.49	2.1	0.0002177	734.96	1.43	1.52	20
247	40.68	0.16	35.5	1.5	3	1.21E-07	8.88E-07	15	458.96	0	970.57	2.34	1.97	0.0002226	718.86	1.4	1.56	20
248	40.85	0.17	32.2	1.3	3	1.01E-07	6.88E-07	14	426.59	0	932.13	2.18	1.82	0.0002413	704.48	1.37	1.56	20
249	41.01	0.16	30.5	1.3	3	7.78E-08	4.84E-07	13	388.52	0	889.72	1.98	1.65	0.0002325	688.27	1.32	1.53	20
250	41.18	0.17	27.4	1.2	3	5.55E-08	3.12E-07	13	351.3	0	855.16	1.79	1.49	0.0002519	674.77	1.27	1.46	20
251	41.34	0.16	24.3	1.1	3	4.16E-08	2.05E-07	11	307.14	0	787.48	1.57	1.3	0.0002471	647.51	1.21	1.49	20
252	41.5	0.16	21.1	0.8	3	3.19E-08	1.36E-07	10	266.83	0	718.05	1.36	1.12	0.0002588	618.31	1.16	1.54	20
253	41.67	0.17	18.8	0.7	3	2.68E-08	1.02E-07	9	237.76	0	661.65	1.22	1	0.0002864	593.53	1.11	1.62	20
254	41.83	0.16	18.2	0.7	3	2.10E-08	6.84E-08	9	203.57	0	641.15	1.13	0.92	0.0002739	584.26	1.08	1.58	20
255	42	0.17	17.4	0.7	3	1.74E-08	5.19E-08	9	186.51	0	636.21	1.08	0.88	0.0002921	582.01	1.06	1.51	20
256	42.16	0.16	16.9	0.7	3	1.65E-08	4.82E-08	9	182.22	0	635.84	1.07	0.87	0.000275	581.84	1.06	1.5	20
257	42.32	0.16	17.8	0.7	3	1.67E-08	4.70E-08	9	175.55	0	624.01	1.05	0.85	0.0002776	576.4	1.05	1.55	20
258	42.49	0.17	16.7	0.6	3	1.53E-08	3.96E-08	9	161.3	0	608.72	1.01	0.81	0.0002986	569.3	1.04	1.56	20
259	42.65	0.16	15.2	0.6	3	1.28E-08	2.89E-08	8	141.33	0	590.02	0.95	0.76	0.0002855	560.49	1.01	1.55	20
260	42.82	0.17	15.2	0.6	3	1.09E-08	2.41E-08	8	137.75	0	600.4	0.94	0.75	0.0003007	565.39	1.01	1.45	20
261	42.98	0.16	16.3	0.7	3	1.26E-08	3.12E-08	9	154.28	0	620.12	0.99	0.79	0.0002785	574.6	1.03	1.46	20
262	43.15	0.17	17.6	0.7	3	1.56E-08	4.45E-08	9	177.91	0	642.19	1.07	0.85	0.0002907	584.74	1.05	1.5	20
263	43.31	0.16	18.4	0.7	3	1.96E-08	6.22E-08	9	198.13	0	651.42	1.13	0.89	0.0002717	588.93	1.07	1.58	20
264	43.47	0.16	18.9	0.7	3	2.16E-08	6.89E-08	9	198.87	0	642.31	1.14	0.89	0.0002736	584.79	1.07	1.67	20
265	43.64	0.17	17.8	0.6	3	2.09E-08	6.27E-08	9	187.25	0	628.35	1.1	0.87	0.0002939	578.4	1.06	1.71	20
266	43.8	0.16	17.1	0.6	3	2.03E-08	5.71E-08	9	176.11	0	614.03	1.07	0.84	0.0002798	571.78	1.05	1.75	20
267	43.97	0.17	17.6	0.6	3	1.87E-08	5.09E-08	9	169.84	0	612.79	1.06	0.82	0.0002976	571.2	1.04	1.72	20
268	44.13	0.16	17.1	0.6	3	1.73E-08	4.53E-08	9	163.69	0	611.44	1.04	0.8	0.0002804	570.56	1.03	1.7	20
269	44.29	0.16	16.4	0.6	3	1.63E-08	4.15E-08	9	159.12	0	610.67	1.03	0.79	0.0002806	570.21	1.03	1.67	20
270	44.46	0.17	17.1	0.6	3	1.80E-08	4.59E-08	9	159.04	0	600.47	1.03	0.79	0.0003007	565.42	1.02	1.78	20
271	44.62	0.16	17.2	0.5	3	2.02E-08	5.44E-08	9	167.99	0	605.47	1.06	0.81	0.0002818	567.77	1.03	1.83	20
272	44.79	0.17	17.7	0.6	3	1.96E-08	5.47E-08	9	174.08	0	620.85	1.08	0.82	0.0002957	574.94	1.04	1.76	20
273	44.95	0.16	18	0.7	3	1.87E-08	6.08E-08	10	202.82	0	677.18	1.17	0.89	0.0002665	600.46	1.07	1.56	20
274	45.11	0.16	20.9	0.9	3	1.93E-08	8.09E-08	11	261.12	0	769.18	1.33	1.01	0.00025	639.95	1.11	1.35	20
275	45.28	0.17	24.7	1.3	3	2.24E-08	1.11E-07	12	310.54	0	890.68	1.58	1.2	0.0002469	688.64	1.18	1.19	20
276	45.44	0.16	28.6	1.7	3	2.49E-08	1.47E-07	14	369.22	0	1038.74	1.88	1.42	0.0002151	743.67	1.25	1.04	20
277	45.61	0.17	33.5	2.3	3	3.35E-08	2.39E-07	16	444.67	0	1185.68	2.27	1.7	0.000214	794.54	1.33	1	20
278	45.77	0.16	40.9	2.7	3	5.80E-08	5.07E-07	19	546.04	0	1318.54	2.79	2.08	0.000191	837.87	1.43	1.05	20
279	45.93	0.16	50.4	2.8	3	1.11E-07	1.12E-06	20	629.51	0	1351.99	3.21	2.39	0.0001886	848.43	1.5	1.23	20
280	46.1	0.17	51.5	2.2	3	1.34E-07	1.33E-06	20	618.97	0	1283.8	3.16	2.34	0.0002056	826.76	1.49	1.37	20
281	46.26	0.16	38.8	1.8	3	9.23E-08	7.45E-07	17	504.06	0	1119.02	2.57	1.9	0.0002073	771.88	1.39	1.43	20
282	46.43	0.17	25.9	1.3	3	3.30E-08	1.84E-07	13	348.42	0	931.95	1.78	1.31	0.0002413	704.41	1.22	1.31	20
283	46.59	0.16	18.2	0.9	3	1.23E-08	4.11E-08	10	207.86	0	752.51	1.2	0.88	0.0002528	632.97	1.06	1.26	20
284	46.75	0.16	14.6	0.6	3	7.80E-09	1.55E-08	9	124.35	0	633.58	0.93	0.68	0.0002755	580.81	0.97	1.37	20
285	46.92	0.17	14.5	0.5	3	8.48E-09	1.37E-08	8	101.1	0	563.72	0.84	0.61	0.0003103	547.85	0.94	1.65	20
286	47.08	0.16	14.4	0.4	3	9.95E-09	1.54E-08	8	96.8	0	536.78	0.82	0.6	0.0002993	534.6	0.93	1.86	20
287	47.25	0.17	13.9	0.4	3	9.25E-09	1.39E-08	8	93.59	0	535.76	0.81	0.59	0.0003183	534.09	0.93	1.84	20
288	47.41	0.16	14	0.5	3	9.37E-09	1.68E-08	8	112.13	0	586	0.89	0.64	0.0002864	558.57	0.95	1.64	20
289	47.57	0.16	17.7	0.7	3	1.34E-08	3.91E-08	10	181.82	0	700.33	1.14	0.82	0.000262	610.63	1.04	1.45	20
290	47.74	0.17	24.2	1.1	3	2.51E-08	1.19E-07	12	295.02	0	829.03	1.51	1.08	0.0002559	664.38	1.14	1.43	20
291	47.9	0.16	29.5	1.3	3	4.09E-08	2.41E-07	14	368.23	0	947.06	1.88	1.34	0.0002253	710.1	1.23	1.42	20
292	48.07	0.17	33.4	1.5	3	5.06E-08	3.25E-07	14	401.28	0	993.22	2.05	1.46	0.0002338	727.2	1.26	1.43	20

CPT-3 Estimations

293	48.23	0.16	31.3	1.4	3	5.04E-08	3.24E-07	14	401.55	0	994.73	2.05	1.45	0.0002199	727.75	1.26	1.43	20
294	48.39	0.16	29.6	1.3	3	4.21E-08	2.48E-07	14	368.27	0	942.23	1.88	1.33	0.0002259	708.28	1.22	1.45	20
295	48.56	0.17	26.3	1.1	3	3.20E-08	1.69E-07	13	328.84	0	884.06	1.68	1.18	0.0002478	686.08	1.18	1.45	20
296	48.72	0.16	22.9	1	3	2.34E-08	1.07E-07	11	284.82	0	810.42	1.45	1.02	0.0002436	656.88	1.12	1.47	20
297	48.89	0.17	20.2	0.8	3	1.78E-08	6.61E-08	11	231.93	0	762.1	1.3	0.91	0.0002669	636.99	1.08	1.47	20
298	49.05	0.16	19.9	0.8	3	1.83E-08	6.66E-08	11	227.04	0	751.42	1.29	0.9	0.000253	632.52	1.07	1.52	20
299	49.22	0.17	22.4	0.9	3	2.28E-08	1.02E-07	11	278.41	0	801.12	1.43	0.99	0.0002603	653.1	1.11	1.5	20
300	49.38	0.16	26.1	1.1	3	3.32E-08	1.70E-07	12	320.77	0	856.99	1.64	1.13	0.0002369	675.49	1.16	1.55	20
301	49.54	0.16	28.6	1.1	3	4.42E-08	2.47E-07	13	348.7	0	884.27	1.78	1.23	0.0002332	686.15	1.19	1.63	20
302	49.71	0.17	28.4	1	3	4.99E-08	2.87E-07	13	359.38	0	891.6	1.83	1.26	0.0002467	688.99	1.2	1.68	20
303	49.87	0.16	28.4	1.1	3	4.87E-08	2.79E-07	13	357.94	0	892.01	1.83	1.25	0.0002322	689.15	1.2	1.68	20
304	50.04	0.17	28.3	1.1	3	4.52E-08	2.59E-07	13	357.38	0	902.68	1.82	1.25	0.0002452	693.26	1.2	1.62	20

Sum 0.0919794

Vs of CPT 544.035 (ft/s)
165.864 (m/s)

Extrapolated Vs 642.394 (ft/s)
Following Boore (2004) 195.852 (m/s)

CPT-4 Estimations

In situ data						Estimations												
No	Depth (ft)	Thickness (ft)	qc (tsf)	fs (tsf)	SBTn	Ksbt (ft/s)	Cv (ft2/s)	SPT N60 (blows/ft)	Con. Mod. (tsf)	Es (tsf)	Go (tsf)	Su (tsf)	Su ratio	Thickness/V s (s)	Vs (ft/s)	Ko	Sensitivity	Peak phi (°)
1	0.33	0.33	323.7	1.2	7	2.43E-02	3.73E-01	40	956.24	762.96	956.24	0	0	0.000462489	713.53	0	0	20
2	0.49	0.16	235.3	1.4	7	1.42E-02	2.08E-01	37	916.99	731.64	916.99	0	0	0.000228987	698.73	0	0	20
3	0.66	0.17	208.6	1.2	7	7.88E-03	1.06E-01	32	841.33	671.28	841.33	0	0	0.000254001	669.29	0	0	20
4	0.82	0.16	189.5	1	7	7.49E-03	9.06E-02	29	755.29	602.63	755.29	0	0	0.00025231	634.14	0	0	20
5	0.98	0.16	165.4	0.7	7	6.17E-03	6.87E-02	26	694.89	554.43	694.89	0	0	0.000263045	608.26	0	0	20
6	1.15	0.17	145.8	0.8	7	4.57E-03	4.77E-02	24	652.38	520.52	652.38	0	0	0.000288448	589.36	0	0	20
7	1.31	0.16	134	0.8	6	1.89E-03	2.03E-02	22	668.7	533.54	668.7	0	0	0.00026815	596.68	0	0	20
8	1.48	0.17	109.3	1.3	6	7.30E-04	7.86E-03	21	672.06	536.22	672.06	0	0	0.000284195	598.18	0	0	20
9	1.64	0.16	85.9	1.4	6	2.25E-04	2.30E-03	18	637.71	508.81	637.71	0	0	0.000274584	582.7	0	0	20
10	1.8	0.16	57.3	1.3	6	5.75E-05	4.91E-04	13	533.63	425.77	533.63	0	0	0.000300171	533.03	0	0	20
11	1.97	0.17	21.9	1.1	8	1.09E-05	7.39E-05	9	424.8	338.93	424.8	0	0	0.000357458	475.58	0	0	20
12	2.13	0.16	18.1	1.1	9	1.78E-06	7.28E-06	6	255.44	264.92	332.03	1.3	20.93	0.000380545	420.45	2.49	1.2	20
13	2.3	0.17	14.9	1	9	9.17E-07	3.03E-06	5	206.55	241.48	302.66	1.05	15.67	0.000423486	401.43	2.35	1.03	20
14	2.46	0.16	11.5	0.9	9	5.61E-07	1.50E-06	4	167.57	214.17	268.42	0.85	11.89	0.000423236	378.04	2.2	0.97	20
15	2.62	0.16	9.8	0.7	9	3.48E-07	7.72E-07	4	138.45	0	241.75	0.71	9.22	0.000445968	358.77	2.07	0.9	20
16	2.79	0.17	8.7	0.7	9	2.90E-07	5.74E-07	4	123.8	0	223.48	0.63	7.75	0.000492825	344.95	1.97	0.93	20
17	2.95	0.16	8.4	0.6	9	2.40E-07	4.46E-07	3	116.15	0	216.94	0.59	6.87	0.000470782	339.86	1.92	0.92	20
18	3.12	0.17	8.2	0.6	9	2.14E-07	3.84E-07	3	111.76	0	213.01	0.57	6.25	0.000504796	336.77	1.87	0.93	20
19	3.28	0.16	7.8	0.6	9	1.84E-07	3.11E-07	3	105.51	0	206.75	0.54	5.61	0.000482247	331.78	1.82	0.93	20
20	3.45	0.17	7.1	0.5	3	1.49E-07	2.34E-07	3	97.86	0	199.22	0.5	4.95	0.000521969	325.69	1.76	0.92	20
21	3.61	0.16	6.6	0.5	3	1.09E-07	1.54E-07	3	87.92	0	189.27	0.45	4.25	0.000504032	317.44	1.7	0.88	20
22	3.77	0.16	5.7	0.5	3	7.39E-08	9.46E-08	3	79.85	0	184.53	0.41	3.7	0.000510448	313.45	1.65	0.8	20
23	3.94	0.17	5.4	0.5	3	6.10E-08	7.24E-08	2	74.12	0	177.37	0.38	3.28	0.000553205	307.3	1.6	0.79	20
24	4.1	0.16	5.4	0.4	3	5.86E-08	6.72E-08	2	71.64	0	172.68	0.37	3.05	0.00052767	303.22	1.56	0.83	20
25	4.27	0.17	5.2	0.4	3	5.91E-08	6.63E-08	2	70.08	0	168.67	0.36	2.86	0.000567291	299.67	1.53	0.88	20
26	4.43	0.16	5.1	0.4	3	5.67E-08	6.40E-08	2	70.4	0	170.69	0.36	2.77	0.00053075	301.46	1.52	0.88	20
27	4.59	0.16	5.5	0.4	3	6.10E-08	7.14E-08	2	73.05	0	174.76	0.37	2.78	0.000524521	305.04	1.51	0.91	20
28	4.76	0.17	5.8	0.4	3	8.05E-08	1.04E-07	3	80.37	0	182.89	0.41	2.95	0.000544784	312.05	1.53	1	20
29	4.92	0.16	6.7	0.4	3	1.06E-07	1.56E-07	3	92	0	199.13	0.47	3.26	0.000491385	325.61	1.57	1.06	20
30	5.09	0.17	8	0.5	3	1.58E-07	2.84E-07	3	112.52	0	226.78	0.57	3.86	0.000489237	347.48	1.64	1.13	20
31	5.25	0.16	10.2	0.6	3	2.10E-07	4.44E-07	4	132.04	0	252.65	0.67	4.39	0.000436241	366.77	1.7	1.17	20
32	5.41	0.16	10.9	0.6	3	2.34E-07	5.34E-07	4	142.12	0	266.55	0.73	4.59	0.000424719	376.72	1.72	1.18	20
33	5.58	0.17	10.2	0.6	3	2.23E-07	5.07E-07	4	141.9	0	268.54	0.72	4.44	0.000449593	378.12	1.71	1.18	20
34	5.74	0.16	10.2	0.6	3	2.08E-07	4.70E-07	4	140.82	0	269.79	0.72	4.28	0.000422152	379.01	1.69	1.17	20
35	5.91	0.17	10.7	0.6	3	1.92E-07	4.28E-07	4	139.28	0	270.81	0.71	4.11	0.000447698	379.72	1.68	1.16	20
36	6.07	0.16	9.9	0.6	3	1.72E-07	3.88E-07	4	140.56	0	278.72	0.72	4.04	0.000415347	385.22	1.67	1.11	20
37	6.23	0.16	10.5	0.7	3	1.75E-07	4.10E-07	4	146.51	0	289.82	0.75	4.1	0.000407311	392.82	1.68	1.1	20
38	6.4	0.17	12	0.7	3	2.04E-07	5.32E-07	5	162.75	0	312.95	0.83	4.44	0.000416463	408.2	1.72	1.11	20
39	6.56	0.16	13.4	0.8	3	2.70E-07	7.87E-07	5	181.89	0	332.47	0.93	4.84	0.000380282	420.74	1.76	1.19	20
40	6.73	0.17	14.6	0.8	4	3.11E-07	9.75E-07	6	195.47	0	348.24	1	5.07	0.000394807	430.59	1.78	1.22	20
41	6.89	0.16	14.9	0.8	4	3.51E-07	1.15E-06	6	203.9	0	355.46	1.04	5.17	0.000367782	435.04	1.79	1.27	20
42	7.05	0.16	15.2	0.8	4	3.34E-07	1.09E-06	6	202.92	0	356.97	1.04	5.02	0.000367006	435.96	1.78	1.27	20
43	7.22	0.17	14.4	0.8	4	3.13E-07	9.88E-07	6	196.78	0	350.19	1	4.76	0.000393701	431.8	1.75	1.28	20
44	7.38	0.16	13.6	0.7	4	2.95E-07	9.00E-07	5	190.69	0	343.12	0.97	4.51	0.000374339	427.42	1.72	1.3	20
45	7.55	0.17	13.9	0.7	4	3.03E-07	9.41E-07	6	193.9	0	347.16	0.99	4.48	0.000395413	429.93	1.72	1.32	20
46	7.71	0.16	15.1	0.8	4	3.02E-07	9.65E-07	6	199.88	0	358.18	1.02	4.53	0.000366384	436.7	1.73	1.3	20
47	7.87	0.16	14.9	0.8	4	2.93E-07	9.58E-07	6	204.41	0	368.29	1.04	4.53	0.000361321	442.82	1.73	1.28	20
48	8.04	0.17	14.9	0.8	4	3.28E-07	1.12E-06	6	212.7	0	375.36	1.09	4.62	0.000380271	447.05	1.74	1.33	20
49	8.2	0.16	16.9	0.8	4	3.69E-07	1.34E-06	6	226.17	311.71	390.67	1.15	4.81	0.000350816	456.08	1.76	1.36	20
50	8.37	0.17	17.8	0.9	4	4.05E-07	1.58E-06	7	243.41	329.96	413.55	1.24	5.08	0.000362288	469.24	1.79	1.35	20
51	8.53	0.16	18.6	1	4	3.71E-07	1.53E-06	7	257.76	355.01	444.95	1.32	5.27	0.000328724	486.73	1.82	1.25	20
52	8.69	0.16	20	1.2	4	3.67E-07	1.60E-06	8	272.07	375.46	470.58	1.39	5.46	0.000319648	500.55	1.85	1.2	20
53	8.86	0.17	20.9	1.2	4	3.53E-07	1.58E-06	8	279.75	0	487.32	1.43	5.51	0.000333739	509.38	1.86	1.17	20
54	9.02	0.16	20.3	1.2	4	3.64E-07	1.61E-06	8	275.49	0	477.06	1.41	5.33	0.000317473	503.98	1.84	1.22	20
55	9.19	0.17	19.1	1	4	3.69E-07	1.59E-06	8	269.43	371.47	465.57	1.37	5.12	0.000341448	497.88	1.81	1.26	20
56	9.35	0.16	19.6	1	4	4.07E-07	1.72E-06	7	264.38	357.98	448.67	1.35	4.94	0.000327359	488.76	1.79	1.37	20

CPT-4 Estimations

57	9.51	0.16	19.2	0.9	4	4.28E-07	1.82E-06	7	264.82	355.31	445.33	1.35	4.86	0.000328589	486.93	1.78	1.42	20
58	9.68	0.17	19.2	0.9	4	4.88E-07	2.12E-06	7	270.86	355	444.93	1.38	4.88	0.000349277	486.72	1.78	1.5	20
59	9.84	0.16	20.9	0.9	4	5.22E-07	2.37E-06	8	282.96	366.28	459.08	1.44	5.02	0.000323631	494.39	1.79	1.52	20
60	10.01	0.17	21.8	1	4	5.20E-07	2.46E-06	8	295.03	382.18	479	1.51	5.14	0.000336627	505.01	1.81	1.48	20
61	10.17	0.16	21.8	1.1	4	4.48E-07	2.15E-06	8	300.04	399.32	500.48	1.53	5.15	0.000309951	516.21	1.82	1.36	20
62	10.34	0.17	22	1.2	4	4.06E-07	1.97E-06	8	303.56	411.27	515.46	1.55	5.12	0.000324508	523.87	1.82	1.3	20
63	10.5	0.16	22.6	1.2	4	4.03E-07	1.97E-06	8	304.81	413.47	518.22	1.56	5.07	0.000304599	525.28	1.82	1.31	20
64	10.66	0.16	22.1	1.1	4	4.46E-07	2.18E-06	8	305.12	406.48	509.45	1.56	5	0.000307214	520.81	1.8	1.39	20
65	10.83	0.17	22.1	1	4	4.22E-07	2.08E-06	9	307.5	413.65	518.44	1.57	4.96	0.000323569	525.39	1.8	1.36	20
66	10.99	0.16	23.1	1.3	4	3.88E-07	1.97E-06	9	316.33	432.13	541.61	1.61	5.02	0.000297952	537	1.82	1.28	20
67	11.16	0.17	24	1.4	4	3.32E-07	1.76E-06	9	331.25	0	583.33	1.69	5.18	0.000305042	557.3	1.84	1.16	20
68	11.32	0.16	25.3	1.6	9	3.79E-07	2.17E-06	10	357.66	490.72	615.03	1.82	5.51	0.000279603	572.24	1.88	1.17	20
69	11.48	0.16	28.8	1.6	9	4.16E-07	2.51E-06	10	377.17	508.8	637.7	1.92	5.73	0.000274589	582.69	1.9	1.18	20
70	11.65	0.17	28.2	1.6	9	4.43E-07	2.73E-06	11	385.47	514.19	644.45	1.97	5.78	0.000290216	585.77	1.91	1.2	20
71	11.81	0.16	27.1	1.6	9	4.13E-07	2.55E-06	11	384.92	519.83	651.52	1.96	5.69	0.000271661	588.97	1.9	1.18	20
72	11.98	0.17	28.7	1.7	9	3.91E-07	2.42E-06	11	385.69	526.12	659.4	1.97	5.62	0.00028691	592.52	1.9	1.16	20
73	12.14	0.16	28.4	1.7	9	3.97E-07	2.48E-06	11	389.24	529.42	663.54	1.99	5.6	0.000269188	594.38	1.89	1.17	20
74	12.3	0.16	27.9	1.6	9	4.13E-07	2.56E-06	11	386.37	521.9	654.11	1.97	5.48	0.000271122	590.14	1.88	1.21	20
75	12.47	0.17	28.1	1.5	4	4.28E-07	2.63E-06	11	383.11	514.1	644.34	1.95	5.36	0.000290241	585.72	1.87	1.25	20
76	12.63	0.16	27.7	1.5	4	4.42E-07	2.71E-06	11	383.56	511.77	641.42	1.96	5.3	0.00027379	584.39	1.86	1.28	20
77	12.8	0.17	28	1.5	4	4.22E-07	2.51E-06	10	371.65	500.12	626.81	1.9	5.07	0.00029427	577.7	1.83	1.3	20
78	12.96	0.16	25.6	1.3	4	3.76E-07	2.07E-06	10	344.1	472.76	592.53	1.76	4.63	0.00028486	561.68	1.78	1.32	20
79	13.12	0.16	21.9	1.1	4	3.04E-07	1.41E-06	8	290.11	0	519.27	1.48	3.86	0.000304292	525.81	1.68	1.4	20
80	13.29	0.17	16.6	0.7	4	2.04E-07	7.23E-07	7	221.16	0	425.32	1.13	2.9	0.00035724	475.87	1.54	1.51	20
81	13.45	0.16	11	0.4	4	1.28E-07	3.14E-07	5	152.83	0	319.65	0.78	1.98	0.000387841	412.54	1.36	1.76	20
82	13.62	0.17	7.4	0.2	3	6.46E-08	1.00E-07	3	96.95	0	229.6	0.49	1.24	0.000486228	349.63	1.18	2.08	20
83	13.78	0.16	4.7	0.1	3	1.84E-08	1.40E-08	3	47.6	0	182.2	0.31	0.78	0.00051371	311.46	1.02	1.84	20
84	13.94	0.16	3.4	0.2	3	3.09E-09	1.00E-09	2	20.18	0	166.13	0.2	0.5	0.000537978	297.41	0.88	1.2	20
85	14.11	0.17	2.9	0.2	2	1.65E-09	3.27E-10	2	12.35	0	168.14	0.16	0.39	0.000568182	299.2	0.81	0.79	20
86	14.27	0.16	2.9	0.2	2	1.62E-09	3.14E-10	2	12.11	0	168.8	0.16	0.38	0.000533725	299.78	0.8	0.79	20
87	14.44	0.17	3.4	0.2	3	2.10E-09	6.13E-10	2	18.21	0	187.62	0.2	0.47	0.000537873	316.06	0.86	0.83	20
88	14.6	0.16	4.5	0.3	3	4.15E-09	2.66E-09	3	40.06	0	225.25	0.3	0.69	0.000462027	346.3	0.98	0.96	20
89	14.76	0.16	7	0.4	3	1.05E-08	1.26E-08	3	74.44	0	260.89	0.4	0.94	0.0004293	372.7	1.09	1.08	20
90	14.93	0.17	8	0.4	3	1.56E-08	2.53E-08	4	101.27	0	310.04	0.52	1.18	0.00041842	406.29	1.18	1.01	20
91	15.09	0.16	9.2	0.7	3	2.29E-08	4.69E-08	5	127.93	0	365.54	0.65	1.48	0.00036268	441.16	1.27	0.96	20
92	15.26	0.17	12.7	0.9	3	3.64E-08	9.40E-08	6	161.05	0	423.01	0.82	1.84	0.000358219	474.57	1.36	0.97	20
93	15.42	0.16	15.1	0.9	3	6.95E-08	2.25E-07	7	202.13	0	472.33	1.03	2.29	0.000319056	501.48	1.45	1.08	20
94	15.58	0.16	18	1	3	1.07E-07	3.97E-07	7	230.99	0	498.92	1.18	2.59	0.000310438	515.4	1.51	1.19	20
95	15.75	0.17	18.9	1	3	1.29E-07	5.09E-07	8	247.21	0	516.86	1.26	2.74	0.000324063	524.59	1.53	1.24	20
96	15.91	0.16	18.6	1	3	1.47E-07	5.83E-07	8	248.01	0	506.31	1.27	2.72	0.000308166	519.2	1.53	1.33	20
97	16.08	0.17	18.2	0.8	3	1.58E-07	6.06E-07	7	239.89	0	483.33	1.22	2.6	0.000335121	507.28	1.5	1.44	20
98	16.24	0.16	17.2	0.7	4	1.63E-07	5.95E-07	7	228.14	0	457	1.16	2.45	0.000324366	493.27	1.47	1.56	20
99	16.4	0.16	16.1	0.7	4	1.61E-07	5.63E-07	7	218.23	0	437.98	1.11	2.32	0.000331332	482.9	1.45	1.64	20
100	16.57	0.17	16.1	0.6	4	1.36E-07	4.48E-07	7	205.03	0	424.11	1.05	2.16	0.000357752	475.19	1.41	1.62	20
101	16.73	0.16	14.4	0.6	4	1.25E-07	3.81E-07	6	190.93	0	401.4	0.97	1.99	0.000346096	462.3	1.38	1.68	20
102	16.9	0.17	13.1	0.5	3	9.51E-08	2.65E-07	6	174.03	0	384.24	0.89	1.8	0.000375848	452.31	1.34	1.63	20
103	17.06	0.16	12.5	0.5	3	7.91E-08	2.05E-07	6	161.84	0	369.47	0.83	1.66	0.00036075	443.52	1.3	1.62	20
104	17.23	0.17	11.8	0.5	3	7.58E-08	1.95E-07	6	160.87	0	370.12	0.82	1.63	0.000382961	443.91	1.3	1.61	20
105	17.39	0.16	12.9	0.5	3	8.24E-08	2.11E-07	5	159.92	0	362.36	0.82	1.61	0.000364266	439.24	1.29	1.71	20
106	17.55	0.16	12.3	0.4	3	9.04E-08	2.30E-07	5	158.97	0	354.25	0.81	1.58	0.000368417	434.29	1.28	1.83	20
107	17.72	0.17	11.6	0.4	3	7.67E-08	1.81E-07	5	147.7	0	339.11	0.75	1.45	0.000400085	424.91	1.25	1.85	20
108	17.88	0.16	10.5	0.4	3	6.21E-08	1.40E-07	5	140.63	0	335.43	0.72	1.37	0.000378609	422.6	1.23	1.76	20
109	18.05	0.17	10.8	0.4	3	6.07E-08	1.37E-07	5	140.54	0	336.54	0.72	1.36	0.000401606	423.3	1.22	1.76	20
110	18.21	0.16	11.6	0.4	3	4.79E-08	1.06E-07	5	137.83	0	344.58	0.7	1.32	0.000373544	428.33	1.21	1.59	20
111	18.37	0.16	10	0.5	3	3.46E-08	7.30E-08	5	131.94	0	349.89	0.67	1.25	0.000370696	431.62	1.2	1.41	20
112	18.54	0.17	9.7	0.5	3	2.21E-08	4.35E-08	5	123.06	0	353.89	0.63	1.16	0.000391633	434.08	1.17	1.23	20
113	18.7	0.16	9.9	0.5	3	2.18E-08	4.30E-08	5	123.26	0	355.29	0.63	1.15	0.000367875	434.93	1.17	1.23	20
114	18.87	0.17	10.2	0.5	3	2.42E-08	5.06E-08	5	130.76	0	369.92	0.67	1.21	0.000383055	443.8	1.19	1.23	20
115	19.03	0.16	11.4	0.6	3	3.52E-08	8.32E-08	6	147.78	0	390.66	0.75	1.36	0.000350823	456.07	1.23	1.3	20

