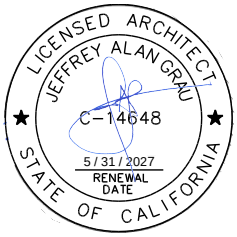
May 19, 2026

HMC Project No. 3595-003-000
DSA File and Application No. 02-122844
PTN # 75499-200

ADDENDUM NO.3

Tracy HS Football Field Scoreboard Replacement
Tracy, California



HMC Architects

1. ALL WORKMANSHIP, MATERIALS, APPLIANCES AND EQUIPMENT which may be included in the following items shall be the same relative quantity as described for similar work set forth in the original or main specifications of which these Addendum items shall be considered a part.

2. ADDENDUM ATTACHMENTS (included with this Addendum)

   ADD ATTACHMENT A: TRACY HS GEOTECH REPORT

3. ADDENDUM DRAWINGS (included with this Addendum)
   The following modify or supplement the issued bid documents.

AD3.01	REPLACE SHEET A1.20
AD3.02	REPLACE SHEET E0.0
AD3.03	REPLACE SHEET E0.1
AD3.04	REPLACE SHEET E1.0

4. PROJECT MANUAL

A. Reference Added Sections

1. The following specification sections are hereby added:

26 01 00 – BASIC ELECTIRCAL
26 05 33 - ELECTRICAL RACEWAYS AND BOXES
26 05 53 - IDENTIFICATION FOR ELECTRICAL SYSTEMS
26 27 16 - CABINETS AND ENCLOSURES
26 28 00 - CIRCUIT PROTECTIVE DEVICES

B. Reference Revised Sections / Remove and replace

1. The following specification sections are hereby Revised:

00 01 10 - TABLE OF CONTENTS
01 10 00 - SUMMARY

5. DRAWINGS

A. Sheet A1.20, Partial Site Plans – New & Demo
   a. DELETE sheet in its entirety and REPLACE with Sheet AD3.01 included with this addendum.
B. Sheet E0.0, Electrical General Notes & One-Line Diagram
   a. DELETE sheet in its entirety and REPLACE with Sheet AD3.02 included with this addendum.
C. Sheet E0.1, Electrical Schedules and Details
   a. DELETE sheet in its entirety and REPLACE with Sheet AD3.03 included with this addendum.
D. Sheet E1.0, Electrical Site Plan
   a. DELETE sheet in its entirety and REPLACE with Sheet AD3.04 included with this addendum.

6. ADDITIONAL INFORMATION:

1. The contractor is required to safely load, transport, and unload the new scoreboard from the District's maintenance yard north of the stadium and install. The contractor is required to coordinate with the District's representatives and Daktronics.
2. Contractor is required to remove all vegetation to place the new scoreboard.
3. Contractor to cut and cap irrigation to prevent unnecessary leaks/flooding/etc. Contractor is required to coordinate with the District prior to cutting irrigation.

* * END OF ADDENDUM * * *

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NOT APPLICABLE

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01 26 00 - CONTRACT MODIFICATION PROCEDURES
01 26 73 - DSA CONSTRUCTION CHANGE DOCUMENT PROCEDURES
01 29 00 - PAYMENT PROCEDURES
01 31 00 - PROJECT MANAGEMENT AND COORDINATION
01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION
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NOT APPLICABLE

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NOT APPLICABLE

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DIVISION 23 - HEATING, VENTILATING, AND AIR-CONDITIONING(HVAC)

NOT APPLICABLE

DIVISION 25 - INTEGRATED AUTOMATION

NOT APPLICABLE

DIVISION 26 - ELECTRICAL

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DIVISION 27 - COMMUNICATIONS

NOT APPLICABLE

DIVISION 28 - ELECTRONIC SAFETY AND SECURITY

NOT APPLICABLE

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NOT APPLICABLE

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NOT APPLICABLE

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NOT APPLICABLE

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NOT APPLICABLE

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NOT APPLICABLE

DIVISION 41 - MATERIAL PROCESSING AND HANDLING EQUIPMENT

NOT APPLICABLE

DIVISION 42 - PROCESS HEATING, COOLING, AND DRYING EQUIPMENT

NOT APPLICABLE

DIVISION 43 - PROCESS GAS AND LIQUID HANDLING, PURIFICATION AND STORAGE EQUIPMENT

NOT APPLICABLE

DIVISION 44 - POLLUTION CONTROL EQUIPMENT

NOT APPLICABLE

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NOT APPLICABLE

DIVISION 46 - WATER AND WASTEWATER EQUIPMENT

NOT APPLICABLE

DIVISION 48 - ELECTRICAL POWER GENERATION

NOT APPLICABLE

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SECTION 01 10 00 - SUMMARY

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Contractor's use of site and premises.
2. Coordination with occupants.
3. Work restrictions.
4. Specification and Drawing conventions.

1.02 CONTRACTOR'S USE OF SITE AND PREMISES

A. Restricted Use of Site: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Limits on Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
1. Driveways, Walkways, and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.

C. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.03 COORDINATION WITH OCCUPANTS

A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated.

B. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

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1.04 WORK RESTRICTIONS

A. Comply with restrictions on construction operations.
   1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work in the existing building to normal business working hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, unless otherwise indicated. 2

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
   1. Notify Architect not less than two days in advance of proposed utility interruptions.
   2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.
   1. Notify Architect not less than two days in advance of proposed disruptive operations.
   2. Obtain Owner's written permission before proceeding with disruptive operations.

1.05 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
   2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
   3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
   4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.

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C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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SECTION 26 01 00 – BASIC ELECTRICAL

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes the basic requirements for the electrical work on this project

B. Work Included
1. Furnish and install a fully functional electrical power system including all panelboards, breakers, wiring, relays, and other material as shown on in the Electrical Drawings and specified herein. It is the intent that a complete operating system conforming to all applicable codes and District Standards be installed and that any power supplies, disconnect, relays, controls, programming or other items required to achieve this end result shall be furnished whether or not such item or items are specified herein.
2. Site and System Investigation: The bidding contractor for the electrical power system shall visit the site prior to the bid and become thoroughly knowledgeable about the existing system and work required to perform work of this section. Failure to discover the equipment, materials, and labor required to complete the extensions will not relieve the contractor from completing the work at no additional cost.
3. Utility Coordination: The contractor shall be responsible for coordinating the additional electrical load for this project with the electrical utility provider serving the facility.

1.02 REFERENCES AND STANDARDS

A. California Electrical Code (CEC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

B. California Energy Code (CENC), edition as noted on the Drawings, as adopted by the California Division of the State Architect (DSA).

C. National Electrical Contractors Association (NECA): Standard of Installation

D. National Fire Protection Association (NFPA): 70E

E. National Safety Council (NSC)

F. Occupational Safety and Health Administration (OSHA)

1.03 SUBMITTALS

A. Product Data

B. Operation and Maintenance (O&M) Manuals
   1. Operating Instruction Manuals outlining the step-by-step procedures required for system start-up and operations shall be furnished. The instructions shall include manufacturer's name, model number, service manual parts list, and brief description of all equipment and their basic operating features.
   2. Maintenance Instruction Manuals outlining maintenance procedures shall be furnished. The manual shall include a troubleshooting guide listing possible breakdowns and repairs and a simplified connection wiring diagram for the system as installed.

C. As-Built Drawings
   1. Final Inspection will not be made until drawings are received and approved. Record Drawings shall include "As Built" one line and wiring diagrams, with terminations identified, wire color coding schedule, pullbox locations, and conduit routing plans.

D. Field Test Reports
   1. Upon completion of installed system, submit in booklet form all field tests performed to prove compliance with the specified performance criteria. Each test report shall indicate the final position of controls.
   2. Tests may include (but are not limited to):
      a. Fiber optic cable performance
      b. Ground rod ohms
      c. Cat6 cable performance
      d. Energy Code Acceptance Tests

1.04 QUALITY ASSURANCE

A. Reference to Codes, Standards, Specifications and recommendations of technical societies, trade organizations and governmental agencies shall mean that latest edition of such publications adopted and published prior to submittal of the bid. Such codes or standards shall be considered a part of this Specification as though fully repeated herein.

B. When codes, standards, regulations, etc. allow Work of lesser quality or extent than is specified under this Division, nothing in said codes shall be construed or inferred authority for reducing the quality, requirements, or extent of the Contract Documents. The Contract Documents address the minimum requirements for construction.

C. Work shall be performed in accordance with all applicable requirements of the latest edition of all governing codes, rules and regulations including but not limited to the following minimum standards, whether statutory or not:
   1. California Electrical Code (CEC)
   2. California Building Code (CBC)
   3. California Green Building Code (CGC)
   4. California Fire Code (CFC)
   5. California Energy Code (CENC)

6. California Mechanical Code (CMC)
7. California Plumbing Code (CPC)

D. Standards: Equipment and materials specified under this Division shall conform to the following standards where applicable:
1. ACI American Concrete Institute
2. ANSI American National Standards Institute
3. ASTM American Society for Testing Materials
4. AWS American Welding Society
5. CBM Certified Ballast Manufacturers
6. ETL Electrical Testing Laboratories
7. FS Federal Specification
8. IEEE Institute of Electrical and Electronics Engineers, Inc.
9. IPCEA Insulated Power Cable Engineer Association
10. NEMA National Electrical Manufacturer's Association
11. UL Underwriters' Laboratories

E. Independent Testing Agency qualifications:
1. Testing Agency shall be an independent testing organization that will function as an unbiased authority, professionally independent of Manufacturer, Supplier and Contractor, furnishing and installing equipment or system evaluated by Testing Agency.
2. Testing Agency shall be regularly engaged in the testing of electrical equipment, devices, installations, and systems.
3. Testing Agency shall meet Federal Occupational Safety and Health Administration (OSHA) requirements for accreditation of independent testing laboratories, Title 9, Part 1907.
4. On-site technical personnel shall be currently certified by the International Electrical Testing Association in electrical power distribution system testing.
5. Testing Agency shall use technicians who are regularly employed by the firm for testing services.
6. Contractor shall submit proof of above Testing Agency qualifications with bid documentation upon request.

F. All base material shall be ASTM and/or ANSI standards.

G. All electrical apparatus furnished under this Section shall conform to NEMA standards and the NEC and bear the UL label where such label is applicable.

PART 2 - PRODUCTS

2.01 CONDUCTORS

A. SEE ELECTRICAL DRAWINGS

2.02 PULL BOXES

A. Provide traffic rated pull boxes for power and signal as noted in the Electrical Drawings

2.03 CIRCUIT BREAKERS

A. Unless noted otherwise, circuit breakers shall be molded case, bolt on and trip indicating.

B. Where stationary molded case circuit breakers are indicated on the Drawings to be current limiting type, they shall be current limiting as defined by UL 489 and shall not employ any fusible elements.

C. Circuit breakers shall have interrupting capacity not less than that indicated on the Drawings or if not indicated, not less than 25,000 RMS symmetrical amps for 480 volt systems and 10,000 RMS symmetrical amps for 208 volt systems.

D. Covers shall be sealed on non-interchangeable breakers and trip unit covers shall be sealed on interchangeable trip breakers to prevent tampering. Circuit breaker ratings shall be clearly visible after installation or engraved nameplates shall be provided stating the rating. All ferrous parts shall be plated to minimize corrosion.

E. Circuit breakers shall be toggle, quick-make and quick-break operating mechanisms with trip-free feature to prevent contacts being held closed against overcurrent conditions in the circuit. Trip position of the breakers shall be clearly indicated by operating handles moving to a center position.

F. Multipole breakers shall have a single handle to open and close all contacts simultaneously in both manual operation and under automatic tripping. Interpole barriers shall be provided inside the breaker to prevent any phase-to-phase flashover. Each pole of the breaker shall have means for Arc extinguishing.

G. All terminals shall be rated for aluminum or copper wire.

H. Unless noted otherwise, circuit breakers with trip ratings 400 amp and smaller shall be ambient temperature compensated, thermal magnetic type unless otherwise noted. Breakers shall be of full size, 1" per pole type. Panels with more than one branch breaker larger than 100 amps shall be installed in distribution type panels.

I. Accessories: Provide accessories as noted on the Drawings, i.e. shunt-trip, auxiliary contacts, undervoltage trip, alarm switch, etc.

J. Spaces in the boards shall be able to accept any combination of 1, 2 or 3 pole circuit breakers as indicated. Provide all necessary bus, device supports and mounting hardware sized for frame, not trip rating.

K. Series rated breakers are not acceptable unless specifically noted on the Drawings.

2.04 RECEPTACLES

A. Standards:
1. Provide general purpose 20 ampere, 125/250 VAC receptacles that conform to NEMA WD-1 Specifications. Specialty receptacles shall conform to NEMA WD-5 Specifications as applicable.
2. Provide NEMA 5-20R, commercial specification grade as noted herein, 20 amp, 125 VAC, 2 pole, 3 wire grounding type receptacles.
3. Receptacles shall be the standard conventional style device.
4. Receptacles shall be labelled to designate the circuit number they are fed from.

B. Color:
1. Device color shall be as selected by the Architect, unless otherwise noted.

C. General purpose single outlets:
1. Provide self-grounding back and side wired with binding head staked terminal screw.

D. General purpose duplex receptacles:
1. Provide self-grounding, back and side wired with binding head staked terminal screws and break-off strip for two-circuit wiring.

E. Tamper-resistant single outlets:
1. Provide self-grounding back and side wired with binding head staked terminal screw.
2. Shall have tamper-resistant feature and shall conform to CEC Article 406.12.

F. Tamper-resistant duplex receptacles:
1. Provide self-grounding, back and side wired with binding head staked terminal screws and break-off strip for two-circuit wiring.
2. Shall have tamper-resistant feature and shall conform to CEC Article 406.12.

G. Ground-fault circuit interrupting (GFCI) receptacles:
1. Provide 20 amp, 125 VAC, receptacles consisting of NEMA 5-20R duplex device with integral solid state sensing and signaling circuitry capable of detecting and interrupting a maximum 5 milli-amp line-to-ground fault current in approximately 1/40th of a second.
2. Provide visual device with trip indication, manual reset and test mechanisms and with point of use and multi-outlet protection.
3. Shall have tamper-resistant feature and shall conform to CEC Article 406.12.

H. Special purpose receptacles: Provide Specification grade devices with the NEMA configuration, voltage and current rating, number of poles and ground provisions as noted on the Drawings.

2.05 COVER PLATES

A. General:
1. Provide all coverplates with rounded edges and corners, smooth and free of grooves, embossing or other embellishment.
2. Provide mounting screws to match the plate finish.
3. Provide gang type coverplates where two or more devices are installed at one location. Individual gangable coverplates are not acceptable.
4. Provide plates of one design throughout the Project unless otherwise specified.

B. Color:
1. Coverplate color shall be as specified by the Architect, unless otherwise noted.

C. Plastic coverplates:
1. Provide smooth, high impact, self-extinguishing thermoplastic coverplates and 0.100 inches thick with rounded edges and corners.
2. Provide openings to accommodate the devices indicated on the Drawings and in the Specifications.

D. Metal coverplates:
1. Provide smooth, type 430 stainless steel coverplates, 0.035" thick with rounded edges and corners.
2. Provide openings to accommodate the devices indicated on the Drawings and in the Specifications.

E. Outdoor covers:
1. Provide in-use weatherproof, metal, lockable outlet covers for all receptacles installed in outdoor locations.

PART 3 - EXECUTION

3.01 ROUGH-IN

A. Contractor shall verify lines, levels and dimensions indicated on the construction document drawings and shall be responsible for the accuracy of the setting out of Work and for its strict conformance with existing conditions at the Project site.

B. Verify final locations for rough-ins with field measurements and with the requirements for the actual equipment to be connected.

C. Refer to equipment specifications in other sections for equipment rough-in requirements.

3.02 INSTALLATION

A. Preparation, sequencing, handling, and installation shall be in accordance with Manufacturer's written instructions and technical data particular to the product specified and/or accepted equal except as otherwise specified.

B. Comply with Manufacturer Shop Drawings.

C. