QUATTROCCHI KWOK
ARCHITECTS

LIBERTY HIGH SCHOOL
Administration and Student Commons Modernization

Addendum 02

DECEMBER 21, 2020

DSA File Number: 7-H4
DSA Application Number: 01-119033
PTN: 61721-55

Owner:
Liberty Union High School District
20 Oak Street
Brentwood, CA 94513

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

Architect's Project No.: 1783.00

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 Addendum in the space provided on the Bid Form; failure to do so may subject the Bidder to disqualification.

Table of Contents - Addendum 02

This Addendum consists of 10 pages and the attachments as listed below dated December 22, 2020.

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

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

ATTACHMENTS:

Project Manual

ADDENDUM 02	BIDDING DOCUMENTS	BID FORM
ADDENDUM 02	SECTION 01 2300	ALTERNATES
ADDENDUM 02	SECTION 01 7419	CONSTRUCTION WASTE MANAGEMENT
ADDENDUM 02	SECTION 09 9113	EXTERIOR PAINTING
ADDENDUM 02	SECTION 09 9123	INTERIOR PAINTING

ADD Drawings (8.5 inch by 11 inch & 11 inch by 17 inch)**:**
None

Drawings: (24 inch by 36 inch)

ADD 02 C-1.0	EXISTING CONDITIONS/DEMOLITION
ADD 02 A-A4.1	ADMIN BLDG ROOF PLAN
ADD 02 A-A5.1	ADMIN BLDG EXTERIOR ELEVATION
ADD 02 A-A6.1	ADMIN BLDG SECTIONS
ADD 02 A-B2.0	CAFETERIA AND A-WING BUILDINGS DEMOLITION PLAN
ADD 02 A-B4.1	CAFETERIA BUILDING ROOF PLAN
ADD 02 A-B5.1	CAFETERIA BUILDING EXTERIOR ELEVATIONS
ADD 02 A-B6.3	CAFETERIA BUILDING WALL SECTIONS
ADD 02 A-8.4	FINISH SCHEDULE
ADD 02 A-9.2	FRAMING DETAILS
ADD 02 A-9.4	ROOFING DETAILS
ADD 02 A-9.5	ROOFING DETAILS
ADD 02 A-10.1	CEILING DETAILS
ADD 02 S-A2.2	ADMINISTRATION BUILDING ROOF FRAMING PLAN
ADD 02 S-B2.2	CAFETERIA ROOF FRAMING PLAN
ADD 02 S-8.1	MODERNIZATION DETAILS

Project Record
Geotechnical Report
Geodetical Report 2019 CBC update letter
Prequalified Contractors

End of Table of Contents

A. CHANGES TO PREVIOUS ADDENDA

Item No. 2. 01
PREQUALIFIED CONTRACTORS
The following document denoted **Addendum 02** supersedes and replaces previously issued document.

Item No. 2. 02
BID FORM RE-ISSUED
The following document denoted **Addendum 02** supersedes and replaces previously issued document.

Item No. 2. 03
01 2300 ALTERNATES RE-ISSUED
The following document denoted **Addendum 02** supersedes and replaces previously issued document.

B. CHANGES TO THE BIDDING AND CONTRACT REQUIREMENTS

Item No. 2. 04
GENERAL CONDITIONS
Revise Article 8.1.4.2 Inclement Weather (rain Days) as follows:
No less than 22 calendar days for each calendar year for ~~Southern~~ ***Northern*** California will be allotted for the Contractor's schedule***, inclement weather/rain days are to be allocated monthly as indicated within this section.*** ~~for each winter weather period or carried at the end of the schedule as Rain Float.~~

The 22 calendar days for each calendar year for inclement weather that are to be included within the Contractor's schedule are to be allocated monthly as indicated below:

January	***5 inclement weather/rain days***
February	***4 inclement weather/rain days***
March	***3 inclement weather/rain days***
April	***2 inclement weather/rain days***
May thru September	***0 inclement weather/rain days***
October	***1 inclement weather/rain days***
November	***3 inclement weather/rain days***
December	***4 inclement weather/rain days***

Item No. 2. 05
GENERAL CONDITIONS
Revise Article 8.3.2.2 District Review and Approval as follows:
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 ether approve or disapprove the Baseline Schedule. All Schedules shall be prepared using an ~~electronic scheduling program acceptable to Distinct~~ ***Primavera P6***. All Schedules shall be delivered in ***both PDF format and Primavera P6 (.xer) format*** ~~an electronic format useable 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.

Item No. 2. 06
GENERAL CONDITIONS
Revise Article 8.3.3.2 Schedule Updates as follows:

Contractor shall update the approved Schedule each month to address actual start dates and durations, the percent complete on activities, actual completion dates, 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. ***Any and all revisions, beyond what is mentioned above, made to the Schedule in an Update need to be individually noted and explained in a narrative submitted with the Schedule Update.***

Item No. 2. 07
GENERAL CONDITIONS
Revise Article 9.6.1 Reasons to Withhold Payment as follows:

x. Failure to comply with the Section 01 7419 Construction Waste Management and failure to provide an updated Construction Waste Management Plan with delivery receipts.

Item No. 2. 08
GENERAL CONDITIONS
Revise Article 9.11 as follows:
~~**Final Payment (90% Billing if Substantially Complex Finding and 95% Billing If No Finding Is Made)**~~ ***Final Payment 90% Billing (the project has been determined to Substantially Complex by the Liberty Union High School District on 12/16/2020).***

C. CHANGES/ ADDITIONS TO THE SPECIFICATIONS

Item No. 2. 09
Section 01 1100 SUMMARY OF WORK
Revise Article 1.02.C.1 WORK COVERED BY CONTRACT DOCUMENTS as follows:
Selective demolition, ~~hazardous material abatement~~ and construction necessary for the modernization of existing school building, including associated civil, architectural, structural, plumbing, mechanical and/or electrical work as indicated in the Drawings and Specifications.

Item No. 2. 10
Section 01 1100 SUMMARY OF WORK
Revise Article 1.09.A ACCESS as follows:
3. ***All work is to be accomplished in accordance with the Phasing and Milestone plans included in Document 00 7300 Supplemental General Conditions.***

Item No. 2. 11
Section 01 1100 SUMMARY OF WORK
1.01 Revise Article 1.07.0 **CONTRACTOR'S USE OF PREMISES** as follows:
O. Provide, erect and maintain barricades and guard rails as required by governing regulatory agencies to protect occupants of building and workers. ***The District has purchased 300 feet of HDPE K rail barrier with fencing (Yodock 2001MB) for use as a temporary construction barrier along the Eastside of the site. The 300 feet of barrier with upper fence panel is stored within 300 feet of the Eastside project site courtyard area. The Contractor is to relocate and assemble the HDPE barrier along the East edge of the courtyard area in order to provide a barrier from the construction zone for student travel along the eastside of the Courtyard. Contractor is also responsible to maintain the 300 feet of HDPE K rail barrier and fence along the Eastside of the courtyard. At the completion of the project the Contractor is responsible for the disassembly***

and relocation of the barriers to the LUHSD Maintenance yard located at 19 Oak Street, Brentwood. If the barriers require temporary relocation in order for the Contractor to perform the required scope of project, the Contractor is responsible for the relocating and reinstallation of the barriers.

Item No. 2. 12
Delete the following section from the Table of Contents and Project Manual:
~~Section 01 2900 – APPLICATIONS FOR PAYMENT~~

Item No. 2. 13
Section 01 17419 CONSTRUCTION WASTE MANAGEMENT denoted Addendum 02 supersedes and replaces the previously published section

Item No. 2. 14
Delete the following section from the Table of Contents and Project Manual:
~~Section 07 4113 – METAL ROOF PANELS~~

Item No. 2. 15
Section 07 4150 METAL WALL PANELS
Revise Article 2.02A.Panel Materials as follows:

A. Sheet Metal: form wall panels, trim and flashings galvanized steel sheet. Panel finish shall be a smooth machined finish.
   1. ***Aluminum*** ~~Galvanized Steel~~: ASTM A 653/A 653M, with G90/Z275 zinc coating; minimum 0.025 inch thick base metal, minimum thickness ***0.04*** ~~24 gauge~~ and greater as required by referenced standards for specific applications indicated.

Item No. 2. 16
Section 07 5550 MODIFIED BITUMEN ROOFING
Revise Article 2.05. as follows:

~~C. Gravel for roof: ASTM 1863 clean river rock.~~
~~D. Gravel adhesive: Weathercreen asphlat cutback.~~

Item No. 2. 17
Section 08 7100 DOOR HARDWARE
Revise to add Hardware Groups 20 and 21

HW-20

Each door to have

	Hinges	*BB1279*	*652*	*HAG*
1	*Office Lockset*	*ND91LD RHO*	*626*	*SCH*
1	*Floor Stop*	*481*	*626*	*ROC*
1	*Set Seals*	*319CN*		*PEM*

HW-21

Each door to have

	Hinges	*BB1279*	*652*	*HAG*
1	*Office Lockset*	*ND91LD RHO*	*626*	*SCH*
1	*Floor Stop*	*481*	*626*	*ROC*
1	*Automatic Door Bottom*	*411CRL*		*PEM*
1	*Set Seals*	*379CS*		*PEM*

Item No. 2. 18
Section 09 9113 EXTERIOR PAINTING denoted Addendum 02 supersedes and replaces the previously published section

Item No. 2. 19
Section 09 9123 INTERIOR PAINTING denoted Addendum 02 supersedes and replaces the previously published section

Item No. 2. 20
Delete the following section from the Table of Contents and Project Manual:
~~Section 10 5626 – MOBLE STORAGE SHELVING~~

D. CHANGES/ ADDITIONS TO THE DRAWINGS

Item No. 2. 21
Sheet G-0.2 ABBREVIATION AND NOTES
Add sheets ***M-3.1 ADMINISTRATION MECHANICAL ENLARGEMENT FLOOR PLAN*** & ***M-3.2 ADMINISTRATION MECHANICAL ENLARGEMENT FLOOR PLAN*** to the sheet index.
These sheets are already included in the set.

Item No. 2. 22
The following drawings dated December 18, 2020 denoted **Addendum 02** supersede and replace previous drawings with the same titles:

ADD 02 C-1.0	EXISTING CONDITIONS/DEMOLITION
ADD 02 A-A4.1	ADMIN BLDG ROOF PLAN
ADD 02 A-A5.1	ADMIN BLDG EXTERIOR ELEVATION
ADD 02 A-A6.1	ADMIN BLDG SECTIONS
ADD 02 A-B2.0	CAFETERIA AND A-WING BUILDINGS DEMOLITION PLAN
ADD 02 A-B4.1	CAFETERIA BUILDING ROOF PLAN
ADD 02 A-B5.1	CAFETERIA BUILDING EXTERIOR ELEVATIONS
ADD 02 A-B6.3	CAFETERIA BUILDING WALL SECTIONS
ADD 02 A-8.4	FINISH SCHEDULE
ADD 02 A-9.2	FRAMING DETAILS

ADD 02 A-9.4	ROOFING DETAILS
ADD 02 A-9.5	ROOFING DETAILS
ADD 02 A-10.1	CEILING DETAILS
ADD 02 S-A2.2	ADMINISTRATION BUILDING ROOF FRAMING PLAN
ADD 02 S-B2.2	CAFETERIA ROOF FRAMING PLAN
ADD 02 S-8.1	MODERNIZATION DETAILS

E. BIDDERS QUESTIONS

Item No. 2. 23

Q: Do the existing remote-control valves on irrigation plan L3.0 also get a rainmaster TW-D-1 decoder? Please advise.

A: 2- wire and decoders are required. Refer to Sheet Note 12 and Construction Notes on L3.0.

Item No. 2. 24

Q: I printed out the mechanical plans & noticed that M-A3.1 & M-A3.2 are included in the drawings but are not listed on the drawings list. Are these sheets supposed to be with the mechanical drawings or removed?

A: See changes to drawings.

Item No. 2. 25

Q: Irrigation plan L3.1 has a total of 749 shrub bubblers, but planting plan L4.0 has a total of 777 shrubs? The bubbler quantity from irrigation plan does not match the total quantity of shrubs? Please advise if to bid per planting plan or irrigation bubbler count?

A: Graphic depiction of plant material shall take precedence over stated quantities. Provide and install plants of type and quantity as graphically shown on the Planting Plan.

For plants that are not shown to be irrigated with sprinklers on the Irrigation Plan, provide and install bubblers for the quantity of plants shown graphically on the Planting Plan.

Item No. 2. 26

Q: Irrigation plan sheet L3.0 note 6 says to install new 2-wire cable in existing electrical conduit and use existing pull boxes to pull wire. Its hard to determine how many of those existing pull boxes there are? Note also mentions to refer to field irrigation improvement plans, are these plans as-builts? Please provide any as-builts or field irrigation improvement plans.

A: Refer to L3.0 for existing conduit and controller. The topographic survey may not show exact locations of pull boxes. Assume existing pull box locations meet industry standards. Record Drawings will be provided to the contractor following award at their request.

Item No. 2. 27

Q: Planting legend on plan L4.0 shows a total of 39ea of Chondropetalum Tectorum 1 gallon shrub, but after counting the plants there's only 13ea of Chondropetalum Tectorum. Please change or advise on the quantity of the 1 gallon Chondropetalum Tectorum.

A: The quantity (39) of Chondropetalum tectorum (Cho tec) in the legend corresponds to the number shown and called out on the Planting Plan.

Item No. 2. 28

Q: The instructions to bidders state "Pre-bid clarification request shall be filed a minimum of ten (10) days prior to the bid opening." With Addenda #1 changing the bid date to 1/6/2021 that would mean the new RFI deadline is 12/30.2020.

Can you please confirm that this is the correct RFI deadline?

A: Ten days prior to the bid would be Sunday December 27th, 2020. All pre-bid clarifications need to be submitted by Monday December 28th, 2020

Item No. 2. 29

Q: Can the geotechnical report be provided

A: See Attachments – Project Records

Item No. 2. 30

Q: The door schedule A-8.1 calls out hardware groups 20 and 21. The specification does not include these hardware groups. Please advise what hardware is to be used for these two groups.

A: See changes to specifications

Item No. 2. 31

Q: On page A-B2.0 demolition keynote #9 says the covered walkway is to be demolished. The finish & reflective ceiling plans all show the walkway in place.

Is the covered walkway being demolished?

A: See changes to drawings

Item No. 2. 32

Q: Per sheet A-A3.1 & sheet E-A2.1 there appears to be lights in the demoed covered walkway. Please clarify

A: See changes to drawings

Item No. 2. 33

Q: Detail 20 calls for 4x blocking under the wall. How often does the blocking occur?

A: The callout for the shaped 4x block requires the block to occur at each vertical 4x6, which occur at 32"oc. The lag screws for the RCKW5.5, embedded in the shaped 4x block. should occur along the centerline of the block.

Item No. 2. 34

Q: The bottom of the Plan Legend calls for full depth blocking for straps. Detail 3/S-1.3 calls for flat 2X4 or 2x6 blocking. Can you clarify the size of blocking required?

A: See changes to drawings

Item No. 2. 35

Q: In the Notice to Contractors it says "Pre-Qualification of Prime Contractors & MEP Subcontractors is required for this project"

Does that mean these classifications are the only ones that are subject to the pre-qualification requirement?
A – General Engineering Contractor
B – General Building Contractor
C10 – Electrical Contractor
C20 – Warm-Air-Heating, Ventilating and Air-Conditioning Contractor
C36 – Plumbing Contractor

Please confirm or specify which license classifications fall under this regulation.

A: Only prequalified general contractors may submit a bid directly to the District. In addition the general contractor must hold a B license and must have attended the mandatory pre-bid conference held on December 4, 2020.

Only prequalified mechanical, electrical, and plumbing contractors may be used, In accordance with Public Contract Code 20111.6.(j).

Item No. 2. 36

Q: Would the District find it acceptable for a contractor to use their Umbrella Insurance policy along with their General Liability & Auto coverage to meet the limit requirements ?

A: Yes, the umbrella insurance policy combined with underlying GL & Auto coverage is acceptable to meet the required contractor/subcontractor provided insurance requirements for coverage outside of SEWUP. General Conditions Section 11.7

Item No. 2. 37

Q: 08 3613 Overhead Sectional Doors is listed in the table of contents, but there is no spec for it. Please provide the spec.

A: See Addendum 01.

Item No. 2. 38

Q: At 2 clouded locations it tells me to abandon 2″ asbestos pipe cut & cap. There is also a third location that is not clouded per addendum #1 & it tells me to remove 375′ of 2″ Asbestos water pipe.

Is that that correct? Or is it to be abandon in place like others? If it is to be removed, will the district be removing it? (at the job walk bidders were told the District will be performing all abatement work.)

A: It has been confirmed with the District that the water lines are not asbestos.

The 375′ water pipe is to be removed as it will conflict with the future improvements of the bioretention area and raised platform off A-wing

Item No. 2. 39

Q: At the job walk it was stated that the District would be doing all of the lead & asbestos abatement work. Does that also include the 2″ asbestos water line shown to be removed on page C-1.0?

A: It has been confirmed with the District that the water lines are not asbestos.

Item No. 2. 40

Q: Is there a specification section for the tectum on the ceiling. The only specification for tectum is 09 8420. Should we use this or is there another specification that should be used?

A: Use section 09 8420. Attach per details and manufactures standard methods.

END OF ADDENDUM

ADDENDUM 002

LIBERTY UNION HIGH SCHOOL DISTRICT
PREQUALIFIED CONTRACTORS AS OF DECEMBER 18, 2020
VALID THROUGH DECEMBER 31, 2021

***This list is subject to change based on 11/20/20 applications that are still under review**

Contractor	Type of License
3D Datacom	B, C7, C10
Airteks	C20
ALB	A, B
Alten	A, B
American Air Conditioning, Plumbing, Heating	B, C4, C20, C36, C38, C43
American Plumbing	B, C4, C36
AMS Heating	C4, C20, C36, C43
Anaya Construction	B
Arntz	A, B
Asbestos Management Group (AMG)	A, B, C2, C21, C22
B&H Electric	C10
Bay Cities Fire Protection	B, C16
Bay City Mechanical	C4, C20, C36, C43
Beals Martin	A, B
Bel Aire Mechanical	B, C4, C10, C20, C36, C38
Bell Products	A, B, C4, C20, C36, C43
Best Contracting	A, B, C17, C39, C43
Bobo Construction	A, B, C8, C20, C36, C43
Bockmon & Woody Electric Co., Inc.	C10
Bothman	A, B, C8, C27
Bowen Engineering & Environmental	A, B, C10, C21, C22, C29, C33
Cal Pacific Systems	A, B, C4, C10, C20, C36
Charles Pankow Builders	B
Collins Electrical	A, B, C10, C31
Con J Franke	C10
Consolidated Engineering	A
CWS Construction Group	A, B
D.A. Bender	C36
DDK Mechanical	B, C20, C36, C43
DecoTech Systems	B, C7, C10
Del Monte	C10
Demolition Services and Grading	A, B, C12, C21
Diede	A, B, C8, C15, C27, C39, C61
Digital Networks Group	C7, C10
Dinelli	C36
Div 15 Tech, Inc.	B, C20
Diversified Power Corp	C10
DL Falk	B
Dowdle	A, B, C4, C20, C36
Du-Mor Fire Systems	C16
EF Brett	A, B
F & H	A, B
Fertado Heating	C20, C43

Contractor	Type of License
GCCI	B
GP Mechanical	C20, C43
Granite Rock Company	A, B
Hometown Construction	B, C20, C36
Kerex Engineering	A
KS Plumbing	C36
Lloyd F. McKinney	C7, C10
Marquee Fire Protection	C16, C41A
Matrix	B, C4, C10, C20, C36, C38, C43
McGuire & Hester	A, B, C21, C27, C31
McMillian Data Communications	C10
Meehlies	B
MK Pipelines, Inc.	A, B,
Pacific Coast General Engineering	A
Pacific Metro Electric	B, C10
Pacific Power & Systems	C7, C10
Paschke Electric	C10
PCD	C7, C10
Peterson Mechanical	B,C20,C16,C36,C38,C42,C43,C4, C34
Point One Electrical Systems	B, C7, C10
Presidential Fire Protection	C16
Prime Mechanical	B, C4, C20, C36, C38
Quality Sound	C7, C10
Red Top Electric	B, C7, C10
Rodan	A, B, C21
Saboo	A, B, C10, C20
Sausal Corp	B
Sebastian Corp.	A, B, C7, C10
Smith and Sons Electric	C10
Southern Bleacher	A
Sturdiesteel	A
SW Allen	A, B, C39, ASB
Teichert Construction	A, B, C10, C22, C27
Trahan Mechanical	C20, C43
Vanden Bos Electric	B, C7, C10
WA Thomas	A, B
Walker Telecomm	B ,C7, C10
W.C. Maloney	A, C21
Zapein Electric	C10, C38
Zovich & Sons	A, B, C8

ADDENDUM 02

BID FORM

FOR

Administration and Student Administration

850 2nd Street, Brentwood CA 94513

Project No. 1783.00

Bid No. U2019L

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 ADMINISTRATION AND STUDENT COMMONS (as described below):

Project provides a new 9,705 square foot Administration, a modernization of the existing 3,709 square foot A Wing, partial demolition of existing Building B, modernization of Building (7,790 square feet) and new addition to Building B (1,540 square feet of Student Commons and associated site development.

The Administration building includes offices, break rooms, toilet rooms and related spaces. The building is construction Type 5B, wood framed, fully sprinklered for B occupancy.

The modernization of Wing A includes selective demolition, installation of new finishes and fire sprinklers, transaction windows. Existing building is Wood framed A-3 occupancy.

The modernization and new construction of Wing B include partial building demolition, selective demolition of the remaining portion of the building, installation of new finishes, fire sprinklers, windows and opening, kitchen equipment, electrical, mechanical and plumbing items. Existing building is concrete wood framed for an A-2 occupancy.

The site development includes selective demolition and provision of parking lot with passenger drop-off/loading, concrete paved walkways, plaza and amphitheater, construction yard, landscaping, bio-swales, site lighting, and fencing.

For the:

LIBERTY HIGH SCHOOL ADMINISTRATION AND STUDENT COMMONS

BID NO. U2019L

Liberty High School Administration and Student Commons.

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.

Alternate No. 1: ADD _____ Dollars ($_____)

Alternate No. 1: DEDUCT _____ Dollars ($_____)

Alternate No. 2: ADD _____ Dollars ($_____)

Alternate No. 2: DEDUCT _____ Dollars ($_____)

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.

ADDENDUM 02

SECTION 01 2300

ALTERNATES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Alternative submission procedures.

B. Documentation of changes to Contract Sum and Contract Time.

1.02 RELATED SECTIONS

A. Document 00 2113 - Instructions to Bidders: Instructions for preparation of pricing for alternatives.

B. Document 00 5200 - Contract: Incorporating monetary value of accepted alternatives.

1.03 ACCEPTANCE OF ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at the Owner's option. Accepted alternatives will be identified in the Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work to integrate the Work of each alternative.

1.04 SCHEDULE OF ALTERNATES

A. Alternative No. 01 – Flooring at Building B:
   1. Base Bid Item: Section 09 6500 Resilient Flooring and Drawing number A-B2.2, A-8.4 including all finish codes, RF2A, RF2B, RF2C and related details
   2. Add Alternate Item: Section 09 6770 Fluid-Applied Cork Flooring at Finish codes RF2A, RF2B, and RF2C

B. Alternate No, 02 - Data Communication System Raceways Only
   1. Base Bid Item: In regard to the data communication system, furnish and install all work including but not limited to; all raceways, wiring, devices, terminations, etc. as required by Division 26 and 27 and as shown on the plans.

   2. Deductive Alternate Item: In regard to the data communication system, furnish only all raceways. All wiring, devices, terminations, etc. as required by Division 26 and 27 and as shown on the plans will be furnished and installed by the District.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

ADDENDUM 02

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 **65%** 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.

I. Alternative Daily Cover (ADC): Material placed over a waste collection location or container in order to prevent vector dispersal, fires, odors, or blowing debris, which is then disposed of as waste itself. ADC is not permitted on projects seeking LEED certification.

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.

1. Provide separate collection containers as required by recycling haulers and to prevent contamination of materials, including protection from rain as applicable.

2. Replace loaded containers with empty ones as demand requires but not less than weekly.

3.If waste will be collected co-mingled in a single container for off-site sorting, facility delivery receipts must show recycling rates for each material stream.

4.Personal waste (lunch wrappers, etc) must be collected separately from construction waste.

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.

1. 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.

B. Updated Construction Waste Management Plan with delivery receipts.

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

ADDENDUM 02

SECTION 09 9113

EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Materials for backpriming woodwork.

D. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
   1. Exposed surfaces of steel lintels and ledge angles.
   2. Mechanical and Electrical:
      a. On the roof and outdoors, paint equipment that is exposed to weather or to view, including factory-finished materials.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Pertinent sections of Division 05 specifying shop-primed and galvanized metal items.

C. Section 09 9123 - Interior Painting.

D. Pertinent sections specifying civil, mechanical and electrical work requiring painting.

E. Pertinent Division 32 Section specifying Painted Pavement Markings.

1.03 DEFINITIONS

A. Comply with ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

A. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2014.

B. Manufacturer's recommendations and specifications, including installation instructions.

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition, www.paintinfo.com.

D. SSPC-SP 1 - Solvent Cleaning; 2015.

E. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).

F. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

G. SSPC-SP 13 - Surface Preparation of Concrete; (Reaffirmed 2015); 2003.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).

3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
4. Manufacturer's installation instructions.
5. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.
6. Resin Type.
7. Total VOC Content in grams per liter.
8. Solids Content By Volume SCBV (not solids by weight). All products shall be minimum 35% SCBV.
9. Composition-By-Weight. Demonstrate composition by percentage related to total weight of all components.
10. Film Thickness Per Coat, Wet and Dry.
11. Prime Pigment: Demonstrate prime pigment by percentage related to total volume of all components.

C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches (216 by 279 mm) in size, illustrating range of colors available for each finishing product specified.
1. Where sheen is specified, submit samples in only that sheen.
2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens definitely not required.
3. Allow 30 days for approval process, after receipt of complete samples by Architect.
4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, have been approved.

D. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

E. Certification in writing from manufacturer : Products and Paint systems are approved by manufactuer

F. Manufacturer's Instructions: Indicate special surface preparation procedures.

G. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 6000 - Product Requirements, for additional provisions.
2. Extra Paint and Finish Materials: 1 gallon (4 L) of each color; from the same product run, store where directed.
3. Label each container with color in addition to the manufacturer's label.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum ten (10) years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five (5) years experience and approved by manufacturer.

1.07 MOCK-UP

A. See Section 01 4000 - Quality Requirements, for general requirements for mock-up.

B. Provide panel, 8 feet (____ m) long by 10 feet (____ m) wide, illustrating paint color, texture, and finish.

C. Provide door and frame assembly illustrating paint color, texture, and finish.

D. Locate where directed by Architect.

E. Final color selections and acceptance will be made only after review of mock-ups under lighting conditions approximating finish conditions.

F. Mock-up may remain as part of the work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.09 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior paint and finishes during rain, high wind or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
   1. Do not paint exterior materials when inclement weather is expected within the full drying time specified by the manufacturer.
   2. Painting may be continued during inclement weather if areas and surfaces to be painted are enclosed and heated and dry within temperature and humidity limits specified by paint manufacturer during application and drying periods.

D. Schedule work to avoid painting surfaces, when surfaces are exposed to direct sunlight.

E. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 DESIGN REQUIREMENTS

A. Design Intent: Paint all Work which is normally painted in a building of this type and quality, whether or not the item or surface is specifically identified within the Contract Documents.
   1. The number of coats specified is the minimum to be applied. Provide paint finishes of even, uniform color, free from cloudy or mottled surfaces. Provide one additional coat if necessary where "deep colors" are selected.
   2. Non-scheduled items: Provide manufacturer's approved and recommended system as set forth in Manufacturer's "Specifications Architectural Finishes ".

2.02 MANUFACTURERS

A. Manufacturer's proprietary names or catalog numbers are indicated for covnenience in identifying products. Manufacturer's complete product catalog description and composition for indicated product names or numbers shall constitute requirements for each product specified. Products shall incorporate all attributes set forth in the manufacturer's catalog description for the specified item, except for such modifications thereto as may be indicated in the Contract Documents.

B. Provide paints and finishes from the same manufacturer to the greatest extent possible, unless noted otherwise on the drawings..
   1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
   2. Substitution of other products by the same manufacturer is preferred over substitution of products by a different manufacturer.
   3. Substitution of a different paint system using MPI-approved products by the same manufacturer will be considered.

C. Substitutions: See Section 01 6000 - Product Requirements.
   1. Provide product data documenting conformance to specified requirements and provide all specified information as listed above in SUBMITTALS article. Failure to include all information specified is grounds for rejection of substitution.

D. Paints:
   1. Base Manufacturer: Sherwin-Williams Company.
   2. Kelly-Moore; www.kellymoore.com.

2.03 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready mixed, unless required to be a field-catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
   3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
   4. Supply each paint material in quantity required to complete entire project's work from a single production run.
   5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content: Comply with Section 01 6116.
   1. Provide products conforming with local, State and Federal government requirements limiting the amount of volatile organic compounds contained in the product, for its intended application. If specified product does not comply with current requirement, provide conforming product at no additional cost.

C. Chemical Content: The following compounds are prohibited:
   1. Intentionally added methylene chloride or perchloroethylene.
   2. Aromatic Compounds: In excess of 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
   3. Acrolein, acrylonitrile, antimony, benzene, butyl benzyl phthalate, cadmium, di (2-ethylhexyl) phthalate, di-n-butyl phthalate, di-n-octyl phthalate, 1,2-dichlorobenzene, diethyl phthalate, dimethyl phthalate, ethylbenzene, ethylene glycol, formaldehyde, hexavalent chromium, isophorone, lead, mercury, methyl ethyl ketone, methyl isobutyl ketone, methylene chloride, naphthalene, toluene (methylbenzene), 1,1,1-trichloroethane, vinyl chloride.

D. Flammability: Comply with applicable code for surface burning characteristics.

E. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
   1. Finish Sheen: The following designations are measured in percentage of reflectance when viewed at a 60 degree angle. Provide manufacturer's standard sheen most closely matching the characteristic of specified sheen.
      a. Flat: 0-5%.
      b. Velvet: 5-9%.
      c. Eggshell: 10-15%.
      d. Low Sheen: 20-25%.
      e. Semi-Gloss: 40-50%
      f. Gloss: 70-80%
      g. High Gloss: >85%

F. Colors: As indicated on drawings.
   1. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.
   2. Extend colors to surface edges; colors may change at any edge as directed by Architect.
   3. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under unless accent colors are denoted.

G. Fabricate paints and stains in accordance with the Color Schedule which will include both standard colors and special, non-standard colors.
   1. If deep colors are not available in a specified product, propose substitute formula for approval
   2. Tint undercoats slightly to approximate finish coat color

2.04 PAINT SYSTEMS - EXTERIOR

A. New Exterior Plaster: Acrylic finish per Section 09 2513 - Acrylic Modified Portland Cement Plastering.

B. Paint WE-OP-3L - Wood, Opaque, Latex, 3 Coat:
   1. Satin Acrylic: Two finish coats over a primer.
      a. Primer Coat (4.0 mils):
      b. Intermediate (1.5 mils):
      c. Final Coats (1.5 mils):

C. Paint CE-OP-3L - Masonry/Concrete, Opaque, Latex, 3 Coat:
   1. One coat of block filler:
   2. Two coats of latex enamel. Sheen as selected by Architect.

D. Paint GE-OP-3L - Gypsum Board or Plaster, Opaque, Latex, 3 Coat:
   1. One coat of urethane acrylic primer sealer.
   2. Two coats of latex enamel, sheen as selected by Architect.

E. Paint ME-OP-3A - Ferrous Metals, Primed or Unprimed, Alkyd, 3 Coat:
   1. One coat of alkyd primer.
   2. Two coats of alkyd enamel, or as required to achieve specified sheen and appearance.

F. Paint MgE-OP-3A - Galvanized Metals, Alkyd, 3 Coat:
   1. Pretreatment, reduce to minimum level for finish coat adhesion]. One coat .
   2. Prime Coat:
   3. Two coats of alkyd enamel, Gloss Sheen at exterior handrails and guardrails, Semi-gloss all other locations.

2.05 PRIMERS

A. Primers: As required or recommended by manufacturer of top coats; where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
   1. If products specified are discontinued, submit alternate product approved by specified Manufacturer in writing.

2.06 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Compatible with substrates, recommended by coating manufacturer in writing for conditions indicated.

C. Sanding materials: 120-180 grit, for architectural woodwork, finish carpentry, wood doors, or other surfaces requiring touch-up.

D. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the manufacturer-recommended maximums.

3.02 PROTECTION OF ADJACENT WORK

A. Protect surrounding elements from damage from painting procedures. Provide temporary facilities and barricades required. Additional requirements specified in Division 01.

B. Carefully remove and store removable items located in areas to be painted, including fixtures, fittings, finish hardware, and accessories; reinstall upon completion.

C. Separate areas to be protected from painting areas using means adequate to prevent damage.

D. Cover existing landscaping with tarpaulins or similar covers.

E. Mask immediately adjacent surfaces with material that will withstand cleaning and restoration procedures.

F. Close off adjacent occupied areas with dust proof and weatherproof partitions.

G. Protect roof membrane and flashings from damage with 1/2 inch (13 mm) plywood laid on roof surfaces over full extent of work area and traffic route.

H. When using cleaning methods that involve water or other liquids, install drainage devices to prevent runoff over adjacent surfaces unless those surfaces are impervious to damage from runoff.

3.03 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing paints or finishes that exhibit surface defects.

D. Remove surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

E. Surfaces: Correct defects and clean surfaces which affect work of this section. Feather-edge patches to make finished edges inconspicuous.

F. Seal surfaces that might cause bleed through or staining of topcoat.

G. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

H. Provide barrier coats over incompatible primers, or remove and re-prime.

I. Spot prime shop primed materials in field as required to assure that all surfaces are primed before finished coats are applied. Prime coats specified in this Section shall be provided in addition to shop prime coats on materials supplied for field finish.

J. Verify compatibility of specified products with shop applied primer(s). In the event of incompatibility of products specified in the Section, recommend alternate compatible product for review.

K. Provide full number of coats specified for each coating system indicated. Where recommended alternate compatible primers or undercoats require fewer coats than specified products, provide additional finish coat so that specified number of coats is not reduced.

L. Concrete:
   1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
   2. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.

M. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
   2. Prepare surface as recommended by top coat manufacturer.

N. Exterior Plaster: Fill hairline cracks, small holes, and imperfections with exterior patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

O. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
   2. Prepare surface according to SSPC-SP 2.

P. Ferrous Metal:

1. Solvent clean according to SSPC-SP 1.
2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.

Q. Exterior Wood Surfaces to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.

R. Glue-Laminated Beams: Prior to finishing, wash surfaces with solvent, remove grease and dirt.

S. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.04 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Exterior Wood to Receive Opaque Finish: If final painting must be delayed more than 2 weeks after installation of woodwork, apply primer within 2 weeks and final coating within 4 weeks.

C. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual". In the event of conflict, manufacturer recommendations to prevail.

D. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

E. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied. Do not re-coat until;
1. Paint has dried until firm to the touch.
2. Paint does not deform or feel sticky under moderate thumb pressure.
3. Application of another coat of paint will not cause lifting or loss of adhesion of the undercoat.

F. Apply each coat to uniform appearance.

G. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply additional coats until complete hide is achieved.

H. Sand wood and metal surfaces lightly between coats to achieve required finish.

I. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

J. Make work uniform without sags, runs, skips or brush marks. Make all edges sharp including interior intersections and transitions between split finishes.

K. Backprime all concealed surfaces of finish carpentry, architectural woodwork, wood doors and unclad wood windows.

L. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.05 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Paint shop-finished equipment (electrical panels, load centers, and similar elements) exposed to view. Factory coatings intended for finished exposure may remain in utility areas.

B. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

C. Finish equipment, piping, conduit, and exposed duct work throughout in colors according to the color schedule.

D. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.06 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection.

3.07 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

B. Upon completion of work, clean window glass and other paint-spattered surfaces.

3.08 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.
   1. Remove spatters, spots, runs, sags, blemishes and other defects without marring adjacent unpainted surfaces.
   2. Repaint defective surfaces.

C. Provide "Wet Paint" signs as required to protect newly-painted finishes.

D. Adjusting: Following owner's move-in and occupancy at a time acceptable to the Owner, touch-up and adjust blemishes and other defects incurred by move-in operations and the actions of the Owner and their separate contractors. Limit: Two workers for two full days labor, per building.

3.09 SCHEDULE - SURFACES TO BE FINISHED

A. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, zinc, and lead items.
   6. Non-metallic roofing and flashing.
   7. Marble, granite, slate, and other natural stones.
   8. Ceramic and other types of tiles.
   9. Pre-finished wall, ceiling and floor materials or coverings, unless specifically scheduled for field painting.
   10. Floors, unless specifically indicated.

11. Acrylic-Modified Cement Plaster Finish.
12. Brick, glass unit masonry, architectural concrete, cast stone, integrally colored plaster and stucco unless specifically indicated.
13. Glass.
14. Concealed pipes, ducts, and conduits.

B. General: Paint the surfaces described below under Schedule - Paint Systems. All surfaces exposed to weather, or visible to the eye, exterior and interior, unless specifically excluded by the Article titled "Do Not Paint or Finish the Following Items". If a coating system is not specified for a particular surface or substrate, provide a three-coat finish system recommended by the paint or coating manufacturer for that surface or substrate. Include all preparation necessary as appropriate for a similar substrate listed in the Article titled "PREPARATION", or preparation for that substrate as recommended by the paint or coating manufacturer.

C. Mechanical and Electrical: Use paint systems defined for the materials to be finished.
1. Paint all conduit, insulated and exposed pipes, boxes, hangers, brackets, collars and supports, mechanical equipment, electrical equipment, and exposed ducts occurring in finished areas to match background surfaces, unless otherwise indicated.
2. Paint all equipment, including that which is factory-finished, exposed to weather or to view on the roof and outdoors.
3. Paint shop-primed items occurring in finished areas.
4. Paint dampers exposed behind louvers, grilles, to match face panels.

D. Paint behind moveable equipment and furniture.

E. Finish top, bottom, and side edges of exterior doors the same as exposed faces.

F. Paint access doors, fire hose and extinguisher cabinets, panelboards, conduits and exposed plumbing piping.

G. Paint reveal moldings, expansion joints, and handrails.

H. Paint tube column and miscellaneous connections.

I. Provide split finishes for painted doors and interior windows where different connected room colors are selected.

J. Paint continuous surfaces with the same paint system. Do not change systems at elevation breaks.

K. Touch-up factory paint finishes where damaged.

3.10 SCHEDULE - PAINT SYSTEMS

A. Concrete: Finish only surfaces exposed to view which are indicated to receive paint.
1. Exterior: Flat sheen.

B. Plaster: Finish all surfaces exposed to view, except plaster with acrylic-modified finish per Section 09 2513..
1. Exterior Walls and surfaces, including soffits, (Stucco): GE-OP-3L

C. Wood: Finish all surfaces exposed to view.
1. Exterior trim, beams, soffits and frames: WE-OP-3L.
a. Semi-gloss sheen.

D. Steel Doors and Frames: Finish all surfaces exposed to view and to weather, including door tops and bottoms. Select prime coats compatible with finish color selections.

1. Semi-gloss sheen.

E. Metal Fabrications: Finish all surfaces exposed to view and concealed, before installation.. Select prime coats compatible with finish color selections.
   1. Exterior - Handrails and Guardrails: Gloss sheen.
   2. Exterior - All Other Surfaces: Semi-gloss sheen.

F. Galvanized Steel and Shop-Primed Metal Items: Exterior and Interior; Finish all surfaces exposed to view and to weather, including plaster joints and accessories, exposed portions of roof deck systems.
   1. Exterior - Handrails and Guardrails: Gloss sheen.
   2. Exterior - All Other Surfaces: Semi-gloss sheen.

G. Miscellaneous metals, conduits, non-factory-finished access panels: As specified for either unprimed or shop primed metals, modified as required to make sheen match adjacent surfaces. Finish the following items:
   1. Exposed portions of metal roof deck assemblies.
   2. Exposed surfaces of lintels.
   3. Exposed surfaces of steel stairs, ladders, fences, gates and railings.
   4. Mechanical and electrical equipment.

H. Exterior Pavement Markings: As specified in related Division 32 section.

3.11 SCHEDULE - COLORS

A. Building and Structure Exteriors: Allow individual Schedule with separate color selections for each Building:
   1. Walls; Field color as selected.
   2. Ceilings/soffits; as selected.
   3. Wainscot; as selected, allow for deep tones.
   4. Accent walls; as selected, allow for deep tones.
   5. Paint access doors and panels same as walls/wainscots.
   6. Wood Trim; as selected, allow for deep tones.
   7. Accent members; as selected, allow for deep tones.
   8. Doors and Frames; as selected, allow for deep tones and split finishes exterior/interior.
   9. Guardrails, handrails; as selected.
   10. Fences, gates; as selected.
   11. Rainwater leaders; as selected to match walls or gutters.
   12. Mechanical and electrical units and ductwork exposed to view; match wall/wainscot or as selected.

B. Site Work:
   1. Vehicle Barriers, Bollards and Gates: Paint OSHA "Hi-Visibility" Yellow.
   2. Domestic, Fire and Irrigation Water Service Piping and Valves: Paint above-ground portions selected color.
   3. Playground Equipment: Paint vertical posts of permanent basketball goals, volleyball net posts, tetherball poles OSHA "Hi-Visibility" Yellow.

END OF SECTION

ADDENDUM 02

SECTION 09 9123

INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Materials for backpriming woodwork.

D. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Prime surfaces to receive wall coverings.
   3. Mechanical and Electrical:
      a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
      b. In finished areas, paint shop-primed items.
      c. Paint interior surfaces of air ducts that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.
      d. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.

1.02 RELATED REQUIREMENTS

A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.

B. Pertinent sections of Division 05 specifying shop-primed and galvanized metal items.

1.03 DEFINITIONS

A. Comply with ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2014.

C. Manufacturer's recommendations and specifications, including installation instructions.

D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition, www.paintinfo.com.

E. SSPC-SP 1 - Solvent Cleaning; 2015.

F. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).

G. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

H. SSPC-SP 13 - Surface Preparation of Concrete; (Reaffirmed 2015); 2003.

1.05 SUBMITTALS

A. See Section 01 3300 - Submittals, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
   4. Manufacturer's installation instructions.
   5. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.
   6. Resin Type.
   7. Total VOC Content in grams per liter.
   8. Solids Content By Volume SCBV (not solids by weight). All products shall be minimum 35% SCBV.
   9. Composition-By-Weight. Demonstrate composition by percentage related to total weight of all components.
   10. Film Thickness Per Coat, Wet and Dry.
   11. Prime Pigment: Demonstrate prime pigment by percentage related to total volume of all components.

C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches (216 by 279 mm) in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.
   2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens definitely not required.
   3. Allow 30 days for approval process, after receipt of complete samples by Architect.
   4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as factory finished metals, wood cabinets, wood doors, and wall coverings and tile, have been approved.

D. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

E. Certification in writing from manufacturer : Products and Paint systems are approved by manufactuer

F. Manufacturer's Instructions: Indicate special surface preparation procedures.

G. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Paint and Finish Materials: 1 gallon (4 L) of each color; from the same product run, store where directed.
   3. Label each container with color in addition to the manufacturer's label.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum ten (10) years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five (5) years experience and approved by manufacturer.

1.07 MOCK-UP

A. See Section 01 4000 - Quality Requirements, for general requirements for mock-up.

B. Provide panel, 8 feet (____ m) long by 10 feet (____ m) wide, illustrating paint color, texture, and finish.

C. Provide door and frame assembly illustrating paint color, texture, and finish.

D. Locate where directed by Architect.

E. Final color selections and acceptance will be made only after review of mock-ups under lighting conditions approximating finish conditions.

F. Mock-up may remain as part of the work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

1.09 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.

B. Paints:
1. Sherwin-Williams Company: www.sherwin-williams.com/#sle.

C. Primer Sealers: Same manufacturer as top coats.

D. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.
1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.

2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
4. Supply each paint material in quantity required to complete entire project's work from a single production run.
5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content: Comply with Section 01 6116.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

E. Colors: As indicated on drawings.
1. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.
2. Extend colors to surface edges; colors may change at any edge as directed by Architect.
3. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.
4. In utility areas, finish equipment, piping, conduit, and exposed duct work in colors according to the color coding scheme indicated.

2.03 PAINT SYSTEMS - INTERIOR - CONCRETE AND MASONRY

A. Paint CI-OP-3L - Concrete/Masonry, Opaque, Latex, 3 Coat:
1. One coat of block filler.
2. Two coats of latex enamel; sheen selected by Architect.
3. If any of the products below are discontinued, submit alternate products approved by the Manufacturer in writing.

2.04 PAINT SYSTEMS - INTERIOR - METALS

A. Paint MI-OP-3A - Ferrous Metals, Primed or Unprimed, Alkyd, 3 or 4 Coat:
1. One coat of alkyd primer:
2. Two (or more) coats of Alkyd Enamel, as required to achieve specified appearance. Provide sheen as specified and number of coats as required to achieve specified appearance; Gloss (Handrails and Guardrails), Semi-gloss (All other surfaces). Sheen selected by Architect.
3. If any of the products below are discontinued, submit alternate products approved by the Manufacturer in writing.

B. Paint MI-OP-3L - Ferrous Metals, Primed or Unprimed, Latex, 3 Coat: Surfaces 8 feet or more above finish floor, trusses, metal roof deck, ductwork.
1. One coat of alkyd primer:
2. 2 coats of latex enamel; sheen as selected by Architect.
3. If any of the products below are discontinued, submit alternate products approved by the Manufacturer in writing.

C. Paint MgI-OP-3A - Galvanized Metals, Alkyd, 3 Coat:
1. Pretreatment: reduce to minimum level for finish coat adhesion.
2. One coat alkyd metal primer.
3. Two coats of alkyd enamel, sheen as selected by Architect.

4. If any of the products below are discontinued, submit alternate products approved by the Manufacturer in writing.

D. Paint MgI-OP-3L - Galvanized Metals, Latex, 3 Coats: Surfaces 8 feet or more above finished floor, metal roof deck, ductwork, etc.
   1. Pretreatment: Solvent wash to remove oily residue, ensure finish coat adhesion.
   2. One Coat Galvanized Primer.
   3. Two Coats Latex Enamel; sheen as selected by Architect
   4. If any of the products below are discontinued, submit alternate products approved by the Manufacturer in writing.

2.05 PAINT SYSTEMS - INTERIOR - WOOD

A. Paint WI-OP-3L - Wood, Opaque, Latex, Low-VOC 3 Coat: Cedar, redwood, architectural glue-laminated beams, typical interior wood trim with opaque finish. Provide number of coats necessary for stain resistance and uniform color.
   1. One coat of latex primer sealer.
   2. Two coats of latex enamel; . Sheen selected by Architect.

B. Paint WI-OP-3L - Wood, Opaque, Latex, 3 Coat: Typical exposed interior beams above 8'-0".
   1. One coat of latex primer sealer.
   2. Two coats of latex enamel. Sheen selected by Architect.
   3. If any of the products below are discontinued, submit alternate products approved by the Manufacturer in writing.

C. Wood to Receive Transparent Finishes: Finish as specified in related Section 09 9300.

D. Paint SWI-P-3L - Synthetic Wood (Hardboard, "Masonite"), Floor Paint, 3 coat.
   1. Prime Coat.
   2. Two Coats: Porch and Deck Paint, epoxy-modified acrylic. Sheen selected by Architect.
   3. If any of the products below are discontinued, submit alternate products approved by the Manufacturer in writing.

2.06 PAINT SYSTEMS - INTERIOR - GYPSUM AND PLASTER

A. Paint GI-OP-3E - Gypsum Board, Plaster, Epoxy, 3 Coat:
   1. One coat of synthetic resin primer sealer, quick dry, pigmented.
   2. Two coats of two-component acrylic epoxy enamel; Semi-gloss sheen, or as selected by Architect.
   3. If any of the products below are discontinued, submit alternate products approved by the Manufacturer in writing.

B. Paint GI-OP-3A-L Gypsum Board/Plaster, Acrylic, Low-VOC, 3 Coat:
   1. One coat of low odor/low-VOC vinyl acrylic primer sealer: pigmented.
   2. Two coats of low odor / low-VOC acrylic, sheen as selected by Architect.
   3. Note: Surfaces that prepared to a Level 5 Finish, using the Level 5 Primer/Prep Coat as specified in Section 09 2116 “Gypsum Board Assemblies", may omit primer coat specified above when topcoat manufacturer confirms in writing that this primer is compatible with the finish coats as specified.
   4. If any of the products below are discontinued, submit alternate products approved by the Manufacturer in writing.

C. Paint GI-P-1A - Gypsum Board/Plaster, Alkyd Primer, 1 Coat: Preparation for application of Wall Covering.
   1. One coat of primer sealer.

2. If any of the products below are discontinued, submit alternate products approved by the Manufacturer in writing.

2.07 PRIMERS

A. Primers: As required or recommended by manufacturer of top coats; where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.
   1. If products specified are discontinued, submit alternate product approved by specified Manufacturer in writing.

2.08 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Sanding materials: 120-180 grit, for architectural woodwork, finish carpentry, wood doors, or other surfaces requiring touch-up.

C. Patching Material: Latex filler.

D. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the manufacturer-recommended maximums.

3.02 PROTECTION OF ADJACENT WORK

A. Protect surrounding elements from damage from painting procedures. Provide temporary facilities and barricades required. Additional requirements specified in Division 01.

B. Carefully remove and store removable items located in areas to be painted, including fixtures, fittings, finish hardware, and accessories; reinstall upon completion.

C. Separate areas to be protected from painting areas using means adequate to prevent damage.

D. Cover existing interior planters and landscaping with tarpaulins or similar covers.

E. Mask immediately adjacent surfaces with material that will withstand cleaning and restoration procedures.

3.03 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing paints or finishes that exhibit surface defects.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

G. Concrete:
   1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
   2. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.

H. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

I. Plaster: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

J. Tackable Substrates for Wall Coverings: Prepare as for gypsum board.

K. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
   2. Prepare surface according to SSPC-SP 2.

L. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
   3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.

M. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

N. Glue-Laminated Beams: Prior to finishing, wash surfaces with solvent, remove grease and dirt.

O. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.04 PREPARATION - EXISTING SURFACES

A. General: As specified above and as follows below.

B. Remove or repair existing coatings that exhibit surface defects. Feather-edge patches to make finished edges inconspicuous.

C. Existing Cement Plaster Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Surfaces to be clean, dry, free of dirt, dust, grease, oil, mildew, efflorescence and other contaminants affecting paint adhesion or performance.

Completely remove all loose, peeling or checked paints by power-washing, scraping or other methods. Spot-prime and point-up cracks, voids or other surface fissures by methods recommended by paint manufacturer. Spot-prime again following patching. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

D. Existing Gypsum Board Surfaces to be Painted: Remove dirt, loose texturing, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Surfaces to be clean, dry, free of dirt, dust, grease, oil, mildew, efflorescence and other contaminants affecting paint adhesion or performance. Completely remove all loose, peeling or checked paints by sanding, scraping or other methods. Fill all holes and defects with suitable patching or spackling material compatible with the substrate material, allow to completely dry and sand to approximate existing adjacent textures. Spot prime patched areas.