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116	19.19	0.16	13.6	0.6	3	5.82E-08	1.65E-07	6	177.45	0	428.29	0.91	1.61	0.000335057	477.53	1.3	1.4	20
117	19.36	0.17	16.6	0.7	3	1.12E-07	3.94E-07	7	220.21	0	472.2	1.12	1.99	0.000339044	501.41	1.38	1.57	20
118	19.52	0.16	20.6	0.8	4	2.24E-07	9.85E-07	8	274.72	0	519.57	1.4	2.46	0.000304206	525.96	1.48	1.79	20
119	19.69	0.17	25.3	0.8	4	3.66E-07	1.90E-06	9	324.75	0	561.88	1.66	2.88	0.000310815	546.95	1.55	1.95	20
120	19.85	0.16	27.3	0.9	4	5.34E-07	3.06E-06	10	358.06	461.72	578.69	1.83	3.15	0.000288252	555.07	1.59	2.15	20
121	20.01	0.16	27.7	0.8	4	5.56E-07	3.29E-06	10	369.92	473.49	593.44	1.89	3.23	0.000284642	562.11	1.61	2.13	20
122	20.18	0.17	27.8	0.9	4	5.62E-07	3.35E-06	10	372.26	475.56	596.03	1.9	3.22	0.000301777	563.33	1.61	2.15	20
123	20.34	0.16	27.8	0.9	4	5.79E-07	3.55E-06	10	383.24	486.95	610.31	1.96	3.29	0.000280682	570.04	1.62	2.13	20
124	20.51	0.17	30	0.9	4	5.95E-07	3.69E-06	11	387.15	489.56	613.58	1.98	3.29	0.000297426	571.57	1.62	2.15	20
125	20.67	0.16	28.6	0.9	4	5.93E-07	3.62E-06	10	381.21	482.24	604.41	1.94	3.22	0.000282048	567.28	1.61	2.2	20
126	20.83	0.16	26.5	0.8	4	4.79E-07	2.73E-06	10	355.82	467.97	586.53	1.82	2.98	0.000286318	558.82	1.57	2.13	20
127	21	0.17	24.6	0.8	4	4.15E-07	2.25E-06	10	337.93	456.07	571.6	1.72	2.81	0.000308155	551.67	1.54	2.11	20
128	21.16	0.16	24.8	0.8	4	4.04E-07	2.18E-06	10	336.82	456.78	572.5	1.72	2.78	0.000289803	552.1	1.54	2.11	20
129	21.33	0.17	26.3	0.8	4	4.12E-07	2.29E-06	10	346.48	468.1	586.68	1.77	2.84	0.000304169	558.9	1.55	2.08	20
130	21.49	0.16	26.7	0.9	4	3.71E-07	2.12E-06	10	357.6	492.51	617.28	1.82	2.9	0.000279091	573.29	1.56	1.92	20
131	21.65	0.16	27.2	1.1	4	2.91E-07	1.71E-06	11	366.3	0	660.61	1.87	2.95	0.000269783	593.07	1.58	1.66	20
132	21.82	0.17	28.2	1.3	4	2.28E-07	1.35E-06	11	371.21	0	699.9	1.89	2.97	0.000278483	610.45	1.58	1.47	20
133	21.98	0.16	27.8	1.4	4	1.91E-07	1.13E-06	11	370.41	0	721.24	1.89	2.94	0.000258198	619.68	1.58	1.36	20
134	22.15	0.17	27.1	1.4	3	1.66E-07	9.43E-07	11	354.75	0	708.29	1.81	2.8	0.000276832	614.09	1.56	1.33	20
135	22.31	0.16	24.9	1.2	3	1.46E-07	7.68E-07	10	327.35	0	668.49	1.67	2.56	0.000268191	596.59	1.51	1.36	20
136	22.47	0.16	22	1	3	1.25E-07	5.80E-07	9	288.85	0	606.7	1.47	2.24	0.000281517	568.35	1.45	1.44	20
137	22.64	0.17	18.9	0.8	3	1.06E-07	4.22E-07	8	249.46	0	540.55	1.27	1.92	0.000316886	536.47	1.38	1.56	20
138	22.8	0.16	16.5	0.6	3	8.87E-08	3.05E-07	7	214.87	0	480.45	1.1	1.64	0.000316349	505.77	1.31	1.7	20
139	22.97	0.17	14.6	0.5	3	7.36E-08	2.31E-07	7	195.65	0	452.54	1	1.49	0.000346331	490.86	1.26	1.73	20
140	23.13	0.16	14.8	0.6	3	6.83E-08	2.11E-07	7	192.79	0	451.95	0.98	1.45	0.000326171	490.54	1.26	1.7	20
141	23.3	0.17	15.9	0.6	3	7.11E-08	2.34E-07	7	205.74	0	478.78	1.05	1.54	0.000336707	504.89	1.28	1.62	20
142	23.46	0.16	17.4	0.7	3	8.18E-08	2.93E-07	8	223.83	0	507.94	1.14	1.67	0.000307669	520.04	1.31	1.6	20
143	23.62	0.16	18.7	0.8	3	1.06E-07	4.44E-07	9	260.2	0	562.93	1.33	1.92	0.000292259	547.46	1.38	1.56	20
144	23.79	0.17	23.7	1	4	1.36E-07	6.28E-07	9	287.76	0	595.38	1.47	2.11	0.000301943	563.02	1.42	1.6	20
145	23.95	0.16	23.3	0.9	4	2.03E-07	1.03E-06	10	318.1	0	612.53	1.62	2.32	0.000280171	571.08	1.46	1.77	20
146	24.12	0.17	25.2	0.8	4	2.17E-07	1.09E-06	10	312.83	0	595	1.6	2.26	0.00030204	562.84	1.45	1.88	20
147	24.28	0.16	22.6	0.8	4	2.12E-07	1.02E-06	9	300.08	0	573.03	1.53	2.16	0.000289671	552.35	1.43	1.96	20
148	24.44	0.16	20.6	0.7	4	1.42E-07	6.21E-07	9	272.88	0	560.35	1.39	1.95	0.000292928	546.21	1.38	1.78	20
149	24.61	0.17	19.4	0.8	4	1.46E-07	6.32E-07	9	270.04	0	551.65	1.38	1.92	0.000313682	541.95	1.37	1.84	20
150	24.77	0.16	22	0.7	4	1.63E-07	7.40E-07	9	283.95	0	568.88	1.45	2	0.000290724	550.35	1.39	1.85	20
151	24.94	0.17	23.6	0.8	4	2.01E-07	9.63E-07	9	299.74	0	578.29	1.53	2.1	0.000306373	554.88	1.41	1.95	20
152	25.1	0.16	22.8	0.8	4	2.06E-07	1.04E-06	10	314.56	0	604.17	1.6	2.19	0.000282102	567.17	1.43	1.89	20
153	25.26	0.16	25.2	0.9	4	2.26E-07	1.19E-06	10	328.9	0	620.98	1.68	2.27	0.000278261	575	1.45	1.9	20
154	25.43	0.17	26.7	0.9	4	2.25E-07	1.21E-06	10	335.68	0	634.1	1.71	2.3	0.000292579	581.04	1.46	1.86	20
155	25.59	0.16	24.3	0.9	4	2.27E-07	1.21E-06	10	331.32	0	624.97	1.69	2.26	0.000277368	576.85	1.45	1.91	20
156	25.76	0.17	24.3	0.8	4	2.44E-07	1.27E-06	10	325.61	0	606.39	1.66	2.21	0.000299185	568.21	1.44	2.04	20
157	25.92	0.16	25.5	0.7	4	2.83E-07	1.47E-06	10	325.14	0	589.44	1.66	2.19	0.000285607	560.21	1.43	2.22	20
158	26.08	0.16	24.2	0.7	4	2.96E-07	1.53E-06	10	322.84	0	580.32	1.65	2.16	0.000287842	555.86	1.43	2.31	20
159	26.25	0.17	23.8	0.7	4	2.42E-07	1.27E-06	10	327.99	0	611.56	1.67	2.18	0.000297922	570.62	1.43	2.05	20
160	26.41	0.16	26.6	1	4	2.39E-07	1.39E-06	11	364.41	0	681.1	1.86	2.41	0.000265697	602.19	1.48	1.82	20
161	26.58	0.17	32	1.3	4	2.43E-07	1.61E-06	12	411.84	0	767.21	2.1	2.7	0.000265987	639.13	1.54	1.63	20
162	26.74	0.16	34	1.5	4	2.64E-07	1.87E-06	13	442.51	0	812.36	2.26	2.89	0.000243287	657.66	1.58	1.58	20
163	26.9	0.16	33.2	1.4	4	2.83E-07	2.02E-06	13	445.79	0	808.16	2.27	2.89	0.000243917	655.96	1.58	1.63	20
164	27.07	0.17	32.7	1.2	4	2.80E-07	1.90E-06	12	423.92	0	769.92	2.16	2.73	0.000265517	640.26	1.55	1.72	20
165	27.23	0.16	29.3	1.1	4	2.52E-07	1.56E-06	12	386.04	0	714.79	1.97	2.47	0.000259357	616.91	1.5	1.81	20
166	27.4	0.17	25.1	0.9	4	1.79E-07	9.56E-07	10	334.38	0	658.84	1.71	2.13	0.000287031	592.27	1.43	1.79	20
167	27.56	0.16	21.7	0.8	3	1.12E-07	5.09E-07	9	284.08	0	609.02	1.45	1.8	0.000280978	569.44	1.35	1.7	20
168	27.72	0.16	18.6	0.8	3	6.13E-08	2.42E-07	9	246.47	0	589.18	1.26	1.55	0.000285673	560.08	1.29	1.48	20
169	27.89	0.17	17.1	0.9	3	4.42E-08	1.68E-07	9	236.95	0	601.06	1.21	1.48	0.000300507	565.71	1.27	1.32	20
170	28.05	0.16	19.7	1	3	6.45E-08	2.83E-07	10	273.7	0	648.27	1.4	1.7	0.00027234	587.5	1.33	1.37	20
171	28.22	0.17	26.5	1.1	4	1.44E-07	7.58E-07	10	327.71	0	670.94	1.67	2.03	0.000284433	597.68	1.41	1.7	20
172	28.38	0.16	28.7	0.8	4	2.28E-07	1.27E-06	11	348.12	0	656.4	1.78	2.14	0.00027065	591.17	1.43	2.01	20
173	28.54	0.16	24.1	0.7	4	2.44E-07	1.29E-06	10	328.65	0	611.77	1.68	2.01	0.000280348	570.72	1.4	2.24	20
174	28.71	0.17	22.3	0.7	4	1.64E-07	7.70E-07	9	293.18	0	586.57	1.5	1.78	0.000304202	558.84	1.35	2.09	20

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175	28.87	0.16	21.1	0.7	4	1.17E-07	4.96E-07	9	265.09	0	563.86	1.35	1.6	0.000292013	547.92	1.3	1.99	20
176	29.04	0.17	18.1	0.6	3	8.63E-08	3.34E-07	8	241.52	0	542.72	1.23	1.45	0.00031625	537.55	1.26	1.91	20
177	29.2	0.16	17.3	0.6	4	8.53E-08	3.14E-07	8	229.77	0	517.43	1.17	1.37	0.000304837	524.87	1.23	2.03	20
178	29.36	0.16	18.6	0.5	4	8.13E-08	2.89E-07	8	221.73	0	503.71	1.13	1.32	0.000308958	517.87	1.22	2.08	20
179	29.53	0.17	16.4	0.5	4	7.95E-08	2.74E-07	8	215.06	0	490.48	1.1	1.27	0.000332668	511.02	1.2	2.15	20
180	29.69	0.16	15.9	0.5	3	6.06E-08	2.02E-07	7	207.9	0	498	1.06	1.22	0.000310728	514.92	1.19	1.95	20
181	29.86	0.17	17.1	0.6	3	6.33E-08	2.30E-07	8	227.48	0	540.74	1.16	1.33	0.000316827	536.57	1.22	1.8	20
182	30.02	0.16	20.6	0.8	3	7.89E-08	3.32E-07	9	262.42	0	599.29	1.34	1.53	0.000283251	564.87	1.28	1.71	20
183	30.19	0.17	23.4	0.9	3	1.11E-07	5.48E-07	10	307.73	0	660.44	1.57	1.78	0.000286683	592.99	1.35	1.71	20
184	30.35	0.16	26.8	1	4	1.40E-07	7.66E-07	11	342.32	0	705	1.75	1.97	0.000261152	612.67	1.39	1.71	20
185	30.51	0.16	28	1.1	4	1.55E-07	8.98E-07	11	362.55	0	733.06	1.85	2.07	0.000256107	624.74	1.42	1.7	20
186	30.68	0.17	27.7	1.1	4	1.45E-07	8.47E-07	12	363.55	0	743.31	1.85	2.07	0.000270232	629.09	1.42	1.65	20
187	30.84	0.16	27	1.1	4	1.43E-07	8.22E-07	11	357.95	0	733.73	1.83	2.03	0.000255988	625.03	1.41	1.68	20
188	31.01	0.17	26.8	1	4	1.50E-07	8.45E-07	11	351.8	0	715.31	1.79	1.98	0.000275469	617.13	1.4	1.76	20
189	31.17	0.16	26.4	0.9	4	1.64E-07	9.13E-07	11	348.5	0	697.61	1.78	1.95	0.000262532	609.45	1.39	1.87	20
190	31.33	0.16	26.3	0.9	4	1.79E-07	1.00E-06	11	350.86	0	691.07	1.79	1.95	0.000263774	606.58	1.39	1.95	20
191	31.5	0.17	27.3	0.9	4	1.70E-07	9.65E-07	11	353.67	0	702.82	1.8	1.96	0.000277905	611.72	1.39	1.89	20
192	31.66	0.16	27	1	4	1.46E-07	8.39E-07	11	358.63	0	732.78	1.83	1.98	0.000256156	624.62	1.4	1.74	20
193	31.83	0.17	27.4	1.2	3	1.14E-07	6.63E-07	12	364.02	0	778.19	1.86	2	0.000264106	643.68	1.4	1.52	20
194	31.99	0.16	28.5	1.4	3	9.41E-08	5.60E-07	12	371.66	0	822.26	1.9	2.03	0.000241816	661.66	1.41	1.36	20
195	32.15	0.16	28.7	1.5	3	8.88E-08	5.35E-07	13	376.16	0	841.02	1.92	2.04	0.000239106	669.16	1.42	1.31	20
196	32.32	0.17	28.4	1.4	3	8.86E-08	5.29E-07	12	372.63	0	833.42	1.9	2.01	0.000255205	666.13	1.41	1.33	20
197	32.48	0.16	27.8	1.3	3	8.65E-08	5.02E-07	12	362.69	0	814.7	1.85	1.95	0.000242936	658.61	1.39	1.36	20
198	32.65	0.17	26.6	1.3	3	8.41E-08	4.75E-07	12	352.36	0	795.51	1.8	1.88	0.000261213	650.81	1.38	1.39	20
199	32.81	0.16	26.2	1.2	3	8.20E-08	4.49E-07	12	342.02	0	775.82	1.75	1.82	0.00024895	642.7	1.36	1.43	20
200	32.97	0.16	25.6	1.1	3	9.80E-08	5.14E-07	11	327.89	0	720.14	1.67	1.74	0.000258394	619.21	1.34	1.64	20
201	33.14	0.17	23.6	0.7	4	1.19E-07	5.80E-07	10	304.4	0	645.44	1.55	1.6	0.000289994	586.22	1.3	1.99	20
202	33.3	0.16	21.2	0.5	4	1.33E-07	5.96E-07	9	280.59	0	583.37	1.43	1.47	0.000287088	557.32	1.27	2.34	20
203	33.47	0.17	20.5	0.6	4	1.24E-07	5.61E-07	9	283.41	0	596.74	1.45	1.48	0.000301595	563.67	1.27	2.24	20
204	33.63	0.16	24.2	0.8	4	1.09E-07	5.22E-07	10	300.17	0	647.09	1.53	1.56	0.000272591	586.96	1.29	1.96	20
205	33.79	0.16	24.8	0.9	4	1.07E-07	5.54E-07	11	322.88	0	697.65	1.65	1.67	0.000262523	609.47	1.32	1.79	20
206	33.96	0.17	25.4	1	3	9.35E-08	4.85E-07	11	324.02	0	717.71	1.65	1.67	0.00027501	618.16	1.32	1.68	20
207	34.12	0.16	24.5	1	3	7.94E-08	3.97E-07	11	312.57	0	713.12	1.59	1.6	0.00025966	616.19	1.3	1.62	20
208	34.29	0.17	22.4	0.9	3	5.99E-08	2.72E-07	10	283.73	0	681.19	1.45	1.44	0.000282284	602.23	1.26	1.58	20
209	34.45	0.16	19.3	0.8	3	4.17E-08	1.65E-07	9	247.46	0	634.43	1.26	1.25	0.000275297	581.19	1.2	1.55	20
210	34.61	0.16	16.8	0.7	3	2.90E-08	9.94E-08	8	214.47	0	587.26	1.09	1.08	0.000286138	559.17	1.14	1.53	20
211	34.78	0.17	15.4	0.6	3	2.27E-08	6.90E-08	8	189.51	0	555.85	0.99	0.98	0.000312494	544.01	1.1	1.53	20
212	34.94	0.16	15	0.6	3	2.22E-08	6.69E-08	8	187.67	0	556.62	0.99	0.97	0.000293907	544.39	1.1	1.53	20
213	35.11	0.17	16.7	0.7	3	3.04E-08	1.04E-07	8	213.88	0	580.56	1.09	1.06	0.000305772	555.97	1.13	1.6	20
214	35.27	0.16	19.7	0.7	3	4.27E-08	1.66E-07	9	242.3	0	618.5	1.24	1.2	0.000278819	573.85	1.18	1.65	20
215	35.43	0.16	21.1	0.8	3	6.08E-08	2.72E-07	10	279.69	0	669.58	1.43	1.38	0.000267971	597.08	1.24	1.68	20
216	35.6	0.17	24.7	1	3	7.52E-08	3.92E-07	11	325.5	0	749.9	1.66	1.6	0.000269043	631.87	1.3	1.57	20
217	35.76	0.16	29.5	1.3	3	9.63E-08	5.94E-07	13	385.38	0	849	1.97	1.88	0.000237978	672.33	1.38	1.48	20
218	35.93	0.17	33.9	1.6	3	1.20E-07	8.59E-07	14	445.45	0	942.51	2.27	2.16	0.000239981	708.39	1.45	1.42	20
219	36.09	0.16	37.6	1.8	3	1.51E-07	1.19E-06	16	494.44	0	1004.42	2.52	2.39	0.000218791	731.29	1.5	1.43	20
220	36.26	0.17	40	1.8	4	1.83E-07	1.53E-06	16	523.14	0	1026.36	2.67	2.52	0.000229969	739.23	1.52	1.48	20
221	36.42	0.16	40.1	1.7	4	2.01E-07	1.74E-06	16	540.83	0	1043.12	2.76	2.59	0.000214696	745.24	1.54	1.5	20
222	36.58	0.16	41.4	1.9	4	1.96E-07	1.71E-06	17	544.03	0	1053.61	2.78	2.6	0.000213624	748.98	1.54	1.48	20
223	36.75	0.17	40.8	1.9	4	1.99E-07	1.76E-06	17	551.98	0	1066.2	2.82	2.62	0.000225632	753.44	1.54	1.48	20
224	36.91	0.16	41.9	1.8	4	2.25E-07	1.99E-06	17	553.32	0	1045.89	2.82	2.62	0.000214411	746.23	1.54	1.57	20
225	37.08	0.17	41.8	1.6	4	2.48E-07	2.19E-06	16	551.35	0	1023.6	2.81	2.6	0.000230277	738.24	1.54	1.65	20
226	37.24	0.16	40.4	1.6	4	2.44E-07	2.08E-06	16	533.79	0	994.15	2.72	2.5	0.000219919	727.54	1.52	1.7	20
227	37.4	0.16	38.1	1.5	4	2.34E-07	1.94E-06	16	518.7	0	973.27	2.65	2.42	0.000222265	719.86	1.5	1.73	20
228	37.57	0.17	38.5	1.4	4	2.48E-07	2.05E-06	15	515.64	0	957.06	2.63	2.4	0.000238149	713.84	1.5	1.8	20
229	37.73	0.16	39.7	1.4	4	2.59E-07	2.14E-06	15	515.8	0	950.19	2.63	2.39	0.00022495	711.27	1.5	1.84	20
230	37.9	0.17	38.1	1.4	4	2.60E-07	2.16E-06	15	517.64	0	952.51	2.64	2.38	0.000238717	712.14	1.5	1.85	20
231	38.06	0.16	38.9	1.4	4	2.49E-07	2.05E-06	15	513.53	0	952.35	2.62	2.36	0.000224694	712.08	1.49	1.83	20
232	38.22	0.16	38.8	1.4	4	2.61E-07	2.15E-06	15	513.99	0	945.45	2.62	2.35	0.000225514	709.49	1.49	1.88	20
233	38.39	0.17	38.2	1.3	4	2.54E-07	2.06E-06	15	505.81	0	935.05	2.58	2.3	0.000240937	705.58	1.48	1.9	20

CPT-4 Estimations

234	38.55	0.16	37.1	1.3	4	2.55E-07	2.02E-06	15	494.94	0	914.48	2.53	2.24	0.000229299	697.78	1.47	1.95	20
235	38.72	0.17	36.4	1.2	4	2.20E-07	1.67E-06	14	473.5	0	898.34	2.42	2.13	0.00024581	691.59	1.44	1.92	20
236	38.88	0.16	33.6	1.2	4	1.95E-07	1.42E-06	14	455.51	0	883.26	2.32	2.04	0.000233318	685.76	1.42	1.9	20
237	39.04	0.16	33.3	1.2	4	1.57E-07	1.07E-06	14	428.18	0	863.9	2.18	1.91	0.000235915	678.21	1.39	1.84	20
238	39.21	0.17	30.7	1.1	4	1.29E-07	8.28E-07	13	399.5	0	834.34	2.04	1.78	0.000255064	666.5	1.35	1.82	20
239	39.37	0.16	27.6	1	4	1.07E-07	6.29E-07	12	366.71	0	792.49	1.87	1.63	0.000246317	649.57	1.31	1.83	20
240	39.54	0.17	26.4	0.9	3	9.17E-08	4.96E-07	11	337.91	0	751.05	1.72	1.49	0.000268834	632.36	1.27	1.88	20
241	39.7	0.16	24.6	0.8	3	7.35E-08	3.72E-07	11	316.27	0	731.75	1.61	1.39	0.000256336	624.18	1.24	1.82	20
242	39.86	0.16	23	0.9	3	6.19E-08	2.97E-07	11	299.35	0	714.35	1.53	1.31	0.000259437	616.72	1.22	1.8	20
243	40.03	0.17	22.8	0.8	3	5.58E-08	2.62E-07	11	292.96	0	712.33	1.49	1.28	0.000276046	615.84	1.21	1.76	20
244	40.19	0.16	23.3	0.8	3	6.09E-08	2.87E-07	11	294.11	0	703.96	1.5	1.28	0.000261344	612.22	1.21	1.84	20
245	40.36	0.17	23.3	0.8	3	5.88E-08	2.76E-07	11	292.46	0	704.4	1.49	1.26	0.000277596	612.4	1.2	1.83	20
246	40.52	0.16	22.5	0.8	3	6.37E-08	2.99E-07	10	292.93	0	695.4	1.49	1.26	0.00026295	608.48	1.2	1.91	20
247	40.68	0.16	23.4	0.7	3	6.53E-08	3.08E-07	11	295.18	0	697.74	1.51	1.27	0.000262506	609.51	1.2	1.93	20
248	40.85	0.17	23.8	0.8	3	6.81E-08	3.26E-07	11	298.82	0	700.84	1.52	1.28	0.000278296	610.86	1.21	1.95	20
249	41.01	0.16	23.3	0.8	3	6.03E-08	2.87E-07	11	296.74	0	711.52	1.51	1.26	0.000259955	615.49	1.2	1.85	20
250	41.18	0.17	23	0.8	3	5.18E-08	2.38E-07	11	287.16	0	707.67	1.47	1.22	0.00027695	613.83	1.19	1.79	20
251	41.34	0.16	21.8	0.8	3	4.42E-08	1.96E-07	10	277.23	0	703.22	1.41	1.17	0.000261485	611.89	1.17	1.73	20
252	41.5	0.16	21.2	0.8	3	4.48E-08	1.96E-07	10	273.51	0	691.99	1.4	1.15	0.000263596	606.99	1.17	1.78	20
253	41.67	0.17	22.2	0.7	3	4.97E-08	2.28E-07	11	286.16	0	710.7	1.46	1.2	0.00027636	615.14	1.18	1.79	20
254	41.83	0.16	24.5	0.9	3	5.65E-08	2.72E-07	11	301	0	730.31	1.54	1.26	0.000256587	623.57	1.2	1.81	20
255	42	0.17	24.4	0.9	3	5.09E-08	2.49E-07	11	304.84	0	753.62	1.56	1.27	0.000268376	633.44	1.2	1.69	20
256	42.16	0.16	23.1	0.9	3	3.85E-08	1.73E-07	11	281.32	0	731.56	1.44	1.16	0.000256369	624.1	1.17	1.62	20
257	42.32	0.16	19.6	0.8	3	2.73E-08	1.08E-07	10	246.25	0	681.41	1.26	1.02	0.000265635	602.33	1.12	1.61	20
258	42.49	0.17	17	0.6	3	2.02E-08	5.94E-08	9	183.61	0	617.8	1.08	0.87	0.00029641	573.53	1.06	1.67	20
259	42.65	0.16	15.7	0.5	3	2.15E-08	5.30E-08	8	154.26	0	561.18	0.99	0.79	0.000292708	546.62	1.03	1.94	20
260	42.82	0.17	15.9	0.4	3	2.29E-08	5.19E-08	8	141.29	0	531.69	0.95	0.76	0.000319513	532.06	1.01	2.15	20
261	42.98	0.16	15.3	0.4	3	1.87E-08	4.09E-08	8	136.59	0	543.46	0.94	0.74	0.000297448	537.91	1	1.96	20
262	43.15	0.17	15.1	0.6	3	1.35E-08	2.99E-08	8	138.21	0	581.14	0.94	0.75	0.000305618	556.25	1.01	1.63	20
263	43.31	0.16	16.2	0.7	3	1.14E-08	2.80E-08	9	153.59	0	632.82	1	0.79	0.000275643	580.46	1.02	1.39	20
264	43.47	0.16	17.5	0.8	3	2.37E-08	8.93E-08	10	234.88	0	686.48	1.23	0.97	0.000264651	604.57	1.1	1.58	20
265	43.64	0.17	25.1	0.8	3	4.64E-08	2.11E-07	11	283.52	0	712.92	1.45	1.13	0.000275929	616.1	1.16	1.85	20
266	43.8	0.16	25.1	0.7	4	7.62E-08	3.74E-07	11	306.25	0	703.88	1.56	1.22	0.000261361	612.18	1.19	2.19	20
267	43.97	0.17	22.4	0.6	4	6.99E-08	3.15E-07	10	281.61	0	657.37	1.44	1.12	0.000287351	591.61	1.15	2.35	20
268	44.13	0.16	19.8	0.5	3	5.57E-08	2.27E-07	9	254.7	0	619.53	1.3	1.01	0.000278585	574.33	1.11	2.39	20
269	44.29	0.16	19.4	0.5	3	3.60E-08	1.14E-07	9	197.9	0	589.97	1.14	0.88	0.00028548	560.46	1.06	2.24	20
270	44.46	0.17	15.9	0.5	3	2.48E-08	6.23E-08	8	156.84	0	562.88	1.02	0.78	0.000310536	547.44	1.02	2.14	20
271	44.62	0.16	14.7	0.4	3	1.51E-08	3.01E-08	8	124.28	0	548.96	0.91	0.7	0.000295951	540.63	0.98	1.91	20
272	44.79	0.17	14.8	0.5	3	1.35E-08	2.84E-08	8	131.8	0	578.4	0.94	0.72	0.000306339	554.94	0.99	1.72	20
273	44.95	0.16	17.1	0.7	3	1.29E-08	3.40E-08	9	163.82	0	650.54	1.05	0.8	0.000271864	588.53	1.03	1.47	20
274	45.11	0.16	19.3	0.9	3	1.43E-08	4.60E-08	10	200.56	0	708.04	1.16	0.88	0.000260591	613.99	1.06	1.37	20
275	45.28	0.17	19.6	0.9	3	1.57E-08	5.46E-08	10	216.99	0	725.64	1.21	0.91	0.000273501	621.57	1.08	1.37	20
276	45.44	0.16	19.2	0.8	3	1.72E-08	5.79E-08	10	210.68	0	704.81	1.19	0.9	0.000261186	612.59	1.07	1.46	20
277	45.61	0.17	18.7	0.7	3	1.71E-08	5.11E-08	9	186.88	0	665.68	1.13	0.85	0.000285556	595.33	1.05	1.58	20
278	45.77	0.16	16.8	0.6	3	1.72E-08	4.51E-08	9	164	0	624.04	1.06	0.79	0.000277575	576.42	1.02	1.73	20
279	45.93	0.16	16.3	0.5	3	1.52E-08	3.40E-08	8	139.98	0	590.66	0.98	0.73	0.000285312	560.79	1	1.8	20
280	46.1	0.17	15.4	0.5	3	1.40E-08	2.86E-08	8	127.68	0	573.48	0.94	0.7	0.000307653	552.57	0.98	1.84	20
281	46.26	0.16	15	0.5	3	1.44E-08	3.30E-08	9	143.73	0	606.75	1	0.74	0.000281507	568.37	1	1.72	20
282	46.43	0.17	18.7	0.7	3	2.26E-08	8.03E-08	10	222.28	0	696.51	1.24	0.91	0.000279164	608.96	1.08	1.66	20
283	46.59	0.16	25.6	1	3	3.49E-08	1.71E-07	12	305.09	0	807.62	1.56	1.14	0.000243999	655.74	1.16	1.58	20
284	46.75	0.16	28.2	1.2	3	4.89E-08	2.78E-07	13	355.5	0	885.47	1.81	1.33	0.000233026	686.62	1.22	1.57	20
285	46.92	0.17	29.5	1.2	3	5.45E-08	3.28E-07	13	375.18	0	916.13	1.91	1.4	0.00024341	698.41	1.24	1.56	20
286	47.08	0.16	29.8	1.2	3	6.23E-08	3.82E-07	14	382.78	0	912.33	1.95	1.42	0.000229568	696.96	1.25	1.64	20
287	47.25	0.17	29.8	1.1	3	6.82E-08	4.22E-07	14	386.34	0	905.97	1.97	1.43	0.000244773	694.52	1.25	1.7	20
288	47.41	0.16	30.2	1.1	3	7.49E-08	4.68E-07	14	389.95	0	899.11	1.99	1.44	0.000231251	691.89	1.26	1.77	20
289	47.57	0.16	30.5	1.1	3	7.16E-08	4.50E-07	14	392.11	0	911.34	2	1.44	0.000229694	696.58	1.26	1.73	20
290	47.74	0.17	30.2	1.2	3	6.76E-08	4.31E-07	14	398.09	0	934.99	2.03	1.46	0.000240943	705.56	1.26	1.66	20
291	47.9	0.16	31.4	1.3	3	6.00E-08	3.91E-07	14	407.35	0	977.63	2.08	1.48	0.000221769	721.47	1.27	1.53	20
292	48.07	0.17	32.5	1.5	3	6.02E-08	4.07E-07	15	422.53	0	1013.4	2.16	1.53	0.000231434	734.55	1.29	1.47	20

CPT-4 Estimations

293	48.23	0.16	33.5	1.5	3	6.28E-08	4.39E-07	15	436.66	0	1039.41	2.23	1.58	0.000215077	743.92	1.3	1.46	20
294	48.39	0.16	34.5	1.5	3	7.06E-08	5.14E-07	16	454.08	0	1058.11	2.32	1.64	0.000213168	750.58	1.32	1.48	20
295	48.56	0.17	36.2	1.6	3	7.88E-08	5.95E-07	16	471.1	0	1076.13	2.4	1.69	0.000224588	756.94	1.33	1.5	20
296	48.72	0.16	37.3	1.6	3	8.07E-08	6.13E-07	16	474.43	0	1079.13	2.42	1.7	0.000211082	758	1.33	1.51	20
297	48.89	0.17	35.4	1.5	3	7.26E-08	5.29E-07	16	454.74	0	1054.27	2.32	1.62	0.000226906	749.21	1.31	1.52	20
298	49.05	0.16	32.2	1.4	3	5.88E-08	3.91E-07	15	415.31	0	1000.47	2.12	1.48	0.000219223	729.85	1.27	1.52	20
299	49.22	0.17	28.9	1.2	3	4.76E-08	2.84E-07	14	372.96	0	933.4	1.9	1.32	0.000241148	704.96	1.22	1.55	20
300	49.38	0.16	26.4	1	3	3.98E-08	2.13E-07	13	334.64	0	865.21	1.71	1.18	0.000235738	678.72	1.18	1.62	20
301	49.54	0.16	24.1	0.9	3	3.30E-08	1.59E-07	12	301.65	0	806.69	1.54	1.06	0.000244137	655.37	1.13	1.68	20
302	49.71	0.17	21.9	0.8	3	2.70E-08	1.18E-07	11	272.56	0	772.8	1.42	0.98	0.000265025	641.45	1.1	1.67	20
303	49.87	0.16	21.5	0.8	3	2.39E-08	9.16E-08	11	239.43	0	741.55	1.33	0.92	0.000254635	628.35	1.08	1.71	20
304	50.04	0.17	20.5	0.7	3	2.29E-08	8.31E-08	10	226.17	0	727.17	1.3	0.89	0.000273211	622.23	1.07	1.74	20

Sum 0.094811771

Vs of CPT 527.78257 (ft/s)
160.90932 (m/s)

Extrapolated Vs 622.70611 (ft/s)
Following Boore (2004) 189.84942 (m/s)

CPT-5 Estimations

No	In situ data					Estimations												
	Depth (ft)	Thickness (ft)	qc (tsf)	fs (tsf)	SBTn	Ksbt (ft/s)	Cv (ft2/s)	SPT N60 (blows/ft)	Con. Mod. (tsf)	Es (tsf)	Go (tsf)	Su (tsf)	Su ratio	Thickness/ Vs (s)	Vs (ft/s)	Ko	Sensitivity	Peak phi (°)
1	0.33	0.33	195.2	0.4	7	0.00E+00	0.00E+00	23	541.63	432.16	541.63	0	0	0.000614514	537.01	0	0	20
2	0.49	0.16	144.5	0.3	7	2.10E-02	1.66E-01	20	492.05	392.6	492.05	0	0	0.000312598	511.84	0	0	20
3	0.66	0.17	102.7	0.3	7	6.30E-03	4.43E-02	16	438.68	350.01	438.68	0	0	0.000351763	483.28	0	0	20
4	0.82	0.16	70	0.5	6	1.35E-03	8.18E-03	12	378.32	301.85	378.32	0	0	0.000356498	448.81	0	0	20
5	0.98	0.16	34.4	0.5	6	2.08E-04	1.04E-03	9	310.68	247.88	310.68	0	0	0.000393401	406.71	0	0	20
6	1.15	0.17	17	0.4	6	2.69E-05	1.01E-04	5	234.87	187.4	234.87	0	0	0.000480728	353.63	0	0	20
7	1.31	0.16	12.1	0.4	5	7.01E-06	2.08E-05	4	185.11	147.69	185.11	0	0	0.000509652	313.94	0	0	20
8	1.48	0.17	10.2	0.3	5	3.39E-06	8.18E-06	3	150.77	139.17	174.43	0	0	0.000557834	304.75	0	0	20
9	1.64	0.16	10.2	0.4	5	2.48E-06	5.63E-06	3	141.54	138.19	173.19	0	0	0.000526888	303.67	0	0	20
10	1.8	0.16	10.2	0.4	4	2.05E-06	4.71E-06	3	143.44	144.98	181.71	0.73	13.91	0.000514403	311.04	2.12	1.79	20
11	1.97	0.17	10.7	0.4	4	1.87E-06	4.31E-06	3	143.85	147.84	185.29	0.73	12.75	0.000541246	314.09	2.08	1.8	20
12	2.13	0.16	10.4	0.4	4	1.54E-06	3.43E-06	3	139.32	148.32	185.9	0.71	11.42	0.000508566	314.61	2.04	1.74	20
13	2.3	0.17	9.3	0.4	4	1.09E-06	2.24E-06	3	128.85	146.12	183.13	0.66	9.78	0.000544418	312.26	1.98	1.61	20
14	2.46	0.16	8.5	0.4	4	7.60E-07	1.44E-06	3	118.64	143.49	179.84	0.61	8.42	0.000517063	309.44	1.93	1.48	20
15	2.62	0.16	8.2	0.4	4	6.64E-07	1.18E-06	3	111.31	137.98	172.93	0.57	7.42	0.000527287	303.44	1.86	1.52	20
16	2.79	0.17	7.7	0.3	4	5.56E-07	9.16E-07	3	102.85	131.64	164.99	0.52	6.43	0.000573569	296.39	1.8	1.54	20
17	2.95	0.16	6.7	0.3	4	4.26E-07	6.27E-07	3	91.92	123.47	154.75	0.47	5.44	0.000557414	287.04	1.72	1.53	20
18	3.12	0.17	5.9	0.3	4	2.64E-07	3.44E-07	2	81.56	0	149.74	0.42	4.56	0.00060209	282.35	1.67	1.36	20
19	3.28	0.16	5.5	0.3	3	2.01E-07	2.48E-07	2	76.87	0	148.21	0.39	4.09	0.000569577	280.91	1.63	1.28	20
20	3.45	0.17	5.7	0.3	3	1.94E-07	2.42E-07	2	77.73	0	150.81	0.4	3.93	0.000599922	283.37	1.61	1.3	20
21	3.61	0.16	6.1	0.3	4	2.08E-07	2.69E-07	2	80.84	0	154.93	0.41	3.91	0.000557084	287.21	1.61	1.35	20
22	3.77	0.16	6.2	0.3	4	2.10E-07	2.77E-07	2	82.54	0	157.96	0.42	3.82	0.000551724	290	1.6	1.38	20
23	3.94	0.17	6.1	0.3	3	1.79E-07	2.30E-07	2	80.51	0	158.63	0.41	3.57	0.000584956	290.62	1.57	1.34	20
24	4.1	0.16	5.7	0.3	3	1.45E-07	1.79E-07	2	77.1	0	157.68	0.39	3.28	0.0005522	289.75	1.54	1.28	20
25	4.27	0.17	5.5	0.3	3	1.12E-07	1.30E-07	2	72.72	0	155.93	0.37	2.97	0.000590011	288.13	1.51	1.21	20
26	4.43	0.16	5.2	0.3	3	9.17E-08	1.02E-07	2	69.76	0	155.07	0.36	2.75	0.000556832	287.34	1.48	1.16	20
27	4.59	0.16	5.1	0.3	3	7.84E-08	8.51E-08	2	67.75	0	154.91	0.35	2.58	0.000557122	287.19	1.46	1.13	20
28	4.76	0.17	5.1	0.3	3	6.83E-08	7.24E-08	2	66.2	0	155.17	0.34	2.43	0.000591448	287.43	1.44	1.1	20
29	4.92	0.16	4.9	0.3	3	5.41E-08	5.44E-08	2	62.83	0	153.65	0.32	2.23	0.000559401	286.02	1.41	1.05	20
30	5.09	0.17	4.4	0.3	3	5.32E-08	5.11E-08	2	59.92	0	146.96	0.31	2.05	0.000607751	279.72	1.38	1.12	20
31	5.25	0.16	4.5	0.2	3	6.32E-08	6.06E-08	2	59.84	0	142.27	0.31	1.99	0.000581353	275.22	1.35	1.28	20
32	5.41	0.16	4.9	0.2	3	9.07E-08	9.08E-08	2	62.55	0	139.32	0.32	2.02	0.000587458	272.36	1.34	1.56	20
33	5.58	0.17	5	0.2	3	9.74E-08	1.01E-07	2	64.8	0	142.48	0.33	2.03	0.000617217	275.43	1.34	1.62	20
34	5.74	0.16	5	0.2	3	8.78E-08	8.97E-08	2	63.77	0	142.84	0.33	1.94	0.000580173	275.78	1.33	1.59	20
35	5.91	0.17	4.7	0.2	3	6.91E-08	6.69E-08	2	60.39	0	141.27	0.31	1.78	0.000619872	274.25	1.3	1.51	20
36	6.07	0.16	4.3	0.2	3	5.24E-08	4.74E-08	2	56.53	0	139.04	0.29	1.63	0.000588062	272.08	1.28	1.41	20
37	6.23	0.16	4.2	0.2	3	3.93E-08	3.32E-08	2	52.69	0	136.48	0.27	1.48	0.000593538	269.57	1.25	1.32	20
38	6.4	0.17	3.9	0.2	3	4.14E-08	3.30E-08	2	49.76	0	127.73	0.25	1.36	0.00065189	260.78	1.21	1.49	20
39	6.56	0.16	3.7	0.1	3	3.54E-08	2.74E-08	2	48.26	0	127.39	0.25	1.28	0.000614369	260.43	1.19	1.45	20
40	6.73	0.17	3.9	0.2	3	3.01E-08	2.25E-08	2	46.71	0	127.02	0.24	1.21	0.00065372	260.05	1.18	1.4	20
41	6.89	0.16	3.6	0.2	3	1.97E-08	1.45E-08	2	46.08	0	135.31	0.24	1.17	0.000596103	268.41	1.17	1.15	20
42	7.05	0.16	3.6	0.2	3	1.54E-08	1.09E-08	2	44.05	0	135.22	0.22	1.09	0.000596303	268.32	1.14	1.1	20
43	7.22	0.17	3.5	0.2	3	8.30E-09	5.53E-09	2	41.56	0	142.64	0.21	1	0.000616881	275.58	1.11	0.89	20
44	7.38	0.16	3.1	0.3	3	3.93E-09	2.11E-09	2	33.55	0	147.98	0.19	0.89	0.000570024	280.69	1.07	0.71	20
45	7.55	0.17	2.8	0.3	3	5.73E-09	4.04E-09	2	44.04	0	161.65	0.22	1.02	0.000579473	293.37	1.12	0.73	20
46	7.71	0.16	4.9	0.3	3	2.47E-08	2.47E-08	2	62.63	0	176.54	0.32	1.42	0.00052187	306.59	1.25	1.04	20
47	7.87	0.16	7.1	0.3	3	6.77E-08	9.06E-08	3	83.6	0	196.32	0.43	1.85	0.000494881	323.31	1.33	1.39	20
48	8.04	0.17	7.3	0.3	3	1.12E-07	1.75E-07	3	97.19	0	208.19	0.5	2.11	0.000510603	332.94	1.37	1.62	20
49	8.2	0.16	7.8	0.3	4	1.33E-07	2.20E-07	3	102.82	0	213.56	0.52	2.19	0.000474496	337.2	1.38	1.71	20
50	8.37	0.17	8.3	0.3	4	1.34E-07	2.36E-07	3	109.38	0	226.85	0.56	2.28	0.000489152	347.54	1.4	1.64	20
51	8.53	0.16	8.7	0.4	3	1.25E-07	2.37E-07	4	118.19	0	248.24	0.6	2.42	0.000440105	363.55	1.44	1.48	20
52	8.69	0.16	9.7	0.5	3	1.21E-07	2.55E-07	4	131.67	0	278.46	0.67	2.64	0.000415541	385.04	1.48	1.32	20
53	8.86	0.17	11.2	0.6	3	1.50E-07	3.72E-07	5	154.46	0	313.96	0.79	3.04	0.0004158	408.85	1.55	1.29	20
54	9.02	0.16	13.6	0.7	3	2.00E-07	5.82E-07	5	181.89	0	351.09	0.93	3.52	0.000370062	432.36	1.62	1.3	20
55	9.19	0.17	15.6	0.8	4	2.72E-07	9.11E-07	6	208.79	0	381.09	1.07	3.97	0.0003774	450.45	1.67	1.36	20
56	9.35	0.16	17	0.8	4	3.36E-07	1.22E-06	6	227.32	0	399.56	1.16	4.24	0.000346899	461.23	1.7	1.42	20
57	9.51	0.16	17.6	0.8	4	3.85E-07	1.47E-06	7	237.52	324.88	407.18	1.21	4.36	0.000343635	465.61	1.72	1.48	20

