ADDENDUM 1 TO THE SISKIYOUS JOINT COMMUNITY COLLEGE DISTRICT (“DISTRICT”) STUDENT HOUSING PROJECT (“PROJECT”)

Addendum Date: September 30, 2025

A. This Addendum shall be considered part of the Student Housing Project (“Project”) construction documents as though it had been issued at the same time and shall be incorporated integrally therewith. Where provisions of the following supplementary data differ from those of the Call For Bids, this Addendum shall govern and take precedence. RESPONDENTS MUST SIGN THE ADDENDUM AND SUBMIT IT WITH THEIR BID.

B. Respondents are hereby notified that they shall make any necessary adjustments in their Bid as a result of this Addendum. It will be construed that each Respondent's written response to this Pre-Qualification Application is submitted with full knowledge of all modifications and supplemental data specified herein.

Except as described below, the Call For Bids for the Student Housing Project remains unchanged. The construction documents are modified and/or clarified, as follows:

Additional Bid Documents:

1. Geotechnical Engineering Report, Student Housing Project, by Mid Pacific Engineering dated July 8th, 2025. Attachment 1
2. Revised Door Hardware Specification Section 087100. Attachment 2
3. Revised View Fence Detail. Attachment 3
4. Revised Irrigation Controller Detail. Attachment 4

Respondent questions and District responses to questions received on or before 4:00 PM, September 19th, 2025.

1. Please confirm that the Pre-Bid Inquiry Form outlined on page 16 and spec section 00 43 24 is not required to be submitted with pre-bid RFI’s.
   a. **Confirmed**

2. Spec Section 00 43 24 – Subcontractor List (DSA Backcheck Submittal) form asks that we list subcontractor’s Name, Full Address, CSLB #, Trade and DIR #. Can we omit the requirement for the full address in filling out this form and only list the City and State? We’d be open to providing the full address within 24 hours of bid if we are low bid, but to try and fill out the entire address prior to bid makes room for errors and lost time.
   a. **Approved**

3. Spec Section 00 45 36 – Statement of Qualifications is included in the spec as a bid submission item. This is redundant work as all pre-qualified bidders have already provided this information with our pre-qual package. Can we omit this requirement with bid seeing how it has already been completed and bidders deemed qualified to bid already? This would remove pages 30 and 37 of 2109 in the spec book.
   a. **Bidders may omit this section.**

4. Spec Section 00 11 13 (page 3) section 7 refers to a Community Benefits Agreement that is referenced as “Attachment C” as being required with our bid documents. There are multiple Attachment C references for other spec sections (DVBE), but the form for the Community Benefits Agreement we believe to be on page 150 of 2109 of the spec book (page 36) that is titled “Attachment C Employee Craft Request Form”. This form references Los Angeles County.
   a. **The District is removing the DVBE requirement.**

5. Spec section 00 45 28.08 titled "AGREEMENT" (page 41) on page 55 of 2109 in the spec book references City and County of Los Angelese as well as "Attachment A: Community Benefits Agreement" – please confirm that these items are in error and that this project will NOT be subject to any form of Project Labor Agreement, requirement to use union shops, or any form of special labor requirements beyond typical requirements for benefits and wages in line with California State Prevailing Wage requirements for this region/location.
   a. **Confirmed. This is an error. The project is not subject to any project labor agreement.**

6. Please confirm spec section 00 73 00 Special Conditions Attachment A: (CBA) Agreement is to be removed from the project scope entirely (pages 115 through 157 of 2109 in the pdf spec book).
   a. **Confirmed**

7. Sheet G-120, note 69 refers to a two-way emergency responder communication coverage. No where can we find reference to this in the drawings or specifications further. Please confirm if this system is going to be required in the building or a similar system such as a DAS or ERRCS system.
   a. **No ERCCS is being installed at this time, pathways only for a future installation if required. Refer to sheet FA-001 Fire Alarm System Note #20.**

8. Please provide a spec section for the fencing and gates scope of work.
   a. **Please refer to new specification section 32 31 19 Decorative Metal Fences and Gates.**

9. Please confirm this project is not a PLA project (Project Labor Agreement).
   a. **Confirmed**

10. Will the College obtain an Exterior Skin / Fenestration specialist through the submittal/construction phase of the project for submittal review, mock-up review, field install review and window testing?
    a. **These tasks will be performed by the architectural construction administration team.**

11. C-001, note 27 differs with 16/G301 pertaining to anchoring of wheel stops. Please confirm which attachment method is desired for wheel stops.
    a. **Anchor with rebar.**

12. Spec section 06 41 19, 2.5 C.1 - The spec states that the architect will select the product. There is a great deal of difference in the cost for various PVC edge banding and installation. We need to know what is going to be specified to give an accurate bid for this project. Please provide information as to what edge banding is going to be specified for this project.
    a. **Product shall be Formica, Wilsonart, Egger, or equal.**

13. Regarding sheets A470, A471, A472, & A473 - Sheet A472 shows casework in the upper floor laundry but there is no corresponding elevation for the laundry on A473. Please clarify if the laundry elevation on A471 would be also for the upper floor laundry.
    a. **The laundry rooms sheets A-470 and A-472 reference details 9, 10, 11, and 12 on sheet A4.71**

14. Is a Notifier fire alarm panel required, or can a non-proprietary panel (Potter, Silent Night) be substituted? It is believed that a savings can be achieved with a non-proprietary system.
    a. **Notifier is college standard, no substitutions will be allowed.**

15. There are multiple specification sections listed for hollow metal doors & frames. Which are we supposed to be using? Please clarify.
    Please provide some examples for more clarity of the request.

16. Where is Unit Door U07 used at? I can't find it on the unit floor plans anywhere. Are these for the mobility units?
    a. **There is no door type U07 in the drawing set.**

17. Where is door type F used at? It is not listed on the door schedule at any door openings. Should these be at openings C101.2 & C102? Confirm hollow metal doors & frames per question number one above.
    a. **This is correct, the doors referenced in this request should be door type F.**

18. I'm not understanding door note "J" at openings C101.2 & C102. Are we not using hardware group 20 that is called out in the hardware specification? That hardware group works for those door openings.
    a. **This is a statement that is referring to the type of hardware that has been specified for the doors noted.**

19. Hardware Group 36 - Division 28 would be responsible for the professional services since they are the ones supplying & installing the wifi locks. That paragraph (3.8-A) should be removed from spec section 087100. Confirm or provide some clarification
    a. **Refer to revised Specification attached.**

20. Confirm wifi access control is by Division 28 & not Division 08 74 00. Refer to hardware groups in section 08 71 00.
    a. The contract documents are bid as a whole, and requirements from various sections shall apply as appropriate. The design team will not direct which Division of the specifications applies to a given section. Please provide a more detailed question if additional information is needed.

21. Plan sheet A-581, detail 5, shows a sweep & threshold at those interior sf doors, but the hardware groups do not have those items scheduled to be used. Provide some clarification.
    a. **Sweeps and threshold shall not be required at interior doors unless noted otherwise in the contract documents.**

22. Hardware Sets #3 & #4 call for Sargent 8265 mortise locks. These locks will not work on an 1-3/8" hollow core door. Needs to be 1-3/4" thickness & solid core wood instead. Please choose a Sargent cylindrical lock to be used at these hardware sets / doors or provide some clarification.
    a. **Doors shall be 1 ¾" thick doors to accommodate the specified hardware.**

23. Please clarify the notes on hardware set #3 and why the same notes are not on hardware set #4 since it has the same lock.
    a. **Note has been removed as the auto operator has been removed.**

24. Hardware Group 34.0 - Gates - Detail 8 on L1.3 doesn't show any type of electrical hardware as it is called out in the hardware group schedule. Where exactly are the power supplies & other electrical components supposed to go? Nothing on the electrical plans either. Provide some clarification.
    a. **The power for an electric strike is typically 12VDC that comes from an access control power supply and is run with the low voltage cabling to the door being controlled. All the power from the power supply to the peripheral devices are part of the systems low voltage cabling by the low voltage contractor.**

25. Specs for the trash chute call for a 24" chute and plans call for a 30" chute. Please clarify which is desired.
    a. **30" Diameter trash chutes required at all chutes.**

26. Specs for the trash chute intake door on level 2 call for the door to be 18”x18” and the plans call for 24”x24” door. Please clarify which size is desired.
    a. **Proceed with 24”x24” per plan for the intake doors.**

27. Specs for the trash chute call for an interlocked door system in the chute. This does not make sense as an interlock system is for chutes with more than 1 elevated door (3 stories for more) as the interlock is to prevent the floor above from dropping at the same time as a floor below. Seeing how our building is a 2 story with only one elevated floor the interlock requirement seems to not be needed. Removing the interlock function requirement would provide a savings to the project.
    a. **HPI takes no exception to eliminating the interlock system.**

28. Spec Section 08 11 13 – Hollow Metal Doors & Frames – Part 2 Acceptable Products – Ceco & Curries are listed. Is Steelcraft an acceptable substitution?
    a. **As stated in the contract documents, substitutions shall be submitted in accordance with Section 01 63 00. Substitutions that do not meet the requirements of this section will not be considered.**

29. Spec Section 08 14 16 – Flush Wood Doors – Part 2 - OshKosh is listed as acceptable – please confirm that Oregon Door is also acceptable.
    a. **As stated in the contract documents, substitutions shall be submitted in accordance with Section 01 63 00. Substitutions that do not meet the requirements of this section will not be considered.**

30. Spec Section 08 14 16 – Flush Wood Doors – Part 2.3 - Lite kits – please confirm that Activar is an acceptable substitution.
    a. **As stated in the contract documents, substitutions shall be submitted in accordance with Section 01 63 00. Substitutions that do not meet the requirements of this section will not be considered.**

31. Spec Section 08 14 16 – Flush Wood Doors – Part 2.3 Louvers – please confirm that Activar is an acceptable substitution.
    a. **As stated in the contract documents, substitutions shall be submitted in accordance with Section 01 63 00. Substitutions that do not meet the requirements of this section will not be considered.**

32. Spec Section 08 41 13 – Aluminum Framed Entrances and Storefronts – Part 2 – arcadia is called out. Please confirm if Oldcastle is acceptable.
    a. **As stated in the contract documents, substitutions shall be submitted in accordance with Section 01 63 00. Substitutions that do not meet the requirements of this section will not be considered.**

33. Spec Section 08 53 13 – Vinyl Windows – Part 2.2 – D-4 – “Nominal 1”… IGU” – Please confirm Milgard standard 7/8” is acceptable with U Factor of .25 and SHGC of .22.
    a. **As stated in the contract documents, substitutions shall be submitted in accordance with Section 01 63 00. Substitutions that do not meet the requirements of this section will not be considered.**

34. Spec Section 08 71 00 – Door Hardware – Unit beds and baths call out a Sargent Grade 1 Mortise lock on a 1-3/8” HC Door. We recommend a cylindrical privacy. Please confirm.
    a. **Hardware shall be provided as indicated in the contract documents.**

35. Detail 11/A-505 calls for a Recessed Corner Guard set in an unknown fire barrier not identified in the specs from what we can tell. The spec sections for Corner Guards 10 26 00 – 3, section 2.2 B calls for Protek Systems, Inc. "CO-8". The CO-8 corner guard is NOT a recessed corner guard, but a surface mounted corner guard. Please confirm desired corner guard. With regards to cost savings and ease of install/procurement, we'd recommend the CO-8 surface mounted corner guard in lieu of the recessed corner guard shown in detail 11/A-50.
    a. **The specified surface mounted corner guard shall be used. The detail noted in this request is not applicable to the specified corner guards.**

36. WC-1 as referenced in the finish schedule on A-623 has little information on what we are to provide and install. Can more information be provided on this wall covering? Is the wall covering material being furnished by Ownership and installed by us or are we to furnish as well? If we are furnishing, then we will need more product information and contacts for sales reps to get pricing.
    a. **Wall Covering is CFCI. Designtex is listed as the basis of design for the custom wall covering but an approved equal is acceptable. Actual imagery for these wall graphics to be provided by owner.**

37. Exterior Elevations reference Keynote 10.61 that calls out a Prefabricated Aluminum Fixed Sunshade and tells you to see Sheet A-535 for details. The keynote where shown on the elevations can be found on 1/A-203 as a Typical detail reference, but appears to be pointing to a fiber cement trim piece that surrounds a fiber cement panel and two windows. It does not appear to be flagging a sunshade and the exterior elevations don't visually depict anything that looks like a sunshade. When we go to A-535 we see details for sunshades, but these details do not appear to be reflected in the exterior elevations. Please confirm if sunshades as shown on A-535 are desired for this project and if so, please provide clearer call outs on the elevations so that we can get a count of them.
    a. **The aluminum fixed sunshades are clearly indicated on the exterior elevations. Several of the windows include a thin rectangle above them, which is indicated as typical for that graphic representation.**

38. Bid proposal form (page 13) section 1, item 1.2 Calls for an unforeseen allowance – "A-1 – Unforeseen Conditions; District Authorized Scope Modifications." to be included in our bid. This does not make sense. If the allowance isn't identified for a specific item, it should be carried as a contingency on ownership's side of the cost ledger for ownership to use when needed and not included in our bid. We'd recommend removing this section from the bid form. Please confirm.
    a. **Confirmed**

39. Bid proposal form (page 13) section 1, item 1.4 Alternate Bid Items paragraph reads like something that would be provided on a design-build pursuit or on a private project. We recommend striking this option as it is jeopardizing the equality and fairness of the bid. The language in this paragraph states "Price proposal(s) for Alternate Bid Item(s) will not form the basis for the District's award of the Contract unless an Alternate Bid Item is incorporated into the scope of Work of the Contract award." How can we bid apples to apples if an alternate not asked for of all bidders is given by one bidder and then elected for use by the district. Alternates need to be identified for all bidders to price equally at time of bid, or this section removed from the bid documents. Please confirm.
    a. **In the event the District requests alternate bid items, the District will take the base bid and add any chosen alternate costs to the base bid. The lowest of the combined cost will be the cost the District uses to determine the winning bidder. Alternates not requested by the District will not be considered.**

40. Ownership is providing the OCIP and Builders Risk Policy for the project as outlined in section 8 Owner Controlled Insurance Program ("OCIP") section of the Notice to Contractors Calling for Bids (page 16 of 2109 in the spec pdf). The deductible for the Builders Risk is not identified. Can this

amount please be provided to us? Additionally, with an unknown deductible amount on the Builders Risk Insurance, is ownership going to take responsibility for paying for the deductible?

   a. **Builders Risk deductible varies by project, $10,000-$100,000 for Wood Frame, Masonry Non-Combustible, Joisted Masonry, Fire Resistive/Non-Combustible and Modular (pending carrier confirmation upon submittal of OCIP Application and supporting documents). Water Damage deductible varies by project, $100,000-$500,000 (pending carrier confirmation upon submittal of OCIP Application and supporting documents). Contractor/subcontractor is responsible for the applicable deductible.**

41. Instructions For Bidders page 10, section 14.3.3 identifies that all subcontractors shall have a EMR of no more than 1.25. This may eliminate a number of subcontractors. Is there a way to raise the EMR threshold or is it possible that a subcontractor can obtain a special insurance policy for the project that allows them to work on the project if they have an EMR over 1.25?
    a. **Only the bidding contractor must meet the EMR standard of an Average EMR of 1.25 or less over the last five (5) years OR the current published year. Subcontractors are not required to meet the EMR standard. EMR threshold applies to the bidding contractor only (we encourage the bidder to choose subcontractors who meet these requirements however this will not exclude eligible subcontractors from enrolling in OCIP).**

42. Please verify that we are approved to use Berenson pulls (see attached).
    a. **Confirmed**

43. Please verify that we are approved to use Blum hinges (see attached).
    a. **Confirmed**

44. Please verify that we are approved to use Pro Series 2.0 guides for the 100# guides (see attached).
    a. **Confirmed**

45. Please provide a product number for the Hafele locks.
    a. **Please advise where these are referenced for us to provide a response.**

46. Please verify that toe kicks should be per sections (A-507, ply base) not per specs (06 41 19 / 2.5 / A).
    a. **The referenced specification section does not list a material for the toe kick; it only addresses the adjuster. The material for toe kicks shall be as shown on detail 29/A-507.**

47. Spec M-701 states: *"The Metasys system shall be by JCI Branch Office – No Exceptions."*
    Can you confirm whether this language requires purchase and execution exclusively through the JCI Branch, or if Metasys may be procured through an authorized non-branch contractor—specifically purchased from RSD Total Control and installed/commissioned by City Mechanical?
    a. **JCI components may be purchased through any authorized dealer and commissioned by your company if you have the knowledge to program.**

48. Please provide location for Unit Door U07. Please clarify if these are to be used for the mobility units?
    a. **Refer to question 16 above.**

49. Please provide location for door type F. It is not listed on the door schedule at any door opening. Please confirm if door type F should be at openings C101.2 & C102?
    a. **Refer to question 17 above.**

50. Please clarify door note "J" at openings C101.2 & C102. Is contractor to use hardware group 20 that is called out in the hardware specification? That hardware group works for those door openings.
    a. **Refer to question 18 above.**

51. Plan sheet A-581, detail 5, shows a sweep & threshold at interior sf doors, but the hardware groups do not have those items scheduled to be used. Please provide clarification.
    a. **Refer to question 21 above.**

52. Hardware Sets #3 & #4 call for Sargent 8265 mortise locks. These locks will not work on a 1-3/8" hollow core door. Recommended to be 1-3/4" thickness & solid core wood instead. Please advise what we should use for the hardware sets.
    a. **Refer to question 22 above.**

53. Please clarify intent of notes on hardware set #3 and clarify if the same notes should be on hardware set #4 since it has the same lock. Please provide clarification.
    a. **Refer to question 23 above.**

54. Hardware Group 34.0 - Gates - Detail 8 on L1.3 doesn't show any type of electrical hardware as it is called out in the hardware group schedule. Please clarify the power supplies & other electrical components required for this installation.
    a. **Refer to question 24 above.**

55. Spec's for section 06 41 19 - cabinets call for locks on all doors/drawer fronts etc. Does this include kitchen and communal spaces such as the lounge area, game room, laundry rooms, Accessible suites "c" with their own kitchens etc. or is there only a specific area that will be requiring cabinet locks?
    a. This requirement applies to all door and drawer fronts.

56. Can you please provide clarification on the iron fence color selection.
    a. **Iron fence shall be black finish, refer to the specification section 32 31 19 Decorative Metal Fences and Gates and updated detail "VIEW FENCE".**

57. Are panels & posts to be primer finish only to be painted by others, or powder coated?
    The finish shall be black powder coated, refer to new specification section 32 31 19 Decorative Metal Fences and Gates and updated detail "VIEW FENCE" SL_R&C

58. Advise if (1"x1") wire mesh can be substituted for expanded metal.
    a. **1" X 1" woven wire mesh is acceptable. SL_R&C**

59. Five gates are shown on plans, is a Knox Box required at each location?
    a. Only one location is required. The District will determine the location.

60. Advise is a Mammoth 180 self-closer is acceptable.
    a. This is acceptable.

61. Plans show exterior finish EF1 for Hardie Board and Batten. What is the batten spacing? Plans scale to 24" OC, but attachment is 16". Confirm battens at 16" OC.
    a. **Spacing shall be 16" o.c. to match the stud spacing.**

62. Details 1 & 2/S-560 both have this same note:

a. *"2x continuous rim, typ UNO (See Alternate)-at shear wall above or where strapping occurs above provide 4x continuous rim".*

The Alternate noted on the same details calls out the following:

B. *"Where NO shear wall or strapping occurs above, provide 4x continuous rim w/ 6" long SDS Simpson SDS at 24" OC."*

These two notes seem to contradict each other, A. Is saying "where there IS shear wall above, provide 4x continuous rim, while B. States where NO shear above, provide 4x continuous rim. Please clarify.

Response: At details 1 & 2/S-560 provide 4x continuous rim.

63. Sheets S211-A & S211-B (Second Floor Framing Plans) call out FJ2 (2x10's @ 16" OC) for all of the floor joists, is it possible to have an option to go with pre-manufactured I-joists? Would provide a much more uniform/cleaner/solid installation with material that would be more consistent in size than the 2x10's. Would need details for all rim material associated with the I-joists.
    a. **No option will be provided for I joists. Bid per plans.**

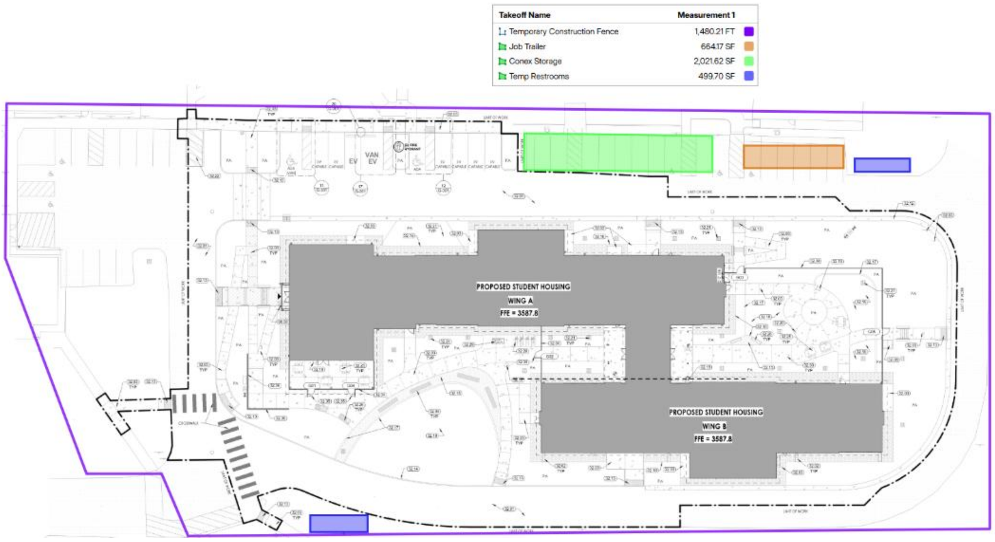
64. Can you please provide a list of all OFOI and OFCI items.
    a. **OFOI and OFCI items are as indicated in the contract documents and a separate list will not be provided. If there are specific items in question provide a follow up RFI.**

65. On demolition plan, are we to assume full removal of existing utilities and capping?
    a. All existing utilities shall be rerouted/installed per plans. If the utilities are serving other facilities, the contractor shall work with the college on shutdown timelines and coordination to minimize interruption.

66. Has the owner coordinated with local utilities and are they responsible to pay all fees for changes in services from providers?
    a. Yes

67. Please confirm that construction start date will be mutually accepted with Owner / Contractor for a start pending weather?
    a. Confirmed. Pricing shall remain in effect. The contractor or subcontractors shall not be entitled to additional funds or payments if the start of construction is moved to a date in 2026.

68. The site constraints of the work area are tight, can we have any other laydown areas for shipments or deliveries? Where would the college allow the true limits of boundary to be for onsite storage, etc.? See below proposed layout with work limits in Purple.
    a. Confirmed



69. Will you accept AEP Span-Lok HP or Design Span HP in lieu of specified for metal roofing?
    a. **Yes, if the performance and warrantee matches those specified in the specifications.**

70. Will you accept Versico or Carlisle single ply roofing in lieu of specified for the two square foot of flat roof.
    a. **Yes, if the performance and warrantee matches those specified in the specifications.**

71. If single ply is not accepted for flat roof, will you accept Malarkey or CertainTeed torch applied system?
    a. **No**

72. Will be date be extended past October 7th?
    a. **Not at this time**

73. Regarding the snow guard, roof plan legend note referencing Snoclips as options, is this to be listed as an add alternate or you actually do want it part of the total snow fence price. The 'option' word leads the Snoclips to be an add alternate.
    a. **The note is stated as follows:**
       "SNOW GUARD. BASIS OF DESIGN: S-5! 'COLORGARD SYSTEM' WITH 'S-5-T' NON-PENETRATING ALUMINUM CLAMPS -OPTION WITH S-5! 'SNOCLIPS' BETWEEN EACH ROOF SEAM, SEE DETAIL 4/BE12.04"
       This note means that the S-5-T non-penetrating aluminum clamps shall be used. Snow clips are not optional.

74. The provided Finish Schedule_A-530 does not mention where B-1 Rubber Base is to be figured, and Finish Floor Plans_A-141-A, A-141-B, A-142-A, A-142-B does not have flooring tags for B-1- Rubber Base. Can a clarification be provided on room/areas or flooring B-1 Rubber Base is to be figured?
    a. **Both note 3 on the finish plans along with the information provided on the enlarged interior elevations provide direction to install wall base B-1 in all rooms U.O.N.**

75. The provided Finish Plans_A-141-A, A-141-B, A-142-A, A-142-B does not have a flooring call out for Elevation 149. Can a clarification be provided on if Flooring is to be figured and if so, can flooring specification also be provided?

a. **ELEV-149 flooring shall be LVT-1.**

76. The Finish Floor Plan_A-142-B calls out R-3 – Rubber Tread & Riser on Stair B but the Finish Floor Plan_A-141-A or A-142-A does not have any flooring tags for the Stair A. Can a clarification be provided on what type of flooring will ne to be figured on Stair A. Should R-3 also be figured at Stair A?
    a. **Confirmed, the only stair tread material listed in the contract documents shall be provided for Stair A.**

77. Is ProPress an acceptable alternative to joining the copper piping for domestic and hydronic heating water?
    a. **Yes.**

78. Will a C-4 license be required for installation of the boiler/snowmelt system?
    a. **Yes**

79. Sheet G-210 indicates two locations for sign type 17 - Exterior Metal Dimensional Lettering (see attached); one on the East Elevation and one on the West Elevation. The signage schedule points to 5/G301, which in turn points to detail 9/G301 Building ID Sign and detail 10/G301 Building Marquee Sign.
    The Elevations don't depict the placement of each sign. For now, we will price these based on a second story install, which will require a more costly articulating lift. If installation will be on the first level, we can probably achieve some cost savings.
    a. **Refer to A-201 for signage locations.**

80. Please confirm interior signage material as signage specifications section 10 14 00 Part 2 specifying multiple materials.
    a. **Material is as indicated on details 9&10/A-301.**

81. Please confirm the fabrication type of Dimensional Letter Signage mentioned on sheet no. G 301
    a. **Material is as indicated on details 5,9&10/A-301.**

82. Specification section 32 84 00 – 2.2 calls for the irrigation system to use recycled water, but the drawings and irrigation legend make no mention of this, none of the recycled water models of irrigation items are listed on the legend. Is this just a boilerplate specification?
    a. U**se the equipment as called out in the plans, refer to irrigation legend on sheet L2.1 SL_R&C**

83. The irrigation legend and drawing call for a 2" Amiad manual inline steel filter, but there is no installation detail provided. Should this just be figured as going right into the irrigation mainline pipe?

F	AMIAD DISC ELEMENT 2" AMIAD MANUAL INLINE STEEL FILTER, DISC ELEMENT (130 MICRON/120 MESH), MAXIMUM WORKING PRESSURE 145PSI. INSTALL PER DETAIL PK-04 AND MANUFACTURER'S REQUIREMENTS. FURNISH AND INSTALL WEATHER PROTECTION BLANKET.	1

    a. **The filter shall be installed down stream of gate valve and up stream of master valve.**

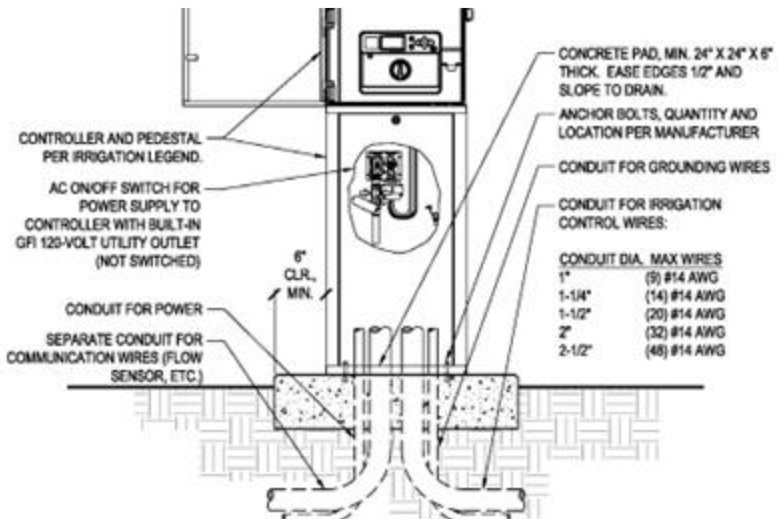
84. The irrigation legend calls for the controller to be wall mounted outside, but the detail shows it being mounted on a pedestal. Which should be followed?

Design team recommendation: The controller shall be outdoor wall-mounted, refer to updated detail "IRRIGATION CONTROLLER: EXTERIOR WALL MOUNT".