E. Existing Metal Surfaces With Existing Coatings to be Recoated; sheet metal flashings and trim, hollow metal doors, frames, columns and similar items. Sand and scrape to remove existing finishes, loose primer and rust. Clean surfaces with solvent. Prime bare metal surfaces. Feather edges to make touch-up patches inconspicuous.

F. Existing Wood to Receive Opaque Finish: Completely remove all loose, peeling chalking, flaking or peeling paint by pressure-washing, scraping, wire brushing, sanding or other appropriate methods which will not damage existing substrates or adjacent finishes. Dull glossy surfaces to provide roughened surface for proper adhesion. Remove all loose sealant and glazing compounds. Feather back rough paint edges and weathered wood material by sanding. Spot prime all areas before and after application of new sealants, patching or glazing materials. Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior sealant compound after prime coat has been applied. Remove mildew growth as recommended by paint manufacturer.

G. Existing Metal Doors to be Painted Sand, patch, clean with solvent. Prime metal door top and bottom edge surfaces. Finish otherwise as for Existing Metal SurfacesWith Existing Coatings to be Recoated.

3.05 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

D. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

E. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

F. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.

G. Sand wood and metal surfaces lightly between coats to achieve required finish.

H. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.06 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection.

3.07 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.08 PROTECTION

3.09 SCHEDULE - SURFACES TO BE FINISHED

A. Do Not Paint or Finish the Following Items:
1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
2. Items indicated to receive other finishes.
3. Items indicated to remain unfinished.
4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
5. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, zinc, and lead items.
6. Marble, granite, slate, and other natural stones.
7. Ceramic and other types of tiles.
8. Pre-finished wall, ceiling and floor materials or coverings, unless specifically scheduled for field painting.
9. Floors, unless specifically indicated.
10. Brick, glass unit masonry, architectural concrete, cast stone, integrally colored plaster and stucco unless specifically indicated.
11. Glass.
12. Concealed pipes, ducts, and conduits.

B. General: Paint the surfaces described below under Schedule - Paint Systems. All surfaces exposed to weather, or visible to the eye, exterior and interior, unless specifically excluded by the Article titled "Do Not Paint or Finish the Following Items". If a coating system is not specified for a particular surface or substrate, provide a three-coat finish system recommended by the paint or coating manufacturer for that surface or substrate. Include all preparation necessary as appropriate for a similar substrate listed in the Article titled "PREPARATION", or preparation for that substrate as recommended by the paint or coating manufacturer.

C. Mechanical and Electrical: Use paint systems defined for the materials to be finished.
1. Paint all conduit, insulated and exposed pipes, boxes, hangers, brackets, collars and supports, mechanical equipment, electrical equipment, and exposed ducts occurring in finished areas to match background surfaces, unless otherwise indicated.
2. Paint all equipment, including that which is factory-finished, exposed to weather or to view on the roof and outdoors.
3. Paint shop-primed items occurring in finished areas.
4. Paint interior surfaces of air ducts that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.
5. Paint dampers exposed behind louvers, grilles, to match face panels.

D. Paint behind moveable equipment and furniture.

E. Finish top, bottom, and side edges of interior doors the same as exposed faces.

F. Paint access doors, fire hose and extinguisher cabinets, panelboards, conduits and exposed plumbing piping.

G. Paint all exposed and semi-exposed galvanized metal, projections through and on roofs.

H. Paint reveal moldings, expansion joints, and handrails.

I. Paint tube column and miscellaneous connections.

J. Provide split finishes for painted doors and interior windows where different connected room colors are selected.

K. Paint continuous surfaces with the same paint system. Do not change systems at elevation breaks.

L. Touch-up factory paint finishes where damaged.

M. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

3.10 SCHEDULE - PAINT SYSTEMS

A. Gypsum Board: Finish all surfaces exposed to view, GI-OP-3A..
   1. Interior Ceilings and Bulkheads: Flat sheen.
   2. Interior Walls: Semi-gloss Sheen at Toilet Rooms, Custodians, Storage Room, Food Service.
   3. Interior Walls: Eggshell at Classrooms, Corridors, Administrative Offices and Work Rooms.

B. Wood: Finish all surfaces exposed to view.
   1. Interior Opaque Finish: WI-OP-3L
      a. Trim and frames: Semi-gloss sheen.
      b. Beams: Low Sheen.

C. New Wood Doors: Factory-finished.

D. Steel Doors and Frames: Finish all surfaces exposed to view and to weather, including door tops and bottoms. Select prime coats compatible with finish color selections. MI-OP-3A.
   1. Semi-gloss sheen.

E. Metal Fabrications, Galvanized Steel and Shop-Primed Metal Items: Finish all surfaces exposed to view and concealed, before installation, including exposed portions of metal roof or floor deck assemblies.. Select prime coats compatible with finish color selections. MI-OP-3A for surfaces under 8 feet above floor. MI-OP-3L for surfaces over 8 feet above floor.
   1. Interior - Handrails and exposed spiral seamed ductwork: Gloss sheen.
   2. Interior - All Other Surfaces: Semi-gloss sheen.

F. Miscellaneous metals, conduits, non factory finished access panels: As specified for either unprimed or shop primed metals, modified as required to make sheen match adjacent surfaces.
   1. Finish the following items:
      a. Exposed portions of metal roof and floor deck assemblies.
      b. Exposed surfaces of lintels.
      c. Exposed surfaces of steel stairs, ladders, fences, gates and railings.
      d. Mechanical equipment.
      e. Electrical equipment.

G. Wall and Substrate Surfaces Under Wall Covering: GI-P-1A.

3.11 SCHEDULE - COLORS

A. Interiors, allow individual schedule for each Building:
   1. Walls; Field color as selected.
   2. Ceilings/soffits; as selected, allow for deep tones.
   3. Wainscot; as selected, allow for deep tones.
   4. Accent walls; as selected, allow for deep tones.
   5. Paint access doors and panels same as walls and wainscots.
   6. Wood Trim; as selected, allow for deep tones.
   7. Accent members; as selected, allow for deep tones.
   8. Doors and Frames; as selected, allow for deep tones and split finishes exterior/interior.
   9. Doors and Frames for Utility or staff access only, as selected; match walls/wainscot.
   10. Guardrails, handrails; as selected.
   11. Exposed trusses or structural members; as selected, allow for deep tones.
   12. Exposed ductwork; as selected, allow for deep tones.
   13. Mechanical or other equipment exposed to view; as selected or match wall/wainscot as directed.

END OF SECTION

QUATTROCCHI KWOK ARCHITECTS
Main Office:
636 Fifth Street, Santa Rosa, CA 95404
Pleasanton Office:
600 Main Street, Suite E,
Pleasanton, CA 94566
(707) 576-0829

cbg CIVIL ENGINEERS
SAN RAMON • (925) 866-0322
SACRAMENTO • (916) 375-1877
WWW.CBANDG.COM
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REGISTERED PROFESSIONAL ENGINEER
JASON D. VOGT
59299
CIVIL
STATE OF CALIFORNIA

LIBERTY HIGH SCHOOL

ADMINISTRATION & STUDENT COMMONS

850 2ND STREET
BRENTWOOD, CA 94513

LIBERTY UNION HIGH SCHOOL DISTRICT

REVISIONS

1	12/8/20	BID ADDENDUM #1
2	12/18/20	BID ADDENDUM #2

DSA APP NO. 01-119033

ARCH PROJECT NO:	1783.00
DRAWN BY:	DRAFTSPERSON
DRAWING SCALE:	SCALE
PTN: 61721-75	FILE NO: 7-H4

CD

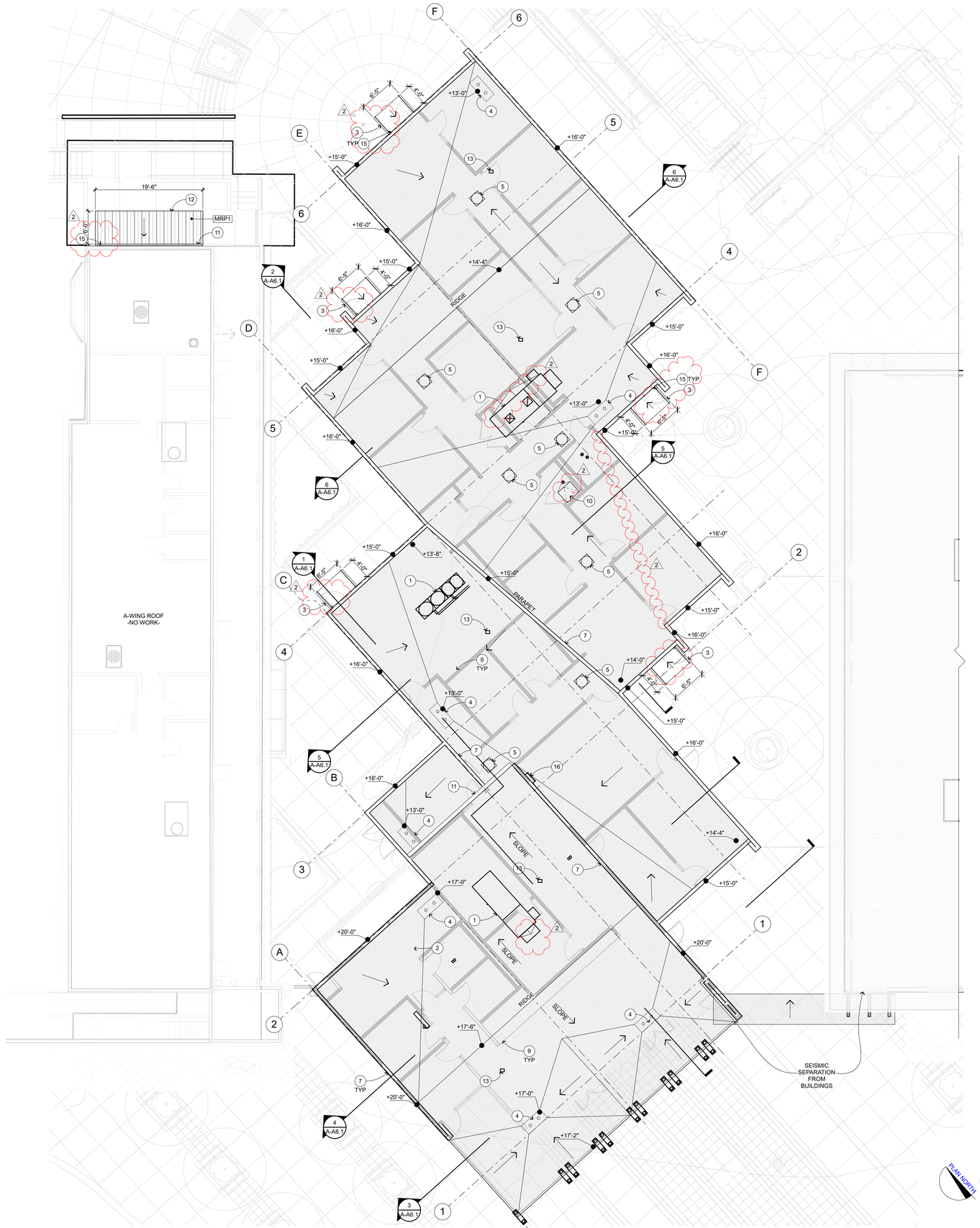
DECEMBER 2, 2020

SHEET TITLE

ADDENDUM 02
EXISTING CONDITIONS/ DEMOLITION

SHEET NUMBER

C-1.0



ROOF PLAN KEYNOTES

NOT ALL KEYNOTES MAY APPLY TO THIS SHEET

1. MECHANICAL ITEM (S.M.D.), FOR CURB SEE 3/A-9.4
2. BUR CRICKET O/ SLOPED INSULATION
3. RAIN CANOPY BELOW, SEE 1/A-9.6
4. ROOF DRAIN, S.P.D. AND SEE 5/A-9.4
5. TUBULAR SKYLIGHT (BLDG. A), SEE 5/A-9.5
6. MECHANICAL SCREEN, SEE 26/A-9.4 28/A-9.4
7. PARAPET, SEE DETAIL 7/A-9.4
8. MAIN ENTRY GATEWAY 28/A-1.2
9. WALLS SHOWN IN GRAY BELOW
10. ROOF ACCESS HATCH, SEE DETAIL 12/A-9.4
11. GUTTER, SEE DETAIL 2/A-9.5 18/A-9.5
12. ENTRY CANOPY, S.S.D. AND 22/A-9.4 2/A-9.4 1/A-9.6
13. ROOF ANCHORAGE FOR SAFETY EQUIP, SEE
14. TRASH ENCLOSURE ROOF (BLDG. B), S.S.D.
15. RAIN WATER LEADER BELOW, SEE RCP, S.P.D.
16. ROOF LADDER, ATTACHMENT SEE 23/A-9.4

ROOF PLAN GENERAL NOTES

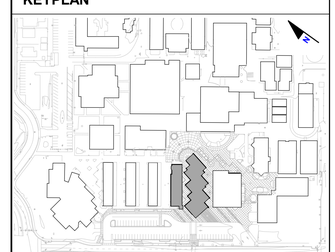
1. LOCATE ALL METAL ROOF PENETRATIONS IN THE CENTER OF THE PAN. DO NOT INTERRUPT STANDING SEAMS.
2. MINIMUM THICKNESS OF TAPERED INSULATION TO BE 1" AT LOW POINT OF ROOF. SLOPE MIN 1/4":12" TO DRAIN. ALL RIGID INSULATION OVERLAID WITH 1/2" COVER BOARD. CRICKETS TO SLOPE 1/2" IN12" MIN. 2/2
3. ALL ROOFING TO BE CLASS A.
4. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ROOF PENETRATION LOCATIONS NOT OTHERWISE INDICATED. TYPICAL.
5. MECHANICAL UNIT MOUNTING CURBS PER 3/A-9.4 S.M.D.
6. MECHANICAL OR PLUMBING VENT FLASHING, 4/A-9.4 BOOTS, SEE B.U.R.

ROOF PLAN LEGEND

SEE SHEET A-8.4 FOR FINISH INFORMATION

- +0'-0" — DIMENSION INDICATING TOP OF ROOF LEVEL. SEE DETAILS FOR TOP OF ROOF LOCATION WITHIN ASSEMBLY
- BUILT-UP ROOFING — 1/A-9.4 2/A-9.4 — ROOF SLOPE CREATED WITH TAPERED INSULATION
- METAL DECK ROOFING — 18/A-9.5

KEYPLAN



QUATTROCCHI KWOK ARCHITECTS
Main Office:
636 Fifth Street, Santa Rosa, CA 95404
Pleasanton Office:
600 Main Street, Suite E,
Pleasanton, CA 94566
(707) 576-0829

LICENSED ARCHITECT
JIM THEISS
LICENSE # C22643
EXP JUNE 30, 2021
STATE OF CALIFORNIA

SIGNED: DECEMBER 2, 2020

LIBERTY HIGH SCHOOL

ADMINISTRATION & STUDENT COMMONS

850 2ND STREET
BRENTWOOD, CA 94513

LIBERTY UNION HIGH SCHOOL DISTRICT

2	12/18/20	ADD-02

DSA APP NO. 01-119033

ARCH PROJECT NO:	1783.00
DRAWN BY:	*HM*
DRAWING SCALE:	1/8" = 1'-0"
PTN: 61721-75	FILE NO: 7-H4

CD

DECEMBER 2, 2020

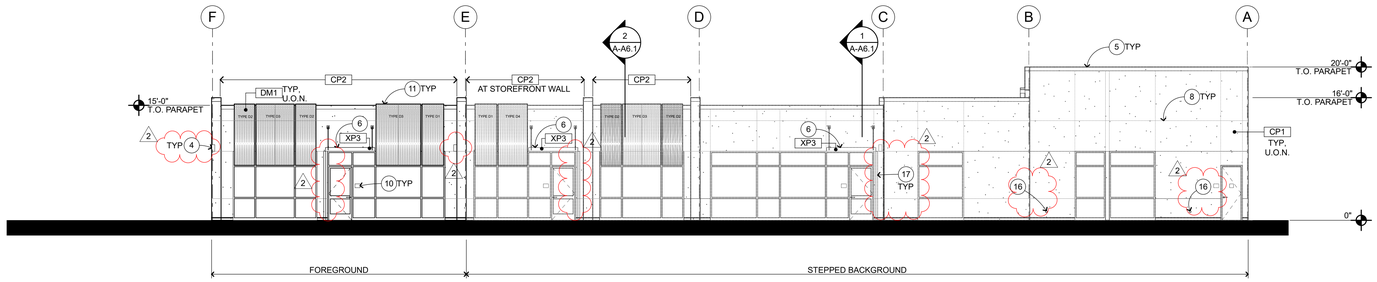
SHEET TITLE

ADMINISTRATION BUILDING ROOF PLAN

SHEET NUMBER

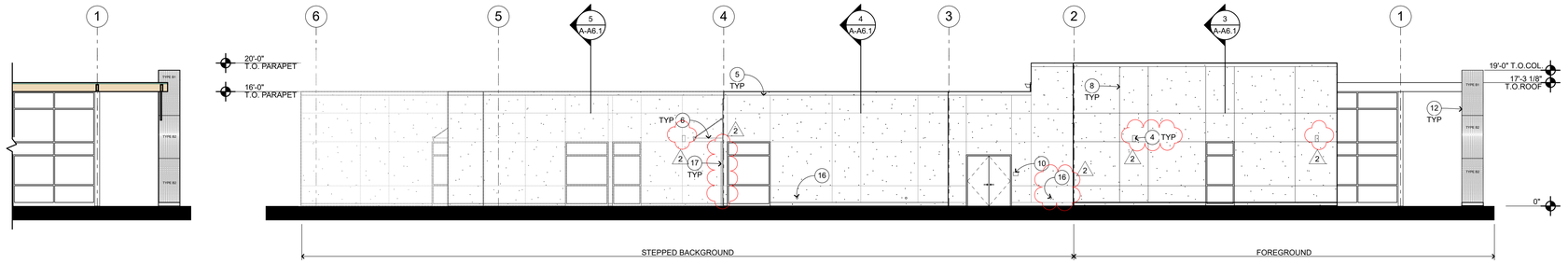
ADDENDUM 02

A-A4.1



NORTH ELEVATION 1

1/8" = 1'-0"

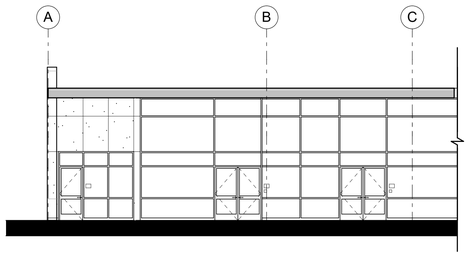


WEST ELEVATION 2

1/8" = 1'-0"

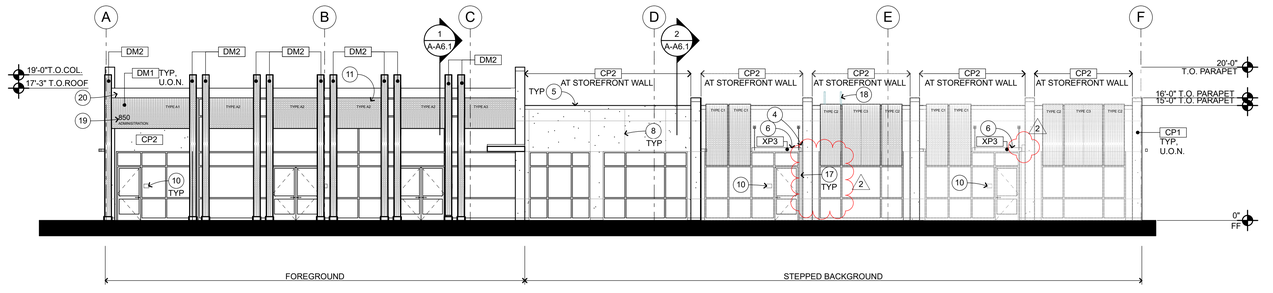
PARTIAL WEST ELEVATION 5

1/8" = 1'-0"



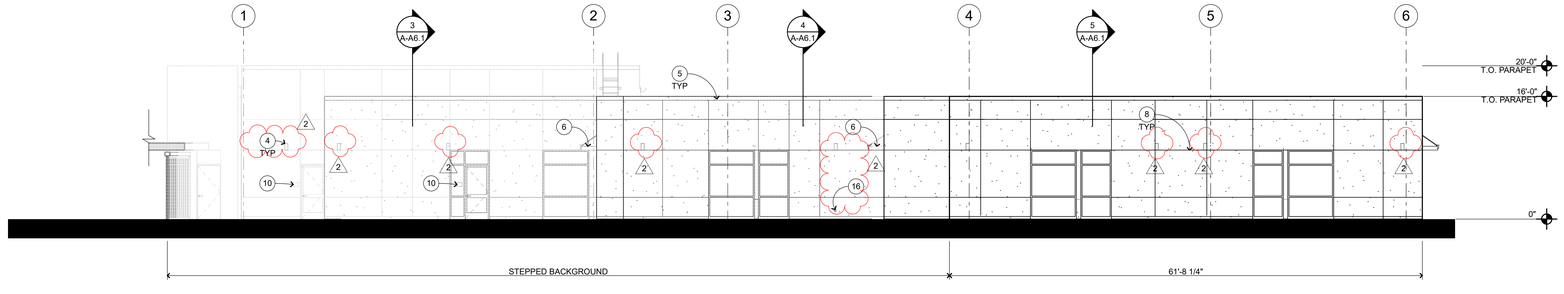
PARTIAL SOUTH ELEVATION 6

1/8" = 1'-0"



SOUTH ELEVATION 3

1/8" = 1'-0"



EAST ELEVATION 4

1/8" = 1'-0"

EXTERIOR ELEVATION KEYNOTES

NOT ALL KEYNOTES MAY APPLY TO THIS SHEET

1. STRUCTURAL ITEM, S.S.D.
2. MECHANICAL ITEM, S.M.D.
3. PLUMBING ITEM / FIXTURE, S.P.D.
4. LIGHT FIXTURE, S.E.D.
5. FLASHING AT PARAPET, SEE 7/A-9.4
6. RAIN CANOPY, SEE ROOF PLAN
7. ENTRY CANOPY, SEE ROOF PLAN
8. CEMENT PLASTER CONTROL JOINT 4/A-9.1
9. SCHOOL SIGN 20/A-9.5
10. SIGNAGE, SEE AG-2.1 ARCH GRAPHICS PLAN
11. PERFORATED METAL PANEL 17/A-9.6
12. NOT USED
13. SERVICE WINDOW, SEE WINDOW SCHEDULE
14. METAL PANEL PAINTED WITH SCHOOL LOGO
15. MECHANICAL SCREEN, SEE ROOF PLAN
16. DOWNSPOUT NOZZLE, S.P.D. 23/A-9.5 2
17. RAIN WATER LEADER, S.P.D.
18. ROOF LADDER, SEE ROOF PLAN
19. BUILDING ID SIGN, SEE 33/AG-2.1
20. METAL FASCIA
21. WALL INFILL TO MATCH EXTERIOR FINISH, S.S.D. 21/S-1.1

EXTERIOR ELEVATION GENERAL NOTES

1. NOTES AND SYMBOLS ARE TO APPLY AT ALL AREAS OF SIMILAR GRAPHIC REPRESENTATION. SUCH INDICATIONS MAY BE LIMITED TO PROMOTE CLARITY OR AVOID REDUNDANCY. NO LIMITATION OF APPLICATION SHALL BE CONSTRUED WITHOUT SPECIFIC NOTATION.
2. ALL PENETRATIONS THROUGH EXTERIOR ROOF AND WALLS, AND FLOORS SHALL BE FLASHED AND SEALED WEATHER TIGHT. ALL PENETRATIONS THROUGH THE BUILDING INSULATION ENVELOPE SHALL BE PACKED WITH INSULATION.
3. PROVIDE OPENING FLASHINGS AT ALL WINDOWS, DOORS, LOUVERS AND SIMILAR WALL OPENINGS PER 17/A-9.1
4. PROVIDE CEMENT PLASTER CONTROL JOINTS AS INDICATED AND AS FOLLOWS: PROVIDE CONTROL JOINTS SO THAT THE MAXIMUM DISTANCE BETWEEN JOINTS, VERTICALLY OR HORIZONTALLY DOES NOT EXCEED 12'-0"; ALL CEMENT PLASTER "PANELS" SHALL BE DEFINED BY FOUR STRAIGHT AND UNINTERRUPTED EDGES; PROVIDE JOINTS AS REQUIRED TO AVOID INSIDE CORNERS IN ANY INDIVIDUAL PANEL.
5. REFER TO MECHANICAL DRAWINGS FOR REGISTERS AND VENTS NOT OTHERWISE SHOWN.
6. REFER TO ELECTRICAL DRAWINGS FOR HORNS, SPEAKERS, PULL STATIONS AND OTHER FEATURES NOT OTHERWISE SHOWN.

EXTERIOR ELEVATION LEGEND

(E) CONCRETE (TILT-UP)

CP1 / CP2 CEMENT PLASTER 4/A-9.1

XP1 FINISH TAG, SEE A-8.4 FINISH SCHEDULE

KEYPLAN

QUATTROCCHI KWOK ARCHITECTS
Main Office:
636 Fifth Street, Santa Rosa, CA 95404
Pleasanton Office:
600 Main Street, Suite E,
Pleasanton, CA 94566
(707) 576-0829

LICENSED ARCHITECT
JIM THEISS
LICENSE # C22643
EXP JUNE 30, 2021
STATE OF CALIFORNIA

SIGNED: DECEMBER 28, 2020

LIBERTY HIGH SCHOOL

ADMINISTRATION & STUDENT COMMONS

850 2ND STREET
BRENTWOOD, CA 94513

LIBERTY UNION HIGH SCHOOL DISTRICT

2	12/18/20	ADD-02

DSA APP NO. 01-119033

ARCH PROJECT NO: 1783.00
DRAWN BY: HM
DRAWING SCALE: 1/8" = 1'-0"
PTN: 61721-75 FILE NO: 7-H4

CD

DECEMBER 28, 2020

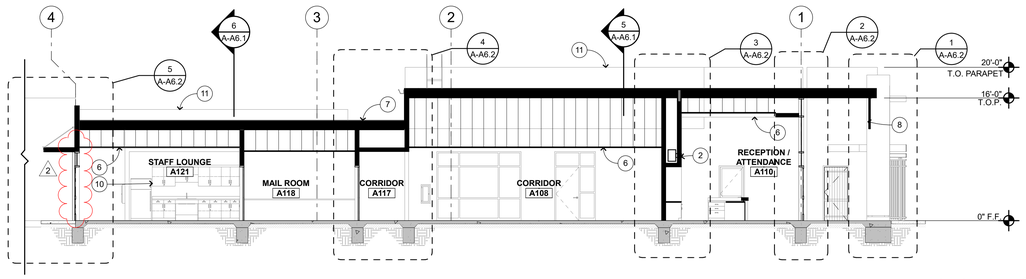
SHEET TITLE

ADMINISTRATION BUILDING EXTERIOR ELEVATIONS

SHEET NUMBER

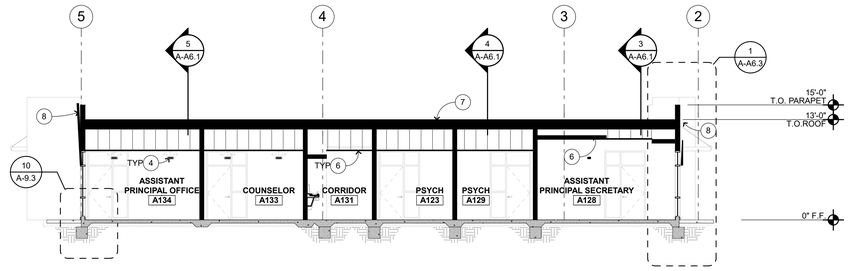
ADDENDUM 02

A-A5.1



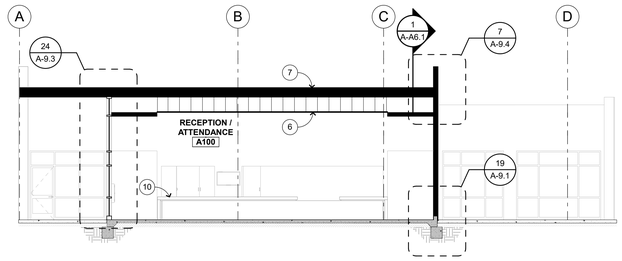
ADMIN SECTION 1

1/8" = 1'-0"



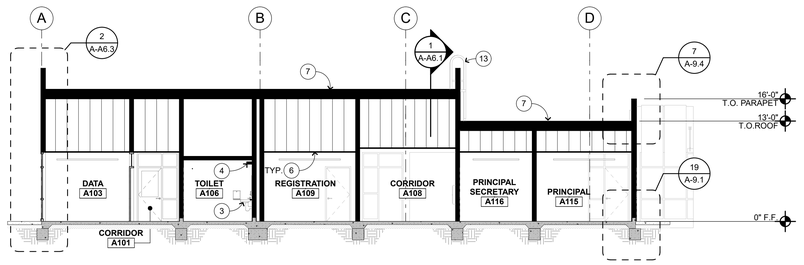
ADMIN SECTION 2

1/8" = 1'-0"



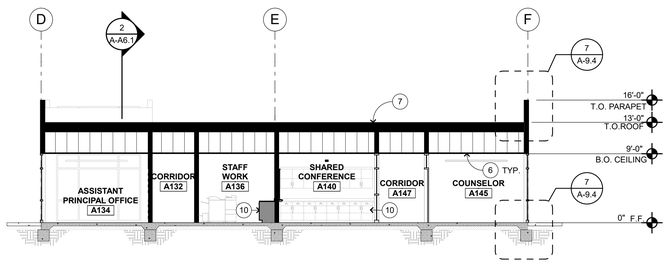
ADMIN SECTION 3

1/8" = 1'-0"



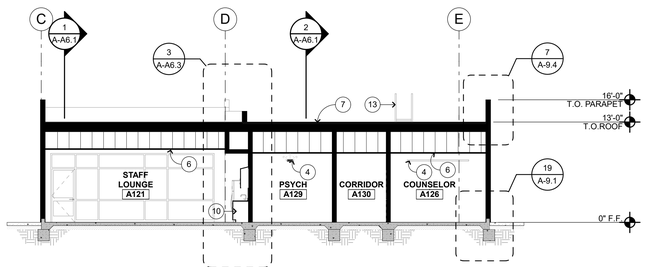
ADMIN SECTION 4

1/8" = 1'-0"



ADMIN SECTION 6

1/8" = 1'-0"



ADMIN SECTION 5

1/8" = 1'-0"

SECTION KEYNOTES

NOT ALL KEYNOTES MAY APPLY TO THIS SHEET

1. STRUCTURAL ITEM, S.S.D.
2. MECHANICAL ITEM, S.M.D.
3. PLUMBING ITEM / FIXTURE, S.P.D.
4. LIGHT FIXTURE, S.E.D.
5. FIRE SPRINKLER HD, S.P.D.
6. CEILING PER PLAN
7. ROOFING, SEE ROOF PLAN
8. PERFORATED METAL PANEL, SEE EXTERIOR ELEVATIONS
9. MECHANICAL SCREEN, SEE ROOF PLAN
10. CASEWORK, SEE INTERIOR ELEVATIONS
11. PARAPET, SEE ROOF PLAN
12. GUTTER, SEE ROOF PLAN
13. ACCESS LADDER
14. FURRED METAL STUD WALL
15. ENTRY GATE AND CANOPY
16. RAIN CANOPY, SEE ROOF PLAN
17. RAIN WATER LEADER, SEE RCP

SECTION GENERAL NOTES

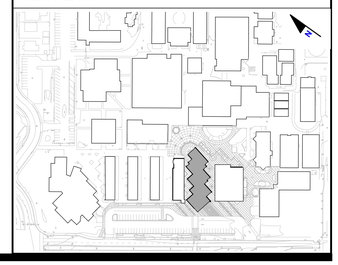
1. NOTES AND SYMBOLS ARE TO APPLY AT ALL AREAS OF SIMILAR GRAPHIC REPRESENTATION. SUCH INDICATIONS MAY BE LIMITED TO PROMOTE CLARITY OR AVOID REDUNDANCY. NO LIMITATION OF APPLICATION SHALL BE CONSTRUED WITHOUT SPECIFIC NOTATION.
2. ALL PENETRATIONS THROUGH EXTERIOR ROOF AND WALLS, AND FLOORS SHALL BE FLASHED AND SEALED WEATHER TIGHT. ALL PENETRATIONS THROUGH THE BUILDING INSULATION ENVELOPE SHALL BE PACKED WITH INSULATION.
3. PROVIDE OPENING FLASHINGS AT ALL WINDOWS, DOORS, LOUVERS AND SIMILAR WALL OPENINGS PER DETAIL 17 / A-9.1
4. PROVIDE FIRESTOPPING AT CONCEALED SPACES, INCLUDING BETWEEN STAIR STRINGERS & BETWEEN STUDS WITH STAIR RUN, FURRED SPACES, CEILING/FLOOR LEVELS AND 10'-0" INTERVALS ALONG LENGTHS OF WALL, SOFFITS, DROP CEILINGS, AND COVE CEILINGS PER CBC 718.
5. REFER TO INTERIOR ELEVATIONS FOR WALL FINISHES AND INFORMATION NOT SHOWN, TYPICAL.
6. REFER TO FLOOR PLAN FOR FLOOR FINISHES, TYPICAL.
7. REFER TO REFLECTED CEILING PLAN FOR CEILING FINISHES, TYPICAL.
8. REFER TO MECHANICAL DRAWINGS FOR REGISTERS AND VENTS NOT OTHERWISE SHOWN.
9. REFER TO ELECTRICAL DRAWINGS FOR HORNS, SPEAKERS, PULL STATIONS AND OTHER FEATURES NOT OTHERWISE SHOWN.

SECTION LEGEND

EXISTING WALL (A-WING AND BUILDING B)

WOOD FRAMING - NON RATED

KEYPLAN



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2	12/18/20	ADD-02

DSA APP NO. 01-119033

ARCH PROJECT NO: 1783.00
DRAWN BY: HM / PAG
DRAWING SCALE: 1/8" = 1'-0"
PTN: 61721-75 FILE NO: 7-H4

CD

DECEMBER 2, 2020

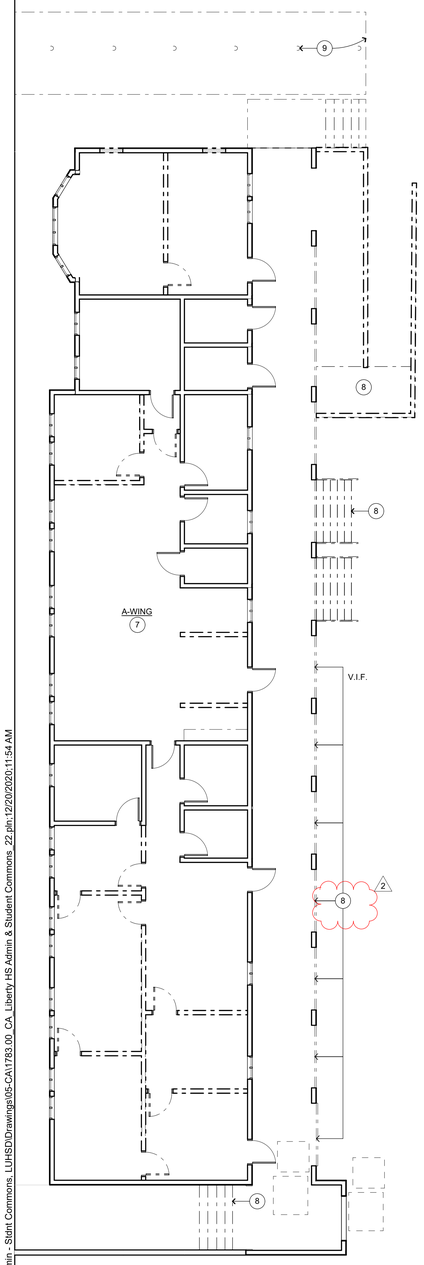
SHEET TITLE

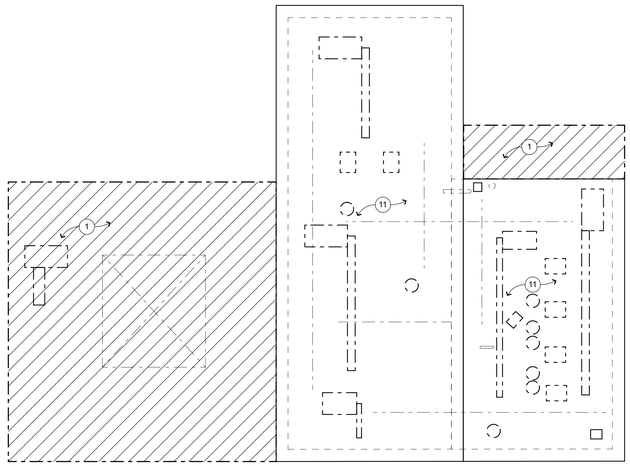
ADMINISTRATION BUILDING SECTIONS

SHEET NUMBER

ADDENDUM 02

A-A6.1

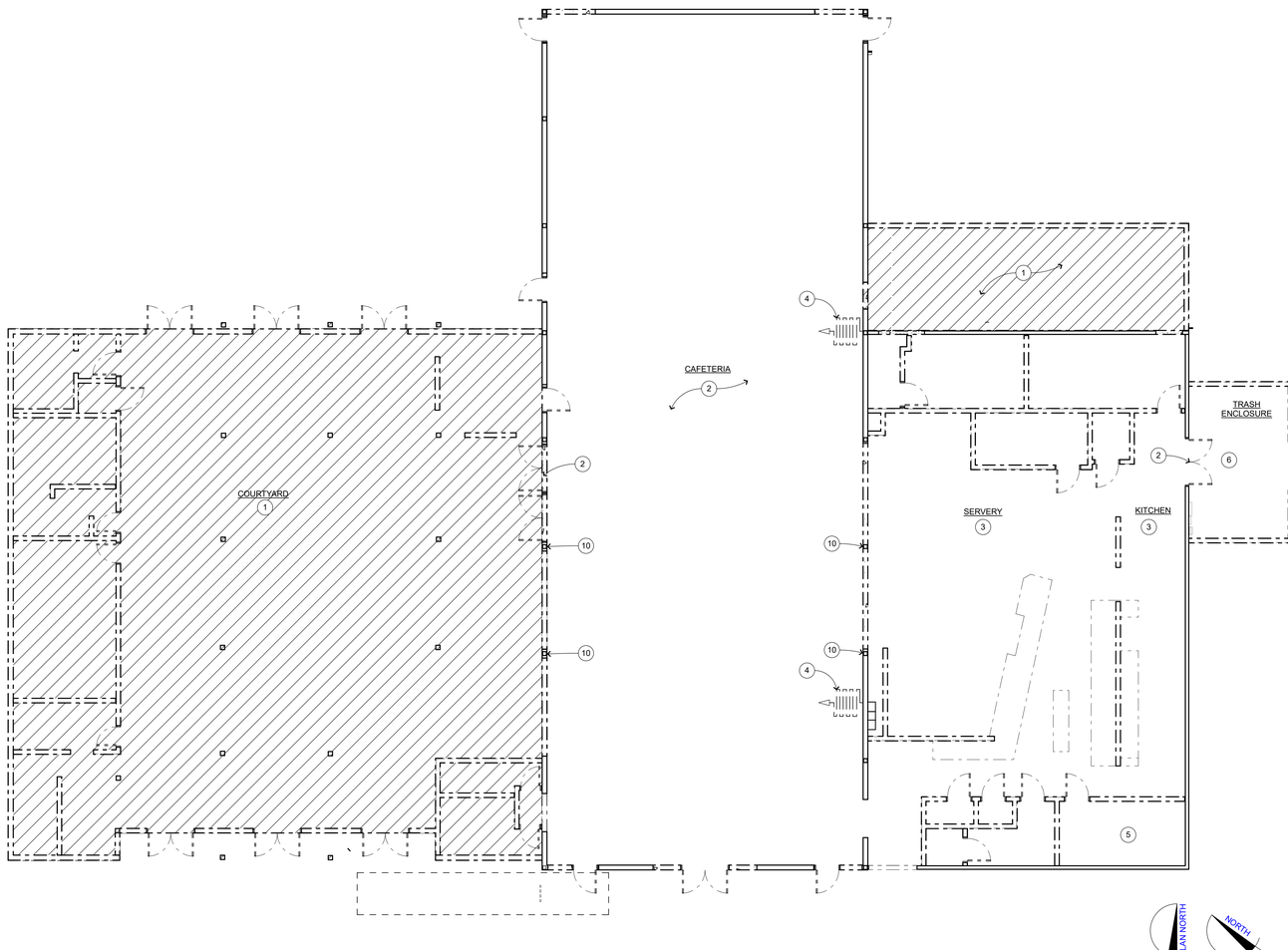




CAFETERIA ROOF DEMO

1/16" = 1'-0"

2



CAFETERIA AND A-WING BUILDINGS DEMOLITION FLOOR PLAN

1/8" = 1'-0"

1

DEMOLITION PLAN KEYNOTES

NOT ALL KEYNOTES MAY APPLY TO THIS SHEET

1. CAFETERIA BUILDING: EXISTING STRUCTURE TO BE DEMOLISHED (COMPLETE) INCLUDING FOUNDATION, CONCRETE FLOORS, COLUMNS, WALLS, ROOF, MECH & ELEC SYSTEMS
2. EXISTING FLOOR FINISH, CEILING TILE, DOORS, WINDOWS, CLERESTORY WINDOWS, ELECTRICAL AND MECHANICAL SYSTEMS TO BE DEMOLISHED. PROTECT EXISTING OPENINGS FOR NEW WORK
3. EXISTING FLOOR FINISH, GYP BOARD CEILING, KITCHEN EQUIPMENT, RAILINGS, CABINETS TO BE REMOVED. PROTECT AND RETURN EQUIPMENT TO DISTRICT.
4. FOLDING PARTITIONS TO BE REMOVED
5. EXISTING PRE-FAB FREEZER TO BE DEMOLISHED
6. TRASH ENCLOSURE CMU WALLS, DOORS AND PAVING TO BE DEMOLISHED
7. A-WING BUILDING: SELECTIVE DEMOLITION OF PARTITION WALLS, DOORS, CARPET, COMPLETE RCP, REMOVE (2) WINDOWS
8. CONCRETE RAMP, STAIRS, RAILINGS AND WOOD RAILINGS BETWEEN COLS. TO BE DEMOLISHED
9. COVERED WALK TO BE DEMOLISHED, PATCH CONC. WALK S REQUIRED TO MATCH (E).
10. EXISTING COLUMN TO REMAIN, PRESERVE AND PROTECT
11. EXISTING ROOFING ASSEMBLY TO BE DEMOLISHED DOWN TO PLYWOOD SHEATHING, ROOF STRUCTURE TO REMAIN. EXISTING MECHANICAL & ELECTRICAL EQUIPMENT, CONDUIT AND CURBS TO BE DEMOLISHED.

DEMOLITION PLAN GENERAL NOTES

GENERAL:

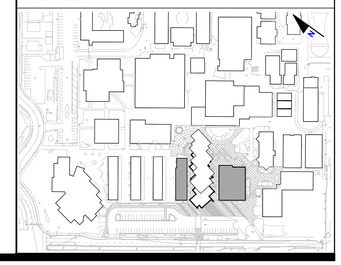
1. COORDINATE ALL WORK WITH THAT SHOWN IN STRUCTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS.
2. SHORING IS THE RESPONSIBILITY OF THE CONTRACTOR.
3. REFER TO CIVIL AND LANDSCAPE DRAWINGS FOR SITE DEMOLITION
4. DEMOLITION SHALL BE SUFFICIENT TO COMPLETE THE (N) WORK SHOWN IN THE DRAWINGS. NEATLY CUT AND REMOVE FINISHES AS REQUIRED TO A NATURAL POINT OF DIVISION TO ENABLE INSTALLATION OF BLOCKING, BACKING, FRAMING, SHEATHING, UTILITIES OR OTHER CONCEALED WORK, WHETHER SPECIFICALLY SHOWN OR INFERRED FOR (N) WORK. REFER TO OTHER DRAWINGS FOR CONCEALED WORK.
5. NO DEMOLITION SHALL BEGIN UNTIL PLANS INCLUDING DEMOLITION WORK HAVE BEEN APPROVED BY DSA.

DEMOLITION LEGEND

EXISTING & DEMOLITION WORK:

- (E) ITEM TO BE DEMOLISHED
- (E) WALL AND ASSOCIATED WORK TO BE DEMOLISHED, PATCH & REPAIR FLOOR AS REQ
- (E) ITEM TO REMAIN
- (E) WALL TO REMAIN, PROTECT AND PRESERVE
- (E) DOOR/FRAME TO BE DEMOLISHED, SEE NEW WORK FLOOR PLAN & DOOR SCHEDULE
- AREA OF COMPLETE DEMOLITION, SEE KEYNOTE 1

KEYPLAN



QUATTROCCHI KWOK ARCHITECTS
Main Office:
636 Fifth Street, Santa Rosa, CA 95404
Pleasanton Office:
600 Main Street, Suite E,
Pleasanton, CA 94566
(707) 576-0829

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JIM THEISS
LICENSE # C22643
EXP JUNE 30, 2021
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SIGNED: DECEMBER 28, 2020

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ADMINISTRATION & STUDENT COMMONS

850 2ND STREET
BRENTWOOD, CA 94513

LIBERTY UNION HIGH SCHOOL DISTRICT

2	12/18/20	ADD-02

DSA APP NO. 01-119033

ARCH PROJECT NO:	1783.00
DRAWN BY:	CH,GRD
DRAWING SCALE:	1/8" = 1'-0"
PTN: 61721-75	FILE NO: 7-H4

CD

DECEMBER 28, 2020

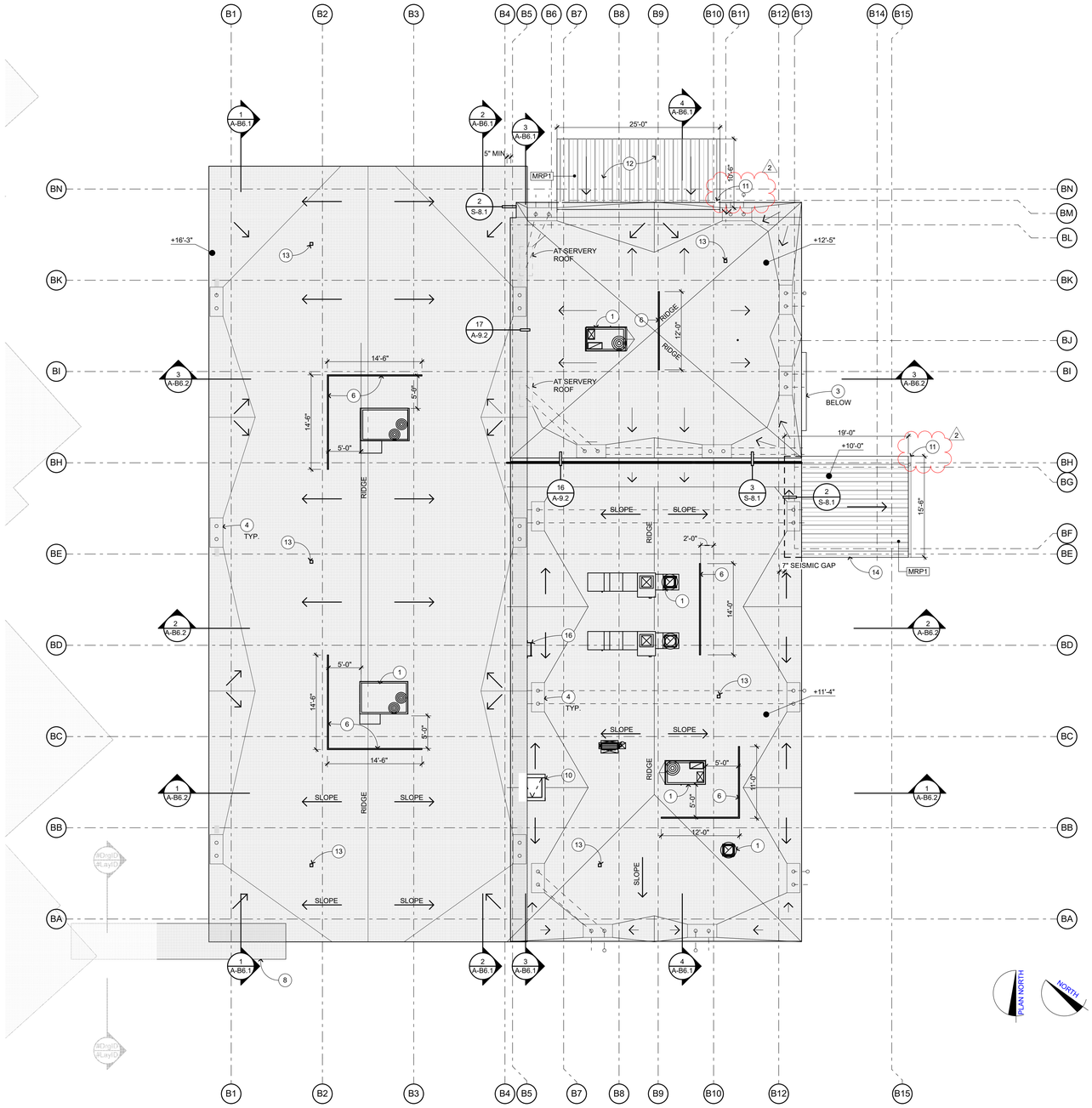
SHEET TITLE

CAFETERIA AND A-WING BUILDINGS DEMOLITION PLAN

SHEET NUMBER

ADDENDUM 02

A-B2.0



CAFETERIA ROOF PLAN 1

1/8" = 1'-0"

ROOF PLAN KEYNOTES

NOT ALL KEYNOTES MAY APPLY TO THIS SHEET

1. MECHANICAL ITEM (S.M.D.), FOR CURB SEE 3/A-9.4
2. BUR CRICKET O/ SLOPED INSULATION
3. RAIN CANOPY BELOW, SEE 1/A-9.6
4. ROOF DRAIN, S.P.D. AND SEE 5/A-9.4
5. TUBULAR SKYLIGHT (BLDG. A), SEE 5/A-9.5
6. MECHANICAL SCREEN, SEE 26/A-9.4 28/A-9.4
7. PARAPET, SEE DETAIL 7/A-9.4
8. MAIN ENTRY GATEWAY 28/A-1.2
9. WALLS SHOWN IN GRAY BELOW
10. ROOF ACCESS HATCH, SEE DETAIL 12/A-9.4
11. GUTTER, SEE DETAIL 2/A-9.5
12. ENTRY CANOPY, S.S.D. AND 18/A-9.5
13. ROOF ANCHORAGE FOR SAFETY EQUIP, SEE 22/A-9.4
14. TRASH ENCLOSURE ROOF (BLDG. B), S.S.D.
15. RAIN WATER LEADER BELOW, SEE RCP, S.P.D. 1/A-9.6
16. ROOF LADDER, ATTACHMENT SEE 23/A-9.4

ROOF PLAN GENERAL NOTES

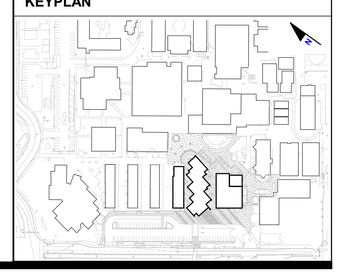
1. LOCATE ALL METAL ROOF PENETRATIONS IN THE CENTER OF THE PAN. DO NOT INTERRUPT STANDING SEAMS.
2. MINIMUM THICKNESS OF TAPERED INSULATION TO BE 1" AT LOW POINT OF ROOF. SLOPE MIN 1/4":12" TO DRAIN. ALL RIGID INSULATION OVERLAID WITH 1/2" COVER BOARD. CRICKETS TO SLOPE 1/2" IN12" MIN.
3. ALL ROOFING TO BE CLASS A.
4. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ROOF PENETRATION LOCATIONS NOT OTHERWISE INDICATED, TYPICAL.
5. MECHANICAL UNIT MOUNTING CURBS PER 3/A-9.4 S.M.D.
6. MECHANICAL OR PLUMBING VENT FLASHING, BOOTS, SEE 4/A-9.4 B.U.R.

ROOF PLAN LEGEND

SEE SHEET A-8.4 FOR FINISH INFORMATION

- +0'-0" — DIMENSION INDICATING TOP OF ROOF LEVEL. SEE DETAILS FOR TOP OF ROOF LOCATION WITHIN ASSEMBLY
- BUILT-UP ROOFING 1/A-9.4 — ROOF SLOPE CREATED WITH TAPERED INSULATION
- METAL DECK ROOFING 18/A-9.5 2

KEYPLAN



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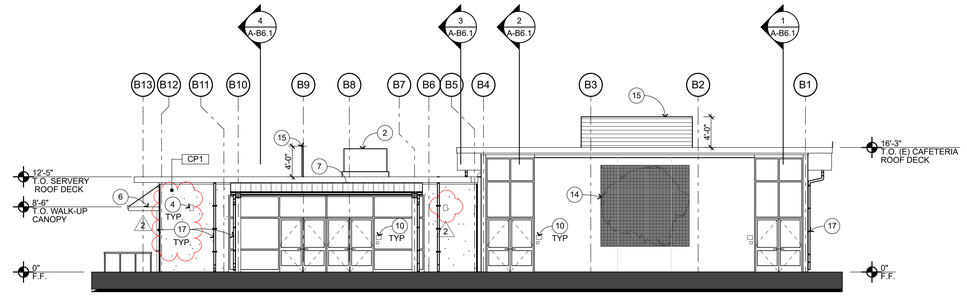
CAFETERIA BUILDING ROOF PLAN

SHEET NUMBER

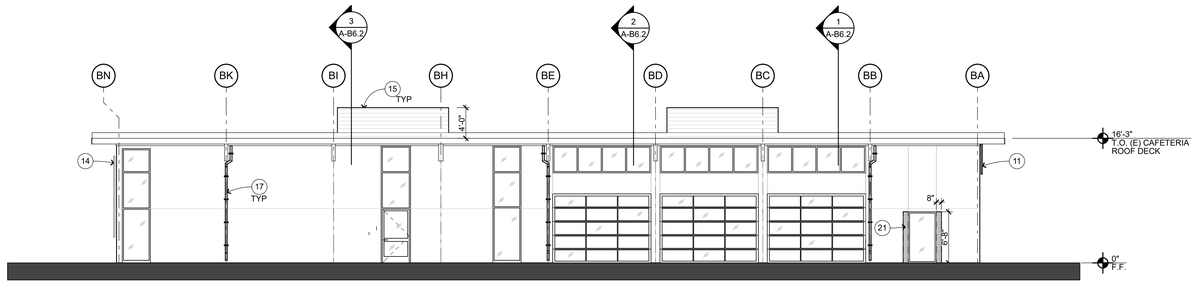
ADDENDUM 02

A-B4.1



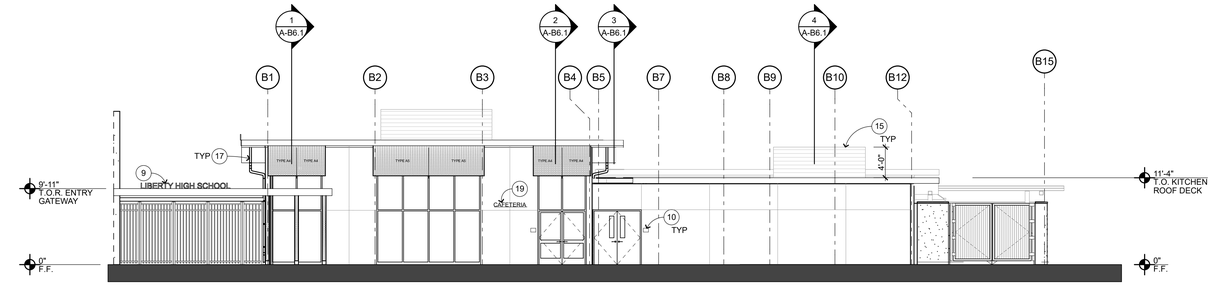
NORTH ELEVATION 1

1/8" = 1'-0"



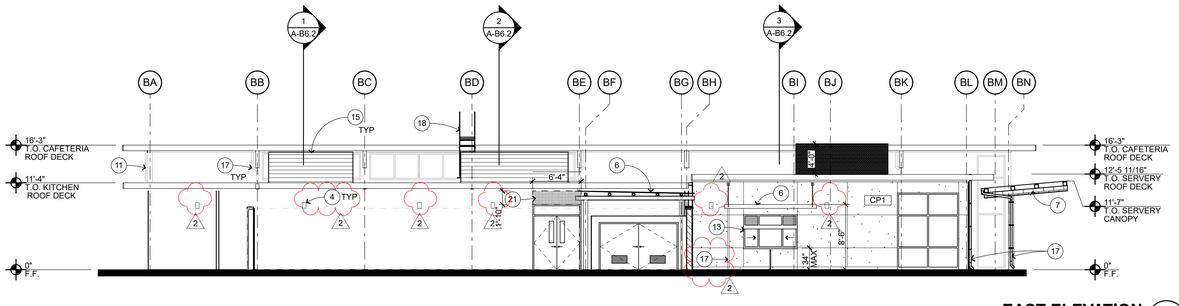
WEST ELEVATION 2

1/8" = 1'-0"



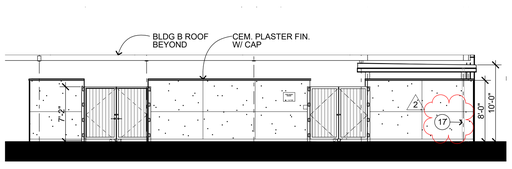
SOUTH ELEVATION 3

1/8" = 1'-0"



EAST ELEVATION 4

1/8" = 1'-0"



EAST ELEVATION TRASH ENCLOSURE 5

1/8" = 1'-0"

EXTERIOR ELEVATION KEYNOTES

NOT ALL KEYNOTES MAY APPLY TO THIS SHEET

1. STRUCTURAL ITEM, S.S.D.
2. MECHANICAL ITEM, S.M.D.
3. PLUMBING ITEM / FIXTURE, S.P.D.
4. LIGHT FIXTURE, S.E.D.
5. FLASHING AT PARAPET, SEE 7/A-9.4
6. RAIN CANOPY, SEE ROOF PLAN
7. ENTRY CANOPY, SEE ROOF PLAN
8. CEMENT PLASTER CONTROL JOINT 4/A-9.1
9. SCHOOL SIGN 20/A-9.5
10. SIGNAGE, SEE AG-2.1 ARCH GRAPHICS PLAN
11. PERFORATED METAL PANEL 17/A-9.6
12. NOT USED
13. SERVICE WINDOW, SEE WINDOW SCHEDULE
14. METAL PANEL PAINTED WITH SCHOOL LOGO
15. MECHANICAL SCREEN, SEE ROOF PLAN
16. DOWNSPOUT NOZZLE, S.P.D. 23/A-9.5
17. RAIN WATER LEADER, S.P.D.
18. ROOF LADDER, SEE ROOF PLAN
19. BUILDING ID SIGN, SEE 33/AG-2.1
20. METAL FASCIA
21. WALL INFILL TO MATCH EXTERIOR FINISH, S.S.D. 21/S-1.1

EXTERIOR ELEVATION GENERAL NOTES

1. NOTES AND SYMBOLS ARE TO APPLY AT ALL AREAS OF SIMILAR GRAPHIC REPRESENTATION. SUCH INDICATIONS MAY BE LIMITED TO PROMOTE CLARITY OR AVOID REDUNDANCY. NO LIMITATION OF APPLICATION SHALL BE CONSTRUED WITHOUT SPECIFIC NOTATION.
2. ALL PENETRATIONS THROUGH EXTERIOR ROOF AND WALLS, AND FLOORS SHALL BE FLASHED AND SEALED WEATHER TIGHT. ALL PENETRATIONS THROUGH THE BUILDING INSULATION ENVELOPE SHALL BE PACKED WITH INSULATION.
3. PROVIDE OPENING FLASHINGS AT ALL WINDOWS, DOORS, LOUVERS AND SIMILAR WALL OPENINGS PER 17/A-9.1
4. PROVIDE CEMENT PLASTER CONTROL JOINTS AS INDICATED AND AS FOLLOWS: PROVIDE CONTROL JOINTS SO THAT THE MAXIMUM DISTANCE BETWEEN JOINTS, VERTICALLY OR HORIZONTALLY DOES NOT EXCEED 12'-0"; ALL CEMENT PLASTER "PANELS" SHALL BE DEFINED BY FOUR STRAIGHT AND UNINTERRUPTED EDGES; PROVIDE JOINTS AS REQUIRED TO AVOID INSIDE CORNERS IN ANY INDIVIDUAL PANEL.
5. REFER TO MECHANICAL DRAWINGS FOR REGISTERS AND VENTS NOT OTHERWISE SHOWN.
6. REFER TO ELECTRICAL DRAWINGS FOR HORNS, SPEAKERS, PULL STATIONS AND OTHER FEATURES NOT OTHERWISE SHOWN.

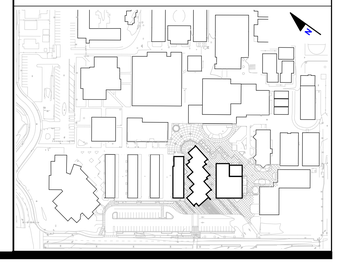
EXTERIOR ELEVATION LEGEND

(E) CONCRETE (TILT-UP)

CP1 / CP2 CEMENT PLASTER 4/A-9.1

XP1 FINISH TAG, SEE A-8.4 FINISH SCHEDULE

KEYPLAN



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DECEMBER 28, 2020

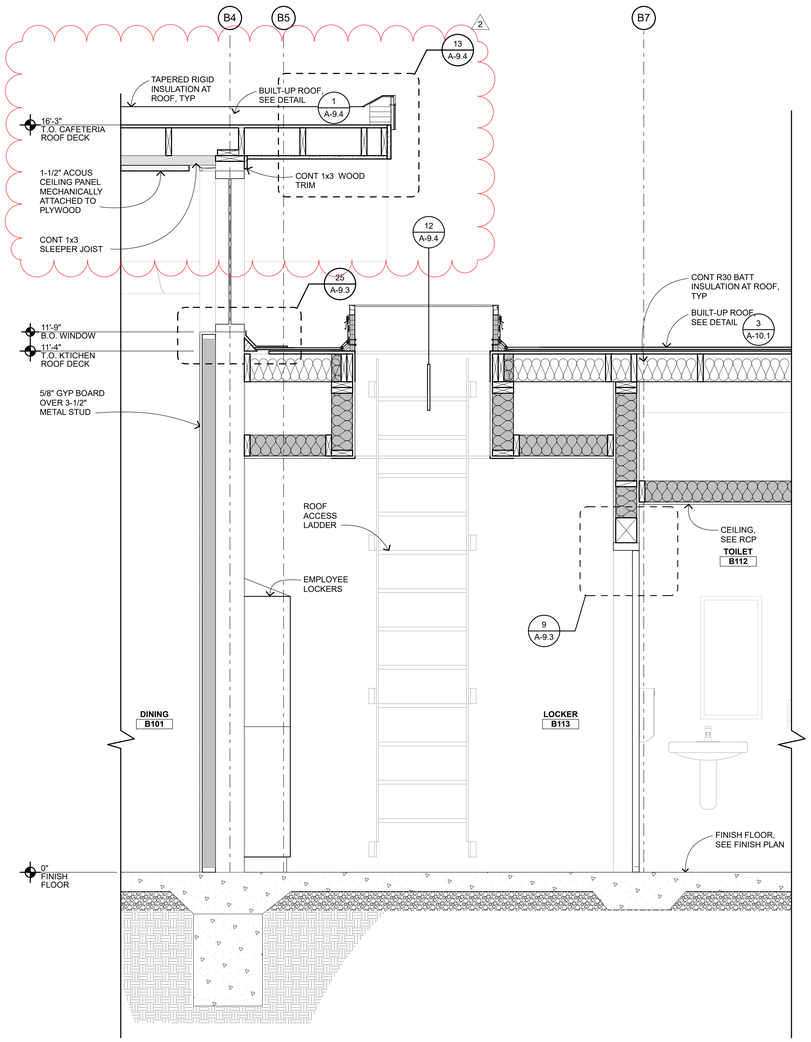
SHEET TITLE

CAFETERIA BUILDING EXTERIOR ELEVATIONS

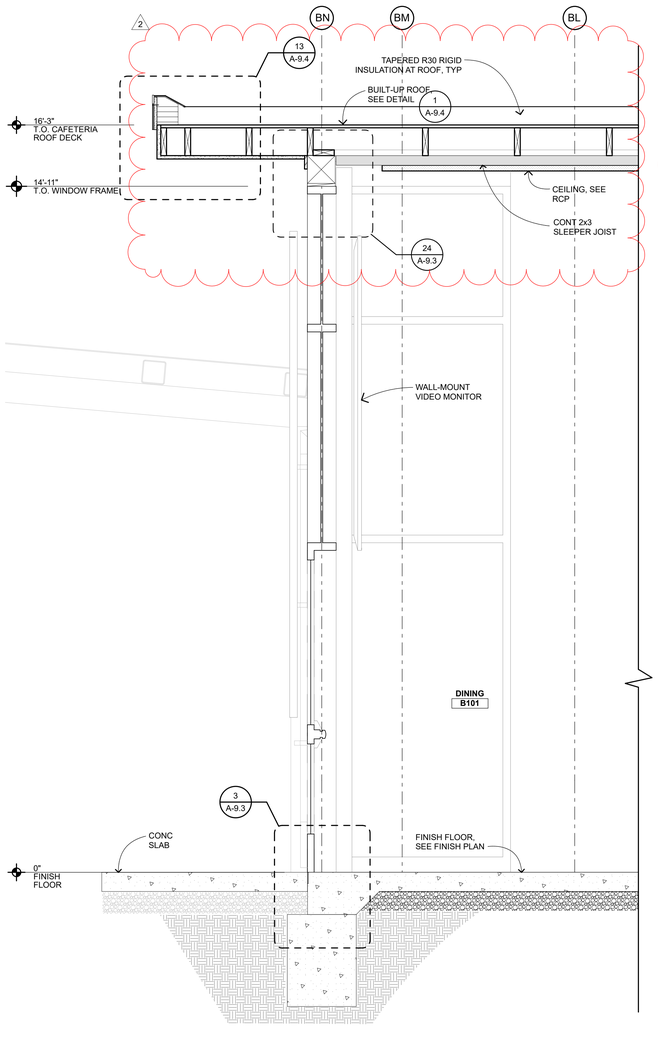
SHEET NUMBER

ADDENDUM 02

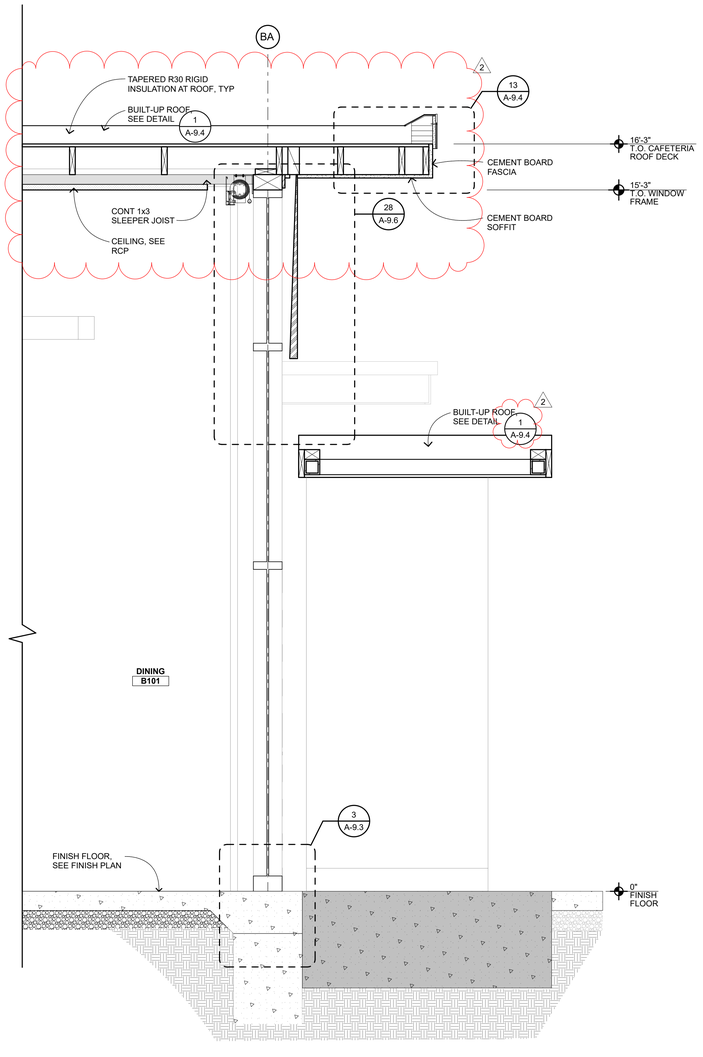
A-B5.1



SECTION 3
3/4" = 1'-0"

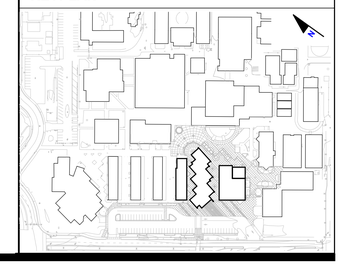


SECTION 2
3/4" = 1'-0"



SECTION 1
3/4" = 1'-0"

KEYPLAN



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PTN: 61721-75 FILE NO: 7-H4

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DECEMBER 28, 2020

SHEET TITLE

CAFETERIA BUILDING WALL SECTIONS

SHEET NUMBER

ADDENDUM 02

A-B6.3

EXTERIOR

SPEC SECTION	FINISH CODE	MATERIAL	MANUFACTURER	PRODUCT	COLOR	FINISH	SIZE	COMMENTS	INSTALLATION
DECORATIVE METAL									
05 7000	DM1	PERFORATED METAL PANELS	BOK MODERN	PATTERN A26	DEEP MATTE IGP-HWF CLASSIC 591T RAL 591TA90160A10	FACTORY FINISH	VARIES - SEE ELEVATIONS	WHITE	
05 7000	DM2	PERFORATED METAL PANELS	BOK MODERN	PATTERN A14	SATIN 38/30041 REDWOOD	FACTORY FINISH	VARIES - SEE ELEVATIONS	RED	
ROOFING									
07 4113	MRP1	METAL ROOF PANELS	GARLAND		RIVER ROCK				
DOORS AND FRAMES									
08 1113	-	HOLLOW METAL DOORS	PER SPECIFICATION		TO MATCH XP2	SEE SPECIFICATIONS		SEE DOOR SCHEDULE AND/OR GENERAL NOTES	
08 1113	-	HOLLOW METAL FRAMES	PER SPECIFICATION		TO MATCH XP2	SEE SPECIFICATIONS		SEE DOOR SCHEDULE AND/OR GENERAL NOTES	
ALUMINUM OPENINGS									
08 4313	-	ALUMINUM ENTRANCES AND STOREFRONT	OLDCASTLE GLASS		740 EC DARK BRZ - DK C-1	FACTORY FINISH			
08 4413	-	ALUMINUM CURTAIN WALL	OLDCASTLE GLASS		740 EC DARK BRZ - DK C-1	FACTORY FINISH			
08 5113	-	ALUMINUM WINDOWS	PER SPECIFICATION		TBD	FACTORY FINISH		GC TO PROVIDE SAMPLES FOR ARCHITECT COLOR SELECTION	
WALLS									
09 2513	CP1	CEMENT PLASTER	BMI PRODUCTS	BMI 690 PLASTER WITH 100% ACRYLIC PRIMER & FINISH	INTEGRAL TO MATCH SW6119 ANTIQUE WHITE	SEE SPECIFICATION			
09 2513	CP2	CEMENT PLASTER	BMI PRODUCTS	BMI 690 PLASTER WITH 100% ACRYLIC PRIMER & FINISH	INTEGRAL TO MATCH SW7019 GAUNTLET GRAY	SEE SPECIFICATION			
EXTERIOR PAINTING									
09 9113	XP1	EXTERIOR PAINT	SHERWIN WILLIAMS	EXTERIOR PAINT	SW6119 ANTIQUE WHITE	SEE SPECIFICATION		OFF-WHITE	
09 9113	XP2	EXTERIOR PAINT	SHERWIN WILLIAMS	EXTERIOR PAINT	SW7019 GAUNTLET GRAY	SEE SPECIFICATION		GRAY	
09 9113	XP3	EXTERIOR PAINT	KELLY MOORE	EXTERIOR PAINT	KM160 BRAVADO	SEE SPECIFICATION		RED	
EXTERIOR MISC.									
10 8213	MS1	MECHANICAL ROOF SCREEN	IMETCO	LATITUDE WALL PANEL					

INTERIOR

SPEC SECTION	FINISH CODE	MATERIAL	MANUFACTURER	PRODUCT	COLOR	FINISH	SIZE	COMMENTS	INSTALLATION
BASE									
09 6500	B1	RESILIENT BASE	BURKE	4" TP STANDARD BASE	DEEP SPACE #198	-	4"H x 100' ROLLS		-
09 6556	CB1	COVED BASE	ECO-GRIP	SLIP RESISTANT SAFETY FLOORING	GRAPHITE	-	6" HIGH MIN	INTEGRAL TO MATCH ADJACENT FLOORING PRODUCT	
09 6500	CB2	COVED BASE	MONDO	KAYAR	SEE ADJACENT FLOOR FINISH CODE	-	6" HIGH MIN	INTEGRAL TO MATCH ADJACENT FLOORING PRODUCT	
09 6770	(ALT) CB2	ALTERNATE BID OPTION: COVED BASE	VERDUREN	-	SEE ADJACENT FLOOR FINISH CODE	-	6" HIGH MIN	INTEGRAL TO MATCH ADJACENT FLOORING PRODUCT	
09 6700	EB1	EPOXY COVE BASE	TERA-LITE	TERA-GEM III, DQ TERA-BLEND	GREY W/ 2 CLEAR COATS	FLINTSHOT		-	-
FLOOR									
03 3511	C1	SEALED CONCRETE	RETROPLATE	-	PER SPEC				
09 6500	RF1	RESILIENT TILE FLOORING	TARKETT	MESHWORK	TALLOW		12"x36" PLANKS		VERTICAL ASHLAR
09 6500	RF2A	RUBBER FLOORING	MONDO	KAYAR	K021		6'-2"x32'-9" ROLLS	DARK GRAY	SEE FINISH PLAN FOR CUSTOM PATTERN
09 6770	(ALT) RF2A	ALTERNATE BID OPTION: FLUID APPLIED RESILIENT FLOORING	VERDUREN	-	GR350 H			DARK GRAY	SEE FINISH PLAN FOR CUSTOM PATTERN
09 6500	RF2B	RUBBER FLOORING	MONDO	KAYAR	K054		6'-2"x32'-9" ROLLS	PUTTY	SEE FINISH PLAN FOR CUSTOM PATTERN
09 6770	(ALT) RF2B	ALTERNATE BID OPTION: FLUID APPLIED RESILIENT FLOORING	VERDUREN	-	B343 L			PUTTY	SEE FINISH PLAN FOR CUSTOM PATTERN
09 6500	RF2C	RUBBER FLOORING	MONDO	KAYAR	K074		6'-2"x32'-9" ROLLS	RED	SEE FINISH PLAN FOR CUSTOM PATTERN
09 6770	(ALT) RF2C	ALTERNATE BID OPTION: FLUID APPLIED RESILIENT FLOORING	VERDUREN	-	R311 L			RED	SEE FINISH PLAN FOR CUSTOM PATTERN
09 6556	RF3	SAFETY FLOORING	ECO-GRIP	SLIP RESISTANT SAFETY FLOORING	GRAPHITE	-			
09 6700	EP1	EPOXY FLOORING	TERA-LITE	TERA-GEM III, DQ TERA-BLEND	GREY W/ 2 CLEAR COATS	FLINTSHOT			
09 6813	CPT1	CARPET TILE	TARKETT / TANDUS	TEXTUREMAP #11129	TOMORROWLAND #42801	-	24"x24"		VERTICAL ASHLAR
09 6813	CPT2	CARPET TILE	TARKETT / TANDUS	COLORMAP #11130	TOMORROWLAND #42801	-	24"x24"		VERTICAL ASHLAR
09 6813	CPT3	CARPET TILE - WALKOFF	TARKETT / TANDUS	ABRASIVE ACTION #02578	WINTER GRAY #19103	-	24"x24"		VERTICAL ASHLAR
WALL									
09 9123	P1	PAINT - GENERAL	SHERWIN WILLIAMS	INTERIOR PAINT	SW7003 TOQUE WHITE	SEE SPECIFICATION		WHITE	
09 9123	P2	PAINT- ACCENT	SHERWIN WILLIAMS	INTERIOR PAINT	SW6002 ESSENTIAL GRAY	SEE SPECIFICATION		GRAY	
09 9123	P3	PAINT - ACCENT	SHERWIN WILLIAMS	INTERIOR PAINT	SW7019 GAUNTLET GRAY	SEE SPECIFICATION		DARK GRAY	
09 3000	WT1	CERAMIC WALL TILE	DALTILE	COLOR WHEEL CLASSIC	X114 MATTE DESERT GRAY	SEMI-GLOSS	3"x6"	GROUT TBD	HORIZONTIAL STACKED BOND PATTERN
09 3000	WT2	CERAMIC WALL TILE	DALTILE	COLOR WHEEL CLASSIC	1012 MUSTARD	SEMI-GLOSS	3"x6"	GROUT TBD	VERTICAL STACKED BOND PATTERN
09 7230	WC1A	LINOLEUM TACKWALL	FORBO	BULLETIN BOARD	#2210 HOT SALSA	-	48"x90' ROLLS	RED	PER MANUFACTURER
09 7230	WC1B	LINOLEUM TACKWALL	FORBO	BULLETIN BOARD	#2212 FRESH PINEAPPLE	-	48"x90' ROLLS	YELLOW	PER MANUFACTURER
WALL PANEL									
09 8430	AP1	ACOUSTIC PANELS	MDC WALLCOVERING	ZINTRA PATTERN PANELS	TOP LAYER: FOSSIL 34720 BACKING LAYER: OCHRE #4719	PATTERN LAYER OVER ACOUSTICAL BACK LAYER	48"x108" PANELS	COMINATION OF CUSTOM IMAGE AND MANUFACTURER'S MONSOON	WALL MOUNT ON STAND-OFFS (1")
09 8448	MP1	METAL PERFORATED WALL PANEL	USG CEILINGS PLUS	WALLFORMS / PARTI PERFORATIONS	WHITE	FACTORY FINISH	30"x60"	CUSTOM PERF PATTERN / INCLUDE ACOUSTICAL BACKER: ULTRA-SORB (1.5", 1.5#, BLACK)	WALL MOUNTED
WALL PROTECTION									
09 7723	WP1	FIBER REINFORCED PANELS	CRANE COMPOSITES	SEQUENTIA TRADITIONAL FRP	TBD	EMBOSSED PEBBLE	4'x10' PANELS	GC TO PROVIDE COLOR SAMPLE TO ARCHITECT FOR SELECTION	
	PLY1	3/4" MDO FIRE RATED PLYWOOD							
CEILINGS									
09 2116	GYP1	GYP BOARD	-	-	PAINT TO MATCH P1, U.O.N.	SEE SPECIFICATIONS			
09 5100	ACT1	ACOUSTICAL CEILING TILE	ARMSTRONG	CALLA, SQUARE TEGULAR	WHITE	-	2'x4'		SUSPENDED - SUPRAFINE XL 9/16" EXPOSED TEE, WHITE
09 5100	ACT2	ACOUSTICAL CEILING TILE	ARMSTRONG	CLEAN ROOM VL, SQUARE LAY-IN	WHITE	-	2'x4'	SMOOTH SURFACE MEETS USDA/FSIS GUIDELINES FOR USE IN FOOD PROCESSING AREAS	SUSPENDED - PRELUDE XL 15/16" EXPOSED TEE, WHITE
09 5100	ACT3	ACOUSTICAL CEILING TILE	ARMSTRONG	CORTEGA, SQUARE LAY-IN	WHITE	-	2'x4'		SUSPENDED - PRELUDE XL 15/16" EXPOSED TEE, WHITE
09 5133	MCT1	METAL PERFORATED CEILING	USG CEILINGS PLUS	ILLUSIONS / PARTI PERFORATIONS	WHITE	PAINT		CUSTOM PERF PATTERN / INCLUDE ACOUSTICAL BACKER: ULTRA-SORB (1.5", 1.5#, BLACK)	SUSPENDED, WHITE
09 8420	ACP1	ACOUSTIC CEILING PANELS	ARMSTRONG	TECTUM DIRECT-ATTACH	TECTUM NATURAL, PAINTED TO MATCH P3	PAINT	4'x8'		
-	ES1	EXPOSED STRUCTURE			PAINTED TO MATCH P3	PAINT			
-	ES2	EXPOSED STRUCTURE			-	UNFINISHED			
WINDOW COVERING									
12 2100	WS1	WINDOW SHADE - MANUAL	MECHOSHADE	ECOVEIL	1569 SILVER BIRCH	1550 SERIES (3% OPEN)			
		FASCIA COLOR	MECHOSHADE		COLOR TBD			CONTRACTOR TO PROVIDE COLOR SAMPLES TO ARCHITECT FOR FINAL SELECTION	
12 2100	WS2	WINDOW SHADE - MOTORIZED	MECHOSHADE	ECOVEIL	1569 SILVER BIRCH / FASCIA TBD	1550 SERIES (3% OPEN)			
		FASCIA COLOR	MECHOSHADE		COLOR TBD			CONTRACTOR TO PROVIDE COLOR SAMPLES TO ARCHITECT FOR FINAL SELECTION	
CASEWORK									
06 4100	PL1	PLASTIC LAMINATE	WILSONART	HPL	LIMBER MAPLE 10734-60	MATTE		FOR TYP. CABINETS, U.O.N.	INSTALL GRAIN PATTERN VERTICALLY
06 4100	PL2	PLASTIC LAMINATE	WILSONART	HPL	WHITE CYPRESS 7976K-12	SOFTGRAIN / AEON SCRATCH RESISTANCE		FOR MAIN RECEPTION DESK, VERTICAL SURFACE	INSTALL GRAIN PATTERN HORIZONTALLY
12 3600	PL3	PLASTIC LAMINATE	WILSONART	HPL	WHITE CYPRESS 7976-60	MATTE / AEON SCRATCH RESISTANCE		FOR MAIN RECEPTION DESK, WORK SURFACE; GROMMET COLOR TO BE SELECTED BY ARCHITECT	
12 3600	PL4	PLASTIC LAMINATE	WILSONART	HPL	WASHI GOLD 5019-38	FINE VELVET FINISH		FOR TYP. COUNTERTOPS	
12 3600	SS1	SOLID SURFACE	DURAT	SOLID SURFACE	#254	-	SLAB: 114.17" x 31.5" x .47"		
FINISH CARPENTRY									
06 2000	FC1	SILLS / TRIM				PAINT TO MATCH P2, U.O.N.			
DOORS AND FRAMES									
08 1113	-	HOLLOW METAL DOORS	PER SPECIFICATION		PAINTED TO MATCH P3	SEE SPECIFICATIONS		SEE DOOR SCHEDULE AND/OR GENERAL NOTES	
08 1113	-	HOLLOW METAL FRAMES	PER SPECIFICATION		PAINTED TO MATCH P3	SEE SPECIFICATIONS		SEE DOOR SCHEDULE AND/OR GENERAL NOTES	
08 1416	-	WOOD VENEER DOORS	PER SPECIFICATION		MFR STAINED, TO MATCH PL1	SEE SPECIFICATIONS		SEE DOOR SCHEDULE AND/OR GENERAL NOTES GC TO PROVIDE SAMPLES TO ARCHITECT FOR COLOR SELECTION	

2

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2	12/18/20	ADD-02

DSA APP NO. 01-119033

ARCH PROJECT NO: 1783.00
DRAWN BY: HM
DRAWING SCALE: N.T.S.
PTN: 61721-75 FILE NO: 7-H4

CD

DECEMBER 28, 2020

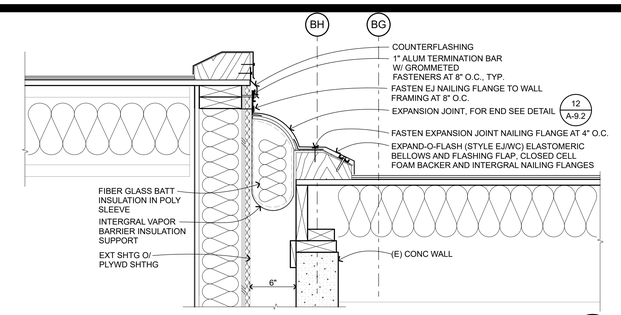
SHEET TITLE

FINISH SCHEDULE

SHEET NUMBER

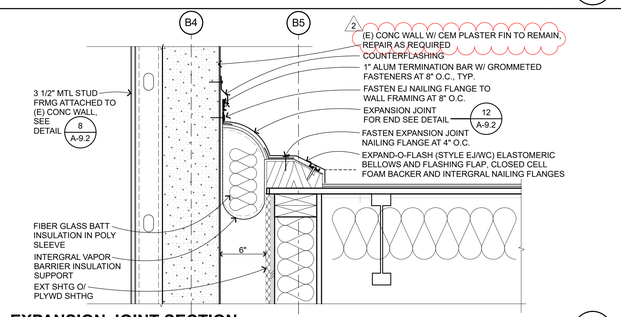
ADDENDUM 02

A-8.4



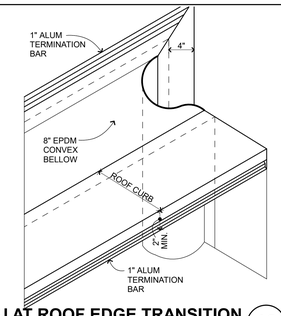
EXPANSION JOINT SECTION

1 1/2"= 1'-0" B400101 **16**



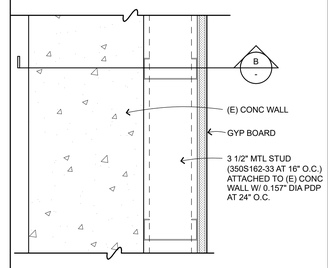
EXPANSION JOINT SECTION

1 1/2"= 1'-0" B400101 **17**

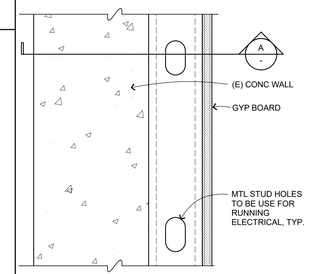


EJ AT ROOF EDGE TRANSITION

1 1/2"= 1'-0" **12**



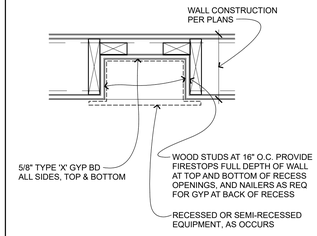
SECTION A



SECTION B

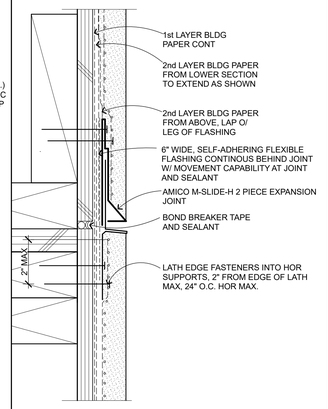
FURRED WALL

3" = 1'-0" 1783.00-001 **8**



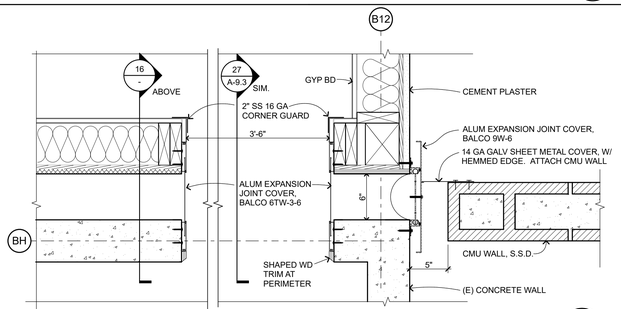
RECESS AT WALL

1 1/2"= 1'-0" C104102 **1**



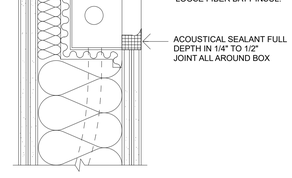
CEM PLAS HORZ EXP JOINT

6" = 1'-0" B201404_D4 **4**

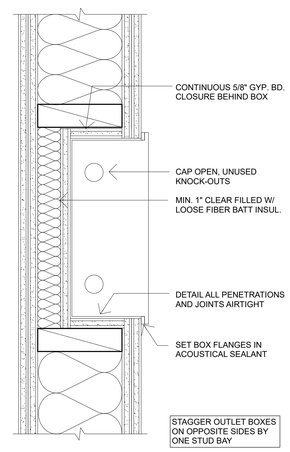


EXPANSION JOINT AT INTERIOR & PERIMETER

1 1/2"= 1'-0" **18**



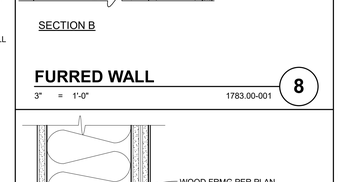
(A) BOX SIZE 4" X 8" AND UNDER



(B) BOX SIZE OVER 4" X 8"

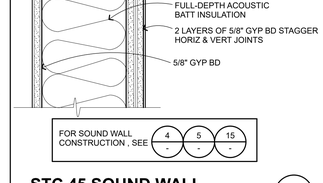
AIRTIGHT RECESSED ITEMS

3" = 1'-0" C101137 **15**



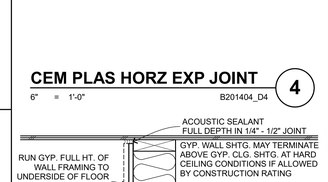
STC 45 SOUND WALL

3" = 1'-0" C101131 **9**



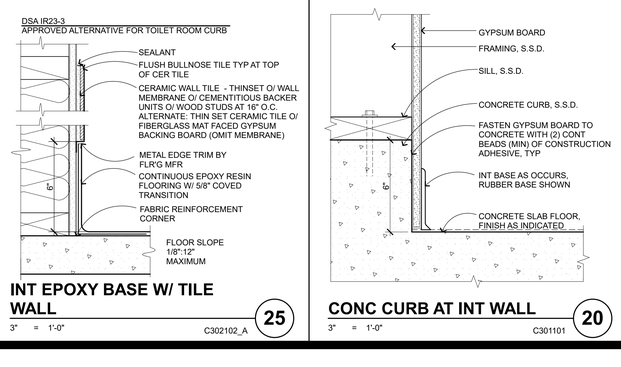
STC 56 SOUND WALL

3" = 1'-0" C101133 **10**



SOUND WALL

1 1/2"= 1'-0" C101135 **4**

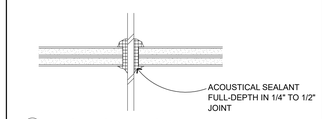


INT EPOXY BASE W/ TILE WALL

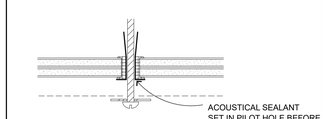
3" = 1'-0" C302102_A **25**

CONC CURB AT INT WALL

3" = 1'-0" C301101 **20**



(A) HANGER ROD, PIPE, OR WIRE



(B) ALL MISC. ANCHORS TYP.

AIRTHIGHT SUPPORT ELEMENTS

3" = 1'-0" C101138 **5**

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CD

DECEMBER 28, 2020

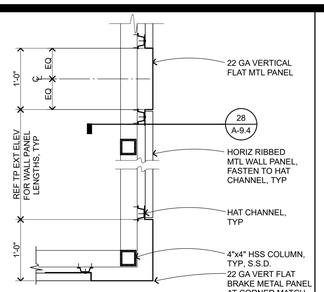
SHEET TITLE

FRAMING DETAILS

SHEET NUMBER

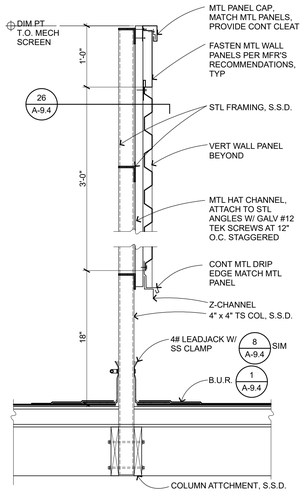
ADDENDUM 02

A-9.2



MECH SCREEN PLAN SECTION

1" = 1'-0" B301210 **26**



MECHANICAL SCREEN SECTION

1" = 1'-0" B301211 **28**

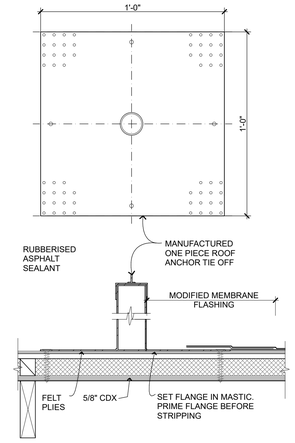
ANCHORAGE: 3100 LB CAPACITY

AT RIGID INSULATION, PROVIDE FULL DEPTH P.T.D.F. INFILL AND 3/8" DIA LAG BOLT INTO SOLID BLOCKING OR ROOF FRAMING MEMBER BELOW.

INSTALL ALL (40) FASTENERS UNTIL SNUG, AND ENSURE THE PLATE IS FULLY SECURED AND EMBEDDED TO SUBSTRATE

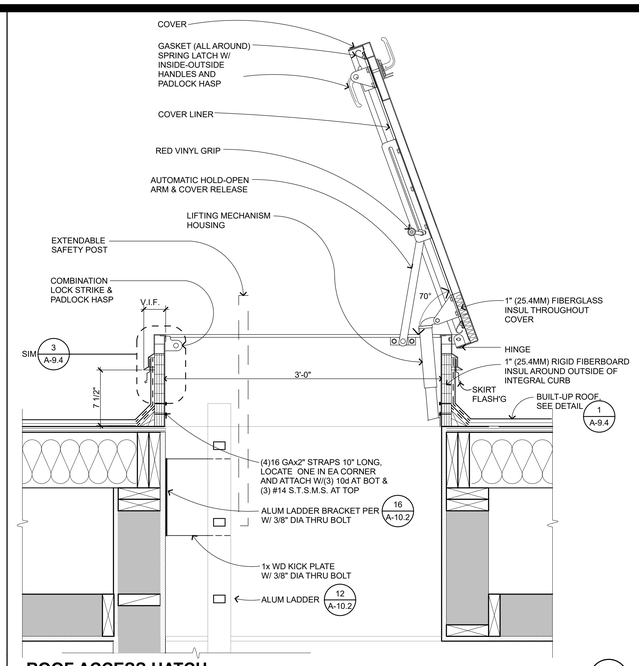
WHERE PLATE IS ON PLYWD ROOF SHEATHING, PROVIDE LAG SCREWS

BUR ASSEMBLY, SEE DTL 1 A-9.4



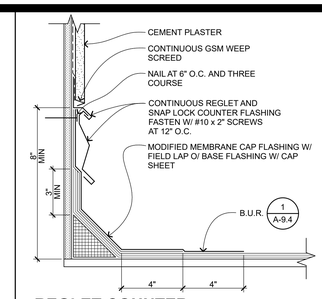
ROOF ANCHORAGE

3" = 1'-0" B301214.1621.00 **22**



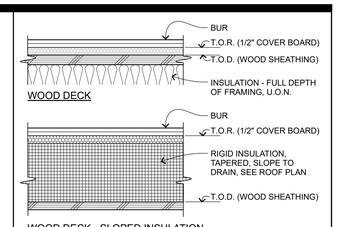
ROOF ACCESS HATCH

1 1/2"= 1'-0" B302301 **12**



REGLET COUNTER FLASHING

3" = 1'-0" B301208 **6**

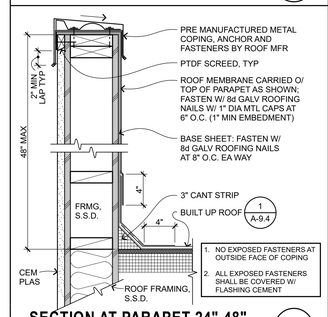


TYPICAL NOTES:

1. BUILT UP ROOFING (BUR) MODIFIED MINERAL SURFACE CAP SHEET OVER FELTS. SET ALL PLIES IN BITUMEN.
2. TOP OF ROOF ASSEMBLY (T.O.R.) DIMENSION POINT IS TOP OF PERLITE BOARD.

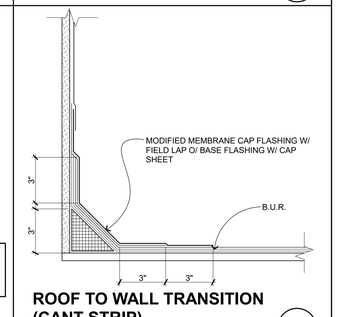
TYP B.U.R. ASSEMBLIES

3" = 1'-0" B301201 **1**



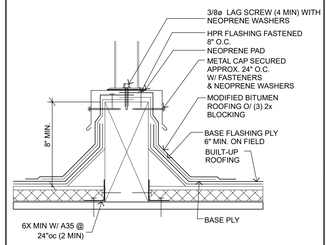
SECTION AT PARAPET 24"-48"

1 1/2"= 1'-0" B301202.2 **7**



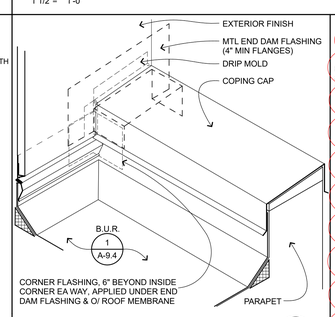
ROOF TO WALL TRANSITION (CANT STRIP)

3" = 1'-0" B301218 **2**



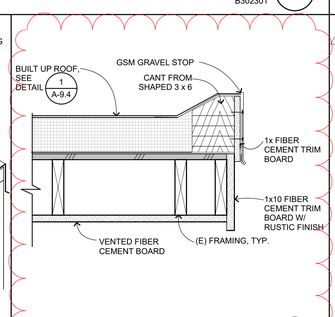
EQUIPMENT SUPPORT

N.T.S. **23**



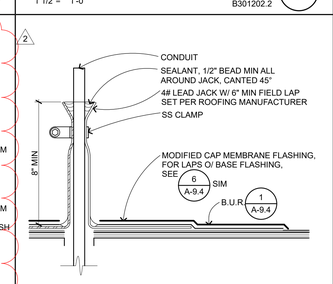
COPING FLASH-INTERSECTION

1 1/2"= 1'-0" B301207 **18**



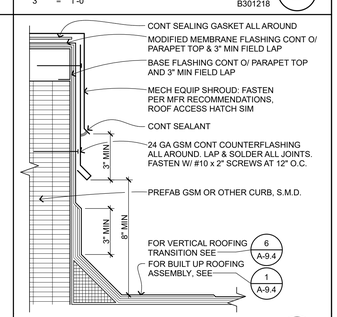
B.U.R. EDGE

1 1/2"= 1'-0" B301204 **13**



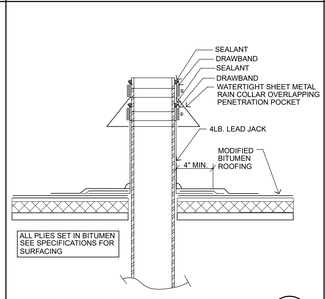
CONDUIT ROOF PENETRATION FLASH'G

3" = 1'-0" B301215 **8**



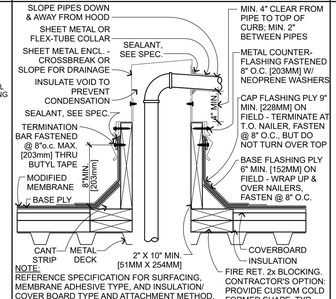
PREFAB MECH EQUIP CURB

3" = 1'-0" B301209 **3**



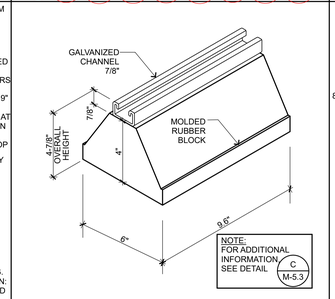
CONDUIT / PIPE FLASHING

N.T.S. **24**



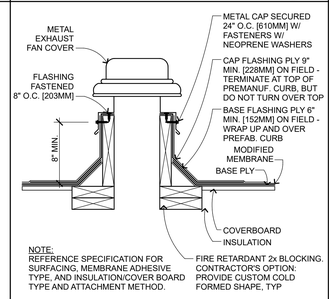
PIPE HOUSING @ ROOF

1 1/2"= 1'-0" B05 1730 **19**



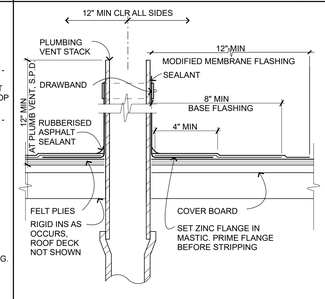
PIPE SUPPORT

3" = 1'-0" B04 1730 **14**



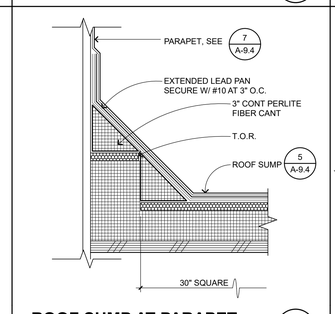
EXHAUST FAN @ BUR

1 1/2"= 1'-0" B03 1730 **9**



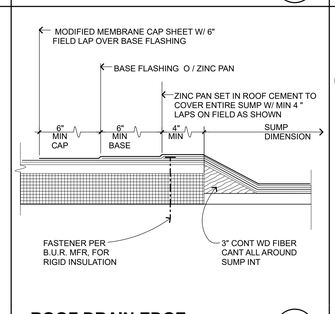
ROOF PLUMB'G FLASH'G

3" = 1'-0" B301214 **4**



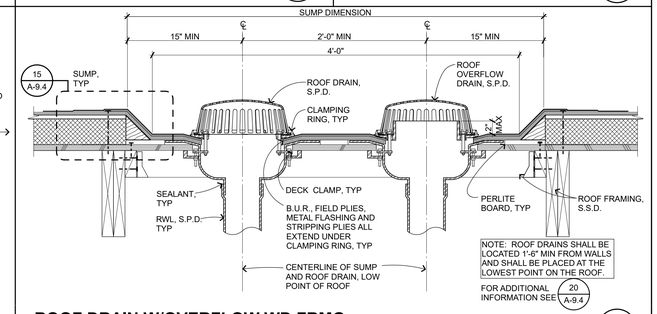
ROOF SUMP AT PARAPET

3" = 1'-0" B301213 **20**



ROOF DRAIN EDGE

3" = 1'-0" B304303 **15**



ROOF DRAIN W/OVERFLOW WD FRMG

1 1/2"= 1'-0" B304301_A **5**

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ROOFING DETAILS

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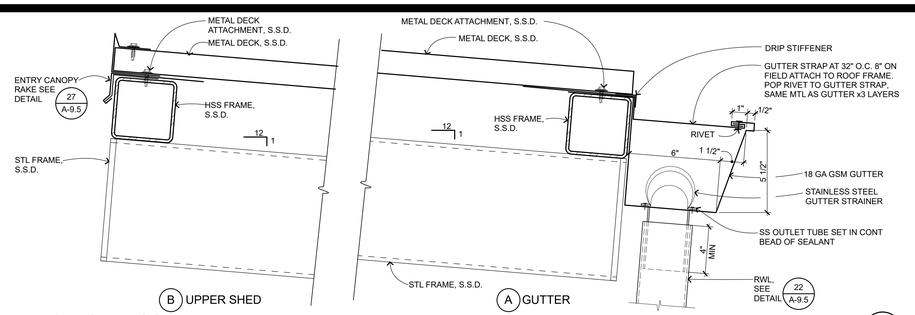
ADDENDUM 02
A-9.4

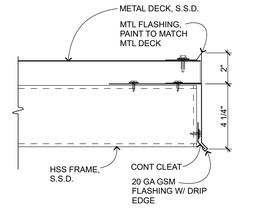
P:\1783.00 - Liberty HS Admin. - Stdnt Commons, LUHSD\Drawings\05-CA\1783.00_CA_Liberty HS Admin & Student Commons_22.pln;12/16/2020 8:14 PM



ENTRY CANOPY ROOF

3" = 1'-0"

21

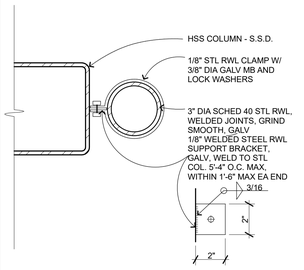


ENTRY CANOPY RAKE

3" = 1'-0"

B205118

27

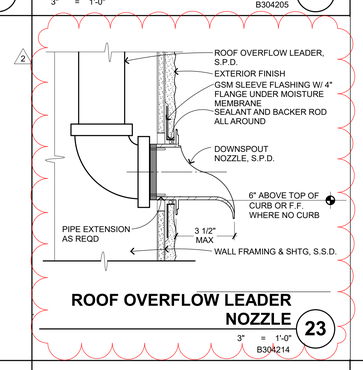


RWL SUPPORT @ HSS COLUMN

3" = 1'-0"

B304205

22

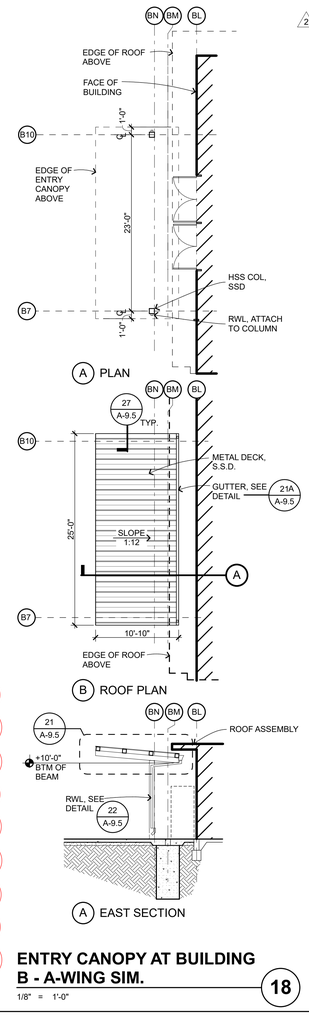


ROOF OVERFLOW LEADER NOZZLE

3" = 1'-0"

B304214

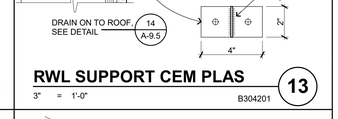
23



ENTRY CANOPY AT BUILDING B - A-WING SIM.

1/8" = 1'-0"

18



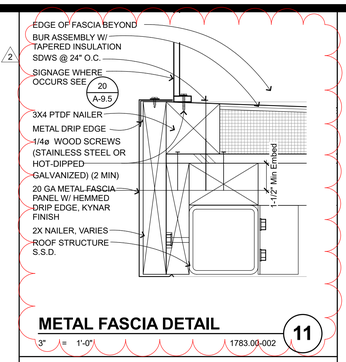
SEE SPECS FOR FONT TYPE , MATERIALS AND FINISHES.

EXTERIOR SIGN

3" = 1'-0"

1583.00-004-1783.00

20

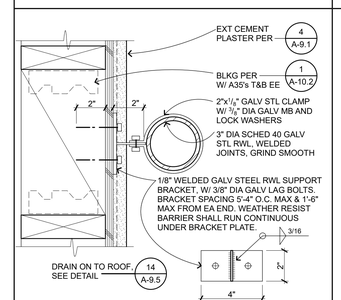


METAL FASCIA DETAIL

3" = 1'-0"

1783.00-002

11

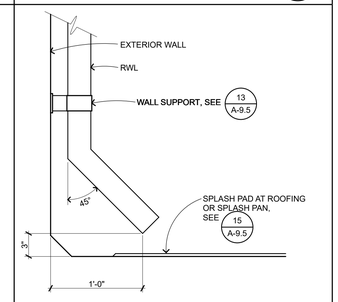


RWL SUPPORT CEM PLAS

3" = 1'-0"

B304201

13

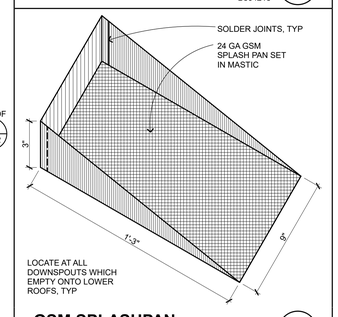


RWL DISCHARGE @ ROOF

1 1/2"= 1'-0"

B304213

14

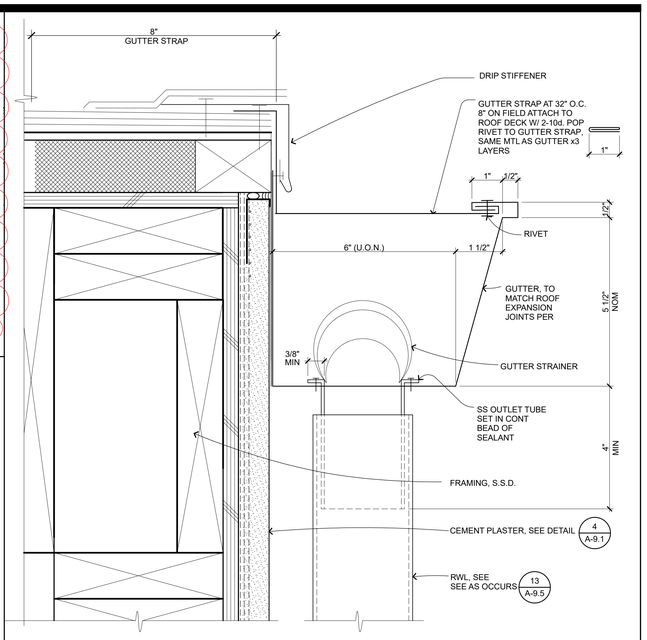


GSM SPLASHPAN

3" = 1'-0"

B304210

15

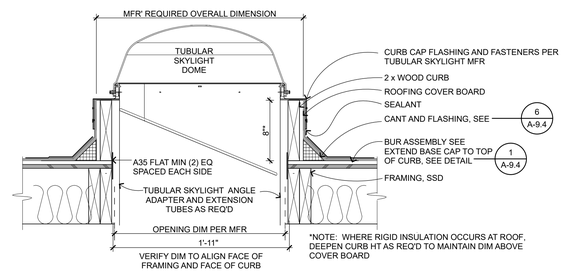


TYP GUTTER AT BUR

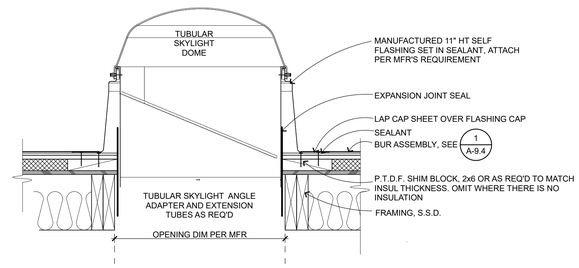
6" = 1'-0"

B304104

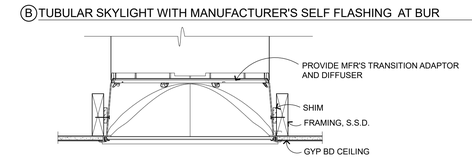
2



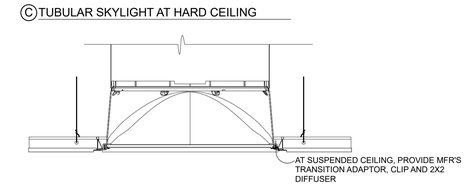
A TUBULAR SKYLIGHT ON CURB AT BUR



B TUBULAR SKYLIGHT WITH MANUFACTURER'S SELF FLASHING AT BUR



C TUBULAR SKYLIGHT AT HARD CEILING



D TUBULAR SKYLIGHT AT SUSPENDED CEILING

TUBULAR SKYLIGHT

1 1/2"= 1'-0"

B302210

5

QUATTROCCHI KWOK ARCHITECTS
Main Office:
636 Fifth Street, Santa Rosa, CA 95404
Pleasanton Office:
600 Main Street, Suite E,
Pleasanton, CA 94566
(707) 576-0829

LICENSED ARCHITECT
JIM THEISS
LICENSE # C22643
EXP JUNE 30, 2021
STATE OF CALIFORNIA

SIGNED: DECEMBER 2, 2020

LIBERTY HIGH SCHOOL

ADMINISTRATION & STUDENT COMMONS

850 2ND STREET
BRENTWOOD, CA 94513

LIBERTY UNION HIGH SCHOOL DISTRICT

2	12/18/20	ADD-02

DSA APP NO. 01-119033

ARCH PROJECT NO:	1783.00
DRAWN BY:	PAG
DRAWING SCALE:	AS NOTED
PTN: 61721-75	FILE NO: 7-H4

CD

DECEMBER 2, 2020

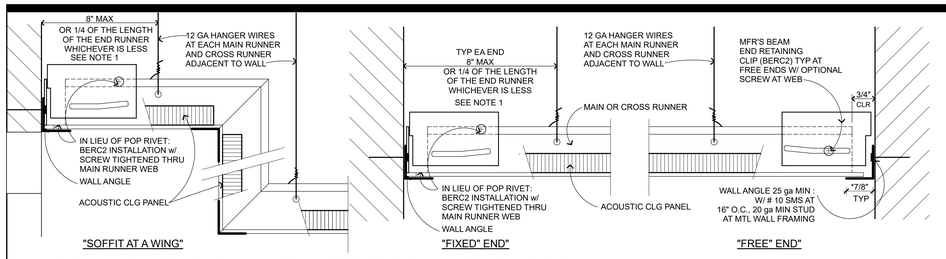
SHEET TITLE

ROOFING DETAILS

SHEET NUMBER

ADDENDUM 02

A-9.5



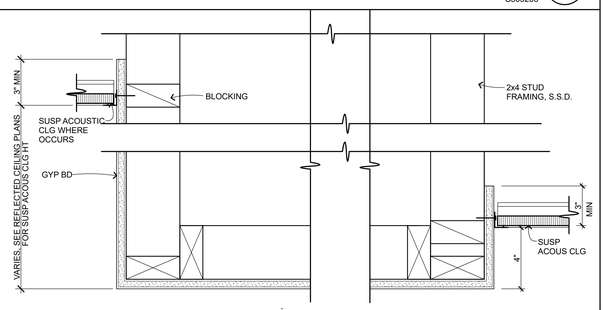
BASIS OF DESIGN: ARMSTRONG PRELUDE XL SEISMIC Rx. ICC ESR 1308. REFER TO SPECIFICATIONS FOR ALTERNATE MANUFACTURERS.

NOTE 1: PERIMETER WIRES ARE NOT REQUIRED WHEN LENGTH OF TEE IS 8" OR LESS.

*NOTE 2: PER IR 25-2.13 FIGURE 2.60 ALLOWS A SMALLER ANGLE WHEN USED IN CONJUCTION WITH A PROPRIETARY SEISMIC CLIP. USE PROPRIETARY CLIP PER MFR AS DRAWN AND AS NOTED IN SPECIFICATIONS AND ICC ESR REPORT.

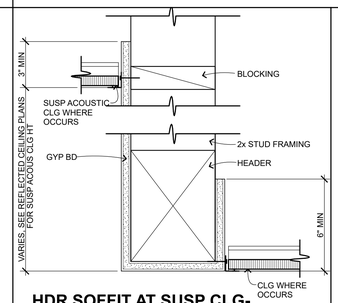
SUSP CLG PERIMETER-MFR CLIP

6" = 1'-0" C303206 **21**



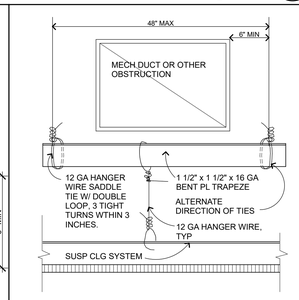
SERVERY SOFFIT AT SUSPENDED CEILING

3" = 1'-0" C303210_A-1783.00B **22**



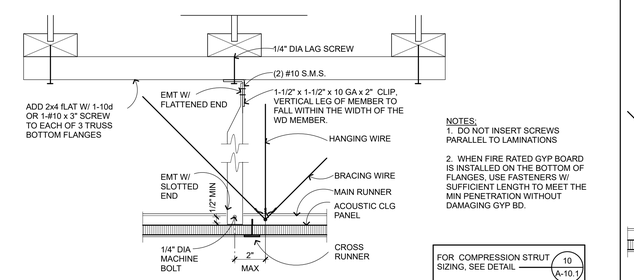
HDR SOFFIT AT SUSP CLG-WD

3" = 1'-0" C303210_A-1783.00 **28**



SUSP ACOUS CLG TRAPEZE

3" = 1'-0" C303203 **23**

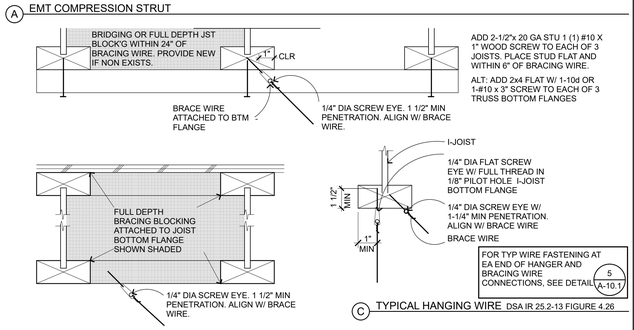


NOTES:
1. DO NOT INSERT SCREWS PARALLEL TO LAMINATIONS

2. WHEN FIRE RATED GYP BOARD IS INSTALLED ON THE BOTTOM OF FLANGES, USE FASTENERS W/ SUFFICIENT LENGTH TO MEET THE MIN PENETRATION WITHOUT DAMAGING GYP BD.

FOR COMPRESSION STRUT SIZING, SEE DETAIL 10 / A-10.1

A EMT COMPRESSION STRUT

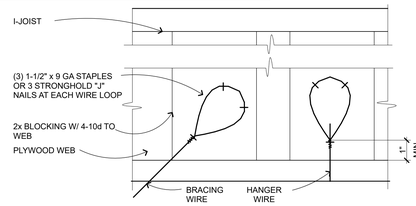


FOR TYP WIRE FASTENING AT EA END OF HANGER AND BRACING WIRE CONNECTIONS, SEE DETAIL 5 / A-10.1

C TYPICAL HANGING WIRE DSA IR 25.2-13 FIGURE 4.26

HANGER OR BRACING WIRE ANCHORS TO THE STRUCTURE SHOULD BE INSTALLED IN SUCH A MANNER THAT THE DIRECTION OF THE ANCHOR ALIGNS AS CLOSELY AS POSSIBLE W/ THE DIRECTION OF THE WIRE. HANGER AND BRACING WIRES SHALL NOT ATTACH TO OR GEND AROUND OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO :PIPING, DUCTWORK, CONDUIT AND EQUIPMENT.

B TYPICAL BRACING WIRE DSA IR 25.2-13 FIGURES 4.36 & 4.37



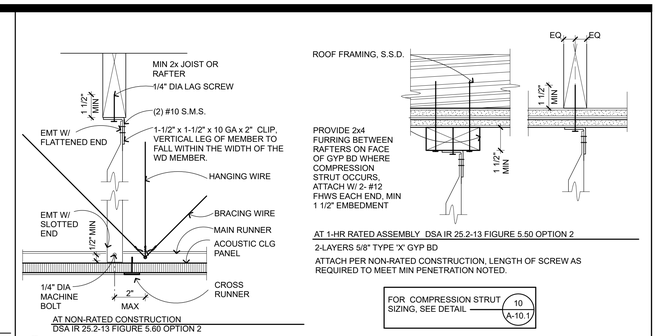
C ALTERNATE WIRE ATTACHMENTS

SEE ALSO 4 / A-10.1, 5 / A-10.1, 9 / A-10.1, 23 / A-10.1

FOR SUSPENDED CEILING CONDITIONS & NOTES

SUSPENDED ACOUSTIC CEILING-TJI

3" = 1'-0" C303205 **13**



AT 1-HR RATED ASSEMBLY DSA IR 25.2-13 FIGURE 5.50 OPTION 2

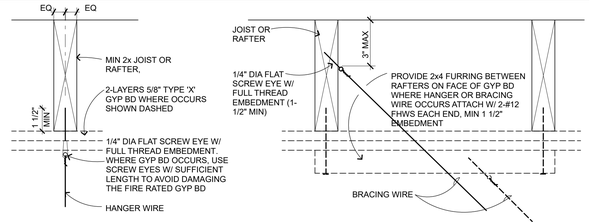
2-LAYERS 5/8" TYPE 'X' GYP BD

ATTACH PER NON-RATED CONSTRUCTION, LENGTH OF SCREW AS REQUIRED TO MEET MIN PENETRATION NOTED.

FOR COMPRESSION STRUT SIZING, SEE DETAIL 10 / A-10.1

AT NON-RATED CONSTRUCTION DSA IR 25.2-13 FIGURE 5.60 OPTION 2

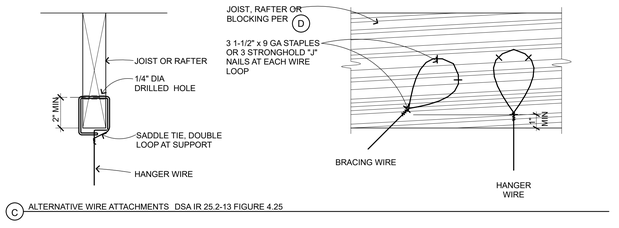
A EMT COMPRESSION STRUT



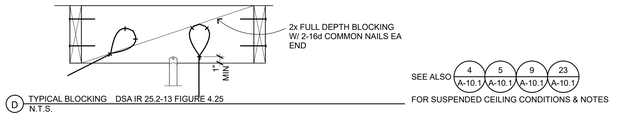
HANGER OR BRACING WIRE ANCHORS TO THE STRUCTURE SHOULD BE INSTALLED IN SUCH A MANNER THAT THE DIRECTION OF THE ANCHOR ALIGNS AS CLOSELY AS POSSIBLE W/ THE DIRECTION OF THE WIRE. HANGER AND BRACING WIRES SHALL NOT ATTACH TO OR BEND AROUND OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO: PIPING, DUCTWORK, CONDUIT, AND EQUIPMENT.

FOR TYP WIRE FASTENING AT EA END OF HANGER AND BRACING WIRE CONNECTIONS, SEE DETAIL 5 / A-10.1

B TYPICAL HANGING AND BRACING WIRES DSA IR 25.2-13 FIGURES 4.25 & 4.35



C ALTERNATIVE WIRE ATTACHMENTS DSA IR 25.2-13 FIGURE 4.25



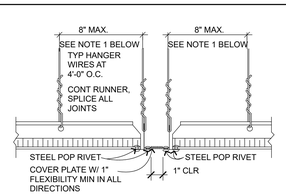
D TYPICAL BLOCKING DSA IR 25.2-13 FIGURE 4.25 N.T.S.

SEE ALSO 4 / A-10.1, 5 / A-10.1, 9 / A-10.1, 23 / A-10.1

FOR SUSPENDED CEILING CONDITIONS & NOTES

SUSPENDED ACOUSTIC CEILING

3" = 1'-0" C303204 **3**



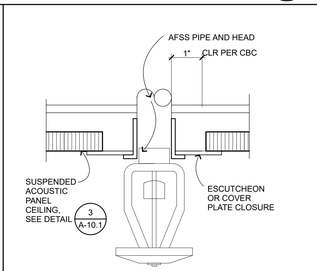
DSA IR 25-2.13 FIGURE 2.40

REQUIRED AT EXITWAY INTERSECTION OR AS EXPANSION JOINT FOR CEILING AREAS OVER 2,500 SF

1. PROVIDE #12 GAGE HANGER WIRES AT THE ENDS OF ALL MAIN AND CROSS RUNNERS WITHIN EIGHT (8) INCHES OF THE SUPPORT OR WITHIN ONE-FOURTH (1/4) OF THE LENGTH OF THE END TEE, WHICHEVER IS LESS, FOR THE PERIMETER OF THE CEILING AREA. PERIMETER WIRES ARE NOT REQUIRED WHEN THE LENGTH OF THE END TEE IS EIGHT (8) INCHES OR LESS.

SUSP CLG EXP JT

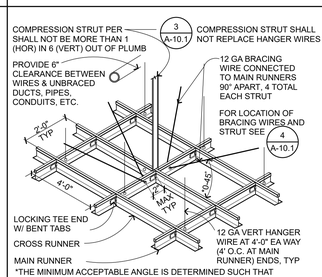
6" = 1'-0" C303216 **19**



NOTE: IN LIEU OF OVERSIZED RING A FLEXIBLE SPRINKLER HOSE FITTING THAT ALLOWS ONE INCH OF CEILING MOVEMENTSHALL BE PERMITTED

FIRE SPRINKLER HD PLATE

6" = 1'-0" C303217 **14**

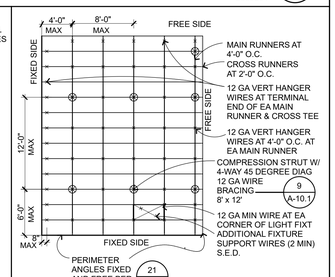


*THE MINIMUM ACCEPTABLE ANGLE IS DETERMINED SUCH THAT THE WIRES DO NOT INTERFERE WITH THE RUNNERS, LIGHT FIXTURES, ETC. AND REMAIN STRAIGHT AND UNOBSTRUCTED.

DSA IR 25.2-13 FIGURE 2.35

CROSS-TEE INTERSECTION

1 1/2"= 1'-0" C303201 **9**



DSA IR 25.2-13 FIGURES 2.10 2.11 & 2.12

SUSP CLG SUPPORT PLAN

1/8" = 1'-0" C303208 **4**

PER DSA IR 25-2.13 FIGURE 3.21

EMT COMPRESSION STRUT	MAXIMUM LENGTH
1/2" DIA EMT (0.042" WALL TH)	3'-11"
3/4" DIA EMT (0.049" WALL TH)	6'-4"
1" DIA EMT (0.057" WALL TH)	9'-9"
1 1/4" DIA EMT (0.065" WALL TH)	12'-9"
1-1/2" DIA EMT (0.065" WALL TH)	14'.-9"
2" DIA EMT (0.065" WALL TH)	18'-10"

CHANNEL COMPRESSION STRUT	MAXIMUM LENGTH
250S125-33	5'-0"
250S137-33	6'-10"
362S137-33	8'-0"
250S137-43	8'-10"
400S137-43	10'-10"

COMPRESSION STRUT TABLE

1" = 1'-0" C303214 **10**

1. GENERAL REQUIREMENTS: CBC Section 1616 & IR 25-2.13 govern the design and installation of metal suspension systems for lay-in ceilings.The details are for ceilings whose total weight, including ceiling mounted air terminals, services and light fixtures, does not exceed 4 PSF.
SEE DETAILS FOR SPECIFIC REQUIREMENTS
All ceiling grid system components shall be from a single manufacturer.
SEE SPECIFICATIONS FOR DETAILED REQUIREMENTS

2. Refer to reflected ceiling plans for locations of expansion joints and seismic separation joints as occur.

3. Lateral force bracing may be omitted for suspended acoustical ceiling systems with a ceiling area of 144 square feet or less, and fire rated suspended acoustical ceiling systems with a ceiling area of 96 square feet or less, when perimeter support in accordance with governing regulations are provided and perimeter walls are designed to carry the ceiling lateral forces.

4. For attachment of all light fixtures, flush, recessed or otherwise ceiling mounted, refer to electrical drawings for details.

5. For attachment of ceiling mounted air terminals , grilles, mechanical terminals, and flexible sprinkler hose fittings or other services be supported directly on runner, refer to mechanical drawings for details.

6. Ceiling panels shall not support any light fixture, air terminals or devices.

TYPICAL WIRE FASTENING:

HANGER WIRES: 12 GA WIRE WITH MINIMUM OF 3 TIGHT TURNS IN 3 INCHES, BOTH ENDS, TYPICAL.
BRACING WIRES: 12 GA WIRE WITH MINIMUM OF 4 TIGHT TURNS IN 1-1/2" EACH END, TYPICAL.

TYP SUSP CEILING NOTES

1/8" = 1'-0" C303209.2016 **5**

QUATTROCCHI KWOK ARCHITECTS
Main Office:
636 Fifth Street, Santa Rosa, CA 95404
Pleasanton Office:
600 Main Street, Suite E,
Pleasanton, CA 94566
(707) 576-0829

LICENSED ARCHITECT ★ JIM THEISS LICENSE # C22643 EXP JUNE 30, 2021 ★ STATE OF CALIFORNIA

SIGNED: DECEMBER 28, 2020

LIBERTY HIGH SCHOOL

ADMINISTRATION & STUDENT COMMONS

850 2ND STREET
BRENTWOOD, CA 94513

LIBERTY UNION HIGH SCHOOL DISTRICT

2	12/18/20	ADD-02

DSA APP NO. 01-119033

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PTN: 61721-75 FILE NO: 7-H4

CD

DECEMBER 28, 2020

SHEET TITLE

CEILING DETAILS

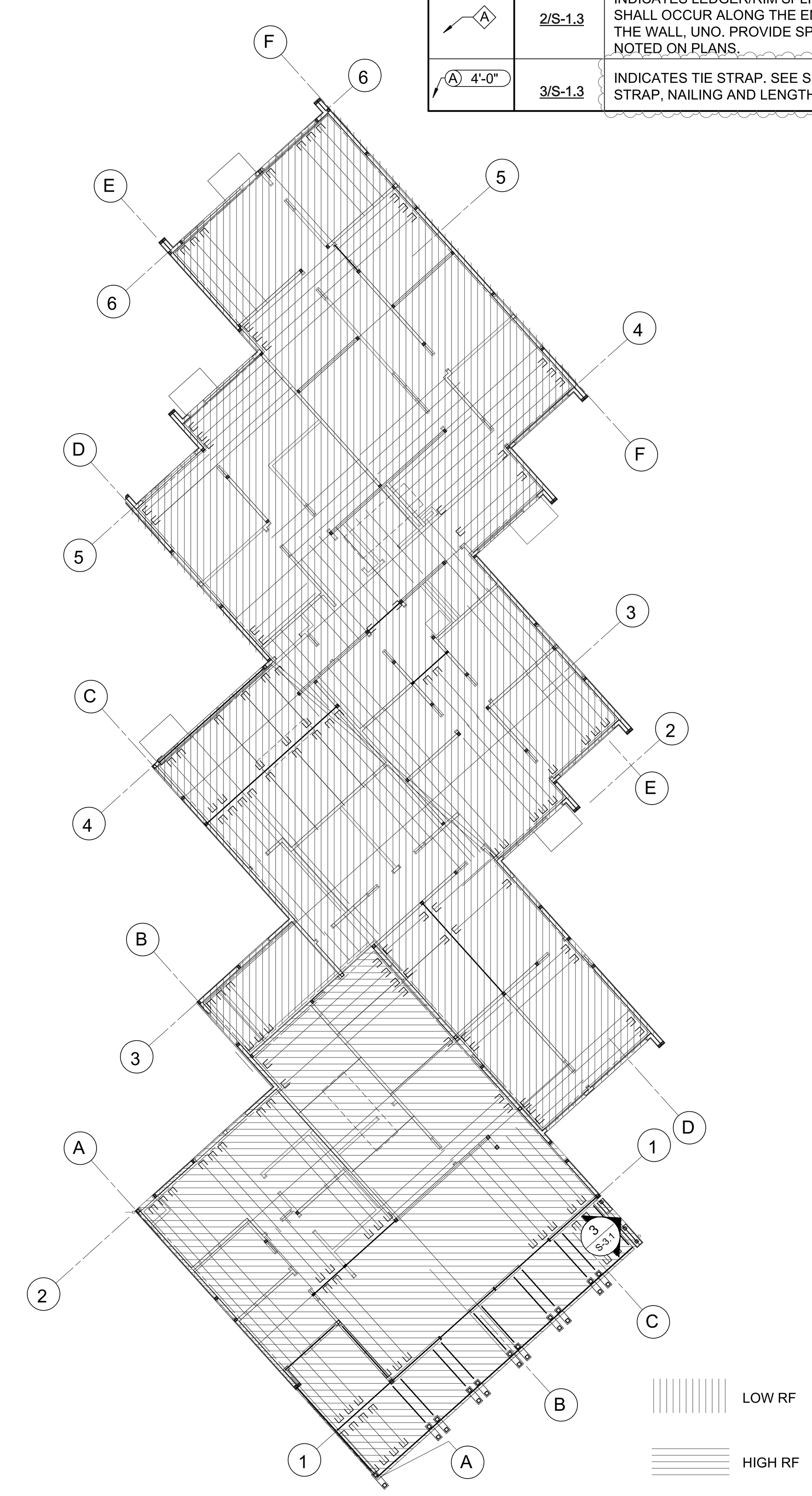
SHEET NUMBER

ADDENDUM 02

A-10.1

ADMINISTRATION BUILDING - ROOF FRAMING PLAN

1/8" = 1'-0"



DIAPHRAGM PLAN

1/16" = 1'-0"

TOP PLATE SPLICE SCHEDULE		
MARK	LAP SPLICE (CASE 1)	STRAP SPLICE (CASE 2)
A	(12) 16d PER 4'-0" MIN LAP	MSTC28
B	(22) 16d PER 4'-0" MIN LAP	MSTC40
C	(26) 16d PER 6'-0" MIN LAP	MSTC52
D	(32) 16d PER 6'-0" MIN LAP	MSTC66
E	(36) 16d PER 8'-0" MIN LAP	MSTC28 EA SIDE
F	(44) 16d PER 8'-0" MIN LAP	MSTC40 EA SIDE
G	(50) 16d PER 10'-0" MIN LAP	MSTC52 EA SIDE

LEDGER SPLICE SCHEDULE				
MARK	CASE	STRAP/PLATE	CASE	STRAP/PLATE
A	1	MSTA24	-	
B	1	MSTA30	-	
C	2	MSTI48	3	MSTI60
D	2	CMST14x5'-6"	3	CMST14x6'-0"
E	2	(2) MSTI48	4	℞ ¼" W/ (6) 1"ø MB ES OF SPLICE

TIE STRAP SCHEDULE						
MARK	STRAP	MIN. NAILING ES OF ◆	MAX. NAIL SPACING (SEE NOTES #1 & #2)			MIN. END LENGTH (EL)
			CASE 1	CASE 2		
				EL	RL	
A	CS16	(10) 10d	10d @ 4"oc STGR	FILL ALL NAIL HOLES	10d @ 4"oc STGR	12"
B	CS14	(13) 10d	10d @ 4"oc STGR	FILL ALL NAIL HOLES	10d @ 4"oc STGR	16"
C	CMSTC16	(25) 10d	10d @ 3"oc STGR	FILL ALL NAIL HOLES	10d @ 3"oc STGR	24"
D	CMST14	(33) 10d	10d @ 3½"oc STGR	FILL ALL NAIL HOLES	10d @ 3½"oc STGR	32"
E	CMST12	(43) 10d	10d @ 3½"oc STGR	FILL ALL NAIL HOLES	10d @ 3½"oc STGR	48"

1. CASE 1 APPLIES UNLESS END LENGTH (EL) IS NOTED ON PLANS. WHERE END LENGTH (EL) IS NOTED, SEE CASE 2.

FRAMING PLAN NOTES:

1. REFER TO SHEETS S-0.1, S-1.2, S-1.3, S-1.4, AND S-1.5 FOR GENERAL NOTES AND TYPICAL DETAILS. THE FOLLOWING DETAIL REFERENCES ARE PROVIDED FOR THE CONTRACTOR'S CONVENIENCE ONLY. ALL GENERAL NOTES AND TYPICAL DETAIL SHEETS NOTED ABOVE ARE APPLICABLE AND SHALL BE FOLLOWED.
2. DIMENSIONS ARE TO FACE OF STUD UNLESS NOTED OTHERWISE. COORDINATE ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS PRIOR TO CONSTRUCTION. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES.
3. MECHANICAL, ELECTRICAL AND PLUMBING PENETRATIONS THROUGH WALLS, ROOFS OR FLOORS SHALL BE PER REFERENCES BELOW UNLESS SHOWN AND DETAILED OTHERWISE ON THE STRUCTURAL PLANS. NOTIFY ARCHITECT/ENGINEER PRIOR TO ANY INSTALLATION NOT CONFORMING TO THESE DETAILS.

   PENETRATIONS THROUGH SHEAR WALLS SHALL BE PER 7/S-1.2.

   PENETRATIONS THROUGH ROOFS SHALL BE PER 6/S-1.2.
4. ALL NEW WOOD EXTERIOR WALLS NOT DESIGNATED AS SHEAR WALLS ON PLANS SHALL BE SHEATHED AS SHEAR WALL TYPE 'A' PER SHEAR WALL SCHEDULE, UNLESS NOTED OTHERWISE.
5. SEISMIC GAPS WHERE NOTED ARE DIMENSIONED CLEAR BETWEEN WALL FINISHES. THIS GAP TO BE MAINTAINED ENTIRELY CLEAR TO ALLOW FOR DIFFERENTIAL BUILDING MOVEMENT. NO PIPES, CONDUITS, ETCETERA SHALL BE LOCATED WITHIN THE GAP. PROVIDE FLEXIBLE COUPLINGS AT ALL UTILITIES CROSSING SEISMIC GAPS.

PLAN LEGEND		
SYMBOL	REFERENCE DETAIL	DESCRIPTION
88		INDICATES GRIDLINE.
	1/S-1.2	INDICATES STRUCTURAL WALL.
	E/S-0.1 16/S-1.2	INDICATES WOOD POST.
	6/S-1.3	INDICATES STEEL COLUMN.
	12/S-1.2	INDICATES PANEL EDGE NAILING ALONG FULL LENGTH OF MEMBER. PROVIDE 2x SB @ 24"oc.
	E/S-0.1 G/S-0.1	INDICATES HANGER.
	H/S-0.1	INDICATES STL BM.
		INDICATES LEDGER. SEE PLAN FOR SIZE AND ANCHORAGE.
1	11/S-7.1	INDICATES METAL DECK AND DIRECTION OF DECK SPAN.
MU 1,000#	7/S-1.3 8/S-1.3	INDICATES APPROXIMATE LOCATION, SIZE AND MAXIMUM WEIGHT OF MECHANICAL UNIT. SEE MECHANICAL DRAWINGS FOR ANCHORAGE AND ADDITIONAL INFORMATION.
		INDICATES EXISTING FRAMING.
A	1/S-1.3	INDICATES TOP PLATE SPLICE. SPLICE TYPE SHALL OCCUR ALONG THE ENTIRE LENGTH OF THE WALL, UNO. PROVIDE SPLICE TYPE 'A' IF NOT NOTED ON PLANS.
A	2/S-1.3	INDICATES LEDGER/RIM SPLICE. SPLICE TYPE SHALL OCCUR ALONG THE ENTIRE LENGTH OF THE WALL, UNO. PROVIDE SPLICE TYPE 'A' IF NOT NOTED ON PLANS.
A 4'-0"	3/S-1.3	INDICATES TIE STRAP. SEE SCHEDULE FOR STRAP, NAILING AND LENGTH.

2

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Main Office:
636 Fifth Street, Santa Rosa, CA 95404
Pleasanton Office:
600 Main Street, Suite E,
Pleasanton, CA 94566
(707) 576-0829

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REGISTERED PROFESSIONAL ENGINEER CHRIS S. WARNER No. S4613 STRUCTURAL STATE OF CALIFORNIA
12/16/2020

LIBERTY HIGH SCHOOL

ADMINISTRATION & STUDENT COMMONS

850 2nd Street
Brentwood CA 94513

LIBERTY UNION HIGH SCHOOL DISTRICT

REVISIONS

2	12/18/20	ADD-02

DSA APP NO. 01-119033

ARCH PROJECT NO: 1783.00
ENGR / PM: KPB / AIZ
DRAWING SCALE: As indicated
PTN: 61721-75 FILE NO: 7-H4

CD

DECEMBER 2, 2020

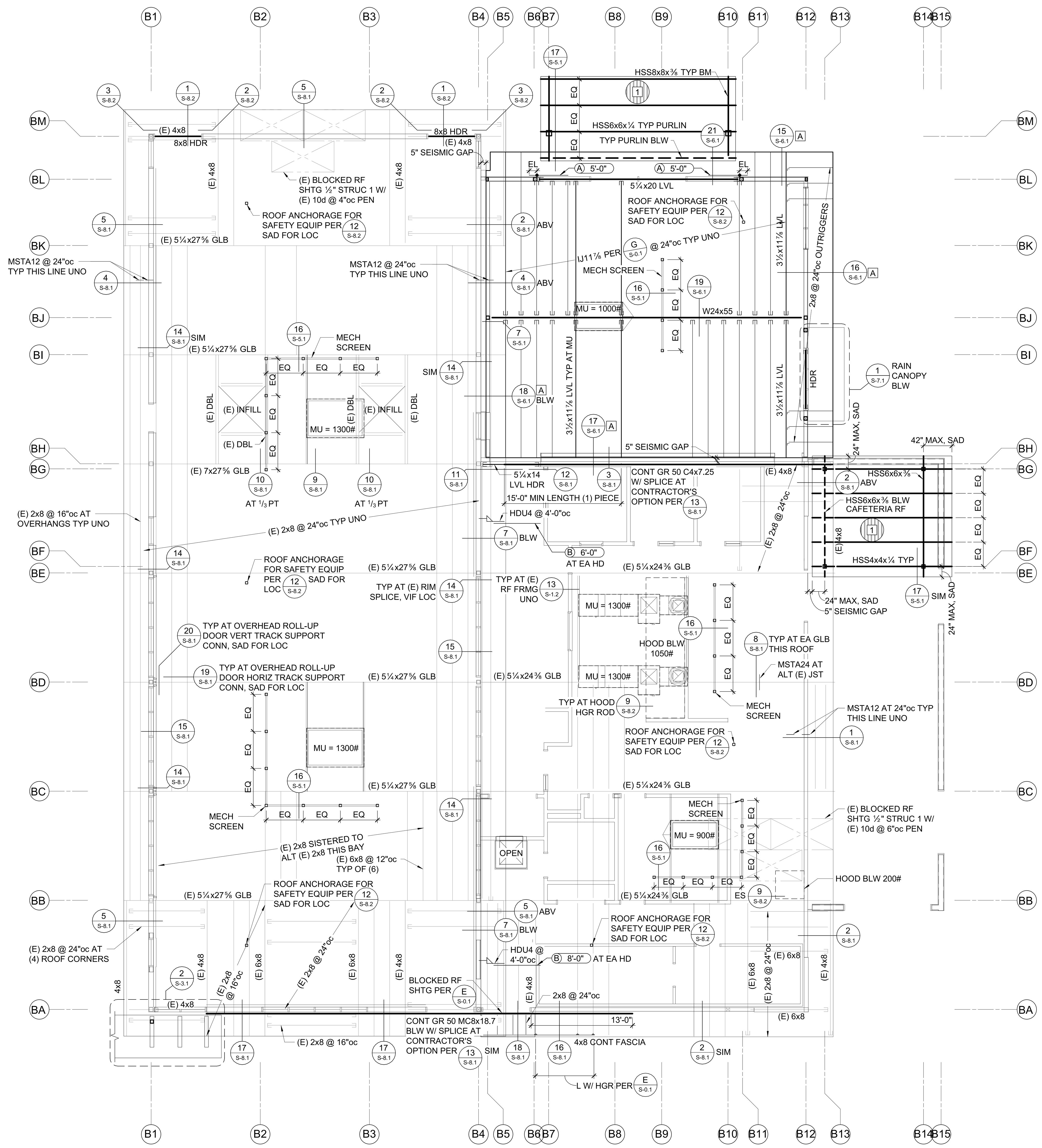
SHEET TITLE

ADMINISTRATION BUILDING ROOF FRAMING PLAN

SHEET NUMBER

ADDENDUM 02

S-A2.2



CAFETERIA - ROOF FRAMING PLAN

1/8" = 1'-0"

FRAMING PLAN NOTES:

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A 4'-0"	3/S-1.3	INDICATES TIE STRAP. SEE SCHEDULE FOR STRAP, NAILING AND LENGTH.

2

TOP PLATE SPLICE SCHEDULE

MARK	LAP SPLICE (CASE 1)	STRAP SPLICE (CASE 2)
A	(12) 16d PER 4'-0" MIN LAP	MSTC28
B	(22) 16d PER 4'-0" MIN LAP	MSTC40
C	(26) 16d PER 6'-0" MIN LAP	MSTC52
D	(32) 16d PER 6'-0" MIN LAP	MSTC66
E	(36) 16d PER 8'-0" MIN LAP	MSTC28 EA SIDE
F	(44) 16d PER 8'-0" MIN LAP	MSTC40 EA SIDE
G	(50) 16d PER 10'-0" MIN LAP	MSTC52 EA SIDE

TIE STRAP SCHEDULE

MARK	STRAP	MIN. NAILING ES OF ◆	MAX. NAIL SPACING (SEE NOTES #1 & #2)			MIN. END LENGTH (EL)
			CASE 1	CASE 2		
				EL	RL	
A	CS16	(10) 10d	10d @ 4"oc STGR	FILL ALL NAIL HOLES	10d @ 4"oc STGR	12"
B	CS14	(13) 10d	10d @ 4"oc STGR	FILL ALL NAIL HOLES	10d @ 4"oc STGR	16"
C	CMSTC16	(25) 10d	10d @ 3"oc STGR	FILL ALL NAIL HOLES	10d @ 3"oc STGR	24"
D	CMST14	(33) 10d	10d @ 3½"oc STGR	FILL ALL NAIL HOLES	10d @ 3½"oc STGR	32"
E	CMST12	(43) 10d	10d @ 3½"oc STGR	FILL ALL NAIL HOLES	10d @ 3½"oc STGR	48"

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DECEMBER 2, 2020

SHEET TITLE

CAFETERIA ROOF FRAMING PLAN

SHEET NUMBER

ADDENDUM 02

S-B2.2

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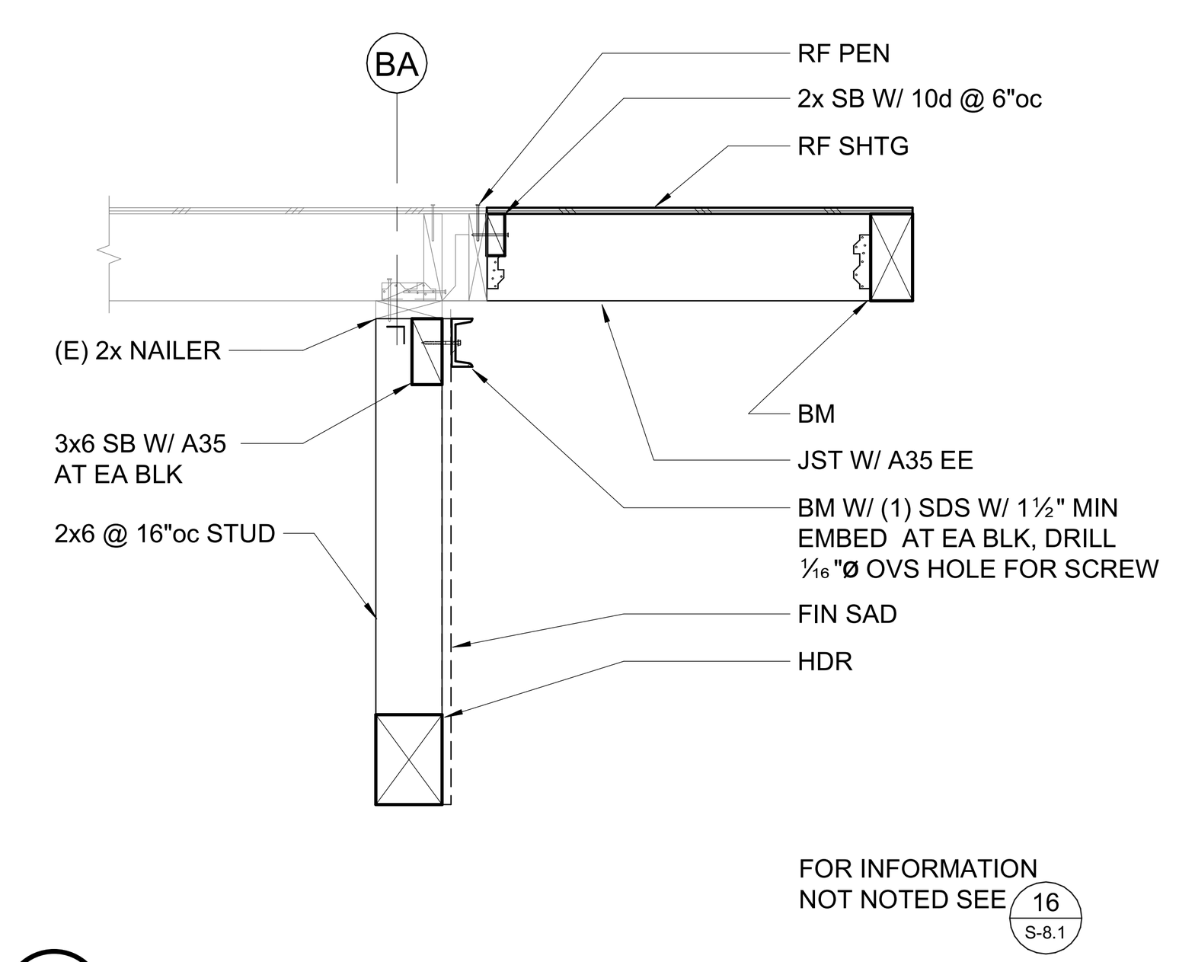

18 COLLECTOR
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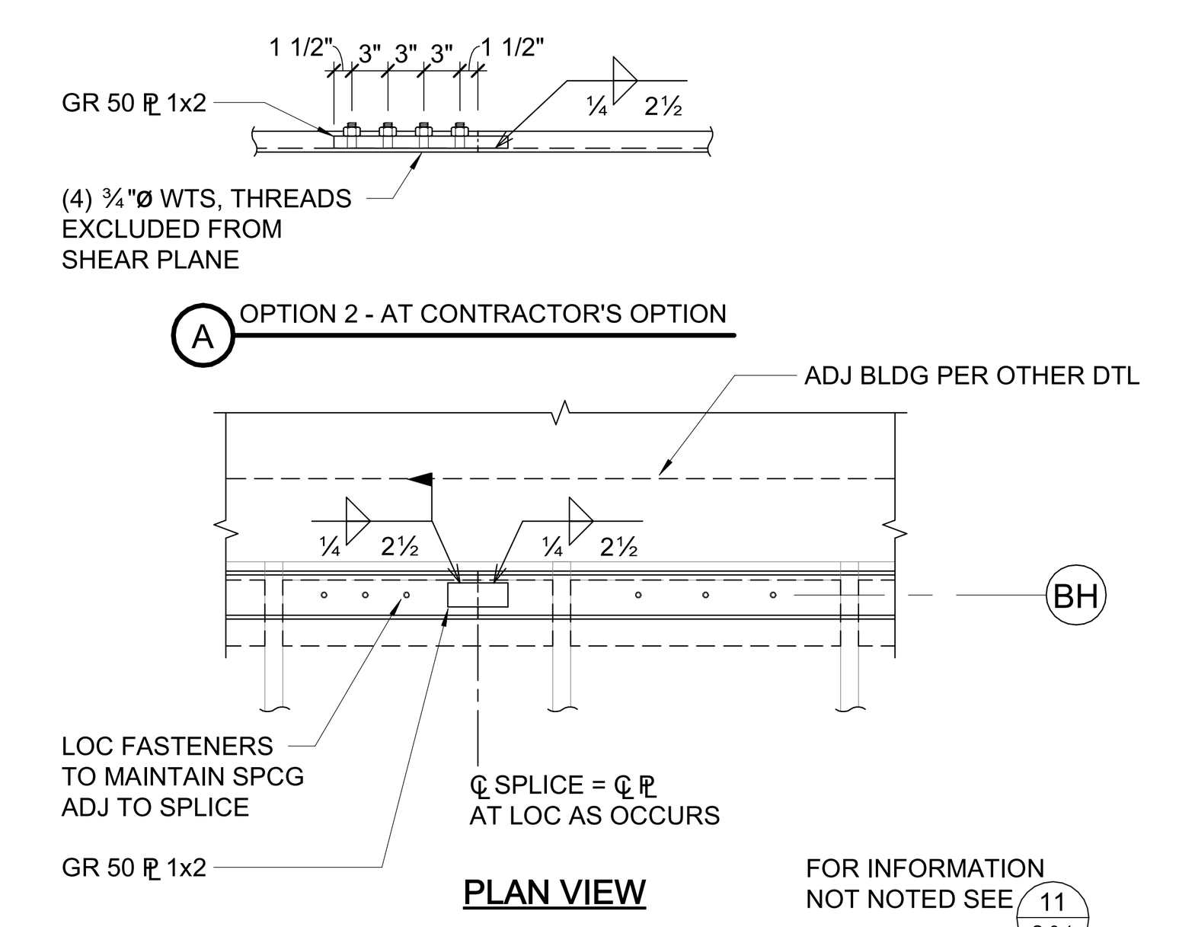

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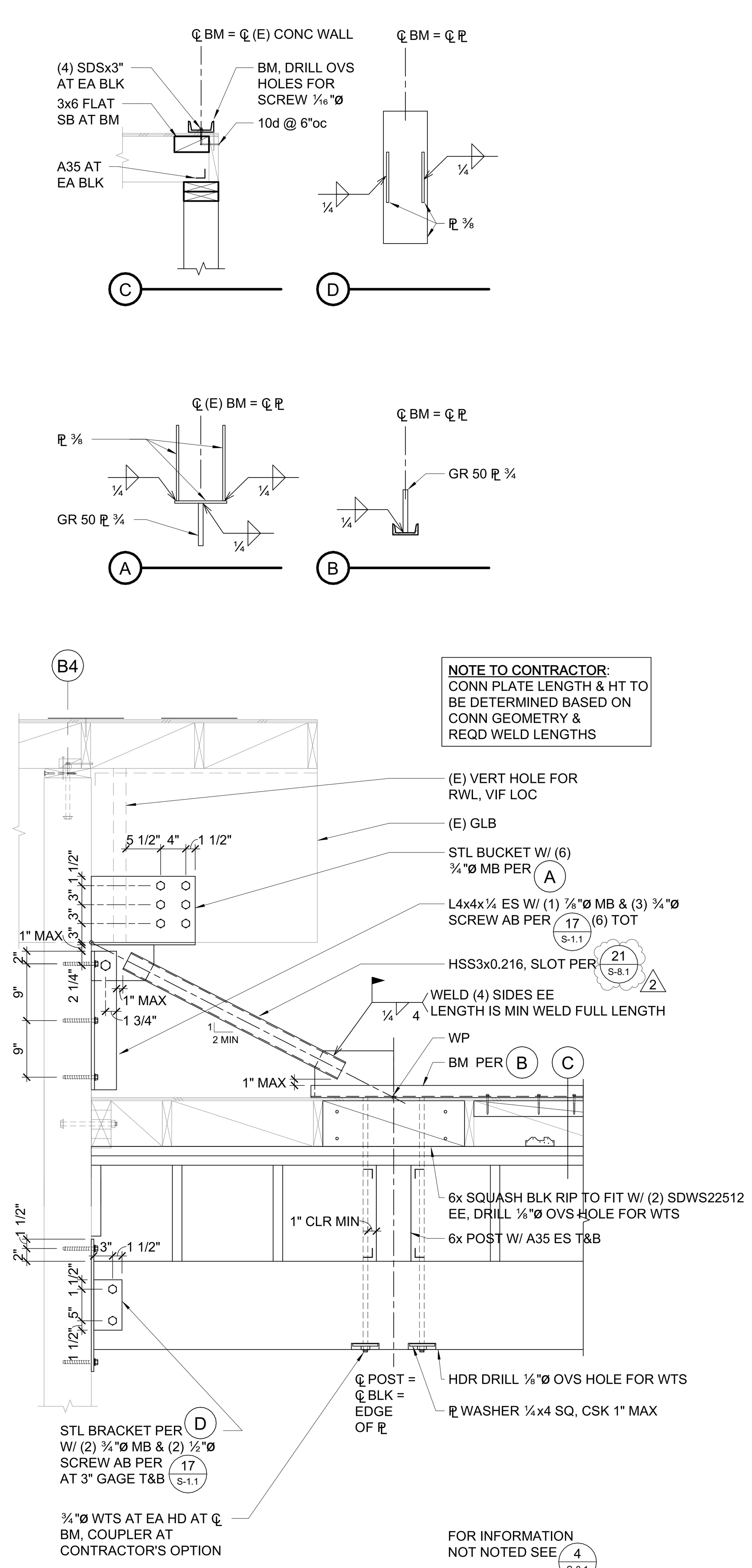
3/4" = 1'-0"



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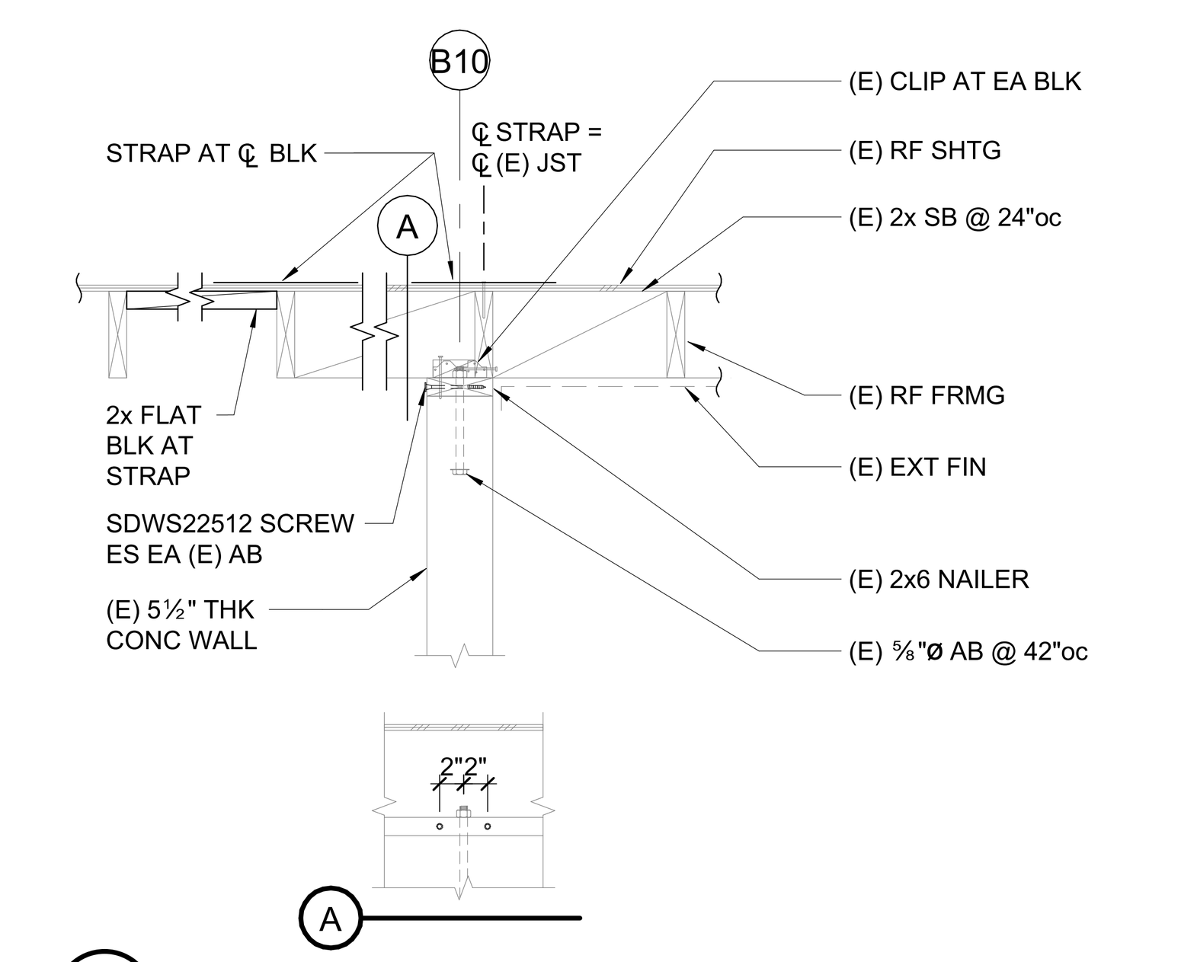
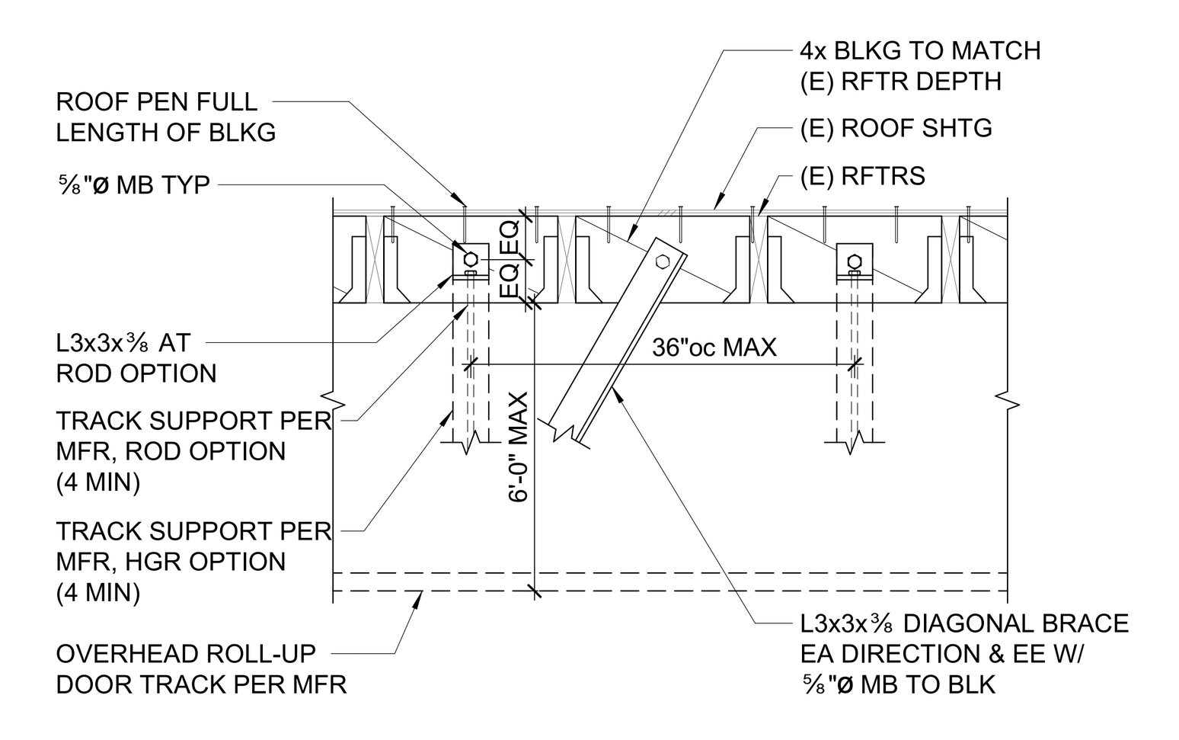
3/4" = 1'-0"

6 NOT USED
3/4" = 1'-0"



1 WALL ANCHORAGE - PARALLEL TO FRAMING
3/4" = 1'-0"



19 OVERHEAD ROLL-UP DOOR HORIZONTAL TRACK SUPPORT
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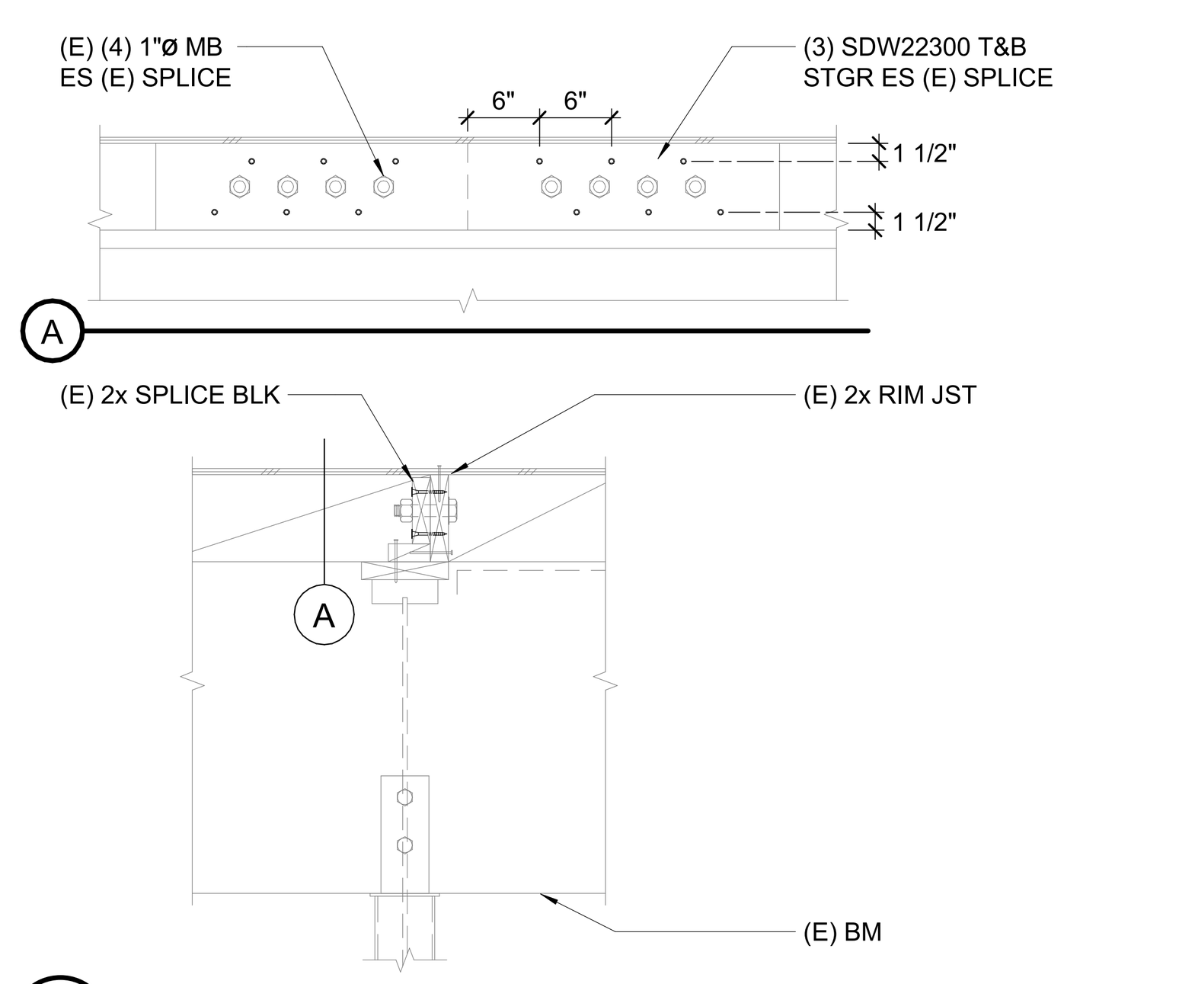

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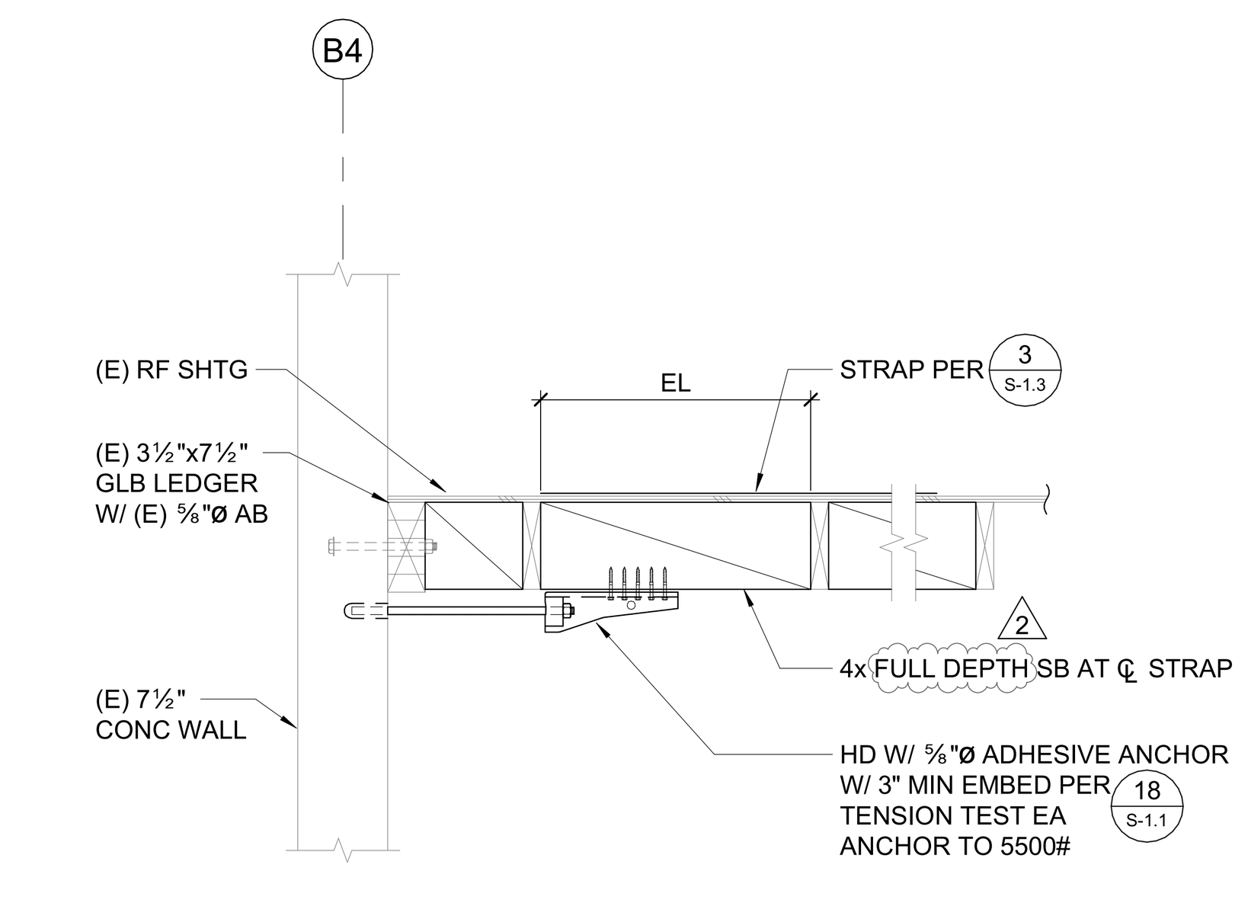

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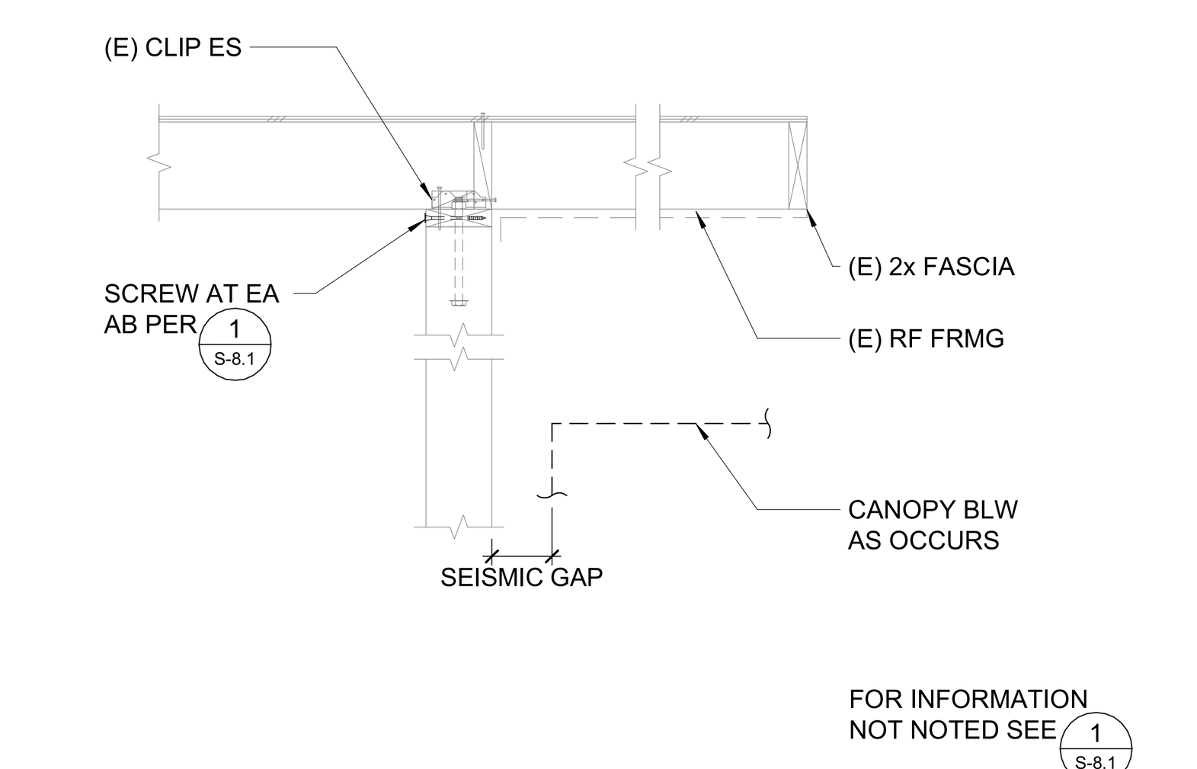

2 WALL ANCHORAGE - PERPENDICULAR TO FRAMING
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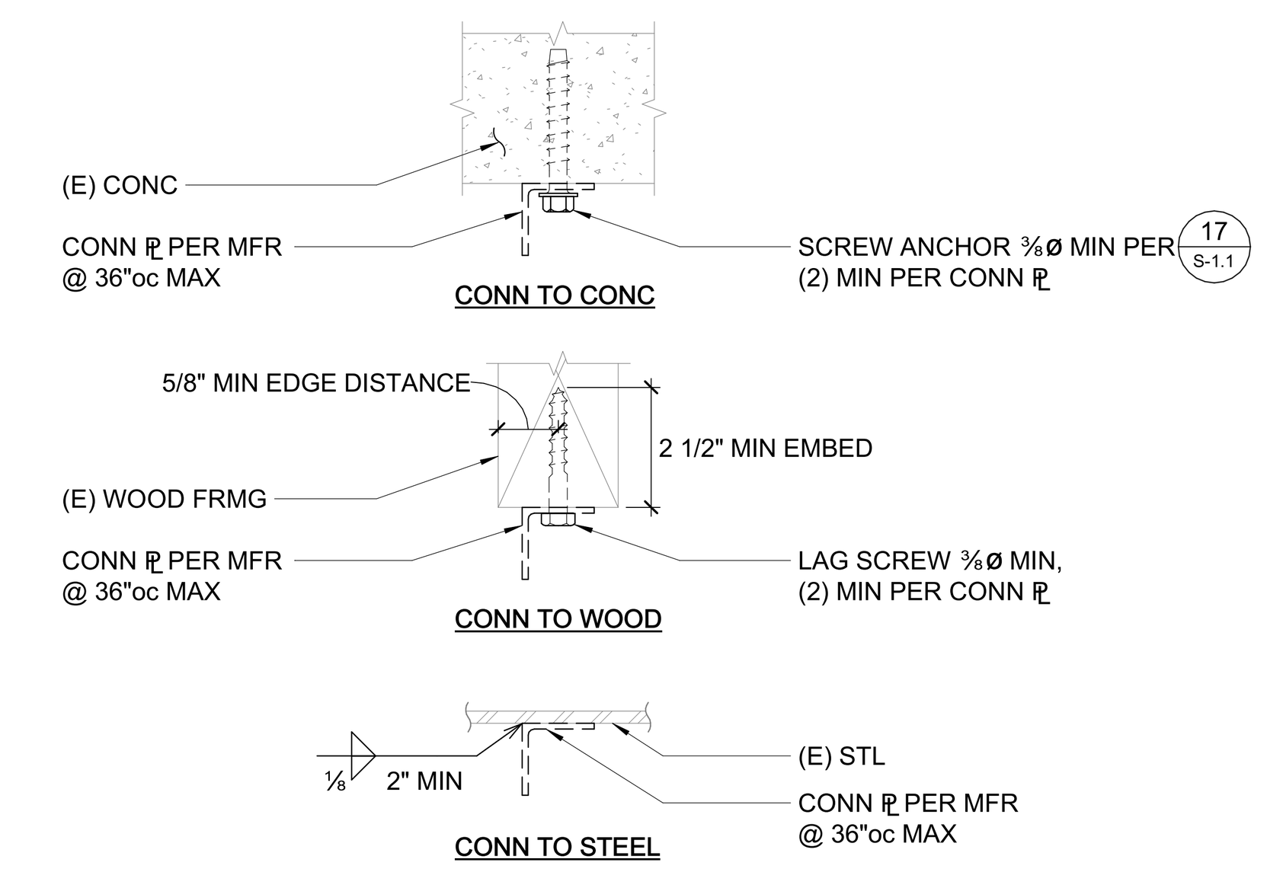
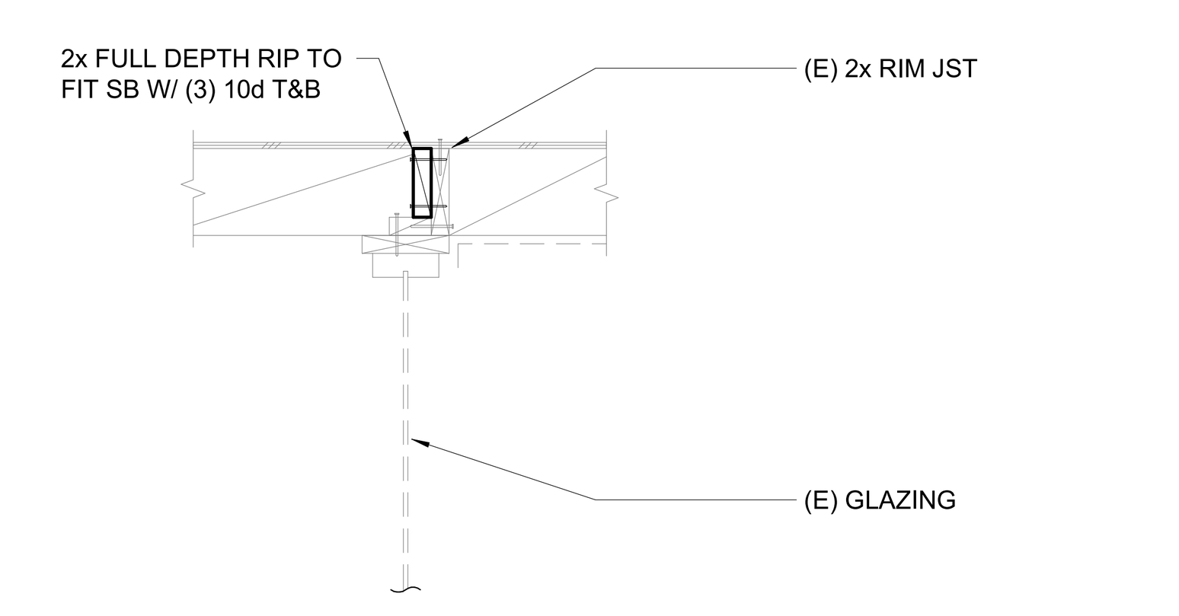


20 OVERHEAD ROLL-UP DOOR VERTICAL TRACK SUPPORT
3" = 1'-0"



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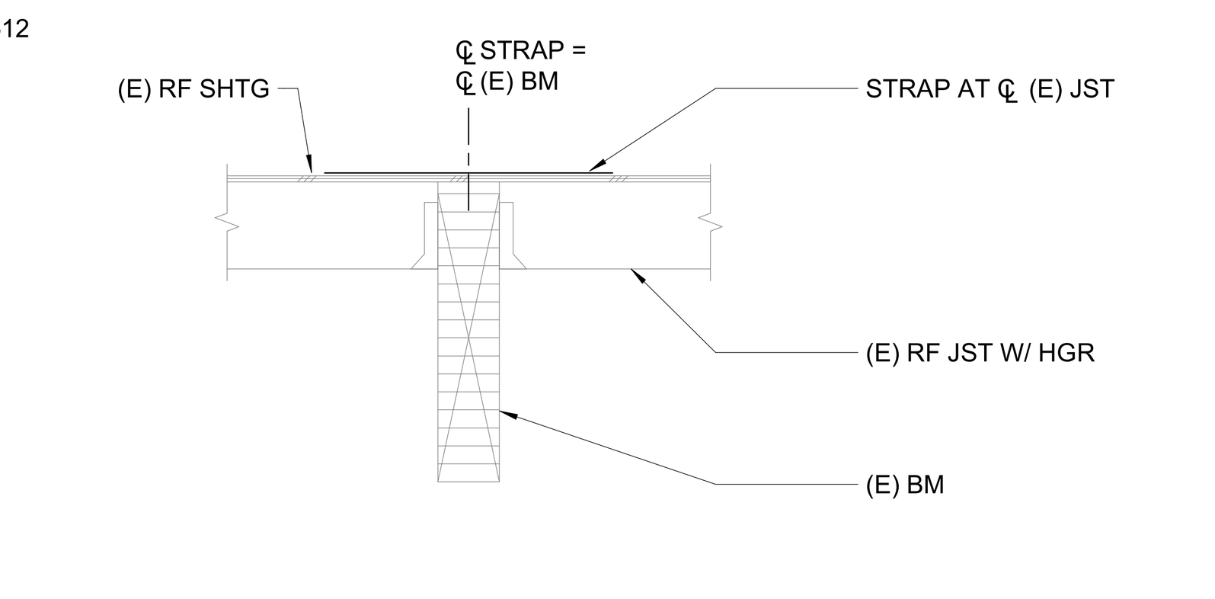
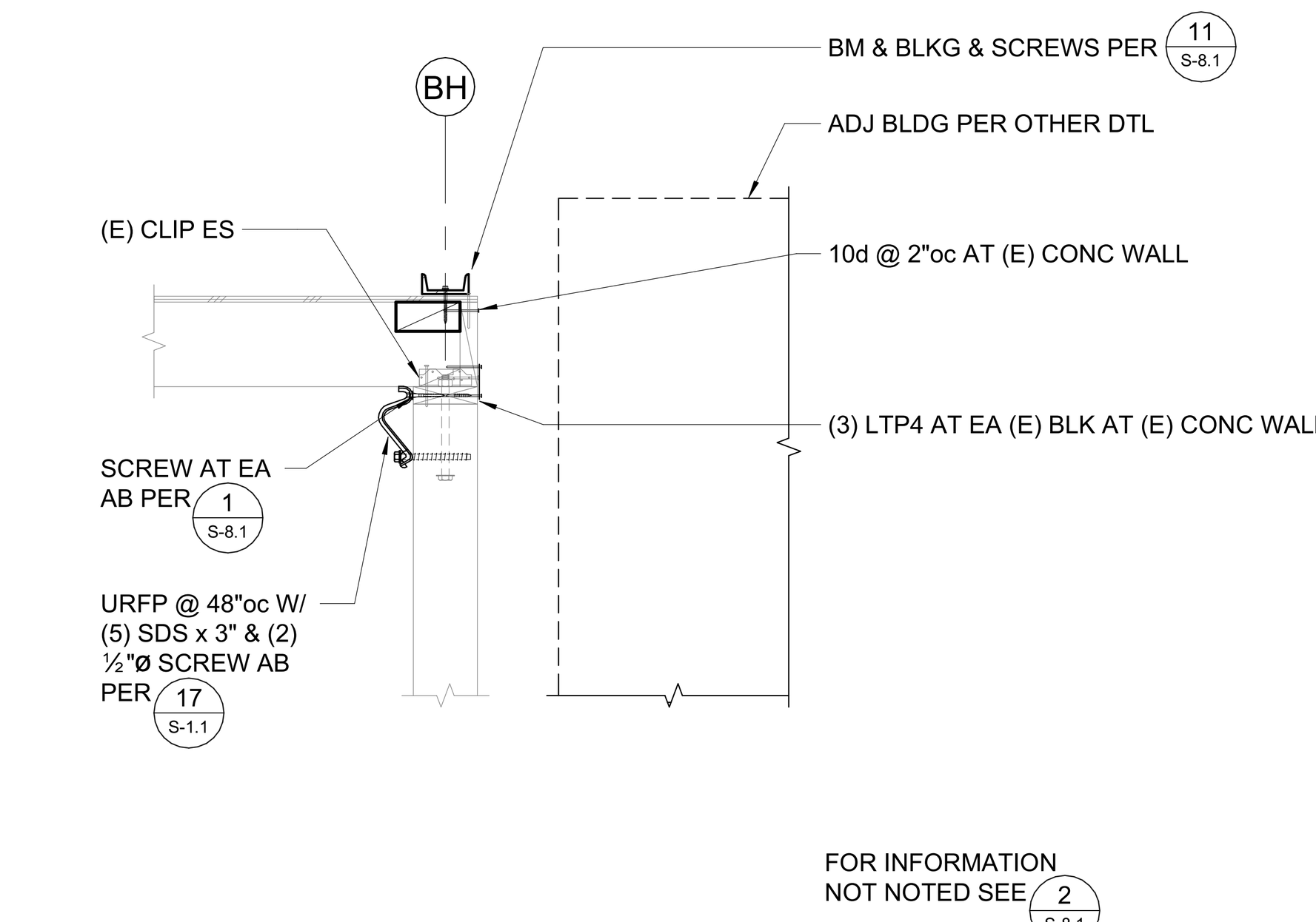


8 JOIST TO BEAM
3/4" = 1'-0"



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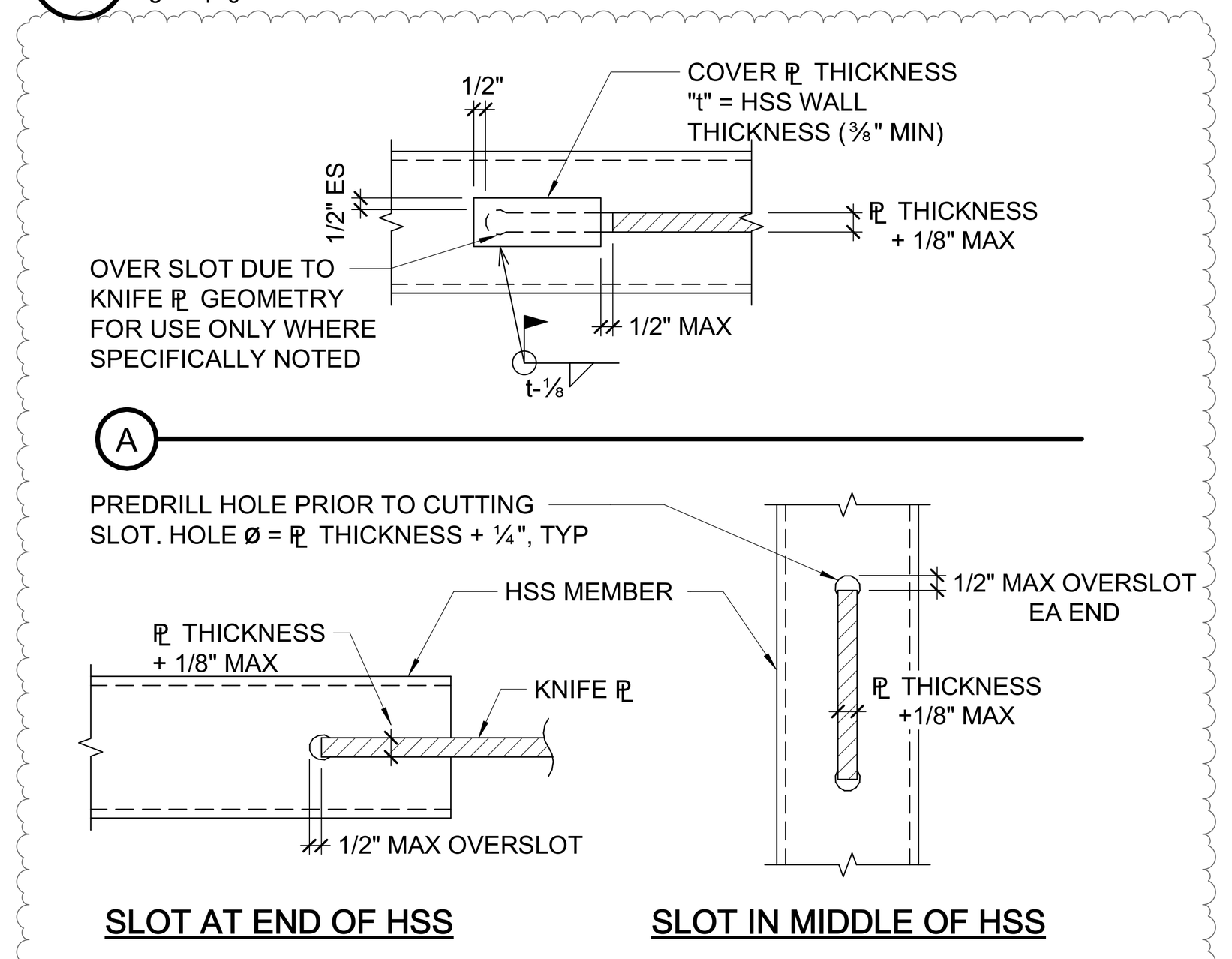
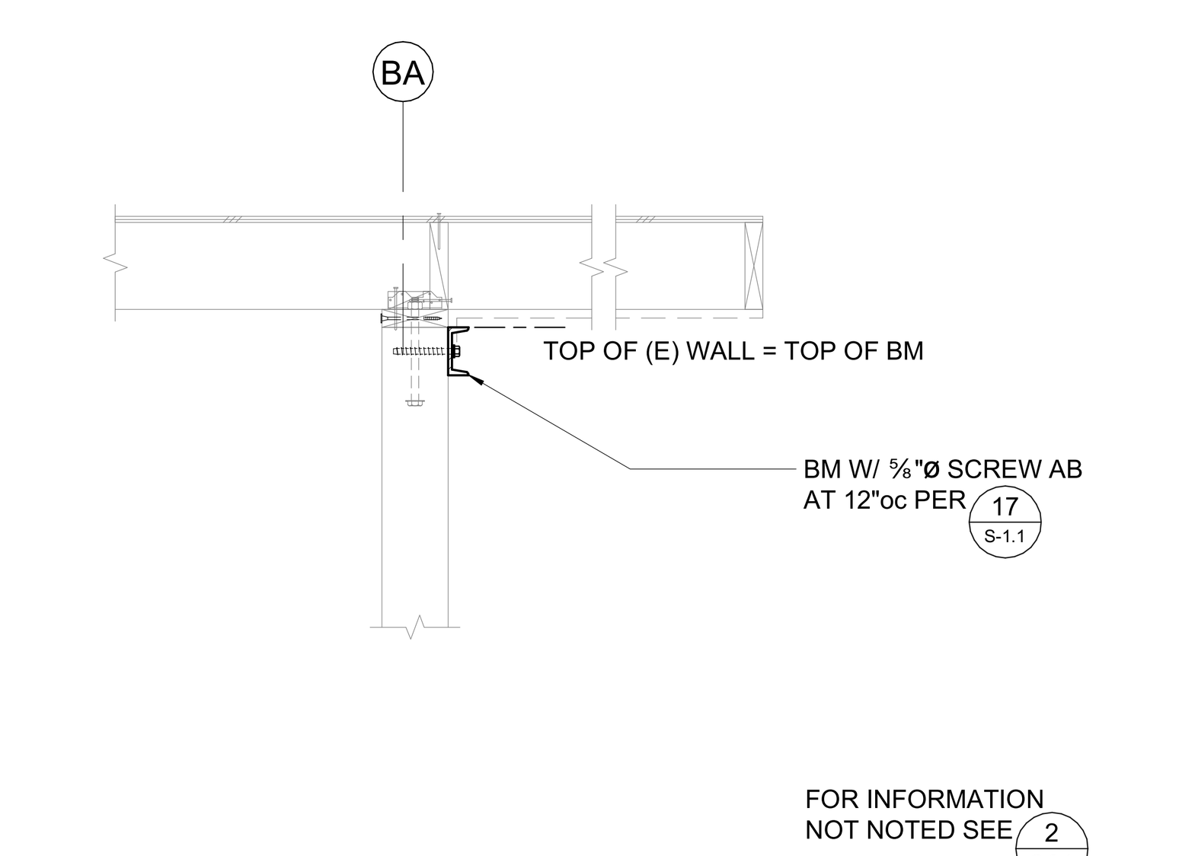
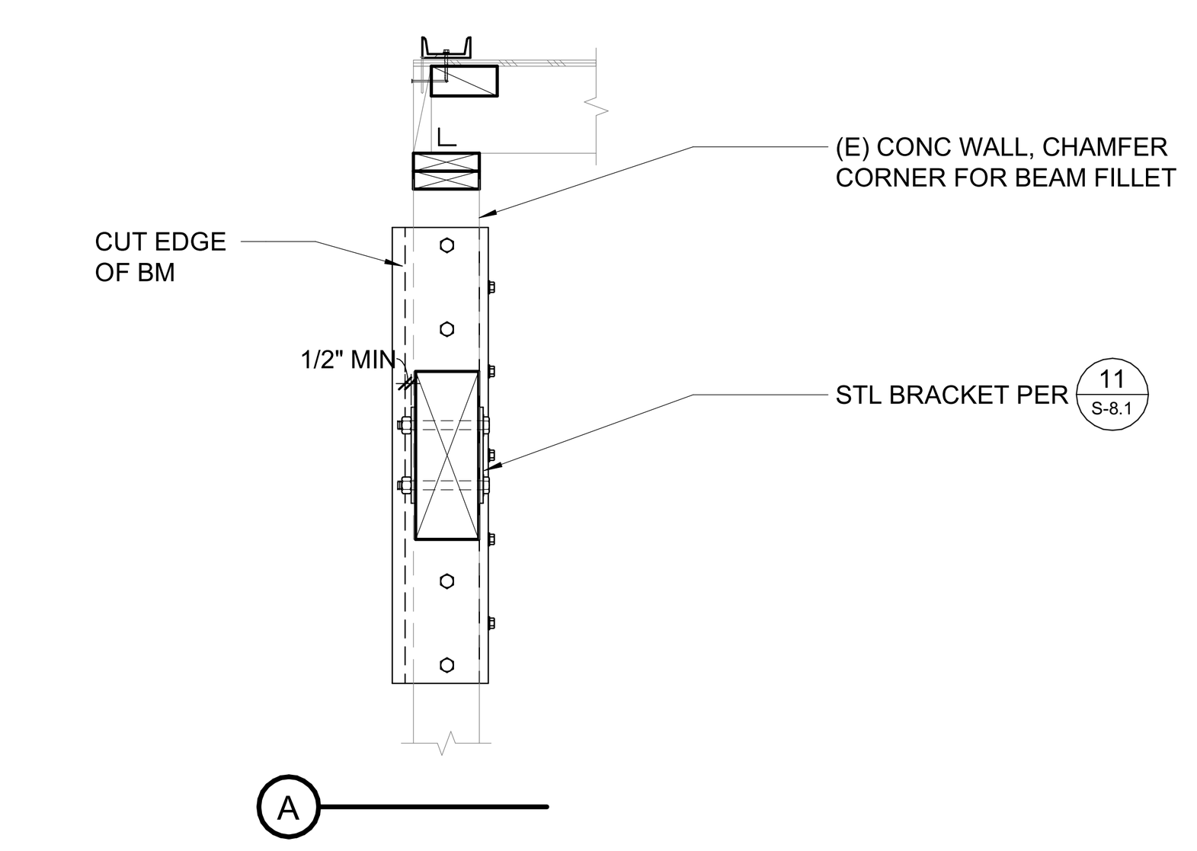
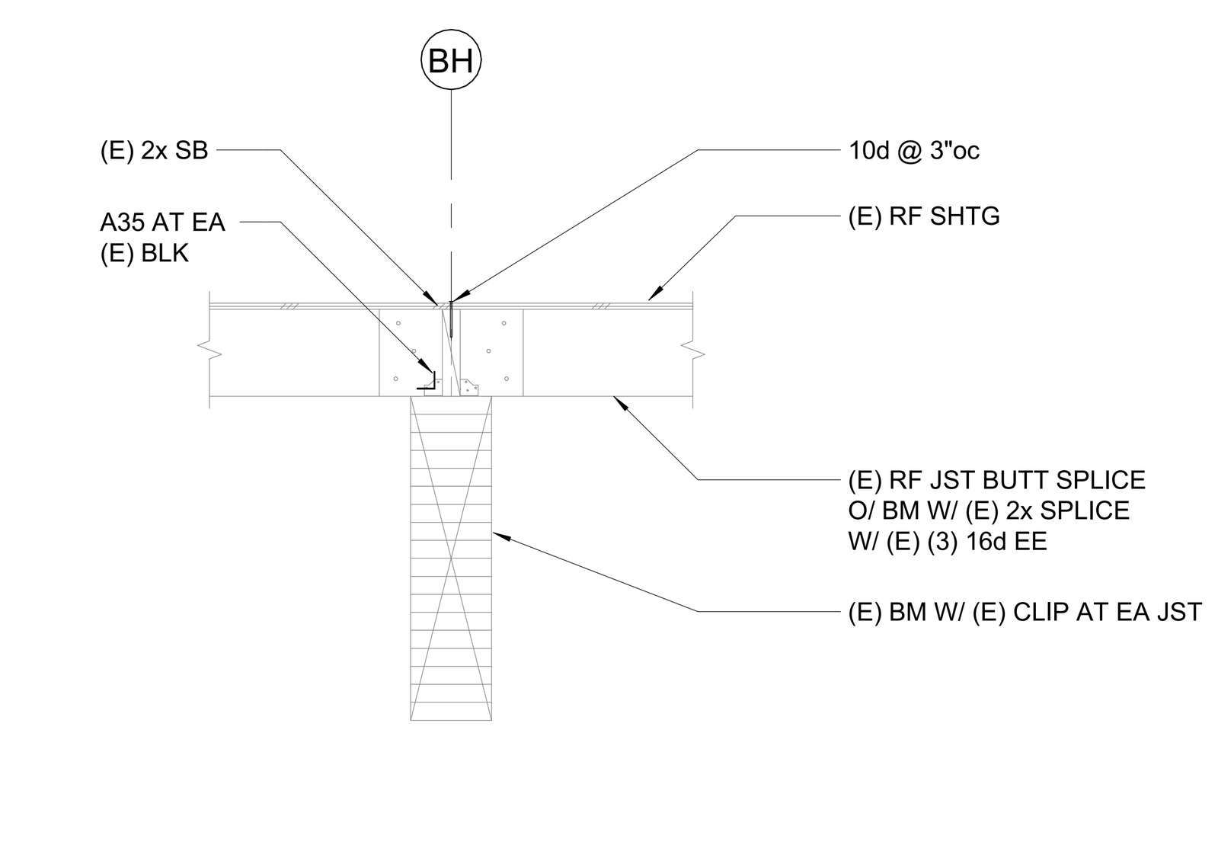


21 TYPICAL SLOTTED HSS FOR GUSSET CONNECTION
1 1/2" = 1'-0"



16 COLLECTOR
3/4" = 1'-0"





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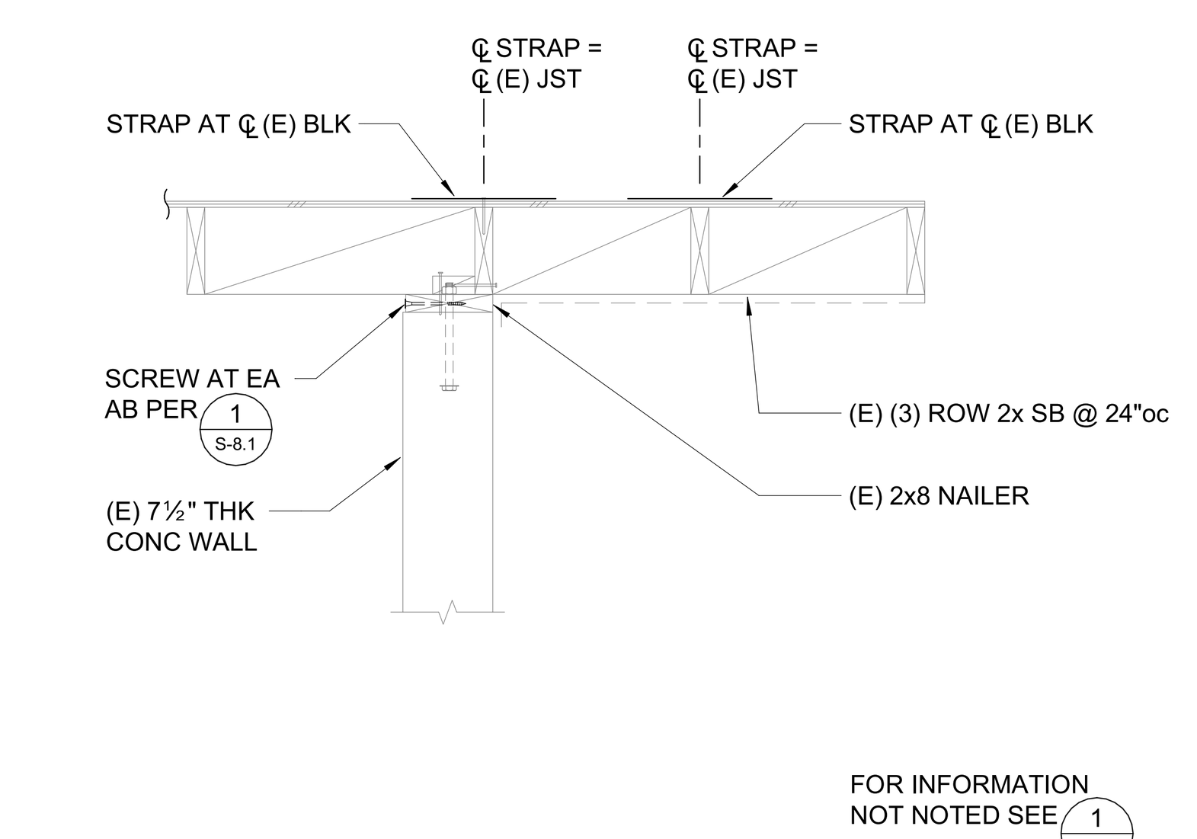

4 WALL ANCHORAGE - PARALLEL TO FRAMING
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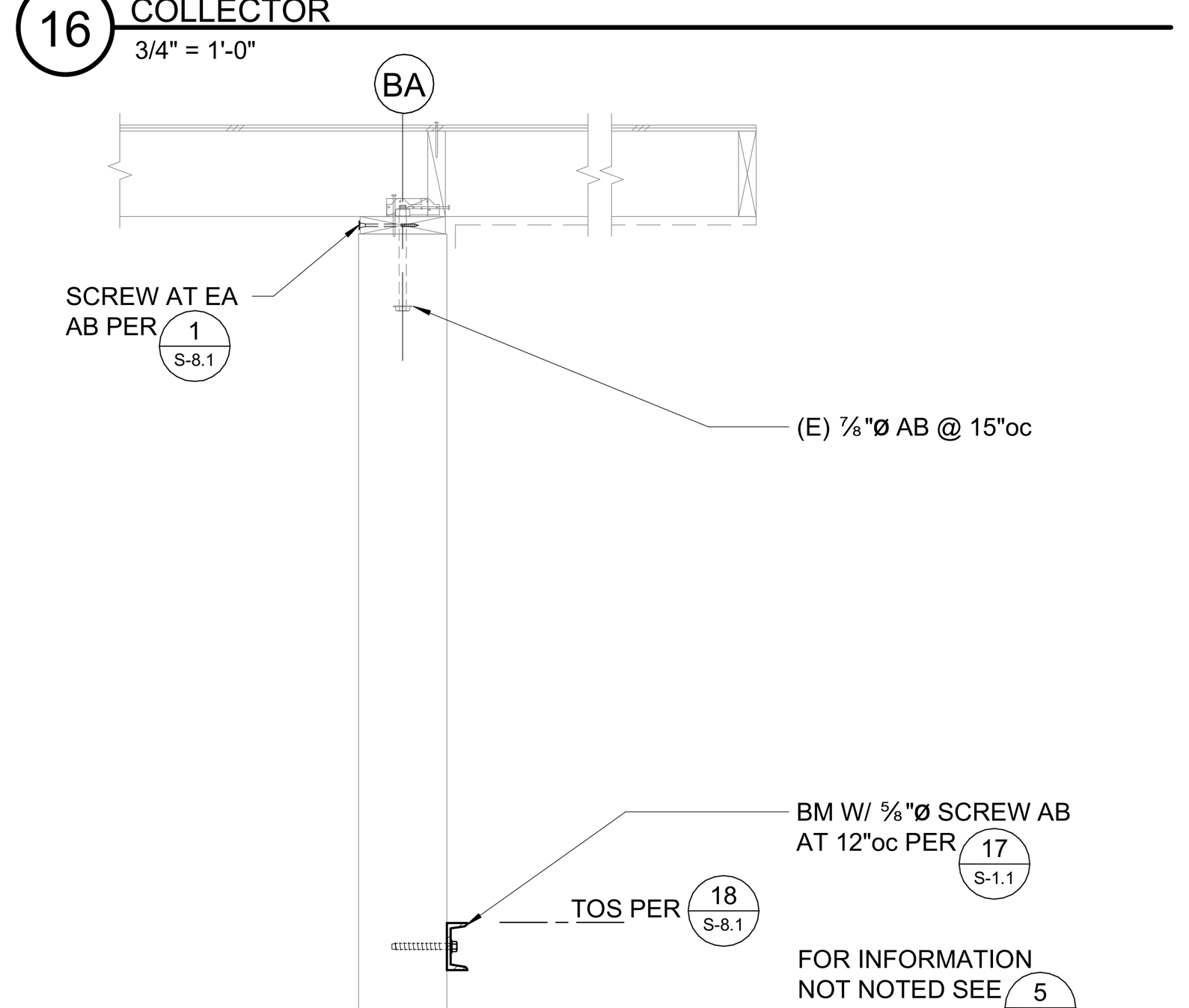

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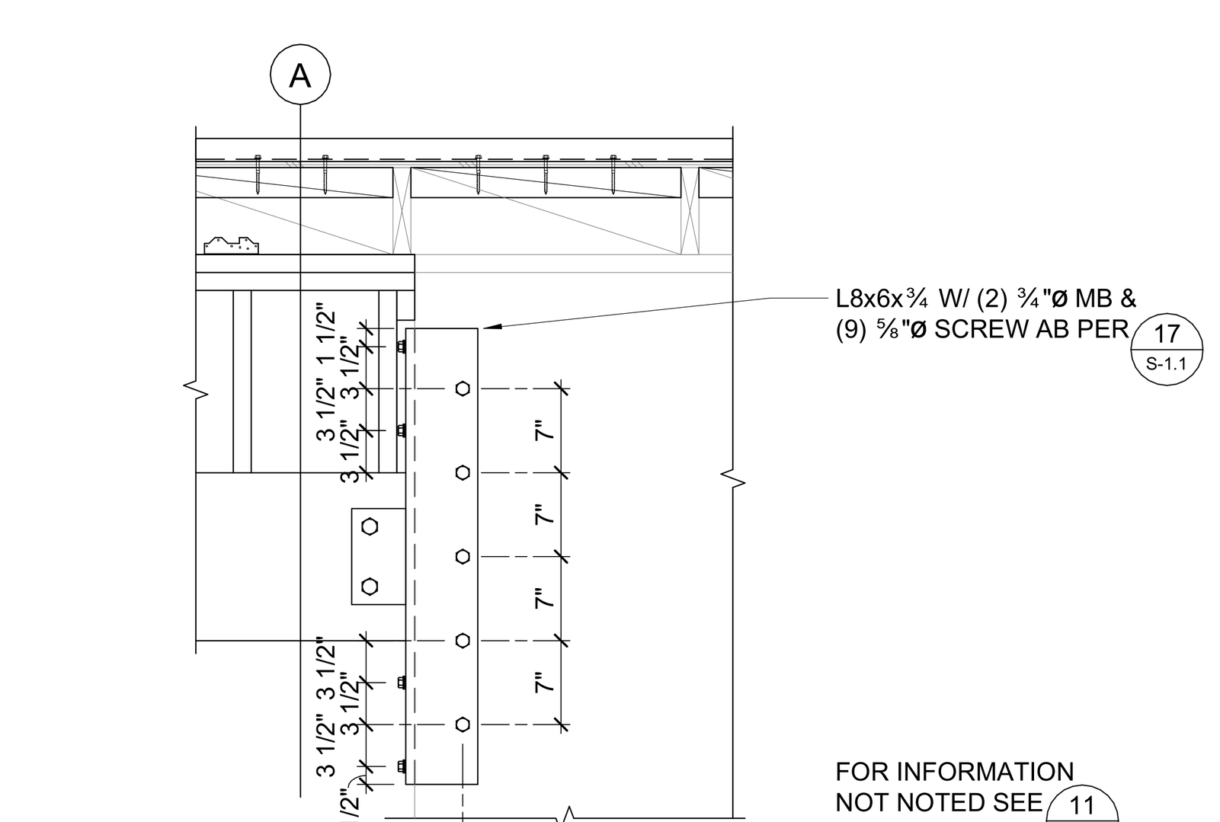

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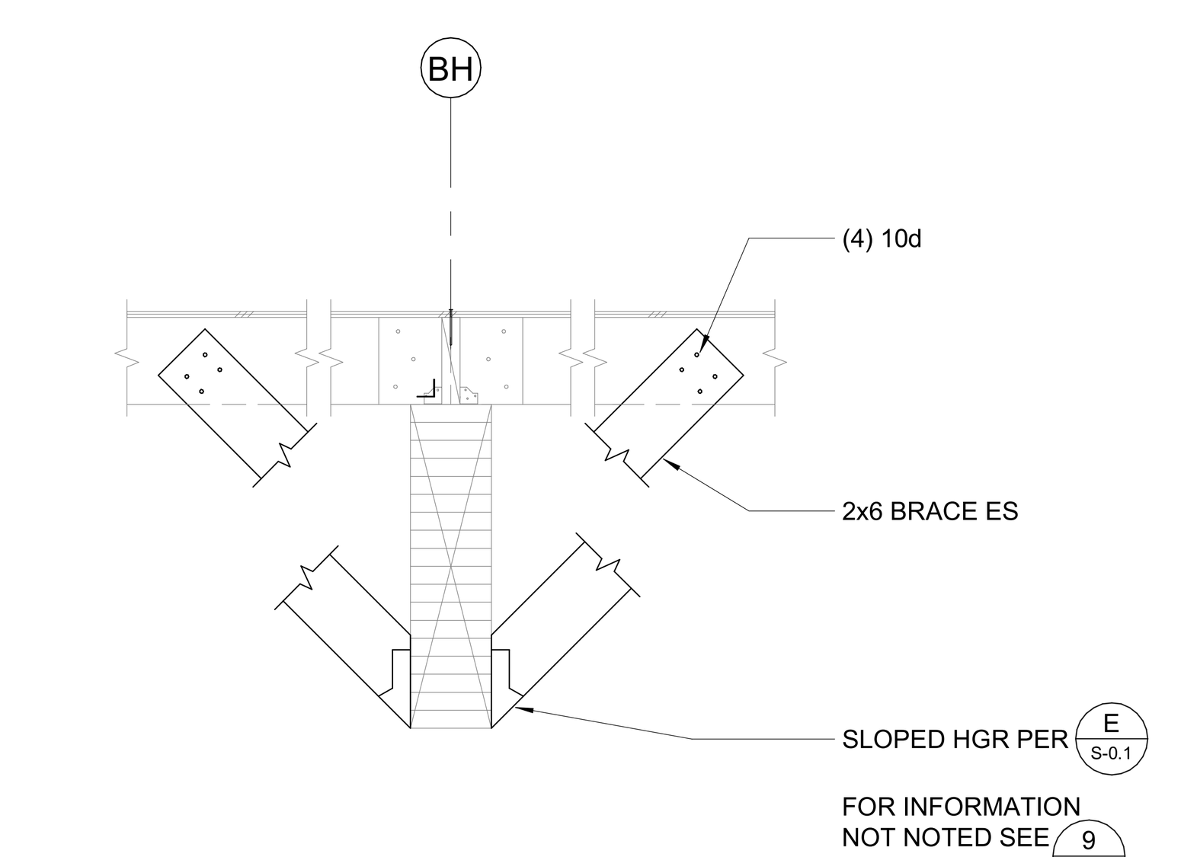

10 BEAM BRACING
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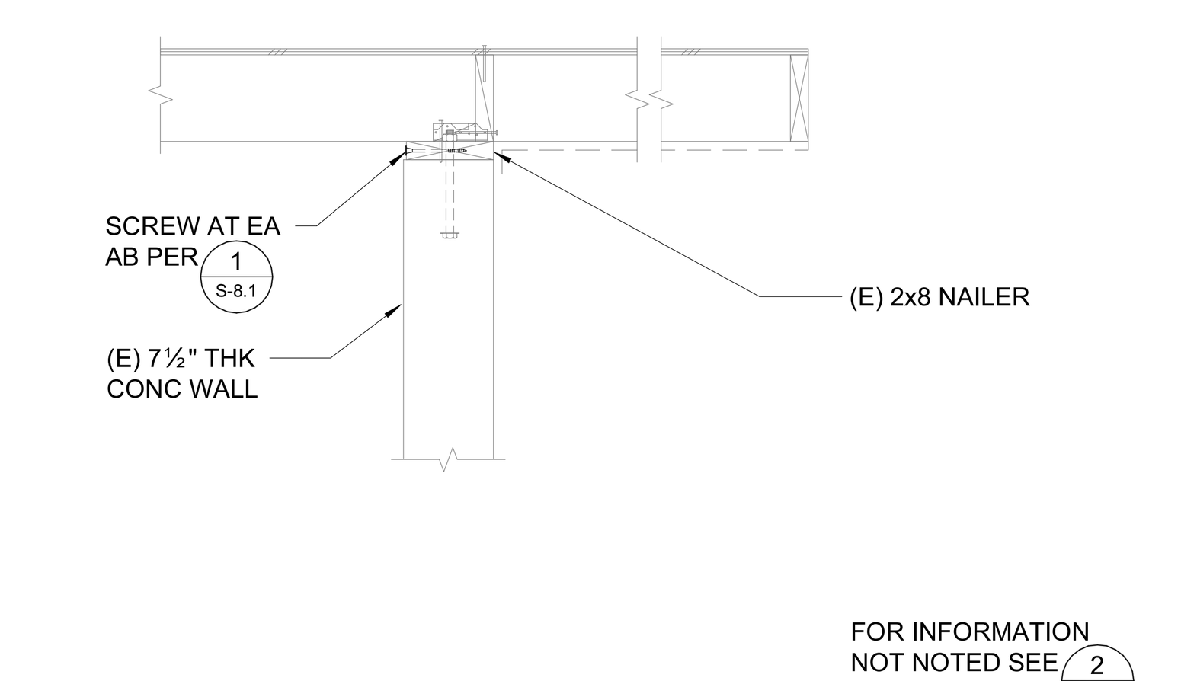

5 WALL ANCHORAGE - PERPENDICULAR TO FRAMING
3/4" = 1'-0"

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DECEMBER 2, 2020

SHEET TITLE
MODERNIZATION DETAILS

SHEET NUMBER
ADDENDUM 02
S-8.1

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GEOTECHNICAL INVESTIGATION REPORT AND GEOLOGIC AND SEISMIC HAZARDS ASSESSMENT

LIBERTY HIGH SCHOOL CAMPUS EXPANSION – OPTION 3

BSK PROJECT NO. G18-308-11L

PREPARED FOR:

LIBERTY UNION HIGH SCHOOL DISTRICT
20 OAK STREET
BRENTWOOD, CALIFORNIA 94513

January 30, 2019

399 Lindbergh Avenue
Livermore CA 94551
P 925.315.3151
F 925.315.3152
www.bskassociates.com

January 30, 2019 BSK Project Number G18-308-11L

Liberty Union High School District (District)
20 Oak Street
Brentwood, California 94513

Attention: Ms. Liz Robbins (robbinsl@lusd.net)
Chief Business Officer

Subject: Geotechnical Investigation Report and Geologic and Seismic Hazards Assessment
Liberty High School Campus Expansion – Option 3
Brentwood, California

Dear Ms. Robbins:

We are pleased to submit our geotechnical investigation report, and geologic and seismic hazards assessment for the planned campus expansion (Option 3) of Liberty High School within the Liberty Union High School District (District) in Brentwood, California. The enclosed report describes the geotechnical investigation performed and presents our geotechnical recommendations for foundations, 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 improvements provided the recommendations presented in our report are incorporated into the design and construction of the project. The main geotechnical concerns for the project Site are the presence of moderately expansive surface clays and near surface soils subject to moderate collapse potential. The buildings can be supported on spread footings, deepened to mitigate the moderately expansive soils and/or potentially collapsible soils at the Site. The building floor slabs should be supported on "non-expansive" fill or quicklime-treated subgrade to reduce the impact of expansive soils at the Site. Depending on the sensitivity of the buildings to potential soil collapse settlement, the affected buildings could instead be supported on mat foundations.

These and other geotechnical recommendations pertaining to the proposed project are discussed in the report. The apparent geologic and seismic 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 and seismic 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.

Danaige Tower, EIT
Senior Staff Engineer

Carrie L. Foulk, PE, GE #3016
Senior Geotechnical Engineer

Table of Contents

Figures and Appendices

1. INTRODUCTION

This report presents the results of our geotechnical investigation for the planned campus expansion (Option 3) of Liberty High School within the Liberty Union High School District (District) in Brentwood, California. A Vicinity Map and Site Exploration Plan showing the location of the project Site are presented on Figures 1 and 2, respectively. Our investigation has been performed for the District and was coordinated with Ms. Barbara Tittle of Lathrop Construction Associates, Inc. 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 project.

BSK has previously performed a geotechnical investigation report and geologic hazards assessment for various improvements at Liberty High School entitled Geotechnical Investigation Report and Geologic Hazard Assessment, Liberty High School Campus Expansion, dated April 11, 2018 (BSK Project No. G17-238-11L). Pertinent information from this report was considered during the preparation of the current report, where applicable.

1.1 Project Description

The project area (Site) is located at the front of the campus adjacent to the staff parking lot and bus loop along 2nd Street. Currently, the project area is occupied by the administration building A, classroom buildings B, C, and D, main campus entrance archway, and a multi-use building consisting of the cafeteria, study hall, student store, and atrium. The surrounding area is covered mainly by concrete flatwork. Landscaping is located between buildings A through D with various trees spread throughout the project area.

According to the conceptual site plan provided to us via email, the Option 3 Campus Expansion by Quattrocchi Kwok Architects dated 9/30/16 includes the following:

- Construction of a new two-story “U” shaped classroom building with a footprint of approximately 10,600 square feet. The new building will overlap the footprint of existing classroom buildings B, C, and D;
- Renovation of the existing administration building A with a footprint of approximately 3,200 square feet;
- Construction of a new administration and student services building with a footprint of approximately 4,000 square feet. This building will be approximately overlap the footprint of the existing student store and atrium;
- Renovating existing cafeteria/study hall area with new addition of approximately 2,800 square feet;
- New restrooms and storage addition along the southeast side of existing cafeteria, with a combined footprint of approximately 1,600 square feet; and

- Other relevant improvements such as underground improvements, landscaping, auditorium plaza and entrance, outdoor eating plaza, and main campus entrance.

Although a grading plan is not currently available for the project, we assume that the site grades will remain close to existing elevations and that cuts and fills during construction will be limited to less than about 3 feet. Excavations for removal of existing foundations, utilities and installation of new underground utilities are expected to be up to 5 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.

1.2 Approach and Scope of Services

The purpose of this investigation was to explore and evaluate the subsurface conditions at the project 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 December 10, 2018 proposal (BSK Proposal No. GL18-17579) and structured to adhere to the requirements of the 2016 California Building Standards Code (California Code of Regulations, Title 24), consisted of field exploration, laboratory testing, engineering analysis, and preparation of this report. A geologic and seismic hazards assessment for the project was also performed concurrently in order to comply with the guidelines established by the California Geological Survey (CGS) in Note 48 and is presented in Appendix D.

This investigation specifically excludes the assessment of site environmental characteristics in the air, water or soil, particularly those involving hazardous substances.

2. SITE INVESTIGATION

2.1 Field Exploration

Exploration locations and frequency were chosen to meet the requirements of the 2016 California Building Code (CBC) which states that there shall not be less than one boring or exploration point for each 5,000 square feet of building area with a minimum of two provided for any one building/structure. An exploration point may be considered to reflect subsurface conditions relevant to more than one building, subject to the approval of the enforcement agency.

Our field investigation was performed on December 26 and 27, 2018 to evaluate the subsurface conditions at the project Site for the planned improvements. The field investigation consisted of drilling four (4) soil borings and advancing two (2) Cone Penetrometer Tests (CPTs) at the approximate locations shown on Figure 2 – Site Exploration Plan. Taber Drilling of West Sacramento, California was subcontracted to provide CPT services and Exploration GeoServices of San Jose was subcontracted to provide drilling services.

Prior to subsurface exploration, Underground Service Alert (USA North 811) was contacted to provide utility clearance and each exploration location was cleared for detectable underground utilities by Ground Penetrating Radar Systems (GPRS). Drilling permits were obtained from Contra Costa County Environmental Health, Land Use Program (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 project 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 25 to 30 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. A discussion of the subsurface conditions encountered at the Site is presented in the "Subsurface Conditions" section of this report.

2.1.2 Cone Penetrometer Tests

We advance two (2) 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 10 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 (Qc) and sleeve friction (Fs) were measured and recorded during the tests at 5 centimeters (about 2 inch) depth intervals.

The cone system was pushed using a 40,000-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 potentially 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 (Cliq)[1], 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.

[1] Cliq v2.0 by Geologismiki

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 correlations developed by Robertson et al, 1990[2], and Lunne, Robertson & Powell, 1997[3]. 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, percent passing #200 sieve, unconsolidated-undrained triaxial compression (TXUU), and collapse potential. Most of the laboratory test results are presented on the individual boring logs. The results of the Atterberg limits, TXUU, and collapse potential are also presented graphically in Appendix B.

Analytical testing was performed on samples of near-surface soils in borings B-1 and B-3 to assist in evaluating the corrosion potential of the on-site soils. The corrosivity testing was performed by CERCO Analytical of Concord, California, a State-Certified laboratory, using ASTM methods as described in the CERCO Analytical report. The corrosion results are also presented in Appendix B.

[2] Robertson P.K., 1990. Soil classification using the cone penetration test. Canadian Geotechnical Journal, 27(1): 151-158

[3] 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 mainly residential and some commercial retail. The location of the proposed improvements is currently occupied by existing buildings, flatwork, and landscaping and is essentially flat at an elevation of about 72 to 73 feet according to Google Earth Pro.

3.2 Subsurface Conditions

According to the California Geological Survey (CGS), the campus is underlain by Holocene (younger than 11,700 years) age alluvial fan and natural levee deposits. Alluvial fan deposits consist of brown or tan, medium dense to dense, gravelly sand or sandy gravel that generally grades upward to sandy or silty clay, whereas natural levee deposits consist of loose, moderately to well-sorted sandy or clayey silt grading to sandy or silty clay. Based on our field exploration, the alluvial deposits consist mostly of layers of clays with thin layers of 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 dense with a high clay and silt content. The laboratory test results of the near surface soils 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 24 to 28 feet BGS in our borings, while free groundwater in our 2017 investigation at the campus was observed about 15 and 22 feet BGS in our borings and CPTs. According to the CGS, historic high groundwater is about 17 feet BGS. 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 Site. For a more detailed description of the soils encountered, refer to the boring logs in Appendix A and CPT logs in Appendix C. 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. These conclusions are based on the assumption that the recommendations presented in this report will be incorporated into the design and construction of this project. The main geotechnical concerns for the project Site are the presence of moderately expansive surface clays and near surface 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-induced 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 50 feet.

4.2.2 Soil Collapse Potential

Soil samples obtained within the upper approximately 10 feet BGS were observed to be slightly porous to 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 or a leaking underground utility. Therefore, we performed collapse potential testing on two samples obtained from depths of about 3 to 5½ feet BGS in borings B-2 and B-4. According to our test results, the surficial soils at the Site have slight to moderate collapse potential, with estimated settlements ranging from about 2 to 3 inches as shown in the table below. Mitigation measures are discussed in the “Foundations” section of this report.

FOUNDATION TYPE	ESTIMATED SETTLEMENT*	DIFFERENTIAL SETTLEMENT**
Mat foundation	3 inches	1½ inches
Continuous or Spread Footing	2½ inches	1¼ inches
Continuous or Spread Footing overexcavated 1 ft	2 inches	1 inch
*Approximate **Over an approximate horizontal distance of 50 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 clays with varying amounts of silt and sand and thin layers of clayey/silty sand.

We evaluated liquefaction potential across the Site in our CPTs for the project (CPT-1 and CPT-2) using the methods proposed by Boulanger and Idriss (2014)[4]. For our analyses, we used a peak ground acceleration 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 17 feet BGS, and we used a conservative groundwater level in our analyses of 14 feet BGS to account for fluctuations in the groundwater table. The CPTs predicted negligible liquefaction-induced settlement based on the design level event. The results of these analyses are presented in Appendix C.

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 (about 50 feet), we conclude that the potential for dynamic compaction/seismic settlement during a seismic event is negligible.

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 hazards evaluation is needed for school developments. BSK has provided an evaluation of the project Site, 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 mentioned above and the potential for strong ground shaking, which is typical of the entire San Francisco Bay Area.

[4]"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.

5. RECOMMENDATIONS

Presented below are recommendations for foundations, seismic considerations, exterior flatwork, earthwork, construction considerations, site drainage, and paving for this project.

5.1 Foundations

5.1.1 Shallow Footings

Based on our investigation, the loads for the proposed buildings 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.

FOOTING BEARING CAPACITY RECOMMENDATIONS			
Footing Type	Allowable Bearing Pressure (psf)*	Minimum Embedment (in)**, ***	Minimum Width (in)
Exterior Continuous Footings	2,500 psf	24	18
Isolated Interior Footings	2,500 psf	24	18x18
* Pounds per square foot, dead plus live load. Includes factor of safety (FS) of at least 3.			
**Below lowest adjacent grade defined as bottom of slab on the interior and finish grade at the exterior.			
*** Depth should be increased to 36 inches if it is desired to reduce collapse-induced settlement potential.			

Allowable soil bearing pressures may be increased by one-third for transient loads such as wind and seismic loads. 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. 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.

It should be noted that the 24-inch or 36-inch embedment recommendation for footings reflects the mitigation for the expansive nature of the near surface soils and susceptibility to the collapse potential discussed earlier. The actual depth of embedment for bearing capacity requirements is 18 inches below the lowest adjacent grade. In lieu of extending the reinforcing steel and structural concrete the entire depth, the portion of the footings in the excavation below 18 inches can be backfilled with a 2-sack lean concrete mixture that should be placed shortly following excavation. By placing the lean concrete shortly after excavation, the soil at the bottom of the excavation will not have time to dry out, thus avoiding higher expansion pressures upon wetting. The use of lean concrete also eliminates disturbance of the soil exposed at the bottom of the excavation to weather and construction activities following excavation.

5.1.2 Drilled Piers

New drilled piers supporting covered walkways and/or light standards should be at least 12 inches in diameter, spaced at least three pier diameters center to center (for axial capacity), and extend at least 5 feet below grade. Drilled piers that extend into firm soil may be designed using an allowable skin friction of 300 psf for axial compressive and 200 psf for uplift loads. These values include a factor of safety of three and may be increased by one-third for resisting total loads, including wind and seismic. 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.

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.

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 turned down edge to a minimum depth 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 or capillary break rock, placed over subgrade prepared as discussed in the "Earthwork" section of this report.

Consideration should be given to installing a 2- to 3-inch mud slab on the excavated subgrade in order to reduce disturbance during construction of the mat. It is critical that the mat excavation not be allowed to dry significantly before placing aggregate base or capillary break rock and concrete. If shrinkage cracks appear in the excavation, the excavation should be thoroughly moistened to close all cracks prior to concrete placement. The slab excavation 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, loose or dry materials are encountered at the bottom of the excavation, they should be removed and replaced with either engineered fill or lean concrete as soon as possible following excavation. Unit prices for overexcavation and backfilling should be obtained during bidding.

Existing and new underground utilities should not extend below the mat and should be located above a 1H:1V (horizontal to vertical) plane projected downward from the lower outside edge of the mat.

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 2,000 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 Appendix D 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 interior concrete floor slabs (if the mat foundation is not chosen) 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 of "non-expansive" 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 or dolomitic quicklime treatment of the in situ soils can be considered as an alternative to "non-expansive" fill. If this alternative is utilized, extensive quality control is needed as well as possibly laboratory testing to evaluate the appropriate quicklime 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 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 quicklime by weight is typically needed for treatment. We may elect to perform additional laboratory tests to refine this estimate prior to quicklime 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 not planned. The horizontal limits of treatment can be reduced to 3 feet elsewhere, such as for exterior flatwork. The over-build of the "non-expansive" fill or quicklime treatment can be eliminated where landscaping is planned; however, it is important that the "non-expansive" fill or quicklime 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 and moisture conditioning of the subgrade to prevent drying of the native subgrade soils and that slabs be constructed as soon as possible after "non-expansive" fill or quicklime-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" 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 and provide a capillary moisture break. This material may 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 ¾ 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" fill or quicklime-treated subgrade materials to reduce drying of the subgrade.

If a mat foundation is used, consideration should be given to using crushed rock described above if a capillary break is desired.

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. If a mat foundation used, because it will partially rely on friction between the concrete and the subgrade for resistance to lateral loads, the vapor barrier should not be placed directly below the mat. Instead, the mat should be underlain by at least 6 inches of angular gravel or crushed rock to enhance subgrade support for the slab and to act as a capillary break as discussed above in the "Interior Floor Slabs" section. 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" section of this report.

5.3.3 Exterior Concrete Flatwork

Exterior concrete flatwork for this project will consist of walkway 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 of "non-expansive" imported fill, quicklime-treated on-site soils, Class 2 Aggregate Sub-Base (ASB), or Class 2 Aggregate Base (AB). Even with the 6 inches of "non-expansive" fill, 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" fill 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" fill 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 "non-expansive" fill, quicklime-treated soil, ASB or AB, should be moisture conditioned to near optimum moisture content. If the "non-expansive" fill, quicklime-treated soil, 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 water-consumptive 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 quicklime-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 quicklime-treated soil and landscaping to reduce the risk that quicklime-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 5 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 on-site 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 to 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 Demolition

5.5.1 Existing Improvements

As part of the demolition process, existing foundations and other improvements should be removed. Excavations from removal of foundations, 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.

5.5.2 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.

5.6 Earthwork

Earthwork at the Site will generally consist of excavation and backfill of demolished foundations, subgrade preparation and placement of concrete slabs and pavements (including possible quicklime treatment), 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. Excavations for the removal of existing underground utilities and installation of new ones are expected to be up to 5 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, concrete flatwork, and pavements. In general, soft/loose or unsuitable materials encountered should be overexcavated, removed, and replaced with compacted engineered fill material.

5.6.1 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, and landscaping located within the Site. Deeper grubbing will be required for removal of the established trees and their root systems. 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 recompacted 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).

Site preparation (including stripping, clearing and grubbing) 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.

5.6.2 Quicklime Treatment

Quicklime treatment of the in situ soils (if used) should be performed using high calcium or dolomitic quicklime. Extensive quality control is needed as well as possibly laboratory testing to evaluate the appropriate quicklime treatment mixture. Our experience has indicated that about 5 percent quicklime by dry unit weight of the soil is typically needed for treatment. For design purposes, an in situ dry unit weight of 105 pcf may be assumed. The negative impact of quicklime treatment on future vegetation should be considered.

The 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.

5.6.3 Fill Material

Based on the soil encountered in our borings, except for organic laden soil, the on-site soil appears 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" fill 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 materials 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 surficial 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" fill or quicklime-treated subgrade for the building pads, or prior to aggregate base or crushed rock placement for the mat foundations (if applicable), 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.

5.6.4 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 quicklime 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 provided 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 quicklime treatment may be needed if construction takes place during winter months.

5.6.5 Excavation and Backfill

We anticipate that excavation for the foundations 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 at depths of approximately 24 to 28 feet BGS; however, high groundwater has been recorded at about 17 feet BGS. 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.

5.7 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.

5.8 Pavements

5.8.1 Asphalt Concrete Pavements

Pavements for this project will include 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 previous R-value testing at the campus and on near-surface conditions, 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 treatment 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.

5.8.2 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 PCC 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 PCC pavement is the responsibility of the civil or structural engineer for the project.

5.8.3 Pavement Drainage

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 aggregate base 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 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 within pavements, 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.

5.9 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 runoff collection. These features are not well-suited to the moderately expansive clay soils present at this Site due to their relatively low permeability[5], 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

[5] Infiltration testing and/or laboratory permeability testing was not performed due to the dominant presence of moderately expansive clays blanketing the Site.

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.

According to the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), the project site is mapped as Brentwood clay loam. According to the NRCS, Brentwood clay loam is classified as Hydrologic Group C: soils having a slow infiltration rate when thoroughly wet and a slow rate of water transmission. Saturated hydraulic conductivity rates for Hydrologic Group C range from 0.14 to 1.42 inch/hour according to the NRCS.

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 for bidding.

5.10 Corrosivity Results

Soil samples were collected during our field investigation at depths of approximately 2 and 3 feet below the ground surface in borings B-1 and B-3, 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.

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.

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 on-site soils and should not be classified as being more corrosive than "moderately corrosive." Also, on-site cutting and filling may result in soils contacting concrete that were not anticipated at the time of this investigation.

5.11 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 four borings and advancing two 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 4 borings drilled to a maximum depth of 30 feet BGS, 2 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

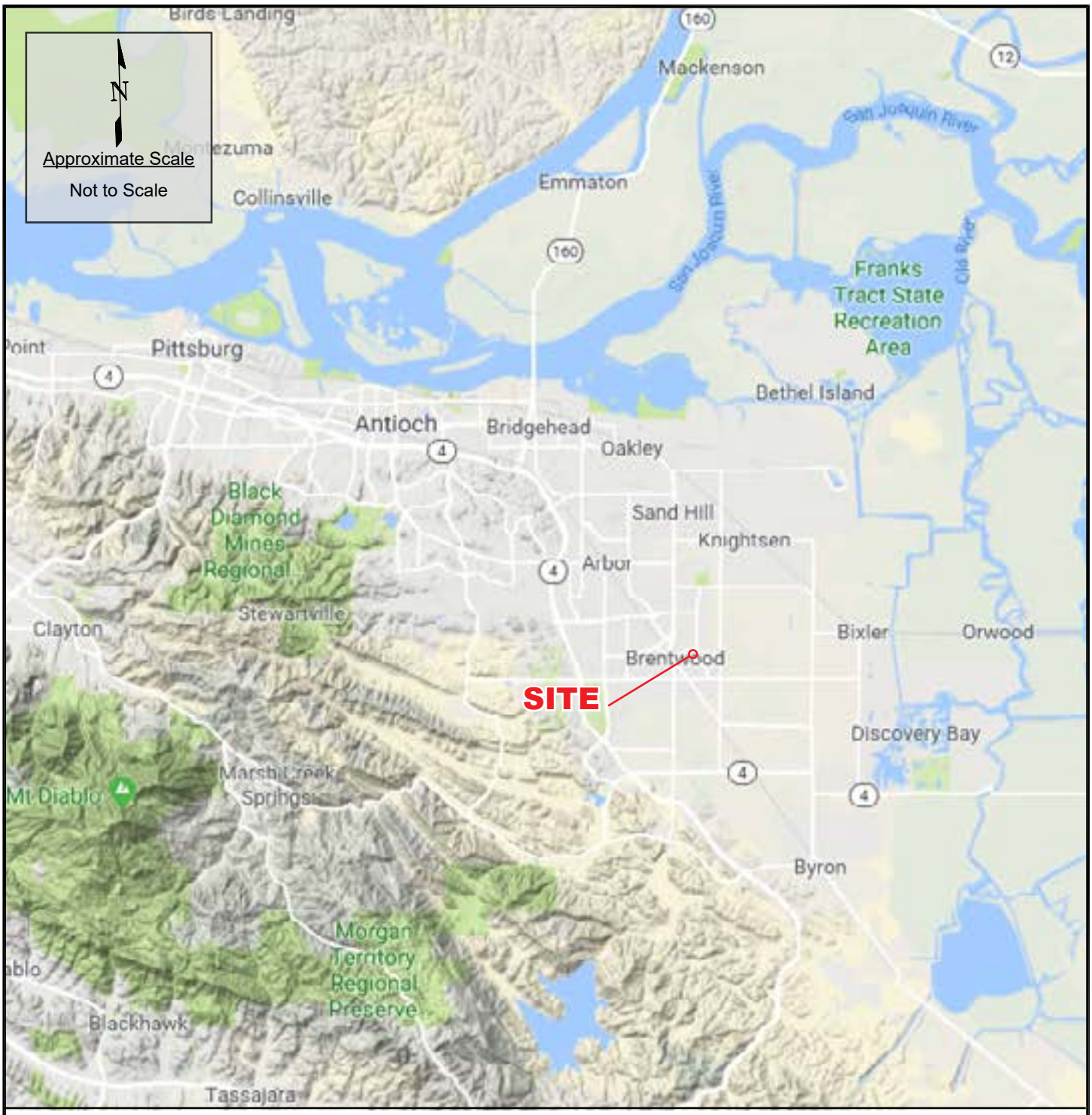
variations in the soil conditions are encountered. As a minimum BSK should be retained to provide the following continuing services for the project:

- 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

BSK ASSOCIATES

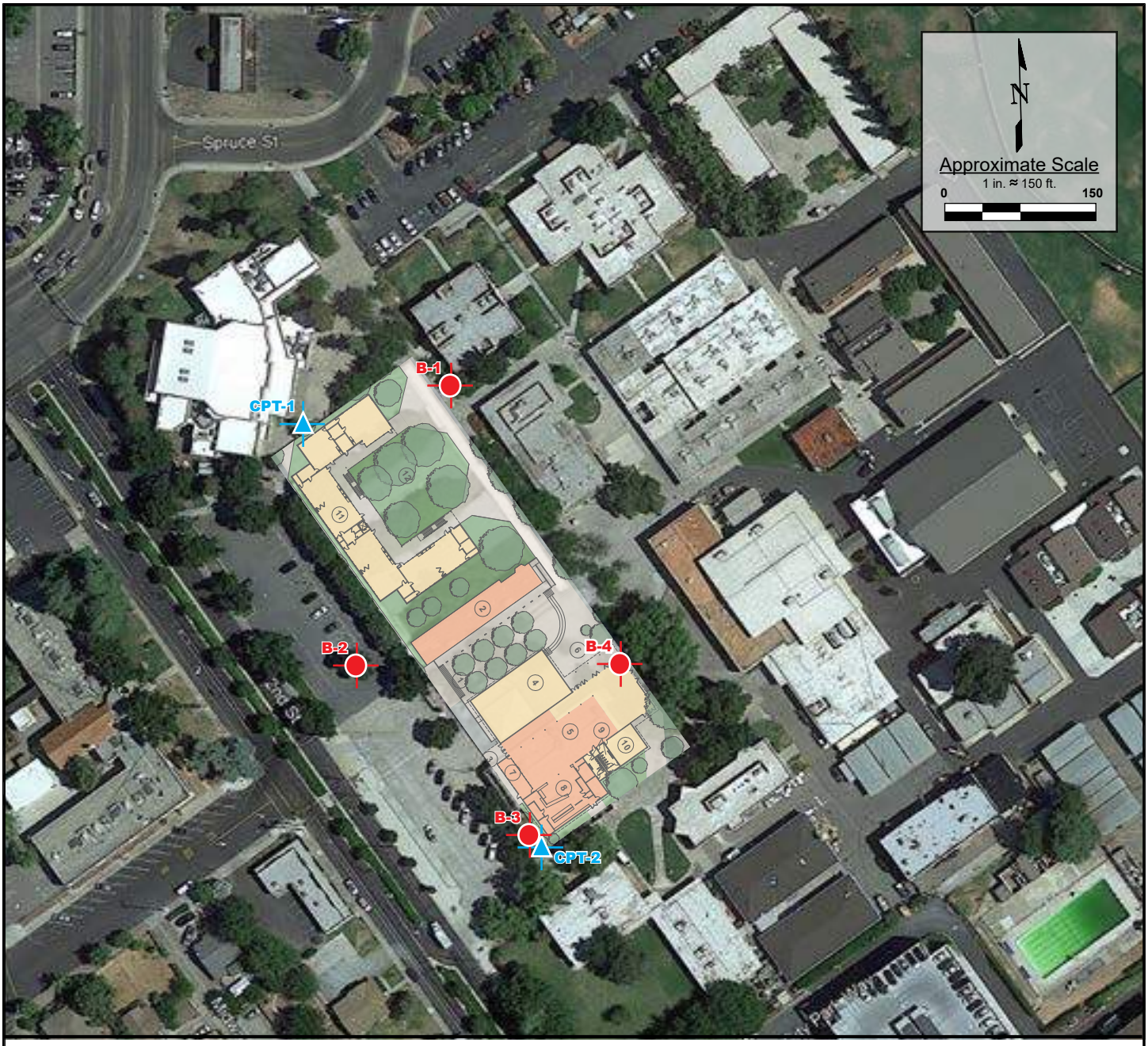
PROJECT NO. G18-308-11L	
DRAWN: 1/11/19	
DRAWN BY: D. Tower	
CHECKED BY: C. Foulk	
FILE NAME: SitePlan.indd	

VICINITY MAP

Campus Expansion- Option 3
Liberty Union High School
850 2nd Street
Brentwood, California

FIGURE

1



References

1. http://earth.google.com, 2018
2. "Campus Entry Plan" by Quattrocchi Kwok Architects dated 9/30/16

Legend

B-1 — Approximate Boring Locations (BSK, 2018)

CPT-1 — Approximate Cone Penetrometer Test Locations (BSK, 2018)

BSK ASSOCIATES

PROJECT NO.	G18-308-11L
DRAWN:	1/11/19
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FILE NAME:	SitePlan.indd

SITE EXPLORATION PLAN

Campus Expansion- Option 3
Liberty Union 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

BSK ASSOCIATES

PROJECT NO. G18-308-11L	
DRAWN: 01/10/19	
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 kneeding 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

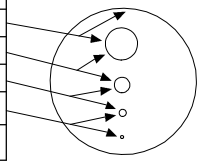
CONSISTENCY	ABBR	FIELD TEST
Very Soft	VS	Thumb will penetrate soil more than 1 in. (25 mm)
Soft	S	Thumb will penetrate soil about 1 in. (25 mm)
Firm	F	Thumb will indent soil about 1/4 in. (6 mm)
Hard	H	Thumb wil not indent soil but readily indented with thumbnail
Very Hard	VH	Thumbnail will not indent 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"	3/4 -3"	Thumb-sized to fist-sized
	fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	coarse	#10 - #4	0.079 - 0.19"	Rock salt-sized to pea-sized
	medium	#40 - #10	0.017 - 0.079"	Sugar-sized to rock salt-sized
	fine	#200 - #10	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	<0.0029	Flour-sized and smaller

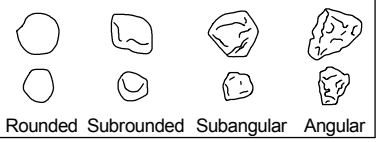
REACTION WITH HCL

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

BSK ASSOCIATES

PROJECT NO. G18-308-11L	**SOIL DESCRIPTION KEY**
DRAWN: 01/10/19	
DRAWN BY: D. Tower	
CHECKED BY: C. Foulk	**Liberty Union High School Campus Expansion 850 2nd Street Brentwood, California**
FILE NAME: Legend.indd	

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.

The Responsible Geotechnical Engineer, Professional Engineer, or Professional Geologist uses professional judgement and visual-manual procedures in general conformance with ASTM D2488 to classify soil when the full classification suite of tests per ASTM D2487 is not conducted.

BSK ASSOCIATES

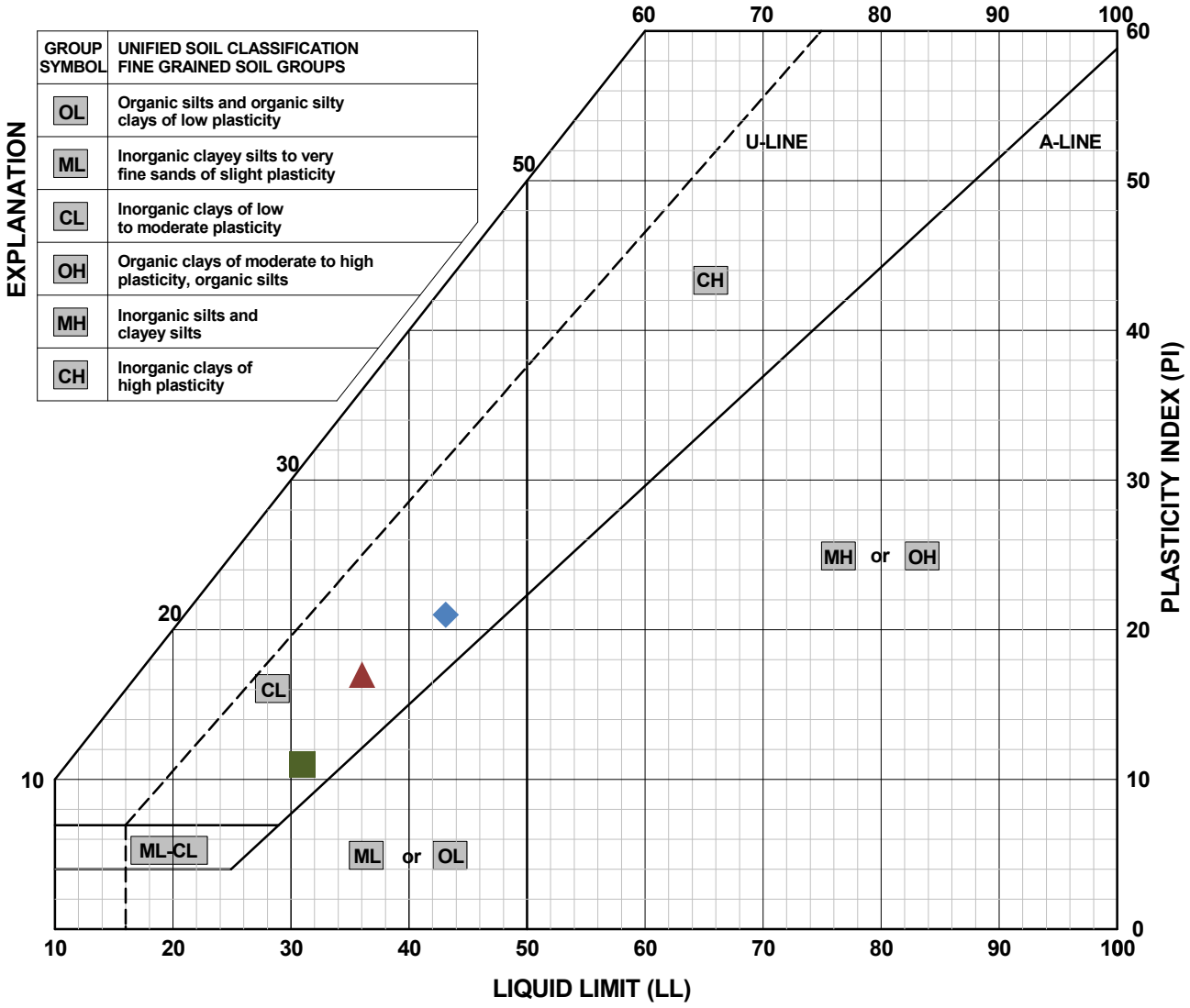
PROJECT NO. G18-308-11L	**LOG KEY**
DRAWN: 01/10/19	
DRAWN BY: D. Tower	
CHECKED BY: C. Foulk	**Liberty Union High School Campus Expansion 850 2nd Street Brentwood, California**
FILE NAME: Legend.indd	

FIGURE

A-3

APPENDIX B

LABORATORY TEST RESULTS



LEGEND:	SOURCE	DEPTH (ft)	LL	PL	PI	DESCRIPTION
◆	B-1	2.5	43	22	21	Lean Clay with Sand (CL)
■	B-3	9.0	31	20	11	Sandy Lean Clay (CL)
▲	B-4	2.5	36	19	17	Sandy Lean Clay (CL)

BSK ASSOCIATES

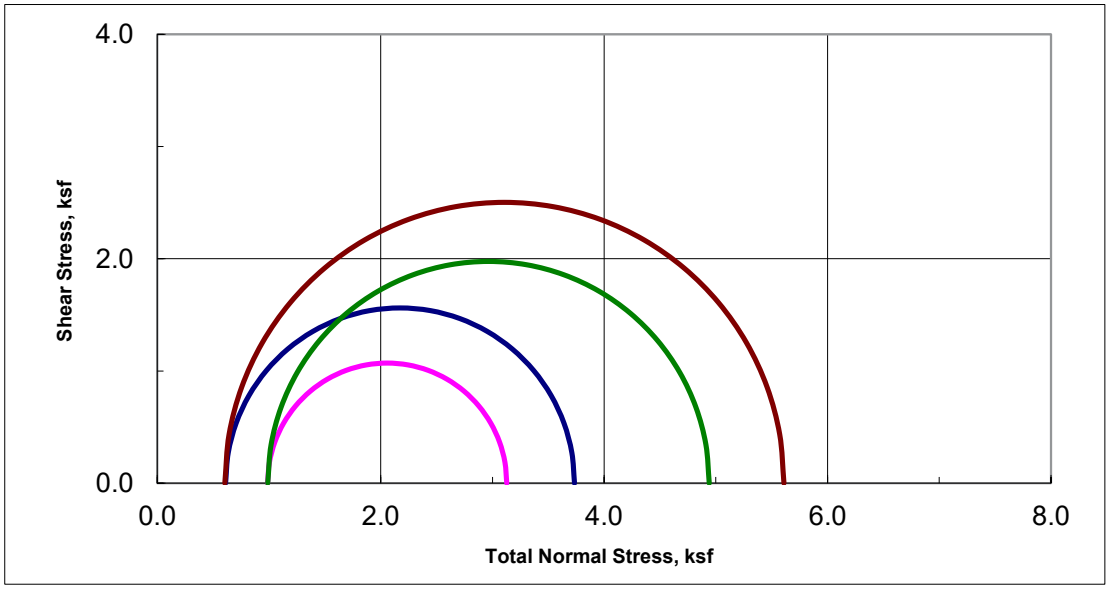
PROJECT NO. G18-308-11L
DRAWN: 1/10/19
DRAWN BY: D. Tower
CHECKED BY: C. Foulk
FILE NAME: SitePlan.indd

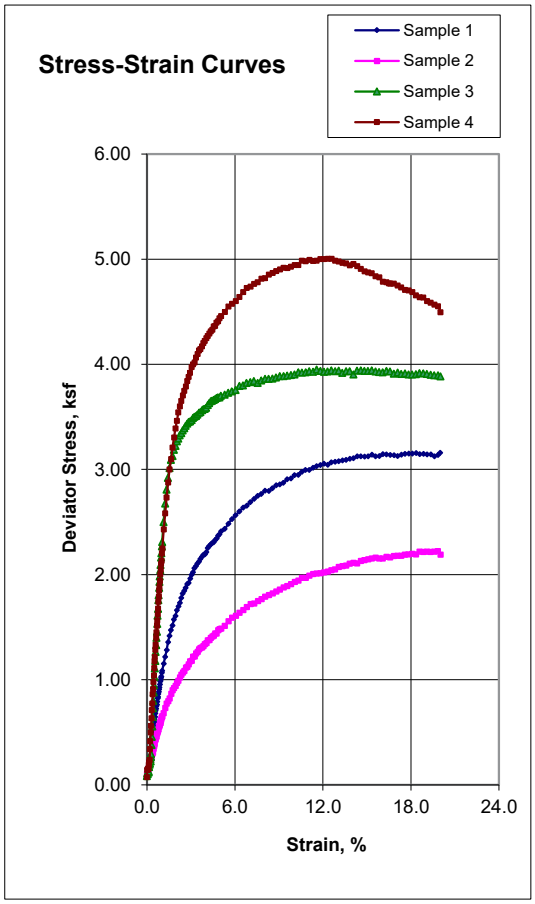
ATTERBERG LIMITS

Campus Expansion- Option 3
Liberty Union High School
850 2nd Street
Brentwood, California

FIGURE
B-1

Unconsolidated-Undrained Triaxial Test
ASTM D2850





Sample Data				
	1	2	3	4
Moisture %	25.6	23.9	15.1	21.4
Dry Den,pcf	99.6	102.0	94.6	105.0
Void Ratio	0.692	0.652	0.781	0.606
Saturation %	99.8	99.1	52.2	95.3
Height in	5.00	5.02	5.01	5.03
Diameter in	2.40	2.42	2.41	2.41
Cell psi	4.2	6.9	6.9	4.2
Strain %	15.00	15.00	11.57	12.33
Deviator, ksf	3.123	2.141	3.952	5.005
Rate %/min	1.00	1.00	1.00	1.00
in/min	0.050	0.050	0.050	0.050
Job No.:	664-234			
Client:	BSK Associates			
Project:	G18-308-11L			
Boring:	B-1	B-1	B-3	B-4
Sample:	2C	3C	3C	2C
Depth ft:	6.0	9.5	9.5	6.0

Visual Soil Description	
Sample #	
1	Lean Clay with Sand (CL)
2	Lean Clay with Sand (CL)
3	Sandy Lean Clay (CL)
4	Sandy Lean Clay (CL)

Remarks:

Note: Strengths are picked at the peak deviator stress or 15% strain which ever occurs first per ASTM D2850.

BSK ASSOCIATES

PROJECT NO.	G18-308-11L
DRAWN:	1/11/19
DRAWN BY:	D. Tower
CHECKED BY:	C. Foulk
FILE NAME:	SitePlan.indd

UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION

Campus Expansion- Option 3
Liberty Union High School
850 2nd Street
Brentwood, California

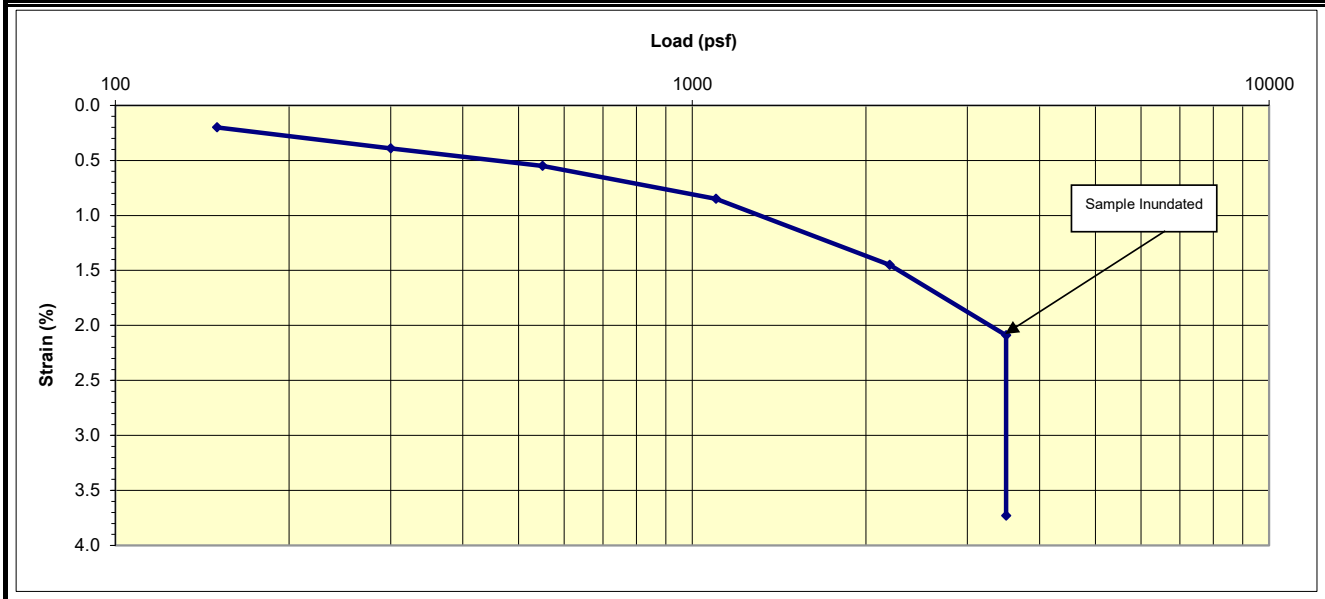
FIGURE
B-2

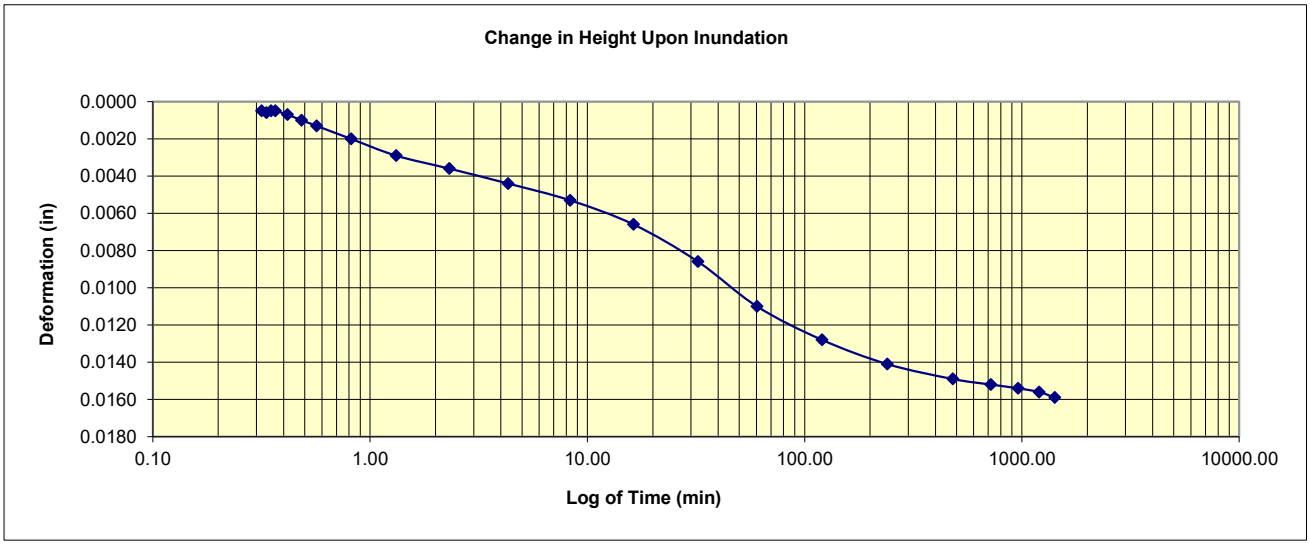
Collapse Potential of Soils
ASTM D5333-03

Job No.:	664-234	**Boring:**	B-2	**Date:**	1/11/2019
Client:	BSK Associates	**Sample:**	2B	**Tested By:**	MD
Project:	Liberty HS Campus Expansion **Proj. No.:** G18-308-11L	**Depth, ft.:**	5.5	**Checked:**	PJ/DC
Soil Description:	Lean Clay with Sand (CL)				

Load, psf	150	300	550	1100	2200	3500	Inundation		
Deformation, in.:	0.002	0.0019	0.0016	0.003	0.006	0.0064	0.0164		

	Initial	**Final**		
Moisture Content %	16.7	24.0	**Vertical Stress at Inundation (psf)**	**Collapse Potential (%)**
Dry Density, pcf	98.7	102.5	**3500**	**1.68**
Void Ratio	0.739	0.674		
Saturation %	62.0	98.0		
Assumed Specific Gravity		2.75		





BSK ASSOCIATES

PROJECT NO.	G18-308-11L
DRAWN:	1/11/19
DRAWN BY:	D. Tower
CHECKED BY:	C. Foulk
FILE NAME:	SitePlan.indd

COLLAPSE POTENTIAL OF SOIL

Campus Expansion- Option 3
Liberty Union High School
850 2nd Street
Brentwood, California

FIGURE

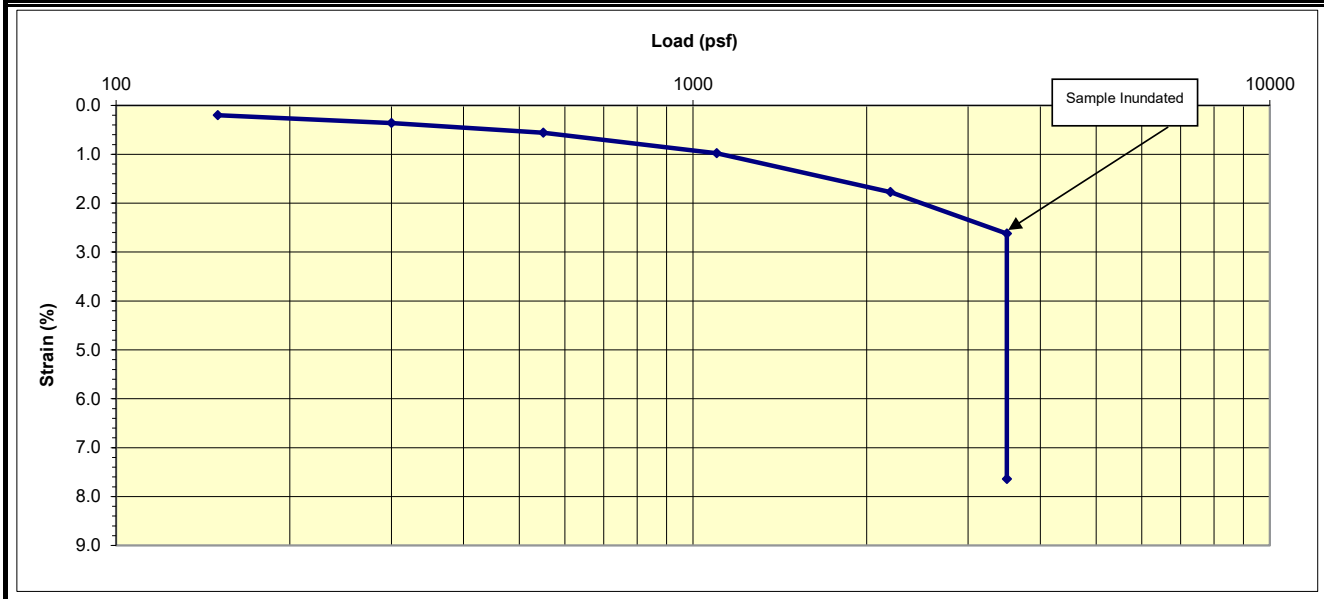
B-3

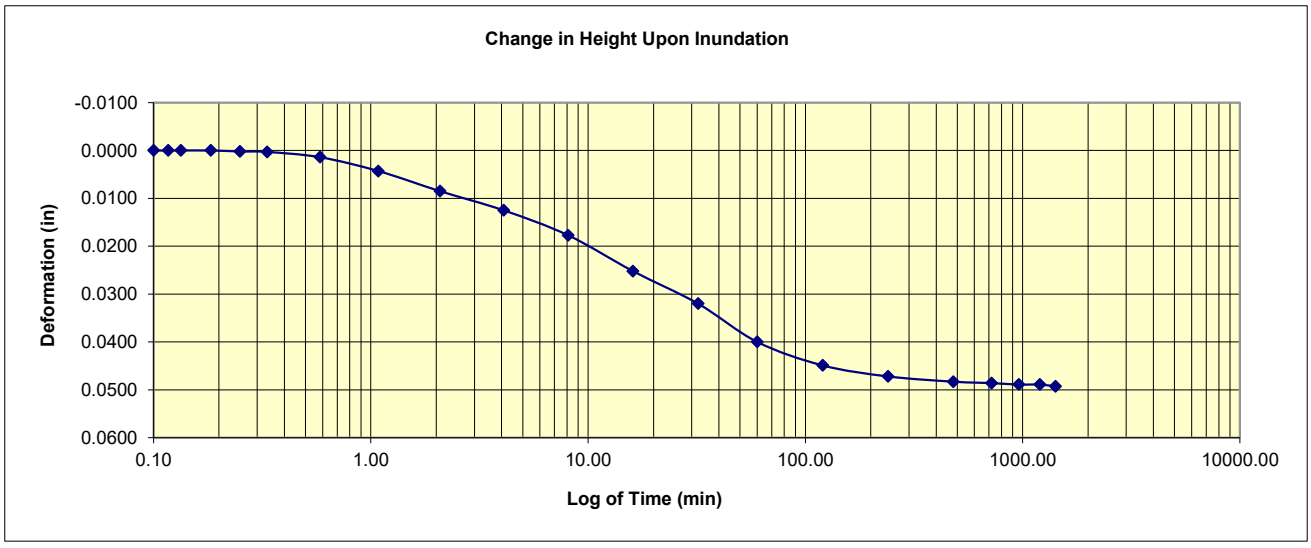
Collapse Potential of Soils
ASTM D5333-03

Job No.:	664-234	**Boring:**	B-4	**Date:**	1/11/2019
Client:	BSK Associates	**Sample:**	1C	**Tested By:**	MD
Project:	Liberty HS Campus Expansion **Proj. No.:** G18-308-11L	**Depth, ft.:**	3	**Checked:**	PJ/DC
Soil Description:	Sandy Lean Clay (CL)				

Load, psf	150	300	550	1100	2200	3500	Inundation		
Deformation, in.:	0.002	0.0016	0.002	0.0042	0.0079	0.0085	0.0502		

	Initial	**Final**		
Moisture Content %	16.6	23.0	**Vertical Stress at Inundation (psf)**	**Collapse Potential (%)**
Dry Density, pcf	96.3	104.2	**3500**	**5.16**
Void Ratio	0.784	0.648		
Saturation %	58.1	97.6		
Assumed Specific Gravity		2.75		





BSK ASSOCIATES

PROJECT NO. G18-308-11L	**COLLAPSE POTENTIAL OF SOIL**
DRAWN: 1/11/19	
DRAWN BY: D. Tower	
CHECKED BY: C. Foulk	Campus Expansion- Option 3 Liberty Union High School 850 2nd Street Brentwood, California
FILE NAME: SitePlan.indd	

FIGURE

B-4

California State Certified Laboratory No. 2153

CERCO analytical
1100 Willow Pass Court, Suite A
Concord, CA 94520-1006
925 462 2771 Fax. 925 462 2775
www.cercoanalytical.com

21 January, 2019

Job No. 1901057
Cust. No. 12667

Ms. Danaige Tower
BSK Associates Engineers & Laboratories
399 Lindbergh Avenue
Livermore, CA 94551

Subject: Project No.: G18-308-11L
Project Name: Liberty HS
Corrosivity Analysis – ASTM Test Methods

Dear Ms. Tower:

Pursuant to your request, CERCO Analytical has analyzed the soil samples submitted on January 09, 2019. 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 reflect 27 & 87 mg/kg and determined to be insufficient to attack steel embedded in a concrete mortar coating.

The sulfate ion concentrations reflect 97 & 170 mg/kg and are determined to be insufficient to damage reinforced concrete structures and cement mortar-coated steel at these locations.

The pH of the soils reflect 7.98 & 8.12, which does not present corrosion problems for buried iron, steel, mortar-coated steel and reinforced concrete structures.

The redox potential for both samples is 290-mV and is indicative of potentially "slightly corrosive" soils resulting from anaerobic 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

California State Certified Laboratory No. 2153

CERCO analytical
1100 Willow Pass Court, Suite A
Concord, CA 94520-1006
925 462 2771 Fax. 925 462 2775
www.cercoanalytical.com

Client: BSK Associates Engineers & Laboratories
Client's Project No.: G18-308-11L
Client's Project Name: Liberty HS
Date Sampled: 26-Dec-18
Date Received: 9-Jan-19
Matrix: Soil
Authorization: Signed Chain of Custody

Date of Report: 21-Jan-2019

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)*
1901057-001	B-1 @ 2.5'	290	7.98	-	650	-	87	170
1901057-002	B-3 @ 3'	290	8.12	-	820	-	27	97

Method:	ASTM D1498	ASTM D4972	ASTM D1125M	ASTM G57	ASTM D4658M	ASTM D4327	ASTM D4327
Reporting Limit:	-	-	10	-	50	15	15
	15-Jan-2019	15-Jan-2019	-	18-Jan-2019	-	18-Jan-2019	18-Jan-2019

* Results Reported on "As Received" Basis

Cheryl McMillen
Laboratory Director

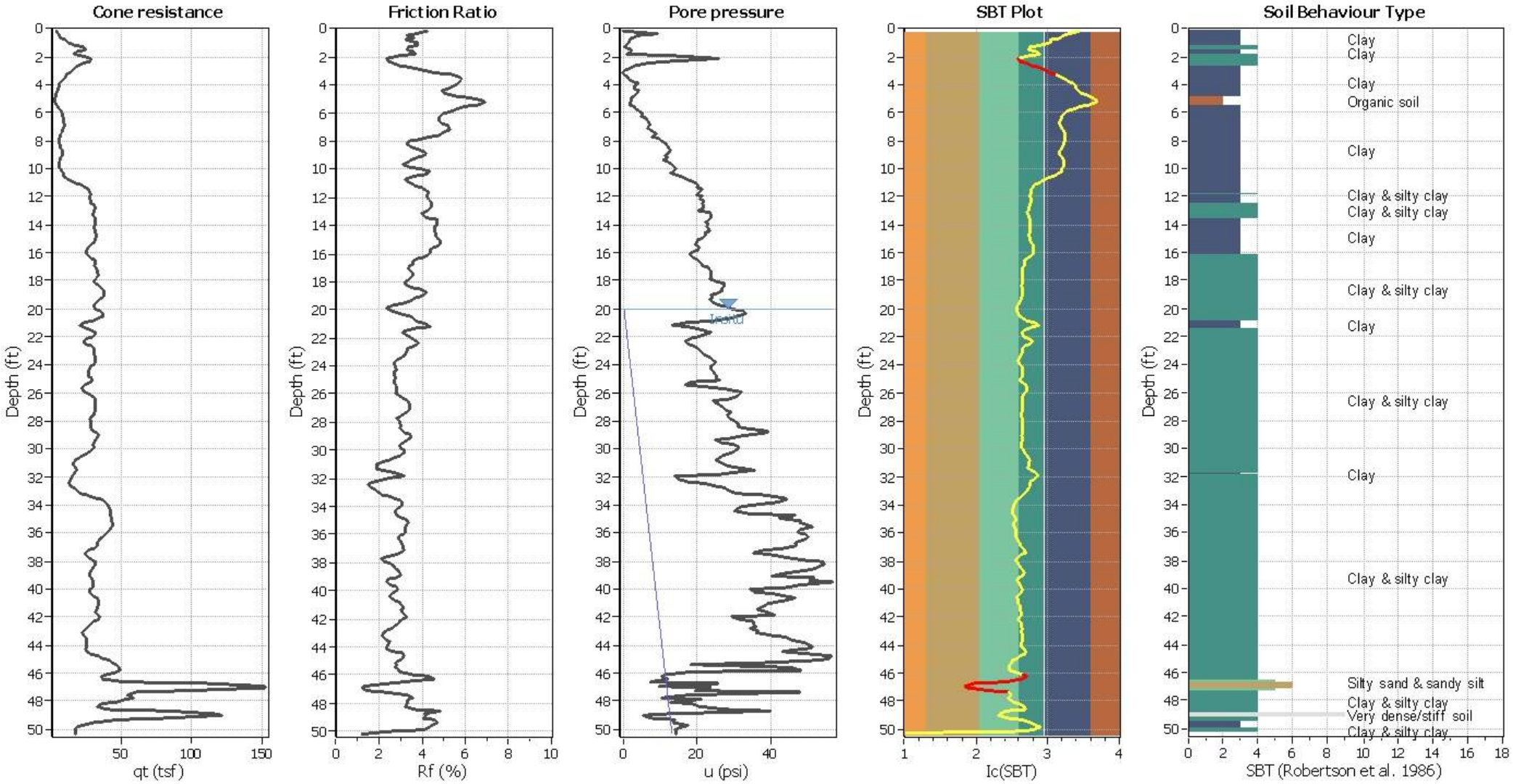
Quality Control Summary - All laboratory quality control parameters were found to be within established limits

APPENDIX C

CONE PENETROMETER TEST RESULTS

AND LIQUEFACTION ANALYSES

CPT basic interpretation plots



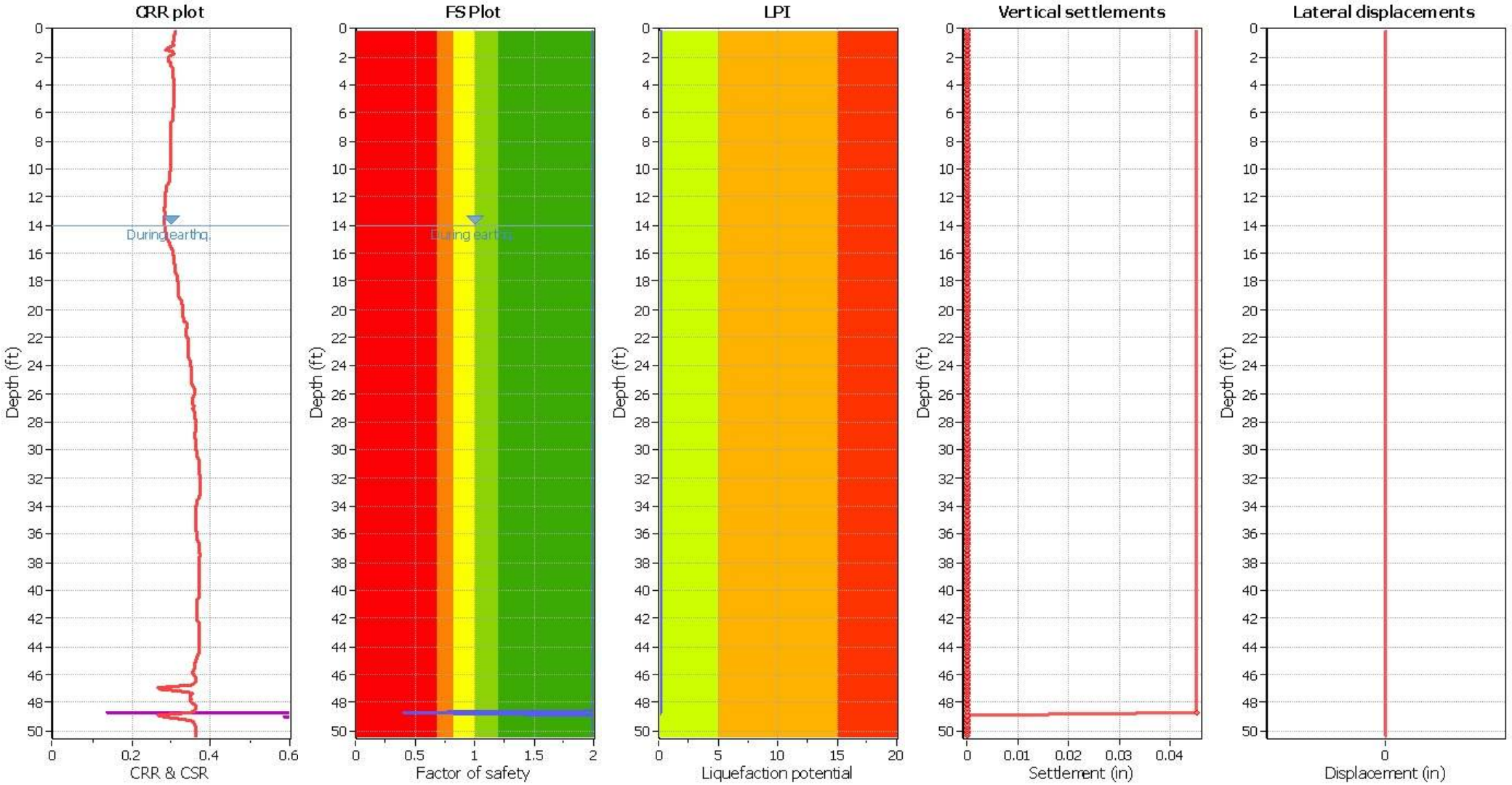
Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	14.00 ft	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.52	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.50	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	14.00 ft	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.52	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.50	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

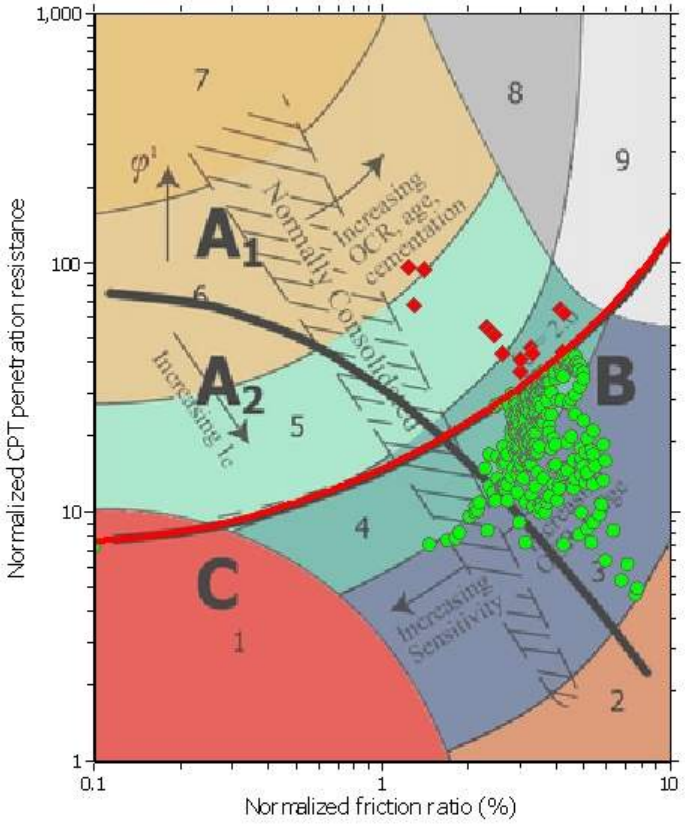
F.S. color scheme

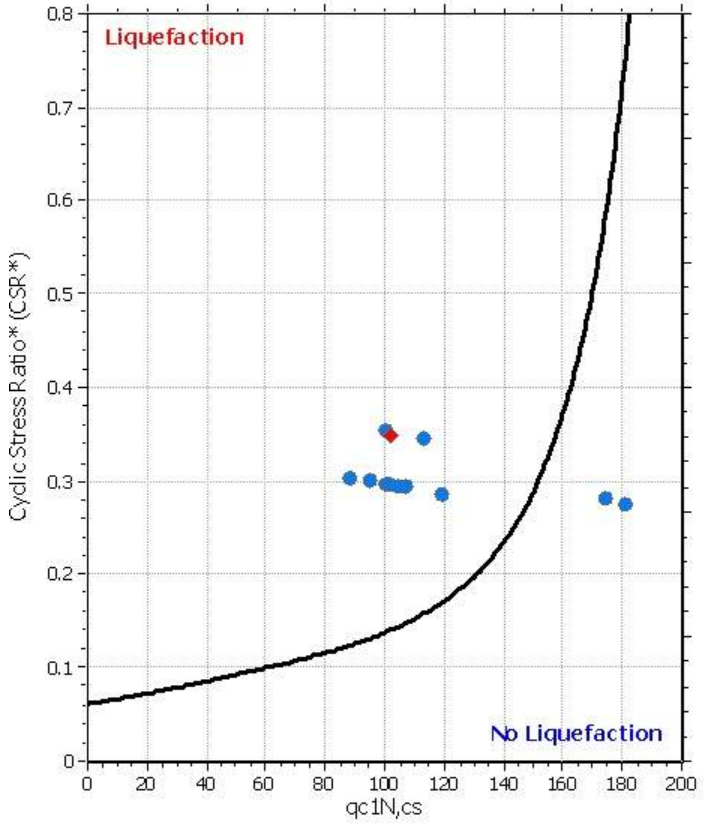
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

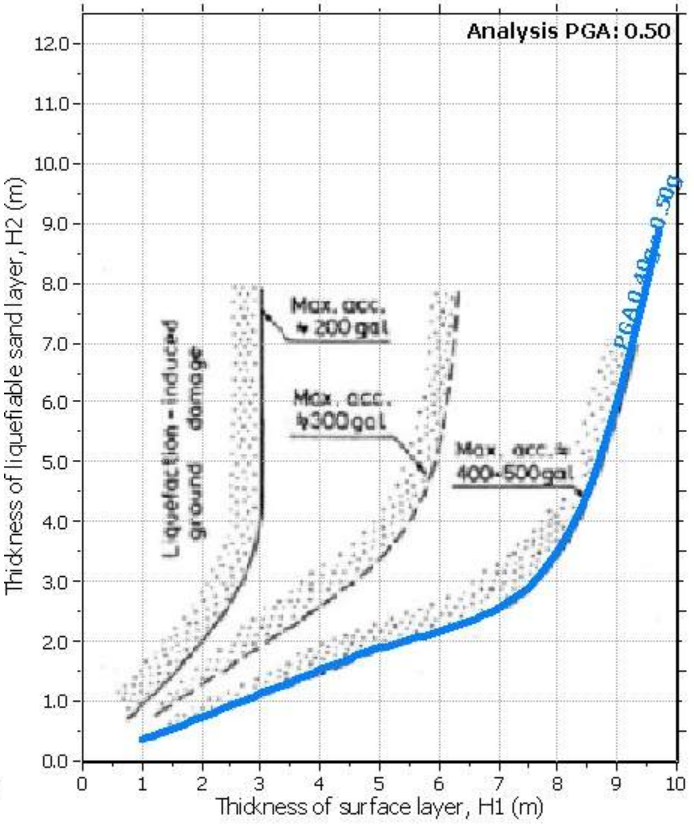
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plots







Input parameters and analysis data

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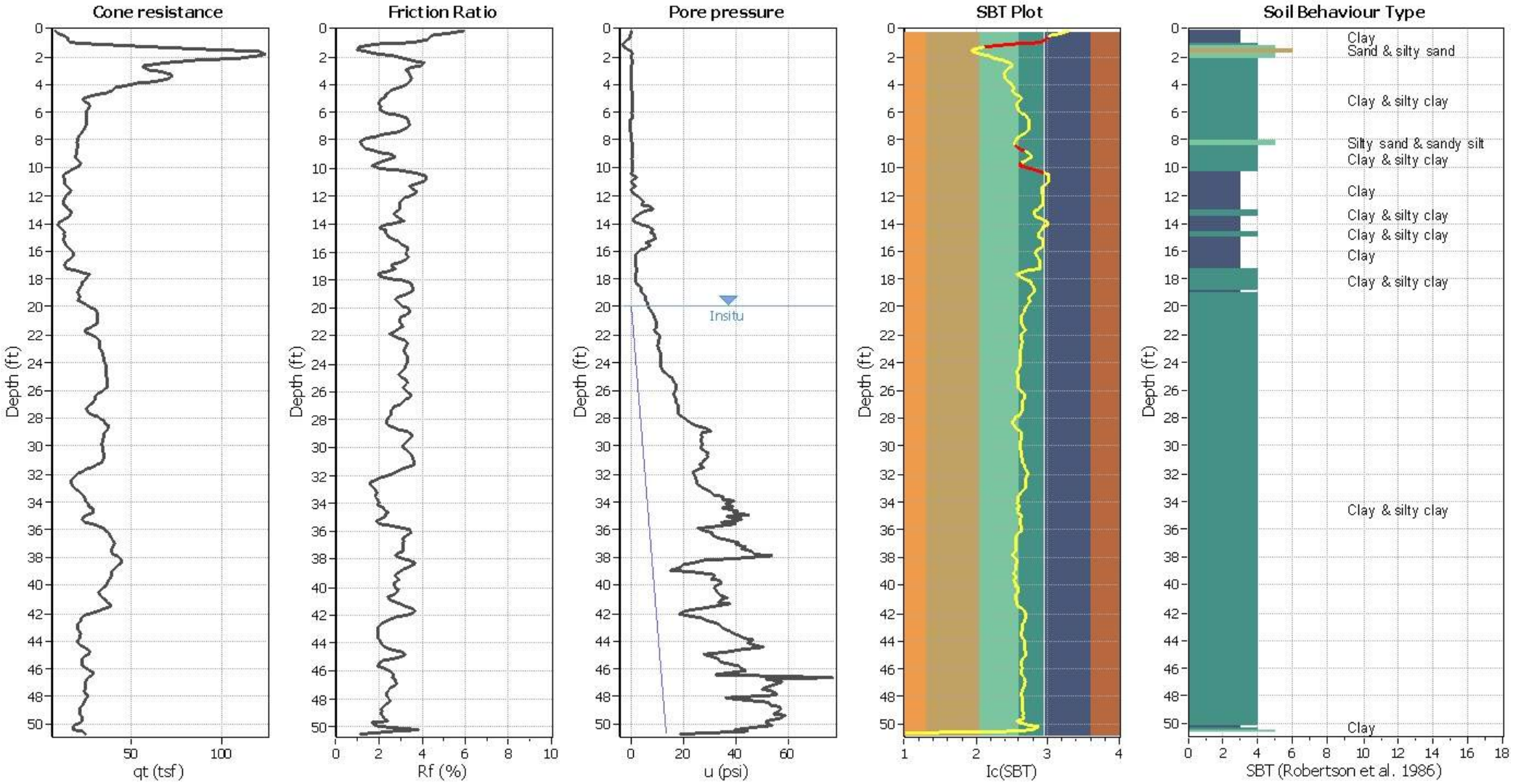
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.52	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.50	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

CPT basic interpretation plo



Input parameters and analysis data

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Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
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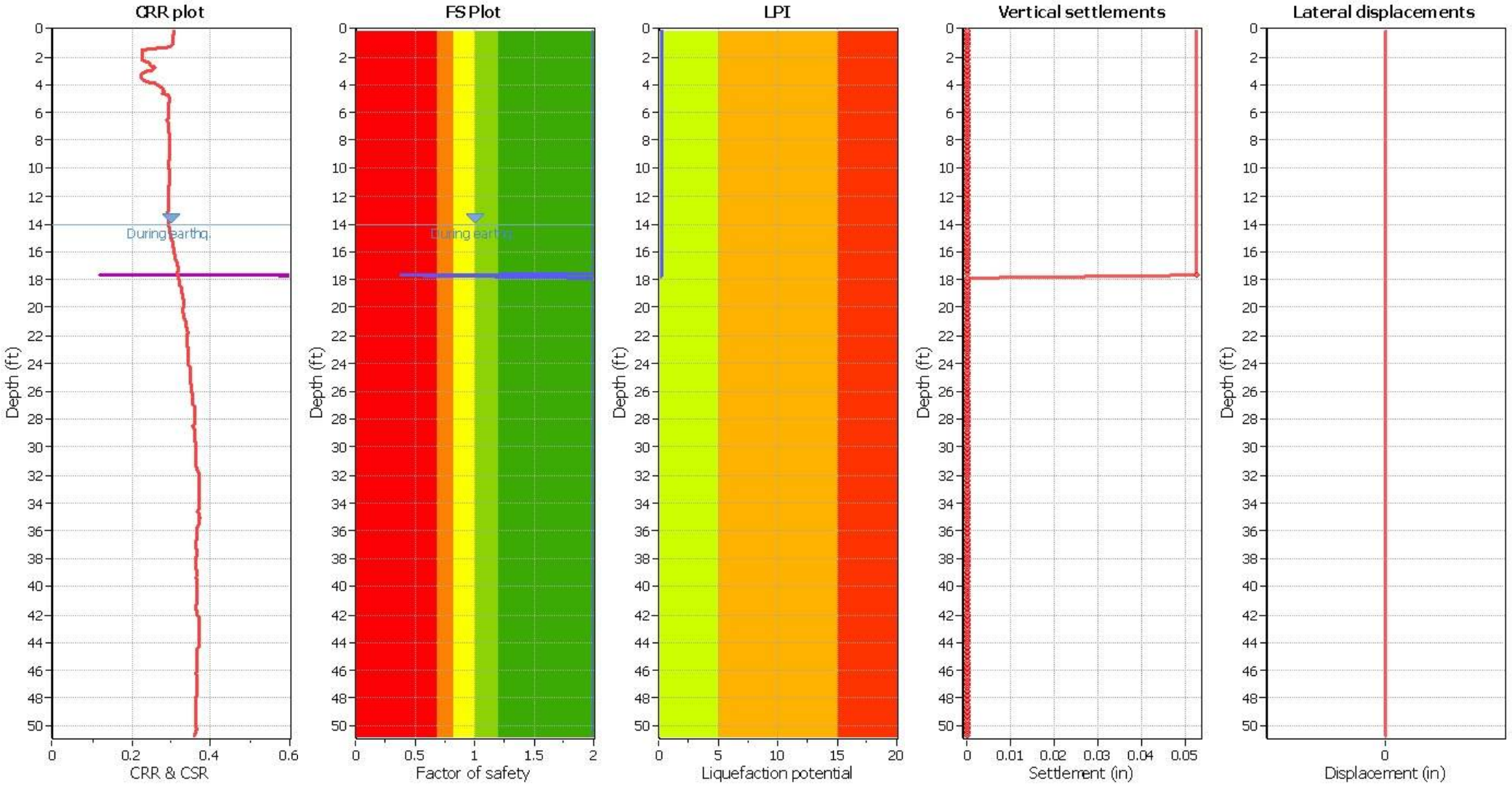
Peak ground acceleration:	0.50	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained	4. Clayey silt to silty	7. Gravely sand to sand
2. Organic material	5. Silty sand to sandy silt	8. Very stiff sand to
3. Clay to silty clay	6. Clean sand to silty sand	9. Very stiff fine grained

Liquefaction analysis overall plot



Input parameters and analysis data

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Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
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Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

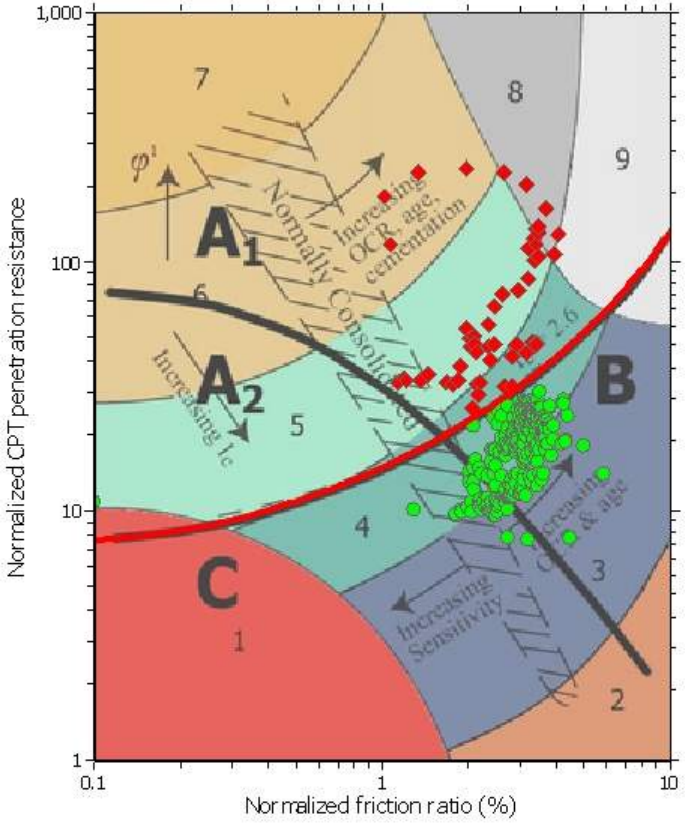
F.S. color scheme

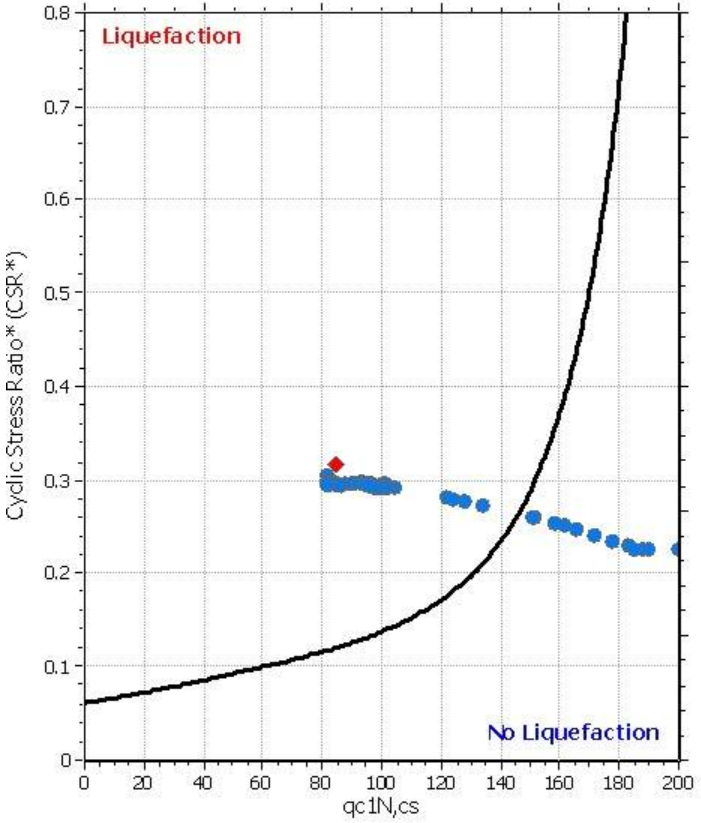
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

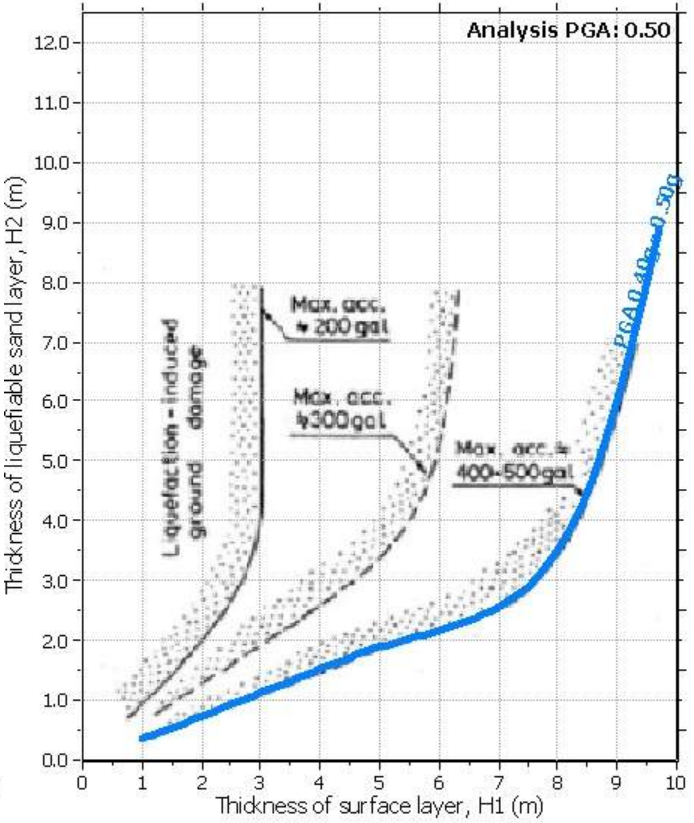
LPI color scheme

- Very high risk
- High risk
- Low risk

Liquefaction analysis summary plo







Input parameters and analysis data

Analysis method:	B&I (2014)	Depth to GWT (erthq.):	14.00 ft	Fill weight:	N/A
Fines correction method:	B&I (2014)	Average results interval:	3	Transition detect. applied:	Yes
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Depth to water table (insitu):	20.00 ft	Fill height:	N/A	Limit depth:	N/A

APPENDIX D

GEOLOGIC AND SEISMIC HAZARDS ASSESSMENT

GEOLOGIC AND SEISMIC HAZARDS ASSESSMENT

LIBERTY HIGH SCHOOL
CAMPUS EXPANSION – OPTION 3
BRENTWOOD, CALIFORNIA

BSK PROJECT NO. G18-308-11L

PREPARED FOR:

LIBERTY UNION HIGH SCHOOL DISTRICT
20 OAK STREET
BRENTWOOD, CALIFORNIA 94513

January 30, 2019

Omar K. Khan
Project Geologist

Martin B. Cline, CEG #2084
Senior Engineering Geologist

GEOLOGIC AND SEISMIC HAZARDS ASSESSMENT REPORT
LIBERTY HIGH SCHOOL
CAMPUS EXPANSION – OPTION 3
850 2nd STREET
BRENTWOOD, CALIFORNIA

Table of Contents

Figures

D1.0 INTRODUCTION

This report presents the geologic and seismic hazards assessment prepared in accordance with the 2016 California Building Standards Code (CBC), California Code of Regulations, 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 District 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 Figure D-1, Area Topographic Map, Liberty High School is located at 850 2nd Street in Brentwood, California within the northeastern portion of Contra Costa County. A map of the project area is shown on Figure D-2, Site Plan.

The approximate coordinates near the center of the project area are:

Latitude: 37.935796˚N Longitude: 121.695261˚W

The campus is located in the southeastern portion of Brentwood within an area with dense residential and commercial properties.

D1.3 Site Topography

The project area and surroundings are generally level with minor topographic relief (see Figure D-1). According to the U.S. Geological Survey (USGS, 2018) 7½-minute Brentwood quadrangle topographic map, the estimated ground surface elevation of the campus is approximately 70 to 75 feet above mean sea level.

D1.4 Groundwater Conditions

The campus and City of Brentwood is located within the Tracy sub-basin of the San Joaquin River Hydrologic Region (CDWR, 2003). Free groundwater was observed in the borings performed for our concurrent geotechnical investigation between depths of approximately 24 and 28 feet below the ground surface (BGS). Groundwater was encountered in our February 2018 borings and CPTs at the campus between approximately 15 and 23 feet BGS. According to the Seismic Hazard Zone Report for the Brentwood Quadrangle (CGS, 2018a), historic high ground water at the campus is between 10 and 20 feet (see Figure D-3, Historically High Groundwater Depth). According to Department of Water Resources (DWR), the regional groundwater levels from Spring 2018 in the Brentwood area are between approximately 40 to 50 feet BGS.

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 City of Brentwood is located in the California Delta region of the Great Valley geomorphic province of California near the eastern boundary of the Coast 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. Liberty High School 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 Coast Ranges province that is characterized by northwest trending ridges and valleys that are typically highly folded with numerous faults (CGS, 2002).

According to Knudsen et al. (2000) and the CGS (2018a), who have differentiated Quaternary deposits between Holocene and Pleistocene age, the project area is mapped across two geologic units. The southeastern portion is underlain by Holocene alluvial fan levee deposits (map symbol Qhl) and the northwestern portion is underlain by Holocene alluvial fan deposits, fine facies (map symbol Qhff). Holocene alluvial fan levee deposits are formed by streams that overtop their banks and deposit sediment adjacent to the channel. Levee deposits tend to be loose, moderately to well sorted sand, silt, and clay. Holocene alluvial fan deposits, fine facies, are dominated by clay and silt with interbedded sand and gravel. A portion of Knudsen et al. (2000) geologic map is presented in Figure D-4, Quaternary Geologic Map.

According to Dibblee and Minch (2006), the project site is underlain by Holocene age (younger than 11,700 years) alluvial loam of valley areas (map symbol Ql) as shown on Figure D-5, Geologic Map. These deposits generally include alluvial gravel, sand, silt, and clay.

Nearby active faults include the Greenville Fault zone located approximately 9 miles southwest of the project, the Concord Fault located approximately 16 miles west of the project site, the Las Positas Fault

located approximately 17 miles south of the project site, and the Green Valley Fault zone located approximately 24 miles northwest of the project site.

D2.1 Subsurface Conditions

Subsurface conditions are described in the geotechnical investigation report prepared by BSK and to which this geologic and seismic hazards report is appended. The project area was the subject of a current field investigation of four hollow-stem auger borings which ranged in depth from approximately 25 to 30 feet BGS and two CPTs completed to a depth of approximately 50 feet BGS. The underlying soil consisted predominantly of clay and silty clay with interbedded clayey sand and silty sand. In the upper 30 feet, the fine grained soils were generally firm to hard, whereas the coarse-grained soils medium dense to very dense.

As shown on Figure D-6, Geologic Cross Sections were constructed to interpret subsurface conditions based on soil borings, CPT data and published reports in the area.

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 Earthquake Fault Zoning Act, as summarized in CGS Special Publication 42 (2018b), is to "address the hazard of surface fault rupture through the regulation of development in areas near Holocene-active faults and prevent the construction of structures for human occupancy across traces of active faults." As indicated by Special Publication 42, "the State Geologist (Chief of the California Geological Survey) is required to delineate 'Earthquake Fault Zones (EFZ)' along known Holocene-active faults in California. The EFZs are distributed as 'Earthquake Fault Zone maps.' The zones are regulatory in nature and are one class of 'Earthquake Zones of Required Investigation', which includes other geologic hazards such as liquefaction and earthquake-induced landslides. 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 City of Brentwood and the campus are located within the Brentwood 7½-minute quadrangle in Contra Costa County. Alquist-Priolo Earthquake Fault Zones have not been prepared for this quadrangle since the quadrangle lacks Holocene-active faults. As shown on the Alquist-Priolo Earthquake Fault Zones map, Figure D-7, the closest Fault-Rupture Hazard Zone is associated with the Greenville fault zone located approximately 9¼ miles southwest of the project 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 project site is not located in an Earthquake-Induced Landslide Hazard Zone. However, the northwestern portion of the project site is located in a state-delineated Liquefaction Hazard Zone, as shown on the State Seismic Hazard Zones, Figure D-8 (CGS, 2018c).

The results of our liquefaction evaluation are presented in the section entitled “Soil Liquefaction” of the geotechnical report and discussed in Section D4.4.1 below.

D3.3 Slope Stability and Potential for Slope Failure

The project site is essentially flat, with little to no topographic relief. Therefore, the potential for landslides and slope failures (seismically induced or otherwise) to occur at the site is considered negligible.

D3.4 Flood and Inundation Hazards

An evaluation of flooding at the project 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 project site. As shown on the FEMA Flood Zones, Figure D-9, according to FEMA Flood Hazard Map Layer (Panel 06013C0362G), dated 3/21/2017, the project site lies in Zone X outside of the 100-year and 500-year floodplains.

D3.4.2 Inundation Hazards - Dams

The Los Vaqueros Reservoir is located approximately 7 miles southeast of the campus. According to the inundation map for Los Vaqueros Reservoir provided by Department of Water Resources (DWR), https://water.ca.gov/Programs/All-Programs/Division-of-Safety-of-Dams/Inundation-Maps, the campus is just outside the inundation zone.

D3.5 Volcanic Hazards

According to the United States Geological Survey (USGS) Bulletin 1847, the project 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 entitled "Corrosivity Results" in the geotechnical report for discussion of the corrosivity of the project site soils.

D3.7 Expansive Soils

As discussed in the geotechnical report, the near-surface soils encountered within the current borings at the project site consist of lean clay which exhibits a low to 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 project 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-10 and D-11, Regional Fault Map and Local Fault Map, respectively, present the major faults that may impact the project area 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 area 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 Earthquakes map, Figure D-12, 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 ≥ 2.5 earthquakes. Some of the significant regional earthquake events include the 1980 M5.8 Livermore earthquake located approximately 7 miles southwest of the project area, 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 area.

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 Standards Code

D4.3.1 Site Class

Based on Section 1613A.3.2 of the 2016 California Building Code (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. Based on the estimated undrained shear strength of the fine-grained soils encountered in our hollow stem boring and CPT test hole, as per Table 20.3-1 of ASCE 7-10, the Site is Class D (Stiff Soil, 15 blows per foot < N < 50 blows per foot).

D4.3.2 Seismic Design Criteria

The 2016 CBSC utilizes ground motion based on the Risk-Targeted Maximum Considered Earthquake (MCE). The Risk-Targeted MCE is defined in the 2016 CBSC 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 CBSC 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: https://seismicmaps.org/ https://seismicmaps.org/

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_S = 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} = 0.766	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

As shown above, the short period design spectral response acceleration coefficient, SDS, is greater than 0.50, therefore the Site lies in Seismic Design Category D as specified in Section 1613A.3.5 of the 2016 CBC. 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 project site is underlain by alluvial soils consisting of primarily of lean clay with layers of silt and silty sand throughout the observed depth. Based on our analysis, we conclude that liquefaction-induced settlement of some of the sand and silt layers to be negligible at the project 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 project site (see above section for additional discussion). In addition, there are no free faces in the vicinity of the project site and the depth to the potentially liquefiable layers identified in our CPTs (refer to Appendix C of the geotechnical report) is not significant; therefore, the potential for lateral spread to occur at the project 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 that the potential for dynamic compaction is negligible.

D5.0 REFERENCES

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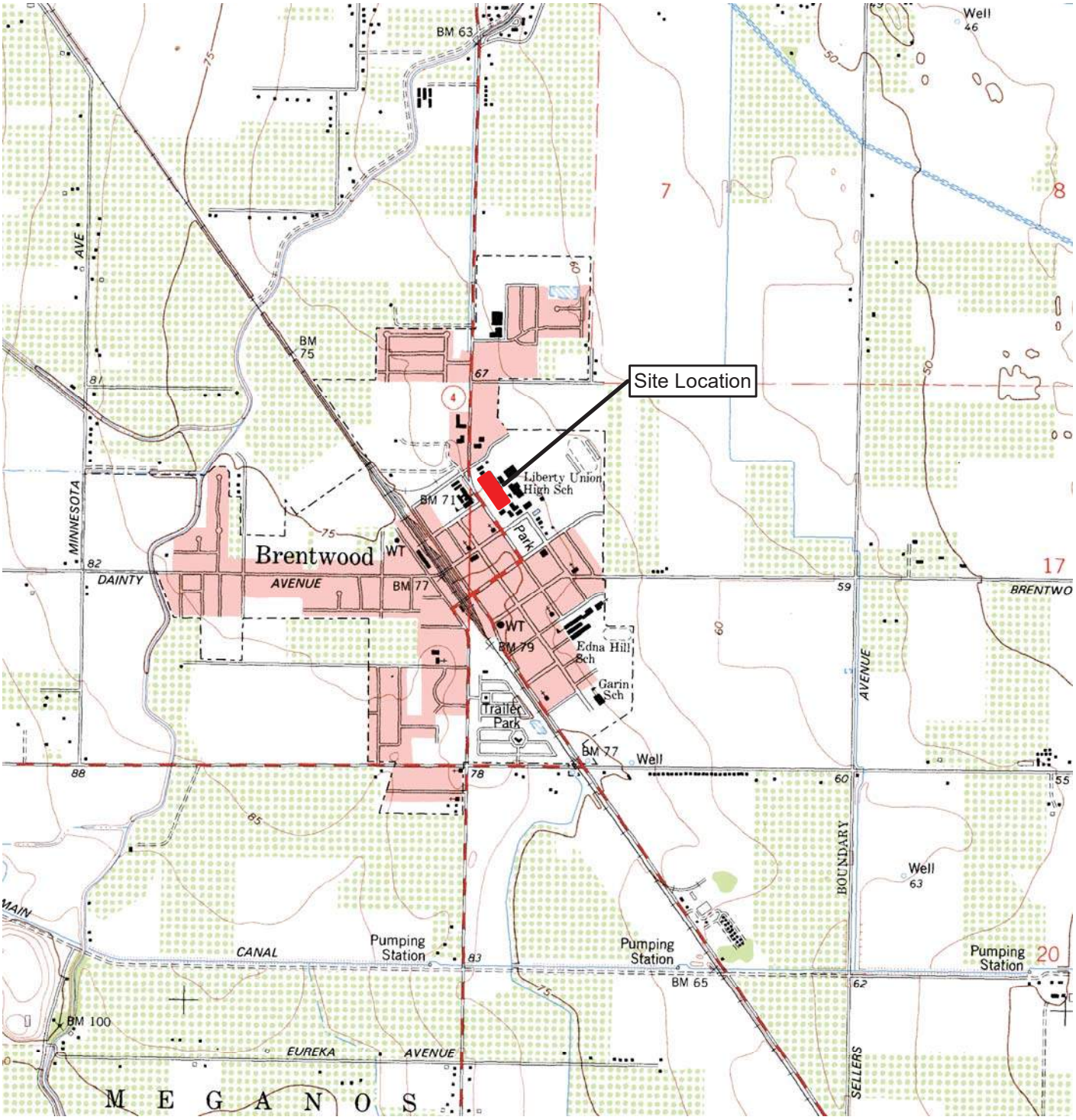

Reference: http://www.atlas.ca.gov/download.html#/casil/imageryBaseMaps
LandCover/baseMaps/drg/7.5_minute_series_albers_nad83_trimmed

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BSK ASSOCIATES

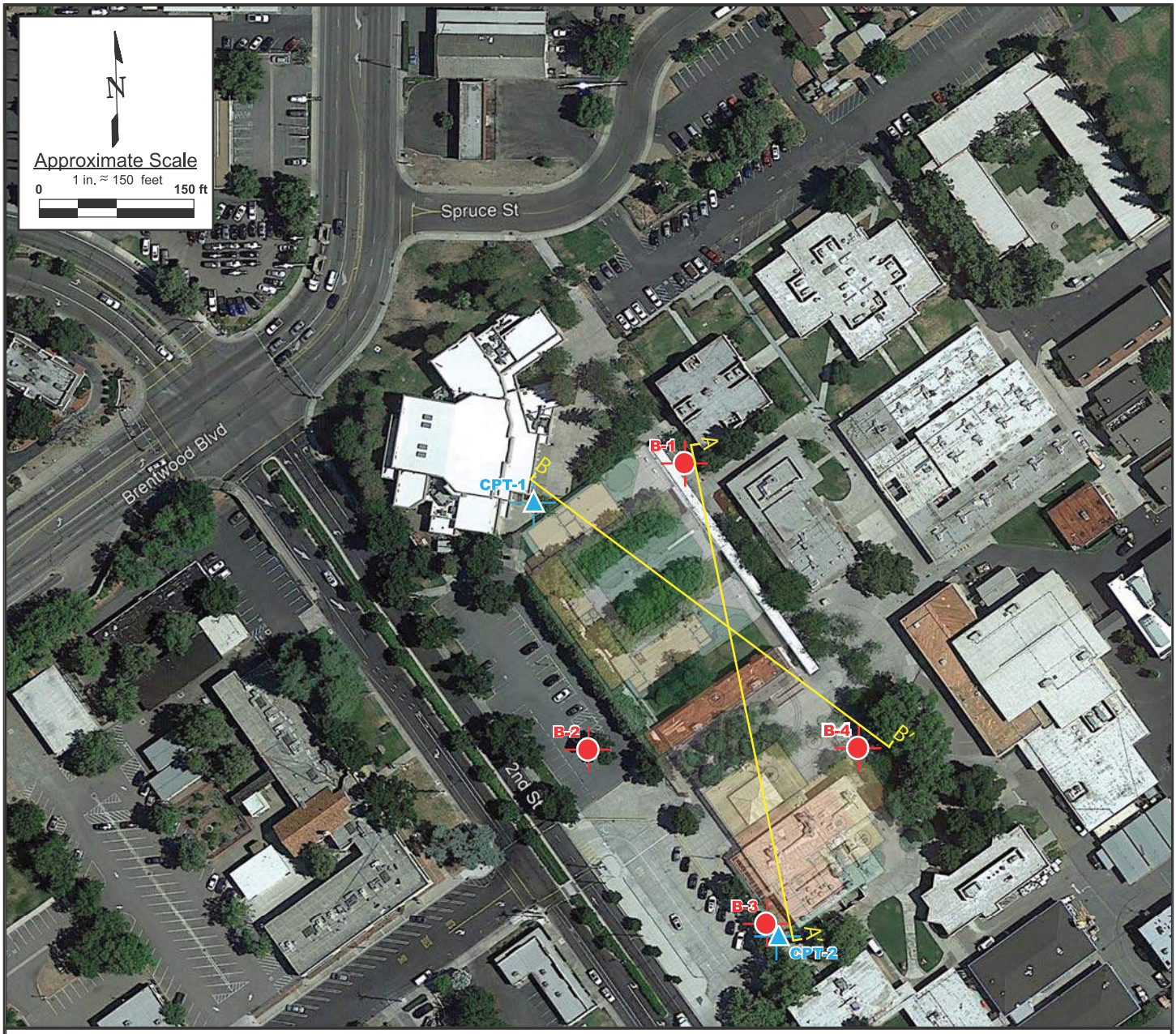
PROJECT NO. G1830811L	
Drawn: 12/10/2018	
DRAWN BY: MBC	
CHECKED BY: CF	
FILE NAME: Figure D-1 Topomap	

AREA TOPOGRAPHIC MAP

Liberty High School
Campus Expansion - Option 3
850 2nd Street
Brentwood, California

Figure

D-1



References: 1. http://earth.google.com, 2018

2. "Campus Entry Plan" by Quattrocchi Kwok Architects dated 9/30/16

Note: Locations are approximate.

LEGEND

B-1 — Approximate Boring Location (BSK, 2018)

CPT-1 — Approximate Cone Penetration Test Location (BSK, 2018)

A A' — Cross section line (see Figure D-6 for cross sections)

BSK ASSOCIATES

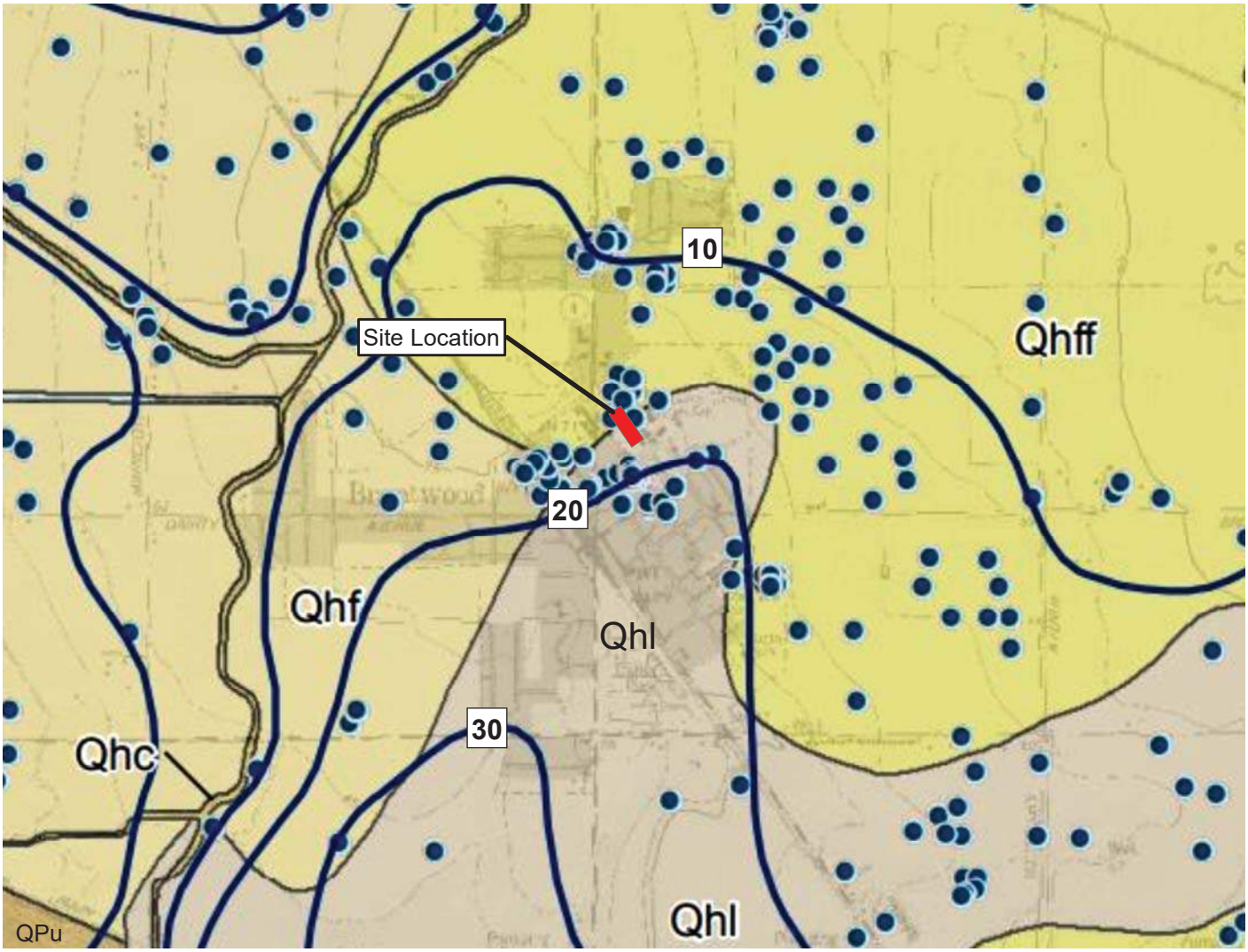
PROJECT NO.	G1830811L
DRAWN:	1/14/19
DRAWN BY:	MJR
CHECKED BY:	MBC
FILE NAME:	Figure D-2 Site Plan

SITE PLAN

Liberty High School
Campus Expansion - Option 3
850 2nd Street
Brentwood, California

FIGURE

D-2



LEGEND
Qhc - Holocene to Modern Stream Channel Deposits
Qhl - Holocene Alluvial Fan Levee Deposits
Qhf - Holocene Alluvial Fan Deposits
Qhff - Holocene Alluvial Fan Deposits, Fine Facies
QPu - Late to Early Pleistocene Sandstone, Siltstone, and Gravel - Undifferentiated

• Groundwater measurement location
—10— Depth to groundwater (in feet)

Reference: CGS, 2018, Seismic Hazard Zone Report for the Brentwood 7.5-Minute Quadrangle, Contra Costa County, California, Seismic Hazard Zone Report 124

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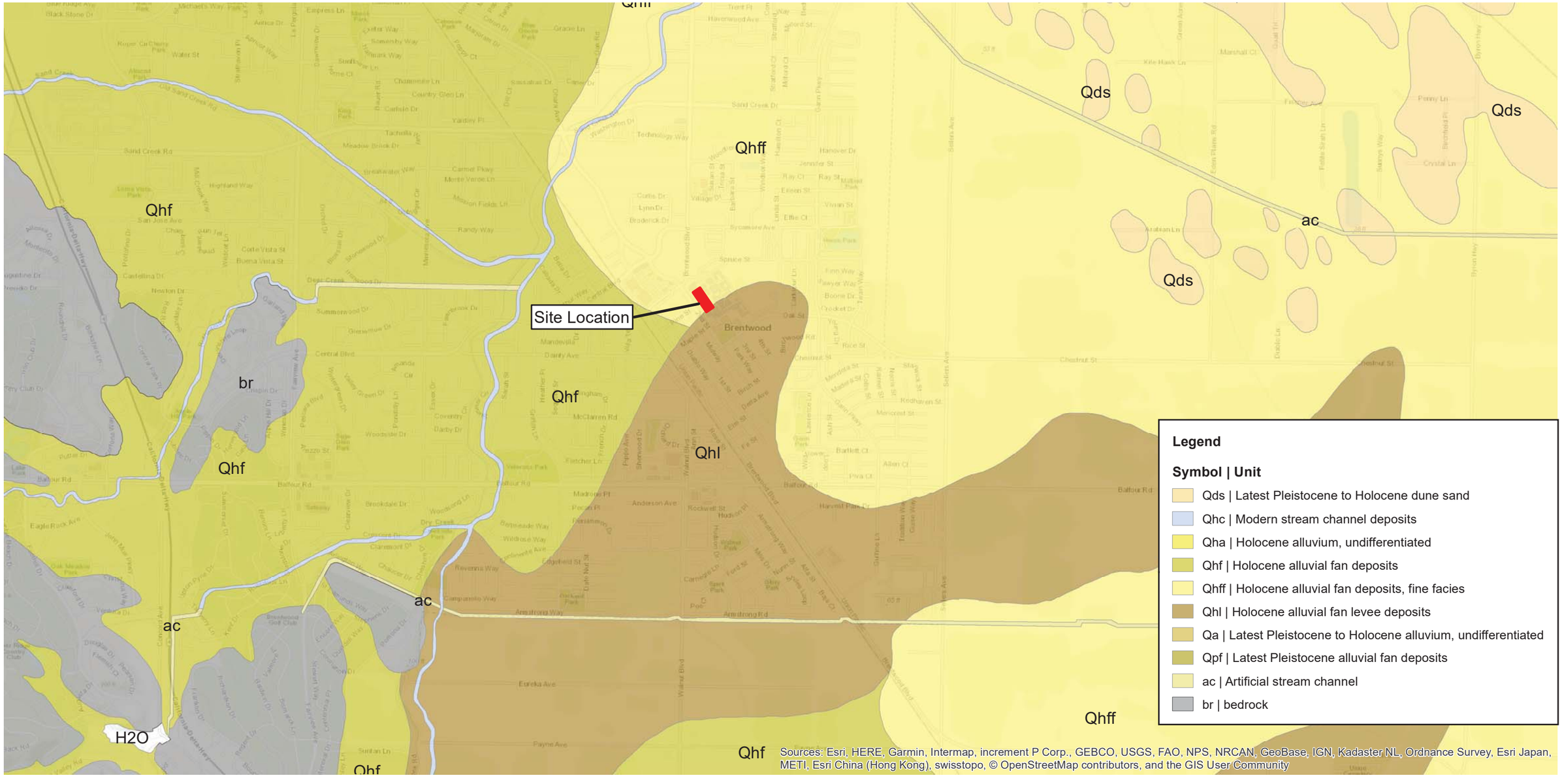
BSK ASSOCIATES

PROJECT NO. G1830811L	HISTORICALLY HIGH GROUNDWATER DEPTH
Drawn: 12/10/2018	
DRAWN BY: MBC	Liberty High School Campus Expansion - Option 3 850 2nd Street Brentwood, California
CHECKED BY: CF	
FILE NAME: Figure D-3 Historic GW	

Figure
D-3



References: Knudsen, K.L., et all., 2000, Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California: A Digital Database, U.S. Geological Survey Open-File Report 00-444

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BSK ASSOCIATES

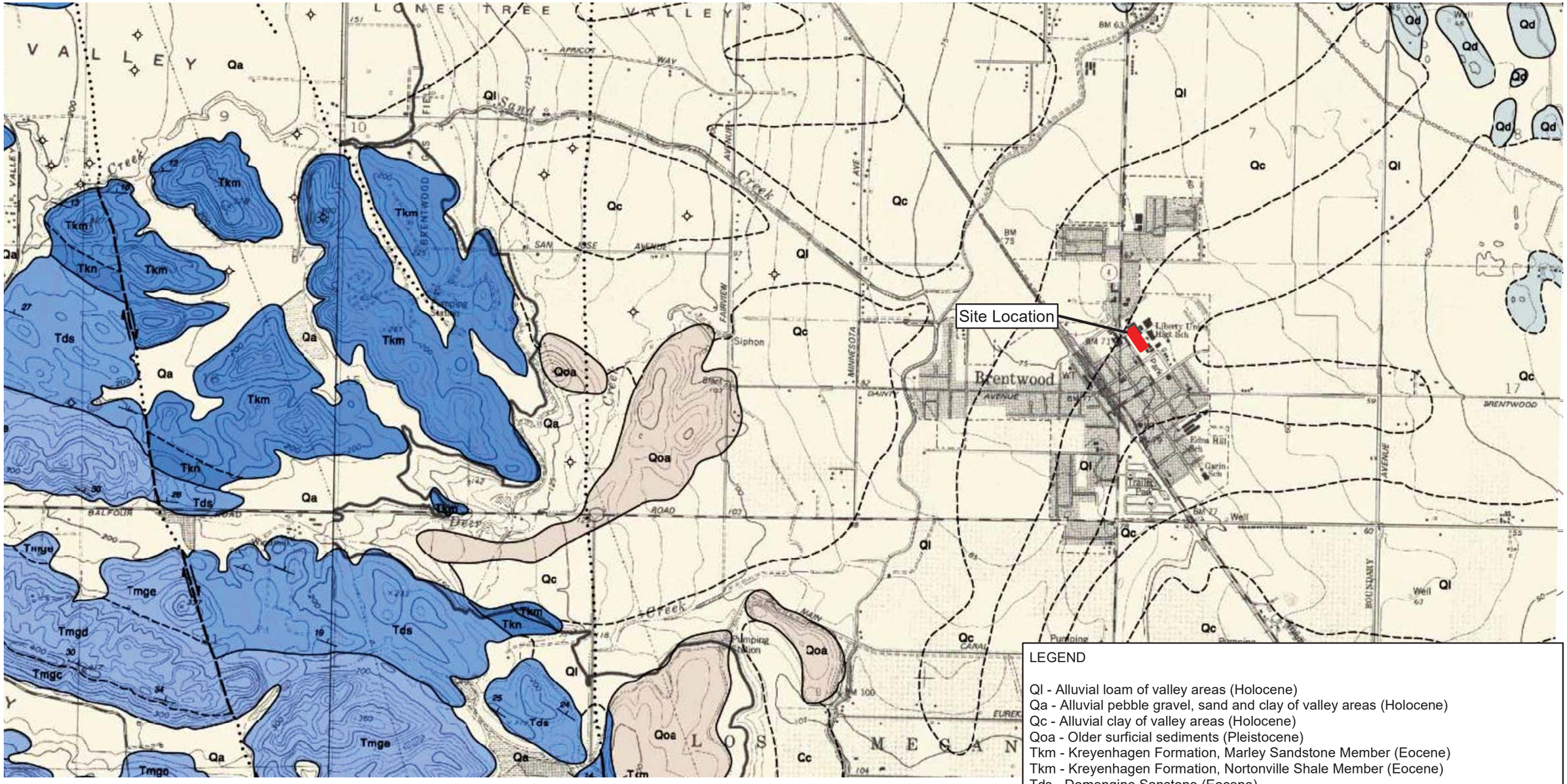
PROJECT NO. G1828711L	
Drawn: 11/5/2018	
DRAWN BY: MBC	
CHECKED BY: CF	
FILE NAME: Figure D-4 Geologic_map	

QUATERNARY GEOLOGIC MAP

Liberty High School
Campus Expansion - Option 3
850 2nd Street
Brentwood, California

Figure

D-4



LEGEND

Ql - Alluvial loam of valley areas (Holocene)
Qa - Alluvial pebble gravel, sand and clay of valley areas (Holocene)
Qc - Alluvial clay of valley areas (Holocene)
Qoa - Older surficial sediments (Pleistocene)
Tkm - Kreyenhagen Formation, Marley Sandstone Member (Eocene)
Tkm - Kreyenhagen Formation, Nortonville Shale Member (Eocene)
Tds - Domengine Sanstone (Eocene)
Tmgd - Meganos Formation, Sandstone Member (Eocene)

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

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BSK ASSOCIATES

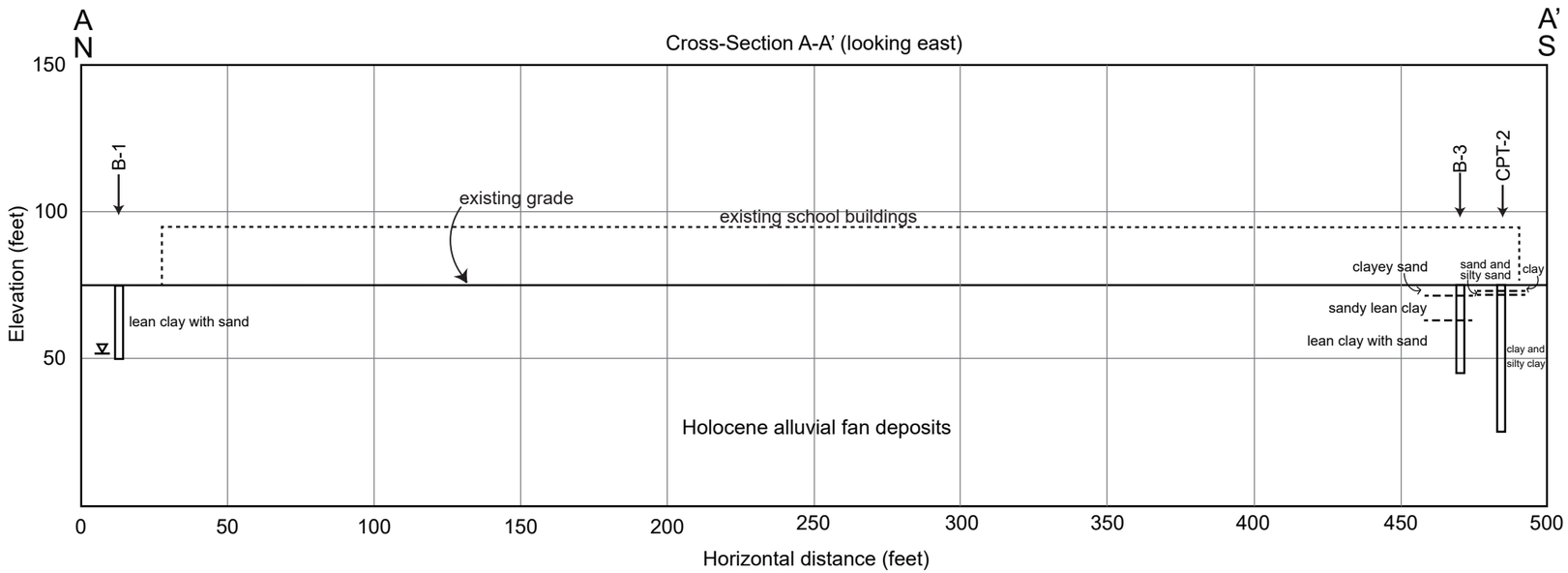
PROJECT NO. G1830811L	
Drawn: 12/10/2018	
DRAWN BY: MBC	
CHECKED BY: CF	
FILE NAME: Figure D-5 Geologic_map2	

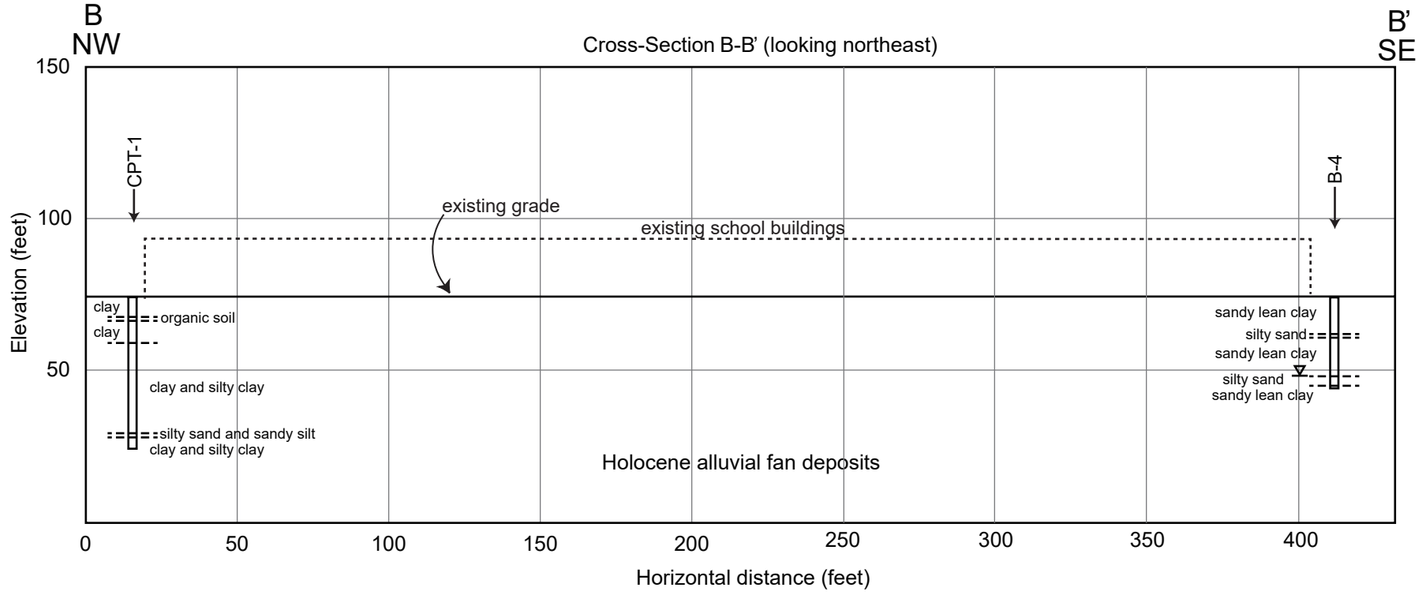
GEOLOGIC MAP

Liberty High School
Campus Expansion - Option 3
850 2nd Street
Brentwood, California

Figure

D-5





LEGEND

- Soil boring or CPT profile
- –?– – Unit contact
- Groundwater level

Scale 1 inch : 50 feet

BSK ASSOCIATES

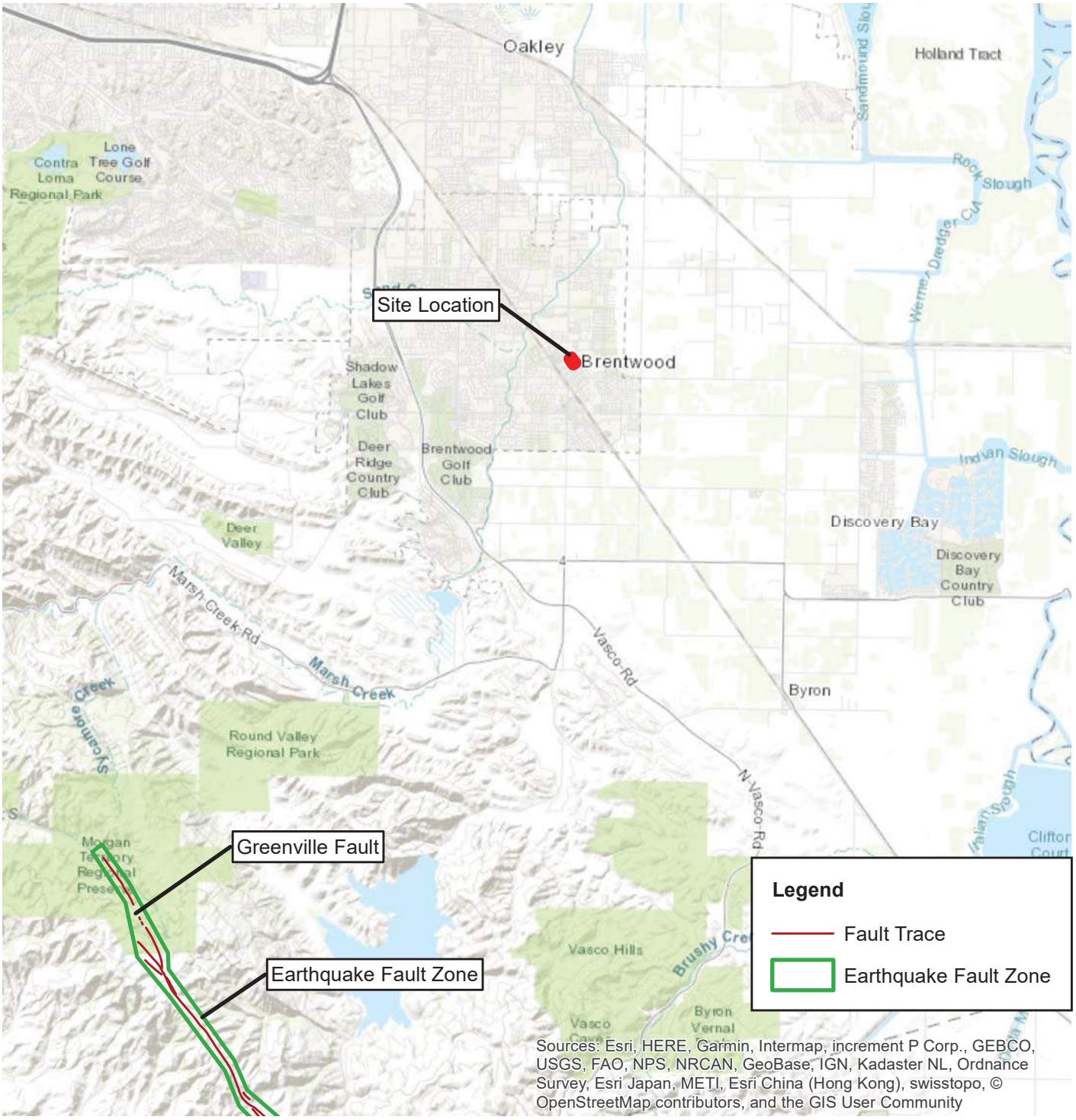
PROJECT NO.	G1830811L
DRAWN:	1/14/19
DRAWN BY:	MJR
CHECKED BY:	MBC
FILE NAME:	Figure D-6 Cross Section

GEOLOGIC CROSS SECTION

Liberty High School
Campus Expansion - Option 3
850 2nd Street
Brentwood, California

FIGURE

D-6



Reference: Special Studies Zones, Hayward Quad, CGS
http://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=regulatorymaps

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BSK ASSOCIATES

PROJECT NO. G1830811L
Figure Drawn: 12/10/2018
DRAWN BY: MBC
CHECKED BY: MR
FILE NAME: Figure D-7 AP_Fault_map

ALQUIST-PRIOLO EARTHQUAKE FAULT ZONE

Liberty High School
Campus Expansion - Option 3
850 2nd Street
Brentwood, California

D-7

Reference: Special Studies Zones, Brentwood Quad, CGS
http://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=regulatorymaps

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BSK ASSOCIATES

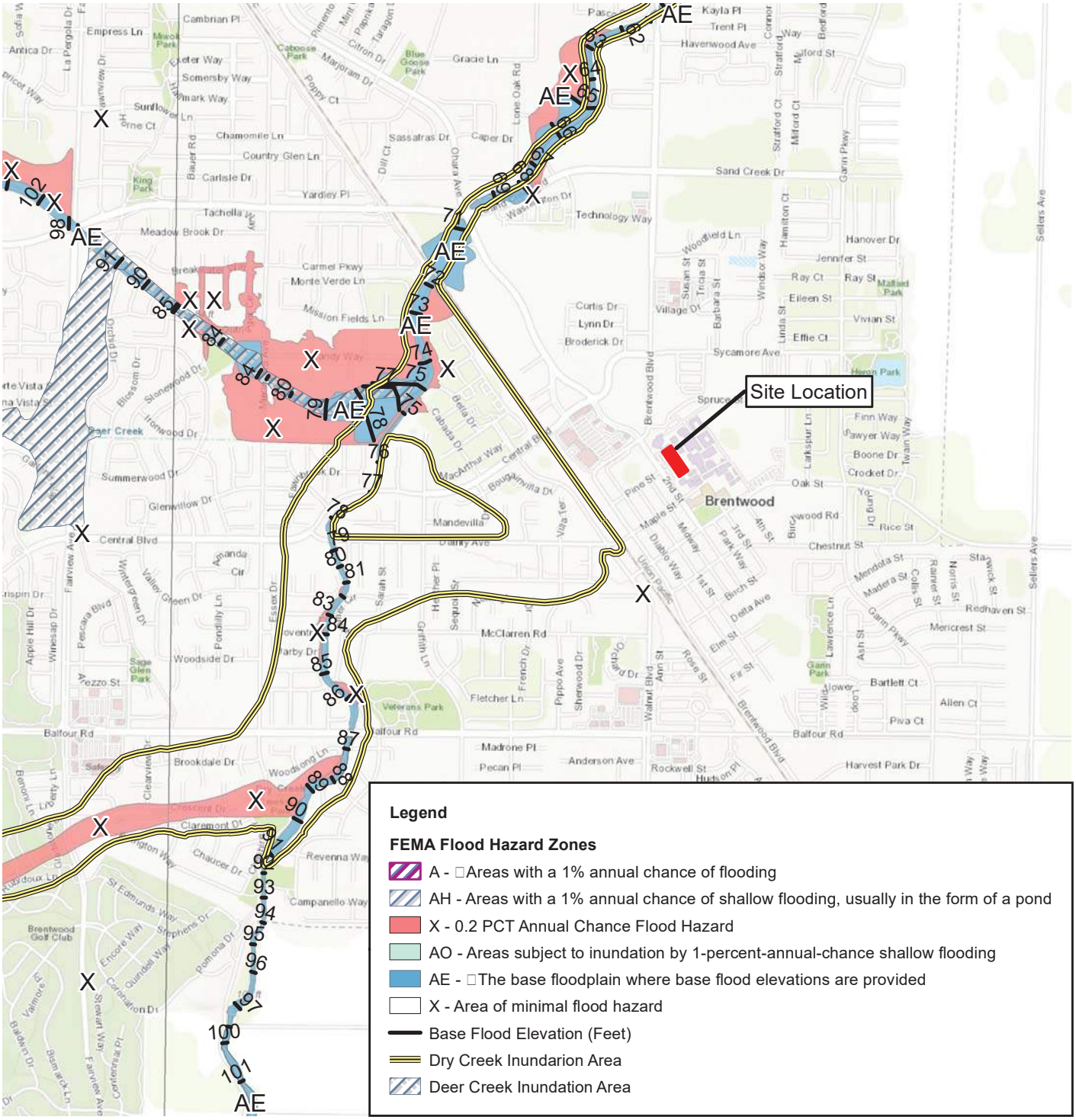
PROJECT NO. G1828711L	
Drawn: 12/10/2018	
DRAWN BY: MBC	
CHECKED BY: CF	
FILE NAME: Figure D-8 Seismic Hazard Zone	

STATE SEISMIC HAZARD ZONES

Liberty High School
Campus Expansion - Option 3
850 2nd Street
Brentwood, California

Figure

D-8



Reference: FEMA Flood Hazard Layer, 06001C-NFHL, 5/7/2018
State of California OES Dam Inundation DVD

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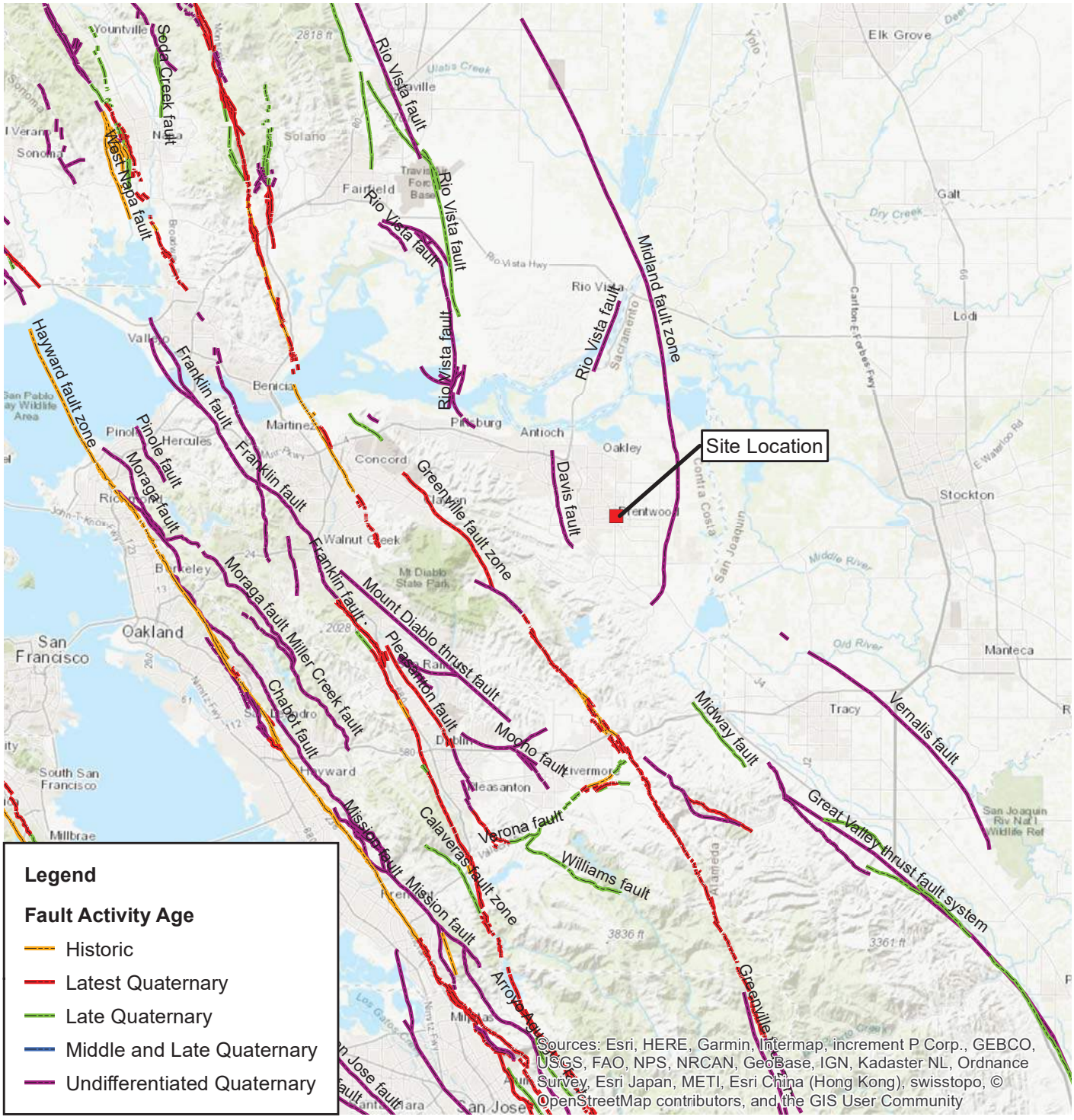
BSK ASSOCIATES

PROJECT NO. G1830811L	FEMA FLOOD ZONES
Drawn: 12/10/2018	
DRAWN BY: MBC	Liberty High School Campus Expansion - Option 3 850 2nd Street Brentwood, California
CHECKED BY: MR	
FILE NAME: Figure D-9 FEMA map	

Figure

D-9



Reference: USGS Quaternary Fault Database ftp://hazards.cr.usgs.gov/maps/qfault/

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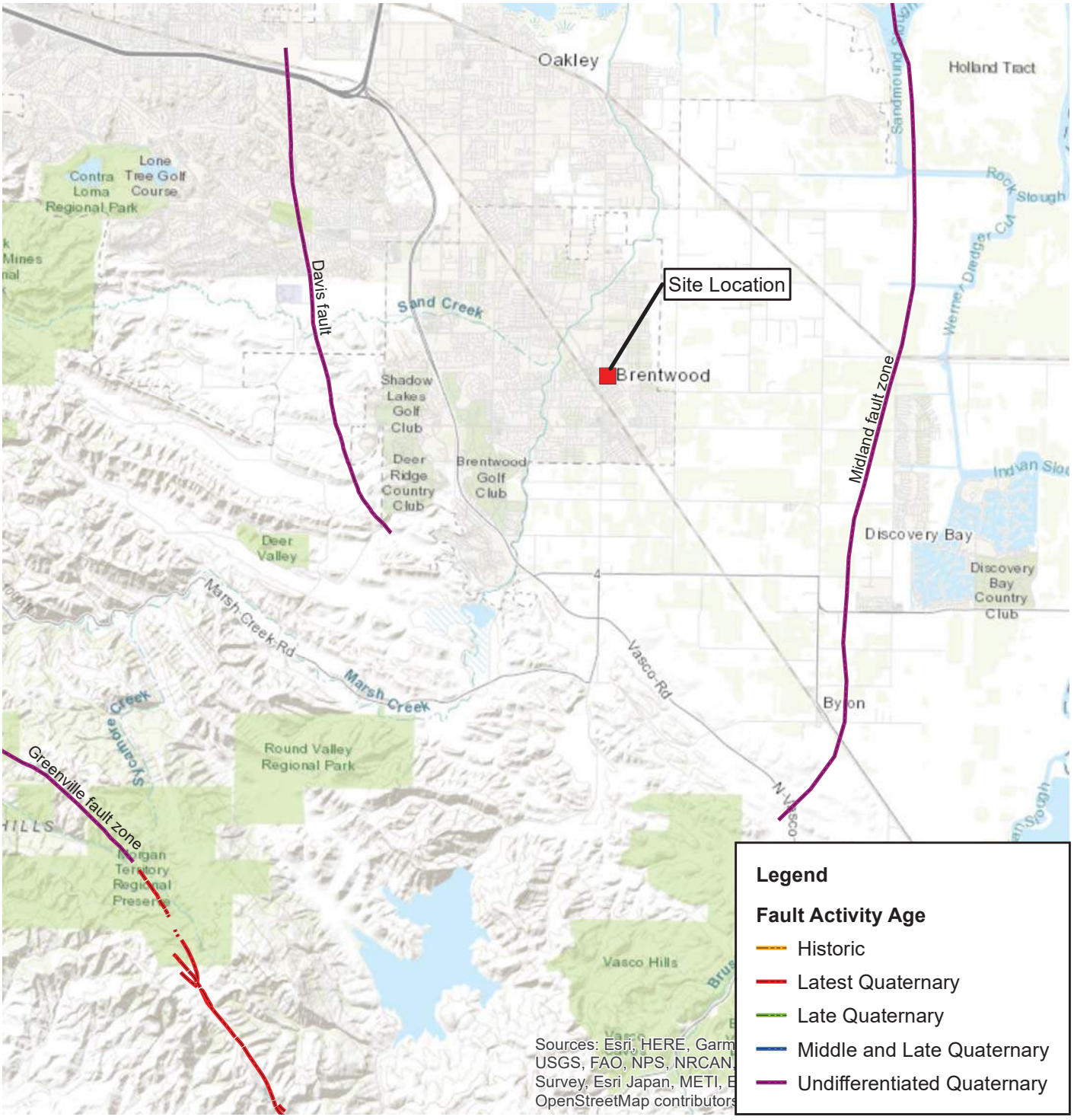
PROJECT NO. G1830811L	
Drawn: 12/10/2018	
DRAWN BY: MBC	
CHECKED BY: CF	
FILE NAME: Figure D-10 Regional Fault map	

REGIONAL FAULT MAP

Liberty High School
Campus Expansion - Option 3
850 2nd Street
Brentwood, California

Figure

D-10



Reference: USGS Quaternary Fault Database ftp://hazards.cr.usgs.gov/maps/qfault/

BSK ASSOCIATES

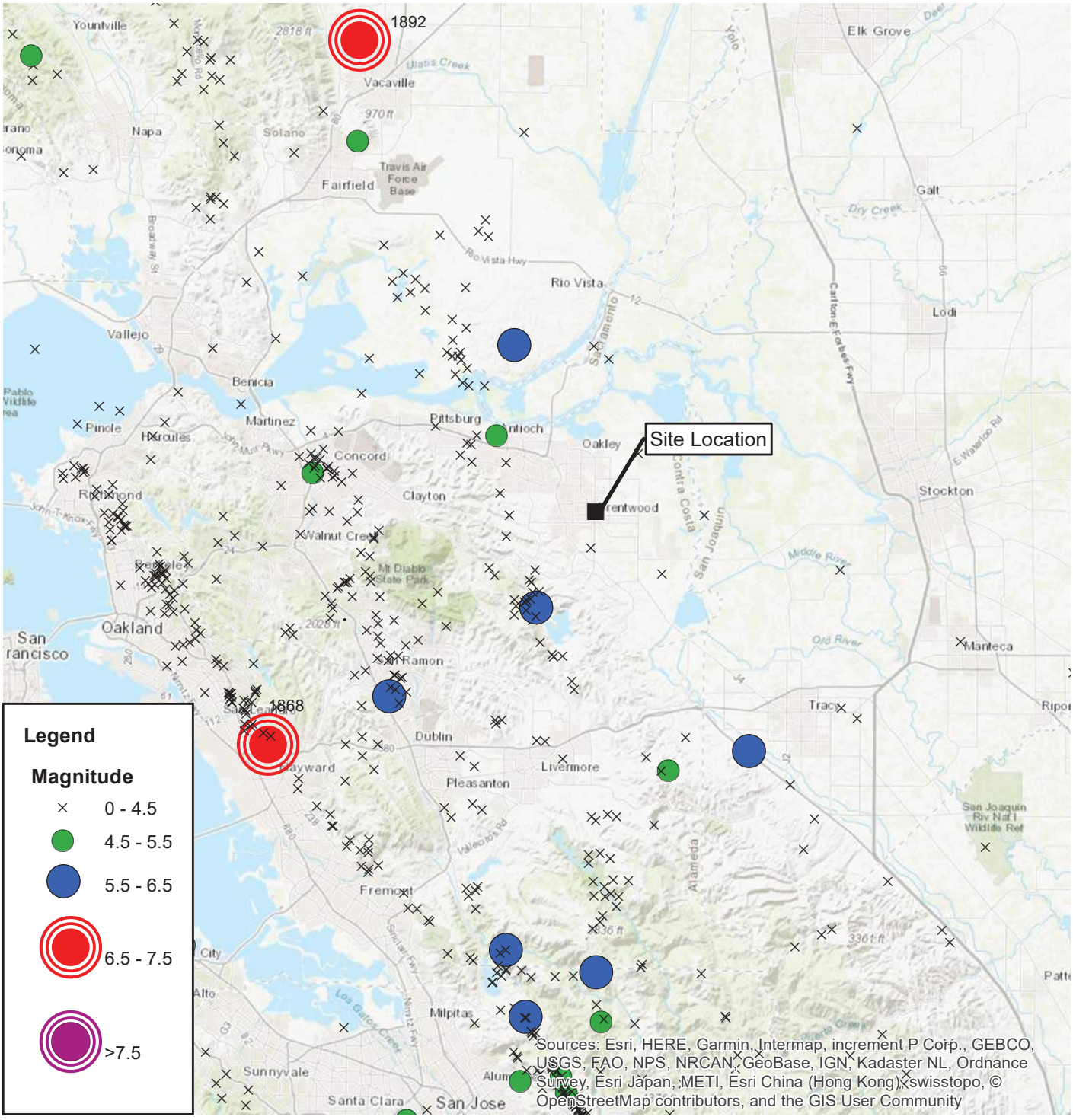
PROJECT NO. G1830811L	
Drawn: 12/10/2018	
DRAWN BY: MBC	
CHECKED BY: CF	
FILE NAME: Figure D-11 Local Fault map	

LOCAL FAULT MAP

Liberty High School
Campus Expansion - Option 3
850 2nd Street
Brentwood, California

Figure

D-11



Source: 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. G1830811L	
Drawn: 11/5/2018	
DRAWN BY: MBC	
CHECKED BY: RR	
FILE NAME: Figure D-12 Historic Earthquakes map	

HISTORICAL EARTHQUAKES

Liberty High School
Campus Expansion - Option 3
850 2nd Street
Brentwood, California

Figure

D-12

APPENDIX E

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.
Quicklime-Treated Soil	Compact quicklime-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 95 percent compaction for granular soils at near optimum moisture content and to a minimum of 92 percent compaction at a minimum of 2 percent over optimum moisture content for clayey soils 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.

399 Lindbergh Avenue
Livermore CA 94551
P 925.315.3151
F 925.315.3152
www.bskassociates.com

Sent via email: robbinsl@lusd.net

November 13, 2019 BSK Project No.: G18-308-11L

Liberty Union High School District (District)
20 Oak Street
Brentwood, California 94513

Attention: Ms. Liz Robbins (robbinsl@lusd.net)
Chief Business Officer

SUBJECT: Updated Mapped Seismic Design Parameters
Liberty High School Campus Expansion – Option 3
Brentwood, California

Dear Ms. Robbins:

The purpose of this letter is to provide 2019 California Building Code (CBC)[1] mapped seismic design parameters for the Liberty High School Campus Expansion – Option 3 project. The 2019 CBC will become effective on January 1, 2020 and we understand this project will be designed per this updated building code. BSK conducted a geotechnical investigation and provided 2016 CBC mapped seismic design parameters in our geotechnical investigation report for the project.[2] ASCE 7-16[3] (which has been adopted by the 2019 CBC) states in Section 11.4.8, Site-Specific Ground Motion Procedures, that a site-specific ground motion hazard analysis per Section 21.2 of ASCE 7-16 shall be performed for structures on Site Class D with S_1 greater than or equal to 0.2. As shown in Section D4.3 of Appendix D of our geotechnical report, the project site is a Site Class D and S_1 = 0.510 (2016 CBC value). However, it is our understanding that the structural engineer for the project, ZFA Structural Engineers, will use Exception 2 of Section 11.4.8 of ASCE 7-16, which allows for the use of mapped values per Section 11.4.2 of ASCE 7-16 in lieu of a site-specific ground motion hazard analysis.

[1] 2019 California Building Code, California Code of Regulations, Title 24, Part 2.
[2] Report entitled "Geotechnical Investigation Report and Geologic and Seismic Hazards Assessment, Liberty High School Campus Expansion – Option 3" dated January 30, 2019 by BSK Associates (BSK Project No. G18-308-11L)
[3] ASCE Standard ASCE/SEI 7-16 "Minimum Design Loads and Associated Criteria for Buildings and Other Structures" and "Supplement 1" effective December 12, 2018.

Provided in the table below are the mapped seismic design parameters per the 2019 CBC.

2019 CBC SEISMIC DESIGN PARAMETERS (LAT: 37.935796, LON: -121.6952610)			
Seismic Design Parameter	Value		Reference[1]
Site Class	D		Table 20.3-1, ASCE 7-16
MCE_R Mapped Spectral Acceleration (g)	S_S = 1.37	S_1 = 0.481	USGS Mapped Values based on Figures 1613.2.1(1) and 1613.2.1(2), 2019 CBC
Site Coefficients	F_a = 1.000	F_v = 1.819[2]	Tables 1613.2.3(1) and 1613.2.3(2), 2019 CBC
MCE_R Mapped Spectral Acceleration Adjusted for Site Class Effects (g)	S_{MS} = 1.37	S_{M1} = 0.875	Section 1613.2.3, 2019 CBC
Design Spectral Acceleration (g)	S_{DS} = 0.913	S_{D1} = 0.583	Section 1613.2.4, 2019 CBC
Seismic Design Category	D		Section 1613.2.5, 2019 CBC
MCE_G peak ground acceleration adjusted for Site Class effects (g)	PGA_M = 0.621		Section 11.8.3, ASCE 7-16

Notes:
1. When referencing ASCE 7-16, Supplement 1 must also be checked for changes to ASCE 7-16.
2. This value of F_v shall be used only for calculation of T_S.

We appreciate the opportunity of providing our services to the District on this project and trust this meets your needs currently. Please, contact us at (925) 315-3151 if you have any questions or require additional information.

Respectfully submitted,
BSK Associates

Carrie L. Foulk

Carrie Foulk, PE, GE
Senior Geotechnical Engineer

Cristiano Melo, PE, GE
Geotechnical Group Manager

Distribution: Jim Theiss - Quattrocchi Kwok Architects (jimt@qka.com)
Kyle Bettencourt - ZFA Structural Engineers (kyleb@zfa.com)