CPT-5 Estimations

58	9.68	0.17	17.8	0.8	4	3.92E-07	1.54E-06	7	245.44	334.68	419.46	1.25	4.43	0.000359727	472.58	1.73	1.47	20
59	9.84	0.16	18.7	0.9	4	3.76E-07	1.53E-06	7	254.28	349.37	437.87	1.3	4.51	0.000331373	482.84	1.74	1.41	20
60	10.01	0.17	19.5	1	4	3.52E-07	1.47E-06	7	261.17	0	455.11	1.33	4.55	0.000345353	492.25	1.75	1.35	20
61	10.17	0.16	19.3	1	4	3.04E-07	1.25E-06	7	257.3	0	460.45	1.31	4.42	0.000323147	495.13	1.74	1.29	20
62	10.34	0.17	17.9	1	4	2.71E-07	1.07E-06	7	246.94	0	451.02	1.26	4.17	0.000346918	490.03	1.71	1.28	20
63	10.5	0.16	17.3	0.9	4	2.74E-07	1.05E-06	7	240	0	437.58	1.22	3.99	0.000331483	482.68	1.69	1.33	20
64	10.66	0.16	17.8	0.8	4	3.11E-07	1.20E-06	7	240.05	0	427.69	1.22	3.93	0.000335296	477.19	1.68	1.44	20
65	10.83	0.17	17.9	0.8	4	3.33E-07	1.29E-06	7	240.94	0	424	1.23	3.88	0.000357797	475.13	1.67	1.51	20
66	10.99	0.16	17.5	0.8	4	3.43E-07	1.31E-06	7	238.96	0	418.41	1.22	3.8	0.00033899	471.99	1.65	1.56	20
67	11.16	0.17	17.4	0.7	4	3.61E-07	1.38E-06	7	238.36	0	413.49	1.22	3.73	0.000362311	469.21	1.64	1.63	20
68	11.32	0.16	17.8	0.7	4	3.60E-07	1.38E-06	7	239.69	0	415.9	1.22	3.7	0.000340013	470.57	1.64	1.63	20
69	11.48	0.16	17.8	0.8	4	3.18E-07	1.24E-06	7	243.75	0	432.64	1.24	3.71	0.000333368	479.95	1.65	1.52	20
70	11.65	0.17	18.3	0.9	4	2.32E-07	8.92E-07	7	239.81	0	450.54	1.22	3.59	0.000347095	489.78	1.64	1.33	20
71	11.81	0.16	17	1	3	1.78E-07	6.55E-07	7	229.28	0	451.87	1.17	3.39	0.000326198	490.5	1.62	1.23	20
72	11.98	0.17	15.6	0.9	3	1.36E-07	4.70E-07	7	215.05	0	444.87	1.1	3.13	0.000349305	486.68	1.59	1.15	20
73	12.14	0.16	15.3	0.9	3	1.62E-07	5.65E-07	7	217.79	0	436.72	1.11	3.13	0.000331813	482.2	1.58	1.26	20
74	12.3	0.16	17.6	0.8	4	2.15E-07	8.14E-07	7	235.97	0	449.39	1.2	3.35	0.000327098	489.15	1.61	1.36	20
75	12.47	0.17	19.5	0.9	4	2.95E-07	1.24E-06	8	262.55	0	472.51	1.34	3.68	0.000338936	501.57	1.65	1.46	20
76	12.63	0.16	21	1	4	3.29E-07	1.51E-06	8	286.75	0	505.85	1.46	3.96	0.000308303	518.97	1.69	1.43	20
77	12.8	0.17	22.8	1.1	4	3.63E-07	1.78E-06	9	305.77	0	529.97	1.56	4.17	0.00032003	531.2	1.72	1.43	20
78	12.96	0.16	23.6	1.1	4	3.97E-07	2.03E-06	9	319.64	434.89	545.06	1.63	4.3	0.000297006	538.71	1.74	1.45	20
79	13.12	0.16	24	1.1	4	4.14E-07	2.15E-06	9	324.74	438.48	549.56	1.66	4.32	0.000295787	540.93	1.74	1.48	20
80	13.29	0.17	23.9	1.1	4	3.71E-07	1.91E-06	9	322.26	443.83	556.27	1.64	4.23	0.000312374	544.22	1.73	1.42	20
81	13.45	0.16	23.1	1.2	4	2.71E-07	1.29E-06	9	298.52	0	545.46	1.52	3.87	0.000296901	538.9	1.69	1.32	20
82	13.62	0.17	19	1.1	3	1.58E-07	6.51E-07	8	257.1	0	517.8	1.31	3.29	0.000323773	525.06	1.62	1.17	20
83	13.78	0.16	15.2	1	3	8.23E-08	2.69E-07	7	204.14	0	462.67	1.04	2.59	0.000322366	496.33	1.51	1.06	20
84	13.94	0.16	11.9	0.8	3	4.59E-08	1.18E-07	6	160.33	0	403.88	0.82	2.01	0.000345036	463.72	1.4	1	20
85	14.11	0.17	9.7	0.6	3	2.59E-08	5.41E-08	5	130.4	0	364.31	0.67	1.61	0.000385995	440.42	1.31	0.93	20
86	14.27	0.16	8.8	0.7	3	5.39E-08	1.40E-07	6	161.74	0	395.81	0.83	1.98	0.000348531	459.07	1.39	1.1	20
87	14.44	0.17	18.6	0.9	4	9.57E-07	5.90E-06	10	385.21	446.9	560.12	1.97	4.66	0.000311298	546.1	1.77	2.06	20
88	14.6	0.16	57.6	1.2	5	2.50E-06	2.16E-05	13	538.19	524.76	657.7	0	0	0.00027038	591.76	0	0	20
89	14.76	0.16	41.6	1.2	5	2.68E-06	2.43E-05	13	566.49	545.69	683.93	0	0	0.000265146	603.44	0	0	20
90	14.93	0.17	24.7	1.1	4	7.24E-07	4.58E-06	10	394.81	481.81	603.87	2.01	4.62	0.000299813	567.02	1.78	1.79	20
91	15.09	0.16	20.8	1	4	2.96E-07	1.43E-06	9	300.48	0	540.19	1.53	3.48	0.000298346	536.29	1.64	1.5	20
92	15.26	0.17	21.4	0.9	4	2.30E-07	9.88E-07	8	268.3	0	504.96	1.37	3.07	0.000327863	518.51	1.58	1.49	20
93	15.42	0.16	17.8	0.8	4	1.83E-07	7.04E-07	7	239.81	0	470.27	1.22	2.71	0.000319757	500.38	1.52	1.5	20
94	15.58	0.16	14.7	0.7	3	1.10E-07	3.57E-07	7	202.51	0	435.47	1.03	2.27	0.000332281	481.52	1.44	1.38	20
95	15.75	0.17	13.4	0.7	3	8.77E-08	2.58E-07	6	183.32	0	410.74	0.94	2.03	0.000363527	467.64	1.39	1.37	20
96	15.91	0.16	13.7	0.6	3	9.56E-08	2.81E-07	6	183.67	0	405.18	0.94	2.02	0.000344479	464.47	1.39	1.45	20
97	16.08	0.17	14.8	0.6	3	1.04E-07	3.04E-07	6	183.56	0	399.16	0.94	1.99	0.000368764	461	1.38	1.53	20
98	16.24	0.16	13.4	0.6	3	8.99E-08	2.49E-07	6	173.14	0	386.2	0.88	1.86	0.000352843	453.46	1.35	1.53	20
99	16.4	0.16	11.5	0.5	3	5.30E-08	1.25E-07	5	147.72	0	362.52	0.75	1.57	0.000364191	439.33	1.29	1.38	20
100	16.57	0.17	9.4	0.5	3	2.86E-08	5.65E-08	5	123.18	0	337.96	0.63	1.3	0.000400764	424.19	1.21	1.23	20
101	16.73	0.16	8.2	0.5	3	2.05E-08	3.63E-08	4	110.83	0	323.13	0.57	1.16	0.000385747	414.78	1.17	1.19	20
102	16.9	0.17	8.9	0.4	3	2.95E-08	5.54E-08	5	117.22	0	319.91	0.6	1.21	0.000411912	412.71	1.19	1.35	20
103	17.06	0.16	10.8	0.4	3	5.34E-08	1.13E-07	5	132.09	0	323.75	0.67	1.35	0.000385375	415.18	1.22	1.65	20
104	17.23	0.17	11.4	0.4	3	7.47E-08	1.73E-07	5	144.63	0	333.63	0.74	1.47	0.00040335	421.47	1.25	1.81	20
105	17.39	0.16	11.6	0.4	3	7.89E-08	1.86E-07	5	147.38	0	336.59	0.75	1.48	0.000377956	423.33	1.25	1.84	20
106	17.55	0.16	11.4	0.4	3	9.16E-08	2.34E-07	5	159.48	0	354.58	0.81	1.59	0.000368248	434.49	1.28	1.84	20
107	17.72	0.17	14	0.5	4	1.15E-07	3.34E-07	6	181.36	0	386.93	0.93	1.79	0.00037454	453.89	1.33	1.81	20
108	17.88	0.16	16.3	0.6	4	1.41E-07	4.71E-07	7	208.78	0	429.45	1.07	2.04	0.000334602	478.18	1.39	1.74	20
109	18.05	0.17	17.3	0.7	3	1.10E-07	3.76E-07	7	212.31	0	456.29	1.08	2.05	0.000344905	492.89	1.4	1.52	20
110	18.21	0.16	14.8	0.8	3	6.67E-08	2.09E-07	7	196.19	0	461.98	1	1.88	0.000322613	495.95	1.37	1.28	20
111	18.37	0.16	12.9	0.8	3	4.59E-08	1.40E-07	7	190.55	0	479.94	0.97	1.81	0.000316518	505.5	1.35	1.1	20
112	18.54	0.17	16.1	1	3	8.22E-08	3.13E-07	8	237.83	0	539.13	1.21	2.24	0.0003173	535.77	1.45	1.19	20
113	18.7	0.16	24.9	1.2	3	1.54E-07	7.43E-07	9	301.8	0	610.93	1.54	2.82	0.000280539	570.33	1.55	1.29	20
114	18.87	0.17	26.6	1.3	4	2.35E-07	1.32E-06	10	351.23	0	658.56	1.79	3.25	0.000287094	592.14	1.62	1.39	20
115	19.03	0.16	26.7	1.3	4	2.53E-07	1.45E-06	11	359.03	0	664.29	1.83	3.29	0.000269034	594.72	1.63	1.42	20
116	19.19	0.16	26.6	1.2	4	2.77E-07	1.57E-06	10	353.58	0	643.46	1.8	3.22	0.000273355	585.32	1.61	1.52	20
117	19.36	0.17	25.4	1	4	2.82E-07	1.54E-06	10	341	0	618.35	1.74	3.07	0.000296281	573.78	1.59	1.6	20

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118	19.52	0.16	24	1	4	2.78E-07	1.45E-06	10	324.76	0	590.42	1.66	2.9	0.000285368	560.68	1.56	1.68	20
119	19.69	0.17	23.1	0.9	4	2.44E-07	1.21E-06	9	310.13	0	577.34	1.58	2.75	0.000306621	554.43	1.53	1.66	20
120	19.85	0.16	22.3	0.9	4	2.14E-07	9.94E-07	9	290.34	0	553.74	1.48	2.55	0.00029467	542.98	1.5	1.68	20
121	20.01	0.16	19.8	0.8	4	1.59E-07	6.65E-07	8	260.59	0	524.04	1.33	2.27	0.000302904	528.22	1.45	1.63	20
122	20.18	0.17	16.8	0.7	4	1.21E-07	4.35E-07	7	224.01	0	473.33	1.14	1.94	0.000338639	502.01	1.37	1.68	20
123	20.34	0.16	14.5	0.5	3	9.93E-08	3.15E-07	7	198.22	0	434.31	1.01	1.7	0.00033273	480.87	1.32	1.75	20
124	20.51	0.17	14.3	0.5	3	9.07E-08	2.75E-07	6	189.26	0	421.46	0.97	1.61	0.000358869	473.71	1.29	1.77	20
125	20.67	0.16	14.9	0.6	3	8.63E-08	2.59E-07	6	187.65	0	421.66	0.96	1.58	0.000337681	473.82	1.29	1.76	20
126	20.83	0.16	14.2	0.5	3	8.05E-08	2.39E-07	6	185.11	0	421.27	0.94	1.55	0.000337838	473.6	1.28	1.74	20
127	21	0.17	13.8	0.5	3	8.88E-08	2.63E-07	6	184.95	0	413.48	0.94	1.54	0.000362319	469.2	1.27	1.85	20
128	21.16	0.16	14.9	0.5	3	8.06E-08	2.41E-07	6	186.66	0	424.68	0.95	1.54	0.000336481	475.51	1.28	1.75	20
129	21.33	0.17	14.6	0.6	3	8.12E-08	2.51E-07	7	193.09	0	438.7	0.99	1.58	0.000351748	483.3	1.29	1.7	20
130	21.49	0.16	15.2	0.6	3	7.81E-08	2.47E-07	7	197.11	0	450.99	1.01	1.6	0.000326517	490.02	1.29	1.64	20
131	21.65	0.16	15.8	0.6	3	9.68E-08	3.23E-07	7	208.64	0	459.24	1.06	1.68	0.000323572	494.48	1.31	1.74	20
132	21.82	0.17	17.1	0.6	4	1.21E-07	4.41E-07	7	227.11	0	479.94	1.16	1.82	0.000336301	505.5	1.35	1.79	20
133	21.98	0.16	19.2	0.7	4	1.83E-07	7.94E-07	8	270.43	0	530.3	1.38	2.15	0.000301114	531.36	1.42	1.84	20
134	22.15	0.17	25.1	0.9	4	2.29E-07	1.14E-06	9	310.45	0	584.8	1.58	2.45	0.000304659	558	1.48	1.79	20
135	22.31	0.16	25.7	1	4	2.27E-07	1.19E-06	10	327.54	0	618.13	1.67	2.56	0.000278901	573.68	1.51	1.69	20
136	22.47	0.16	22.9	1	4	1.93E-07	1.01E-06	10	326.19	0	633.95	1.66	2.53	0.000275401	580.97	1.5	1.58	20
137	22.64	0.17	24.8	1.1	4	1.74E-07	9.20E-07	10	329.4	0	651.8	1.68	2.54	0.000288576	589.1	1.51	1.5	20
138	22.8	0.16	26.4	1.2	4	1.71E-07	9.17E-07	10	334	0	662.9	1.7	2.56	0.000269319	594.09	1.51	1.47	20
139	22.97	0.17	23.9	1.1	4	1.58E-07	8.06E-07	10	318.72	0	642.12	1.63	2.42	0.000290742	584.71	1.48	1.49	20
140	23.13	0.16	21.6	0.9	4	1.42E-07	6.66E-07	9	292.09	0	599.58	1.49	2.2	0.000283181	565.01	1.44	1.56	20
141	23.3	0.17	20.7	0.8	4	1.94E-07	9.11E-07	9	293.64	0	570.05	1.5	2.2	0.000308575	550.92	1.43	1.84	20
142	23.46	0.16	24.2	0.7	4	2.58E-07	1.23E-06	9	296.96	0	547.23	1.52	2.21	0.000296417	539.78	1.43	2.12	20
143	23.62	0.16	22.3	0.6	4	2.96E-07	1.40E-06	9	294.17	0	528.86	1.5	2.17	0.000301523	530.64	1.42	2.32	20
144	23.79	0.17	20.1	0.6	4	2.44E-07	1.07E-06	8	274.54	0	511.22	1.4	2.01	0.000325845	521.72	1.39	2.29	20
145	23.95	0.16	20	0.6	4	1.93E-07	8.41E-07	8	272.75	0	530.1	1.39	1.99	0.000301171	531.26	1.39	2.05	20
146	24.12	0.17	21.9	0.8	4	1.42E-07	6.43E-07	9	282.16	0	579.25	1.44	2.04	0.000306119	555.34	1.4	1.69	20
147	24.28	0.16	22.1	1.1	3	1.22E-07	5.98E-07	10	306.85	0	648.08	1.57	2.21	0.000272382	587.41	1.44	1.44	20
148	24.44	0.16	25.3	1.3	3	1.37E-07	7.47E-07	11	340.36	0	703.52	1.74	2.43	0.000261429	612.02	1.49	1.38	20
149	24.61	0.17	29.1	1.3	4	2.23E-07	1.36E-06	11	379.38	0	717.78	1.94	2.69	0.000274992	618.2	1.54	1.58	20
150	24.77	0.16	30.5	1	4	3.35E-07	2.16E-06	12	402.2	0	707.33	2.05	2.83	0.000260722	613.68	1.56	1.83	20
151	24.94	0.17	30.2	1	4	4.08E-07	2.64E-06	11	404.2	547.22	685.84	2.06	2.83	0.000281322	604.29	1.56	2.02	20
152	25.1	0.16	29.5	1	4	3.45E-07	2.22E-06	12	401.45	0	702.23	2.05	2.79	0.000261669	611.46	1.55	1.88	20
153	25.26	0.16	29.9	1.2	4	2.82E-07	1.81E-06	12	400.58	0	726.63	2.04	2.77	0.000257239	621.99	1.55	1.72	20
154	25.43	0.17	30	1.3	4	2.31E-07	1.49E-06	12	403.76	0	759.42	2.06	2.77	0.00026735	635.87	1.56	1.55	20
155	25.59	0.16	30.2	1.4	4	2.23E-07	1.45E-06	12	406.65	0	769.6	2.07	2.77	0.000249953	640.12	1.56	1.52	20
156	25.76	0.17	30.5	1.3	4	2.33E-07	1.52E-06	12	407.12	0	764.3	2.08	2.76	0.000266495	637.91	1.55	1.57	20
157	25.92	0.16	30.1	1.2	4	2.45E-07	1.58E-06	12	402.37	0	748.9	2.05	2.71	0.000253385	631.45	1.54	1.63	20
158	26.08	0.16	29.2	1.2	4	2.25E-07	1.39E-06	12	384.94	0	727.13	1.96	2.58	0.000257148	622.21	1.52	1.65	20
159	26.25	0.17	26.8	1.1	4	1.93E-07	1.12E-06	11	361.37	0	702.03	1.84	2.4	0.000278064	611.37	1.48	1.64	20
160	26.41	0.16	25.1	1	4	1.59E-07	8.56E-07	11	335.63	0	675.1	1.71	2.22	0.000266876	599.53	1.45	1.62	20
161	26.58	0.17	23.7	1	4	1.55E-07	8.04E-07	10	323.9	0	654.71	1.65	2.13	0.000287936	590.41	1.43	1.68	20
162	26.74	0.16	24.3	0.9	4	1.97E-07	1.03E-06	10	326.96	0	632.62	1.67	2.13	0.000275691	580.36	1.43	1.89	20
163	26.9	0.16	25.8	0.7	4	2.33E-07	1.18E-06	10	315.68	0	592.81	1.61	2.05	0.000284794	561.81	1.41	2.15	20
164	27.07	0.17	21.3	0.6	4	2.25E-07	1.06E-06	9	293.77	0	555	1.5	1.89	0.000312736	543.59	1.37	2.32	20
165	27.23	0.16	19.6	0.6	4	1.80E-07	8.03E-07	9	278.98	0	548.98	1.42	1.79	0.000295946	540.64	1.34	2.2	20
166	27.4	0.17	22.5	0.7	4	1.96E-07	9.62E-07	9	305.7	0	591.97	1.56	1.95	0.000302809	561.41	1.38	2.08	20
167	27.56	0.16	26.9	0.9	4	2.28E-07	1.28E-06	11	349.54	0	658.95	1.78	2.21	0.000270124	592.32	1.44	1.94	20
168	27.72	0.16	29	1.1	4	2.25E-07	1.37E-06	11	379.06	0	716	1.93	2.39	0.000259139	617.43	1.48	1.78	20
169	27.89	0.17	28.9	1.2	4	2.03E-07	1.26E-06	12	386.92	0	745.11	1.97	2.42	0.000269906	629.85	1.49	1.66	20
170	28.05	0.16	28.7	1.2	4	1.84E-07	1.13E-06	12	384.16	0	753.04	1.96	2.39	0.000252685	633.2	1.49	1.6	20
171	28.22	0.17	28.4	1.2	4	1.78E-07	1.07E-06	12	376.96	0	743.42	1.92	2.33	0.00027021	629.14	1.47	1.62	20
172	28.38	0.16	27.4	1.1	4	1.62E-07	9.43E-07	11	364.33	0	730.92	1.86	2.24	0.00025648	623.83	1.45	1.61	20
173	28.54	0.16	26	1.1	4	1.51E-07	8.59E-07	11	354.47	0	719.61	1.81	2.17	0.00025849	618.98	1.44	1.61	20
174	28.71	0.17	26.3	1.1	4	1.45E-07	8.14E-07	11	351.58	0	719.71	1.79	2.14	0.000274623	619.03	1.43	1.6	20
175	28.87	0.16	26.8	1.1	4	1.55E-07	8.89E-07	11	358.37	0	724.52	1.83	2.17	0.000257612	621.09	1.44	1.63	20
176	29.04	0.17	27.5	1.1	4	1.71E-07	1.01E-06	11	367.98	0	730.74	1.88	2.21	0.000272545	623.75	1.45	1.67	20
177	29.2	0.16	28.4	1.1	4	1.62E-07	9.49E-07	11	364.5	0	730.5	1.86	2.18	0.000256554	623.65	1.44	1.66	20

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178	29.36	0.16	26	1.1	4	1.53E-07	8.55E-07	11	349.51	0	708.29	1.78	2.08	0.000260548	614.09	1.42	1.69	20
179	29.53	0.17	24.2	0.9	4	1.51E-07	8.04E-07	11	332.95	0	676.3	1.7	1.97	0.0002833	600.07	1.39	1.78	20
180	29.69	0.16	24.6	0.8	4	1.74E-07	9.33E-07	10	333.83	0	660.47	1.7	1.96	0.000269815	593	1.46	1.93	39.76
181	29.86	0.17	25.8	0.9	4	1.78E-07	1.01E-06	11	354.2	0	698.01	1.81	2.07	0.000278862	609.62	1.51	1.83	40
182	30.02	0.16	28.3	1.2	4	1.66E-07	1.01E-06	12	381.67	0	762.3	1.95	2.22	0.000251146	637.08	1.58	1.64	40
183	30.19	0.17	30.6	1.4	4	1.62E-07	1.06E-06	13	406.47	0	814.71	2.07	2.35	0.000258119	658.61	1.48	1.52	20
184	30.35	0.16	31.4	1.4	4	1.73E-07	1.18E-06	13	423.83	0	839.61	2.16	2.44	0.000239306	668.6	1.5	1.51	20
185	30.51	0.16	32.2	1.4	4	1.91E-07	1.33E-06	13	434.79	0	846.3	2.22	2.49	0.000238358	671.26	1.51	1.55	20
186	30.68	0.17	33.1	1.4	4	2.00E-07	1.41E-06	13	440.83	0	850.74	2.25	2.51	0.000252593	673.02	1.51	1.57	20
187	30.84	0.16	32.8	1.4	4	1.92E-07	1.35E-06	13	437.58	0	850.81	2.23	2.48	0.000237724	673.05	1.51	1.56	20
188	31.01	0.17	31.6	1.4	4	1.67E-07	1.13E-06	13	424.22	0	846.24	2.16	2.39	0.000253263	671.24	1.49	1.52	20
189	31.17	0.16	30.3	1.4	3	1.39E-07	9.07E-07	13	407.3	0	839.7	2.08	2.28	0.000239292	668.64	1.47	1.45	20
190	31.33	0.16	29.2	1.4	3	1.24E-07	7.88E-07	13	397.33	0	836.37	2.03	2.21	0.000239769	667.31	1.45	1.42	20
191	31.5	0.17	29.5	1.4	3	1.23E-07	7.77E-07	13	393.26	0	828.47	2.01	2.18	0.000255966	664.15	1.45	1.44	20
192	31.66	0.16	29.4	1.3	3	1.29E-07	8.06E-07	12	389.1	0	812.63	1.99	2.15	0.000243246	657.77	1.44	1.5	20
193	31.83	0.17	28.4	1.2	3	1.32E-07	8.11E-07	12	382.38	0	795.23	1.95	2.1	0.000261261	650.69	1.43	1.55	20
194	31.99	0.16	28.2	1.2	4	1.34E-07	8.14E-07	12	379.31	0	787.2	1.94	2.07	0.000247142	647.4	1.42	1.58	20
195	32.15	0.16	28.8	1.2	4	1.44E-07	8.93E-07	12	386.82	0	792.28	1.97	2.1	0.000246347	649.49	1.43	1.61	20
196	32.32	0.17	30.1	1.2	4	1.43E-07	8.83E-07	12	386.81	0	793.83	1.97	2.09	0.00026149	650.12	1.43	1.61	20
197	32.48	0.16	28.3	1.2	4	1.30E-07	7.78E-07	12	374.2	0	781.03	1.91	2.01	0.000248116	644.86	1.41	1.6	20
198	32.65	0.17	26.1	1.1	3	1.10E-07	6.15E-07	12	350.5	0	754.31	1.79	1.87	0.000268253	633.73	1.37	1.59	20
199	32.81	0.16	25	1	3	9.20E-08	4.82E-07	11	327.3	0	727.05	1.67	1.74	0.00025716	622.18	1.34	1.58	20
200	32.97	0.16	23.3	1	3	8.23E-08	4.01E-07	10	304.66	0	690.6	1.55	1.61	0.000263861	606.38	1.31	1.63	20
201	33.14	0.17	21.4	0.8	3	5.94E-08	2.55E-07	10	268.4	0	645.35	1.37	1.41	0.000290013	586.18	1.25	1.61	20
202	33.3	0.16	17.4	0.7	3	4.11E-08	1.50E-07	9	227.84	0	585.66	1.16	1.19	0.000286528	558.41	1.18	1.63	20
203	33.47	0.17	14.7	0.6	3	2.71E-08	8.39E-08	8	193.44	0	536.14	0.99	1.01	0.000318185	534.28	1.11	1.61	20
204	33.63	0.16	14.1	0.5	3	2.02E-08	5.24E-08	7	161.91	0	516.05	0.9	0.92	0.000305244	524.17	1.08	1.56	20
205	33.79	0.16	13.8	0.6	3	1.93E-08	4.65E-08	7	150.32	0	502.55	0.87	0.88	0.000309316	517.27	1.06	1.6	20
206	33.96	0.17	13.5	0.5	3	1.88E-08	4.24E-08	7	140.5	0	489.3	0.84	0.85	0.000333066	510.41	1.05	1.65	20
207	34.12	0.16	13.1	0.4	3	1.89E-08	3.76E-08	7	124.33	0	461.26	0.8	0.8	0.000322861	495.57	1.03	1.8	20
208	34.29	0.17	11.9	0.4	3	1.60E-08	2.74E-08	6	107.41	0	443.03	0.74	0.74	0.000350032	485.67	1	1.82	20
209	34.45	0.16	11.3	0.4	3	1.24E-08	1.90E-08	6	95.51	0	438.2	0.7	0.7	0.000331249	483.02	0.98	1.72	20
210	34.61	0.16	11.4	0.4	3	1.22E-08	1.86E-08	6	94.9	0	439.01	0.7	0.69	0.000330941	483.47	0.98	1.71	20
211	34.78	0.17	11.9	0.4	3	1.35E-08	2.15E-08	6	99.56	0	442.65	0.72	0.71	0.000350176	485.47	0.99	1.76	20
212	34.94	0.16	12.1	0.4	3	1.71E-08	3.05E-08	6	111.34	0	449.57	0.76	0.75	0.000327031	489.25	1	1.87	20
213	35.11	0.17	13.2	0.4	3	2.55E-08	5.48E-08	7	134.36	0	460.71	0.84	0.82	0.000343247	495.27	1.04	2.05	20
214	35.27	0.16	15.1	0.4	3	3.99E-08	1.13E-07	7	177.61	0	489.59	0.97	0.94	0.000313381	510.56	1.09	2.19	20
215	35.43	0.16	17.4	0.5	3	5.35E-08	1.80E-07	8	210.13	0	514.78	1.07	1.04	0.000305618	523.53	1.12	2.25	20
216	35.6	0.17	17.6	0.5	3	5.61E-08	2.03E-07	8	225.57	0	548.02	1.15	1.11	0.000314716	540.17	1.15	2.11	20
217	35.76	0.16	18.4	0.6	3	5.95E-08	2.24E-07	9	235.42	0	565.86	1.2	1.15	0.000291497	548.89	1.16	2.08	20
218	35.93	0.17	19.5	0.6	3	6.45E-08	2.61E-07	9	252.62	0	598.32	1.29	1.23	0.000301199	564.41	1.19	1.99	20
219	36.09	0.16	21.2	0.7	3	7.87E-08	3.50E-07	10	277.35	0	633.68	1.42	1.34	0.000275458	580.85	1.23	1.98	20
220	36.26	0.17	23.6	0.8	4	9.47E-08	4.77E-07	11	314.05	0	693.92	1.6	1.51	0.000279683	607.83	1.28	1.88	20
221	36.42	0.16	27.3	1	4	1.15E-07	6.38E-07	11	346.77	0	739.98	1.77	1.66	0.000254907	627.68	1.32	1.86	20
222	36.58	0.16	28.2	1	4	1.29E-07	7.61E-07	12	368.57	0	770.29	1.88	1.76	0.00024984	640.41	1.35	1.84	20
223	36.75	0.17	28.2	1	4	1.47E-07	8.95E-07	12	380.79	0	777.33	1.94	1.81	0.00026425	643.33	1.36	1.9	20
224	36.91	0.16	29.7	1	4	1.66E-07	1.04E-06	12	392.74	0	784.02	2	1.86	0.000247644	646.09	1.37	1.96	20
225	37.08	0.17	30.6	1	4	1.82E-07	1.17E-06	13	402.27	0	789.62	2.05	1.89	0.000262184	648.4	1.46	2.01	38.57
226	37.24	0.16	30.1	1	4	1.78E-07	1.14E-06	13	400.73	0	790.28	2.04	1.88	0.000246662	648.66	1.45	2	38.5
227	37.4	0.16	29.4	1	4	1.58E-07	9.91E-07	12	391	0	787.31	1.99	1.82	0.000247127	647.44	1.43	1.95	38.47
228	37.57	0.17	28.5	1	4	1.40E-07	8.39E-07	12	374.8	0	771.92	1.91	1.74	0.000265178	641.08	1.38	1.94	38.41
229	37.73	0.16	26.6	0.9	4	1.18E-07	6.72E-07	12	355.37	0	754.65	1.81	1.64	0.000252418	633.87	1.34	1.9	38.31
230	37.9	0.17	25.2	0.9	4	1.04E-07	5.57E-07	11	334.37	0	726.52	1.71	1.54	0.000273334	621.95	1.28	1.93	38.36
231	38.06	0.16	23.9	0.8	3	8.95E-08	4.56E-07	11	317.95	0	709.83	1.62	1.46	0.000260264	614.76	1.24	1.91	38.12
232	38.22	0.16	23.1	0.8	3	8.37E-08	4.13E-07	11	308.04	0	696.06	1.57	1.41	0.000262825	608.77	1.22	1.93	37.94
233	38.39	0.17	23.1	0.8	3	7.70E-08	3.73E-07	11	302.84	0	694.74	1.55	1.38	0.000279518	608.19	1.21	1.89	37.58
234	38.55	0.16	22.9	0.8	3	7.31E-08	3.51E-07	11	299.85	0	694.44	1.53	1.36	0.000263132	608.06	1.2	1.87	37.16
235	38.72	0.17	22.6	0.8	3	6.28E-08	2.92E-07	10	290.19	0	690.76	1.48	1.31	0.00028032	606.45	1.18	1.81	36.54
236	38.88	0.16	21.2	0.8	3	5.48E-08	2.43E-07	10	276.51	0	674.56	1.41	1.24	0.000266983	599.29	1.15	1.8	35.94
237	39.04	0.16	20.1	0.7	3	4.48E-08	1.86E-07	10	259.15	0	655.79	1.32	1.16	0.000270773	590.9	1.11	1.77	35.28

CPT-5 Estimations

238	39.21	0.17	19	0.7	3	4.12E-08	1.61E-07	9	244.29	0	627.43	1.25	1.09	0.000294128	577.98	1.08	1.83	34.75
239	39.37	0.16	18.1	0.6	3	3.58E-08	1.33E-07	9	231.6	0	610.24	1.18	1.03	0.000280697	570.01	1.05	1.83	34.12
240	39.54	0.17	17.5	0.6	3	3.14E-08	1.07E-07	9	213.36	0	593.24	1.12	0.97	0.000302486	562.01	1.03	1.83	33.48
241	39.7	0.16	16.6	0.6	3	2.76E-08	9.29E-08	9	210.53	0	604.58	1.12	0.96	0.000282008	567.36	1.02	1.73	33.44
242	39.86	0.16	17.9	0.7	3	2.98E-08	1.11E-07	9	233.42	0	635.9	1.19	1.02	0.000274976	581.87	1.05	1.67	34.29
243	40.03	0.17	20.5	0.8	3	4.45E-08	1.98E-07	10	277.83	0	703.9	1.42	1.21	0.000277692	612.19	1.13	1.67	36.2
244	40.19	0.16	25.8	1	3	7.35E-08	3.88E-07	11	329.3	0	761.85	1.68	1.43	0.000251221	636.89	1.24	1.76	37.38
245	40.36	0.17	28.8	1	3	8.43E-08	4.82E-07	12	356.93	0	805.51	1.82	1.54	0.00025959	654.88	1.29	1.73	20
246	40.52	0.16	27.1	1.1	3	7.23E-08	3.94E-07	12	340.14	0	789.15	1.74	1.47	0.000246837	648.2	1.27	1.7	20
247	40.68	0.16	22.7	0.9	3	4.51E-08	2.31E-07	12	319.37	0	807.03	1.63	1.37	0.000244088	655.5	1.24	1.45	20
248	40.85	0.17	24.8	1.3	3	5.00E-08	2.74E-07	12	341.47	0	846.94	1.74	1.46	0.000253157	671.52	1.26	1.42	20
249	41.01	0.16	31.5	1.4	3	1.19E-07	8.68E-07	15	454.51	0	963.28	2.32	1.93	0.000223417	716.15	1.39	1.59	20
250	41.18	0.17	47.3	1.6	4	2.15E-07	1.89E-06	17	549.62	0	1047.05	2.8	2.33	0.000227687	746.64	1.49	1.72	20
251	41.34	0.16	45.4	1.8	4	2.78E-07	2.67E-06	18	601.22	0	1093.67	3.07	2.54	0.000209677	763.08	1.53	1.77	20
252	41.5	0.16	42.8	1.7	4	1.84E-07	1.60E-06	17	543.03	0	1064	2.77	2.28	0.000212579	752.66	1.48	1.63	20
253	41.67	0.17	34.8	1.5	4	1.50E-07	1.16E-06	15	482.73	0	981.74	2.46	2.02	0.000235138	722.98	1.42	1.68	20
254	41.83	0.16	32.5	1.1	3	9.62E-08	6.20E-07	13	401.9	0	885.49	2.05	1.68	0.000233022	686.63	1.33	1.67	20
255	42	0.17	25.6	1	4	1.11E-07	6.91E-07	13	388.32	0	833.72	1.98	1.61	0.000255159	666.25	1.31	1.88	20
256	42.16	0.16	31.6	1	4	8.26E-07	8.72E-06	18	659.73	786.16	985.32	3.37	2.73	0.000220903	724.3	1.58	2.75	20
257	42.32	0.16	90.8	1.6	5	4.99E-06	8.46E-05	23	1059.25	911.71	1142.67	0	0	0.000205131	779.99	0	0	20
258	42.49	0.17	111.4	1.5	5	7.45E-06	1.46E-04	26	1219.05	972.65	1219.05	0	0	0.000211012	805.64	0	0	20
259	42.65	0.16	65.5	1.4	5	4.09E-06	6.41E-05	22	979.99	874.42	1095.94	0	0	0.000209457	763.88	0	0	20
260	42.82	0.17	40.4	0.9	4	7.03E-07	6.63E-06	16	589.18	722.88	906.01	3.01	2.4	0.000244766	694.54	1.51	2.95	20
261	42.98	0.16	27.6	0.7	4	1.71E-07	1.04E-06	12	379.33	0	753.48	1.94	1.54	0.000252613	633.38	1.29	2.47	20
262	43.15	0.17	20.5	0.7	3	5.43E-08	2.39E-07	10	275.01	0	671.98	1.4	1.11	0.00028421	598.15	1.15	2.06	20
263	43.31	0.16	18	0.6	3	2.85E-08	9.89E-08	9	216.4	0	636.17	1.18	0.93	0.000274919	581.99	1.08	1.83	20
264	43.47	0.16	18.3	0.6	3	2.70E-08	8.29E-08	9	191.72	0	605.89	1.11	0.88	0.000281705	567.97	1.06	1.93	20
265	43.64	0.17	17.7	0.5	3	3.24E-08	1.08E-07	9	208.98	0	613.26	1.17	0.91	0.000297504	571.42	1.08	2.02	20
266	43.8	0.16	20.1	0.6	3	4.52E-08	1.77E-07	9	244.61	0	625.77	1.26	0.99	0.000277195	577.21	1.11	2.19	20
267	43.97	0.17	22.3	0.6	3	6.12E-08	2.74E-07	10	279.51	0	668.46	1.43	1.11	0.000284958	596.58	1.15	2.21	20
268	44.13	0.16	24.3	0.7	4	7.81E-08	3.87E-07	11	309.26	0	707.68	1.58	1.22	0.000260658	613.83	1.19	2.21	20
269	44.29	0.16	26.3	0.8	4	9.30E-08	5.09E-07	12	341.94	0	758.1	1.74	1.35	0.000251842	635.32	1.23	2.14	20
270	44.46	0.17	29.1	0.9	4	1.09E-07	6.56E-07	13	374.68	0	806.67	1.91	1.47	0.000259399	655.36	1.27	2.08	20
271	44.62	0.16	31.1	1	4	1.39E-07	9.12E-07	13	409.47	0	844.03	2.09	1.6	0.000238678	670.36	1.31	2.12	20
272	44.79	0.17	33.6	1	4	1.52E-07	1.05E-06	14	431.72	0	875.36	2.2	1.68	0.000249015	682.69	1.33	2.09	20
273	44.95	0.16	33.6	1.1	4	1.74E-07	1.24E-06	14	445.63	0	882.35	2.27	1.73	0.000233437	685.41	1.35	2.16	20
274	45.11	0.16	33.7	1	4	1.79E-07	1.29E-06	14	449.32	0	885.13	2.29	1.74	0.00023307	686.49	1.39	2.17	38.42
275	45.28	0.17	34	1	4	1.97E-07	1.43E-06	14	453.54	0	877.75	2.31	1.75	0.000248676	683.62	1.39	2.27	39.19
276	45.44	0.16	34.2	1	4	1.93E-07	1.42E-06	14	459.16	0	891.73	2.34	1.76	0.000232207	689.04	1.39	2.22	39.69
277	45.61	0.17	34.7	1.1	4	1.79E-07	1.34E-06	15	465.32	0	916.09	2.37	1.78	0.000243417	698.39	1.4	2.12	40
278	45.77	0.16	35.1	1.2	4	1.58E-07	1.21E-06	15	477.67	0	961.88	2.44	1.82	0.000223579	715.63	1.42	1.94	40
279	45.93	0.16	36.6	1.4	4	1.86E-07	1.51E-06	16	508.45	0	994.67	2.59	1.93	0.000219862	727.73	1.47	1.96	40
280	46.1	0.17	41	1.3	4	2.17E-07	1.88E-06	17	540.4	0	1027.41	2.76	2.05	0.000229851	739.61	1.53	1.98	40
281	46.26	0.16	42.3	1.4	4	2.06E-07	1.77E-06	16	535.04	0	1026.81	2.73	2.02	0.000216395	739.39	1.52	1.96	40
282	46.43	0.17	35.5	1.4	4	1.42E-07	1.12E-06	16	492.61	0	1011.56	2.51	1.85	0.000231646	733.88	1.43	1.8	39.83
283	46.59	0.16	32.4	1.3	3	8.74E-08	5.98E-07	14	426.85	0	956.99	2.18	1.6	0.000224149	713.81	1.31	1.68	39.26
284	46.75	0.16	28.2	1.1	3	6.74E-08	4.08E-07	13	377.88	0	887.99	1.93	1.41	0.000232693	687.6	1.23	1.72	37.44
285	46.92	0.17	25.6	0.9	3	5.15E-08	2.72E-07	12	330.2	0	814.64	1.68	1.23	0.000258127	658.59	1.14	1.77	36.32
286	47.08	0.16	22.4	0.8	3	3.97E-08	1.85E-07	11	290.72	0	751.69	1.48	1.08	0.000252912	632.63	1.07	1.82	35.34
287	47.25	0.17	19.9	0.7	3	2.70E-08	1.05E-07	10	242.25	0	710.16	1.31	0.95	0.000276468	614.9	1	1.75	34.72
288	47.41	0.16	18.2	0.7	3	2.30E-08	7.60E-08	10	206.78	0	676.74	1.21	0.87	0.000266551	600.26	0.97	1.78	32.9
289	47.57	0.16	18.8	0.6	3	1.82E-08	5.18E-08	9	177.6	0	655.01	1.12	0.81	0.000270934	590.55	0.96	1.74	31
290	47.74	0.17	16.7	0.6	3	1.55E-08	3.89E-08	9	157.06	0	635.64	1.06	0.76	0.000292222	581.75	1.01	1.73	20
291	47.9	0.16	15.8	0.6	3	1.18E-08	2.74E-08	9	144.89	0	642.33	1.02	0.73	0.000273598	584.8	0.92	1.57	29.72
292	48.07	0.17	17	0.7	3	1.19E-08	2.76E-08	9	145.38	0	643.84	1.02	0.73	0.000290355	585.49	0.92	1.58	30.04
293	48.23	0.16	16.8	0.6	3	1.23E-08	2.92E-08	9	148.05	0	646.38	1.03	0.73	0.00027274	586.64	0.92	1.6	30.02
294	48.39	0.16	16.3	0.6	3	1.24E-08	2.80E-08	9	141.56	0	632.82	1.01	0.71	0.000275643	580.46	0.91	1.65	30.02
295	48.56	0.17	16.1	0.6	3	1.17E-08	2.59E-08	9	138.17	0	632.29	1	0.7	0.000292997	580.21	0.9	1.63	30.3
296	48.72	0.16	16.3	0.6	3	1.14E-08	2.36E-08	9	129.71	0	617.17	0.97	0.68	0.00027912	573.23	0.88	1.68	30.44
297	48.89	0.17	15	0.5	3	9.53E-09	1.73E-08	8	113.52	0	597.01	0.91	0.64	0.000301525	563.8	0.86	1.67	29.93

CPT-5 Estimations

298	49.05	0.16	13.6	0.5	3	7.80E-09	1.22E-08	8	97.9	0	575.8	0.85	0.59	0.00028897	553.69	0.83	1.66	29.33
299	49.22	0.17	13.7	0.5	3	6.90E-09	1.02E-08	8	92.46	0	573.1	0.82	0.57	0.000307754	552.39	0.82	1.61	29.09
300	49.38	0.16	14.1	0.5	3	7.36E-09	1.19E-08	8	100.7	0	592.09	0.86	0.6	0.000284966	561.47	0.84	1.58	29.28
301	49.54	0.16	15.2	0.6	3	1.13E-08	2.24E-08	9	123.41	0	607.29	0.95	0.66	0.000281378	568.63	0.87	1.75	30.05
302	49.71	0.17	17.6	0.5	3	1.49E-08	3.37E-08	9	140.7	0	617.78	1.02	0.7	0.000296415	573.52	0.9	1.88	30.44
303	49.87	0.16	16.9	0.5	3	1.60E-08	3.53E-08	9	137.78	0	604.75	1.01	0.69	0.000281968	567.44	0.89	1.98	30.9
304	50.04	0.17	14.7	0.5	3	1.08E-08	2.09E-08	9	120.84	0	609.23	0.95	0.65	0.000298486	569.54	0.85	1.74	31.21
305	50.2	0.16	14.8	0.6	3	7.81E-09	1.37E-08	9	109.25	0	615.25	0.9	0.62	0.000279554	572.34	0.82	1.56	31.66

Sum 0.101458463

Vs of CPT 494.78376 (ft/s)
150.84871 (m/s)

Extrapolated Vs 582.78194 (ft/s)
Following Boore (2004) 177.67742 (m/s)

APPENDIX E

SUMMARY OF COMPACTION RECOMMENDATIONS



SUMMARY OF COMPACTION RECOMMENDATIONS

Area	Compaction Recommendations (See Notes 1, 2, 3, 4, 6)
Subgrade Preparation and Placement of General Engineered Fill, Including Imported Fill	Compact upper 12 inches of subgrade and entire fill to a minimum of 90 percent compaction at near optimum content for granular soils and to a minimum of 90 percent compaction at a minimum of 2 percent over optimum moisture content for clayey soils.
Lime-Treated Soil	Compact lime-treated on-site soils to a minimum of 90 percent compaction and at least 3 percent over optimum moisture content.
Trenches ⁵	Compact trench backfill to a minimum of 90 percent compaction at near optimum moisture content for granular soils and to a minimum of 90 percent compaction at a minimum of 2 percent over optimum moisture content for clayey soils. Where trenches will be under flatwork or paving, the upper 12 inches should be compacted as recommended below for flatwork and pavement. Proper granular bedding and shading should be used beneath and around new utilities.
Exterior Flatwork	Compact upper 12 inches of subgrade to a minimum of 90 percent compaction at near optimum moisture content for granular soils and to a minimum of 90 percent compaction at a minimum of 2 percent over optimum moisture content for clayey soils. Compact aggregate base to a minimum of 90 percent compaction at near optimum moisture content. Where exterior flatwork is exposed to vehicular traffic, compact upper 12 inches of subgrade to a minimum of 92 percent compaction and aggregate base to a minimum of 95 percent compaction.
Pavements	Compact upper 12 inches of subgrade to a minimum of 95 percent compaction at near optimum moisture content for granular soils and to a minimum of 92 percent compaction at a minimum of 2 percent over optimum moisture content for clayey soils. Compact aggregate base to a minimum of 95 percent compaction near optimum moisture content.

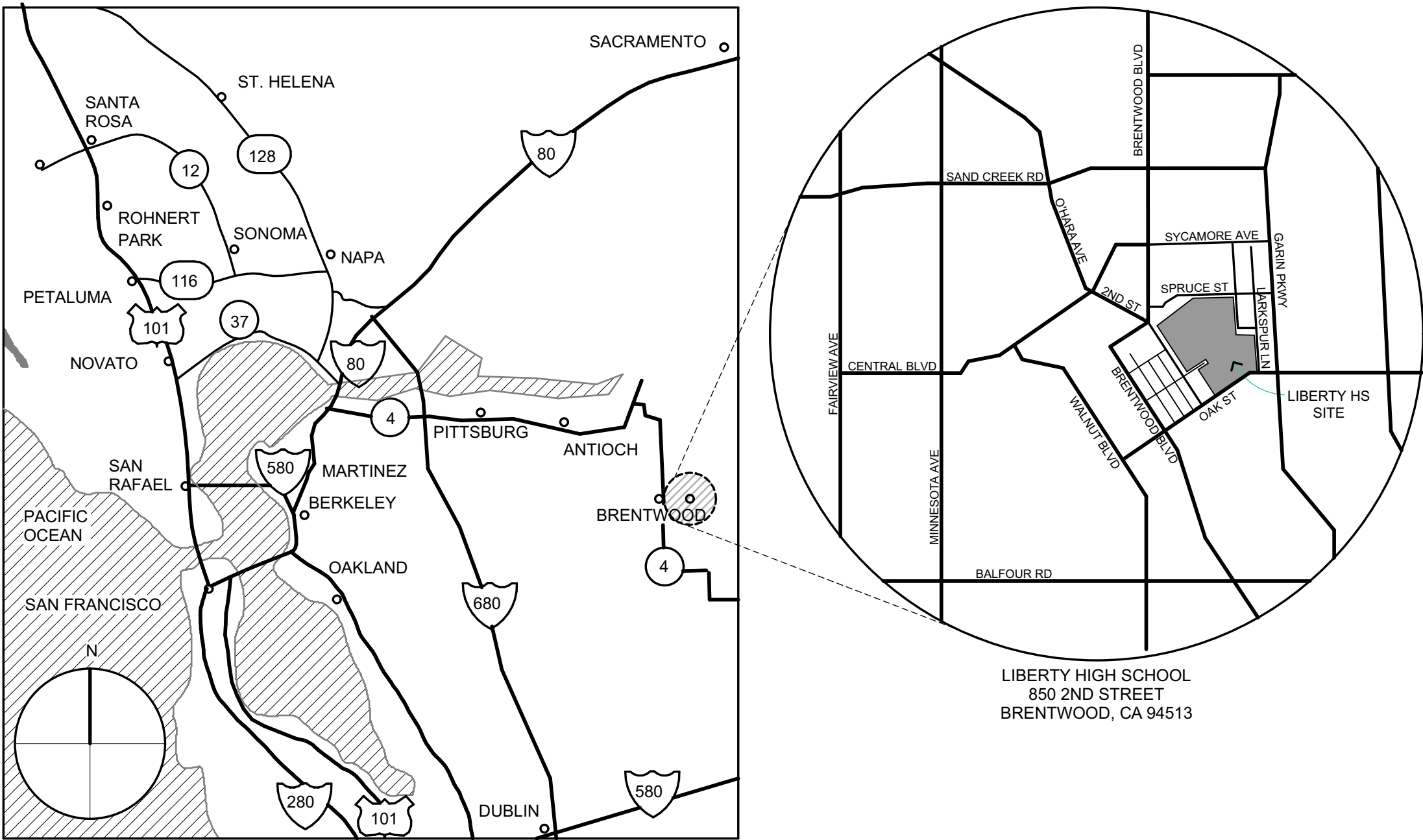
Notes:

- (1) Depths are below finished subgrade elevation.
- (2) All compaction requirements refer to relative compaction as a percentage of the laboratory standard described by ASTM D 1557.
- (3) Fill material should be compacted in lifts not exceeding 8 inches in loose thickness.
- (4) All subgrades should be firm and stable.
- (5) In landscaping areas only, the percent compaction in trenches may be reduced to 85 percent.
- (6) Where fills are greater than 7 feet in depth below finish grade, the portion below a depth of 7 feet should be compacted to a minimum of 95 percent compaction.



LIBERTY HIGH SCHOOL
BASEBALL BACKSTOP REPLACEMENT
850 2ND STREET, BRENTWOOD, CA 94513
LIBERTY UNION HIGH SCHOOL DISTRICT

VICINITY MAP



DSA FILE NO: 7-H4

DSA APPLICATION NO: 01-119543

PTN: 61721-81

CONSTRUCTION DOCUMENTS

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IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-119543 INC:
REVIEWED FOR
SS ☐ FLS ☐ ACS ☒
DATE: 08/05/2021


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SIGNED: August 2, 2021

LIBERTY HIGH
SCHOOL
BASEBALL
BACKSTOP
REPLACEMENT

850 2ND STREET
BRENTWOOD, CA 94513

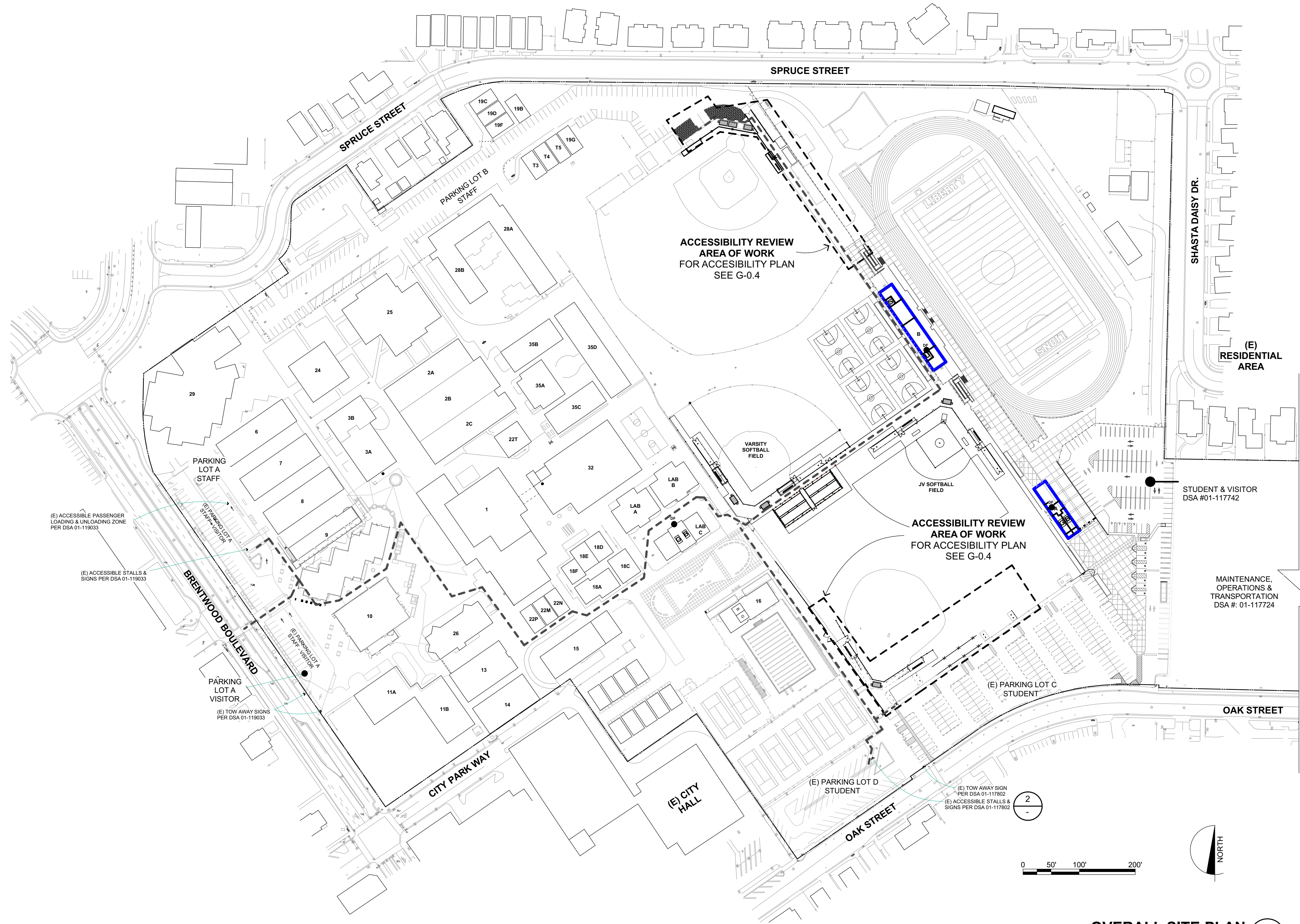
LIBERTY UNION HIGH
SCHOOL DISTRICT

DSAAPP NO. 01-119543	
ARCH PROJECT NO:	1923.00
DRAWN BY:	PAG
DRAWING SCALE:	N.T.S.
PTN: 61721-81	FILE NO: 7-H4
CONSTRUCTION DOCUMENTS	
August 2, 2021	
SHEET TITLE	

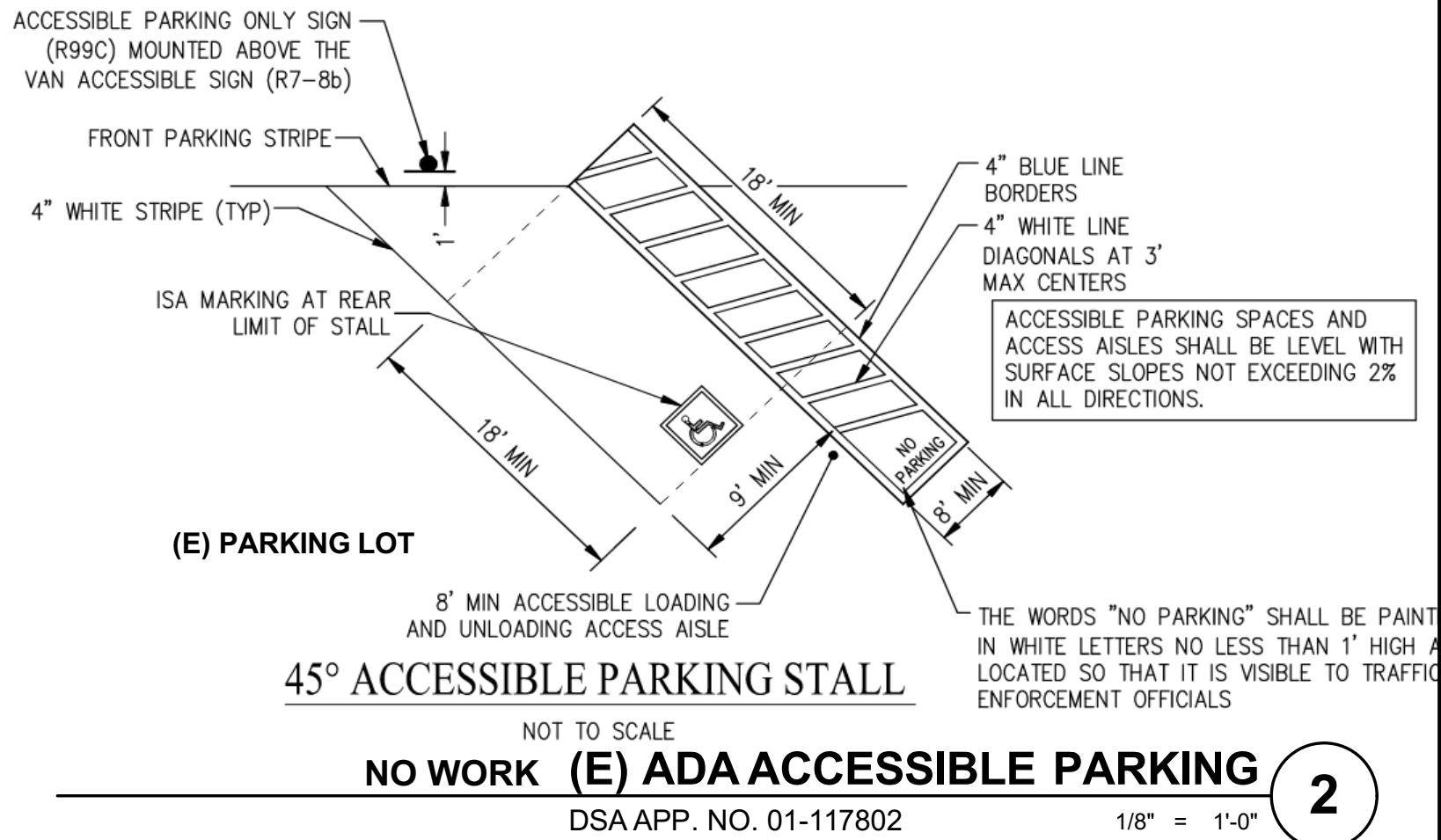
COVER SHEET

SHEET NUMBER
G-0.1

P:\1923.00 - Liberty HS Backstops_LUHSD\Drawings\04-CD\PDFs-01 DSA Submittal\1923.00 LIBERTY HS BACKSTOP REPLACEMENT.dwg-8/2/2021:12:09 PM



OVERALL SITE PLAN 1
1" = 100'



#	BLDG DESCRIPTION	APP. #
A	CONCESSION / RESTROOMS	01-117742
B	FITNESS BUILDING	01-117742
1	GYMNASIUM	30513
2A	LANGUAGE & SOCIAL SCIENCE BLDGS	25083
2B	LANGUAGE & SOCIAL SCIENCE BLDGS	25083
2C	LANGUAGE & SOCIAL SCIENCE BLDGS	25083
3A	LIBRARY	25083
3B	LIBRARY ADDITION	53065
6	CLASSROOM BUILDING	22109 & 53065
7	CLASSROOM BUILDING	2286 & 53065
8	CLASSROOM BUILDING	8915
9	A-WING, STUDENT USE	01-119033
10	STUDENT ACTIVITY CENTER & CAFETERIA	01-119033
10A	ADMIN AND STUDENT SERVICES	01-119033
11	APT WING & COMPUTER WING	25083 & 54083
13	WOOD SHOP	14565
14	METAL SHOP	7354
15	AUTO SHOP	3518 & 25083
16	SWIMMING POOL BUILDING	01-117802
18A	T1 BIOLOGICAL, PHYSIOLOGY	46363
18B	T2 CLOTHING LABORATORY	46363
18C	T3 COMPUTER LABORATORY	46363
18D	T4 PHYSICAL / EARTH SCIENCE LAB	46363
18E	T5 CHEMISTRY LABORATORY	46363
18F	T6 BIOLOGY	46363
18H	T7 CLASSROOM	46363
18J	T8 CLASSROOM	47440
19A	CC7 SPECIAL EDUCATION	47440
19B	CC8 SPECIAL EDUCATION	47440
19C	CC9 SPECIAL EDUCATION	47440
19D	CC10 SPECIAL EDUCATION	47440
19E	CC11 SPECIAL EDUCATION	47440
19F	CC12 SPECIAL EDUCATION	47440
19G	CC13 SPECIAL EDUCATION	47440
19J	NEW RELOCATABLE CLASSROOM	01-105226
19K	NEW RELOCATABLE CLASSROOM	01-105226
19L	NEW RELOCATABLE CLASSROOM	01-105226
21	BUS GARAGE	
22D	P4 - CHAPTER 1	48291
22F	P6 - DRIVER TRAINING & SIMULATOR	48291
22T	P18 - DRAFTING	47440
24	SCIENCE BUILDING	46950
25	COUNTY SPECIAL ED. FACILITY	48347
26	COUNTY SPECIAL ED. FACILITY	48347
28A	MATH & SCIENCE CLASSROOMS	53065
28B	MATH & SCIENCE CLASSROOMS	53065
29	PERFORMING ARTS BUILDING	54083
31A	R9 TOILETS	61129
31B	R19 CLASSROOMS	61129
31C	R18 CLASSROOMS	61129
31D	R17 CLASSROOMS	61129
31E	R16 CLASSROOMS	61129
32	JOINT USE GYMNASIUM	01-102471
33A	RELOCATABLE CLASSROOMS	01-105228
33B	RELOCATABLE CLASSROOMS	01-105228
33C	RELOCATABLE CLASSROOMS	01-105228
33D	RELOCATABLE CLASSROOMS	01-105228
33E	RELOCATABLE CLASSROOMS	01-105228
33F	RELOCATABLE CLASSROOMS	01-105228
34	UNITY PLAZA	01-106022
35A	SCIENCE CLASSROOMS	01-107504
35B	CLASSROOMS	01-107504
35C	CLASSROOMS	01-107504
35D	CLASSROOMS	01-107504
T3	CLASSROOMS	01-114250
T4	CLASSROOMS	01-114250
T5	CLASSROOMS	01-114250
LAB	SCIENCE LAB A, B & C	01-114751
VSF	VARSITY SOFTBALL FIELD	01-117607
JVSF	JV SOFTBALL FIELD	01-117607

ACCESS SITE PLAN LEGEND

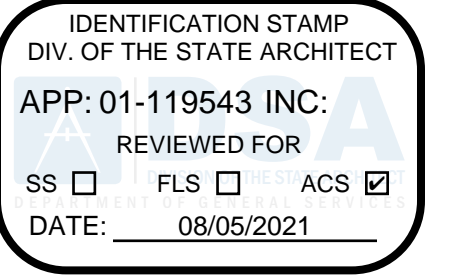
	(E) BUILDING TO REMAIN
	(E) BARRIER FREE PATH OF TRAVEL
	(E) ACCESSIBLE DRINKING FOUNTAIN
	(E) RESTROOM - GIRLS
	(E) RESTROOM - BOYS
	(E) RESTROOM - STAFF
	(E) RESTROOM - UNISEX
	PROPERTY LINE (APPROX)

PARKING COUNT

	OVERALL	ACC STALL	ACC VAN STALL	REQUIRED STD	VAN
(E) PARKING LOT A STAFF & VISITOR	58	2	1	2	1
(E) PARKING LOT B STAFF	103	2	3	4	1
(E) PARKING LOT C STUDENT & VISITOR	264	8	4	5	2
(E) PARKING LOT D STUDENT	44	1	1	1	1

CBC 2019 TABLE 11B-208.2:
26-50 TOTAL SPACES = 2 REQ'D ACC SPACES

CBC 2019 SECTION 11B-208.2.4:
FOR EVERY 6 OR FRACTION OF 6 ACC PARKING SPACES REQUIRED, AT
LEAST 1 SHALL BE A VAN ACCESSIBLE PARKING SPACE.



LIBERTY HIGH SCHOOL

BASEBALL BACKSTOP REPLACEMENT

850 2ND STREET
BRENTWOOD, CA 94513

LIBERTY UNION HIGH SCHOOL DISTRICT

DSA APP NO. 01-119543

ARCH PROJECT NO: 1923.00

DRAWN BY: PAG

DRAWING SCALE: AS NOTED

PTN: 61721-81 FILE NO: 7-H4

CONSTRUCTION DOCUMENTS

August 2, 2021

SHEET TITLE

OVERALL SITE PLAN

SHEET NUMBER

G-0.3

1	ACCESSIBLE PARKING, S.L.D. AND DETAIL	1 A-1.3
2	FOR BLDG ID SEE G-0.3	
3	JUNIOR VARSITY CHAIN LINK DUGOUT, S.L.D.	
4	(E) VARSITY DUGOUT	
5	(E) BLEACHERS	
6	36"x48" ACCESSIBLE SEATING AREA	
7	(E) AC WALKWAY	
8	AC PAVING WALK, S.L.D.	
9	JV BASEBALL BULLPEN, S.L.D.	
10	CONCRETE PAVING, S.L.D.	
11	(E) AC PAVING PARKING LOT	

ALL NEW WORK SHALL BE ACCESSIBLE. ALL NEW WALKWAYS SHALL CONFORM TO CBC 11B-403. ACCESSIBLE P.O.T. AS SHOWN ON THE PLANS CAN BE NEGOTIATED BY A PERSON WITH A DISABILITY USING A WHEELCHAIR, AND IS ALSO SAFE FOR AND USABLE BY PERSONS WITH OTHER DISABILITIES.

- CONCRETE SHALL SLOPE MIN. 1/8" PER FOOT AWAY FROM (E) BUILDINGS
- EXTERIOR DOOR LANDINGS SHALL SLOPE 1/4" PER FOOT MAX. AWAY FROM BUILDING FOR DRAINAGE
- REFER TO LANDSCAPE DWGS FOR SIDEWALK AND SITE FEATURES NOT OTHERWISE INDICATED
- PARKING AND PEDESTRIAN SITE SIGNAGE SHALL COMPLY WITH CBC SECTIONS 11B-502.6 & 11B-703.7.2.1
- BUILDING SIGNAGE SHALL COMPLY WITH CBC 11B-703
- PEDESTRIAN GATES SHALL COMPLY WITH CBC 1008.2 & 11B-206.5

◀----- INDICATES BARRIER FREE PATH OF TRAVEL

- 1:20 MAXIMUM SLOPE WITHOUT A RAMP
- 1:48 MAXIMUM CROSS SLOPE
- 1:48 MAXIMUM SLOPE DIRECTION FOR ACC PARKING SPACES
- ACCESS AISLES PER 11B-502.4.NO ABRUPT VERTICAL CHANGES EXCEEDING 1/4"
- CHANGES BETWEEN 1/4" TO 1/2" VERTICAL CAN BE AT 1:2
- NO ABRUPT VERTICAL CHANGES EXCEEDING 1/4"
- CHANGES BETWEEN 1/4" TO 1/2" VERTICAL CAN BE AT 1:2
- MAX SLOPE: CHANGES LESS THAN 1/4" CAN BE VERTICAL
- 48" MIN. CLEAR IN WIDTH (60" MIN PASSING SPACE)
- NON-SLIP SURFACE -HEAVY BROOM FINISH AT EXTERIOR CONCRETE PAVING WHERE SLOPE >6%, MEDIUM BROOM FINISH AT SLOPES <6%
- MAINTAIN FREE OF OVERHANGING OBSTRUCTIONS TO 80" MIN
- PROTRUDING OBJECTS NOT GREATER THAN 4" SHALL BE MOUNTED BETWEEN 27" AND 80" A.F.F.
- WHERE IS DRAINAGE IN THE PATH OF TRAVEL, THE GRATE SHALL BE ORIENTED SO THAT MAX OPENING IS 1/2" & LONG DIM IS PERPENDICULAR TO THE PREDOMINANT DIRECTION OF PEDESTRIAN TRAVEL
- CONTRACTOR TO VERIFY THAT NO BELOW-GRADE PLUMB BOXES OCCUR WITHIN THE AREA OF TRUNCATED DOMES

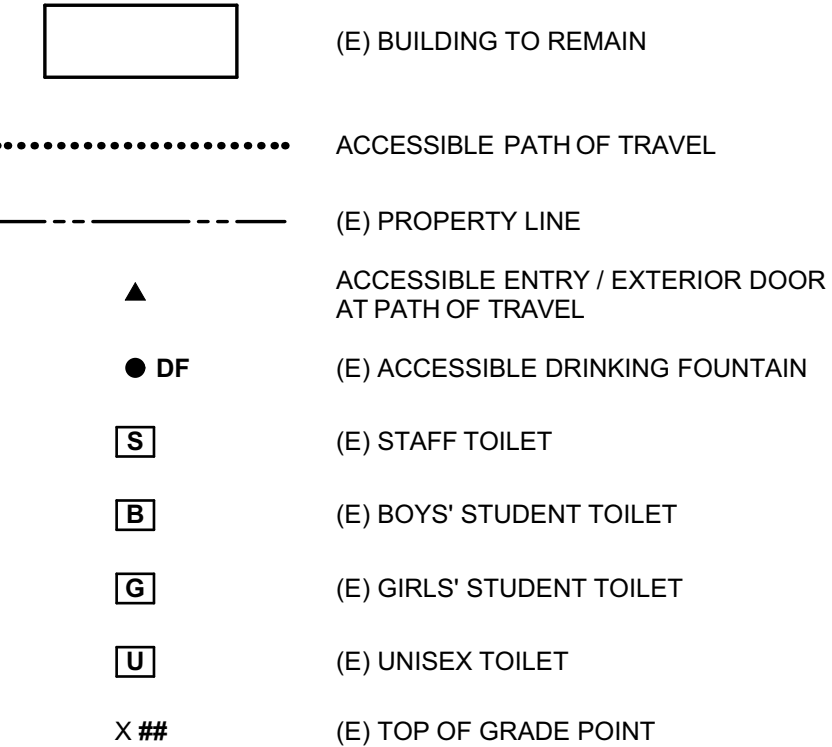
THE P.O.T. IDENTIFIED IN THESE CONSTRUCTION DOCUMENT IS COMPLIANT WITH THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE ACCESSIBILITY PROVISIONS FOR PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT THE P.O.T. WAS EXAMINED AND ANY ELEMENT, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WERE DETERMINED TO BE NONCOMPLIANT

- 1) HAVE BEEN IDENTIFIED AND
- 2) THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS.

ANY NONCOMPLIANT ELEMENT, COMPONENT, OR PORTION OF THE P.O.T. THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE SO INDICATED IN THESE CONSTRUCTION DOCUMENTS.

DURING CONSTRUCTION IF P.O.T. ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CODE-COMPLIANT ARE FOUND TO BE NONCONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THEY SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS A PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

ALL TOILET ROOMS NOTED ARE ACCESSIBLE PER CBC.



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SIGNED: August 2, 2021

BASEBALL BACKSTOP REPLACEMENT

850 2ND STREET
BRENTWOOD, CA 94513

LIBERTY UNION HIGH
SCHOOL DISTRICT[illegible]

DSA APP NO. 01-119543

ARCH PROJECT NO: 1923.00

DRAWN BY: _____ PAG _____

DRAWING SCALE: AS NOTED

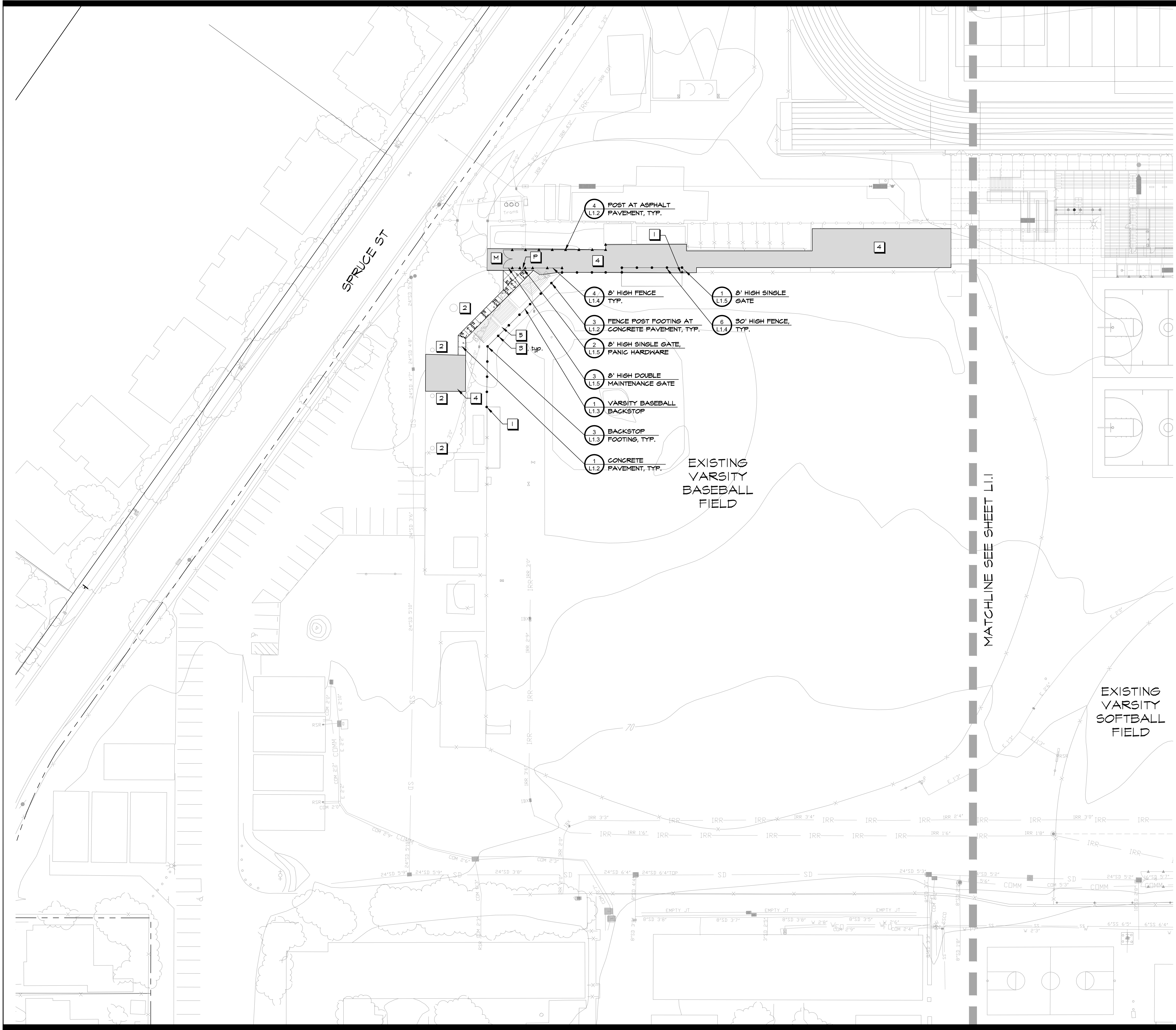
CONSTRUCTION DOCUMENTS

August 2, 2021

ACCESS - ENLARGED SITE PLAN

SHEET NUMBER

G-0.4



MATERIAL LEGEND

NOT ALL MAY APPEAR ON THIS SHEET

- Bleachers (Existing). See Architectural Drawings.
- 3'-6" High Fence
- 8' High Fence
- 12' High Fence
- 30' High Fence or Backstop
- Single Gate
- Double Gate
- Expansion Joint
- Control Joint
- Direction of broom finish
- Concrete Pavement. Concrete shall have a slip resistant broom finish in the direction shown on this sheet.
- Asphalt Pavement. See Architectural Drawings.
- Turf (NIC)

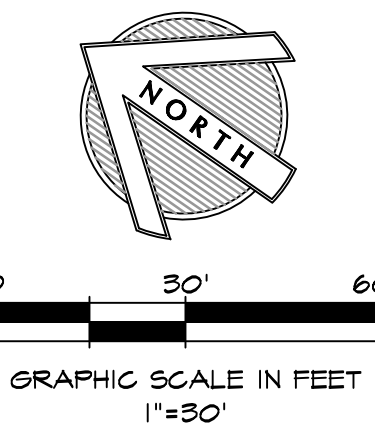
KEY NOTES

- Connect new fence and gates to existing chain link fence, typ.
- Existing tree shall remain, typ. Comply with Tree Preservation Standards on L1.2.
- Infield fines shall be placed in areas where existing fines have been disturbed and added fines are required to create flush connection to adjacent surfaces. See Detail 2 on Sheet L1.2.
- Asphalt Pavement. See Architectural Drawings.
- Existing concrete pavement. See Architectural Drawings.

M	Maintenance Gate
P	Panic Hardware Gate
Refer to General Fencing and Gate Notes and Schedules on L1.5	

CONCRETE NOTES

- Subgrade preparation shall be done in accordance with the recommendations in the Geotechnical Report.
- Tooled control joints shall run continuously and extend through integral curbs and thickened edges. Tooled control joint layout shall be as shown on the Layout Plan, and coincide with the corners of objects, structures and the beginning and ends of curves. Joints should have a minimum depth of 25% of the slab thickness, unless otherwise noted on plans.
- Expansion joints shall be laid out as shown on the Layout Plan.
- Contractor shall place 3/8" asphalt impregnated fiber board where new concrete meets existing building and existing or new walls and planters.
- The base rock layer, prior to placement of concrete, shall be sprinkled with clean water several times to restore any moisture that may have been lost after completion of compaction.
- Provide a surface texture as described in Material Legend on this sheet. See Plan for direction.
- Cure concrete with curing compound or keep continuously moist for a minimum of 7 days.
- Contractor shall prepare a 4'x4' sample of all materials in the field prior to construction, for review and approval by the District.
- Concrete pavement with slopes less than 6% shall receive a medium broom finish and slopes greater than 6% shall receive a heavy broom finish. Finish shall be in the direction shown on this sheet.



IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-119543 INC:
REVIEWED FOR
SS ☐ FLS ☐ ACS ☒
DATE: 08/05/2021

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www.gsilandscape.com

STEVEN STRANZL
No. 2790
Exp. 10-31-22
STATE OF CALIFORNIA

LIBERTY
HIGH SCHOOL

BASEBALL
BACKSTOP
REPLACEMENT

850 2ND STREET,
BRENTWOOD, CA 94513

LIBERTY UNION
HIGH SCHOOL
DISTRICT

REVISIONS	

DSA APP NO.	01-119543
ARCH PROJECT NO.	1923.00
DRAWN BY:	BTI, HDJ
DRAWING SCALE:	1"=30'-0"
PTN: 61721-81	FILE NO: 7-H4

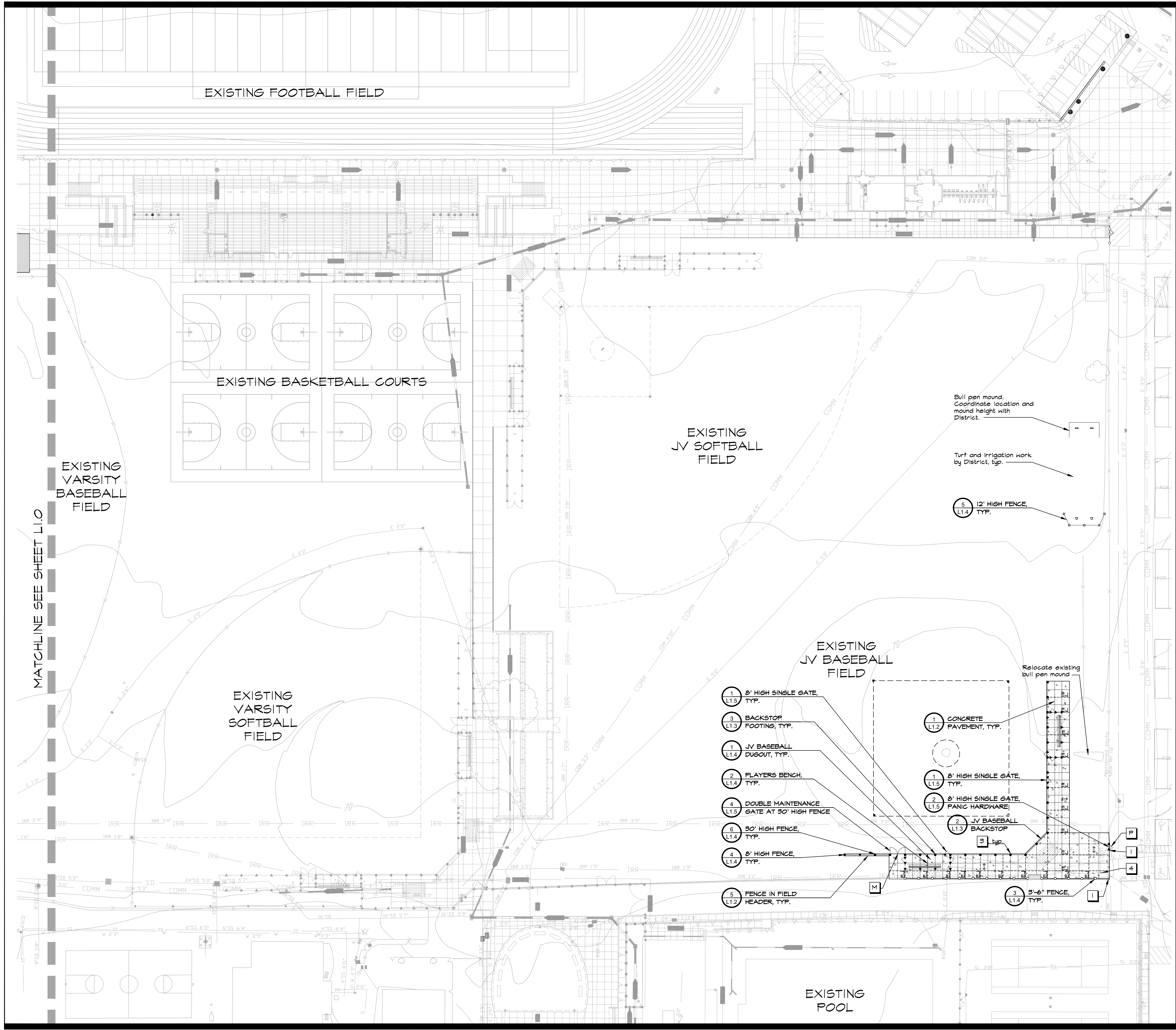
CONSTRUCTION DOCUMENTS

AUGUST 2, 2021
SHEET TITLE

MATERIAL
AND DETAIL
REFERENCE
PLAN

SHEET NUMBER

L1.0



MATERIAL LEGEND

NOT ALL MAY APPEAR ON THIS SHEET

- Bleachers (Existing). See Architectural Drawings.
- 3'-6" High Fence
- 8' High Fence
- 12' High Fence
- 30' High Fence or Backstop
- Single Gate
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- Concrete Pavement. Concrete shall have a slip resistant broom finish in the direction shown on this sheet.
- Asphalt Pavement. See Architectural Drawings.
- Turf (NIC)

KEY NOTES

- Connect new fence and gates to existing chain link fence, typ.
- Existing tree shall remain, typ. Comply with Tree Preservation Standards on L1.2.
- Infield lines shall be placed in areas where existing lines have been disturbed and added lines are required to create flush connection to adjacent surfaces. See Detail 2 on Sheet L1.2.
- Provide and install concrete valve boxes at finish grade for existing utilities in the area of work, typ.

- M Maintenance Gate
- P Panic Hardware Gate

Refer to General Fencing and Gate Notes and Schedules on L1.5



0 30' 60'
GRAPHIC SCALE IN FEET
1"=30'

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HIGH SCHOOL
DISTRICT

REVISIONS	

DSA APP NO. 01-119543
ARCH PROJECT NO. 1923.00
DRAWN BY: BTI, HDJ
DRAWING SCALE: 1"=30'-0"
PTN: 61721-81 FILE NO: 7-H4

CONSTRUCTION DOCUMENTS

AUGUST 2, 2021
SHEET TITLE

MATERIAL
AND DETAIL
REFERENCE
PLAN

SHEET NUMBER

L1.1



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LIBERTY HIGH SCHOOL

BASEBALL BACKSTOP REPLACEMENT

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REVISIONS		

DSA APP NO: 01-119543	
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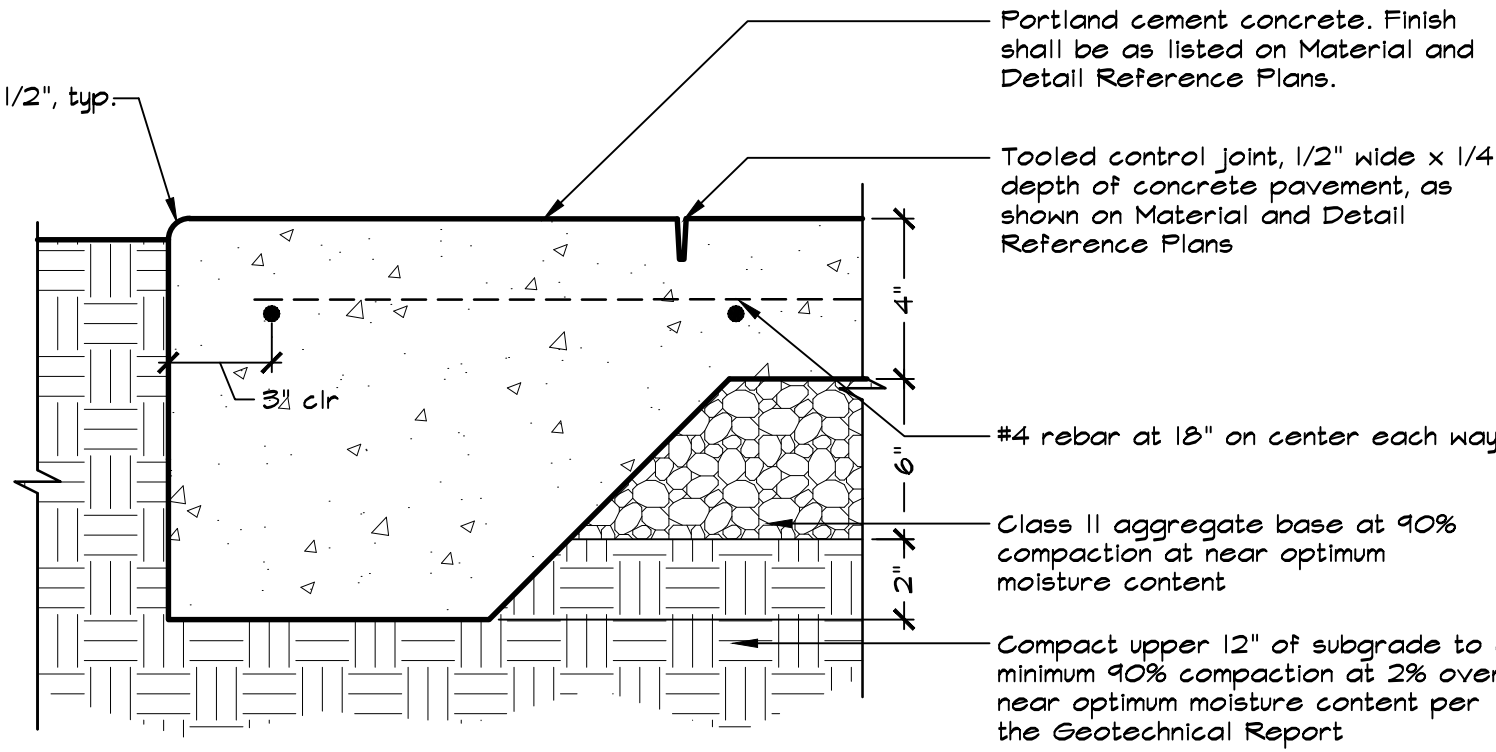
CONSTRUCTION DOCUMENTS

AUGUST 2, 2021
SHEET TITLE

CONSTRUCTION DETAILS

SHEET NUMBER

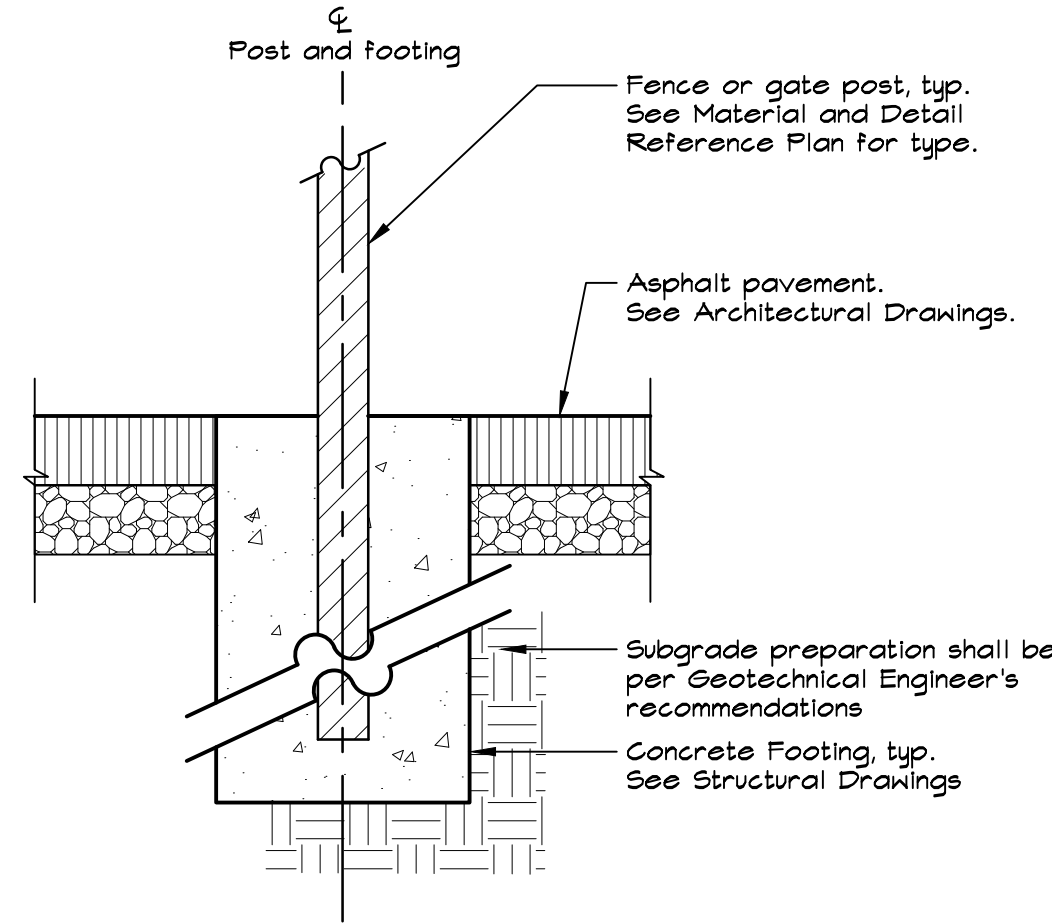
L1.2



NOTES:

1. See Concrete Notes on the Material and Detail Reference Plans in addition to requirements in the Specifications.
2. See Material and Detail Reference Plans for concrete finish.
3. See Material and Detail Reference Plans for tooled control joint and expansion joint locations.

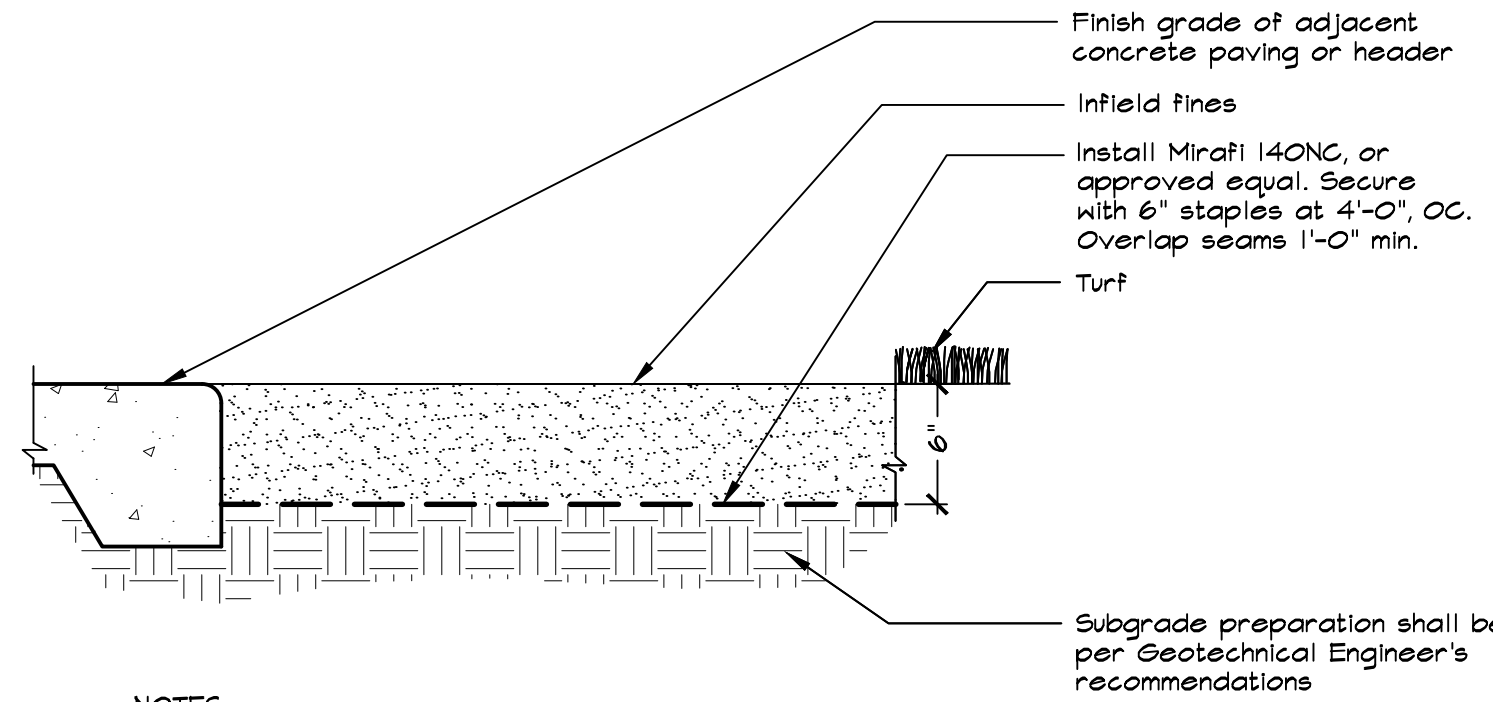
1 CONCRETE PAVEMENT NOT TO SCALE



NOTES:

1. See Concrete Notes on the Material and Detail Reference Plans.
2. See Structural Drawings for fence footing design.
3. See General Fencing and Gate Notes and Schedules on Sheet L1.5.

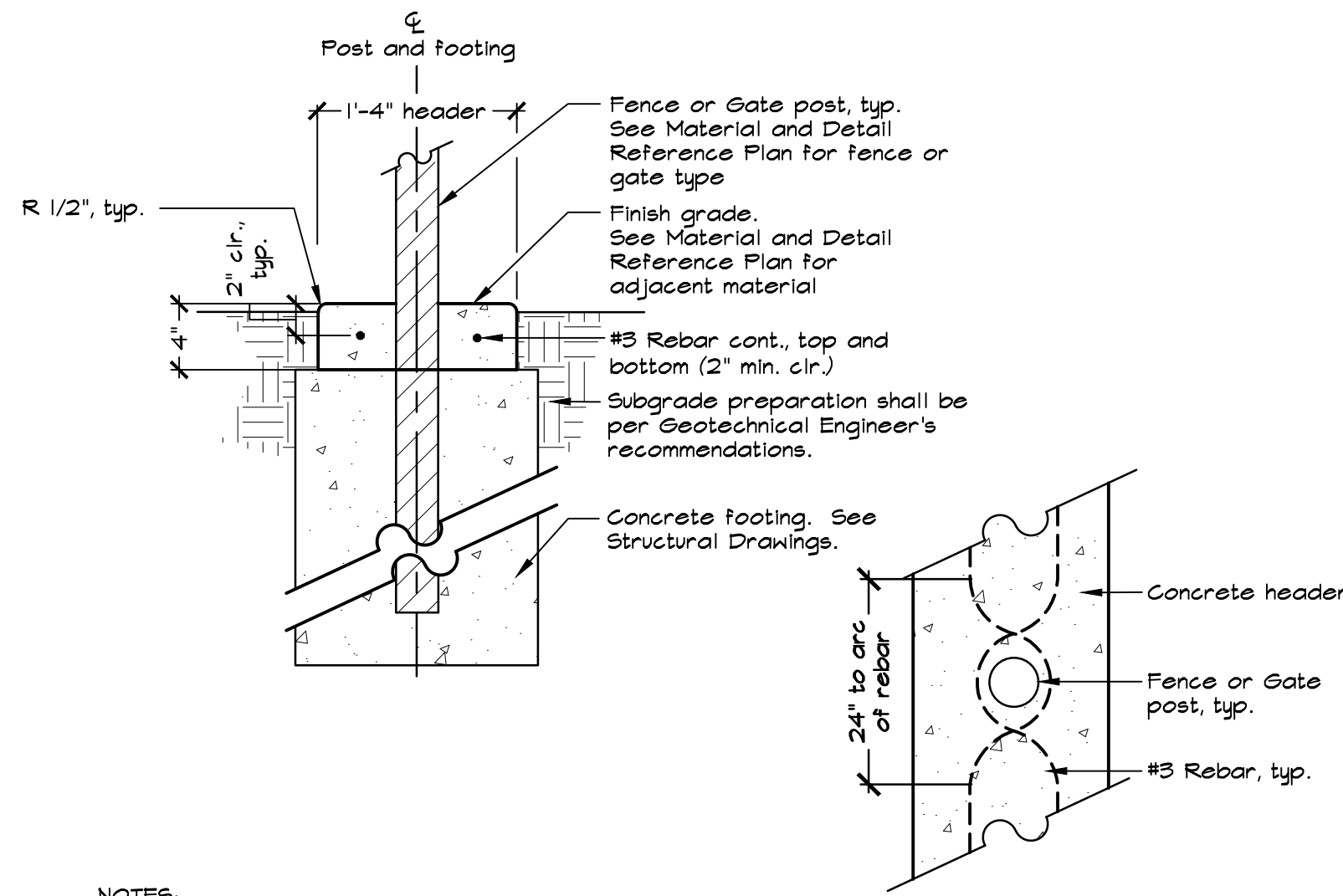
4 POST AT ASPHALT PAVEMENT NOT TO SCALE



NOTES:

1. Infield fines shall be Infield Fines 70/30, available through Brown Sand Inc., Lathrop, CA, (209) 234-1500, or approved equal.
2. Geotextile fabric shall extend a minimum of 3" vertical at all edges of infield fines.
3. Contractor shall submit infield fines sample for District review and approval.

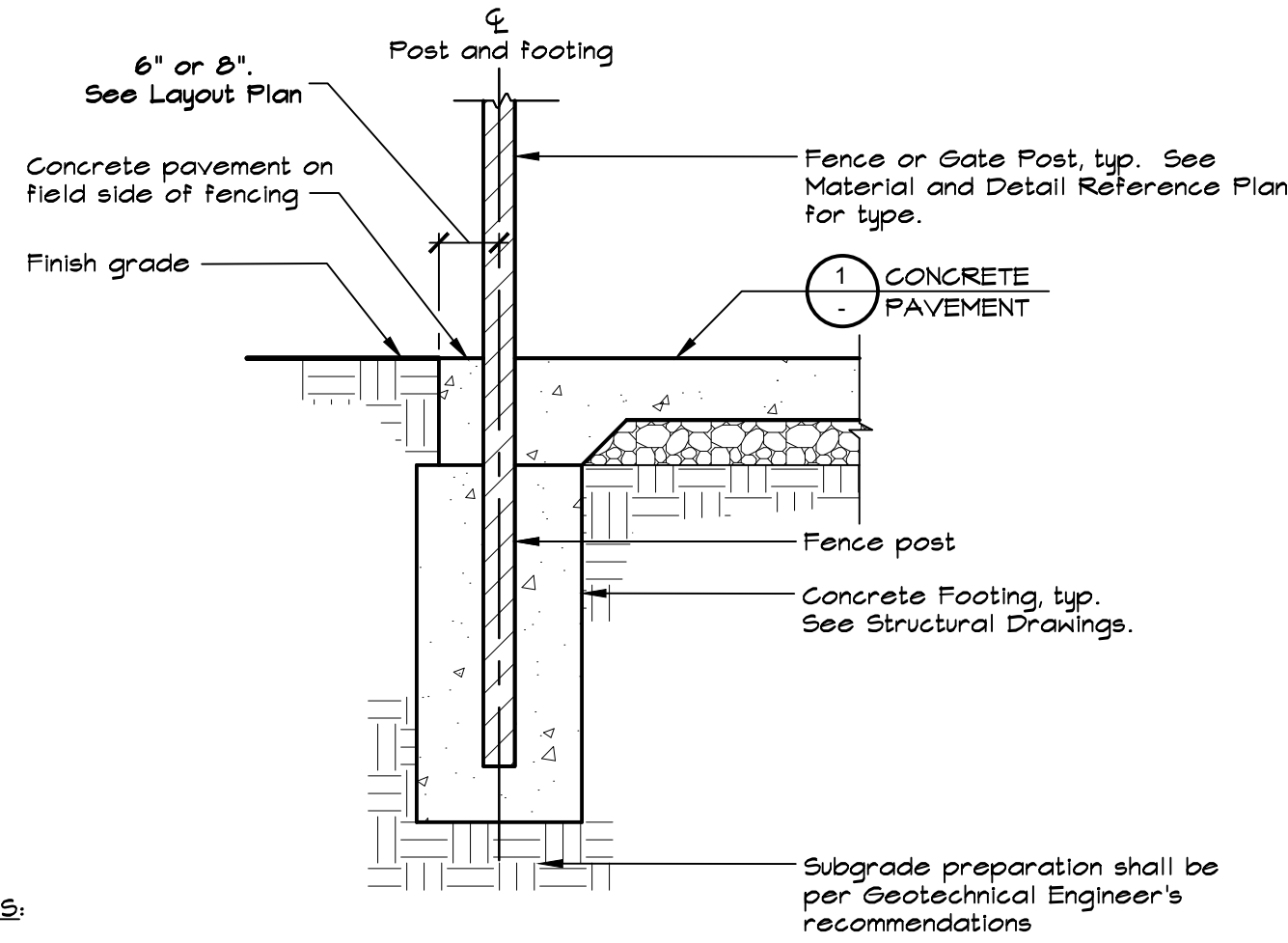
2 INFIELD FINES NOT TO SCALE



NOTES:

1. See Concrete Notes on Sheet L1.0.
2. Contractor shall install score joints at 10' OC spacing and alternating expansion joints every 20' on straight runs. On curved runs, score joints shall be at 5' OC spacing and alternating expansion joints every 10'.
3. Score joints shall align with fence posts.
4. See Structural Drawings for fence footing design.
5. See General Fencing and Gate Notes and Schedules on Sheet L1.5.

5 FENCE IN FIELD HEADER NOT TO SCALE



NOTES:

1. See Concrete Notes on Sheet L1.0.
2. See Structural Drawings for fence footing design.
3. See General Fencing and Gate Notes and Schedules on Sheet L1.5.

3 FENCE POST FOOTING AT CONCRETE PAVEMENT NOT TO SCALE

TREE PRESERVATION STANDARDS

1. Tree Protection Specifications shall be utilized for the protection of trees to remain within the Limit of Work. Construction activity shall include, but is not limited to, grading, trenching, excavating, and operation of construction equipment or vehicles in the vicinity of the tree to be protected, or work which has the potential to harm or affect the health or vigor of the tree.
2. Roots of single standing trees often extend two to three times the distance of the actual drip line and function primarily in the uptake of nutrients and water. The drip line is arbitrarily established as the minimum root area generally required to preserve tree health. As much area around the circumference of the tree beyond the drip line shall have minimum intrusion to further ensure tree survival and health.
3. Original grade shall be maintained at all times in the immediate area of the root crown, where the soil contacts tree bole. No increase in grade shall be allowed under any circumstances in this area.
4. All underground work within tree drip lines shall be avoided wherever possible to reduce negative impact on trees. Underground utilities should be located well outside the tree drip line for preservation purposes.
5. All underground work required within the drip line of the trees and below original grade shall be previewed by the District to determine potential impact on trees. Hand trenching shall be required where existing tree root systems could be damaged by equipment.
6. Construction materials or facilities shall not be placed under the dripline of existing trees.
7. Root pruning shall be restricted to roots less than two (2) inches in diameter. Roots shall be cut with a sharp saw. Roots may not be severed, pulled or broken with any soil excavation equipment during grading or trenching. Cutting of roots larger than two (2) inches in diameter must be approved by the District.

TREE PROTECTION SPECIFICATIONS

Site Preparation Phase

The following work, #1 through #12, must be accomplished before any site clearing, grading or other earthwork occurs within 100 feet of trees that are to be retained.

1. The General Contractor and grading contractor are required to meet with the District's Consulting Arborist (CA) at the site prior to beginning work to review all work procedures, access routes and tree protection measures.
2. Tree Protection Zones (TPZ's) shall be a minimum of 12 times the diameter at breast height (DBH) of all protected trees. The boundaries of all TPZ's shall be staked in the field.
3. No change to grade or branching shall take place within the Critical Radius, a minimum 5 times the DBH, of all protected trees without prior approval of the CA.
4. Trees to be removed that have branches extending into canopies of trees to remain must be removed by a qualified arborist, not by demolition or construction contractors.
5. Tree removals shall be performed so as to prevent damage to branches, trunks and roots of protected trees.
6. Trees to be removed from within a TPZ shall be removed by a qualified arborist. Stumps shall be cut as low as possible. If stump grinding is preferred by the owner or contractor, grinding shall not be deep enough to damage woody roots of adjacent protected trees.
7. All downed brush and trees shall be removed from TPZ's either by hand or with equipment sitting outside the TPZ, by lifting the material out, not by skidding across the ground.
8. Roots or other underground features to be removed where a TPZ would be disturbed shall be done so as to minimize disturbance. Equipment shall operate from outside the TPZ. The CA shall be on site during all operations within the TPZ to monitor activity.
9. Any pruning required for site preparation shall be performed by a qualified arborist and in accordance with current professional standards.
10. A four foot high visibility or comparable barrier fence, affixed with locking zip-ties to steel T posts shall be erected to fully enclose TPZ's, or partially enclose them.
11. Any tree damage resulting from grading or other site preparation work shall be reported to the Architect and CA within six hours so that remedial action can be taken. Timeliness is critical.
12. If temporary access pathways for vehicles must pass over TPZ's, Contractor shall place geogrid and a bed of 6 inches of coarse wood chip under the mulch to protect the soil and roots.

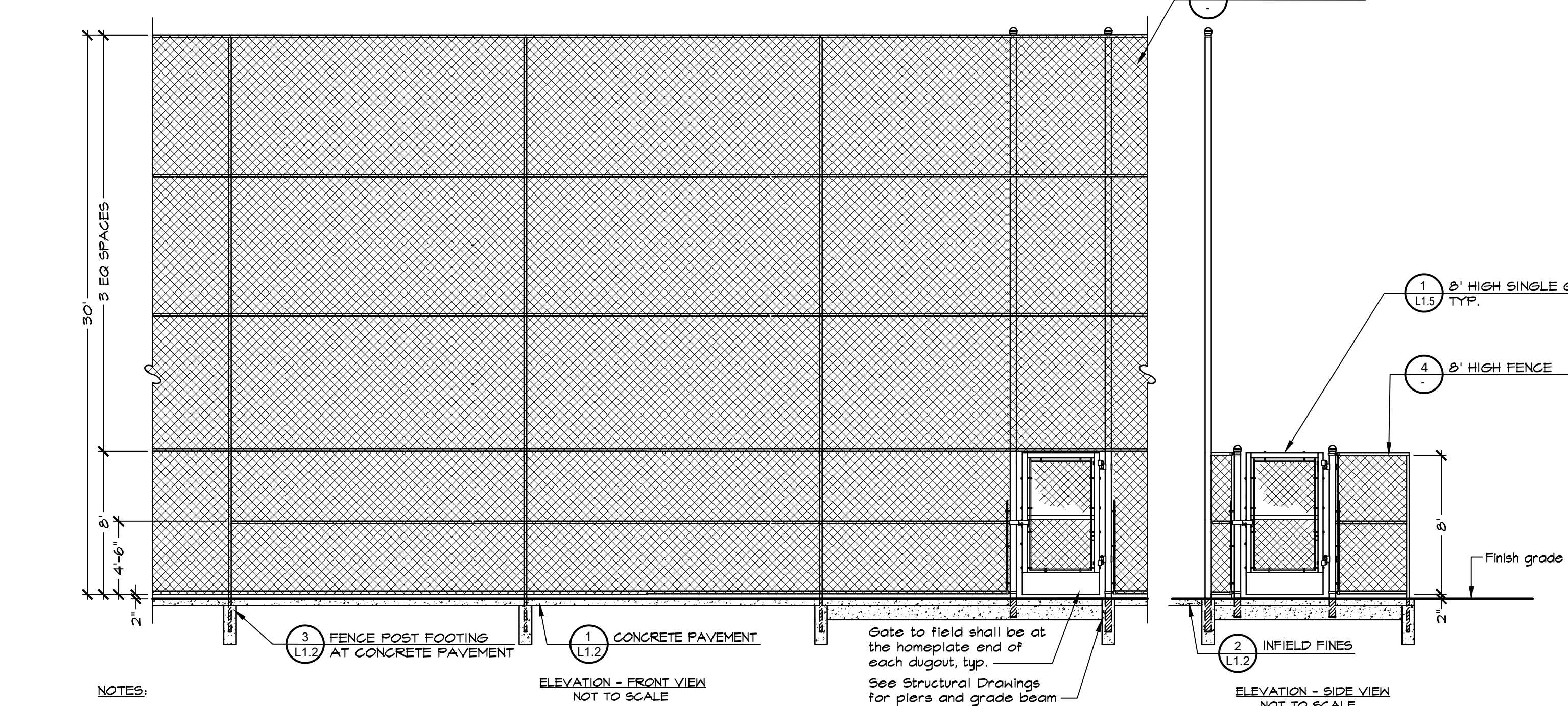
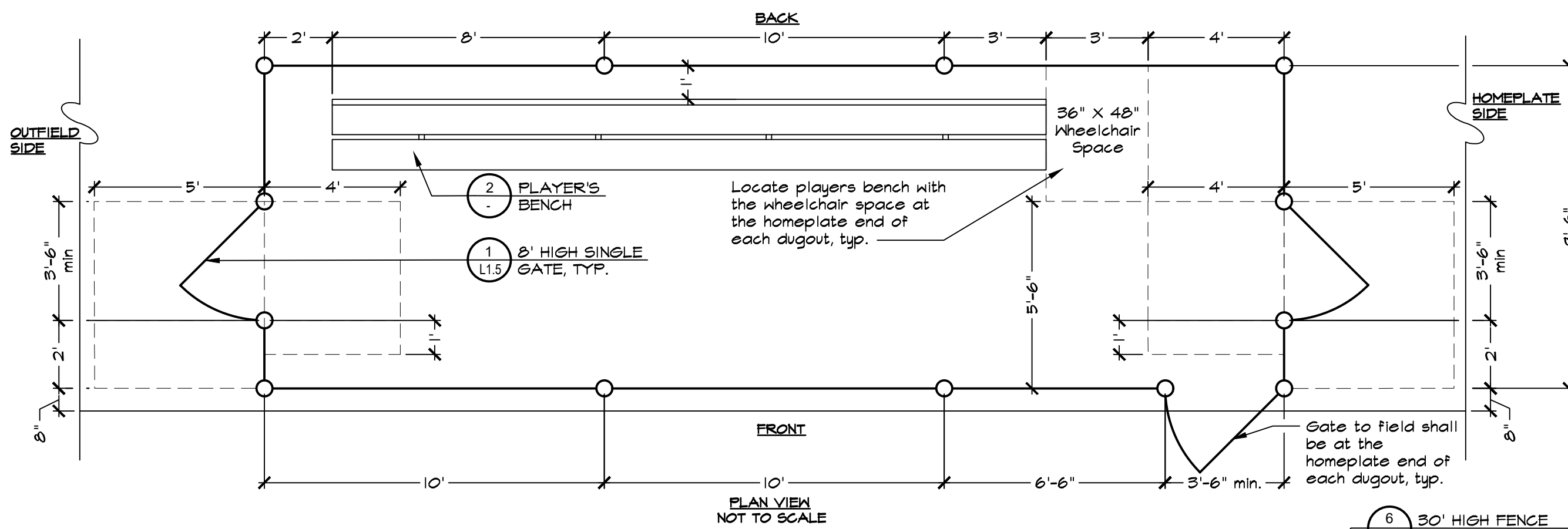
Construction Phase

1. The General Contractor and grading contractor are required to meet with the CA at the site prior to beginning work to review all work procedures, access routes and tree protection measures.
2. Tree protection fences erected before site grading shall remain in place throughout the construction phase and may not be relocated, detached or removed without written permission of the CA.
3. Construction trailers, traffic, parking and storage areas shall remain outside of fenced areas at all times.
4. All underground utilities, drainage or irrigation lines shall be routed outside the TPZ's as much as is feasible. If lines must traverse a TPZ they shall be tunneled or bored under trees, or hand excavated under observation of the CA to minimize root pruning.
5. No materials, equipment, spoil or waste or washout water shall be deposited, stored, or parked within a TPZ.
6. Additional tree pruning required for clearance during construction shall be performed by a qualified arborist and not by construction personnel.
7. If injury should occur to any tree during construction, it shall be evaluated as soon as possible by the CA so that appropriate treatments can be applied.
8. Any grading, trenching, construction, demolition or other work that is expected to encounter tree roots shall be observed by the CA.
9. The CA may require the General Contractor to apply supplementary irrigation for protected trees that have received root damage in the course of grading or construction work.
10. Before grading, pad preparation, or excavation for foundations, footings, walls, or trenching, any tree with a TPZ within or adjacent to such a location shall be evaluated by the CA and Contractor in order to establish a plan that will prevent or minimize tree damage. Such plans may include manual or pneumatic excavation to expose and evaluate roots, alternative construction techniques, root pruning observed by the CA.
11. Any woody roots damaged during grading and construction shall be exposed back to sound tissue by the Contractor and evaluated by the CA for further action, which might include cleanly severing damaged roots back to tight cambium or excising damaged bark.
12. Spoils from trenches or other excavations shall not be placed within TPZ's.
13. No debris, garbage or other waste materials shall be placed within TPZ's.
14. If temporary access pathways for vehicles must pass over TPZ's, Contractor shall place geogrid and a bed of 6 inches of coarse wood chip under the mulch to protect the soil and roots.



- ### 3 BACKSTOP FOOTING

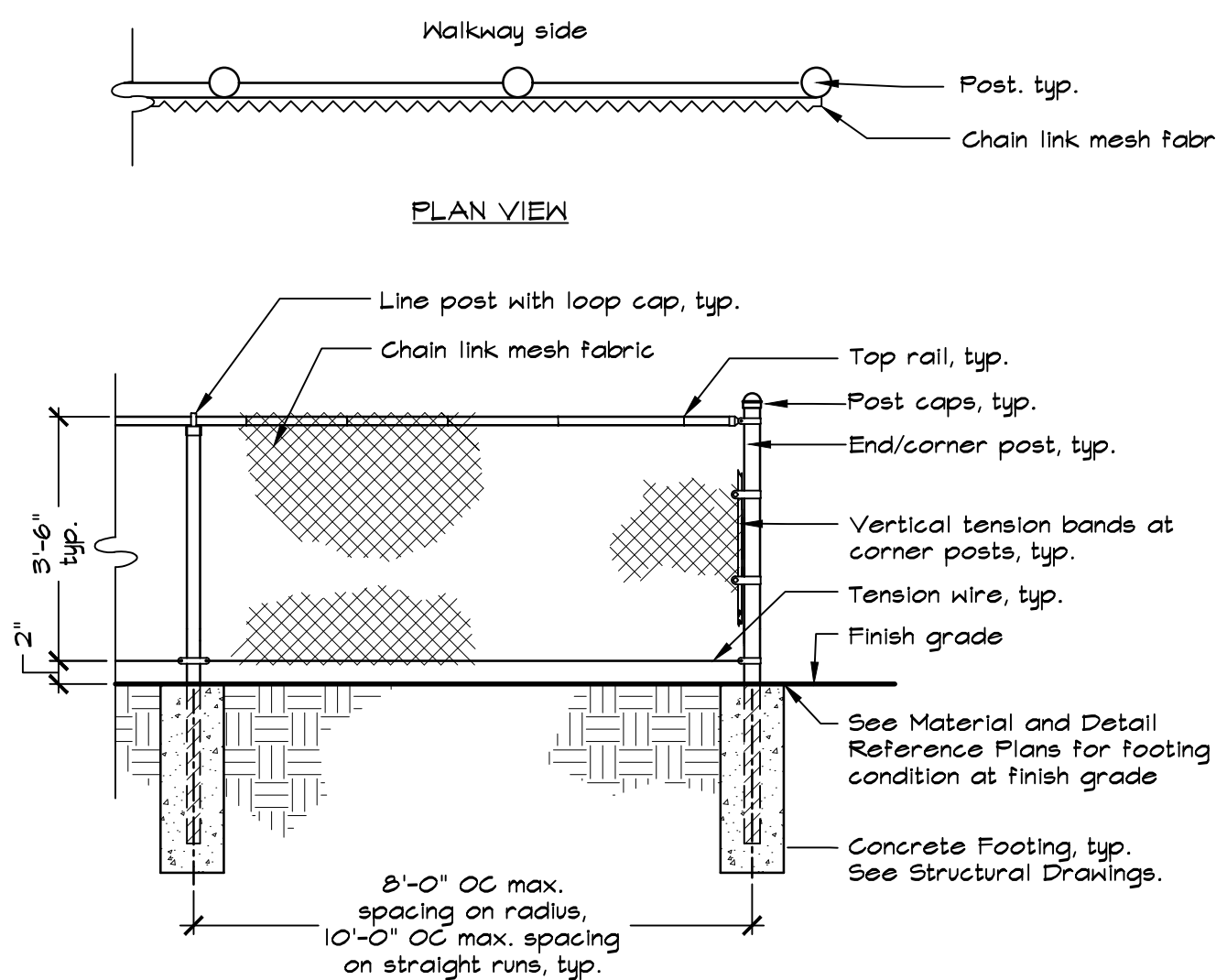
L1.3



- NOTES:
- Gates shall comply with Maneuvering Clearances 2019 C.B.C. 11B-404.2.4.1.
 - Dugout orientation shown is for the 1st baseline dugout. Field gate, players bench and wheelchair space locations at the 3rd baseline dugout shall be mirrored so that gate and wheelchair space are on the homeplate side of the dugout. See Sheet L1.1 for the locations of the players benches and gates.

1 JV BASEBALL DUGOUT

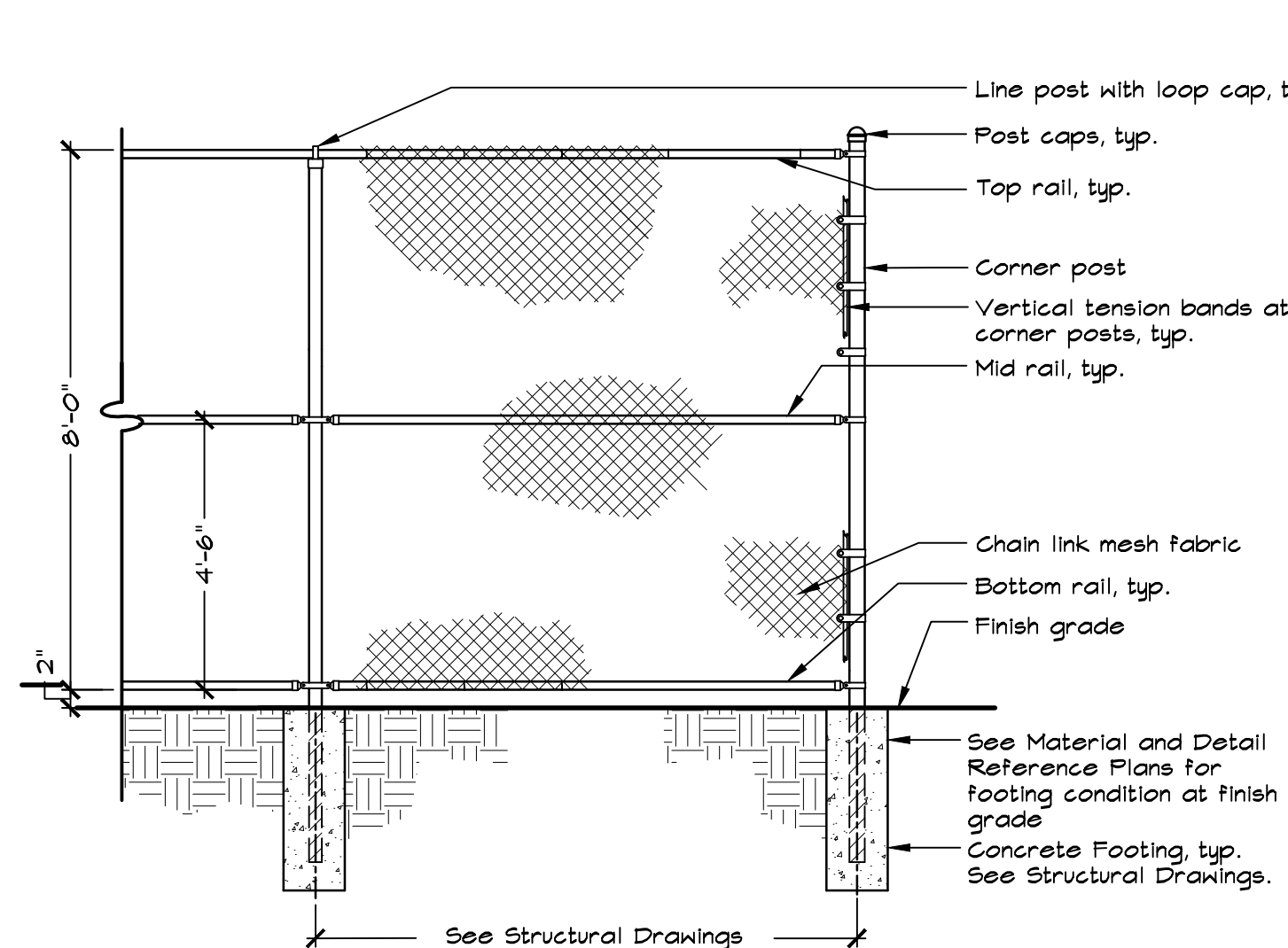
NOT TO SCALE



- NOTES:
- See General Fencing and Gate Notes and Schedules on Sheet L1.5.
 - See Material and Detail Reference Plans and Layout Plans for post locations.
 - See Structural Drawings for post and footing information.

3 3'-6" HIGH FENCE

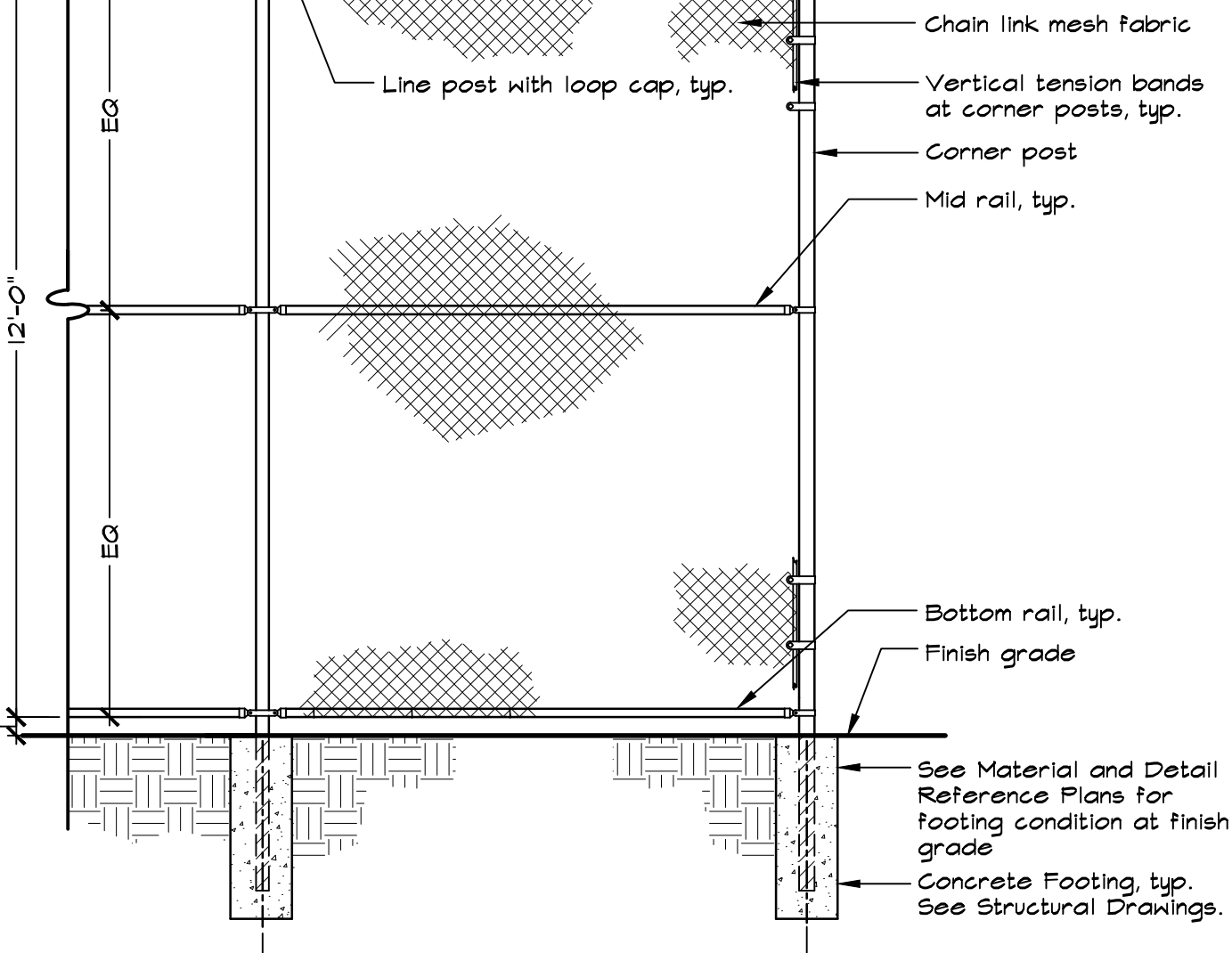
NOT TO SCALE



- NOTES:
- See General Fencing and Gate Notes and Schedules on Sheet L1.5.
 - See Material and Detail Reference Plans and Layout Plans for post locations.
 - See Structural Drawings for post and footing information.

4 8' HIGH FENCE

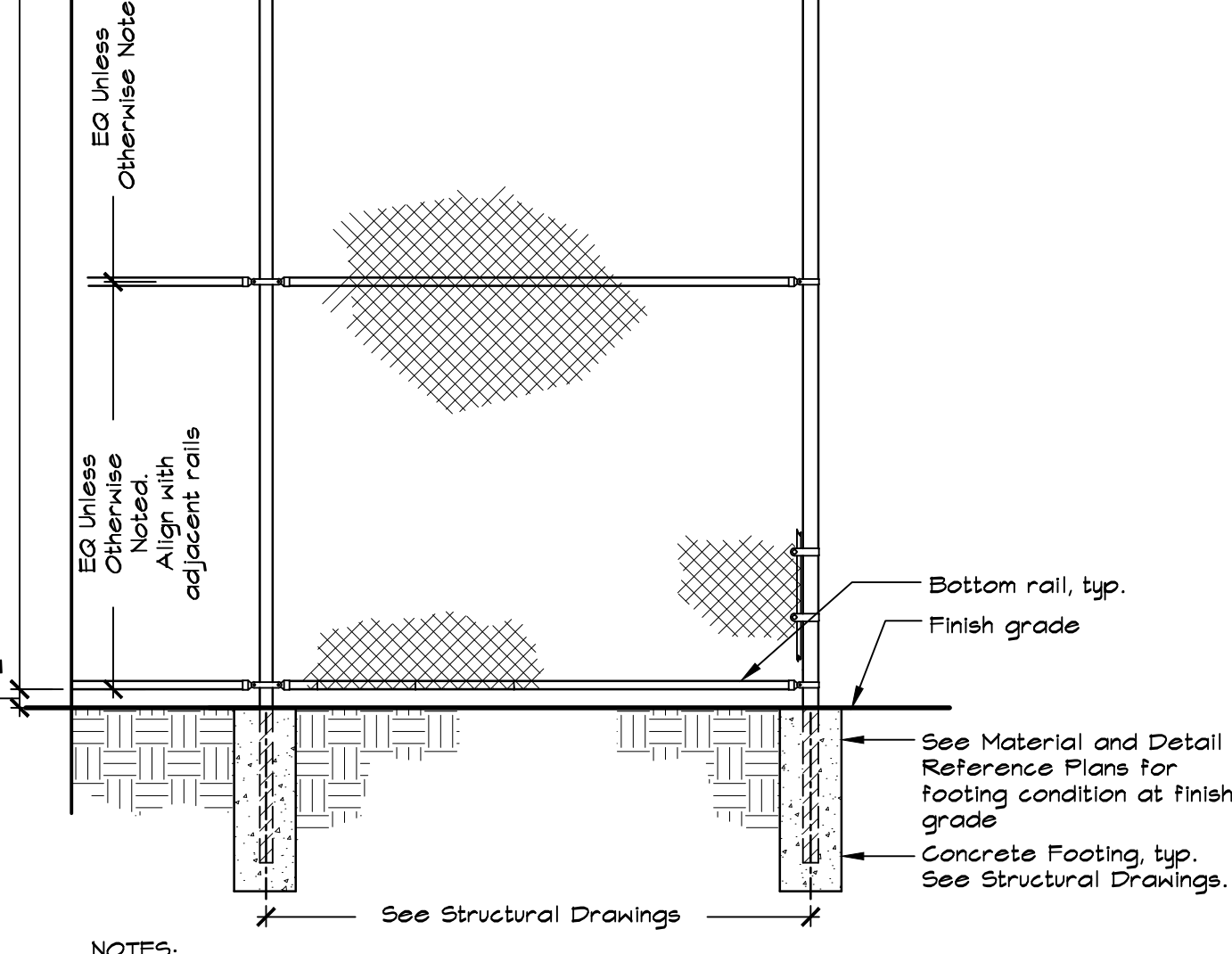
NOT TO SCALE



- NOTES:
- See General Fencing and Gate Notes and Schedules on Sheet L1.5.
 - See Material and Detail Reference Plans and Layout Plans for post locations.
 - See Structural Drawings for post and footing information.

5 12' HIGH FENCE

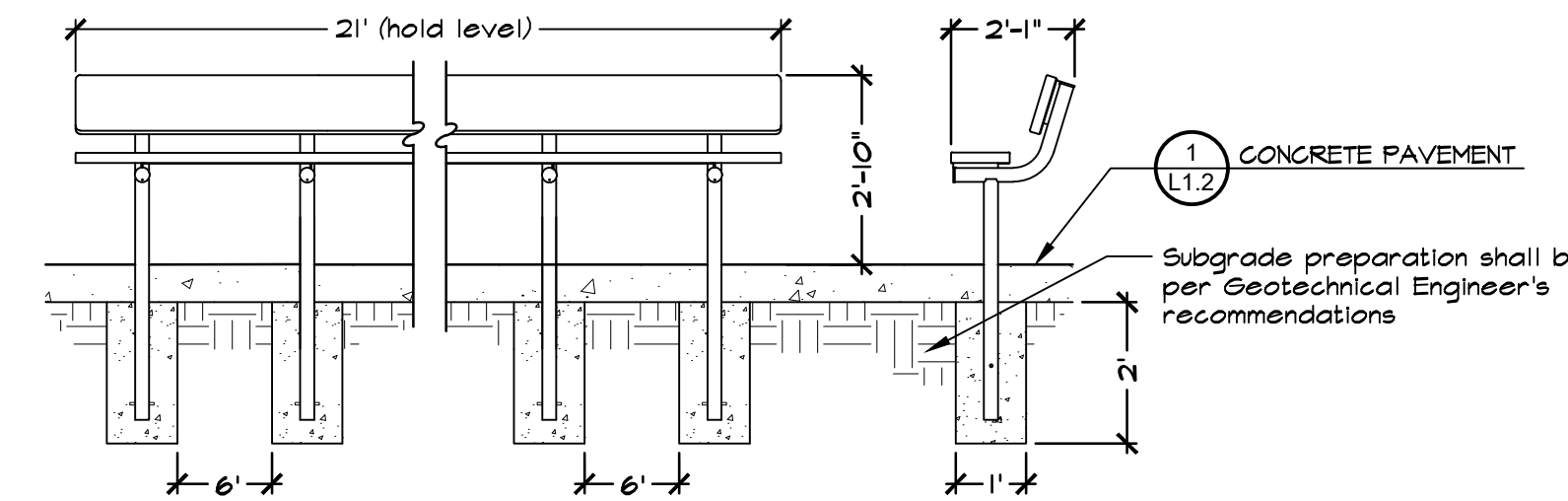
NOT TO SCALE



- NOTES:
- See General Fencing and Gate Notes and Schedules on Sheet L1.5.
 - See Material and Detail Reference Plans and Layout Plans for post locations.
 - See Structural Drawings for post and footing information.

6 30' HIGH FENCE

NOT TO SCALE



- NOTES:
- Player's bench shall be P.W. Athletic Manufacturing Company, Model No. 1103-216 permanent aluminum bench with back, as available through Kelly O'Keefe at Miracle Play Systems, (707) 975-8341; kelly@miracleplaygroup.com, or approved equal.
 - All bench frames shall be schedule 40 galvanized steel pipe.
 - Legs shall be 2-3/8" OD.
 - Seat and back frame shall be 1-7/8" OD.
 - Seat and backrest shall be aluminum planking with anodized finish.
 - Frame shall be all welded construction. All welds shall be ground smooth and treated with cold galvanized compound.
 - All hardware shall be zinc-plated.
 - Mounting method shall be direct burial as shown.

2 PLAYER'S BENCH

NOT TO SCALE

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LIBERTY UNION HIGH SCHOOL DISTRICT
No. 2790
Exp. 10-31-22
STATE OF CALIFORNIA

LIBERTY HIGH SCHOOL

BASEBALL BACKSTOP REPLACEMENT

850 2ND STREET,
BRENTWOOD, CA 94513

LIBERTY UNION HIGH SCHOOL DISTRICT

REVISIONS	

DSA APP NO. 01-119543
ARCH PROJECT NO. 1923.00
DRAWN BY: BTI, HDJ
DRAWING SCALE: 1"=30'-0"
PTN: 61721-81 FILE NO: 7-H4

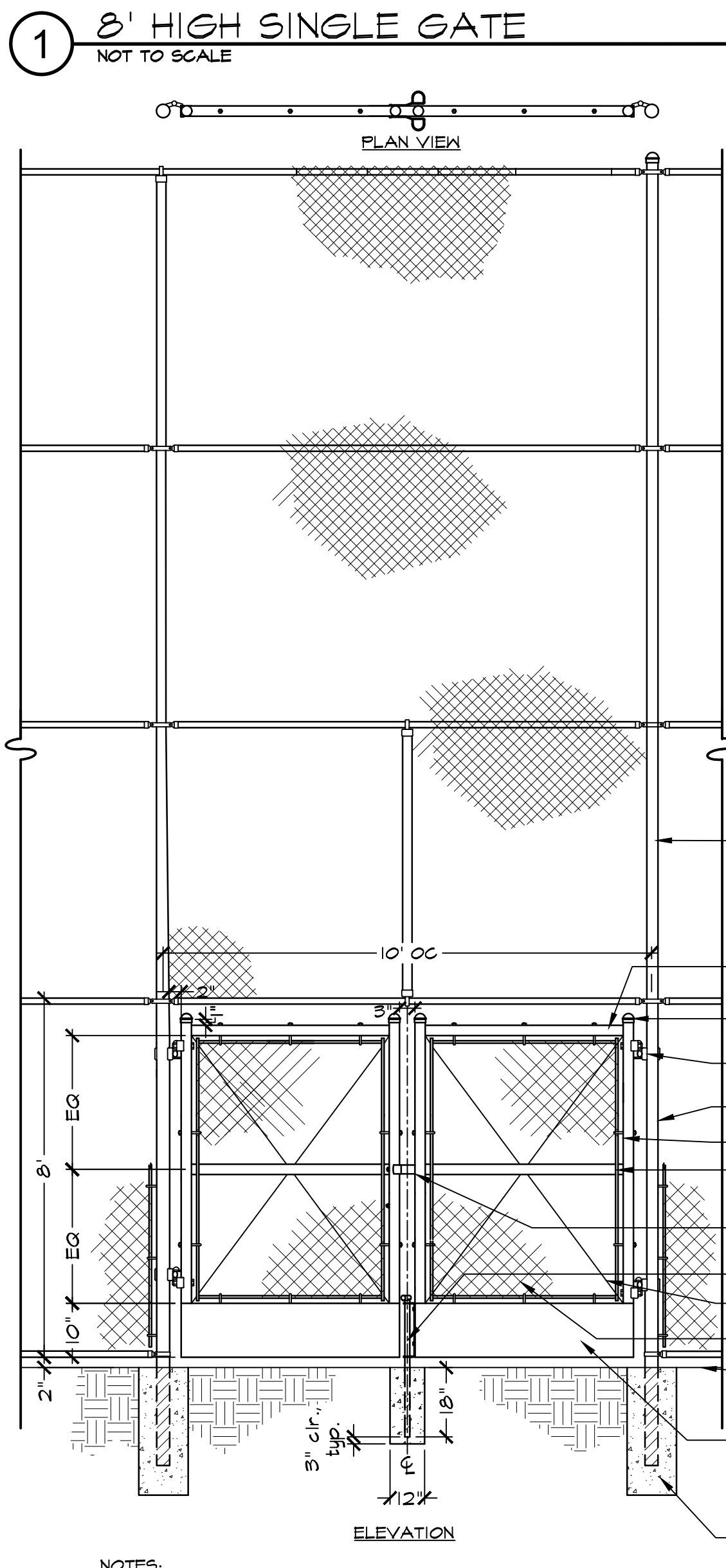
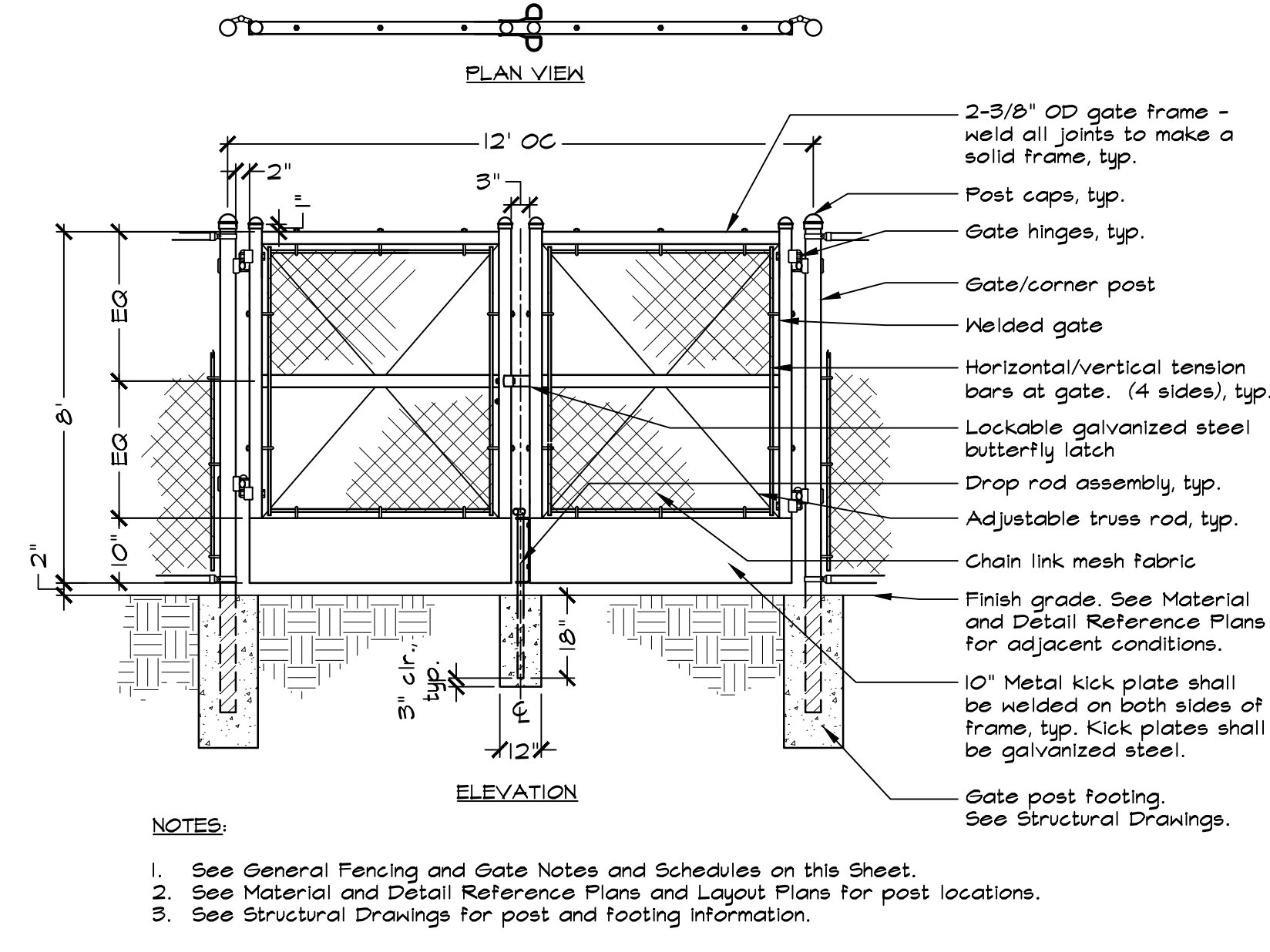
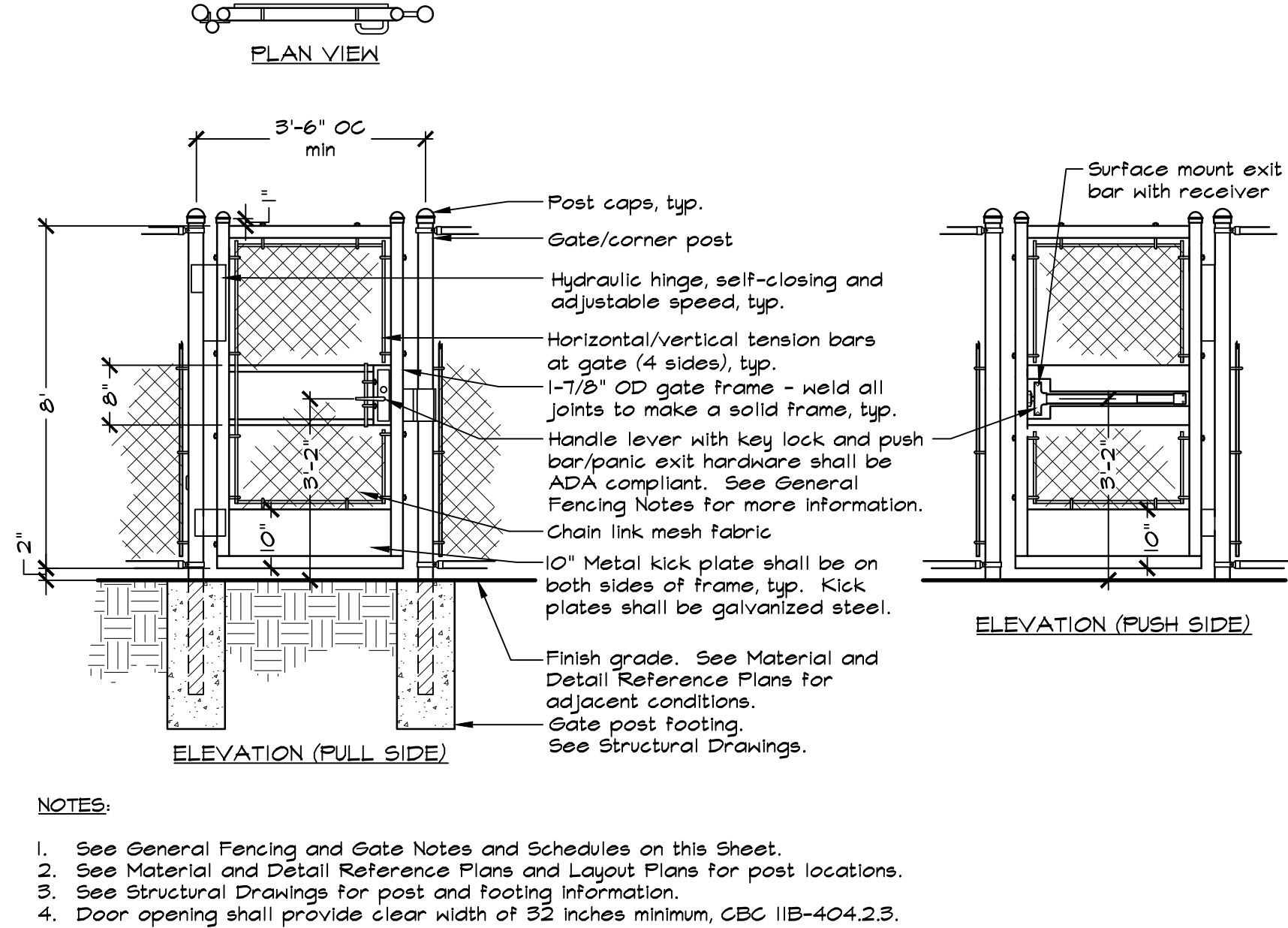
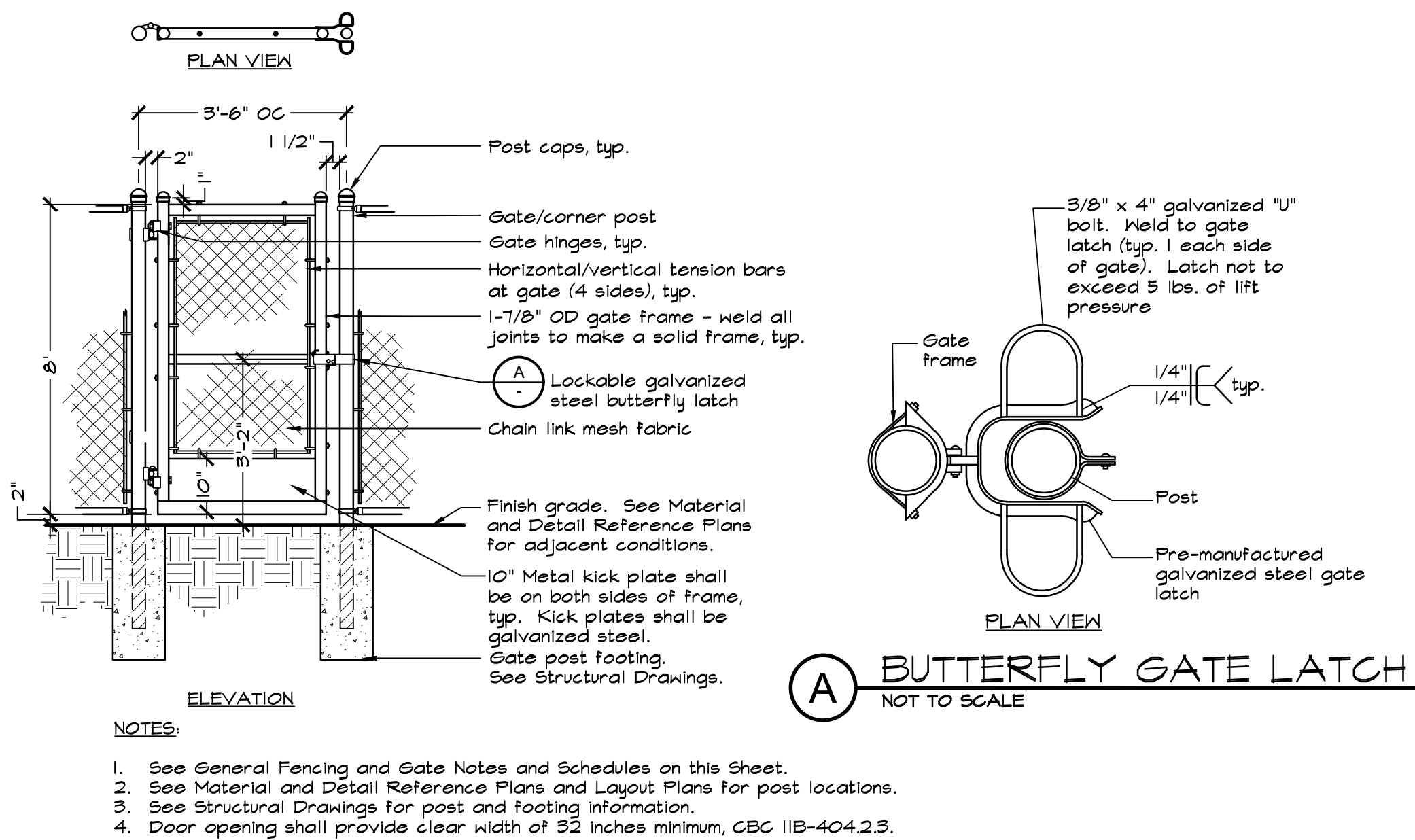
CONSTRUCTION DOCUMENTS

AUGUST 2, 2021
SHEET TITLE

CONSTRUCTION DETAILS

SHEET NUMBER

L1.4



Fence Schedule				
Description	3'-6" High Fence	8' High Fence	12' High Fence	30' High Fence
Detail Reference	3 1.4	4 1.4	5 1.4	6 1.4
Line Post	See Structural Drawings	See Structural Drawings	See Structural Drawings	See Structural Drawings
Corner/ End Post	See Structural Drawings	See Structural Drawings	See Structural Drawings	See Structural Drawings
Bottom Rail (STD SCH 40 Pipe)	1 5/8" OD	1 5/8" OD	2 3/8" OD	2 3/8" OD
Center Rail (STD SCH 40 Pipe)	1 5/8" OD	1 5/8" OD	2 3/8" OD	2 3/8" OD
Top Rail (STD SCH 40 Pipe)	1 5/8" OD	1 5/8" OD	2 3/8" OD	2 3/8" OD
Footing Size	See Structural Drawings	See Structural Drawings	See Structural Drawings	See Structural Drawings

Gate Schedule				
Description	8' High Single Gate	8' High Single Gate, Panic Hardware	8' High Double Maintenance Gate	Double Maintenance Gate at 30' High Fence
Detail Reference	1 -	2 -	3 -	4 -
Gate Post	See Structural Drawings	See Structural Drawings	See Structural Drawings	See Structural Drawings
Gate Frame (STD. SCH 40 Pipe)	1 7/8" OD	2 3/8" OD	2 3/8" OD	2 3/8" OD
Footing Size	See Structural Drawings	See Structural Drawings	See Structural Drawings	See Structural Drawings

GENERAL FENCING AND GATE NOTES AND SCHEDULES

1. Details are for general reference. Contractor shall provide shop drawings prior to construction for approval by the District. Contractor shall include all hardware types and manufacturers' information within shop drawings.
2. Designated gates shown on L1.0 and L1.1 shall be accessible, have push bar and lockable lever with cylinder dogging, push pad armor, push bar with trim, weep holes and keyed lever; all in stainless steel finish. The lever shall be curved with a return to within 1/4 inch of the door to prevent catching on the clothing of persons during egress. Von Duprin, or equal, product number: CD x AX x PA x 98L x 14H x 996L-NL x 630. Lock shall have an interchangeable large format lock, cylinder dogging and night latch feature. Schlage Lock product number: 20-05T D124 (996L) and 20-061 D124 x XQ11-94B 630 (CD). Contact Debbie White at Allegion for ordering information. (925) 463-1102, Debbie.White@allegion.com.
3. Panic exit hardware shall comply with CBC 1010.10 Panic Hardware. Exit devices are required to unlatch with a maximum 5 lbs. force per 11B-404.2.1 and 11B-309.4. Exit devices are required to comply with SFM Standard 12-10-302. (Cross bars shall extend across not less than one-half of the door/gate. The ends of the cross-bar shall be curved, guarded or otherwise designed to prevent catching on the clothing of persons during egress.
4. Chain link fabric shall be galvanized steel, 4 gauge, 2" mesh. All posts, hardware, and rails shall be galvanized steel.
5. All gate hinge hardware shall be commercial/industrial quality.
6. Gates with self-closing hinges shall have Loxinox Mammoth hinge sets, or approved equal. Hardware shall match gate finish. Hinges shall be adjusted so that from an open position of 90°, the time required to move the door to a position of 12" from the latch is 5 sec. min., CBC 11B-404.2.B.1.
7. All overlapping fence fabric shall be cut and knuckled together.
8. See Concrete Notes on Sheet L1.0.
9. See Structural Drawings for post and footing information.
10. Subgrade preparation shall be per Geotechnical Engineer's recommendations.

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HIGH SCHOOL

BASEBALL
BACKSTOP
REPLACEMENT

850 2ND STREET,
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LIBERTY UNION
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DISTRICT

REVISIONS	

DSA APP NO. 01-119543
ARCH PROJECT NO. 1923.00
DRAWN BY: BTI, HDJ
DRAWING SCALE: 1"=30'-0"
PTN: 61721-81 FILE NO: 7-H4

CONSTRUCTION DOCUMENTS

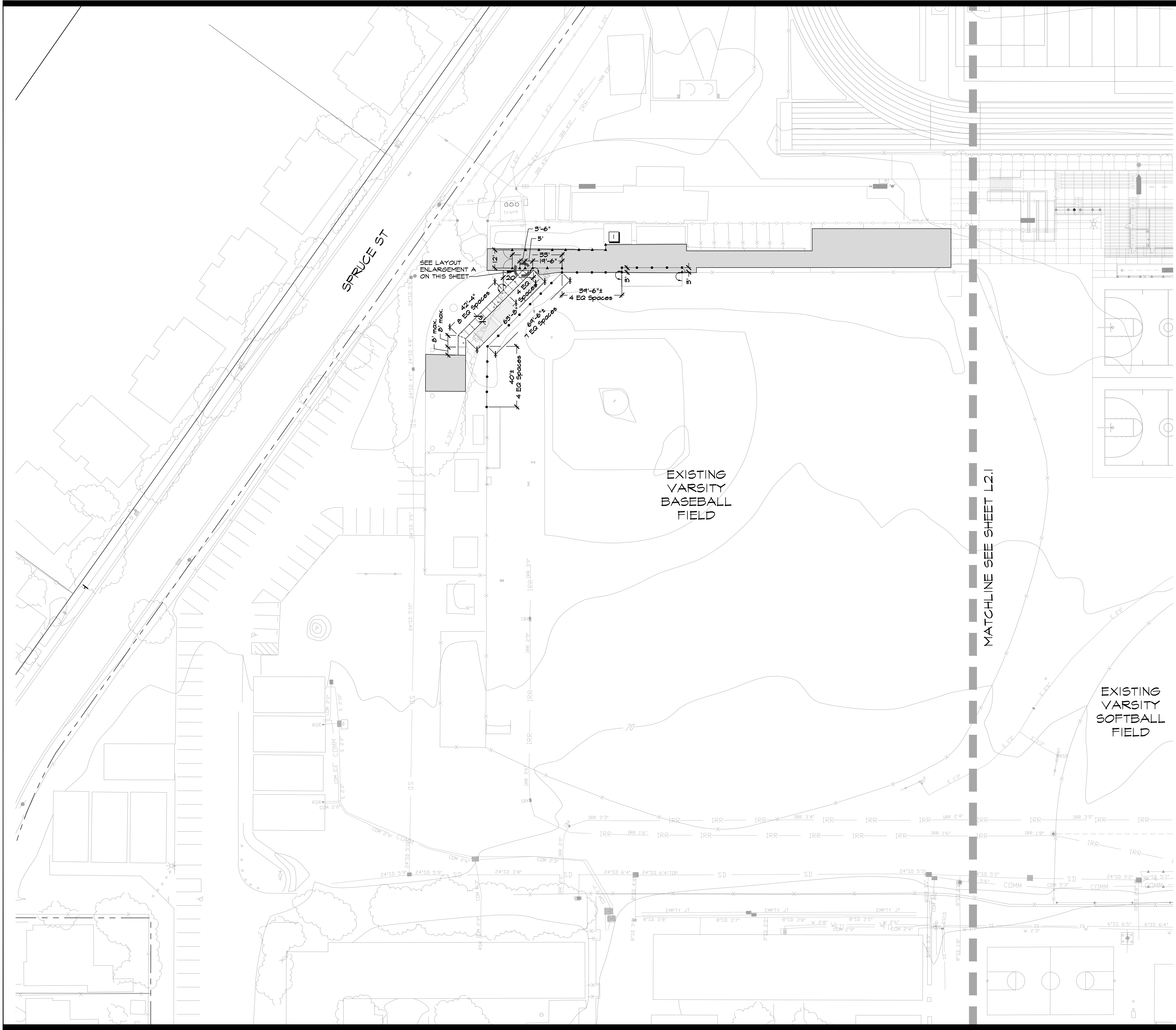
AUGUST 2, 2021

SHEET TITLE

CONSTRUCTION
DETAILS

SHEET NUMBER

L1.5



LAYOUT LEGEND

NOT ALL MAY APPEAR ON THIS SHEET

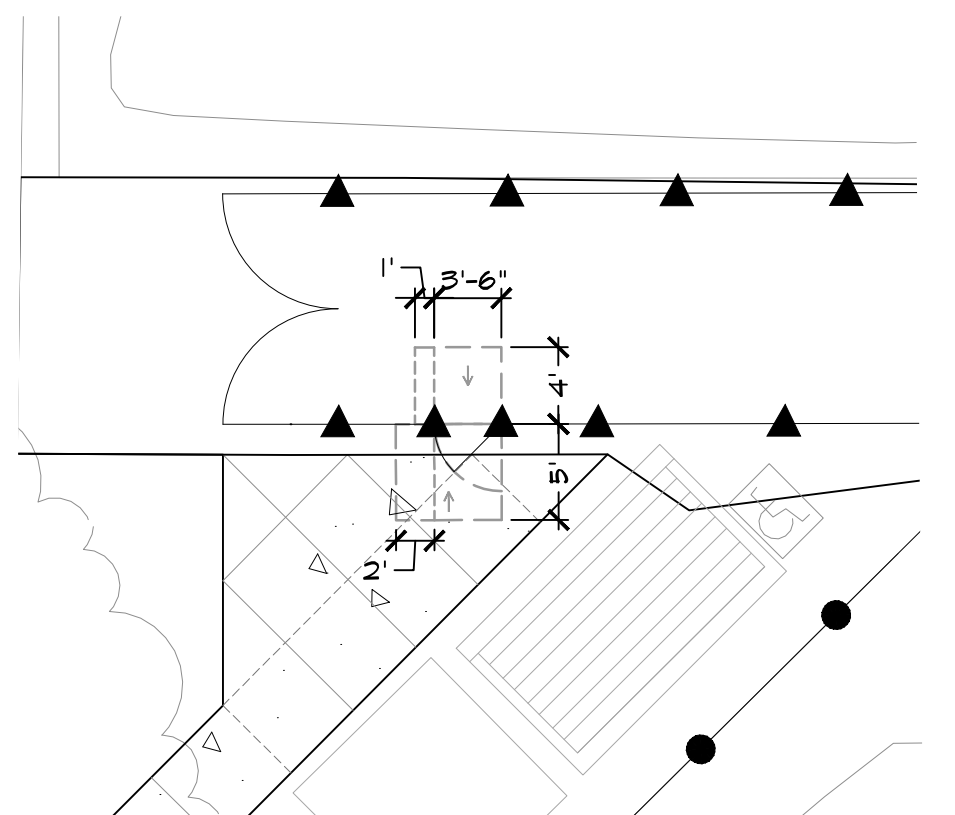
- X-RX'-Y" Radial Dimension
- X'-Y" Arc Dimension
- X" Linear Dimension
- Align
- Guideline to show alignment
- EQ Equal
- Centerline
- MA Midpoint of Arc
- PT Point of Tangency
- Clr Clear Opening
- 90 Degree Angle
- Control Points

KEY NOTES

- Fence shall be less than 4" clear from edge of buildings.

LAYOUT NOTES

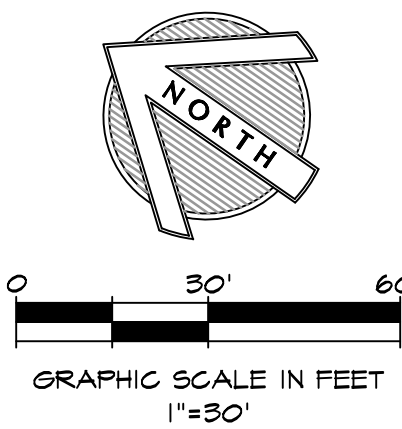
- Contractor shall notify all public or private utility companies two (2) working days prior to commencement of work on this project to verify the locations of existing utility lines. Call Underground Service Alert (U.S.A.) toll free at 1-800-227-2600 or 811, T.00am to 5.00pm, Monday through Friday.
- All coordinates and dimensions shown are in a horizontal plane.
- Written dimensions always take precedence over scaled dimensions. If there is a conflict, notify the Architect and obtain a clarification. No deviation or substitution shall be allowed without obtaining written approval from the Architect.
- This Plan does not represent a Property Line Survey. Property lines shown hereon may not represent the true position of the line.
- The Contractor shall coordinate all construction elements including utility locations and required sleeving prior to installation of any underground utilities.
- The Contractor shall verify critical dimensions, reference and control point locations and construction conditions prior to construction.
- All dimensions shall be verified in the field, chalked painted, and/or string lined. Any minor adjustments required to achieve overall design layout shall be reviewed and approved by the Architect prior to construction.
- All materials shall be furnished and installed by the Contractor per Manufacturer's specifications, unless otherwise noted in these Plans or Specifications.
- Existing features and topographic information have been taken from Survey performed by Carlson Barbee, & Gibson, Inc. on November 7, 2017, provided by Quattrocchi Kwok Architects. GSI landscape architects, inc. assumes no liability, real or alleged, regarding the accuracy of the existing features or topographic information shown.



NOTES:

- Gates shall comply with Maneuvering Clearances 2019 C.B.C. 11B-404.2.1.

LAYOUT ENLARGEMENT A
SCALE: 1"=10'



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STEVEN STRANZ
No. 2790
Exp. 10-31-22
STATE OF CALIFORNIA

LIBERTY
HIGH SCHOOL

BASEBALL
BACKSTOP
REPLACEMENT

850 2ND STREET,
BRENTWOOD, CA 94513

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DISTRICT

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DSA APP NO.	01-119543
ARCH PROJECT NO.	1923.00
DRAWN BY:	BTI, HDJ
DRAWING SCALE:	1"=30'-0"
PTN: 61721-81	FILE NO: 7-H4

CONSTRUCTION DOCUMENTS

AUGUST 2, 2021
SHEET TITLE

LAYOUT
PLAN

SHEET NUMBER

L2.0

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ENLARGED SITE PLAN KEYNOTES

- NOT ALL KEYNOTES MAY APPLY TO THIS SHEET
- 1 (E) CONCRETE PAVING, S.L.D.
 - 2 (E) AC PAVING, S.L.D.
 - 3 REMOVE (E) BASEBALL BACKSTOP, REPLACE W/ 30-FOOT HIGH BACKSTOP FROM BASE TO BASE, S.L.D. AND S.S.D.
 - 4 REMOVE (E) BASEBALL DUGOUT, REPLACE W/ NEW, S.L.D.
 - 5 CONCRETE PAVING, FLUSH W/ ADJACENT PAVING, S.L.D.
 - 6 REMOVE (E) CHAIN LINK FENCE
 - 7 (E) BLEACHERS / LESS THAN (5) ROWS
 - 8 36"x48" ACCESSIBLE SEATING AREA ON CONCRETE
 - 9 AC PAVING, FLUSH W/ (E) ADJACENT PAVING, S.L.D.
 - 10 (E) VARSITY BASEBALL DUGOUT
 - 11 (E) TURF TO REMAIN
 - 12 REMOVE (E) BACK STOP FENCING AND CONCRETE WALL. REMOVE AND RETAIN (E) WALL PADDING FOR INSTALLATION ON NEW WORK
 - 13 30-TALL BACK STOP FENCING, S.L.D. & S.S.D.
 - 14 (E) CHAIN LINK FENCE
 - 15 (E) VARSITY BASEBALL BULLPEN TO REMAIN, S.L.D.
 - 16 JV BASEBALL BULLPEN, S.L.D.
 - 17 (E) STORAGE SHED TO REMAIN
 - 18 (E) BATTING CAGE TO REMAIN
 - 19 REMOVE (E) AC PAVING, REPLACE W/ AC PAVING AND ACCESSIBLE PARKING STALLS, S.L.D. AND DETAIL
 - 20 REMOVE AND PRESERVE (E) BLEACHERS, REINSTALL AFTER NEW CONCRETE PAVING, S.L.D.
 - 21 REMOVE (E) CONCRETE PAVING, REPLACE W/ NEW, S.L.D.
 - 22 CHAIN LINK FENCE/GATE(S), S.L.D.
 - 23 TACTILE WARNING, S.L.D AND SEE DETAIL

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LIBERTY HIGH SCHOOL
BASEBALL BACKSTOP REPLACEMENT

850 2ND STREET
BRENTWOOD, CA 94513

LIBERTY UNION HIGH SCHOOL DISTRICT

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ARCH PROJECT NO. 1923.00
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DRAWING SCALE: 1" = 20'-0"
PTN: 61721-81 FILE NO: 7-H4

CONSTRUCTION DOCUMENTS

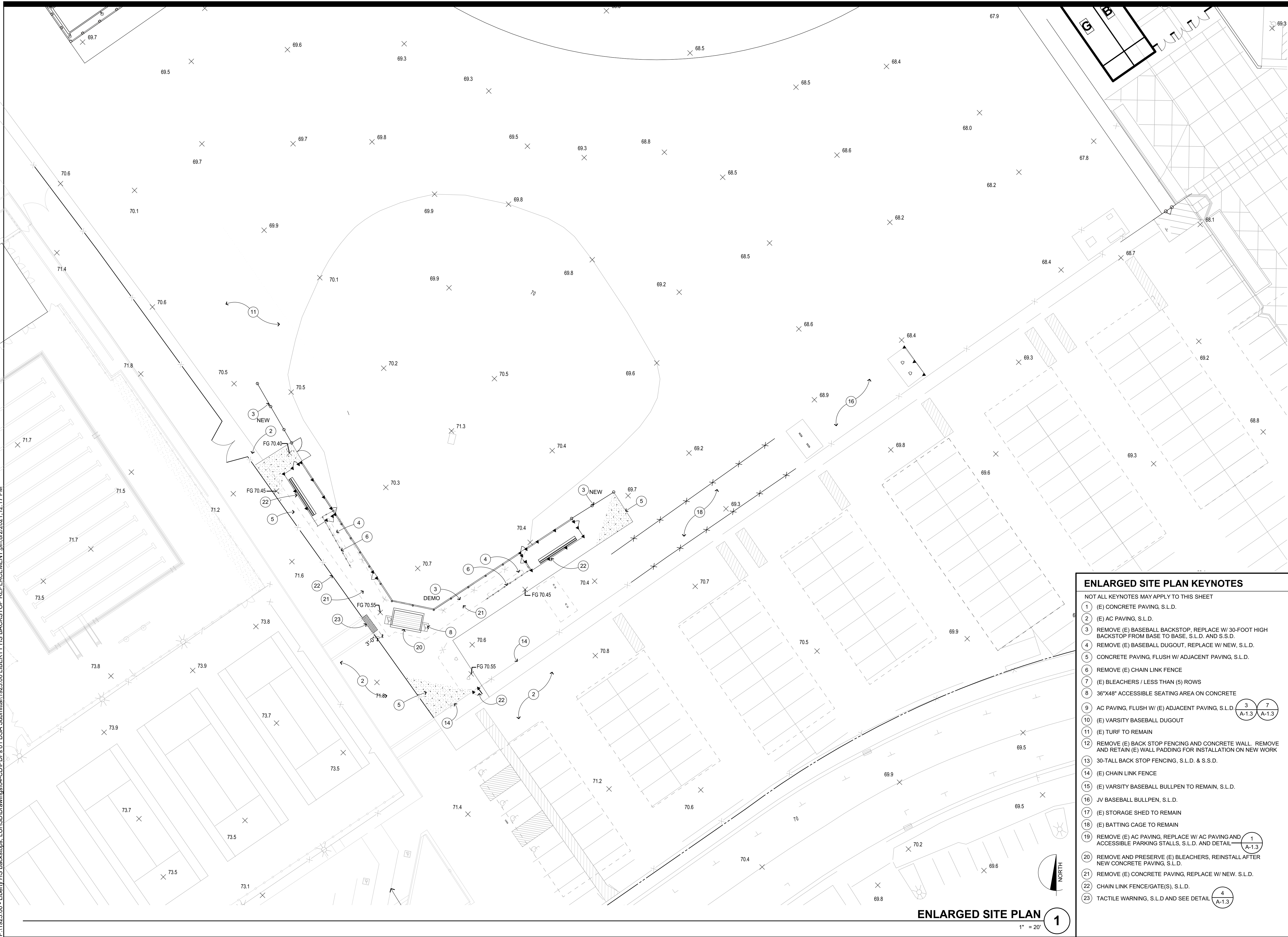
August 2, 2021
SHEET TITLE

ENLARGED SITE PLAN

SHEET NUMBER

A-1.1

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ENLARGED SITE PLAN 1
1" = 20'

ENLARGED SITE PLAN KEYNOTES

NOT ALL KEYNOTES MAY APPLY TO THIS SHEET

- (E) CONCRETE PAVING, S.L.D.
- (E) AC PAVING, S.L.D.
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- 36"x48" ACCESSIBLE SEATING AREA ON CONCRETE
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- CHAIN LINK FENCE/GATE(S), S.L.D.
- TACTILE WARNING, S.L.D AND SEE DETAIL

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SIGNED: August 2, 2021

LIBERTY HIGH SCHOOL

BASEBALL
BACKSTOP
REPLACEMENT

850 2ND STREET
BRENTWOOD, CA 94513

LIBERTY UNION HIGH SCHOOL DISTRICT

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ARCH PROJECT NO: 1923.00

DRAWN BY: PAG

DRAWING SCALE: AS NOTED

PTN: 61721-81 FILE NO: 7-H4

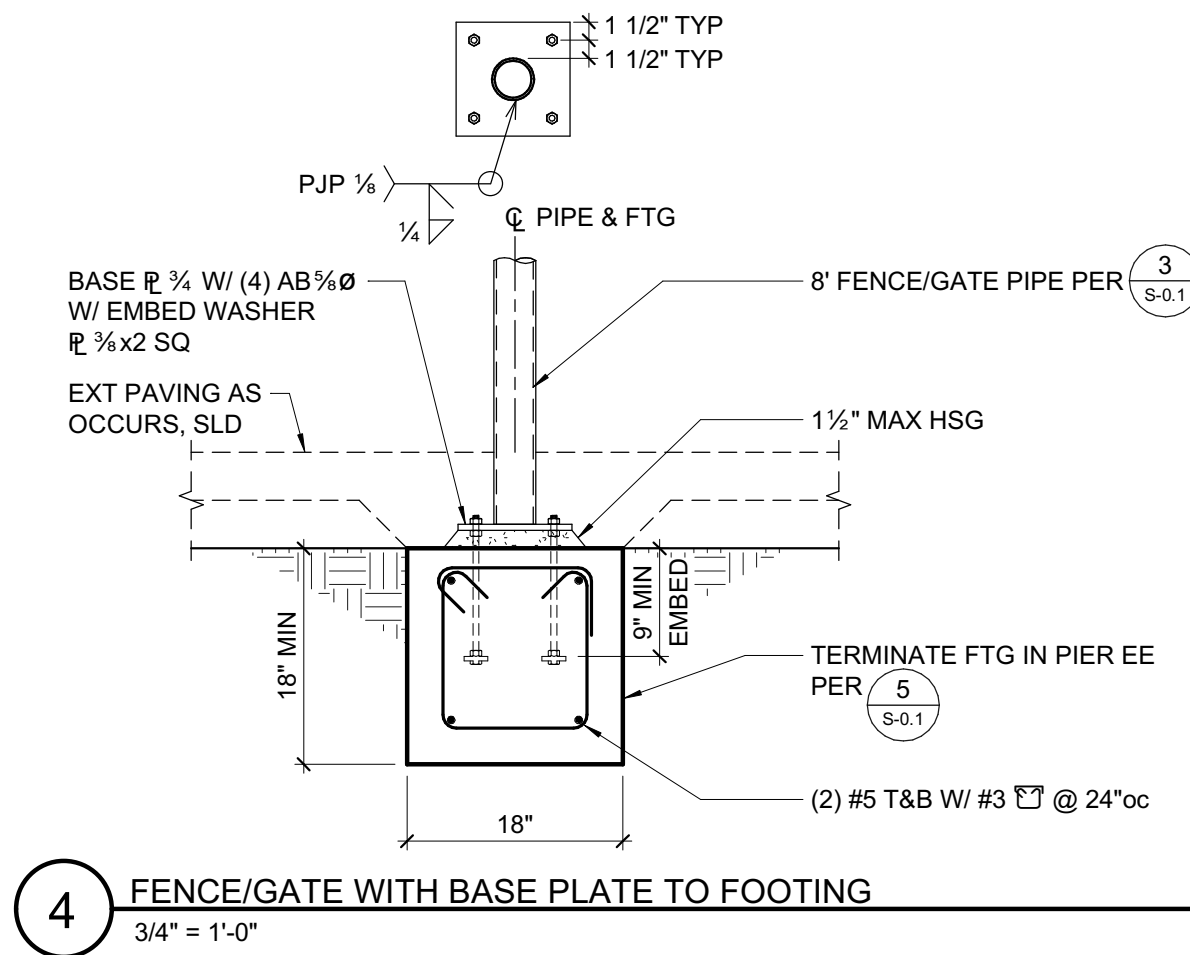
CONSTRUCTION DOCUMENTS

August 2, 2021

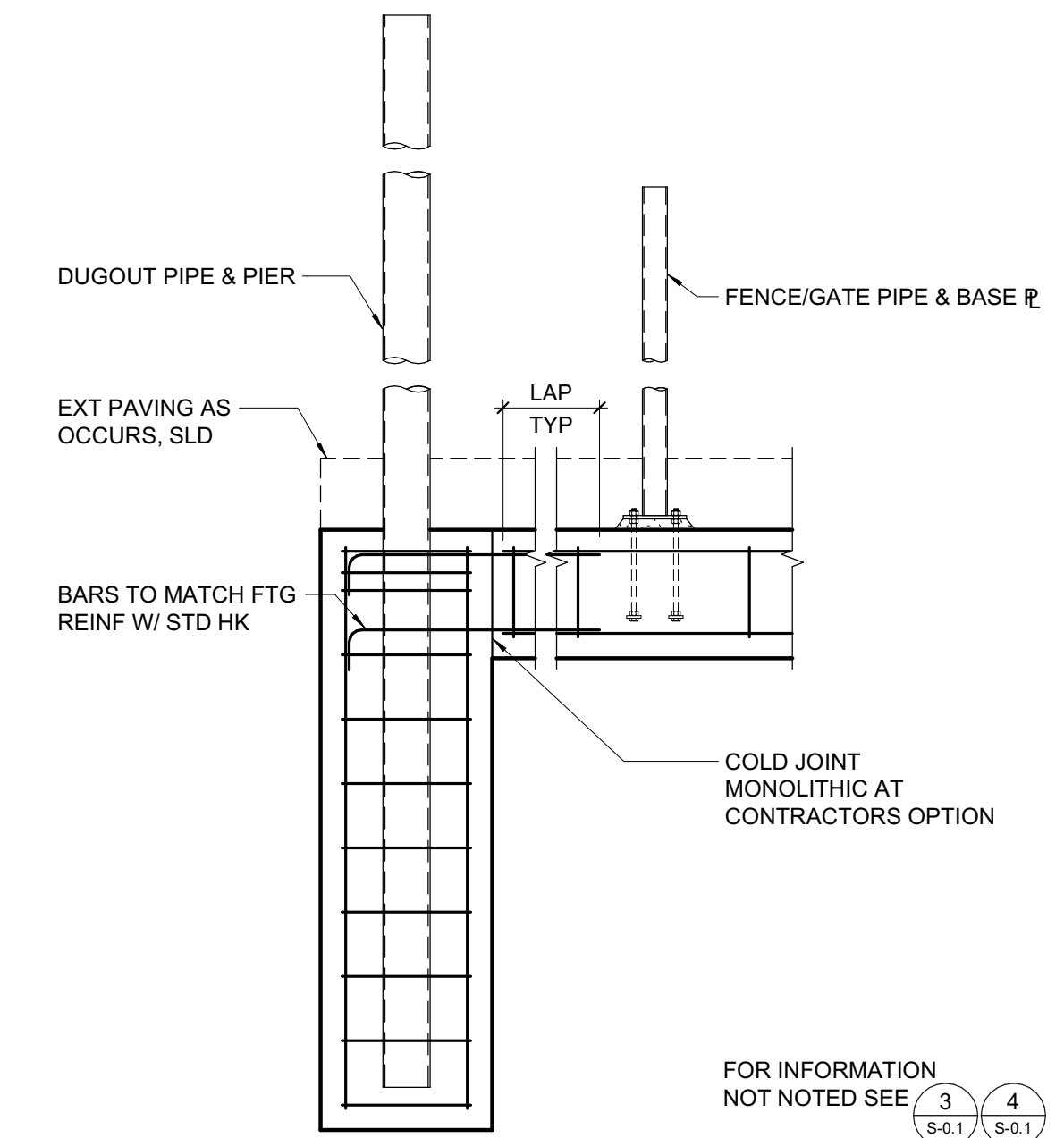
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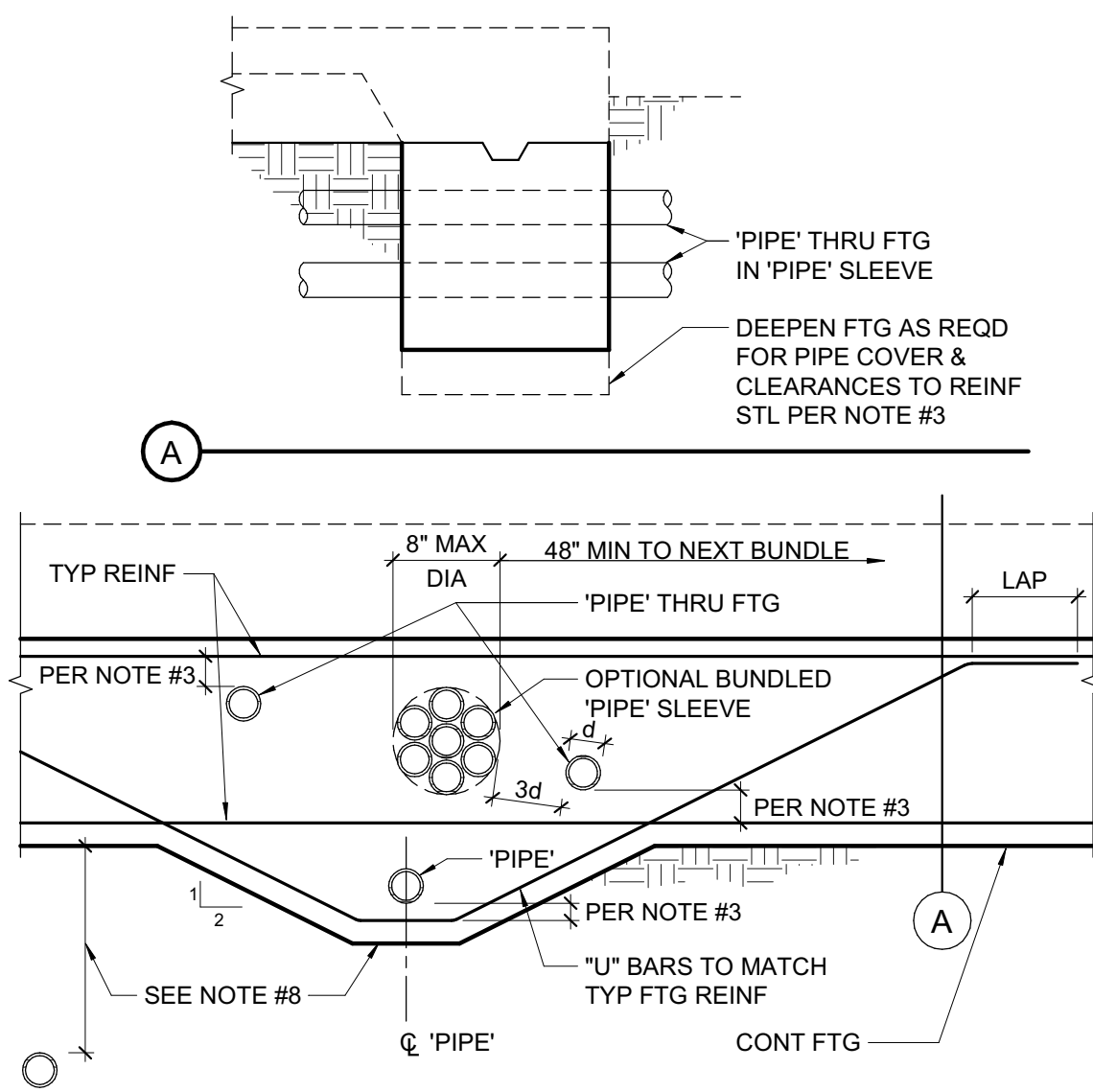
A-1.3



4 FENCE/GATE WITH BASE PLATE TO FOOTING
3/4" = 1'-0"



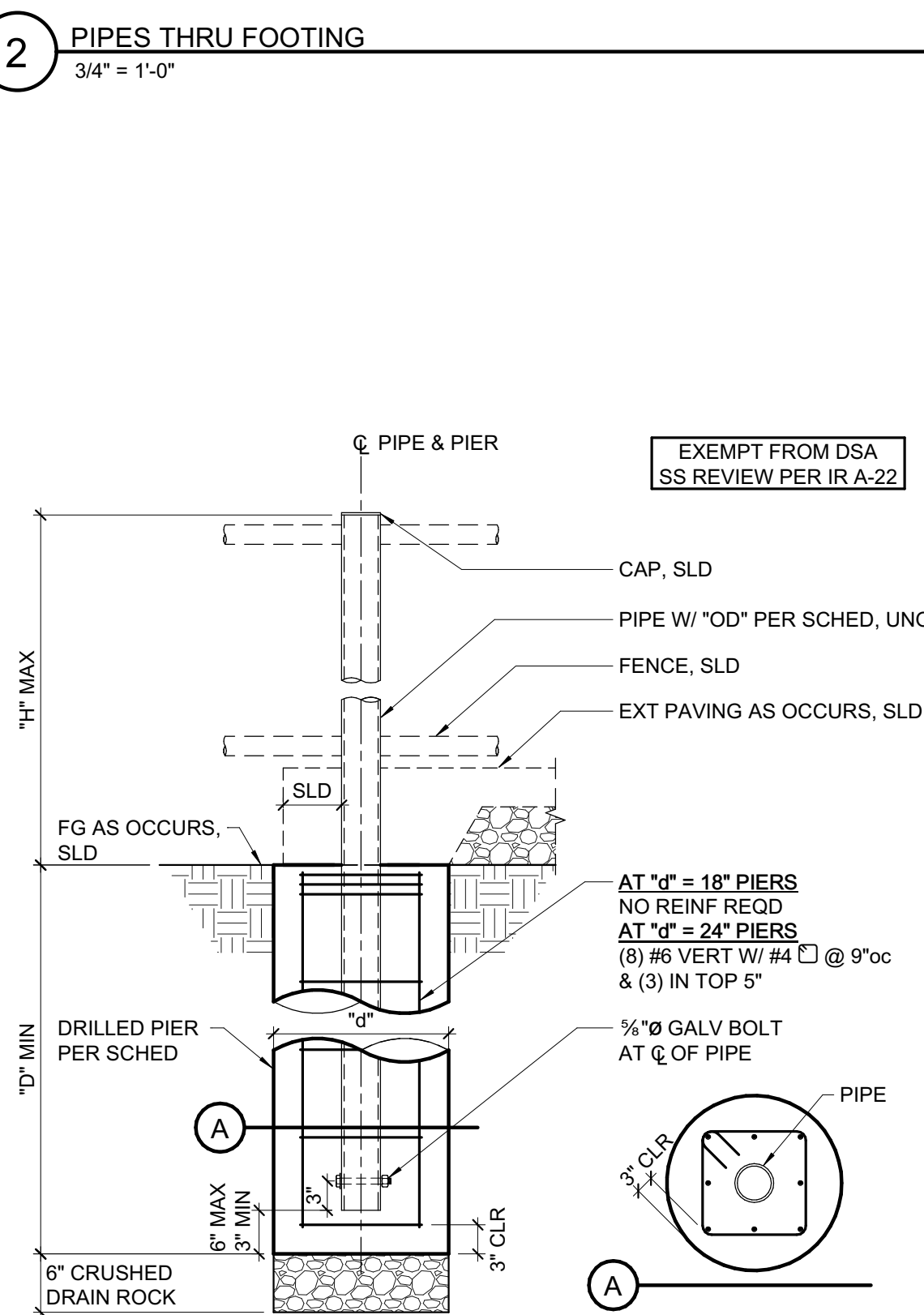
5 FENCE/GATE CLOSE TO BACKSTOP PIERS
1/2" = 1'-0"



2 PIPES THRU FOOTING
3/4" = 1'-0"

- NOTES:
- "PIPE" = ANY PENETRATION THRU OR EMBEDDED IN FOUNDATION.
 - ALL PIPES THROUGH FOOTINGS TO BE WRAPPED OR SLEEVED AS FOLLOWS:
 - SLEEVES: PROVIDE 1" MIN CLEAR ALL AROUND O.D. PIPE TO I.D. SLEEVE, UNO. SEAL SLEEVE ENDS W/ MASTIC OR PLASTIC BITUMINOUS CEMENT.
 - WRAPPED VERTICAL PIPES: PROVIDE 1/4" NOMINAL SHEET FOAM W/ (3) WRAPS MINIMUM, UNO.
 - WRAPPED HORIZONTAL PIPES: PROVIDE 1/4" NOMINAL SHEET FOAM W/ (8) WRAPS MINIMUM, UNO.
 - UNDERGROUND FIRE LINES 4" AND LARGER:
 - SLEEVES: PROVIDE 2" MIN CLEAR ALL AROUND O.D. PIPE TO I.D. SLEEVE. SEAL ENDS PER ABOVE.
 - WRAPPED: PROVIDE 1/4" NOMINAL SHEET FOAM W/ (16) WRAPS MINIMUM.
 - CLEARANCE BETWEEN "PIPES" TO BE 3d MIN TYP W/ A MAXIMUM OF (8) PIPES PER 48". GROUPS OF PIPES MAY BE BUNDLED AS SHOWN.
 - NO "PIPE" TO RUN PARALLEL IN FOOTINGS.
 - NO HORIZONTAL PIPES ALLOWED THROUGH FOOTING WITHIN 2'-0" EACH SIDE OF STEEL COLUMNS.
 - PROVIDE 18" MIN OF COMPACTED FILL ABOVE PIPES UP TO 12"Ø, FOR LARGER PIPES INCREASE COMPACTED FILL DEPTH 1'-0" FOR EACH 6" INCREASE IN PIPE DIAMETER. OTHERWISE DEEPEN FOOTING AS SHOWN.
 - WRAPPED AND SLEEVED PIPES SHALL HAVE 1 1/2" MIN CLEAR TO REINF STEEL.
 - MINIMUM CONCRETE COVER AT PIPES TO BE 3".
 - CLEARANCE BETWEEN "PIPES" TO BE 3d MIN TYP W/ A MAXIMUM OF (8) PIPES PER 48". GROUPS OF PIPES MAY BE BUNDLED AS SHOWN.
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2 PIPES THRU FOOTING
3/4" = 1'-0"



3 FENCE PIPE EMBEDDED IN PIER
3/4" = 1'-0"

PIPE & PIER SCHEDULE						
TYPE	WIND SCREEN?	1/4" MAX PIPE HT ABV GR	1/4" MIN SIZE	MAX SPCG BTWN PIPES	1/4" MIN PIER DEPTH	1/4" PIER DIA
3'-0" FENCE	NO	3'-0"	1 1/4"	10'-0"	5'-0"	18"
8' FENCE	NO	8'-0"	3 1/4"	10'-0"	5'-0"	18"
8' SINGLE OR DOUBLE GATE	NO	8'-0"	3 1/4"	12'-0"	5'-0"	18"
BACKSTOP & BACKSTOP W/ DOUBLE GATE	NO	30'-0"	6 1/4"	10'-0"	12'-0"	24"

NOTES:

- IF GROUND WATER IS ENCOUNTERED AT PIERS CONSULT GEOTECHNICAL ENGINEER FOR PIER CASTING REQUIREMENTS.
- WINDSCREENS, PRIVACY NETTINGS, AND SLATS ARE ALLOWED ONLY WHERE SPECIFICALLY NOTED.
- WHERE PIERS CANNOT BE SPACED 3 x 3' 4" APART, PROVIDE BASE PLATE AND FOOTING PER 4 & 5

3 FENCE PIPE EMBEDDED IN PIER
3/4" = 1'-0"

E MATERIAL DATA

(INFORMATION SHOWN IS FOR STRUCTURAL DESIGN REFERENCE ONLY. SEE THE PROJECT SPECIFICATIONS FOR ALL MATERIAL SPECIFICATIONS.)

CONCRETE 28-DAY MINIMUM DESIGN STRENGTH:
 $F_c = 3,000 \text{ PSI}$ FOUNDATIONS

REINFORCING STEEL:
ASTM A615 GRADE 60 OR A706 GRADE 60 ($F_y = 60,000 \text{ PSI}$)

STRUCTURAL STEEL (UNO):
PLATES - ASTM A36 ($F_y = 36,000 \text{ PSI}$)
PIPES - ASTM A53 GRADE B ($F_y = 35,000 \text{ PSI}$)

FASTENERS:
MACHINE BOLTS SHALL BE ASTM A307 GRADE A
ANCHOR RODS SHALL BE ASTM F1554 GR 36 UNO
ARC-WELDING ELECTRODES SHALL BE E70

SHEET INDEX

S-0.1 (GENERAL NOTES AND DETAILS)

ABBREVIATIONS			
AB	ANCHOR BOLT	FTG	FOOTING
ABV	ABOVE	GA	GAGE OF GAUGE
AC	AIR CONDITIONING	GALV	GALVANIZED
ADJ	ADJACENT	GB	GRADE BEAM
ADOL	ADDITIONAL	GL	GRIDLINE
ALT	ALTERNATE	GLB	GLUE LAMINATED BEAM
ALUM	ALUMINUM	GR	GRADE
ARCH	ARCHITECT	HD	HOLD DOWN
AYC	ALASKAN YELLOW CEDAR	HQ	HOT TOP GALVANIZED
B	BRACED FRAME	HOR	HEADER
BLDG	BLOCKING	HKR	HANGER
BLK/BKG	BLOCK/BACKGROUND	HK	HOOK
BLW	BELOW	HORIZ	HORIZONTAL
BM	BOUNDARY MARK	HSB	HIGH STRENGTH BOLT
BN	BOUNDARY NAIL	HSG	HIGH STRENGTH GROUT
BOT	BOTTOM	HSH	HORIZONTAL SLOTTED
BRG	BEARING	HSH	HOLE
BTWN	BETWEEN	HSS	HOLLOW STRUCTURAL
BU	BUILT UP	HT	HEIGHT
BYND	BEYOND	ID	INSIDE DIAMETER
C	CHANNEL	I	1 SHAPED WOOD BUILT
CA	CALIFORNIA	INT	INTERIOR
CANT	CANTILEVER	JST	JOIST
CB	CARRIAGE BOLT	JT	JOINT
CFS	COLD FORMED STEEL	KP	KING POST
CIP	CAST IN PLACE	LA	LAKE
CJ	CERTIFIED GLUE LUMBER	LD or #	LOAD OR #
CL	CEILING	LG	LIGHT GAGE METAL
CJP	COMPLETE JOINT	LGMC	LIGHT GAGE METAL
CL	CLEAR	LL	LIVE LOAD
CLR	CLEAR	LLH	LONG LEG HORIZONTAL
CLC	COLUMN	LLV	LONG LEG VERTICAL
CONC	CONCRETE	LOC	LOCATION
CONN	CONNECTION	LSC	LAMINATED STRAND LUMBER
CONT	CONTINUOUS	LVL	LAMINATED VENEER LUMBER
COORD	COORDINATION	LWC	LIGHTWEIGHT CONCRETE
CMU	CONCRETE MASONRY UNIT	MAX	MAXIMUM
CSK	COUNTERSINK	MB	MACHINE BOLT
CW	CUT WASHER	MBM	MACHINERY
DBA	DOUBLE	ME	MECHANICAL
DBL	DOUBLE	MEZ	MEZZANINE
DCW	DEMAND CRITICAL WELD	MFR	MOMENT FRAME
DF	DIAMETER	MFR	MANUFACTURER
DIA or Ø	DIAMETER	MIS	MISCELLANEOUS
DIAG	DIAGONAL	MISC	MISCELLANEOUS
DIM	DIMENSION	MJ	METAL JOINT
DIST	DISTANCE	MTL	METAL
DJ	DOWEL JOINT	MU	METAL UNIT
DL	DEAD LOAD	(N)	NEW
DN	DOWN	NA	NOT APPLICABLE
DO	DITTO	NO or #	NUMBER
DWG	DRAWING	NS	NEAR SIDE
DWL	DOWEL	NSG	NON-SHRINK GROUT
E	EACH	NTS	NOT TO SCALE
EE	EACH END	NWC	NORMAL-WEIGHT CONCRETE
ELEC	ELECTRICAL	O	OVER
ELEV	ELEVATION/ELEVATION	ON	ON CENTER
EMBED	EMBEDMENT	OP	OPPOSITE
EQ	EQUAL	OPNG	OPENING
EQUIP	EQUIPMENT	OPP	OPPOSITE HAND
ES	EACH SIDE	OV	OVERSIZED
EW	EACH WAY	OW	OTHERWISE
(E)	EXISTING	OWT	OPEN WEB TRUSS
EXP	EXPANSION	PA	POST ABOVE
EXT	EXTERIOR	PAF	POWER ACTUATED
FDN	FOUNDATION	FASTENERS	FASTENERS
FIN	FINISH	FN	FACE NAIL
FLR	FLOOR	FCC	FACE OF CONCRETE
FN	FACE NAIL	FOM	FACE OF MASONRY
FOS	FACE OF STUD	FOS	FACE OF STUD
FRMG	FRAMING	FRMG	FRAMING
FS	FAR SIDE	PLF	POUNDS PER LINEAR FOOT
FTG	FOOTING	PNL	PANEL
GA	GAGE OF GAUGE	PSF	POUNDS PER SQUARE FOOT
GALV	GALVANIZED	PSI	POUNDS PER SQUARE INCH
GB	GRADE BEAM	PSL	PARALLEL STRAND LUMBER
GL	GRIDLINE	PTDF	PRESSURE TREATED
GLB	GLUE LAMINATED BEAM	PT	POINT
GR	GRADE	R	RADIUS
HD	HOLD DOWN	RBS	REDUCED BEAM SECTION
HQ	HOT TOP GALVANIZED	REF	REFERENCE
HOR	HEADER	REFR	RAFTER
HKR	HANGER	REIN	REINFORCING
HK	HOOK	REIN	REINFORCING
HORIZ	HORIZONTAL	REQD	REQUIRED
HSB	HIGH STRENGTH BOLT	RET	RETAINING
HSG	HIGH STRENGTH GROUT	REV	REVISION
HSH	HORIZONTAL SLOTTED	RF	ROOF
HSH	HOLE	RWD	REDWOOD
HSS	HOLLOW STRUCTURAL	SQ	AMERICAN STANDARD BEAM
HT	HEIGHT	SAD	SEE ARCHITECTURAL
ID	INSIDE DIAMETER	SC	SLIP CRITICAL
I	1 SHAPED WOOD BUILT	SCD	SEE CIVIL DRAWINGS
INT	INTERIOR	SCHED	SCHEDULE
JST	JOIST	SED	SEE ELECTRICAL DRAWINGS
JT	JOINT	SEOR	STRUCTURAL ENGINEER OF
KP	KING POST	SEOR	STRUCTURAL ENGINEER OF
LA	LAKE	SFRS	SEISMIC FORCE RESISTING
LD or #	LOAD OR #	SKYLT	SKYLIGHT
LG	LIGHT GAGE METAL	SMT	SHEET METAL SCREW
LGMC	LIGHT GAGE METAL	SMD	SEE MECHANICAL DRAWINGS
LL	LIVE LOAD	SMD	SEE MECHANICAL DRAWINGS
LLH	LONG LEG HORIZONTAL	SMD	SEE MECHANICAL DRAWINGS
LLV	LONG LEG VERTICAL	SMD	SEE MECHANICAL DRAWINGS
LOC	LOCATION	SPCG	SPACING
LSC	LAMINATED STRAND LUMBER	SPCG	SEE PLUMBING DRAWINGS
LVL	LAMINATED VENEER LUMBER	SPEC	SPECIFICATION
LWC	LIGHTWEIGHT CONCRETE	SQ	SQUARE
MAX	MAXIMUM	SS	SELECT STRUCTURAL
MB	MACHINE BOLT	STG	STAGGERED
MBM	MACHINERY	STD	STANDARD
ME	MECHANICAL	STIFF	STIFFENER
MEZ	MEZZANINE	STIL	STEEL
MFR	MOMENT FRAME	STRUCT	STRUCTURAL
MFR	MANUFACTURER	SW	SHEAR WALL
MIS	MISCELLANEOUS	SYM	SYMMETRICAL
MISC	MISCELLANEOUS	TAB	TOP AND BOTTOM
MJ	METAL JOINT	TAB	TONGUE AND GROOVE
MTL	METAL	THK	THICK
MU	METAL UNIT	THRU	THROUGH
(N)	NEW	TOTL	TOTAL
NA	NOT APPLICABLE	TN	TOE NAIL
NO or #	NUMBER	TOF	TOP OF CONCRETE
NS	NEAR SIDE	TOF	TOP OF FRAMING
NSG	NON-SHRINK GROUT	TOM	TOP OF MASONRY
NTS	NOT TO SCALE	TOP	TOP OF PLYWOOD
NWC	NORMAL-WEIGHT CONCRETE	TOS	TOP OF STEEL
O	OVER	TOTL	TOTAL
ON	ON CENTER	TU	TILT UP
OP	OPPOSITE	TY	TYPICAL
OPNG	OPENING	UNO	UNLESS NOTED OTHERWISE
OPP	OPPOSITE HAND	VERY	VERY
OV	OVERSIZED	VIF	VERIFY IN FIELD
OW	OTHERWISE	W	WIDE FLANGE STEEL BEAM
OWT	OPEN WEB TRUSS	W	WITH
PA	POST ABOVE	WO	WOOD
PAF	POWER ACTUATED	WLD	WELDED HEADED STUD
FASTENERS	FASTENERS	WLD	WELDED
FN	FACE NAIL	WP	WORK POINT/WATERPROOF
FCC	FACE OF CONCRETE	WS	WOOD SCREW
FOM	FACE OF MASONRY	WTS	WELDED THREADED STUD
FOS	FACE OF STUD	WWR	WELDED WIRE
FRMG	FRAMING	WWR	WELDED WIRE
PLF	POUNDS PER LINEAR FOOT	WWR	WELDED WIRE

MINIMUM BAR LAPS FOR REINFORCING STEEL CONCRETE STRENGTH: 3000 PSI OR GREATER (STAGGER SPICES)			
SIZE	LAP LENGTH	SIZE	LAP LENGTH
#3	17"	#5	31"
#4	24"	#6	34"
#7	56"	#8	70"

(CLASS B TOP BAR)
BAR SPCG SHALL NOT BE LESS THAN 4x BAR DIA OR 4'.

CONC COVER FOR REINF STL "CLR"

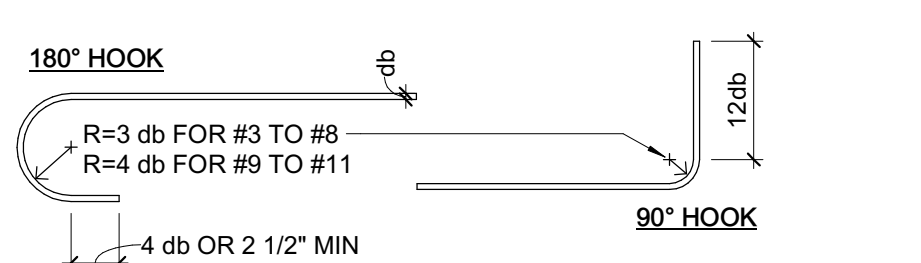
CAST AGAINST EARTH OR GR "CLR"

EXPOSED TO EARTH (FORMED) OR WEATHER

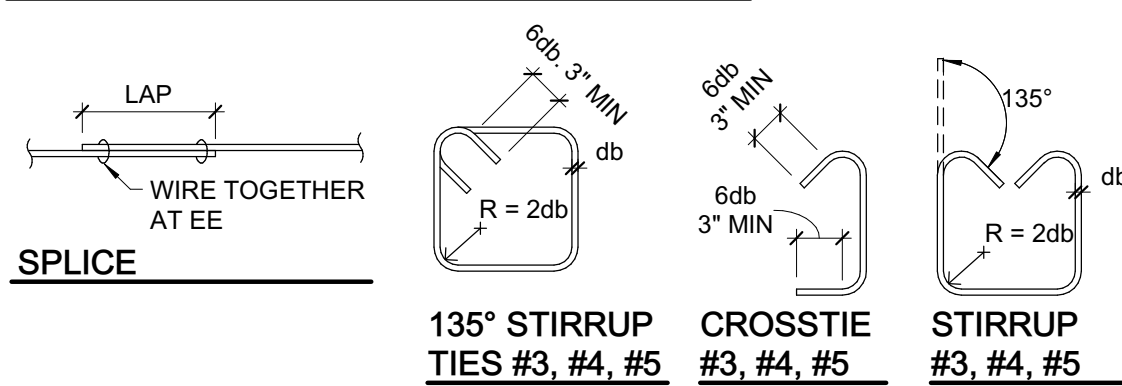
#5 & SMALLER "CLR"

#6 & LARGER "CLR"

ALL REINF BARS SHALL EXTEND AS FAR AS POSSIBLE & END IN A STD 90° OR 180° HK UNLESS DETAILED OTHERWISE



STANDARD HOOKS & BENDS



1 TYPICAL REINFORCING DETAILS ($F_c = 3000 \text{ psi}$ MIN)
3/4" = 1'-0"

A DESIGN CRITERIA

DESIGN CRITERIA:
RISK CATEGORY: 2019 CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2 (CBC)
WIND DATA: ULTIMATE WIND SPEED (3 SEC GUST) IN MPH: 92
WIND EXPOSURE: C
INTERNAL WIND PRESSURE COEFFICIENT (GCPI) = ± 0.18
COMPONENTS AND CLADDING DESIGN PRESSURES FOR SYSTEMS DESIGNED BY OTHERS SHALL COMPLY WITH THE "ASCE 7-16" DESIGN STANDARD
SEISMIC IMPORTANCE FACTOR, I_p : 1.0
MAPPED SPECTRAL RESPONSE ACCELERATIONS: $S_{a8} = 1.37$; $S_{a1} = 0.48$
SITE CLASS: D
SPECTRAL RESPONSE COEFFICIENTS: $S_{DS} = 0.913$; $S_{D1} = 0.583$
SEISMIC DESIGN CATEGORY: D
SEISMIC FORCE RESISTING SYSTEM: STEEL ORDINARY CANTILEVER COLUMN
RESPONSE MODIFICATION FACTOR: $R = 1.25$
SEISMIC RESPONSE COEFFICIENT, $C_s = 0.731$
ANALYSIS PROCEDURE USED: EQUIVALENT LATERAL FORCE

MAXIMUM ANTICIPATED STORY DRIFT = $0.02 \times \text{HEIGHT}$
PROVIDE DEFORMATION COMPATIBILITY PER ASCE 7 SECTION 12.12.5 FOR NON-STRUCTURAL ITEMS, INCLUDING CLADDING, STAIRS, GLAZING, ETC.

SCOPE: REPLACEMENT OF BASEBALL FIELD BACKSTOP AND DUGOUT FENCES.

B GENERAL NOTES

- REFER TO DETAILS ON THIS SHEET FOR STANDARD DETAILS OF CONSTRUCTION. REFER TO THE PROJECT SPECIFICATIONS FOR MATERIALS AND METHODS.
- DIMENSIONS SHOWN ARE FOR GENERAL REFERENCE ONLY. SEE ARCHITECTURAL DRAWINGS (SAD) AND SEE LANDSCAPE DRAWINGS (SLD) FOR ALL ACTUAL DIMENSIONS. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER SO CLARIFICATION CAN BE MADE PRIOR TO COMMENCING WORK.
- STRUCTURAL DRAWINGS SHALL NOT BE SCALED. ALL DIMENSIONS AND FIT SHALL BE DETERMINED AND VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCING WORK.
- DETAILS NOT FULLY OR SPECIFICALLY SHOWN SHALL BE OF SAME NATURE AS OTHER SIMILAR CONDITIONS.
- REFER TO ARCHITECTURAL & LANDSCAPE DRAWINGS FOR SIDEWALK SLABS AND DIMENSIONS.
- COORDINATION OF MECHANICAL, ELECTRICAL, PLUMBING, AND SITE UTILITY SYSTEMS WITH THE STRUCTURAL SYSTEM IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. NO PIPES ARE ALLOWED THROUGH PIERS. AT CONDITIONS WHERE FIELD MODIFICATIONS OF MECHANICAL, ELECTRICAL, PLUMBING, OR SITE UTILITIES AFFECT STRUCTURAL SYSTEMS, NOTIFY STRUCTURAL ENGINEER PRIOR TO INSTALLATION.
- SHORING AND BRACING DESIGN, MATERIALS AND INSTALLATION SHALL BE PROVIDED BY THE GENERAL CONTRACTOR, AND SHALL BE ADEQUATE FOR ALL LOADS. LEAVE IN PLACE AS LONG AS MAY BE REQUIRED FOR SAFETY AND UNTIL FINAL STRUCTURAL CONSTRUCTION IS COMPLETED. THE CONTRACTOR SHALL ENGAGE A LICENSED CIVIL OR STRUCTURAL ENGINEER TO PROVIDE SHORING.
- SPECIAL INSPECTIONS ARE REQUIRED PER THE TESTING AND INSPECTION FORM, SEE SPECIFICATIONS.
- NOTIFY ZFA FOR GENERAL ON SITE REVIEW OF:
 - MINIMUM PIER & FOOTING SIZE AND REINFORCING STEEL.

NOTIFY ZFA FOR REVIEW PRIOR TO COVERING ABOVE LISTED WORK. PROVIDE 2 WORKING DAYS MINIMUM SCHEDULING NOTICE PRIOR TO REVIEW DATE.

C FOUNDATION NOTES

- ALLOWABLE (ASD) FOUNDATION DESIGN PRESSURES:
SHALLOW FOOTINGS:
DEAD LOAD + LIVE LOAD = 2,500 PSF
DEAD LOAD + LIVE LOAD + LATERAL = 3,333 PSF
- ALLOWABLE (ASD) PIER SKIN FRICTION:
DRILLED PIERS:
DEAD LOAD + LIVE LOAD = 300 PSF
DEAD LOAD + LIVE LOAD + LATERAL = 400 PSF
- ALL SOILS WORK SHALL BE DONE IN ACCORDANCE WITH THE SPECIFICATIONS. THE REQUIREMENTS OF THE GEOTECHNICAL REPORT NOTED BELOW AND CHAPTER 18A OF THE CBC, TITLE 24, PART 2. ALL FOUNDATIONS SHALL BEAR ON FIRM, UNDISTURBED, NATIVE SOILS OR ENGINEERED FILL AT OR EXCEEDING DEPTHS SHOWN ON THE DRAWINGS. ENGINEERED FILL TO BE COMPACTED PER GEOTECHNICAL REPORT. INCREASE FILL AND OR FOOTING DEPTH AS REQUIRED BY GEOTECHNICAL ENGINEER. ALL FOOTING EXCAVATIONS SHALL BE AS NEAT AS PRACTICABLE. MAXIMUM OVER EXCAVATION IN WIDTH SHALL BE LESS THAN 12 INCHES OR 25% OF FOOTING WIDTH, WHICH EVER IS LESS. 6 INCHES MAXIMUM PER SIDE. LARGER OVER-EXCAVATIONS IN WIDTH SHALL BE FILLED WITH ADDITIONAL REINFORCED CONCRETE AS DIRECTED BY THE ENGINEER, OR FORMWORK SHALL BE PROVIDED. OVER-EXCAVATIONS IN DEPTH MAY BE FILLED WITH LEAN CONCRETE OR COMPACTED APPROVED BACKFILL. ALL LOOSE SOILS SHALL BE REMOVED FROM EXCAVATIONS PRIOR TO PLACEMENT OF REINFORCING OR CONCRETE. GEOTECHNICAL REPORT BY:

BSK ASSOCIATES
REPORT NO. G17-238-11L
DATED: APRIL 11, 2018
- DRILLING FOR CAST IN PLACE CONCRETE PIERS REQUIRES OBSERVATION AND APPROVAL OF GEOTECHNICAL ENGINEER. ALL PIERS SHALL BE POURED IN ONE CONTINUOUS POUR WITH STEEL IN PLACE. ALL PIERS TO BE VIBRATED WHILE POURING CONCRETE.
- TOP OF FOOTING ELEVATIONS TO BE DETERMINED BY THE CONTRACTOR BASED ON INFORMATION FROM THE ARCHITECTURAL DRAWINGS, GEOTECHNICAL REPORT, LANDSCAPE, ETC.

D STEEL NOTES

- COORDINATE TOP OF FOOTING ELEVATIONS AS DETERMINED BY THE CONTRACTOR PER C/S-0.1.
- TOP OF STEEL ELEVATIONS ARE TO BE DETERMINED BY THE CONTRACTOR BASED ON ARCHITECTURAL DRAWINGS, LANDSCAPE DRAWINGS, AND STRUCTURAL DRAWINGS.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 01-119543 INC:
REVIEWED FOR
SS ☐ FLS ☐ ACS ☒
DATE: 08/05/2021

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LIBERTY HIGH
SCHOOL
BASEBALL
BACKSTOP
REPLACEMENT
850 2ND ST,
BRENTWOOD,
CALIFORNIA

REVISIONS	

DSA APP NO. 01-119543
ARCH NO. 1923.00
ENGR / PM: KPB / CSW
DRAWING SCALE: As indicated
PTN: 61721-81 FILE NO: 7-H4

CONSTRUCTION DOCUMENTS

August 2, 2021
SHEET TITLE

GENERAL NOTES AND DETAILS

SHEET NUMBER

S-0.1