A

HUNTER A2C-2400-SS
24-STATION CONTROLLER WITH TWO (2) A2M-600 MODULES IN AN
OUTDOOR STAINLESS STEEL WALL MOUNT ENCLOSURE.

1



NOTES

A. VERIFY CONTROLLER LOCATION PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE POWER AND ROUTING OF IRRIGATION CONTROL WIRES.
B. ALL WIRING PER N.E.C. AND APPLICABLE LOCAL REQUIREMENTS. CONDUITS SCH 40 PVC, MINIMUM 1" DIAMETER, UNLESS NOTED OTHERWISE
C. PROVIDE LAMINATED CONTROLLER CHART WITH EACH IRRIGATION STATION HIGHLIGHTED IN A SEPARATE COLOR. REFER TO SPECIFICATIONS.

1 IRRIGATION CONTROLLER: PEDESTAL MOUNT

NO SCALE ELEVATION/SECTION

If Respondent's need further directions regarding Addendum #1 for the Student Housing Project, please contact Nick Trover at nicktrover@trovercpm.com and Veronica Rivera at vrivera@siskiyous.edu.

RESPONDENT MUST ACKNOWLEDGE THIS ADDENDUM BY SIGNING BELOW AND ATTACHING THE SIGNED ADENDUM TO THE BID:

Company Name ____

Contact Person ____

Signature ____

Date ____

Attachment 1

GEOTECHNICAL ENGINEERING REPORT
COLLEGE OF THE SISKIYOUS
STUDENT HOUSING FACILITY

800 College Avenue
Weed, California
MPE No. 05040-04
August 30, 2024
Revised July 08, 2025

MID PACIFIC ENGINEERING, INC.

GEOTECHNICAL ENGINEERING
ENVIRONMENTAL
EARTHWORK TESTING
MATERIALS ENGINEERING AND TESTING
SPECIAL INSPECTIONS

6310 STATE HIGHWAY 273, ANDERSON, CALIFORNIA 96007
840 EMBARCADERO DRIVE, SUITE 20, WEST SACRAMENTO, CALIFORNIA 95605
8910 EAST VICTOR ROAD, LODI, CALIFORNIA 95240

Geotechnical Engineering Report
COLLEGE OF THE SISKIYOUS STUDENT HOUSING FACILITY
MPE No. 05040-04
Weed, California

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WEST SACRAMENTO
916-927-7000
LODI
209-625-4400

Geotechnical Engineering Report

COLLEGE OF THE SISKIYOUS STUDENT HOUSING FACILITY

800 College Avenue
Weed, California
MPE No. 05040-04
August 30, 2024
Revised: July 8, 2025

INTRODUCTION

Mid Pacific Engineering, Inc. (MPE) has completed a Geotechnical Engineering Report (GER) for the proposed College of the Siskiyous (COS) Student Housing Facility project to be located at 800 College Avenue in Weed, California. The purposes of our work have been to investigate the site for soil, groundwater, geologic and seismic conditions, and to prepare a GER to include Geologic and Geotechnical Engineering conclusions and recommendations for use by the other members of the design team in preparing project plans and specifications, and the construction of the proposed project. Our office previously prepared a *Geologic Hazards and Geotechnical Engineering Report Update* (MPE No. 05040-01, dated July 31, 2020. This report presents the results of our additional work.

SCOPE OF SERVICES

Our scope of work included the following:

1. Site reconnaissance;
2. Review of the following reports and project plans:
    - *Student Housing Feasibility Study, College of the Siskiyous*, 11 Sheets, prepared by HPI Architecture, dated June 13, 2023.
    - *Floor Plan 01*, Sheet Number A-201, prepared by HPI Architecture, undated.
    - *Floor Plan 02*, Sheet Number A-202, prepared by HPI Architecture, undated.
    - *Geologic Hazards and Geotechnical Engineering Report Update, College of the Siskiyous Fire Training Tower, Weed, California*, prepared by Mid Pacific Engineering, Inc. (MPE No. 05040-01, dated July 31, 2020).

- *Geotechnical Investigation and Geologic Hazards Evaluation Report, Proposed Science Building, College of the Siskiyous, Weed, California*, prepared by Brown & Mills, Inc. (BMI Project No. 08S-294, dated August 10, 2010).

3. Review of available historic aerial photographs, topographic maps and groundwater information of the area;
4. Review of geologic maps and fault maps;
5. Subsurface exploration, including advancing, logging, and sampling of three exploratory soil borings between approximate depths of 26½ to 51½ feet below ground surface (bgs) and the advancement of four Cone Penetration Test (CPT) soundings to an approximate maximum depth of 37 feet bgs within or near the proposed site structural areas;
6. Collection of bulk and in-situ soil samples at various depths within the borings;
7. Laboratory testing of selected soil samples;
8. Engineering analyses; and,
9. Preparation of this report.

This report is specific to the design and construction of the proposed College of the Siskiyous Student Housing Facility and associated improvements to be located at 800 College Avenue in Weed, California. This report should not be used for design or construction of any other proposed future buildings or structures at the site or campus without review of the proposed improvements by our office. Additional reports and site investigations may be required for future buildings, groups of buildings, or structures, depending on the proposed development.

FIGURES AND ATTACHMENTS

The following figures and attachments are included in this report.

- Figure 1 – Vicinity Map indicating the project location.
- Figure 2 – Regional Geologic Map showing previously mapped project vicinity geology.
- Figure 3 – Site Investigation Map showing approximate boring and CPT locations.
- Figures 4 through 6 – Logs of Soil Borings.
- Figure 7 – Unified Soil Classification System.
- Figures 8 and 9 – Geologic Cross Sections A-A’ and B-B’.

Appended to this report are:

- Appendix A - General information regarding project concepts; exploratory methods used during our field investigation; and, laboratory test results not included on the boring logs.
- Appendix B - *Guide Earthwork Specifications* that may be used in the preparation of contract documents.
- Appendix C – Cone Penetration Test data.
- Appendix D - Output of GeoSuite analyses.
- Appendix E – Theory and Methodology of Liquefaction and Seismic Settlement.

PROJECT DESCRIPTION

Review of the *Student Housing Feasibility Study, College of the Siskiyou* indicates the project will consist of constructing a new, approximately 20,781 square foot (building footprint), two-story wood-or metal-framed building supported by a conventional foundation with an interior concrete slab-on-grade floor. The facility will contain approximately 178 beds housed in 106 dwelling units. We anticipate moderate foundation and structural loads for the housing facility. Associated development is anticipated to include exterior concrete flatwork, underground utilities, and typical landscaping.

It is our understanding the referenced BMI *Geotechnical Investigation and Geologic Hazards Evaluation Report, Proposed Science Building, College of the Siskiyous, Weed, California* was reviewed by the California Geological Survey (CGS) and an approval letter was issued on January 26, 2011. In addition, our referenced *Geologic Hazards and Geotechnical Engineering Report Update, College of the Siskiyous Fire Training Tower, Weed, California* was reviewed by CGS and an *Engineering Geology and Seismology Review* was issued on December 9, 2020.

Our office previously prepared a combined *Geologic Hazards and Geotechnical Engineering Report Update* (GHZ-GER) for the College of the Siskiyous Fire Training Facility (MPE No. 05040-01, dated July 31, 2020). The GHZ-GER Update report prepared for the project was submitted to the California Geologic Survey (CGS) and on December 9, 2020, CGS issued an *Engineering Geology and Seismology Review for College of the Siskiyous – Fire Training Tower, 800 College Avenue, Weed, California* (CGS Application No. 02-CGS-4597) noting the GHZ-GER Update adequately addressed the requirements of the California Geological Survey - Note 48 *Checklist for the Review of Engineering Geology and Seismology Reports for California Public*

School, Hospitals, and Essential Services Buildings (CGS Note 48). This GER, combined with the previously approved GHZ-GER Update, together contains information intended to satisfy CGS Note 48 criteria as of November 2022 for the currently proposed development, and will be submitted for review to DSA and/or CGS.

Based on existing site topography, we anticipate earthwork cuts and fills on the order of approximately three to four feet in depth may be required achieve final design grades. These estimated cuts and fills do not include recommended over-excavation depths.

This report was prepared based on the provided *Student Housing Feasibility Study, College of the Siskiyous* plans. When final site plans are available, or if the project plans change, Mid Pacific Engineering should be afforded the opportunity to review the plans and revise and/or update our conclusions and recommendations as necessary.

FINDINGS

Site Description

Review of the *Student Housing Feasibility Study, College of the Siskiyous* plans, Google Earth images, and our recent subsurface investigation, the Student Housing Facility would be constructed within the east-central portion of the COS campus in an area currently occupied by asphalt concrete parking lots, landscaped grass areas, and numerous mature trees. The approximate location of the project is north latitude 41.4126° and west longitude -122.3878°.

The project site is generally bounded to the north, west, and south by existing campus structures and facilities; and to the east by undeveloped property. On the dates of our investigations, the project site was covered with asphalt concrete, sparse, low vegetation, and mature trees.

Review of the United States Geological Survey (USGS) *Weed Quadrangle, California – Siskiyou County, 7.5-minute series* (2021), indicates project site ground surface elevations range from approximately +3,586 to+3,592 feet relative to mean sea level (msl). A portion of the USGS *Weed Quadrangle, California* topographic map containing the site and vicinity, is included with this report as Figure 1. Project site topography is relatively level to gently sloping downward toward the southwest.

HISTORICAL AERIAL PHOTOGRAPHS

The project site history was compiled based on review of historical aerial photographs (https://www.historicaerials.com/viewer), dated 1955, 1976, 1983, 1994, 1998, 2005, 2009, 2010, 2012, 2014, 2016, 2018, and 2020; and Google Earth images (https://maps.google.com) dated 2006, 2009, 2010, 2017, 2021, and 2022. Review of historical aerial photographs and Google Earth images indicates the project site was undeveloped in 1955 (earliest available aerial photograph) and remained relatively undeveloped until at least 1976. The 1983 historical aerial photograph shows the development of a majority of the campus. The project site has remained relatively unchanged since 1983.

Our review of available literature and historical photographs provide a limited site history. Therefore, unknown buried structures (wells, foundations, utility lines, septic systems, etc.) may be present on-site and may be encountered during construction.

REGIONAL GEOLOGIC SETTING

The project site lies within the northwestern portion of the Cascade Ranges Geomorphic Province of California. The Cascade Range, an arc-shaped chain of volcanic cones, extends from British Columbia to northern California, roughly parallel to the Pacific coastline. In the project region, the province is dominated by Mount Shasta, a glacier-mantled volcanic cone, rising 14,162 feet above mean sea level (msl). The southern termination is Lassen Peak. The Cascade Range is transected by deep canyons of the Pit River. The river flows through the range between these two major volcanic cones, after winding across the interior of the Modoc Plateau on its way to the Sacramento River.

The Cascade volcanics have been divided into the Western Cascade series and the High Cascade series. The Western Cascade series rocks consist of Miocene-aged basalts, andesites, and dacite flows interlayered with rocks of explosive origin, including rhyolite tuff, volcanic breccia, and agglomerate. This series is exposed at the surface in a belt 15 miles wide and 50 miles long from the Oregon border to the town of Mount Shasta. After a short period of uplift and erosion that extended into the Pliocene, volcanism resumed creating the High Cascade volcanic series. The High Cascade series forms a belt 40 miles wide and 150 miles long just east of the Western Cascade series rocks. Early High Cascade rocks formed from very fluid basalt and andesite that extruded from fissures to form low shield volcanoes.

Later eruptions during the Pleistocene contained more silica, causing more violent eruptions. Large composite cones like Mt. Shasta and Mt. Lassen had their origins during the Pleistocene (Norris and Webb, 1990).

SITE GEOLOGY

The California Division of Mines and Geology (CDMG) *Geologic Map of the Weed Quadrangle, California*, *1:250,000* compiled by D.L. Wagner and G.J. Saucedo (1987) indicates the project location is underlain by High Cascade Volcanics, Pleistocene age Volcanic rocks of Shasta Valley consisting of pyroclastic deposits (Map Symbol: Qvs^p). The subsurface conditions encountered in our borings were generally consistent with those typically mapped as pyroclastic deposits. The distribution of surficial deposits and geologic formations in the project vicinity are shown on the Regional Geologic Map, Figure 2.

The United States Department of Agriculture, Natural Resources Conservation Service website (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx), indicates the site is underlain by Deetz gravelly loam, 0 to 5 percent slopes and Ponto sandy loam, 5 to 15 percent slopes. The Deetz gravelly loam, 0 to 5 percent slopes is very deep, somewhat excessively drained soil is typically located on glacial outwash fans. It formed in glacial fluvial deposits derived dominantly from mixed extrusive igneous rock and volcanic ash. The surface layer is very dark, grayish-brown, and brown gravelly loamy sand approximately seven inches thick. The upper 31 inches of the underlying material is pale brown, light yellowish-brown, and very pale brown gravelly loamy sand. The lower part to a depth of 65 inches or more is pale brown, gray, and light gray very gravelly sand. Permeability of the Deetz soil is rapid, runoff is slow, and the hazard of water erosion is slight.

The Ponto sandy loam, 5 to 15 percent slopes is very deep, well drained soils on hills and formed from volcanic ash. The surface layer is very dark grayish-brown and brown sandy loam approximately eight inches thick. The subsoil is light brown, pink, and very pale brown sandy loam approximately 45 inches thick. The substratum to a depth of 80 inches is light brown stony sandy loam. Permeability of the Ponto soil is moderate, runoff is medium, and the hazard of water erosion is moderate.

SUBSURFACE SOIL CONDITIONS

The three exploratory borings advanced during our on-site investigation encountered High Cascade Volcanics, Volcanic rocks of Shasta Valley. As encountered in all three borings the pyroclastic deposits generally consisted of loose to very dense, silty sand with gravel-sized rock fragments; dense, well-graded sand with gravel-sized rock fragments; and stiff, sandy clay to the approximate maximum explored depth of 51½ feet bgs. Groundwater was encountered in all three borings between approximate depths of 24 to 25 feet bgs.

To supplement our soil borings, four CPT soundings were advanced to approximate maximum depths between 7¾ and 36½ feet below existing site grades. Sounding refusal was encountered within all four CPT soundings. The soil conditions encountered in the CPT soundings were relatively consistent with those encountered in the soil borings.

For soil conditions at a specific location, please refer to the Logs of Soil Borings (Figures 4 through 6). Figure 7 presents an explanation of the symbols and classification system used on the Logs. Graphic illustrations of the subsurface conditions encountered in the borings are presented on the geologic cross-sections as Figures 8 and 9. Results of the CPT soundings are provided in Appendix C.

Please note that subsurface conditions within the borings and CPTs are representative of the soil conditions at the time of exploration and at the specific location. It should be expected that soil conditions across the site can and will vary laterally and vertically from the soil encountered during our investigation.

GROUNDWATER

Groundwater was encountered in all five borings advanced on June 26 and 27, 2024, between approximate depths of 24 and 26 feet bgs. Review of the California Department of Water Resources Water Data Library (https://wdl.water.ca.gov/waterdatalibrary/) and the State Water Resource Control Board - GeoTracker (https://geotracker.waterboards.ca.gov/) websites indicates local, reliable historic groundwater data was not available at the time this report was prepared.

Groundwater levels may fluctuate beneath the site depending on the time of year and rainfall/snowfall amounts. In addition, shallow perched water may accumulate above less permeable or cemented soils following periods of heavy rainfall. Therefore, groundwater conditions presented in this report may not be representative of those which may be encountered during or subsequent to construction.

CONCLUSIONS

GEOLOGIC HAZARDS

Seismic Hazards

Seismic Site Class

The site is underlain by High Cascade Volcanics, pyroclastic deposits. In addition, shear wave velocity data obtained from our seismic CPTs was utilized to determine the average shear wave velocity beneath the project site. Based on the mapped site geology, the subsurface soil conditions encountered during our investigation, and the calculated average shear wave velocity from the CPTs, it is our opinion the site meets the criteria to be characterized as Site Classification D (ASCE 7-16)[1] in determining seismic design parameters in accordance with Section 1613.3.2 of the 2022 California Building Code (CBC).

Seismic Sources

According to the United States Geological Survey (USGS) 2008 National Seismic Hazard Maps website, (https://earthquake.usgs.gov/cfusion/hazfaults_2008_search/query_main.cfm), several active and/or potentially active faults are mapped within 62 miles (100 kilometers) of the project site. These include the Cedar Mtn.-Mahogany Mtn. fault zone, the Hat Creek-McArthur-Mayfield fault zone, the Gillem-Big Crack fault system, the Sky Lakes fault zone, and the Klamath graben fault system (east). In addition, the surface manifestation of the southern portion of the Cascadia Subduction Zone (CSZ) is located approximately 140 miles (226 kilometers) west of the project site.

The closest active fault is the Cedar Mtn.-Mahogany Mtn. fault zone, located approximately 26.4 miles (42.5 kilometers) east-northeast of the project site. The Maximum Magnitude Earthquake (M_{max}) listed for the fault zone in the project area is 7.1. The M_{max} is the maximum earthquake believed possible for the fault zone.

[1] American Society of Civil Engineers (ASCE 7-10), Chapter 20, Section 20.3.4

The Hat Creek-McArthur-Mayfield Fault Zone, located approximately 39 miles (63 kilometers) east-southeast of the project site. The M_{max} assumed for the Hat Creek-McArthur-Mayfield fault in this region is 7.2.

The Gillem-Big Crack fault system, located approximately 46 miles (74 kilometers) northeast of the project site. The M_{max} assumed for the Gillem-Big Crack fault system in this region is 6.8.

The Sky Lakes fault zone, located approximately 54 miles (87 kilometers) north-northeast of the project site. The M_{max} assumed for the Sky Lakes fault zone in this region is 7.08.

The Klamath graben fault system, located approximately 60 miles (97 kilometers) northeast of the project site. The M_{max} assumed for the Klamath graben fault system in this region is 7.36.

The CSZ is located approximately 140 miles (226 kilometers) west of the project site. Numerous geological and geophysical studies suggest that the Cascadia megathrust may be segmented, but the most recent studies suggest that, at least for the most recent great earthquake on January 26, 1700, much of the megathrust ruptured in a single M9 earthquake (https://earthquake.usgs.gov/data/crust/cascadia.php).

Surface Fault Rupture

The project site does not lie within an Earthquake Fault Zone as currently designated by the State of California. The nearest Earthquake Fault Zone is the Cedar Mtn.-Mahogany Mtn. fault zone, located approximately 26 miles (42 kilometers) east-northeast of the project site. Furthermore, the site is not located across the mapped trace of any known fault, nor was there any indication of surface rupture or fault-related surface disturbance at the site during our review of historical aerial photographs, site reconnaissance, or geotechnical investigation. It is our opinion the potential of fault-related surface rupture at the site is low.

Seismic Risk

The primary seismic risk at the site are earthquakes along the Cedar Mtn.-Mahogany Mtn. fault zone, the Hat Creek-McArthur-Mayfield fault zone, the Gillem-Big Crack fault system, the Sky Lakes fault zone, Klamath graben fault system (east), and the CSZ. These faults are considered active and/or potentially active, and are capable of producing relatively large earthquakes.

Secondary Hazards

Liquefaction Potential

Liquefaction is a soil strength and stiffness loss phenomenon that typically occurs in loose, saturated cohesionless soils as a result of strong ground shaking during earthquakes. The potential for liquefaction at a site is usually determined based on the results of a subsurface geotechnical investigation and the groundwater conditions beneath the site. Hazards to buildings associated with liquefaction include bearing capacity failure, lateral spreading, and differential settlement of soils below foundations, which can contribute to structural damage or collapse. The site is not located within a State Designated Seismic Hazard Zone for liquefaction and to our knowledge, there have been no recorded occurrences of seismically induced liquefaction in the site vicinity or the Siskiyou County region.

The site is underlain by Pleistocene age High Cascade Volcanics pyroclastic deposits. As encountered in all three borings, the native pyroclastic deposits are generally comprised of loose to very dense, silty sand with gravel-sized rock fragments; dense, well-graded sand with gravel-sized rock fragments; and stiff, sandy clay to the approximate maximum explored depth of 51½ feet bgs. As encountered in the CPTs, the on-site soils generally consisted of dense to very dense sand; medium dense to dense sand to silty sand; stiff to hard sandy silt to clayey silt; silty sand to sandy silt; and dense to very dense gravelly sand to sand.

Groundwater was encountered in all three borings advanced on June 26 and 27, 2024 between approximate depths of 24 and 26 feet bgs. Local, reliable historic groundwater data was not available for review.

The site liquefaction potential was evaluated based on Boulanger and Idriss (2010 to 2016) method utilizing Boring D-3 data. A project high groundwater depth of 14 feet below existing site grades was conservatively assumed and utilized to calculate the liquefaction potential and liquefaction –induced settlement in the area. The recommended design PGA_M of 0.379 g and an earthquake magnitude (M_w) of 9.34 were utilized as input into the liquefaction analysis program GeoSuite©, version 3.2 (Yi, 2023)[2]. The theory and methodology of liquefaction potential and seismic settlement evaluations are described in Theory and Methodology of Liquefaction and Seismic Settlement, Appendix E of this report.

Analysis of Boring D-3 data indicates soil layers between approximate depths of 35 and 38½ feet below existing ground surface could be potentially liquefiable resulting in seismic settlement of approximately one inch. Based on the mapped site geology and our experience in the area, it is our opinion the total settlement calculated during our liquefaction analysis should be considered worst case. Considering these soils were encountered at depths greater than 20 feet below existing site grades, loss of bearing capacity of the foundations and surface manifestation are not anticipated. GeoSuite analyses output are included as Appendix D.

Cyclic Softening

Subsurface soils encountered in our borings consisted of loose to very dense, silty sand with gravel-sized rock fragments; dense, well-graded sand with gravel-sized rock fragments; and stiff, sandy clay. As encountered in CPT-2, the on-site soils generally consisted of dense to very dense sand; medium dense to dense sand to silty sand; stiff to hard sandy silt to clayey silt; silty sand to sandy silt; and dense to very dense gravelly sand to sand to the approximate maximum explored depth of 36 feet below existing site grades. No soft clays were encountered during our investigation. Based on the absence of low strength clay layers, we do not consider cyclic softening as a significant hazard for this site. Our analyses using GeoSuite automatically includes modelling clay-like behavior of soils (See Appendix D).

[2] https://geoadvanced.com/

Lateral Spreading

Liquefaction-induced lateral spreading is defined as the finite, lateral displacement of gently sloping ground as a result of pore pressure build up or liquefaction in a shallow underlying deposit during an earthquake. Lateral spreading usually occurs on gently sloping ground exposed to a slope or free face. The proposed improvements will be located on relatively level ground lacking slopes or free faces. Based on the absence of slopes or free faces, it is our opinion that the potential for lateral spreading at the site is low.

Dry Sand Seismic Settlement

Dry sand seismic settlement can be evaluated using the method of Pradel (1998). This method is a simplified method based on earlier work by Tokimatsu and Seed (1987) applicable to sands. The subsurface conditions encountered in the CPTs generally consisted of dense to very dense sand; medium dense to dense sand to silty sand; stiff to hard sandy silt to clayey silt; silty sand to sandy silt; and dense to very dense gravelly sand to sand. The subsurface conditions in our borings generally consisted of loose to very dense, silty sand with gravel-sized rock fragments; dense, well-graded sand with gravel-sized rock fragments; and stiff, sandy clay to the approximate maximum explored depth of 51½ feet bgs. Modelling of these soils using the GeoSuite software, and utilizing the field and laboratory test data from our three borings and CPT-2, indicates dry sand seismic-induced settlement is less than one inch.

Landslides

Site topography and the surrounding area is relatively flat to gently sloping. Review of historic aerial photographs containing the project site and our on-site observations show no indications of past slope instabilities or landslides. Based on the absence of slopes failures and/or instabilities within the project site or vicinity, it is our opinion the potential for earthquake induced landsliding at the site is low. The site does not lie in a Landslide Hazard Zone as designated by the State of California and no landslides are mapped within or in the vicinity of the site.

Slope Stability

Site topography and the surrounding area is relatively flat to gently sloping. In addition, it is our understanding no on-site cut and fill slopes will be constructed. Based on the absence of mapped or observed slope instabilities within the project site or vicinity, it is our opinion that slope stability is not considered a factor in site development.

Site Acceleration and Seismic Coefficients

2022 CBC Seismic Coefficients

The 2022 CBC Seismic Design Parameters have been generated using the Structural Engineers Association of California/Office of Statewide Health Planning and Development (SEAOC/OSHPD) Seismic Design Maps Tool (https://seismicmaps.org/). This web-based software application calculates seismic design parameters in accordance with the American Society of Civil Engineers (ASCE) 7-16 and the 2022 CBC. The results indicate a mapped S_1 value of 0.326 Per ASCE 7-16, Section 11.4.8, a site-specific ground motion study should be performed in accordance with Section 21.2 of ASCE 7-16 for Site Class D sites with an S_1 value greater than or equal 0.2.

Supplement 3 to Section 11.4.8 of ASCE 7-16 includes an exception from such analysis for specific structures on Site Class D sites.

> EXCEPTION: A ground motion hazard analysis is not required where the value of the parameter SM1 determined by ASCE 7-16 Equation (11.4-2) is increased by 50% for all applications of SM1 in this Standard. The resulting value of the parameter SD1 determined by Equation (11.4-4) shall be used for all applications of SD1, in this Standard.

The commentary for Section 11 of ASCE 7-16 Supplement 3 states "The Item 1 exception is intended as an acceptable way to address the inaccuracy of the spectral shape observed in the velocity domain for Site Class D sites subject to high ground motions. Increasing S_{M1} by 50% in Eq. (11.4-2) results in an increase in the value of S_{D1} determined by Equation (11.4-4) by 50 percent. These increased values of S_{M1} and S_{D1} are to be used for all applications of these parameters throughout the Standard, including for the formulation of the design response spectrum where a design response spectrum is needed per this standard. It should be noted that the 50 percent increase in S_{D1} also increases T_s by 50 percent resulting in an extension of the acceleration-controlled plateau of the design response spectrum."

Based on this exception, the spectral response accelerations presented in the following table were calculated using the site coefficients (F_a and F_v) from Tables 1613.2.3(1) and 1613.2.3(2) presented in Section 1613 of the 2022 CBC.

Description	Value
Site Location	Latitude: 41.4126°/Longitude: -122.3878°
Site Classification	D
Mapped MCE_R ground motion 1)	S_S = 0.629 and S_1 = 0.329
Site Coefficients	F_a = 1.297 and F_v = 1.971 2)
Site-modified spectral acceleration	S_{MS} = 0.816 and S_{M1} = 0.973 3)
Numeric seismic design value	S_{DS} = 0.544 and S_{D1} = 0.648 3)
Site modified peak ground acceleration	PGA_M = 0.379 g
Mode de-aggregated Magnitude 2)	9.34
Closet Distance, r_{Rup} 4)	75.9 km
The T_S (Section 11.4.6, ASCE 7-16) for the site is 1.19.	

1) These values were obtained using on-line ASCE7 Hazard Tool (https://asce7hazardtool.online/).
2) Per 2022 CBC Table 1613.2.3 (2).
3) The value of the parameters, S_{M1}, determined by Eq. (11.4-2) of ASCE 7-16 is increased by 50% for all applications of SM1 per ASCE 7-16 Supplement 3.
4) This value was obtained using on-line Unified Hazard Tool by the USGS (https://earthquake.usgs.gov/hazards/interactive/) for return period of 2% in 50 years.

MCE_R – Maximum Considered Earthquake
g – Acceleration due to gravity

The mean de-aggregate magnitude is 7.89[3].
The closest distance, r_{Rup}[3] is 86.4 kilometers (53.7 miles) for mode de-aggregated magnitude.

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3 These values were obtained using the on-line Unified Hazard Tool by the USGS (https://earthquake.usgs.gov/hazards/interactive/) for return period of 2% in 50 years.

Site-specific ground response, ground motion hazard analyses, and/or time history analyses were not part of our work scope.

FOUNDATION AND STRUCTURAL SUPPORT

Based on our field investigation, it is our opinion the on-site, near-surface soils are comprised of native soils that possess variable composition, density, and support qualities. In addition, site clearing operations to remove existing pavements, trees, and other improvements will disturb a majority of the surface and near-surface soils creating variable density and support conditions. Therefore, we will recommend over-excavation of all loose, soft, and/or disturbed native soils within project structural areas, including building pads, exterior concrete flatwork, and pavement areas and replacement with engineered fill, to promote more uniform support for the planned housing structure and associated improvements.

Based on our field investigation and laboratory test results, it is our opinion the proposed structure can be supported on foundations supported by an over-excavated and re-compacted pad, provided the recommendations regarding site preparation and soils compaction are carefully followed and the foundations are designed to resist the differential settlements as presented in this report.

Provided the re-compaction of on-site loose and/or disturbed soils is performed as recommended, we estimate differential settlements (both static and seismic) to be approximately ½-inch over a horizontal distance of 50 feet. Total static settlements are anticipated to be negligible based on the recommended over-excavations and re-compaction. In our opinion, the majority of any initial static settlements will occur during construction. We do not anticipate long-term secondary static settlements to occur, based on the soil conditions and the recommended re-compaction.

Specific recommendations for over-excavation, processing and re-compaction are presented in the SITE PREPARATION AND OVER-EXCAVATION section of this report.

EXCAVATION CONDITIONS

Based on our field investigation, the on-site native soils should be readily excavatable with conventional earthmoving and trenching equipment typically used in the area. The on-site excavations may be subject to sloughing and caving if cohesionless soils and perched groundwater are encountered, requiring sloped excavations to reduce the effects of sidewall stabilities.

Excavations to be entered by workers should be braced or shored in accordance with current Occupational Safety and Health Administration (OSHA) regulations. The contractor must provide an adequately constructed and braced shoring system in accordance with federal, state and local safety regulations for individuals working in an excavation that may expose them to the danger of moving ground. If material is stored or heavy equipment is operated near an excavation, stronger shoring would be needed to resist the extra pressure due to the superimposed loads.

GROUNDWATER

Subsurface conditions encountered in our borings indicate groundwater is present beneath the project site. Groundwater was encountered in all three borings between approximate depths of 24 and 25 feet bgs. Local, reliable historic groundwater data was not available for review at the time this report was prepared. Based on subsurface conditions observed during our investigation and review of existing groundwater data, it is our opinion that groundwater will not be a factor in design, construction, and/or performance of foundations, utilities, and improvements.

EXPANSIVE SOILS

Laboratory test results indicate the on-site, near-surface clayey soils possess a "low" expansion potential when tested in accordance with the American Society of Testing and Materials (ASTM) D4829. Based on the results of our work, we conclude that expansive soils will not be a factor in site development.

SOIL CORROSION POTENTIAL

Two representative soil samples were submitted to Sunland Analytical Lab, Inc., located in Rancho Cordova, California, for testing to determine pH, resistivity, chloride and sulfide concentrations to help evaluate the potential for corrosive attack upon reinforced concrete. Results of the corrosion testing performed by Sunland Analytical Lab are summarized in the following table.

SOILS CORROSIVITY TESTING			
Analyte	Test Method	Sample Identification	
		D-3 (0-3')	D-1 (3-5')
pH	CA DOT Test #643 Modified (Sm. Cell)	6.2	7.3
Minimum Resistivity		16,620 Ω-cm	5,900 Ω-cm
Chloride	CA DOT 417	3.3 ppm	21.7 ppm
Sulfate	CA DOT 422	18.2 ppm	147.9 ppm

*	= Small cell method
Ω-cm	= Ohm-centimeters
ppm	= Parts per million

The California Department of Transportation (Caltrans), Division of Engineering Services, Materials Engineering and Testing Services, Corrosion Branch, Corrosion Guidelines Version 3.2, dated May 2021, defines a corrosive environment in terms of resistivity, pH, and soluble salt content or the soil and/or water. Resistivity serves as an indicator parameter for the possible presence of soluble salts and is not included as a parameter to define a corrosive environment for structures. In general, the higher the resistivity, the lower the corrosion rate. A minimum resistivity value for soil and/or water less than or equal to 1,500 ohm-centimeters indicates the presence of high quantities of soluble salts and a higher propensity for corrosion. For structural elements, Caltrans considers a site to be corrosive if one or more of the following conditions exist for the representative soil and /or water sample collected at the site: a chloride concentration of 500 parts per million (ppm) or greater, a sulfate concentration of 1,500 ppm or greater, or a pH of 5.5 or less. Based on this criterion, the on-site soils tested for this project are not considered corrosive to reinforced concrete. Table 19.3.1.1 – *Exposure Categories and Classes*, American Concrete Institute (ACI) 318, Section 19.3, as referenced in Section 1904.1 of the 2022 CBC, indicates the severity of sulfate exposure for the samples tested is *not a concern*. Ordinary Type I-II Portland cement is considered suitable for use on this project, assuming a minimum concrete cover is maintained over the reinforcement.

Our experience with concrete and steel corrosion is generally based on the Caltrans corrosion guidelines, which have been developed for use by designers for use on public transportation projects, such as bridges. Generally, these structures are more highly sensitive to corrosion of concrete and steel when compared to the proposed development.

Mid Pacific Engineering, Inc. does not practice corrosion engineering. Therefore, to further define the soil corrosion potential at the site, or to determine the need or design parameters for cathodic protection or grounding systems, a Registered Corrosion Engineer should be consulted.

Import fills, if used for construction, should be sampled and tested to verify the materials have corrosion characteristics within acceptable limits and generally should be similar to the tested on-site soils.

SUITABILITY OF ON-SITE SOILS FOR USE AS FILL

The on-site soils are considered suitable for use as engineered fill materials, provided these materials are free from concentrations of organic debris (roots and root balls), expansive clays, over-size rock, rubble, debris, rubbish, or other deleterious materials and are at the proper moisture content for compaction. Removal of rubble, debris, and organic debris from on-site soils may require laborers handpicking the fill materials, and/or screening prior to allowing the soils to be re-used as fill.

SEASONAL WATER

The near-surface soils may be in a near-saturated condition during and for a significant time following the rainy season. Earthwork operations attempted following the onset of the rainy season and prior to prolonged drying will likely be hampered by high soil moisture contents. If grading operations are to proceed shortly after the rainy season, and before prolonged periods of warm dry weather, the near-surface soils and soils to be used as engineered fill, including trench backfill, may be at moisture contents where significant and prolonged aeration may be required to dry the soils to a moisture content where the specified degree of compaction can be achieved. The contractor should anticipate the additional time and effort necessary to achieve a compactable moisture content.

Seasonal moisture and landscape irrigation will result in high soil moisture contents below interior floor slabs throughout their lifetime. Moisture vapor penetration resistance should be a significant consideration in design and construction of interior floor slabs.

In addition, soils located beneath existing pavements will likely be at elevated moisture contents regardless of the time of year of construction and require drying. Wet soils should be anticipated and considered in the construction schedule for this project.

EROSION AND WINTERIZATION

The near-surface on-site soils generally consist of very loose to dense silty sand with gravel-sized rock fragments; and loose to medium dense silty sand to an approximate maximum explored depth of 51 feet bgs. In our opinion, the undisturbed pyroclastic flow deposits may be susceptible to erosion by surface run-off that occurs during intense rainfall. As a minimum, erosion control measures including placement of straw bale sediment barriers or construction of silt filter fences in areas where surface run-off may be concentrated would be prudent. The project civil engineer should develop a site-specific erosion and sediment control plan based upon their site grading and drainage plan and the anticipated construction schedule.

All excavations should be protected from concentrated storm water run-off to minimize potential erosion. Control of water over slopes may be accomplished by constructing small berms at the top of the slope, constructing V-ditches near the top of the slope, or by grading the area behind the top of the slope to drain away from the slope. Ponding of surface water at the top of the slope or allowing sheet flow of water over the top of the slope should be avoided.

PAVEMENT SUBGRADE QUALITY

Laboratory test results indicate the near-surface soils are good quality materials for the support of asphalt concrete pavements. Based on the results of laboratory testing, a Resistance-value of 30 is considered appropriate for design of pavements. Resistance-value test results are attached as Figure A1.

RECOMMENDATIONS

The project is in a preliminary stage of design; therefore, we consider it essential that our office review site, grading, and structural foundation plans to verify the applicability of the following recommendations, perform additional investigations, and provide supplemental recommendations, as conditions dictate. Our recommendations are contingent upon our office performing the recommended plan reviews and providing a letter indicating that the recommendations of this report are applicable to the proposed construction. Grading plans were not available for review at the time this report was prepared. However, based on the following SITE PREPARATION AND OVER-EXCAVATION section of this report, excavations and fills of three to four feet in depth may be required for development of the planned improvements.

Based on our field investigation and laboratory testing, it is our opinion on-site, near-surface soils are variable with respect to density and support quality. In addition, site clearing operations and removal of existing surface and subsurface structures will disturb a majority of the near-surface soils creating variable density and support conditions. Therefore, we will recommend over-excavation and re-compaction of native soils below building pad elevations and all site structural areas to promote more uniform support for slab-on-grade structures, foundations, pavements and concrete flatwork.

Soils located beneath existing pavements will likely be at elevated moisture contents regardless of the time of year of construction and require drying. Wet soils should be anticipated and considered in the construction schedule for this project.

Existing structures and asphalt pavements were observed during our review of historical aerial photographs and Google Earth images containing the project site, and during the field investigation phase of our work. Therefore, the contractor should anticipate additional excavation, backfilling and reworking of areas that may contain previous existing structures, foundations, concrete slabs, pavements, and/or loose, disturbed artificial fill and native soils.

The recommendations presented below are appropriate for typical construction in the late spring through fall months. The on-site soils likely will be saturated by rainfall in the winter and spring months, and will not be compactable without drying by aeration or the addition of lime (or a similar product) to dry the soils. The soils exposed at the bottoms of excavations and those soils removed from excavations may be too wet to compact, requiring an extended period of drying or other stabilization methods. In our opinion, wet soils should be anticipated and considered in the construction schedule for this project. Should the construction schedule require work to continue during the wet months, additional recommendations should be provided by the Geotechnical Engineer retained to provide services during project construction.

Site Clearing

Initially, all structural areas of the site should be cleared of existing structures, foundations, concrete flatwork, pavements, trees, vegetation, debris, and other deleterious materials to expose firm and stable soil conditions as identified by our on-site representative. Our review of available literature and historical photographs provide a limited site history. Therefore, known (foundations) and unknown buried structures (utility lines, etc.) may be present on-site and may be encountered during construction. If encountered, these structures should be removed and the resulting cavities or holes should be backfilled with properly moisture conditioned and compacted engineered fill as described in this report.

The contractor should anticipate additional excavation, backfilling and reworking of areas that may contain existing and former structures. We recommend construction bid documents contain a unit price (price per cubic yard) for additional excavation of unsuitable materials and replacement with engineered fill.

Where practical, the clearing should extend a minimum of five feet beyond the limits of the proposed improvements and structural areas of the site. Existing underground utilities, if encountered, located within proposed building pads should be completely removed and/or rerouted as necessary. Utilities located outside the building areas should be properly abandoned (i.e., fully grouted provided the abandoned utility is situated at least 2½ feet below the final subgrade level to reduce the potential for localized "hard spots").

Adequate removal of debris, rubble, and deleterious material may require laborers and handpicking to clean the subgrade soils to the satisfaction of our on-site representative. Depressions resulting from the clearing operations should be cleared of loose, disturbed, soft soil, organic matter and debris, or otherwise unstable materials, to expose firm, undisturbed native soils, widened as necessary to allow access with compaction equipment, and backfilled in accordance with the recommendations of this report.

Trees and large brush designated for removal should include the entire root ball and all surface roots larger than ½-inch in diameter. Adequate removal of debris, rubble, tree roots, and deleterious material may require laborers and handpicking to clean the subgrade soils to the satisfaction of our on-site representative. Depressions resulting from the clearing operations should be cleared of loose, disturbed, soft soil, organic matter and debris, or otherwise unstable materials, to expose firm, undisturbed native soils, widened as necessary to allow access with compaction equipment, and backfilled in accordance with the recommendations of this report.

Remaining areas should be stripped of surface vegetation and organically contaminated topsoil; strippings may be stockpiled for later use or disposed of off-site. Strippings should not be used in general fill construction, but may be used in landscaped areas, provided they are kept at least five feet from the building pads, exterior flatwork and pavements, and moisture conditioned and compacted. *Strippings should not be used in landscaped berms that will support sound walls, retaining walls, concrete flatwork, or other at-grade structures.*

Adequate removal of debris and rubble may require laborers and handpicking to clean the subgrade soils to the satisfaction of our on-site representative. Depressions resulting from clearing operations and any other loose, disturbed, soft or otherwise unstable materials should be completely removed to expose firm, undisturbed native soils, widened as necessary to allow compaction equipment access, and backfilled in accordance with the recommendations of this report.

It is essential that our representative be present during clearing operations to verify adequate removal of former structures, as well as trees and roots, and determine the need for over-excavation of disturbed soil areas. Excavations resulting from clearing operations be left as shallow dish-shaped depressions for proper location and to allow proper access with compaction equipment during grading operations.

If clearing and removal of structures takes place without direct observation by the Geotechnical Engineer, deeper cross-ripping and/or over-excavation of the disturbed areas and the building pad or structural areas affected will be required.

SITE PREPARATION AND OVER-EXCAVATION

Building/Structural Pad Over-Excavation

Our on-site investigation indicates loose native soils are present across the project site. All loose and/or disturbed native soil within building pads and site structural areas should be over-excavated to expose firm, undisturbed native soil as determined by our on-site representative.

The building pad areas should be over-excavated to a minimum depth of 24-inches below bottom of footings. The over-excavation should extend horizontally a minimum of five feet beyond the proposed structure lines or a distance equal to the over-excavation depth plus two feet, whichever is larger. In addition, in order to construct the engineered fills properly, over-excavations will be required to extend horizontally an additional distance equal to the over excavation depth. Therefore, an over-excavation of four feet in depth would require a horizontal distance of nine feet beyond the edge of the foundation lines. Deeper over-excavations may be required, based on observed conditions. The bottom of all over-excavations should be scarified to a minimum depth of 12 inches, moisture conditioned to at least the optimum moisture content, and compacted to at least 90 percent of the ASTM D1557 maximum dry density. The compacted subgrades must be in a stable and unyielding condition for proper structural support. Any exposed remnants from former construction should be removed and debris cleared from the site. The over-excavations should extend a minimum of five feet horizontally beyond the proposed structure lines, and should include areas of exterior columns, or other areas supporting at-grade structures.

Pavement Areas and Exterior Concrete Flatwork Over-Excavation

All pavement and exterior concrete flatwork areas should be over-excavated to a minimum depth of two feet below existing or final grade, whichever is deeper.

The bottom of all over-excavations should be scarified to a minimum depth of eight inches, moisture conditioned to at least the optimum moisture content, and compacted to at least 90 percent of the ASTM D1557 maximum dry density. The compacted subgrades must be in a stable and unyielding condition for proper structural support.

MPE should review the final plans to verify the applicability of these recommendations and determine the need for revised recommendations.

The soils exposed at the bottoms of the over-excavations may be soft or unstable at the time of compaction and may require additional stabilization methods, prior to fill placement.

All areas that are to remain at-grade, to receive fill, or obtained by excavation should be scarified to a depth of eight inches, uniformly moisture conditioned to achieve at least the optimum moisture condition, and compacted to at least 90 percent of the ASTM D1557 maximum dry density. Grades must be properly compacted and stable. It should be anticipated that some over-excavation and/or stabilization could be needed in these areas, if the soils are wet, soft or unstable at the time of construction.

Compaction operations should be undertaken with a heavy, self-propelled, sheepsfoot compactor (Caterpillar CP7, or equivalent-size compactor) capable of providing adequate compaction and should be performed in the presence of our representative who will evaluate the performance of the subgrade under compactive load and identify loose or unstable soils that could require additional excavation and/or compaction. Loose or unstable soils, as identified by our representative in the field, should be cleaned out to firm, undisturbed and stable soils, as determined by our representative, and should be restored to grade with engineered fill compacted in accordance with the recommendations of this report. Difficulty in achieving subgrade compaction or unusual soil instability may be indications of loose fill associated with past subsurface items. Should these conditions exist, the materials should be excavated to check for subsurface structures and the excavations backfilled with engineered fill. We recommend construction bid documents contain a unit price (price per cubic yard) for all excess excavation due to loose, soft, or unsuitable materials and replacement with engineered fill.

ENGINEERED FILL CONSTRUCTION

Engineered fill should be placed in horizontal lifts not exceeding six inches in compacted thickness. Engineered fill should be brought to at least the optimum moisture content and compacted to at least 90 percent of the maximum dry density as determined by ASTM D1557. Fills deeper than five feet should be compacted to 95 percent of the maximum dry density as determined by ASTM D1557. Compaction operations should be undertaken with a heavy, self-propelled, sheepsfoot compactor (Caterpillar CP7, or equivalent-size compactor) capable of providing proper compaction to the full depth of each lift of fill. Additional passes with the compactor shall be added, as required by the Geotechnical Engineer, to achieve a firm, stable and unyielding subgrade condition. Compactive effort should be applied uniformly across the full width of fill construction. Care must be taken when compacting at the edges of the over-excavations, to ensure that the fills are uniformly tied into the adjacent sloping ground by benching into undisturbed native soil. Each lift of engineered fill should be properly benched into adjacent side slopes, if present, to remove loose soils and promote uniformity.

The on-site soils are considered suitable for use as engineered fill provided the materials are at a workable moisture content and free of rubbish, rubble, debris and concentrations of organics, are non-expansive, and have a maximum particle size of three inches or less. Hand picking of exposed roots, rubbish, debris, and over-sized rock should be performed by the Contractor to adequately clear the grades and properly prepare and clear the soils proposed as fill, prior to use.

Imported fill material, if required, should consist of well-graded granular soils or well-graded aggregates with a Plasticity Index of 15 or less, an Expansion Index of 20 or less, and a resistance (“R”)-value of 30 or greater, and should have no particles greater than three inches in maximum dimension. Clean, open graded gravels (such as crushed rock or pea gravel) and other such materials are *not* acceptable for fill construction. The contractor also should supply appropriate documentation for imported fill materials indicating the materials are free of known contamination and have corrosion characteristics within acceptable limits. The imported materials should be sampled, tested, and approved prior to transporting to the project site. Samples should be submitted to the Geotechnical Engineer at least two weeks prior to planned importation to the site.

The upper eight inches of final building and structural areas, and exterior flatwork subgrades should be scarified, brought to at least the optimum moisture content, and uniformly compacted to not less than 90 percent of the maximum dry density, as determined by ASTM D1557, regardless of whether final grade is completed by excavation, filling, or left at-grade.

The upper six inches of pavement subgrades and exterior slab subgrades supporting vehicle loadings should be scarified, moisture conditioned to at least the optimum moisture content and uniformly compacted to at least 95 percent of the ASTM D1557 maximum dry density, and must be stable under construction traffic prior to placement of aggregate base. Final subgrade processing and compaction should be performed just prior to placement of aggregate base, after construction of underground utilities is complete.

Site preparation should be accomplished in accordance with the recommendations of this section and the *Guide Earthwork Specifications* provided in Appendix B. It is essential that a representative from our office be present on a nearly full-time basis during site preparation and all grading operations to verify adequate over-excavation depths, complete removal of undocumented artificial fills unstable soil deposits, to observe the earthwork construction, perform compaction testing, and verify compliance with our recommendations and the job specifications.

Utility Trench Backfill

Utility trench backfill should be mechanically compacted in maximum six-inch lifts. Trench backfill should be brought to uniform moisture content at the optimum moisture and each lift mechanically compacted to at least 90 percent of the maximum dry density. The upper six inches of trenches in pavement areas should be compacted to at least 95 percent of the maximum dry density. Jetting of trench backfill as a means of compaction is not acceptable. We recommend that native soil be used as trench backfill within the perimeter of the building foundations to help minimize soil moisture variations beneath the structures. The native soil backfill should extend at least three feet horizontally beyond perimeter foundation lines. The upper 12 inches of backfill material for trenches within building pads and slab-on-grade subgrades should be non-expansive granular soils or aggregate base.

We recommend that underground utility trenches that are aligned nearly parallel with foundations be at least three feet laterally from the outer edge of foundations, wherever possible. As a general rule, trenches should not encroach into the zone extending outward at a 1:1 (horizontal to vertical) inclination below the bottom of the foundations. In addition, trenches parallel to foundations should not remain open longer than 72 hours. The intent of these recommendations is to prevent loss of both lateral and vertical support of foundations, resulting in possible settlement.

Foundation Design

We are providing design soil values for the analysis of proposed foundations, and suggested minimums for dimensions, but only from a Geotechnical Engineering perspective. The project Structural Engineer should determine final foundation design width and depth dimensions and reinforcing requirements, based on their specific structural design, which should include an appropriate factor of safety applied to the overall design.

Provided the building pad is over-excavated and re-compacted as recommended, the proposed structure may be supported upon continuous and/or isolated spread foundations extending a minimum of 24 inches into the prepared building pad, or at least 24 inches below lowest adjacent soil grade. Continuous foundations should be at least 12 inches wide; isolated foundations should be at least 24 inches wide. Foundations must be continuous around the perimeter of the buildings to help minimize moisture migration beneath the structure.

Foundations so established may be sized for a maximum allowable soil pressure of 2,500 pounds per square foot (psf) for the dead load plus live load condition with a 1/3 increase in allowable soil pressure for consideration of seismic or wind forces may be used in sizing foundations. The weight of foundation concrete extending below soil grade may be disregarded in sizing computations.

Provided the over-excavation and re-compaction is performed as recommended, it is our opinion the foundations should be capable of resisting static differential settlements of ½-inch over a horizontal distance of approximately 50 feet.

We recommend that all foundations be adequately reinforced to provide structural continuity, mitigate cracking and permit spanning of local soil irregularities. As a minimum, continuous foundations should contain *at least* four No. 4 steel reinforcing bars placed two each, near the top and bottom of the foundations. The project designer should determine the need for additional reinforcement based on structural requirements, including the use of slab ties to provide structural continuity and integrity of the slab and foundation system.

Resistance to lateral displacement of shallow foundations may be computed using an allowable friction factor of 0.25 multiplied by the effective vertical load on each foundation. Additional lateral resistance may be achieved using an allowable passive earth pressure against the vertical projection of the foundation equal to an equivalent fluid pressure of 150 psf per foot of depth. . A factor of safety of 2.0 was applied to passive earth pressure and 1.5 applied to the friction coefficient.

The allowable values of base friction and passive earth pressure may be combined without further reduction. Allowable passive resistance may be increased by one-third to consider the short-term effects of seismic or wind forces for *Alternative Basic Load Combinations* listed in Sections 1605.3.2 or 1605A.3.2 of 2022 CBC.

Passive resistance should be computed below a depth at which at least five feet of engineered fill or native soil is present in front of the foundation, as measured horizontally from the exterior edge of the foundation.

It is an essential requirement that foundation excavations be observed by a representative of MPE to verify competent and uniform bearing conditions and evaluate the need for any modifications to these recommendations as may be required by specific circumstances. The observations should take place prior to placement of reinforcing steel but following cleaning of the excavations. To account for any re-compaction of foundation bottoms or deepening of foundations that might be required, we suggest bid documents include a unit price for additional compaction or foundation excavation and concrete that may be required.

INTERIOR FLOOR SLAB SUPPORT

Interior concrete slab-on-grade floors can be suitably supported upon the soil subgrades prepared and constructed in accordance with the recommendations in this report and maintained in that condition (at or near optimum conditions). Slab thicknesses and reinforcement presented in this report are suggested as a guide "minimum" only; final slab thickness and compressive strength, reinforcement and joint spacing for all should be determined by the Architect and/or Structural Engineer based on their specific design analysis, anticipated slab loading and uses, and Owner’s performance expectations. It is emphasized that thicker slabs with greater reinforcing will be needed in areas supporting higher loads or where increased performance is desired.

Interior concrete slab-on-grade floors should be at least four inches thick and, as a minimum, should be reinforced with chaired No. 3 reinforcing bars on 18-inch center-to-center spacing, located at mid-slab depth. This slab thickness and reinforcement is suggested as a guide "minimum" only; final slab thickness, reinforcement and joint spacing should be determined by the design professional based on anticipated slab loading. Temporary loads exerted during construction from vehicle traffic, cranes, forklifts, and storage of palletized construction materials should be considered in the design of the slab-on-grade floors. In addition, loads exerted by forklifts and machinery used as part of the future business activities must be considered in slab-on-grade floor design. Proper and consistent location of the reinforcement at mid-slab is essential to its performance. The risk of uncontrolled shrinkage cracking is increased if the reinforcement is not properly located within the slab.

Floor slabs may be underlain by a layer of free-draining crushed rock, serving as a deterrent to migration of capillary moisture. The crushed rock layer should be at least four inches thick and graded such that 100 percent passes a one-inch sieve and none passes a No. 4 sieve, and be mechanically compacted. Additional moisture protection may be provided by placing a plastic water vapor retarder (at least 10-mils thick) directly over the crushed rock. The plastic water vapor retarder should meet or exceed the minimum specifications as outlined in ASTM E1745. An optional, thin layer of clean sand above the membrane is acceptable, as an aid to curing of the slab concrete.

For increased support and if heavier floor loads are anticipated within the proposed structure, the crushed rock section (if used) beneath interior slab-on-grade floors should be replaced with a thicker section of Class 2 aggregate base (minimum of six inches) compacted to at least 95 percent of the maximum dry density as determined by ASTM D1557.

Moisture protection *may* be provided by placing a plastic water vapor retarder membrane (at least 10-mils thick) directly over the aggregate base. If used, the vapor retarder membrane should generally conform to ASTM E1745 specifications. Consideration should be given to using a thicker, higher quality membrane for additional moisture protection such as a 15-mil thick Stego vapor barrier or other product. The membrane should be installed so that there are no holes or uncovered areas. All seams should overlap and be sealed with manufacturer-approved tape, continuous at the laps to create vapor tight conditions.

All perimeter edges of the membrane, such as pipe penetrations, interior and exterior footings, joints, etc., should be sealed or caulked per manufacturer's recommendations. An optional, thin layer of clean sand above the membrane is acceptable, as an aid to curing of the slab concrete.

It is emphasized that thicker slabs with greater reinforcing will be needed in areas supporting higher loads or where increased performance is desired, especially within the areas which may be subjected to heavy concentrated loads from vehicles, fork lifts, and storage of products. The Architect or Structural Engineer should determine the final thickness, strength, reinforcement, and joint spacing of slab-on-grade concrete based on anticipated slab loadings, proposed uses and desired performance. Temporary loads exerted during construction from vehicle traffic, cranes, forklifts, and storage of palletized construction materials should be considered in the design of the slab-on-grade floors. Proper and consistent location of the reinforcement at mid-slab is essential to its performance. The risk of uncontrolled shrinkage cracking is increased if the reinforcement is not properly located within the slab

Floor slab construction over the past 25 years or more has included placement of a thin layer of sand over the vapor retarder membrane. The intent of the sand is to aid in the proper curing of the slab concrete. However, recent debate over excessive moisture vapor emissions from floor slabs includes concern for water trapped within the sand. As a consequence, we consider the use of the sand layer as optional. The concrete curing benefits should be weighed against efforts to reduce slab moisture vapor transmission. It has been our experience that slab concrete placed directly on the vapor barrier may be more susceptible to non-uniform curing and shrinkage, bleeding, and curling; therefore, it is our opinion that the concrete mix and curing methods used for construction should take into account these potential issues.

The recommendations presented above are intended to mitigate any significant soils related cracking of the slab-on-grade floors. More important to the performance and appearance of a Portland cement concrete slab is the quality of the concrete, the workmanship of the concrete contractor, the curing techniques utilized and the spacing of control joints.

FLOOR SLAB MOISTURE PENETRATION RESISTANCE

Floor slab construction over the past 25 years or more has included placement of a thin layer of sand over the vapor retarder membrane. The intent of the sand is to aid in the proper curing of the slab concrete. However, recent debate over excessive moisture vapor emissions from floor slabs includes concern for water trapped within the sand. As a consequence, we consider the use of the sand layer as optional. The concrete curing benefits should be weighed against efforts to reduce slab moisture vapor transmission.

It is considered likely that floor slab subgrade soils will become wet to near-saturated at some time during the life of the structures. This is a certainty when slab subgrades are constructed during the wet seasons or when constantly wet ground or poor drainage conditions exist adjacent to structures. For this reason, it should be assumed that all slabs intended for moisture-sensitive floor coverings require protection against moisture or moisture vapor penetration. Standard practice includes the gravel and vapor retarder membrane, as discussed above. However, the gravel and membrane offer only a limited, first-line of defense against soil-related moisture. Recommendations contained in this report concerning foundation and floor slab design are presented as *minimum* requirements, only from the Geotechnical Engineering standpoint.

It is emphasized that the neither use of sub-slab crushed rock and sheet plastic membrane will not "moisture proof" the slab, nor does it assure that slab moisture transmission levels will be low enough to prevent damage to floor coverings or other building components. If increased protection against moisture vapor penetration of slabs is desired, a concrete moisture protection specialist should be consulted. The design team should consider all available measures for slab moisture protection. It is commonly accepted that maintaining the lowest practical water-cement ratio in the slab concrete is one of the most effective ways to reduce future moisture vapor penetration of the completed slabs.

EXTERIOR FLATWORK (NON-PAVEMENT AREAS)

Areas to receive exterior concrete flatwork should be scarified, moisture conditioned and properly compacted just prior to placement of concrete, as recommended in this report, and maintained at optimum moisture conditions. The upper 12 inches of exterior flatwork subgrades should consist of approved on-site or imported granular (non-expansive) soils or aggregate base. Uniform moisture conditioning of subgrade soils is important to reduce the risk of non-uniform moisture withdrawal from the concrete and the possibility of plastic shrinkage cracks. Practices recommended by the Portland Cement Association for proper placement and curing of concrete should be followed during exterior concrete flatwork construction. Some seasonal movement of flatwork should be anticipated. *Areas adjacent to slabs-on-grade should not be allowed to lay fallow to reduce problems associated with seasonal moisture content variations.* For increased support and performance, the exterior slabs may be underlain by a minimum four inches of Class 2 aggregate compacted to 95 percent relative compaction.

The Architect or Structural Engineer should determine the final thickness, strength, reinforcement, and joint spacing of exterior slab-on-grade concrete; however, we offer the following suggested minimum guidelines. Exterior flatwork should be at least four inches thick and be constructed independent of perimeter building foundations and isolated column foundations by the placement of a layer of felt material between the flatwork and the foundation. Reinforcement should consist of at least heavy duty welded wire fabric (flat sheets), or equivalent steel reinforcing bars, placed mid-depth of the slab. Slabs supporting vehicle loads should be designed as pavements with thicker slabs underlain by aggregate base. Thicker slabs constructed with thickened edges to at least twice the slab thickness should be constructed where light wheeled traffic or intermittent light loading is expected over the slabs.

SITE DRAINAGE

Control of surface water on this site is essential to proper performance of the planned improvements. Final site grading should be accomplished to provide positive drainage of surface water away from buildings, pavements, and structures and prevent ponding of water adjacent to foundations, slabs or pavements. Proper control of surface water drainage is essential to the performance of foundations, slabs-on-grade, and pavements. The ground adjacent to the planned buildings and structures should be sloped away from the structure at a gradient no less than two percent for a distance of at least 10 feet. We recommend using full-roof gutters, with downspouts from roof drains connected to rigid non-perforated piping directed to an appropriate drainage point away from the structure, or discharging onto paved surfaces leading away from the structure and foundations. Concentrated storm water discharge collected from roof downspouts or surface drains should not be allowed to drain on unprotected slopes adjacent to structures. The ground should be graded to drain positively away from all flatwork and building structures. Ponding of surface water should be avoided near pavements, foundations, and flatwork. Landscape berms, if planned, should be constructed in such a manner as to promote drainage away from the buildings.

All excavations and fill slopes should be protected from concentrated storm water run-off to minimize potential erosion. Control of water over the slopes may be accomplished by constructing V-ditches near the top of slopes, or by grading the area behind the top of slope to drain away from the slope. Ponding of surface water or allowing sheet flow of water over any open excavation must be avoided.

Pavement Design

Traffic indices (TI's) were not specified for the project; therefore, we are providing a range of typical traffic indices. The project civil engineer should determine the appropriate pavement section based on anticipated traffic conditions and traffic index; we can provide alternative pavement sections based on different TI's, if necessary.

The following pavement sections presented below have been calculated based on the assumed traffic indices, Resistance ("R") -value laboratory test results, and the procedures contained within applicable portions of Chapters 600 to 670 of the *California Highway Design Manual*. Based on laboratory test results, we have used a Resistance-value of thirty (30) for design of pavement section thicknesses.

Traffic Index	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
4.5	2.5	5.5
6.0	2.5	9.5
7.0	3.0	11.5

We emphasize that the performance of pavements is critically dependent upon uniform and adequate compaction of the soil subgrade, as well as all engineered fill and utility trench backfill within the limits of the pavements. Final pavement subgrade preparation, i.e. scarification, moisture conditioning and compaction, should be performed after underground utility construction is completed, just prior to aggregate base placement. The upper six inches of pavement subgrade soils should be compacted to at least 95 percent relative compaction at no less the optimum moisture content and maintained in that condition until covered and protected by aggregate base. Soil subgrades allowed to dry, desiccate or become disturbed must be moisture conditioned and re-compacted prior to placement of aggregate base. All Class 2 aggregate base should be mechanically compacted to at least 95 percent of the ASTM D1557 maximum dry density at a moisture content of at least the optimum.

Pavement subgrades must be stable under construction traffic prior to placement of aggregate base. We recommend subgrades be proof-loaded (i.e. wheel-tested using a loaded water truck) prior to aggregate base placement.

In the summer heat, high axle loads coupled with shear stresses induced by sharply turning tire movements can lead to failure in asphalt concrete pavements. Therefore, we recommend that consideration be given to using a Portland cement concrete (PCC) section in areas subjected to concentrated heavy wheel loading, such as entry driveways, and trash enclosures. Our office should review vehicle loading and frequency prior to finalizing sections. As a minimum, the concrete section should consist of at least six inches of PCC underlain by at least six inches of Class 2 aggregate base mechanically compacted to not less than 95 percent relative compaction. We recommend PCC slabs be constructed with thickened edges. Edges should be thickened in accordance with ACI 330R.

For crack control, if desired, slabs should be reinforced with at least No. 3 reinforcing bars placed on maximum 24-inch centers. Reinforcement must be located at mid-slab depth to be effective. Joint spacing and details should conform to the current Portland Cement Association (PCA) or American Concrete Institute (ACI) guidelines. Portland cement concrete should achieve a minimum compressive strength of 3,500 pounds per square inch at 28 days.

Efficient drainage of all surface water to avoid infiltration and saturation of the supporting aggregate base and subgrade soils is important to pavement performance. Consideration may be given to full-depth curbs where pavements abut landscaped areas to serve as a cut-off against water migrating into the pavement base and subgrade materials. Curbs should extend into the soil subgrade. Weep holes also could be provided at drop inlets, located at the subgrade-base interface, to allow accumulated water to drain from beneath the pavements.

Materials quality and construction of the structural section of the pavements should conform to the applicable provisions of the latest edition of the *Caltrans Standard Specifications*.

EARTHWORK TESTING AND OBSERVATION

Site preparation should be accomplished in accordance with the recommendations of this report and the appended *Guide Earthwork Specifications*. Representatives of Mid Pacific Engineering, Inc. must be present during site preparation and all grading operations to observe and test the fills to verify compliance with our recommendations and the job specifications. In the event that MPE is not retained to provide geotechnical engineering observation and testing services during construction, the Geotechnical Engineer retained to provide this service should indicate in writing that they agree with the recommendations of this report, and prepare supplemental recommendations as necessary.

A final report by the "Geotechnical Engineer" should be prepared upon completion of the project indicating compliance with or deviations from this report and the project plans and specifications. Please be aware that the title Geotechnical Engineer is restricted in the State of California to a Civil Engineer authorized by the State of California to use the title "Geotechnical Engineer."

FUTURE SERVICES

We recommend that our firm be given the opportunity to review the final plans and specifications to verify that the intent of our recommendations has been implemented in those documents. Testing and approval of proposed import sources is an essential requirement to qualify the proposed soils for use as engineered fill for this project. This sampling and testing should be completed well in advance of the proposed start of construction.

LIMITATIONS

Our recommendations are based upon the information provided regarding the proposed construction, combined with our analysis of site conditions revealed by the field exploration and laboratory testing programs. We have used our best engineering judgment based upon the information provided and the data generated from our investigation. This report has been prepared in accordance with generally accepted standards of practice existing in northern California at the time of the report. No warranty, either express or implied, is provided.

If the proposed construction is modified or re-sited; or, if it is found during construction that subsurface conditions differ from those we encountered at the test boring locations, we should be afforded the opportunity to review the new information or changed conditions to determine if our conclusions and recommendations must be modified. Mid Pacific Engineering, Inc., should be retained to review the final plans and specifications to verify that the intent of our recommendations has been implemented in those documents.

We emphasize that this report is applicable only to the proposed construction and the investigated site and should not be utilized for construction on any other site. The conclusions and recommendations of this report are considered valid for a period of two years. If design is not completed and construction has not started within two years of the date of this report, the report must be reviewed and updated, as necessary.

Mid Pacific Engineering, Inc.

REGISTERED GEOLOGIST
WOODY JOE POLLARD
No. 2297
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

Woody Joe Pollard
Senior Engineering Geologist

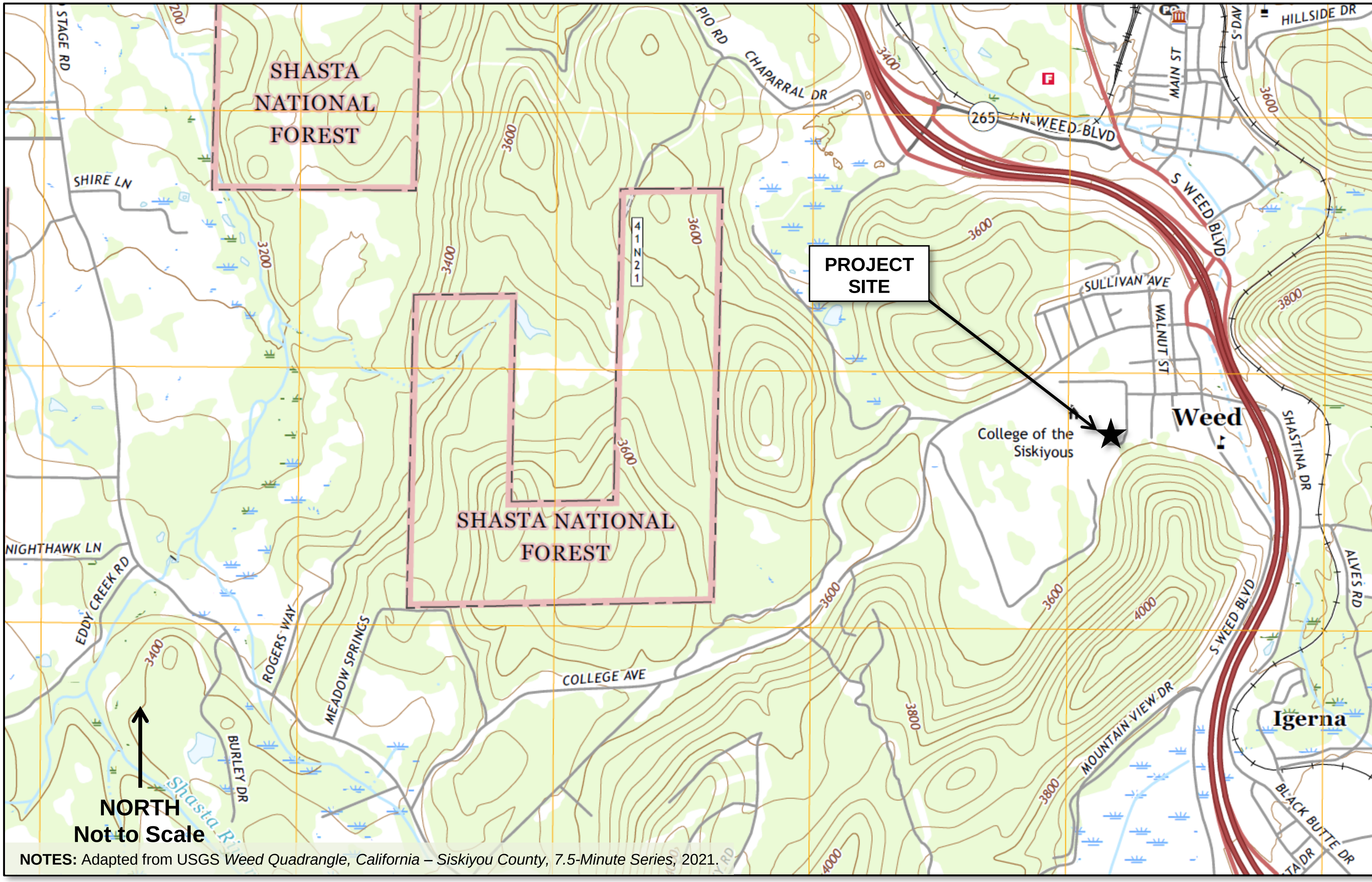
REGISTERED PROFESSIONAL ENGINEER
FRED F. YI
No. 2967
Exp. 6/30/25
GEOTECHNICAL
STATE OF CALIFORNIA

Fred Yi, Ph.D., P.E., G.E., F. ASCE
Chief Engineer

REGISTERED PROFESSIONAL ENGINEER
TROY W. KAMISKY
No. 68350
Exp. 9/30/25
CIVIL
STATE OF CALIFORNIA

Troy W. Kamisky
Senior Engineer

FIGURES



NOTES: Adapted from USGS *Weed Quadrangle, California – Siskiyou County, 7.5-Minute Series,* 2021.

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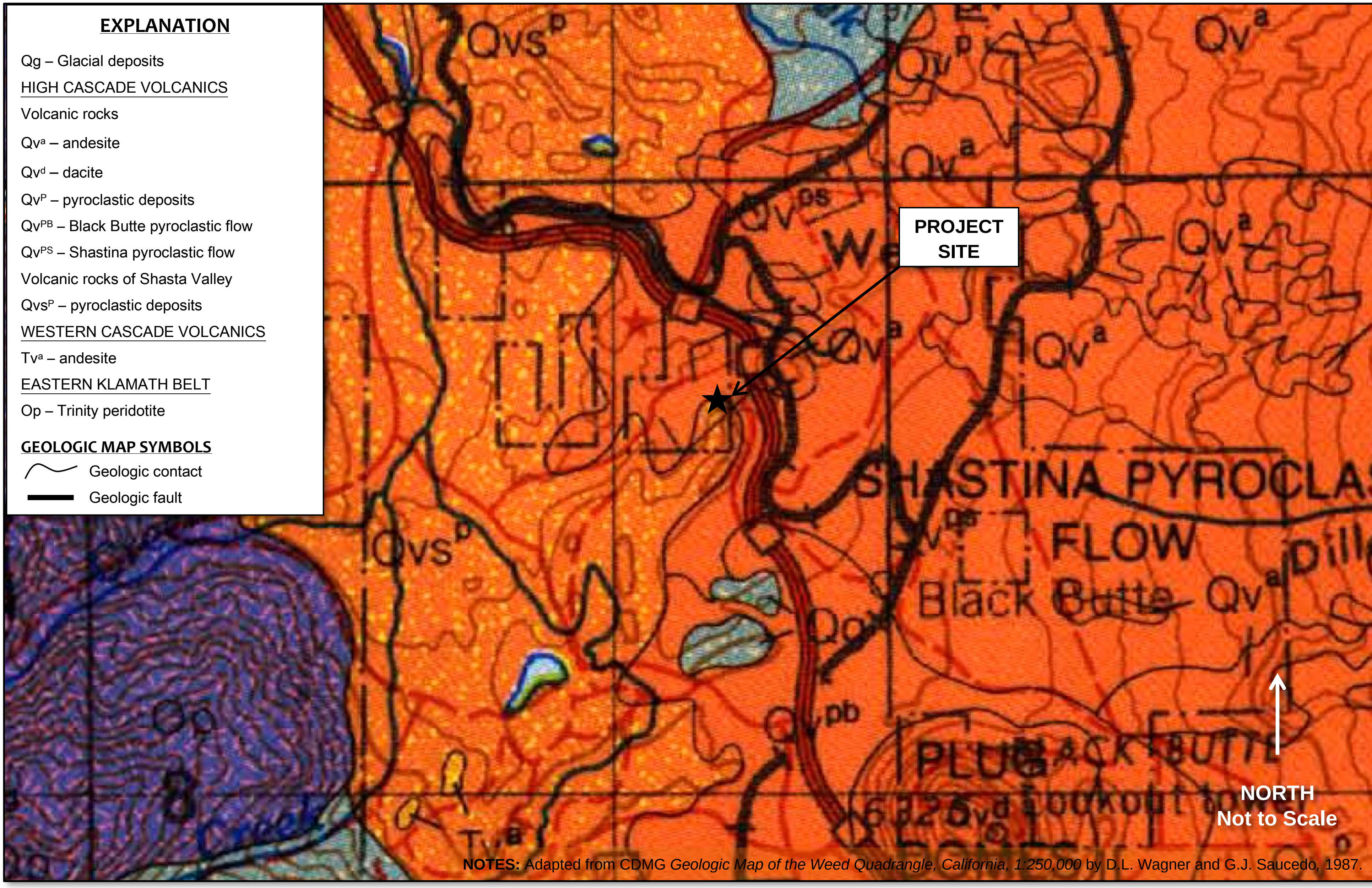
VICINITY MAP

COLLEGE OF THE SISKIYOUS STUDENT HOUSING FACILITY
800 College Avenue
Weed, California

FIGURE 1
Date: 08/24
MPE No. 05040-04



NOTES: Adapted from CDMG *Geologic Map of the Weed Quadrangle, California, 1:250,000* by D.L. Wagner and G.J. Saucedo, 1987.

MPE
MID PACIFIC ENGINEERING, INC.

REGIONAL GEOLOGIC MAP

COLLEGE OF THE SISKIYOUS STUDENT HOUSING FACILITY

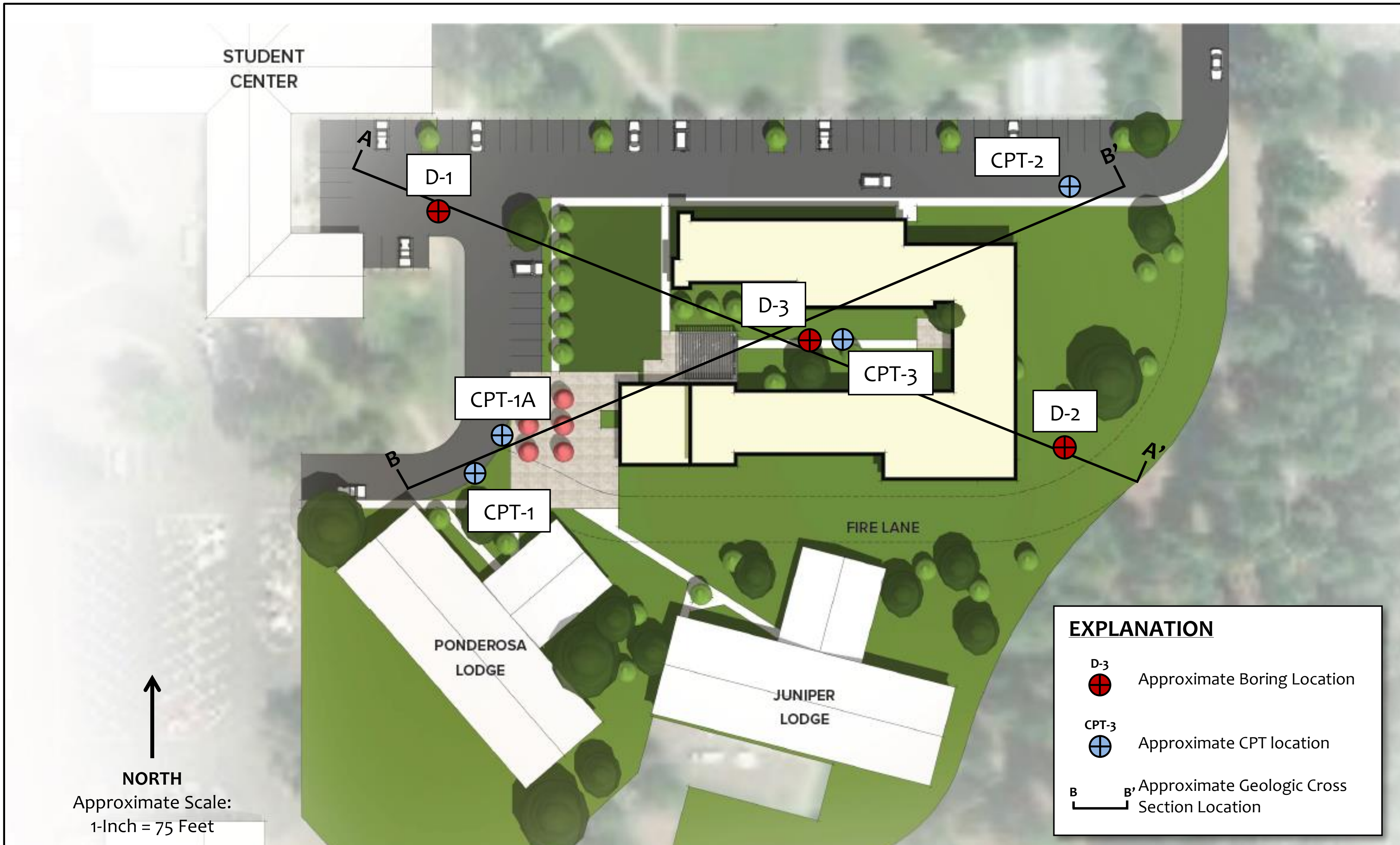
800 College Avenue

Weed, California

FIGURE 2

Date: 08/24

MPE No. 05040-04



NOTES: Adapted from *Student Housing Feasibility Study, College of the Siskiyous,* prepared by HPI Architects, dated June 13, 2023.

MPE
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SITE INVESTIGATION MAP

COLLEGE OF THE SISKIYOUS STUDENT HOUSING FACILITY

800 College Avenue

Weed, California

FIGURE 3

Date: 08/24

MPE No. 05040-04

Project: COLLEGE OF THE SISKYOUS STUDENT HOUSING FACILITY	LOG OF SOIL BORING D-1
Project Location: 800 College Avenue, Weed, CA	
MPE Number: 05040-04	

Date(s) Drilled	27-Jun-24	Logged By	WJP	Checked By	ARH
Drilling Method	Hollow Stem Augers	Drilling Contractor	Taber Drilling	Total Depth of Drill Hole	26½ Feet
Drill Rig Type	CME-55	Diameter(s) of Hole, inches	6 Inches	Approx. Surface Elevation, ft MSL	+3,587 Feet
Groundwater Depth [Elevation], feet	26 Feet	Sampling Method(s)	140 lb Hammer/30 inch drop	Drill Hole Backfill	Cement Grout
Remarks					

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			High Cascade Volcanics, Pyroclastic Deposits (Qvs^P) Loose, slightly moist, light brown, silty fine to coarse sand (SM), some fine gravel-sized rock fragments		D1-1	12			Triax c=300psf ϕ=35°
3,585									
	5		Medium dense, slightly moist, brown-gray, silty fine to coarse sand (SM), scattered fine to coarse gravel-sized rock fragments		D1-2	22	7.0	94	
3,580									
	10		Medium dense, slightly moist, brown-gray, silty fine to coarse sand (SM), scattered fine to coarse gravel-sized rock fragments		D1-3	44			
3,575									
	15		Medium dense, moist, brown-gray, silty fine to coarse sand (SM), scattered fine to coarse gravel-sized rock fragments		D1-4	33	10.1	94	
3,570									
	20		Medium dense, moist, brown-gray, silty fine to coarse sand (SM), scattered fine to coarse gravel-sized rock fragments		D1-5	29			
3,565									
	25								

MPE *Mid Pacific Engineering, Inc .*

FIGURE 4

Project: COLLEGE OF THE SISKYOUS STUDENT HOUSING FACILITY	LOG OF SOIL BORING D-1
Project Location: 800 College Avenue, Weed, CA	
MPE Number: 05040-04	Sheet 2 of 2

Date(s) Drilled	27-Jun-24	Logged By	WJP	Checked By	ARH
Drilling Method	Hollow Stem Augers	Drilling Contractor	Taber Drilling	Total Depth of Drill Hole	26½ Feet
Drill Rig Type	CME-55	Diameter(s) of Hole, inches	6 Inches	Approx. Surface Elevation, ft MSL	+3,587 Feet
Groundwater Depth [Elevation], feet	26 Feet	Sampling Method(s)	140 lb Hammer/30 inch drop	Drill Hole Backfill	Cement Grout
Remarks					

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Medium dense, wet, gray-brown, silty fine to coarse sand (SM), few fine to coarse gravel-sized rock fragments Groundwater encountered at 26 feet		D1-6	24	15.5	115	
3,560			Total Depth = 26 Feet Groundwater Encountered at 26 Feet Backfilled with Cement Grout						
	30								
3,555									
	35								
3,550									
	40								
3,545									
	45								
3,540									
	50								

Project: COLLEGE OF THE SISKYOUS STUDENT HOUSING FACILITY		LOG OF SOIL BORING D-2	
Project Location: 800 College Avenue, Weed, CA			
MPE Number: 05040-04		Sheet 1 of 2	

Date(s) Drilled	26-Jun-24	Logged By	WJP	Checked By	ARH
Drilling Method	Hollow Stem Augers	Drilling Contractor	Taber Drilling	Total Depth of Drill Hole	26½ Feet
Drill Rig Type	CME-55	Diameter(s) of Hole, inches	6 Inches	Approx. Surface Elevation, ft MSL	+3,587 Feet
Groundwater Depth [Elevation], feet	24 Feet	Sampling Method(s)	140 lb Hammer/30 inch drop	Drill Hole Backfill	Cement Grout
Remarks					

ELEVATION, feet	DEPTH, feet	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE NUMBER	BLOWS PER FOOT	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
		High Cascade Volcanics, Pyroclastic Deposits (Qvs^P)					
		Loose, slightly moist, gray-brown, silty fine to coarse sand (SM) with fine gravel-sized rock fragments					
3,585							
			D2-1	12			
	5	Very dense, slightly moist, gray-brown, silty fine to coarse sand (SM) with fine to coarse gravel-sized rock fragments	D2-2	83			
3,580							
	10	Medium dense, moist, gray-brown, silty fine to coarse sand (SM) with fine to coarse gravel-sized rock fragments	D2-3	28	13.5	107	
3,575							
	15	Dense, moist, gray-brown, silty fine to coarse sand (SM) with fine to coarse gravel-sized rock fragments	D2-4	46			
3,570							
	20	Medium dense, moist, gray, silty fine to coarse sand (SM), scattered fine to coarse gravel-sized rock fragments	D2-5	31	12.7	107	
3,565							
		Groundwater encountered at 24 feet					
	25						

Project: COLLEGE OF THE SISKYOUS STUDENT HOUSING FACILITY Project Location: 800 College Avenue, Weed, CA MPE Number: 05040-04		LOG OF SOIL BORING D-2 Sheet 2 of 2

Date(s) Drilled	26-Jun-24	Logged By	WJP	Checked By	ARH
Drilling Method	Hollow Stem Augers	Drilling Contractor	Taber Drilling	Total Depth of Drill Hole	26½ Feet
Drill Rig Type	CME-55	Diameter(s) of Hole, inches	6 Inches	Approx. Surface Elevation, ft MSL	+3,587 Feet
Groundwater Depth [Elevation], feet	24 Feet	Sampling Method(s)	140 lb Hammer/30 inch drop	Drill Hole Backfill	Cement Grout
Remarks					

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE DATA: SAMPLE NUMBER	SAMPLE DATA: BLOWS PER FOOT	TEST DATA: MOISTURE CONTENT, %	TEST DATA: DRY UNIT WEIGHT, pcf	TEST DATA: ADDITIONAL TESTS
			Medium dense, wet, gray, silty fine to coarse sand (SM) with fine to coarse gravel-sized rock fragments		D1-6	25	17.4	108	
3,560			Total Depth = 26½ Feet Groundwater Encountered at 24 Feet Backfilled with Cement Grout						
	30								
3,555									
	35								
3,550									
	40								
3,545									
	45								
3,540									
	50								

Project: COLLEGE OF THE SISKIYOUS STUDENT HOUSING	LOG OF SOIL BORING D-3
Project Location: 800 College Avenue, Weed, CA	
MPE Number: 05040-04	Sheet 1 of 3

Date(s) Drilled	26-Jun-24	Logged By	WJP	Checked By	
Drilling Method	Mud Rotary	Drilling Contractor	Taber Drilling	Total Depth of Drill Hole	51½ Feet
Drill Rig Type	CME-55	Diameter(s) of Hole, inches	8 Inches	Approx. Surface Elevation, ft MSL	+3,590 Feet
Groundwater Depth [Elevation], feet	24 Feet	Sampling Method(s)	140 lb Hammer/30 inch drop	Drill Hole Backfill	Cement Grout
Remarks					

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG		SAMPLE DATA			TEST DATA		
				SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Asphalt Concrete/Aggregate Base						
			Shastina Pyroclastic Flow (Qv^{ps}) Medium dense, dry to slightly moist, brown, silty fine to coarse to coarse sand (SM), scattered fine to coarse gravel-sized rock fragments		D3-1	38			
3,585	5		Medium dense, slightly moist, gray-brown, silty fine to coarse sand (SM), some fine gravel-sized rock fragments		D3-2	12			%-200 18.1
			Switch to mud rotary drilling						
3,580	10		Very dense, wet, gray-brown, silty fine to coarse sand (SM) with fine gravel-sized rock fragments		D3-3	77			%-200 16.2
3,575	15		Dense, wet, gray-brown, silty fine to coarse sand (SM) with fine to coarse gravel-sized rock fragments		D3-4	37			%-200 13.6
3,570	20		Medium dense, wet, gray, silty fine to coarse sand (SM), few fine to coarse gravel-sized rock fragments		D3-5	29			%-200 19.6
			Groundwater encountered at 24 feet						
3,565	25								

Project: COLLEGE OF THE SISKIYOUS STUDENT HOUSING Project Location: 800 College Avenue, Weed, CA MPE Number: 05040-04	LOG OF SOIL BORING D-3 Sheet 2 of 3

Date(s) Drilled	26-Jun-24	Logged By	WJP	Checked By	
Drilling Method	Mud Rotary	Drilling Contractor	Taber Drilling	Total Depth of Drill Hole	51½ Feet
Drill Rig Type	CME-55	Diameter(s) of Hole, inches	8 Inches	Approx. Surface Elevation, ft MSL	+3,590 Feet
Groundwater Depth [Elevation], feet	24 Feet	Sampling Method(s)	140 lb Hammer/30 inch drop	Drill Hole Backfill	Cement Grout
Remarks					

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG		SAMPLE DATA: SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Medium dense, wet, gray, silty fine to medium sand (SM), scattered fine to coarse gravel-sized rock fragments		D3-6	23			%-200 19.3
3,560	30		Dense, wet, gray, silty fine to coarse sand (SM), scattered fine to coarse gravel-sized rock fragments		D3-7	32			%-200 19.1
3,555	35		Medium dense, wet, gray, silty fine to coarse sand (SM), few fine to coarse gravel-sized rock fragments		D3-8	14			%-200 18.2
			Dense, wet, gray, silty, well-graded fine to coarse sand (SW) with few coarse gravel-sized rock fragments						
3,550	40				D3-9	25 7 50/4"			%-200 6.2
3,545	45		Very dense, wet, gray, silty, well-graded fine to coarse sand (SW) with fine to coarse gravel-sized rock fragments		D3-10	47			%-200 11.6
3,540	50		Stiff, moist, light brown with dark orange-brown mottles, fine sandy clay (CL)						

Project: COLLEGE OF THE SISKIYOUS STUDENT HOUSING	LOG OF SOIL BORING D-3
Project Location: 800 College Avenue, Weed, CA	
MPE Number: 05040-04	Sheet 3 of 3

Date(s) Drilled	26-Jun-24	Logged By	WJP	Checked By	
Drilling Method	Mud Rotary	Drilling Contractor	Taber Drilling	Total Depth of Drill Hole	51½ Feet
Drill Rig Type	CME-55	Diameter(s) of Hole, inches	8 Inches	Approx. Surface Elevation, ft MSL	+3,590 Feet
Groundwater Depth [Elevation], feet	24 Feet	Sampling Method(s)	140 lb Hammer/30 inch drop	Drill Hole Backfill	Cement Grout
Remarks					

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG		SAMPLE DATA: SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Stiff, moist, light brown with dark orange-brown mottles, fine sandy clay (CL)		D3-11	14			%-200 50.7
			Total Depth = 51½ Feet Groundwater Encountered at 25 Feet Backfilled with Cement Grout						
3,535	55								
3,530	60								
3,525	65								
3,520	70								
3,515	75								

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		SYMBOL	CODE	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of soil > no. 200 sieve size)	GRAVELS (More than 50% of coarse fraction > no. 4 sieve size)	GW		Well graded gravels or gravel - sand mixtures, little or no fines
		GP		Poorly graded gravels or gravel - sand mixtures, little or no fines
		GM		Silty gravels, gravel - sand - silt mixtures
		GC		Clayey gravels, gravel - sand - silt mixtures
	SANDS (50% or more of coarse fraction < no. 4 sieve size)	SW		Well graded sands or gravelly sands, little or no fines
		SP		Poorly graded sands or gravelly sands, little or no fines
		SM		Silty sands, sand - silt mixtures
		SC		Clayey sands, sand clay mixtures
FINE GRAINED SOILS (More than 50% of soil < no. 200 sieve size)	SILTS & CLAYS LL< 50	ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL		Inorganic clays of low to medium plasticity, gravely clays, sandy clays, silty clays, lean clays
		OL		Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS LL ≥ 50	MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH		Inorganic clays of high plasticity, fat clays
		OH		Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS		Pt		Peat and other highly organic soils
ROCK		RX		Rocks, weathered to fresh
FILL		FILL		Artificially placed fill material

OTHER SYMBOLS

= Drive Sample: 2-1/2" O.D. Modified California sampler

= Hand Driven Sample

=SPT Sampler

= Initial Water Level

= Final Water Level

= Estimated or gradational material change line

= Observed material change line

Laboratory Tests

PI = Plasticity Index
EI =Expansive Index
UCC = Unconfined Compression Test
TR = Triaxial Compression Test
GR = Gradation Analysis (Sieve)
K = Permeability Test

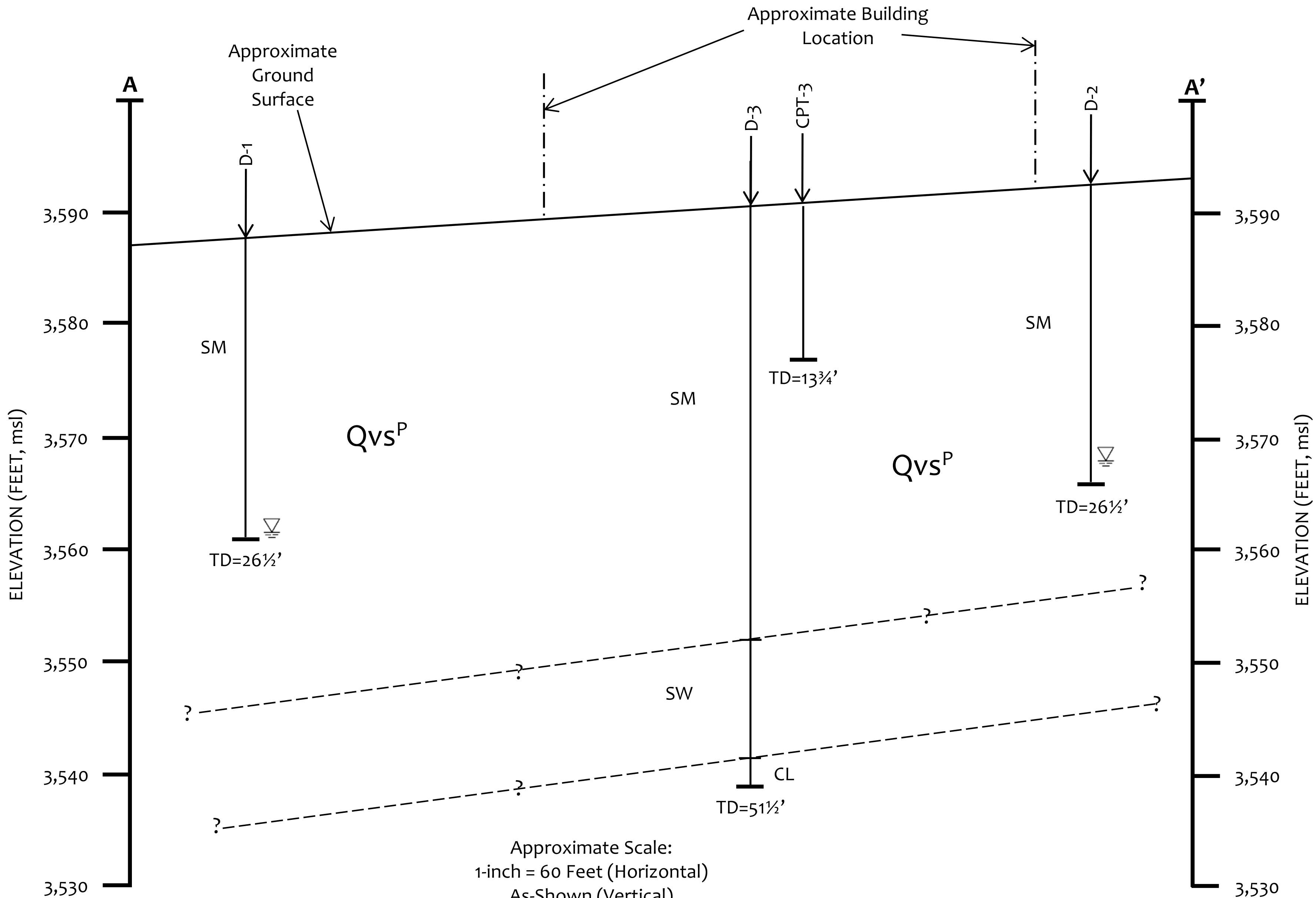
GRAIN SIZE CLASSIFICATION

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL coarse (c) fine (f)	3" to No. 4 3" to 3/4" 3/4" to No. 4	76.2 to 4.76 76.2 to 19.1 19.1 to 4.76
SAND coarse (c) Medium (m) fine (f)	No. 4 to No. 200 No. 4 to No. 10 No. 10 to No. 40 No. 40 to No. 200	4.76 to 0.074 4.76 to 2.00 2.00 to 0.420 0.420 to 0.074
SILT & CLAY	Below No. 200	Below 0.074

MPE
Mid Pacific Engineering, Inc.

UNIFIED SOIL CLASSIFICATION SYSTEM
COLLEGE OF THE SISKIYOUS STUDENT HOUSING FACILITY
800 College Avenue

FIGURE 7
Date: 08/24
MPE No. 05040-04



MID PACIFIC ENGINEERING, INC.

GEOLOGIC CROSS SECTION A-A'

COLLEGE OF THE SISKIYOUS STUDENT HOUSING FACILITY

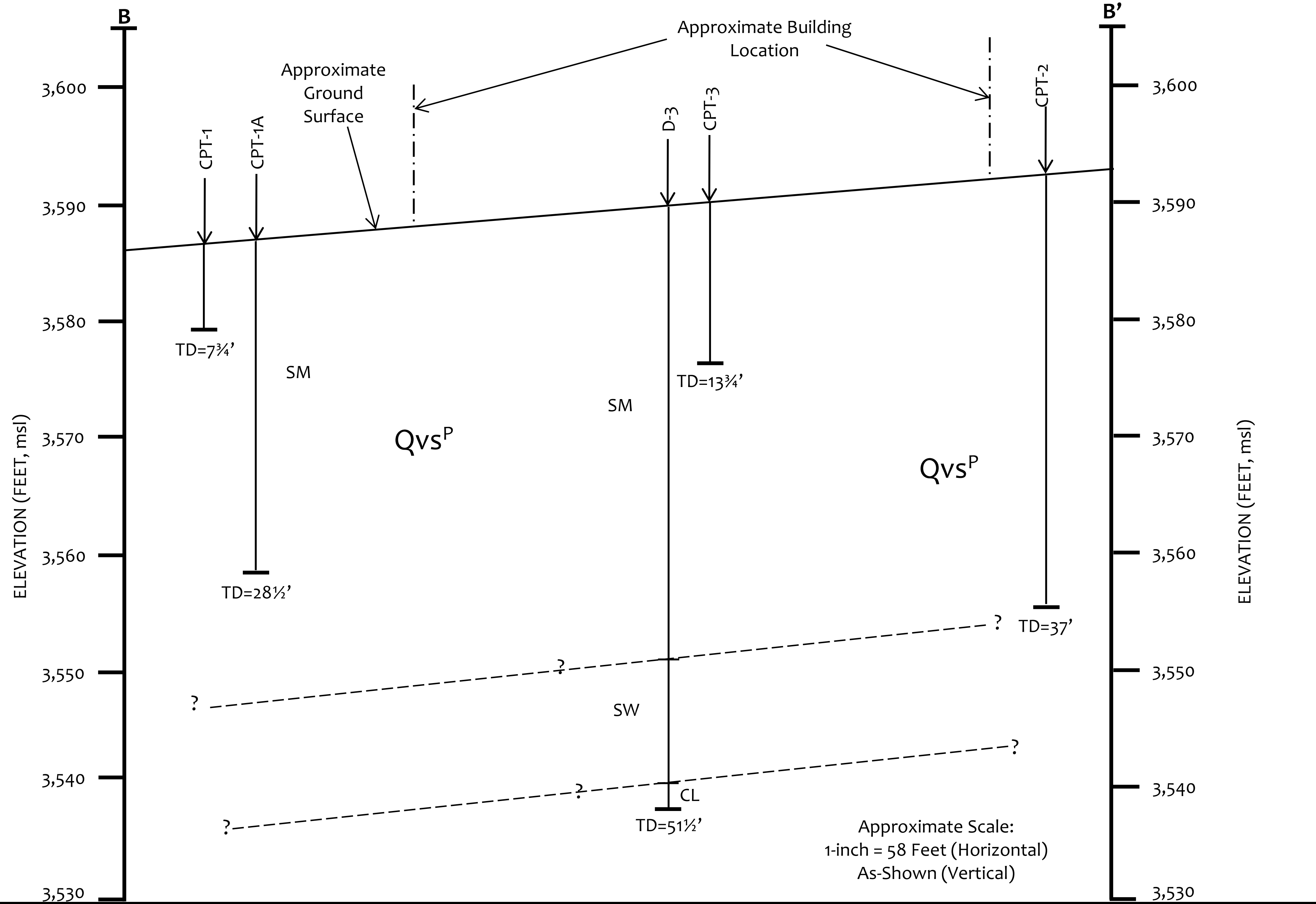
800 College Avenue

Weed, California

FIGURE 8

Date: 08/24

MPE No. 05040-04



MID PACIFIC ENGINEERING, INC.

GEOLOGIC CROSS SECTION B-B'

COLLEGE OF THE SISKIYOUS STUDENT HOUSING FACILITY

800 College Avenue
Weed, California

FIGURE 9

Date: 08/24

MPE No. 05040-04

APPENDICES

APPENDIX A

APPENDIX A

A. GENERAL INFORMATION

The performance of a geotechnical engineering investigation for the proposed College of the Siskiyous Student Housing project, located at 800 College Avenue in Weed, California, was authorized by Mrs. Char Perlas, on June 12, 2024. Authorization was for an investigation as described in our proposal letter (MPE No 24-0223) of May 31, 2024 (revised June 6, 2024) sent to Ms. Veronica A. Rivera, Director of Maintenance, College of the Sikiyous.

The project Architect is HPI Architecture, whose mailing address is 115 22nd Street, Newport Beach, California 92663; telephone (949) 675-6442; email: info@hpiarchitecture.com.

In performing this investigation, we referenced the *Student Housing Feasibility Study, College of the Siskiyous* plan, prepared by HPI Architecture., dated June 13, 2023; Google Earth images containing the site, the United States Geological Survey (USGS) *7.5-Minute Series Topographic Map Yreka Quadrangle, California – Siskiyou County* (2022), and the *Geologic Map of the Yreka Quadrangle, California, USGS Bulletin 1436, Plate 1, 1977*, produced by the United States Geological Survey.

B. FIELD EXPLORATION

On June 26 and 27, 2024, three test borings were advanced at the approximate locations indicated on Figure 3 utilizing a track-mounted CME-55 drill rig equipped with six-inch diameter, hollow-stem flight augers; and four inch solid flight augers. The borings were advanced to approximate maximum depths 26½ and 51½ feet below existing site grades. At various intervals, soil samples were recovered from borings using a Standard Penetration Test (SPT) sampler. In addition, relatively undisturbed soil samples were recovered from the soil borings with a 2½-inch O.D., 2-inch I.D. Modified California sampler (ASTM D3550) driven by an automatically operated 140-pound hammer freely falling 30 inches. The number of blows of the hammer required to drive the 18-inch long sampler each six-inch interval was recorded with the sum of the blows required to drive the sampler the lower 12-inch interval being designated the penetration resistance or "blow count" for that particular drive.

The samples obtained with the modified California sampler were retained in two-inch diameter by six-inch long, thin-walled stainless steel tubes contained within the sampler. Immediately after sample recovery, the field engineering geologist visually classified the soil in the tubes and the ends of the tubes were sealed to preserve the natural moisture contents. Disturbed bulk samples of the near-surface materials were also obtained at various locations and depths. Soil samples were taken to our laboratory for additional classification (ASTM D2488) and selection of samples for testing. Upon completion, the boring were backfilled with cement grout.

The Logs of Soil Borings, Figures 4 through 6, contain descriptions of the soils encountered in the borings. An explanation of the Unified Soil Classification System, and the symbols used on the logs, are presented on Figure 7.

In addition, four Cone Penetration Test (CPTs) soundings were advanced on June 26 and 27, 2024 to an approximate maximum depth of 37 feet below existing site grades at the approximate locations indicated on Figure 3 utilizing a 25-ton truck-mounted CPT rig. The CPT soundings results are attached in Appendix C.

C. LABORATORY TESTING

Selected undisturbed soil samples were tested to determine dry unit weight (ASTM D2937), natural moisture content (ASTM D2216), Triaxial Shear Testing (ASTM D4767); and, percent passing the No. 200 sieve (ASTM D1140). The results of these tests are included on the boring logs at the depth each sample was obtained.

Expansion Index testing (ASTM D4829) was performed on one composite bulk sample of the near-surface soils.

Resistance ("R")-value testing (ASTM D2844, CT301) was performed on one composite bulk sample of the near-surface soils. Test results are presented on Figure A1.

Two representative samples of on-site soil were tested by Sunland Analytical Lab to determine the preliminary corrosion characteristics of the soil (CT 417, 422 & 643). The test results are presented in the Geotechnical Engineering Report.

D. LABORATORY TESTING

Unit Weight/Moisture Content		Percent Moisture	Dry Density (pcf)
Sample ID:	D1-2I	7.0	94
	D1-41	10.1	94
	D1-6I	15.5	115
	D2-3I	13.5	107
	D2-5I	12.7	107
	D2-6I	17.4	108

Percent Passing the No. 200 Sieve		
Sample ID:	D3-2	17.1
	D3-3	16.2
	D3-4	13.6
	D3-5	19.6
	D3-6	19.3

D3-7	19.1
D3-8	18.2
D3-9	6.2
D3-10	11.6
D3-11	50.7

Triaxial Shear Test Results (Effective Stress)		Friction angle (°)	Cohesion, psf
Sample ID:	D1-1I	35.0	300

Expansion Index

EI_{50} = 0.

Corrosion Characteristics

See Soil Corrosion Potential, see page 17 of the report.

Input parameters used in our seismic settlement analysis included the following:

- Earthquake magnitude $M_w = 9.34$
- Maximum acceleration 0.379g
- Project groundwater elevation 14 feet bgs

Output parameters derived from our analysis include the following:

- Maximum settlement 0.97 inch
- Settlement at bottom of footing 0.97 inch

//

RESISTANCE VALUE TEST RESULTS

(California Test 301)

Material Description: Brown, silty fine to coarse sand (SM), scattered rock fragments.
Location: D-3 @ 0 - 3'

Specimen No.	Dry Unit Weight (pcf)	Moisture at Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (psi)	R-Value
1	112.0	11.2	412	0	79
2	115.9	11.6	174	0	70
3	114.6	11.3	283	13	75

Resistance-value at 300 psi = 76

APPENDIX B

APPENDIX B

GUIDE EARTHWORK SPECIFICATIONS

COLLEGE OF THE SISKIYOUS STUDENT HOUSING

800 College Avenue
Weed, California
MPE No. 05040-04

PART 1: GENERAL

1.1 SCOPE

A. General Description

This item shall include clearing of all surface and subsurface structures including fences, surface debris, including all trees, vegetation, stockpiled soil, and any other items designated for removal; preparation of surfaces to be filled, including over-excavations, filling, spreading, compaction, observation and testing of the fill; and all subsidiary work necessary to complete the grading of the building area to conform with the lines, grades and slopes as shown on the accepted Drawings.

B. Related Work Specified Elsewhere

1. Trenching and backfilling for sanitary sewer system: Section ______.
2. Trenching and backfilling for storm drain system: Section ______.
3. Trenching and backfilling for underground water, natural gas, and electric supplies: Section ______.

C. Geotechnical Engineer

Where specific reference is made to "Geotechnical Engineer" this designation shall be understood to include either him or his representative.

1.2 PROTECTION

A. Adequate protection measures shall be provided to protect workers and passers-by at the site. Streets and adjacent property shall be fully protected throughout the operations.

B. In accordance with generally accepted construction practices, the Contractor shall be solely and completely responsible for working conditions at the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and shall not be limited to normal working hours.

C. Any construction review of the Contractor's performance conducted by the Geotechnical Engineer is not intended to include review of the adequacy of the Contractor's safety measures, in, on or near the construction site.

D. Adjacent streets and sidewalks shall be kept free of mud, dirt or similar nuisances resulting from earthwork operations.

E. Surface drainage provisions shall be made during the period of construction in a manner to avoid creating a nuisance to adjacent areas.

F. The site and adjacent influenced areas shall be watered as required to suppress dust nuisance.

1.3 GEOTECHNICAL REPORT

A. A Geotechnical Engineering Report Addendum (MPE No. 05040-04; dated August 19, 2024) has been prepared for this site by Mid Pacific Engineering, Inc., Geotechnical Engineers. A copy is available for review at the office of Mid Pacific Engineering, Inc., 6310 State Highway 273, Anderson, California 96007.

B. The information contained in this report was obtained for design purposes only. The Contractor is responsible for any conclusions he/she may draw from this report; should the Contractor prefer not to assume such risk, he/she should employ their own experts to analyze available information and/or to make additional investigations upon which to base their conclusions, all at no cost to the Owner.

1.4 EXISTING SITE CONDITIONS

The Contractor shall be acquainted with all site conditions. If un-shown active utilities are encountered during the work, the Architect shall be promptly notified for instructions. Failure to notify will make the Contractor liable for damage to these utilities arising from Contractor's operations subsequent to the discovery of such un-shown utilities.

1.5 SEASONAL LIMITS

Fill material shall not be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by heavy rains or snow, fill operations shall not be resumed until field tests indicate that the moisture contents of the subgrade and fill materials are satisfactory.

PART 2: PRODUCTS

2.1 MATERIALS

A. All fill shall be of approved local materials from required excavations, supplemented by imported fill, if necessary. Approved local materials are defined as local granular soils free from significant quantities of rubble, rubbish and vegetation, and having been tested and approved by the Geotechnical Engineer prior to use. Clods, rocks or hard lumps exceeding three inches (3") in final size shall not be allowed in the upper twenty-four inches (24") of any fill supporting pavements and structures. Expansive clays shall not be used within the upper twelve inches (12") of the building pad or exterior flatwork subgrades, or subgrades supporting at-grade structures, unless lime-treated.

B. Imported fill materials shall meet the above requirements; shall have plasticity indices not exceeding fifteen (15) when tested in accordance with ASTM D4318 test method; an Expansion Index less than twenty (20) when tested in accordance with ASTM D4829 test method; shall be of three inch (3”) maximum particle size; and, shall be approved by the Geotechnical Engineer prior to transportation to the project site.

C. Import fill shall be clean of contamination with appropriate documentation and shall have corrosion characteristics within acceptable limits. All imported materials shall be sampled, tested and approved by the Geotechnical Engineer prior to being transported to the site.

D. Asphalt concrete, aggregate base, aggregate subbase, and other paving products shall comply with the appropriate provisions of the *State of California (Caltrans) Standard Specifications*, latest editions.

PART 3: EXECUTION

3.1 LAYOUT AND PREPARATION

Lay out all work, establish grades, locate existing underground utilities, set markers and stakes, set up and maintain barricades and protection of utilities--all prior to beginning actual earthwork operations.

3.2 CLEARING, GRUBBING AND PREPARING BUILDING PADS AND PAVEMENT AREAS

A. The site shall be cleared of trees, vegetation, stockpiled soil, and structures designated for removal including but not limited to, concrete slabs, retaining walls, septic tanks and leach fields, utilities to be relocated or abandoned including backfill, debris, rubbish, rubble, and other unsuitable materials. Exposed remnants, rubble and debris shall be removed from the subgrades. Hand picking of exposed roots, rubble and debris shall be performed by the Contractor to adequately clear the grades. Subsurface utilities to be relocated or abandoned shall be removed from within and to at least five feet beyond the perimeter of the proposed structural areas; utilities located outside the building area should be properly abandoned (i.e., fully grouted provided the abandoned utility is situated at least two and one-half feet (2½') below the final subgrade level to reduce the potential for localized "hard spots). Excavations and depressions resulting from the removal of such items, as well as any existing excavations or loose soil deposits, as determined by the Geotechnical Engineer, shall be cleaned out to firm, undisturbed soil and backfilled with suitable materials in accordance with these specifications.

B. Following site clearing operations, over–excavations shall be performed to the depths and lateral extents as recommended in the Geotechnical Engineering Report. Hand picking and/or screening of roots, rubble and debris shall be performed by the Contractor to adequately clear the soils proposed for use in engineered fill construction.

C. Cut portions of building pads consisting of both cut and fill (cut/fill transitions) should be over-excavated so that the difference in fill depths across the pads is less than five feet in vertical extent.

D. Exposed subgrades shall be scarified to a minimum depth of twelve inches (12”) as recommended in the Geotechnical Engineering Report and until the surface is free from ruts, hummocks or other uneven features that would tend to prevent uniform compaction by the selected equipment.

E. Subgrade preparation and compaction shall extend at least five feet (5') beyond the proposed structure or fill boundary lines, or as required by the Geotechnical Engineer based on the exposed soil and site conditions.

F. When the moisture content of the subgrade is below that required to achieve the specified density, and that minimum content recommended in the geotechnical report, water shall be added until the proper moisture content is achieved.

G. When the moisture content of the subgrade is too high to permit the specified compaction to be achieved, the subgrade shall be aerated by blading or other methods until the moisture content is satisfactory for compaction.

H. After the foundations for fill have been cleared, plowed or scarified, they shall be disced or bladed until uniform and free from large clods, brought to the proper moisture content and compacted to not less than ninety percent (90%) of the maximum dry density as determined by the ASTM D1557 Compaction

Test. Soils compaction shall be performed using a heavy, self-propelled sheepsfoot compactor capable of providing adequate compaction (Caterpillar 815 or equivalent size). Compaction operations shall be performed in the presence of the Geotechnical Engineer who will evaluate the performance of the materials under compactive load. Wet, soft or unstable soil deposits, as determined by the Geotechnical Engineer, shall be excavated to depths that expose a firm base and grades restored with engineered fill in accordance with these specifications.

3.3 PLACING, SPREADING AND COMPACTING FILL MATERIAL

A. Engineered fills shall be placed in layers which when compacted shall not exceed six inches (6") in thickness. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to promote uniformity of material in each layer.

B. When the moisture content of the fill material is below that required to achieve the specified density, and that minimum content recommended in the geotechnical report, water shall be added until the proper moisture content is achieved.

C. When the moisture content of the fill material is too high to permit the specified degree of compaction to be achieved, the fill material shall be aerated by blading or other methods until the moisture content is satisfactory.

D. After each layer has been placed, mixed and spread evenly, soils shall be thoroughly compacted to at least ninety percent (90%) of the ASTM D1557 maximum dry density. Soils compaction shall be performed using a heavy, self-propelled sheepsfoot compactor, to the satisfaction of our on-site representative. Each layer shall be compacted over its entire area until the desired density has been obtained. Fills deeper than five feet (5') shall be compacted to at least ninety-five percent (95%) of the ASTM D1557 maximum dry density.

E. Fills placed on or adjacent to sloping ground or where fill slopes are to be constructed shall begin with a base key as required in the Geotechnical Engineering Report. Fills placed on or adjacent to existing slopes, or excavation slopes for over- excavation, shall be properly benched into the side slope, as required by the Geotechnical Engineering Report and as recommended by the Geotechnical Engineer at the time of construction.

F. The filling operations shall be continued until the fills have been brought to the finished slopes and grades as shown on the accepted Drawings.

3.4 FINAL SUBGRADE PREPARATION

A. The upper twelve inches (12") of final building pad subgrade and subgrades supporting exterior concrete flatwork or at-grade structures shall consist of approved on-site or imported granular, non-expansive soils or aggregates placed and compacted as engineered fill. Final building pad and flatwork subgrades slabs shall be brought to a uniform moisture content of at least the optimum, and shall be uniformly compacted to at least ninety percent (90%) relative compaction.

B. The upper six inches (6") of final exterior slabs subgrades supporting vehicular traffic shall be brought to a uniform moisture content of at least the optimum moisture content and shall be uniformly compacted to at least ninety-five percent (95%) relative compaction, regardless of whether final subgrade elevations are attained by filling, excavation, or are left at existing grades. Pavement subgrades shall be proof-rolled in the presence of the Geotechnical Engineer prior to placement of aggregate base and shall be stable under construction equipment traffic.

3.5 TRENCH BACKFILL

Utility trench backfill shall be placed in lifts of no more than six inches (6") in compacted thickness. Each lift shall be compacted to at least ninety percent (90%) compaction, as defined by ASTM D1557. The upper six inches (6") of trench backfill supporting pavement sections shall be compacted to at least ninety-five percent (95%) relative compaction. The upper twelve inches (12") of trench backfill shall match the materials used to construct final building pad subgrade and subgrades supporting exterior concrete flatwork or at-grade structures.

3.6 TESTING AND OBSERVATION

A. Grading operations shall be observed by the Geotechnical Engineer, serving as the representative of the Owner.

B. Field density tests shall be made by the Geotechnical Engineer after compaction of each layer of fill. Additional layers of fill shall not be spread until the field density tests indicate that the minimum specified density has been obtained.

C. Earthwork shall not be performed without the notification or approval of the Geotechnical Engineer. The Contractor shall notify the Geotechnical Engineer at least two (2) working days prior to commencement of any aspect of the site earthwork.

D. If the Contractor should fail to meet the technical or design requirements embodied in this document and on the applicable plans, the Contractor shall make the necessary readjustments until all work is deemed satisfactory, as determined by the Geotechnical Engineer and the Project Design Engineer. No deviation from the specifications shall be made except upon written approval of the Geotechnical Engineer or Project Design Engineer.

//

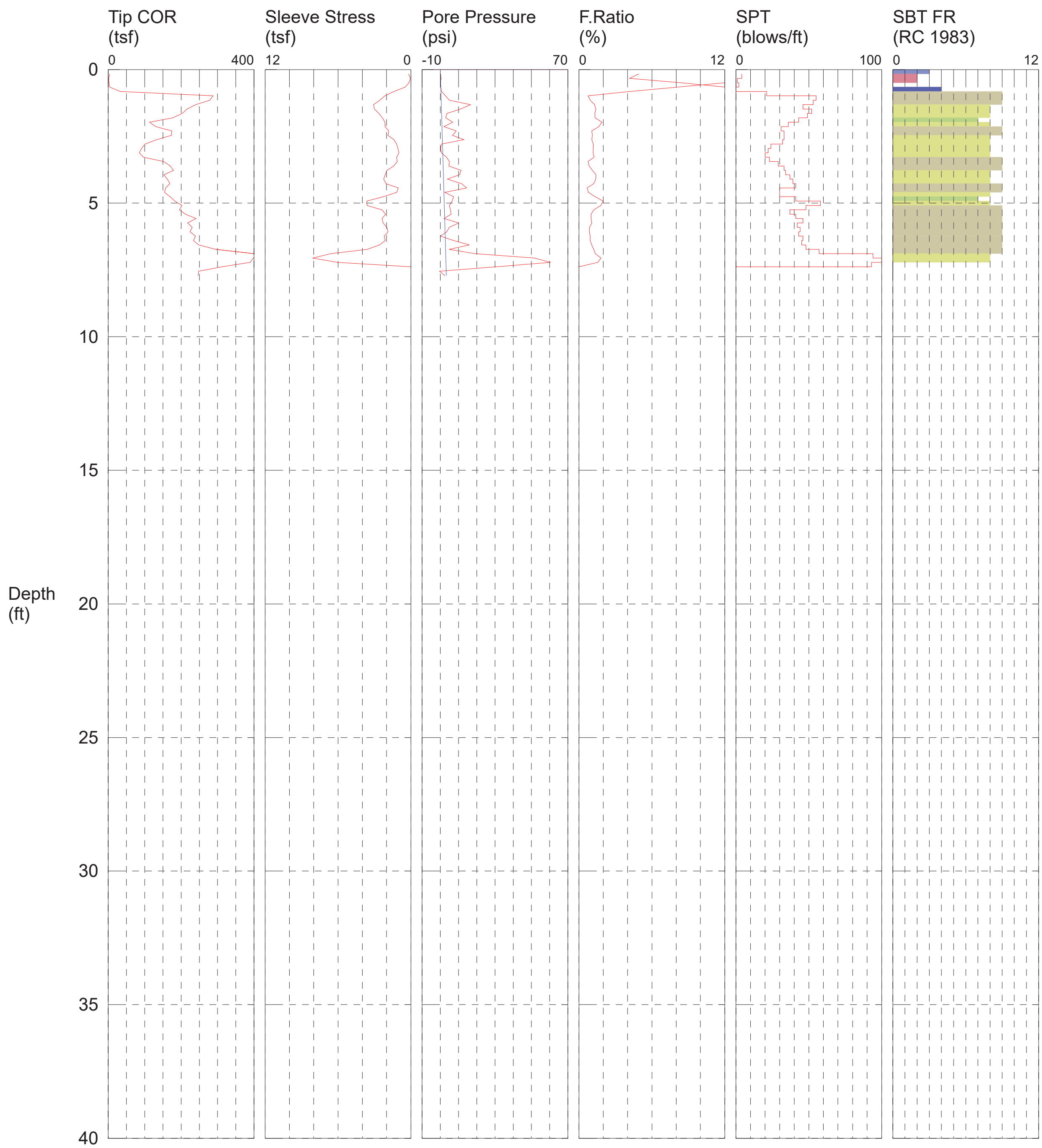
APPENDIX C

SOUNDING

SOUNDING
CUSTOMER: Taber Drilling
OPERATOR: David
CONE ID: DDG1570
LOCATION:

JOB NUMBER:
HOLE NUMBER: CPT-1
TEST DATE: 6/27/2024 9:31:10 AM
COMMENT: Auto Enhance On
COMMENT: Filter On

COMMENT:
GPS (LAT,LON,ALT): 0.00,0.00,0.0
LOCATION:
LOCATION:
LOCATION:



1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

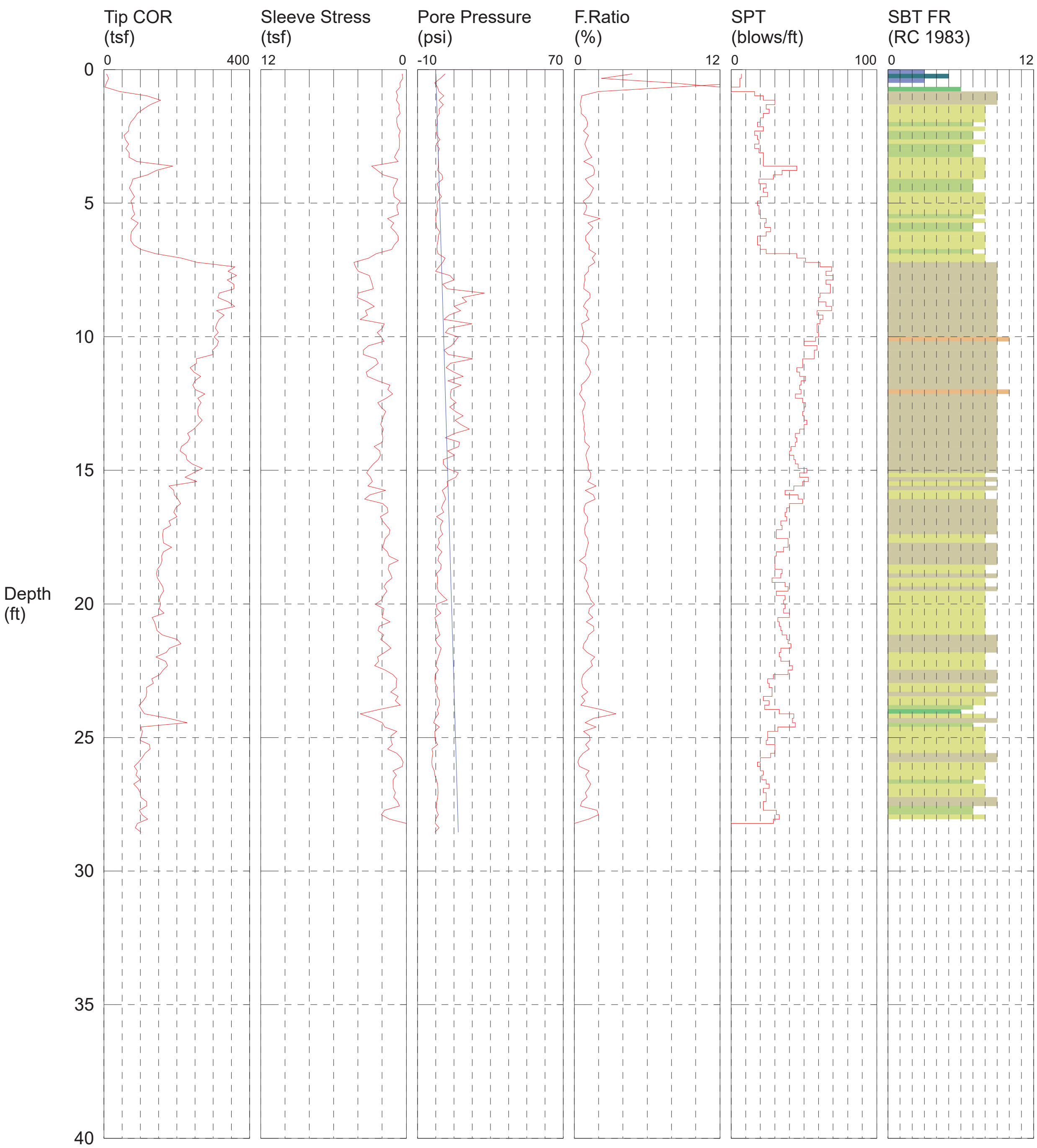
*SBT/SPT CORRELATION: UBC-1983

SOUNDING

SOUNDING
CUSTOMER: Taber Drilling
OPERATOR: David
CONE ID: DDG1570
LOCATION:

JOB NUMBER:
HOLE NUMBER: CPT-1a
TEST DATE: 6/27/2024 10:16:07 AM
COMMENT: Auto Enhance On
COMMENT: Filter On

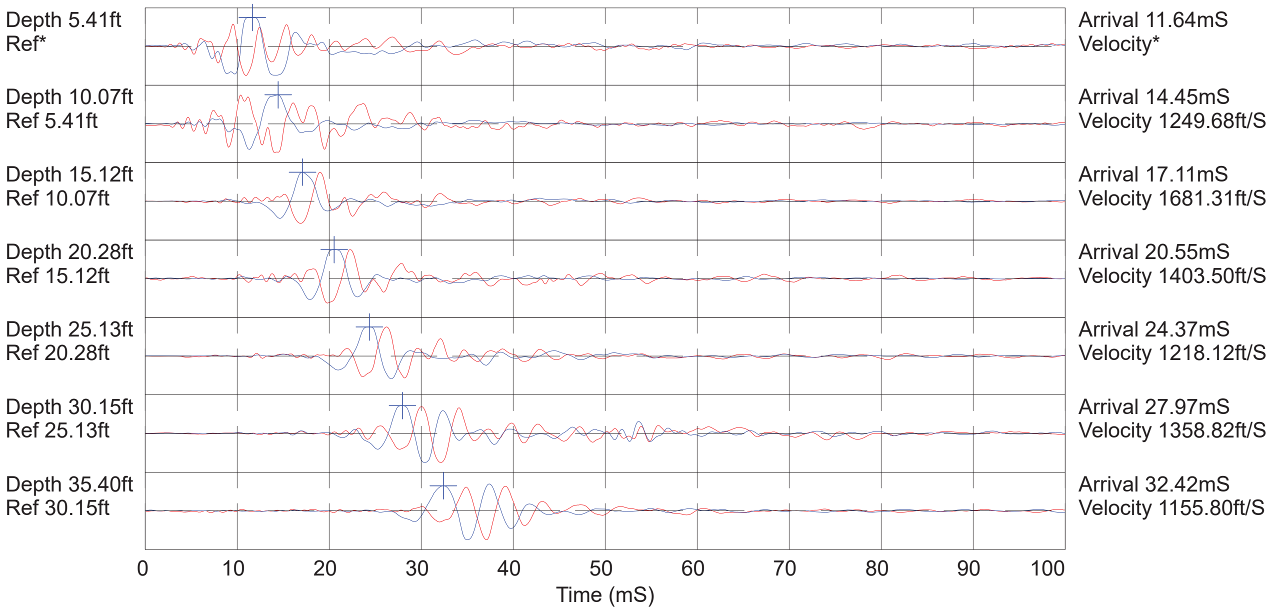
COMMENT:
GPS (LAT,LON,ALT): 0.00,0.00,0.0
LOCATION:
LOCATION:
LOCATION:



1	sensitive fine grained	4	silty clay to clay	7	silty sand to sandy silt	10	gravelly sand to sand
2	organic material	5	clayey silt to silty clay	8	sand to silty sand	11	very stiff fine grained (*)
3	clay	6	sandy silt to clayey silt	9	sand	12	sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

SEISMIC TEST



Hammer to Rod String Distance (ft): 6.56
* = Not Determined

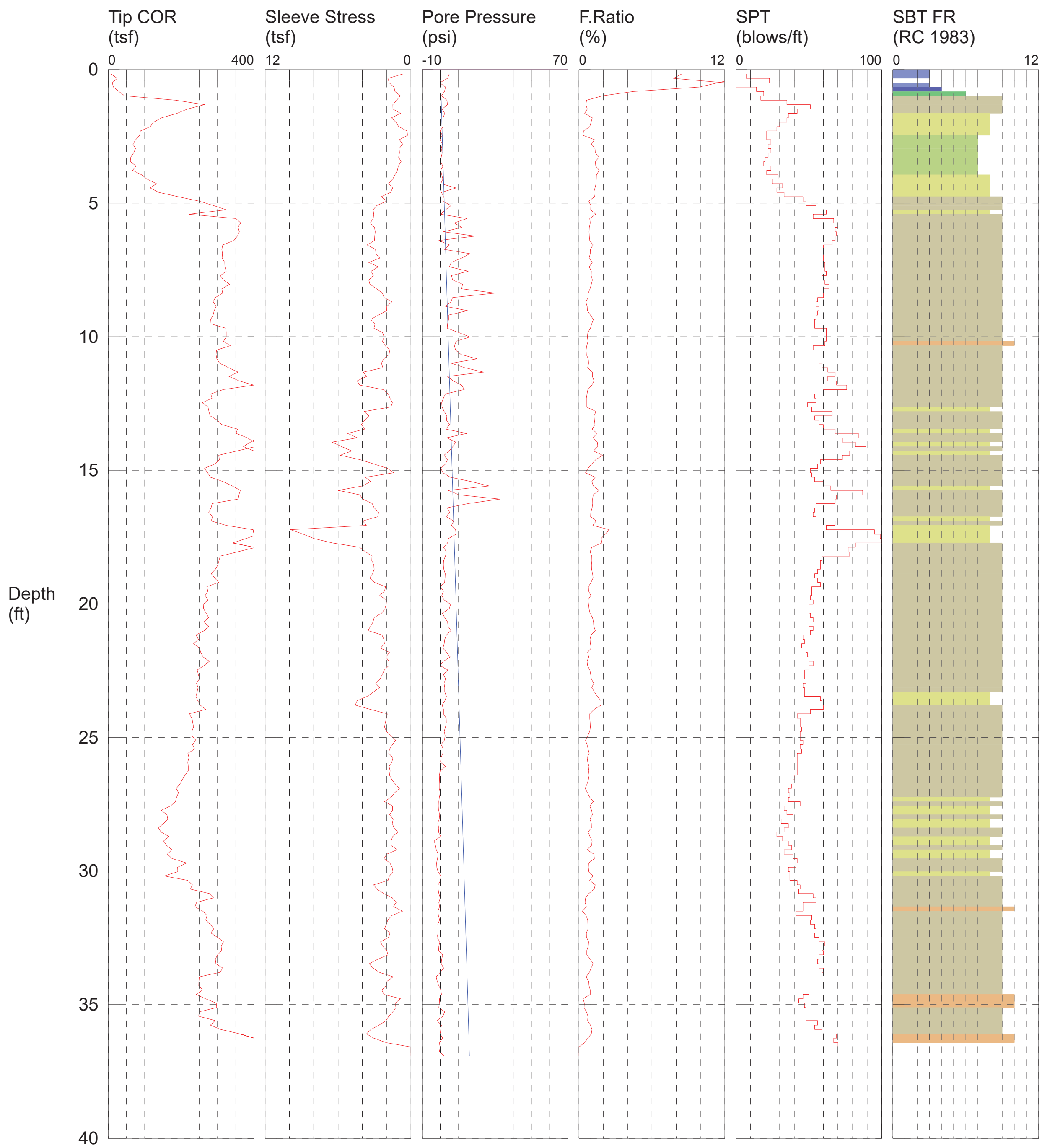
COMMENT:

SOUNDING

SOUNDING
CUSTOMER: Taber Drilling
OPERATOR: David
CONE ID: DDG1570
LOCATION:

JOB NUMBER:
HOLE NUMBER: CPT-2
TEST DATE: 6/27/2024 11:05:54 AM
COMMENT: Auto Enhance On
COMMENT: Filter On

COMMENT:
GPS (LAT,LON,ALT): 0.00,0.00,0.0
LOCATION:
LOCATION:
LOCATION:



1 sensitive fine grained	4 silty clay to clay	7 silty sand to sandy silt	10 gravelly sand to sand
2 organic material	5 clayey silt to silty clay	8 sand to silty sand	11 very stiff fine grained (*)
3 clay	6 sandy silt to clayey silt	9 sand	12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

SOUNDING

SOUNDING
CUSTOMER: Taber Drilling
OPERATOR: David
CONE ID: DDG1570
LOCATION:

JOB NUMBER:
HOLE NUMBER: CPT-3
TEST DATE: 6/27/2024 12:13:59 PM
COMMENT: Auto Enhance On
COMMENT: Filter On

COMMENT:
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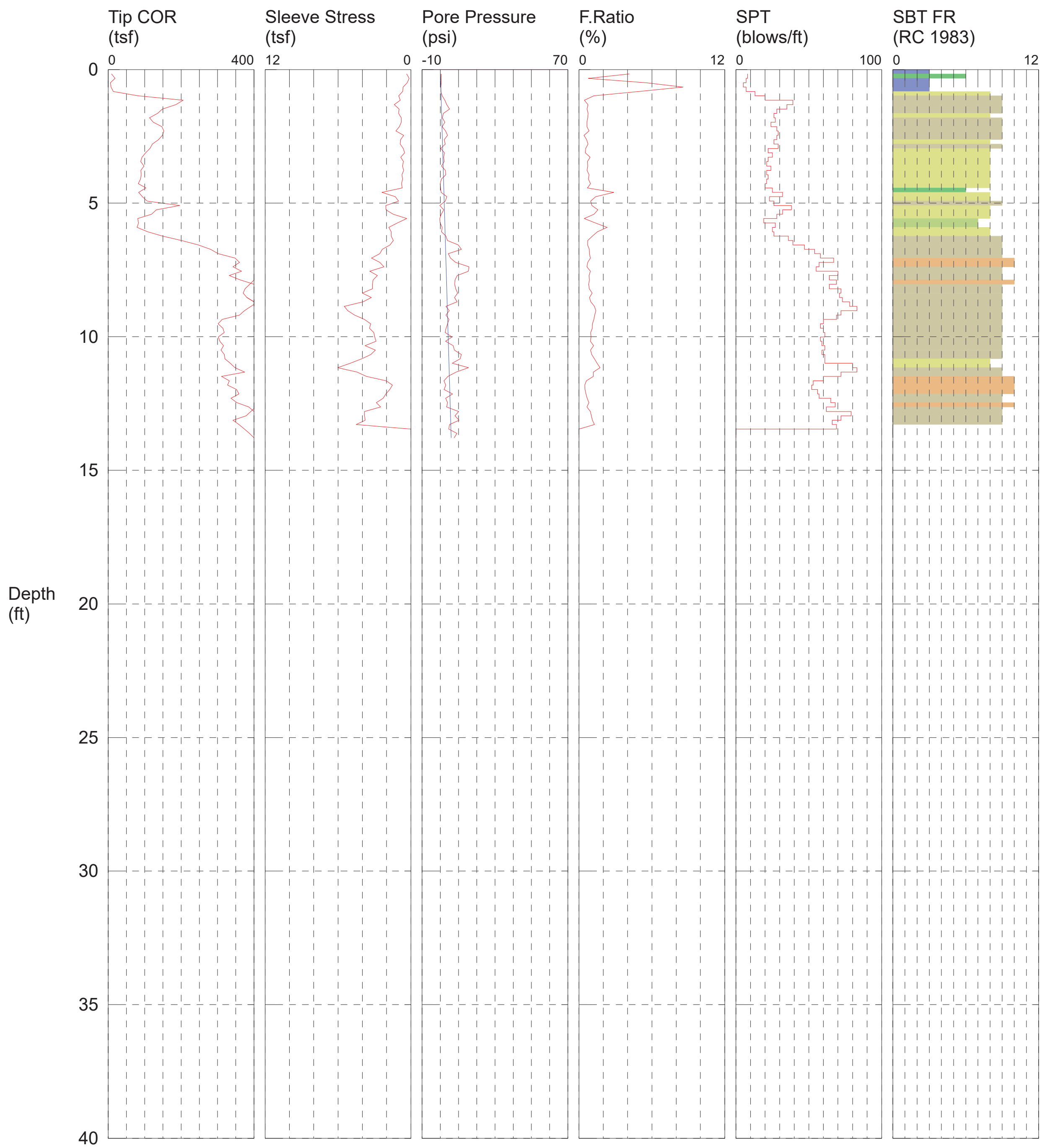
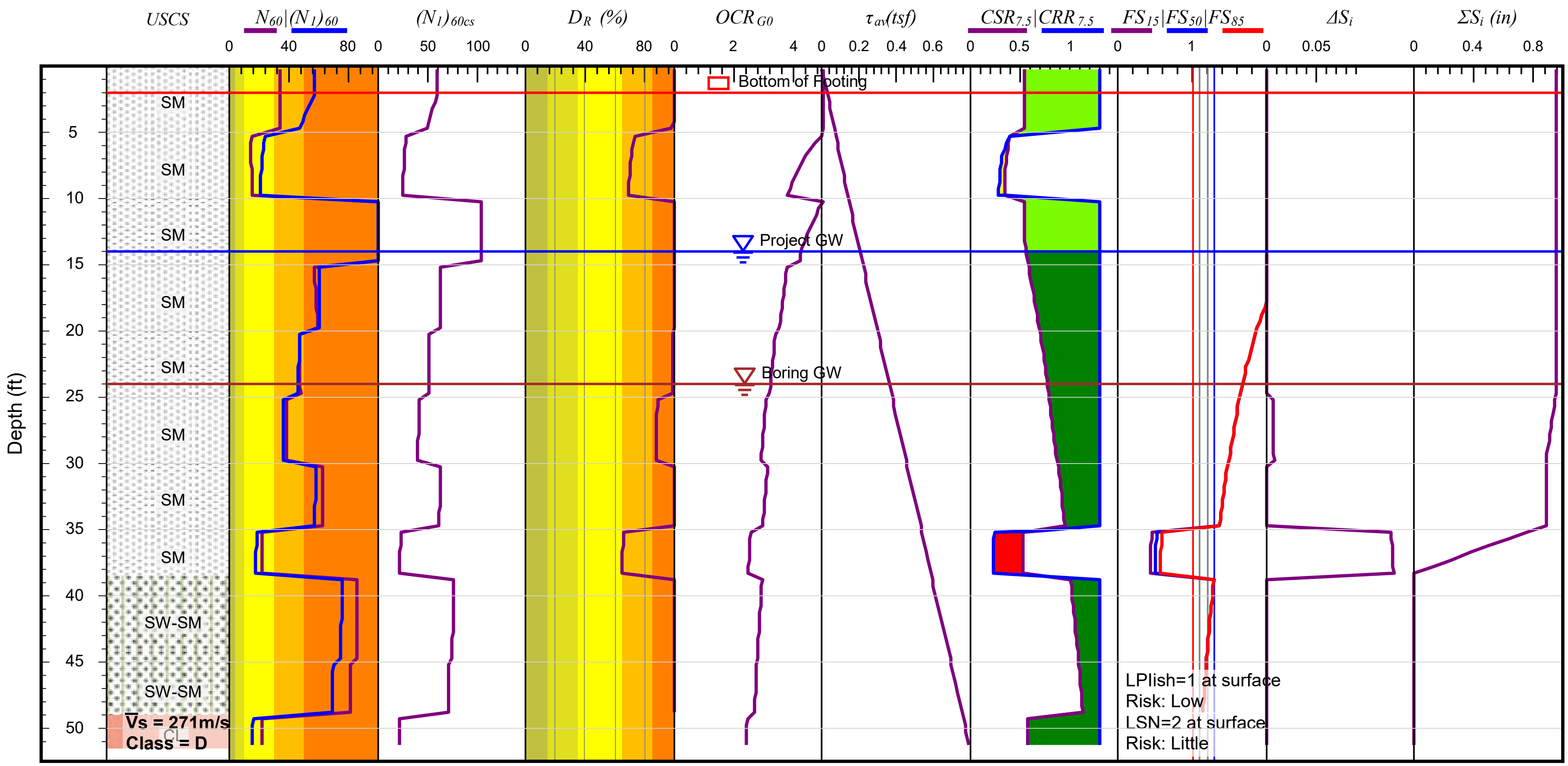
LOCATION:
LOCATION:
LOCATION:



1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

APPENDIX D



SM

SW-SM

CL

Silt Correction:
UCLA method

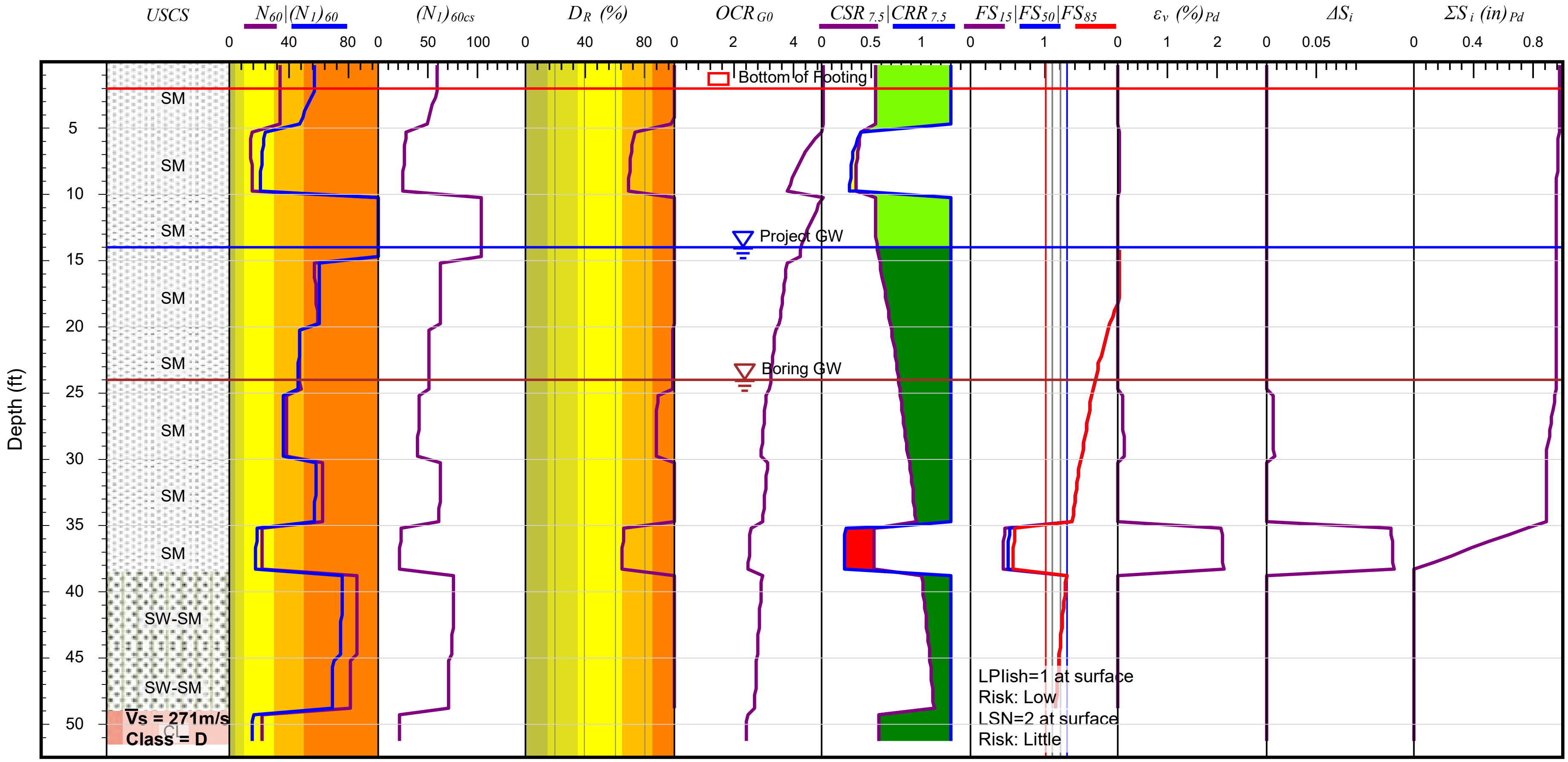
Earthquake & Groundwater Information:
Magnitude = 9.34
Max. Acceleration = 0.379 g
Project GW = 14 ft
Maximum Settlement = 0.95 in
Settl. at Bottom of Footing = 0.95 in

Liquefaction: Boulanger & Idriss (2010-16)
Settl.: [dry] Yi (2022); [sat] Idriss & Boulanger (2008)
Lateral spreading: Idriss & Boulanger (2008)
M correction: [Sand; Clay] Boulanger & Idriss(2004)
σv correction: Idriss & Boulanger (2008)
Stress reduction: Idriss & Boulanger (2008)

MPE
MID PACIFIC ENGINEERING, INC.

Liquefaction Potential - SPT Data			
Project:	College of the Siskiyoius Student Housing Facility		
Location:	Weed, CA		
Project No.: 05040-04	Boring No.: D-3	Figure:	D-1

R:\05000-00 through 05099-00\05040-04 - College of the Siskiyous Student Housing Facility\4 - GER & Correspondence\Data & Analysis\GeoSuite\GeoSuite_05040-04_D-3.csv



SM

SW-SM

CL

Silt Correction:
UCLA method

Earthquake & Groundwater Information:
Magnitude = 9.34
Max. Acceleration = 0.379 g
Project GW = 14 ft
Maximum Settlement = 0.97 in
Settl. at Bottom of Footing = 0.97 in

Liquefaction: Boulanger & Idriss (2010-16)
Settl.: [dry] Pradel (1998); [sat] Idriss & Boulanger (2008)
Lateral spreading: Idriss & Boulanger (2008)
M correction: [Sand; Clay] Boulanger & Idriss(2004)
σv correction: Idriss & Boulanger (2008)
Stress reduction: Idriss & Boulanger (2008)

MID PACIFIC ENGINEERING, INC.

Seismic Settlement Potential - SPT Data

Project:	College of the Siskiyoius Student Housing Facility				
Location:	Weed, CA				
Project No.:	05040-04	Boring No.:	D-3	Figure:	D-2

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APPENDIX E

THEORY AND METHODOLOGY OF LIQUEFACTION AND SEISMIC SETTLEMENT

LIQUEFACTION POTENTIAL

Liquefaction is a process in which strong ground shaking causes saturated soils to lose their strength and behave as a fluid. Ground failure associated with liquefaction can result in severe damage to structures. Soil types susceptible to liquefaction include sand, silty sand, sandy silt and silt, as well as soils having a plasticity index (PI) less than 7 (Boulanger and Idriss, 2006). Loose soils with a PI less than 12 and moisture content greater than 85 percent of the liquid limit are also susceptible to liquefaction (Bray and Sancio, 2006). For sandy soils, the geologic conditions for increased susceptibility to liquefaction are: 1) shallow groundwater (generally less than 50 feet in depth), 2) the presence of unconsolidated sandy alluvium, typically Holocene in age, and 3) strong ground shaking. All three of these conditions must be present for liquefaction to occur.

For clayey soils, recent studies indicate that deposits of clays and plastic silts (i.e., cohesive soils) have also experienced failure during earthquakes (Idriss and Boulanger, 2008). This kind of failure is called cyclic softening. "The term cyclic softening is used in reference to strength loss and deformation in clays and plastic silts, while the term liquefaction is used in reference to strength loss and deformation in saturated sands and other cohesionless soils. As such, the terms cyclic softening and liquefaction can also be used in reference to the engineering procedures that have been developed for these respective soil types" (Idriss and Boulanger, 2008).

Liquefaction potential can usually be evaluated based on the SPT, CPT or shear wave velocity data and using the simplified procedure described by Seed and Idriss (1971, 1982), Seed and others (1985), modified in the 1996 National Center for Earthquake Engineering Research (NCEER) and 1998 NCEER/National Science Foundation (NSF) workshops (Youd and Idriss, 2001), and as recently summarized by Idriss and Boulanger (2008). The method of evaluating liquefaction potential consists of comparing the cyclic stress ratio (CSR) developed in the soil by the earthquake motion to cyclic resistance ratio (CRR), which will cause liquefaction of the soil for a given number of cycles. In the simplified procedure, the CSR developed in the soil is calculated from a formula that incorporates ground surface acceleration, total and effective stresses in the soil at different depths (which in turn are related to the location of the groundwater table), non-rigidity of the soil column and a number of simplifying assumptions.

For sandy soils, the CRR that will cause liquefaction is related to the relative density of the soil, expressed in terms of SPT blowcounts (N1)60 (Seed and Idriss, 1982; Seed and others, 1985; Youd and Idriss, 2001; Idriss and Boulanger, 2008), cone penetration resistance (qc1N) (Robertson and Wride, 1998; Youd and Idriss, 2001; Idriss and Boulanger, 2008) or shear wave velocity (Vs1) (Andrus and Stokoe, 2000; Youd and Idriss, 2001; Andrus and others, 2004), all normalized for an effective overburden pressure of 1 ton per square foot and corrected to equivalent clean sand resistance. For clayey soils, the CRR is related to cyclic undrained shear strength ratio, s_u/σ_{vc}' (Idriss and Boulanger, 2008). All of these methods are incorporated into a liquefaction and seismic settlement program, GeoSuite©, version 2.4 (Yi, 2018).

SEISMIC SETTLEMENT

Prediction of seismic-induced settlement is also very important. Seismic-induced settlement includes settlement that occurs both in dry sands and saturated sands (California Geological Survey, 2008). Severe seismic shaking may cause dry sands to densify, resulting in settlement expressed at the ground surface. Seismic settlement in dry soils generally occurs in loose sands and silty sands, with cohesive and fine-grained soils being less prone to significant settlement. For saturated soils, significant settlement is anticipated if the soils exhibit liquefaction during seismic shaking.

The methods for evaluating seismic settlement in saturated sands can generally be classified into two groups. The method for the first group was developed during the 1970s and 1980s, generally based on the relationship between cyclic stress ratio, $(N_1)_{60}$, and volumetric strain (Silver and Seed, 1971; Lee and Albaisa, 1974; and Tokimatsu and Seed, 1987). The method for the second group was developed in the early 1990s with the paper by Ishihara and Yoshimine (1992) as the first publication in the category, modified and improved by various researchers (Robertson and Wride, 1998; Yoshimine et al., 2006; Idriss and Boulanger, 2008; and Yi, 2010), and is generally based on the relationship between volumetric strain and the factor of safety for liquefaction. Idriss and Boulanger (2008) modified the methods to incorporate both SPT and CPT data. Yi (2010) modified the methods to incorporate shear wave velocity data.

Research related to the estimation of dry sand settlement during earthquake excitation was initiated in the early 1970s by Silver and Seed (1971), followed by the works of several researchers (Seed and Silver, 1972; Pyke et al., 1975; Tokimatsu and Seed, 1987; and Pradel, 1998). A simplified method of evaluating earthquake-induced settlements in dry, sandy soils based on the Tokimatsu and Seed procedure has been developed by Pradel (1998) and is recommended by Martin and Lew (1999) as one of the standard methods for the estimation of earthquake-induced settlements of dry sands in California.

In recent years, serious research was performed by the University of California, Los Angeles (Duku et al. 2008; Yee et al. 2014; Stewart, 2014), and a new volumetric strain material model (VSMM) was proposed. The new UCLA VSMM was developed based on a series of laboratory test results and is able to consider the effects of overburden pressure, fines contents and degree of saturation. This new model was utilized for a new based-isolated new hospital, Loma Linda University Medical Center Campus Transformation Project, and approved by California's Office of Statewide Health Planning and Development (OSHPD). All of these methods generally utilize SPT data. Utilizing the test results of Silver and Seed (1971), Yi extended the application of the procedures for both CPT (Yi, 2010a) and V_s data (Yi, 2010b, 2010c). These methods are also incorporated into a liquefaction and seismic settlement program, GeoSuite©, version 2.5 (Yi, 2020).

SURFACE MANIFESTATION OF LIQUEFACTION

Ishihara (1985) published a paper containing observations on the protective effect that an upper layer of non-liquefied material had against the manifestation of liquefaction at the ground surface. The paper contained graphs that plotted thickness of the upper non-liquefied layer (H_1) and the thickness of underlying liquefied material (H_2). The maximum acceleration is 400 to 500 gal in Ishihara's graph. The term "surface manifestation" is utilized to describe liquefaction-induced surface damage.

A quantitative method using an index called the liquefaction potential index (LPI) was developed and presented by Iwasaki (1978, 1982). The LPI is defined as:

$$\mathrm{LPI} = \int_0^{20} \mathrm{F}_1\, \mathrm{W(z)dz}$$

where $W(z) = 10 - 0.5z$, $F_1 = 1 - FS$ for $FS < 1.0$, $F_1 = 0$ for $FS > 1.0$ and z is the depth below the ground surface in meters. The LPI presents the risk of liquefaction damage as a single value with the following indicators of liquefaction-induced damage:

LPI Range and Damage	
LPI Range	Damage
LPI = 0	Liquefaction risk is very low.
0 < LPI ≤ 5	Liquefaction risk is low.
5 < LPI ≤ 10	Liquefaction risk is medium.
10 < LPI ≤ 15	Liquefaction risk is high.
LPI > 15	Liquefaction risk is very high.

The original liquefaction potential index (LPI) was improved by Maurer et al (2015) by assessing liquefaction hazard utilizing the Ishihara (1985) boundary curves for liquefaction surface effects. The new index is named Ishihara-inspired index, LPI_{ISH}.

$$\mathrm{LPI}_{ISH} = \int_0^{20} F(FS)\frac{25.56}{z}\,\mathrm{dz}$$

where

$$F(FS) = \begin{cases} 1 - FS\ if\ FS \leq 1\ \cap\ H_1 \cdot m(FS) \leq 3 \\ 0\ otherwise \end{cases}$$

and

$$m(FS) = \exp\left(\frac{5}{25.56(1 - FS)}\right) - 1$$

The most recent development for quantitative descriptions of liquefaction-induced surface damage, called "liquefaction vulnerability," was made by Tonkin & Taylor (2013) after the Christchurch earthquakes occurred between 2010 and 2011 and was based on field observations and analyses of approximately 7,500 cone penetrometer test (CPT) investigations. A new index, the liquefaction severity number (LSN), was proposed and defined as:

$$\mathrm{LSN} = \int \frac{\varepsilon_v}{z}\,\mathrm{dz}$$

where ε_v is the calculated volumetric densification strain in the subject layer from Zhang et al. (2002) and z is the depth to the layer of interest in meters below the ground surface. The typical behaviors of sites with a given LSN are summarized in following table.

LSN Ranges and Observed Land Effects	
LSN Range	**Predominant Performance**
0 – 10	Little to no expression of liquefaction, minor effects
10 – 20	Minor expression of liquefaction, some sand boils
20 – 30	Moderate expression of liquefaction, with sand boils and some structural damage
30 – 40	Moderate to severe expression of liquefaction, settlement can cause structural damage
40 – 50	Major expression of liquefaction, undulations and damage to ground surface, severe total and differential settlement of structures
>50	Severe damage, extensive evidence of liquefaction at surface, severe total and differential settlements affecting structures, damage to services

REFERENCES

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SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.
2. Sliding doors.
3. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical door hardware.
3. Automatic operators.
4. Cylinders specified for doors in other sections.

C. Related Sections:

1. Division 08 Section “Hollow Metal Doors and Frames”.
2. Division 08 Section “Flush Wood Doors”.
3. Division 08 Section “Aluminum-Framed Entrances and Storefronts”.
4. Division 28 Section “Access Control Hardware Devices”.

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. CBC - California Building Code.
2. CEC - California Electrical Code.
3. NFPA 80 - Fire Doors and Windows.
4. NFPA 101 - Life Safety Code.
5. NFPA 105 - Installation of Smoke Door Assemblies.
6. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.

2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
3. ANSI/UL 294 - Access Control System Units.
4. UL 305 - Panic Hardware.
5. ANSI/UL 437- Key Locks.

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing, fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:

    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.
    h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
b. Complete (risers, point-to-point) access control system block wiring diagrams.
c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

E. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

1.4 CLOSEOUT SUBMITTALS

A. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

B. Project Record Documents: Provide record documentation of as-built door hardware sets in digital format (.pdf, .docx, .xlsx, .csv) and as required in Division 01, Project Record Documents.

1.5 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

F. California Building Code: Provide hardware that complies with CBC Section 11B.

1. All openings as a part of an accessible route shall comply with CBC Section 11B-404.
2. The clear opening width for a door shall be 32” minimum. For a swinging door it shall be measured between the face of the door and the stop, with the door open 90 degrees. There shall be no projections into it below 34” and 4” maximum projections into it between 34” and 80” above the finish floor or ground. Door closers and stops shall be permitted to be 78” minimum above the finish floor or ground. CBC Section 11B-404.2.3.
3. Operable hardware on accessible doors shall comply with CBC Section 11B-309.4 and shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. Operable parts of such hardware shall be 34” minimum and 44” maximum above finish floor or ground. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable from both sides.
4. Hardware (including panic hardware) shall not be provided with “nightlatch” function for any accessible doors or gates unless the following conditions are met:

   a. Such hardware has a ‘dogging’ feature and is dogged during the time the facility is open.
   b. All ‘dogging’ operation is performed only by employees as their job function (non-public use).

5. The force for pushing or pulling open a door shall be in accordance with CBC Section 11B-404.2.9.

   a. Interior hinged doors, sliding or folding doors, and exterior hinged doors: 5 pounds (22.2 N) maximum. Required fire doors: the minimum opening force allowable by the DSA authority, not to exceed 15 pounds (66.7N). These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position.

b. The force required for activating any operable parts, such as lever hardware, or disengaging other devices shall be 5 pounds (22.2N) maximum to comply with CBC Section 11B-309.4.
c. The 5 pound (22.2 N) maximum force shall be validated for the size of the door used. The Building Materials Listing of the California State Fire Marshal shall indicate that the door hardware meets the 5 pound (22.2 N) force and shall also list the largest door that can be used.

6. Door closing speed shall comply with CBC Section 11B-404.2.8. Closers shall be adjusted so that the required time to move a door from an open position of 90 degrees to a position of 12 degrees from the latch is 5 seconds minimum. Spring hinges shall be adjusted so that the required time to move a door from an open position of 70 degrees to the closed position is 1.5 seconds minimum.
7. Floor stops shall not be located in the path of travel and 4" maximum from walls.
8. Thresholds shall comply with CBC Section 11B-404.2.5.

G. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.

H. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

I. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

J. At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved schedule.

1.6 DELIVERY, STORAGE AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.7 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.

C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.8 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 BUTT HINGES

A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:

    a. Two Hinges: For doors with heights up to 60 inches.
    b. Three Hinges: For doors with heights 61 to 90 inches.
    c. Four Hinges: For doors with heights 91 to 120 inches.
    d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

    a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
    b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

    a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
    b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following:

    a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for all out-swinging lockable doors.

5. Manufacturers:

    a. McKinney (MK) - TA/T4A Series, 5-knuckle.

2.2 CONTINUOUS HINGES

A. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:.

a. Pemko (PE).

2.3 POWER TRANSFER DEVICES

A. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Manufacturers:

a. Pemko (PE) - EL-CEPT Series.
b. Securitron (SU) - EL-CEPT Series.

B. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:

a. McKinney (MK) - Electrical Connecting Kit: QC-R001.
b. McKinney (MK) - Connector Hand Tool: QC-R003.

2. Manufacturers:

a. McKinney (MK) - QC-C Series.

2.4 DOOR OPERATING TRIM

A. Door Push Plates and Pulls: ANSI/BHMA A156.6 door pushes and pull units of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Pulls, where applicable, shall be provided with a 10" clearance from the finished floor on the push side to accommodate wheelchair accessibility.
5. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets. When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.
6. Manufacturers:

   a. Rockwood (RO).

2.5 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:

1. Threaded mortise cylinders with rings and cams to suit hardware application.
2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
4. Tubular deadlocks and other auxiliary locks.
5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
6. Keyway: Match Facility Restricted Keyway.

C. Security Cylinders: ANSI/BHMA A156.5, Grade 1 Certified Products Directory (CPD) listed security cylinders and keys able to be used together under the same facility master or grandmaster key system.

1. New security key systems shall not be established with products that have an expired patent. Expired systems shall only be specified and supplied to support existing systems.
2. Manufacturers:

a. Schlage (SC) - Primus Everest.

D. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. Existing System: Field verify and key cylinders to match Owner's existing system.

E. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).

F. Construction Keying: Provide construction master keyed cylinders.

2.6 MORTISE LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): Provide ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed mortise locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:

a. Sargent Manufacturing (SA) - 8200 Series.

2.7 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.8 ELECTRIC STRIKES

A. Standard Electric Strikes: Electric strikes conforming to ANSI/BHMA A156.31, Grade 1, for use on non-rated or fire rated openings. Strikes shall be of stainless steel construction tested to a minimum of 1500 pounds of static strength and 70 foot-pounds of dynamic strength with a minimum endurance of 1 million operating cycles. Provide strikes with 12 or 24 VDC capability, fail-secure unless otherwise specified. Where specified provide latchbolt and latchbolt strike monitoring indicating both the position of the latchbolt and locked condition of the strike.

1. Manufacturers:

a. HES (HS) - 1500/1600 Series.

B. Provide electric strikes with in-line power controller and surge suppressor by the same manufacturer as the strike with the combined products having a five year warranty.

2.9 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. Exit devices shall have a five-year warranty.
2. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
3. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.
4. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
5. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.

a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.

8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed exit devices. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide exit devices with functions and features as follows:

   a. Where required by code, provide knurling or abrasive coating on all levers leading to hazardous areas.
   b. Meets UL and CUL Standard 10C Positive Pressure, Fire Test of Door Assemblies with levers that meet A117.1 Accessibility Code.
   c. No catch points: addition of applied deflectors or other added components are not allowed.
   d. No visible plastic.
   e. Heavy duty end caps with flush and overlapping options made of stainless steel, brass, or bronze with architectural finishes.
   f. Constructed of all stainless steel.
   g. Stainless steel pullman type latch with deadlock feature.
   h. Narrow or wide style exterior trim as specified in the hardware sets.
   i. Center case adjustability on concealed vertical rod exit devices; single operation with hex key individually adjusts top or bottom latches. No retainer screws or clips required to maintain adjustment.
   j. Ten-year limited warranty for mechanical features.

2. Electromechanical exit devices shall have the following functions and features:

   a. Universal Molex plug-in connectors that have standardized color-coded wiring and are field configurable in fail safe or fail secure and operate from 12vdc to 24vdc regulated.
   b. Wire routing for all non-access control electromechanical functions and EcoFlex trim to be contained within the carrier of the device eliminating the need for cavities in doors to be drilled. Include a protective film so that wires don't get damaged if the rail needs to be removed.
   c. EcoFlex or equivalent technology that reduces energy consumption up to 92% as certified by GreenCircle.
   d. Options to be available for request-to-exit or enter signaling, latchbolt and touchbar monitoring.
   e. Field configurable electrified trim to fail-safe or fail-secure that operates from 12-24VDC.

3. Manufacturers:

   a. Sargent Manufacturing (SA) - PE80 Series.

2.10 SURFACE DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

1. Heavy duty surface mounted door closers shall have a 30-year warranty.

2. Manufacturers:

   a. Norton Rixson (NO) - 7500 Series.
   b. Sargent Manufacturing (SA) - 351 Series.

C. Door Closers, Surface Mounted (Standard Duty): ANSI/BHMA 156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, institutional grade door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck, closing sweep, and latch speed control valves. Provide non-handed units standard.

1. Manufacturers:

   a. Sargent Manufacturing (SA) - 1331 Series.
   b. Norton Rixson (NO) - 210 Series

2.11 ELECTROMECHANICAL DOOR OPERATORS

A. Electromechanical Door Operators (Moderate Traffic): Provide ANSI/BHMA A156.19 Certified Products Directory (CPD) listed low energy operators that are UL325/991 certified and comply with requirements for the Americans with Disabilities Act (ADA). Operators shall accommodate openings up to 200 pounds and 48" wide.

1. Provide operators with features as follows:

   a. Non-handed with push and pull side mounting.
   b. Activation by wall switch, hands-free or radio frequency devices.
   c. Adjustable opening force and closing power.
   d. Two-year limited warranty.
   e. Wi-Fi interface where the operator is a secure, password protected WiFi hot spot with no connection to building's IT required.
      1) Simple setup with no app required.
      2) View status and make adjustments without removing the cover.
      3) Built-in logic to support single use restroom applications with no external relay boards, logic modules, position switches required.
   f. Mounting backplate to simplify and speed up installation.

2. Operators shall have the following functionality:

   a. Adjustable Hold Open: Amount of time a door will stay in the full open position after an activation.
   b. Infinite Hold Open: Door will hold open at set position until power is turned off.
   c. Latch Assist: At closed position, after an activation, the door is pulled in. After the door has closed, the door is pulled in to assist with latch release/engagement.
   d. Obstruction Detection: Door closes if it hits an obstruction while opening; door will reverse to open position if it hits an obstruction while closing. Door will stop once it hits an obstruction and will rest against the obstruction until removed.
   e. Open Delay: Delays operator opening for locking hardware.
   f. Outside Wall Switch Disable: When contact is closed, outside wall switch is disabled.
   g. Power Close: Additional force to assist door closing between 7° and 2°.
   h. Presence Detector Input: Input for external sensor to detect presence at door open or close position only.
   i. Selector Mode Switch: Off disables the signal inputs unless Blow Open is activated, on activates the signal inputs, hold open activates the unit (unless Blow Closed is activated) to the hold open position.
   j. Restroom Function: Built-in, configurable operator logic to support single use restroom applications without the need for external relays, logic modules, or door position switches.

k. Executive Mode Feature: When the door receives an activation signal it opens and remains open until either a second signal is received, or the door is manually moved in closing direction.

3. Manufacturers:

a. Norton Rixson (NO) - 5200 Series.

B. Electromechanical Door Operators (High Traffic): Provide ANSI/BHMA A156.19 Certified Products Directory (CPD) listed low energy operators that are UL325/991 and UL10C certified and comply with requirements for the Americans with Disabilities Act (ADA). Operators shall accommodate openings up to 250 pounds and 48” wide.

1. Provide operators with features as follows:

a. Non-handed with push and pull side mounting.
b. Activation by push button, hands-free or radio frequency devices.
c. Adjustable opening force and closing power.
d. Two-year limited warranty.
e. Wi-Fi interface where the operator is a secure, password protected WiFi hot spot with no connection to building’s IT required.
   1) Simple setup with no app required.
   2) View status and make adjustments without removing the cover.
   3) Built-in logic to support single use restroom applications with no external relay boards, logic modules, position switches required.
f. Mounting backplate to simplify and speed up installation.
g. Integration with access control systems.

2. Operators shall have the following functionality:

a. Adjustable Hold Open: Amount of time a door will stay in the full open position after an activation.
b. Blow Open for Smoke Ventilation: Door opens when signal is received from alarm system allowing air or smoke to flow through opening. Door will stay open until signal from alarm system is stopped.
c. Emergency Interface Relay: Door closes and ignores any activation input until signal is discontinued.
d. Infinite Hold Open: Door will hold open at set position until power is turned off.
e. Latch Assist: At closed position, after an activation, the door is pulled in. After the door has closed, the door is pulled in to assist with latch release/engagement.
f. Obstruction Detection: Door closes if it hits an obstruction while opening; door will reverse to open position if it hits an obstruction while closing. Door will stop once it hits an obstruction and will rest against the obstruction until removed.
g. Open Delay: Delays operator opening for locking hardware.
h. Outside Wall Switch Disable: When contact is closed, outside wall switch is disabled.

i. Power Assist: Senses the door is being opened manually and applies small amount of power to assist the user in opening the door with force less than 5 lbs. The door opens only as far as it is moved manually, then closes once released.
j. Power Close: Additional force to assist door closing between 7° and 2°.
k. Presence Detector Input: Input for external sensor to detect presence at door open or close position only.
l. Push & Go: As the door is manually opened, the operator "senses" movement and opens door to the full-open position.
m. Selector Mode Switch: Off disables the signal inputs unless Blow Open is activated, on activates the signal inputs, hold open activates the unit (unless Blow Closed is activated) to the hold open position.
n. Vestibule Delay: When the wall switch is pressed, first door in vestibule will open. Second door will open once vestibule door delay has expired. Delay is adjustable.
o. Executive Mode Feature: When the door receives an activation signal it opens and remains open until either a second signal is received, or the door is manually moved in closing direction.

3. Manufacturers:

a. Norton Rixson (NO) - 6300 Series.

2.12 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

a. Rockwood (RO).

2.13 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Manufacturers:

1. Pemko (PE).

2.14 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.15 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Push Plates and Door Pulls: When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.

E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

F. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Sections “Closeout Procedures”. Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.
2. The supplier is responsible for handing and sizing all products.
3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.

B. Manufacturer's Abbreviations:

1. MK - McKinney
2. PE - Pemko
3. SU - Securitron
4. RO - Rockwood
5. SA - SARGENT
6. SC - Schlage
7. HS - HES
8. RF - Rixson
9. NO - Norton
10. OT - Other
11. ZE - Zero International

Hardware Sets

Set: 1.0

Doors: U01, U07

Description: Unit Entry Door - WIFI Lockset

3 Hinge, Full Mortise	TA2714	US26D	MK
1 WIFI Access Control Mort Lock	IN120-82278 BIPS MB LNP (by Div. 28)	US26D	SA
1 Cylinder	20-763 x B520-296 (verify system)	626	SC
1 Surface Closer	210 TPN	689	NO
1 Door Stop	409 / 441H	US32D	RO
1 Gasketing	S44BL		PE
1 Auto Door Bottom	420 / 411APKL		PE
1 Viewer	627 (2 @ mobility units)	CRM	RO

Notes: WIFI / Battery powered. Fail-secure lockset – door normally closed and locked.
Presenting authorized credential to reader on door momentarily unlocks outside lever, allowing door to be opened.
REX switch in inside lever signals the access control system of authorized exit.
Free egress at all times via the inside lever.
During loss of power, door remains locked.

Set: 2.0

Doors: U02
Description: Unit Entry Door - Exterior

3 Hinge, Full Mortise	TA2314 NRP	US32D	MK
1 WIFI Access Control Mort Lock	IN120-82278 BIPS MB LNP (by Div. 28)	US26D	SA
1 Cylinder	20-763 x B520-296 (verify system)	626	SC
1 Door Closer	PR7500	689	NO
1 Door Stop	471 EXP	US26D	RO
1 Gasketing	294AV		PE
1 Sweep	315CN	Al	PE
1 Threshold	Per Detail & Field Conditions x FHSL	Al	PE

Notes: WIFI / Battery Powered. Fail-secure lockset – door normally closed and locked.
Presenting authorized credential to reader on door momentarily unlocks outside lever, allowing door to be opened.
REX switch in inside lever signals the access control system of authorized exit.
Free egress at all times via the inside lever.
During loss of power, door remains locked.

Set: 3.0

Doors: U03
Description: Unit Bathroom

3 Hinge, Full Mortise	TA2714	US26D	MK
1 Privacy Lock	LB 8265 LNP	US26D	SA
1 Door Stop	409 / 441H	US32D	RO
3 Silencer	608		RO

Set: 4.0

Doors: U04
Description: Unit Bedroom

3 Hinge, Full Mortise	TA2714	US26D	MK
1 Privacy Lock	LB 8265 LNP	US26D	SA
1 Door Stop	409 / 441H	US32D	RO
3 Silencer	608		RO

Set: 5.0

Doors: U05

Description: Unit Closet

1 Bipass Door Hardware	HBP200A		PE
2 ADA Flush Pull	BF97	US32D	RO

Set: 6.0

Doors: A100.2

2 Continuous Hinge	BSPFM_SLF-HD1 EL-CEPTx10B		PE
1 Concealed Vert Rod Exit	LD 5CH 55 56 ADPE8610 P106	BSP	SA
1 Concealed Vert Rod Exit	LD 5CH 55 56 ADPE8610 EO	BSP	SA
1 Cylinder	20-763 x B520-296 (verify system)	BLK	SC
2 Door Pull	RM3311-36" Mtg-Type 12XHD	BSP	RO
2 Drop Plate	As Required	BSP	NO
2 Surface Closer	PR7500	BSP	NO
2 Door Stop	471 EXP	BSP	RO
1 Gasket	By Door Manufacturer		
2 Sweep	315BSPN		PE
1 Threshold	Per Detail x BSP x FHSL14		PE
2 Frame Harness	QC-C__x (length as required)		MK
2 Door Harness	QC-C__x (length as required)		MK
1 Power Supply	AQDx (size as reqd)		SU
1 Power Distribution Board	PDB-xx (as reqd)		SU
1 Card Reader	By Security Contractor		

Notes: Traditonal power - card reader on wall.
Fail-secure exit device – doors are locked when power is not applied.
When doors are locked, presenting authorized credential to reader on wall retracts latchbolts on both panics allowing doors to be pulled open.
REX switch in panic rails signals access control system of authorized egress.
Free egress at all times via exit device.

Set: 7.0

Doors: A103, A103.1

2	Continuous Hinge	BSPFM_SLF-HD1 EL-CEPTx10B		PE
1	Concealed Vert Rod Exit	LD 5CH 55 56 ADPE8610 P106	BSP	SA
1	Concealed Vert Rod Exit	LD 5CH 55 56 ADPE8610 EO	BSP	SA
1	Cylinder	20-763 x B520-296 (verify system)	BLK	SC
2	Door Pull	RM3311-36" Mtg-Type 12XHD	BSP	RO
1	Drop Plate	As Required	BSP	NO
1	Surface Closer	PR7500	BSP	NO
1	Automatic Opener	6331	BSP	NO
2	Door Stop	471 EXP	BSP	RO
1	Gasket	By Door Manufacturer		
2	Sweep	315BSPN		PE
1	Threshold	Per Detail x BSP x FHSL14		PE
2	Frame Harness	QC-C__x (length as required)		MK
2	Door Harness	QC-C__x (length as required)		MK
2	Push Plate (Acuator)	Wikk Ingrss'r S-i36-3		OT
2	Switch Post (pedastal)	Wikk SQ11	628	OT
1	Power Supply	AQDx (size as reqd)		SU
1	Power Distribution Board	PDB-xx (as reqd)		SU
1	Card Reader	By Security Contractor		

Notes: Traditonal power - card reader on wall.
Fail-secure exit device – doors are locked when power is not applied.
When doors are locked, presenting authorized credential to reader on wall retracts latchbolts on both panics allowing doors to be pulled open.
REX switch in panic rails signals access control system of authorized egress.
Free egress at all times via exit device.
Card reader / actuator switch integration required – by Security Contractor.

Set: 8.0

Doors: A100

2	Continuous Hinge	BSPFM_SLF-HD1		PE
1	Concealed Vert Rod Exit	NB 16 18 5CH ADPE8610 P106	BSP	SA
1	Concealed Vert Rod Exit	NB 16 18 5CH ADPE8610 EO	BSP	SA
1	Cylinder	20-763 x B520-296 (verify system)	BLK	SC
2	Door Pull	RM3311-36" Mtg-Type 12XHD	BSP	RO
1	Drop Plate	As Required	BSP	NO
1	Door Closer	PR7500	689	NO

1 Automatic Opener	6331	BSP	NO
2 Door Stop	471 EXP	BSP	RO
1 Gasket	By Door Manufacturer		
2 Sweep	315BSPN		PE
1 Threshold	Per Detail x BSP x FHSL14		PE
2 Push Plate (Acuator)	Wikk Ingrss'r S-i36-3		OT
2 Switch Post (pedastal)	Wikk SQ11	628	OT

Notes: Doors normally dogged by key cylinder in panic rail for push/pull operation.
Auto operator at one leaf, manual closer at other leaf.
Auto operator push plates inside and outside always active for use.

Set: 9.0

Doors: C101.1, C102.1, S100A.2

1 Continuous Hinge	BSPFM_SLF-HD1 EL-CEPTx10B		PE
1 Rim Exit Device, Alarm	AL LD 5CH PE8804 FSW	BSP	SA
1 Cylinder	20-763 x B520-296 (verify system)	BLK	SC
1 Cylinder	20-757 (verify system)	BLK	SC
1 Drop Plate	As Required	BSP	NO
1 Surface Closer	PR7500	BSP	NO
1 Door Stop	471 EXP	BSP	RO
1 Gasket	By Door Manufacturer		
1 Sweep	315BSPN		PE
1 Threshold	Per Detail x BSP x FHSL14		PE
1 Frame Harness	QC-C__x (length as required)		MK
1 Wiring Harness	546		SA
1 **DISCONTINUED**	3267		SA

Set: 10.0

Doors: B105

3 Hinge (heavy weight)	T4A3386 NRP	US32D	MK
1 Rim Exit Device	LD 5CH PE8804 FSW	US32D	SA
1 Cylinder	20-757	626	SC
1 Door Closer	PR7500	689	NO
1 Kickplate	K1050 10" High x CSK	US32D	RO
1 Door Stop	471 EXP	US26D	RO
1 Gasketing	294AV		PE

1 Sweep	315CN	Al	PE
1 Threshold	Per Detail & Field Conditions x FHSL	Al	PE

Set: 11.0

Doors: S100B.1

2 Hinge (heavy weight)	T4A3386 NRP	US32D	MK
1 Electric Hinge (heavy weight)	T4A3386-QCxx	US32D	MK
1 Rim Exit Device, Alarm	AL LD 5CH PE8804 FSW	US32D	SA
1 Cylinder	20-763 x B520-296 (verify system)	626	SC
1 Cylinder	20-757	626	SC
1 Door Closer	PR7500	689	NO
1 Door Stop	471 EXP	US26D	RO
1 Gasketing	294AV		PE
1 Sweep	315CN	Al	PE
1 Threshold	Per Detail & Field Conditions x FHSL	Al	PE
1 Frame Harness	QC-C__x (length as required)		MK
1 Wiring Harness	546		SA
1 **DISCONTINUED**	3267		SA

Set: 12.0

Doors: B108

6 Hinge (heavy weight)	T4A3386 NRP	US32D	MK
1 Concealed Vert Rod Exit	LD 5CH MDPE8606 WEP	US32D	SA
1 Concealed Vert Rod Exit	LD 5CH MDPE8610 EO	US32D	SA
1 Cylinder	20-763 x B520-296 (verify system)	626	SC
2 Door Closer	PR7500	689	NO
2 Kickplate	K1050 10" High x CSK	US32D	RO
2 Door Stop	471 EXP	US26D	RO
2 Meeting Stile Astragal	29324CNB		PE
1 Gasketing	294AV		PE
2 Sweep	315CN	Al	PE
1 Threshold	Per Detail & Field Conditions x FHSL	Al	PE

Set: 13.0

Doors: B104, B109

6 Hinge (heavy weight)	T4A3386 NRP	US32D	MK

1 Auto Flush Bolt Set	2842 / 2942	US32D	RO
1 Dust Proof Strike	570	US26D	RO
1 Storeroom Lock	8204 LNP	US26D	SA
1 Coordinator	2600 x FB x Mtg Brkts	US28	RO
2 Door Closer	PR7500	689	NO
2 Kickplate	K1050 10" High x CSK	US32D	RO
2 Door Stop	471 EXP	US26D	RO
1 Astragal	43SP		ZE
1 Gasketing	294AV		PE
2 Sweep	315CN	Al	PE
1 Threshold	Per Detail & Field Conditions x FHSL	Al	PE

Set: 14.0

Doors: B107

3 Hinge, Full Mortise	TA2314	US32D	MK
1 Storeroom Lock	8204 LNP	US26D	SA
1 Cylinder	20-763 x B520-296 (verify system)	626	SC
1 Door Closer	7500	689	NO
1 Door Stop	409 / 441H	US32D	RO
1 Gasketing	294AV		PE
1 Brush Sweep	18061CNB	Al	PE
1 Threshold	Per Detail & Field Conditions x FHSL	Al	PE

Set: 15.0

Doors: A100.1

2 Continuous Hinge	BSPFM_SLF-HD1 EL-CEPTx10B		PE
1 Concealed Vert Rod Exit	LD 5CH 55 56 ADPE8610 P106	BSP	SA
1 Concealed Vert Rod Exit	LD 5CH 55 56 ADPE8610 EO	BSP	SA
1 Cylinder	20-763 x B520-296 (verify system)	BLK	SC
1 Surface Closer	PR7500	BSP	NO
1 Automatic Opener	6331	BSP	NO
2 Door Stop	471 EXP	BSP	RO
1 Gasket	By Door Manufacturer		
2 Frame Harness	QC-C__x (length as required)		MK
2 Door Harness	QC-C__x (length as required)		MK
2 Push Plate (Acuator)	Wikk Ingrss'r S-i36-3		OT
2 Switch Post (pedastal)	Wikk SQ11	628	OT

1 Power Supply	AQDx (size as reqd)		SU
1 Power Distribution Board	PDB-xx (as reqd)		SU
1 Card Reader	By Security Contractor		

Notes: Traditonal power - card reader on wall.
Fail-secure exit device – doors are locked when power is not applied.
When doors are locked, presenting authorized credential to reader on wall retracts latchbolts on both panics allowing doors to be pulled open.
REX switch in panic rails signals access control system of authorized egress.
Free egress at all times via exit device.
Card reader / actuator switch integration required – by Security Contractor.

Set: 16.0

Doors: 100B, 100C, 100D, 100E

1 Continuous Hinge	BSPFM_SLF-HD1		PE
1 WIFI Access Control Mort Lock	IN120-82278 BIPS MB LNP (by Div. 28)	BSP	SA
1 Cylinder	20-763 x B520-296 (verify system)	BLK	SC
1 Door Stop	409 / 441H	BSP	RO
1 Gasket	By Door Manufacturer		

Notes: WIFI / Battery powered. Fail-secure lockset – door normally closed and locked.
Presenting authorized credential to reader on door momentarily unlocks outside lever, allowing door to be opened.
REX switch in inside lever signals the access control system of authorized exit.
Free egress at all times via the inside lever.
During loss of power, door remains locked.

Set: 17.0

Doors: 100H

1 Continuous Hinge	BSPFM_SLF-HD1		PE
1 WIFI Access Control Mort Lock	IN120-82278 BIPS MB LNP (by Div. 28)	BSP	SA
1 Cylinder	20-763 x B520-296 (verify system)	BLK	SC
1 Drop Plate	As Required	BSP	NO
1 Surface Closer	PR7500	BSP	NO
1 Door Stop	409 / 441H	BSP	RO
1 Gasket	By Door Manufacturer		

Notes: WIFI / Battery powered. Fail-secure lockset – door normally closed and locked.

Presenting authorized credential to reader on door momentarily unlocks outside lever, allowing door to be opened.
REX switch in inside lever signals the access control system of authorized exit.
Free egress at all times via the inside lever.
During loss of power, door remains locked.

Set: 18.0

Doors: 100H.1

1 Continuous Hinge	BSPFM_SLF-HD1		PE
1 Classroom Lock	8237 LNP	BSP	SA
1 Cylinder	20-763 x B520-296 (verify system)	BLK	SC
1 Drop Plate	As Required	BSP	NO
1 Surface Closer	PR7500	BSP	NO
1 Door Stop	409 / 441H	BSP	RO
1 Gasket	By Door Manufacturer		

Set: 19.0

Doors: C101

3 Hinge (heavy weight)	T4A3786	US26D	MK
1 WIFI Rim Exit Device	12 IN120-PE8877 BIPS MB WEP (by Div. 28)	US32D	SA
1 Cylinder	20-757	626	SC
1 Door Closer	PR7500	689	NO
1 Door Stop	409 / 441H	US32D	RO
1 Gasketing	S44BL		PE

Set: 20.0

Doors: C101.2, C102

6 Hinge (heavy weight)	T4A3786	US26D	MK
2 Concealed Vert Rod Exit	12 NB 5CH WDPE8610 EO	US32D	SA
2 Door Closer	7500	689	NO
2 Electromagnetic Holder	990 Series (per details)	689	RF
2 Meeting Stile Astragal	29324CNB		PE
1 Astragal	S772BL		PE
2 Gasketing	S88BL		PE
2 Auto Door Bottom	STC411APK		PE

Set: 21.0

Doors: S100A.1, S100B, S200A, S200B

3 Hinge (heavy weight)	T4A3786	US26D	MK
1 Rim Exit Device, Passage	12 5CH PE8815 WEP	US32D	SA
1 Door Closer	7500	689	NO
1 Door Stop	409 / 441H	US32D	RO
1 Gasketing	S44BL		PE

Set: 22.0

Doors: A201, A202

3 Hinge, Full Mortise	TA2714	US26D	MK
1 WIFI Access Control Mort Lock	IN120-82278 BIPS MB LNP (by Div. 28)	US26D	SA
1 Cylinder	20-763 x B520-296 (verify system)	626	SC
1 Door Closer	7500	689	NO
1 Door Stop	409 / 441H	US32D	RO
2 Gasketing	S88BL		PE
1 Auto Door Bottom	420 / 411APKL		PE

Set: 23.0

Doors: A104, A204

3 Hinge, Full Mortise	TA2714	US26D	MK
1 WIFI Access Control Mort Lock	IN120-82278 BIPS MB LNP (by Div. 28)	US26D	SA
1 Cylinder	20-763 x B520-296 (verify system)	626	SC
1 Surface Closer	7500 DA	689	NO
1 Door Stop	409 / 441H	US32D	RO
1 Gasketing	S44BL		PE

Set: 24.0

Doors: A102

3 Hinge, Full Mortise	TA2714	US26D	MK
1 WIFI Access Control Mort Lock	IN120-82278 BIPS MB LNP (by Div. 28)	US26D	SA
1 Cylinder	20-763 x B520-296 (verify system)	626	SC
1 Door Closer	CPS7500	689	NO

2 Gasketing	S88BL		PE
1 Auto Door Bottom	420 / 411APKL		PE

Set: 25.0

Doors: B112, B113, B215, B216

6 Hinge, Full Mortise	TA2714	US26D	MK
1 Auto Flush Bolt Set	2842 / 2942	US32D	RO
1 Dust Proof Strike	570	US26D	RO
1 Storeroom Lock	8204 LNP	US26D	SA
1 Cylinder	20-763 x B520-296 (verify system)	626	SC
1 Coordinator	2600 x FB x Mtg Brkts	US28	RO
2 Door Closer	CPS7500	689	NO
1 Astragal	As Required By Door Mfr.		OT
1 Gasketing	S44BL		PE

Set: 26.0

Doors: B101, B102, B103, B110, B202, B203, B205, B206, B207, B208, B209, B210, B212, B213

3 Hinge, Full Mortise	TA2714	US26D	MK
1 Storeroom Lock	8204 LNP	US26D	SA
1 Cylinder	20-763 x B520-296 (verify system)	626	SC
1 Door Closer	7500	689	NO
1 Door Stop	409 / 441H	US32D	RO
1 Gasketing	S44BL		PE

Set: 27.0

Doors: B106

3 Hinge, Full Mortise	TA2714	US26D	MK
1 Storeroom Lock	8204 LNP	US26D	SA
1 Cylinder	20-763 x B520-296 (verify system)	626	SC
1 Door Closer	7500	689	NO
1 Door Stop	409 / 441H	US32D	RO
2 Gasketing	S88BL		PE
1 Auto Door Bottom	420 / 411APKL		PE

Set: 28.0

Doors: B111, B201, B214

3 Hinge, Full Mortise	TA2714	US26D	MK
1 Storeroom Lock	8204 LNP	US26D	SA
1 Cylinder	20-763 x B520-296 (verify system)	626	SC
1 Door Closer	CPS7500	689	NO
1 Gasketing	S44BL		PE

Set: 29.0

Doors: R201, R202, R205, R206

3 Hinge (heavy weight)	T4A3786	US26D	MK
1 Classroom Lock	8237 LNP	US26D	SA
1 Cylinder	20-763 x B520-296 (verify system)	626	SC
1 Door Closer	7500	689	NO
1 Kickplate	K1050 10" High x CSK	US32D	RO
1 Mop Plate	K1050 4" High x CSK	US32D	RO
1 Door Stop	409 / 441H	US32D	RO
1 Gasketing	S44BL		PE

Set: 30.0

Doors: B104A, B109A, B204, B211

3 Hinge, Full Mortise	TA2714	US26D	MK
1 Classroom Lock	8237 LNP	US26D	SA
1 Cylinder	20-763 x B520-296 (verify system)	626	SC
1 Surface Closer	7500 DA	689	NO
1 Kickplate	K1050 10" High x CSK	US32D	RO
1 Door Stop	409 / 441H	US32D	RO
1 Gasketing	S44BL		PE

Set: 31.0

Doors: R101, R102, R105, R106

3 Hinge (heavy weight)	T4A3786	US26D	MK
1 Classroom Lock	8237 LNP	US26D	SA
1 Cylinder	20-763 x B520-296 (verify system)	626	SC
1 Electric Strike	1600-CS	630	HS
1 ElectroLynx Adaptor	2004M		HS
1 SMART Pac Bridge Rectifier	2005M3		HS

1 Automatic Opener, pull side	6311	689	NO
1 Kickplate	K1050 10" High x CSK	US32D	RO
1 Mop Plate	K1050 4" High x CSK	US32D	RO
1 Door Stop	409 / 441H	US32D	RO
1 Gasketing	S44BL		PE
1 Frame Harness	QC-C__x (length as required)		MK
2 Door Switch (actuator)	671		NO

Set: 32.0

Doors: 100F, R103, R104, R107, R108

3 Hinge (heavy weight)	T4A3786	US26D	MK
1 Privacy Lock, Key Override	LB V21 8225 LNP	US26D	SA
1 Cylinder	20-763 x B520-296 (verify system)	626	SC
1 Electric Strike	1600-CS-DLMS	630	HS
1 ElectroLynx Adaptor	2004M		HS
1 SMART Pac Bridge Rectifier	2005M3		HS
1 Door Operator	5211	689	NO
1 Kickplate	K1050 10" High x CSK	US32D	RO
1 Mop Plate	K1050 4" High x CSK	US32D	RO
1 Door Stop	409 / 441H	US32D	RO
1 Gasketing	S44BL		PE
1 Frame Harness	QC-C__x (length as required)		MK
2 Door Switch (actuator)	671		NO

Notes: Door normally closed and unlocked.
If vacant, door can be opened manually or by pressing actuator to trigger auto operator.
Once inside, deadbolt is thrown which indicates "occupied" on indicator, and deadbolt monitor in electric strike signals auto operator to not function while deadbolt is thrown.
When leaving, deadbolt must be retracted manually, then auto operator can be triggered to open door.
Key cylinder outside used for emergency access, or to lock the door for maintenance.

Set: 33.0

Doors: R203, R204, R207, R208

3 Hinge, Full Mortise	TA2714	US26D	MK
1 Privacy Lock	LB V21 8265 LNP	US26D	SA
1 Door Closer	7500	689	NO
1 Kickplate	K1050 10" High x CSK	US32D	RO

1 Mop Plate	K1050 4" High x CSK	US32D	RO
1 Door Stop	409 / 441H	US32D	RO
1 Gasketing	S44BL		PE

Set: 34.0

Doors: G01, G02, G03, G04

1 Rim Exit Device	CPC LD WH 5CH PE8804 FSW	US32D	SA
1 Cylinder	20-757	626	SC
1 Electric Strike	9600	630	HS
1 ElectroLynx Adaptor	2004M		HS
1 SMART Pac Bridge Rectifier	2005M3		HS
1 Frame Harness	QC-C__x (length as required)		MK
1 Power Supply	AQDx (size as reqd)		SU
1 Power Distribution Board	PDB-xx (as reqd)		SU
1 Balance of Hardware	By Gate Supplier		OT

Set: 35.0

Doors: A203

1 All Hardware	By Door Manufacturer

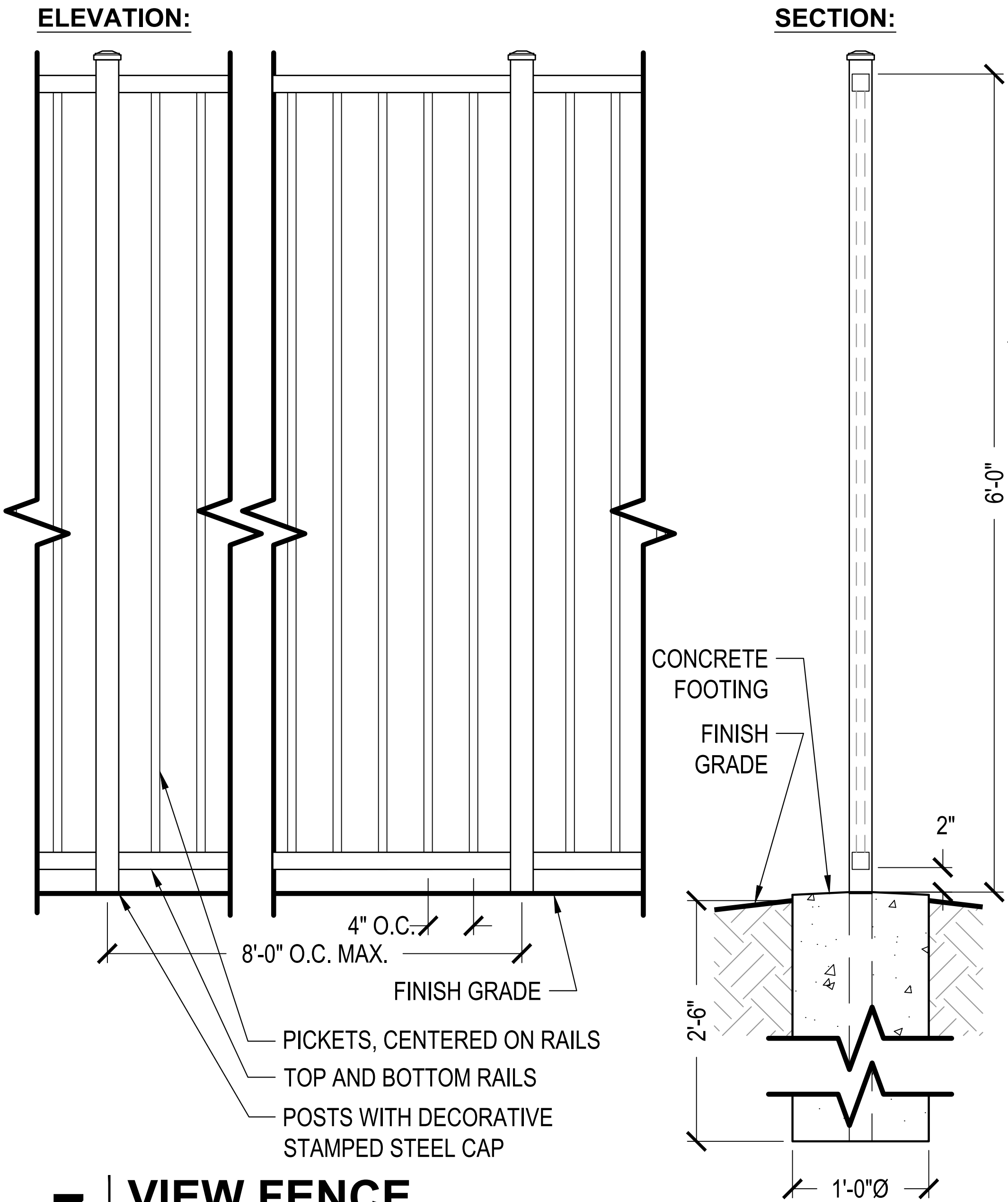
Set: 37.0

Doors: G05

1 Rim Exit Device	CPC LD WH 5CH PE8804 FSW	US32D	SA
1 Cylinder	20-757	626	SC
1 Balance of Hardware	By Gate Supplier		OT

END OF SECTION 087100

Attachment 3



NOTES:

A. MINIMUM SIZING: 1-1/2" SQ., 14 GA. TOP AND BOTTOM RAILS WITH 3/4" SQ., 16 GA. PICKETS, 2" SQ. 14 GA. POSTS.

B. MATERIAL: ALL STEEL SHALL BE GALVANIZED G90

C. COLOR: BLACK POWDER-COATED.

D. FOOTINGS: PROVIDE CONCRETE FTG. AT EACH POST ON PROPERTY LINES WHERE INSTALLED ON-GRADE. COORDINATE FOOTING INSTALLATION WHERE CENTERED ON RETAINING WALLS

E. LOCATE FENCING ON PROPERTY LINES, U.N.O.

F. ALL CONNECTIONS SHALL BE WELDED.

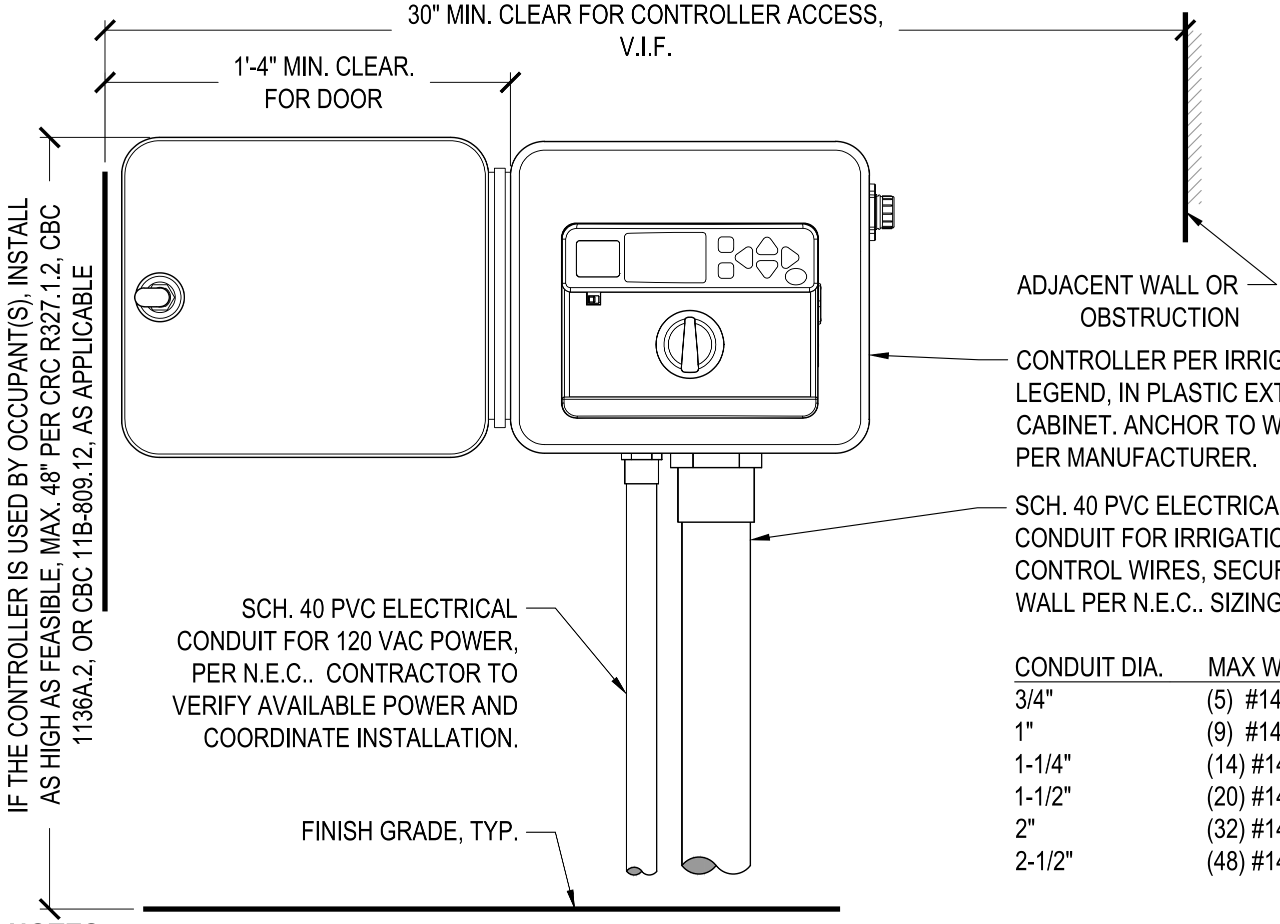
7 VIEW FENCE

3/4" = 1'-0"

AS NOTED

TO REPLACE DETAIL 7/L1.3

Attachment 4



CONDUIT DIA.	MAX WIRES
3/4"	(5) #14 AWG
1"	(9) #14 AWG
1-1/4"	(14) #14 AWG
1-1/2"	(20) #14 AWG
2"	(32) #14 AWG
2-1/2"	(48) #14 AWG

NOTES

A. VERIFY CONTROLLER LOCATION (INTERIOR OR EXTERIOR) PRIOR TO CONSTRUCTION. CONTRACTOR SHALL COORDINATE POWER AND ROUTING OF IRRIGATION CONTROL WIRES WITH SUPERINTENDENT AND LOCAL INSPECTOR.

B. ALL WIRING PER N.E.C. AND APPLICABLE LOCAL REQUIREMENTS.

C. PAINT ALL CONDUIT AND CABINET WALL COLOR OR AS DIRECTED BY OWNER.

D. TYPE OR NEATLY HAND-WRITE CONTROLLER STATION ASSIGNMENTS AND SCHEDULE ON MANUFACTURER-PROVIDED INFORMATION CARD OR ON SEPARATE SHEET ATTACHED TO CONTROLLER MANUAL. LEAVE ALL PRODUCT LITERATURE WITH CONTROLLER.

1 IRRIGATION CONTROLLER: EXTERIOR WALL MOUNT

NO SCALE

ELEVATION

TO REPLACE DETAIL 1/L2.2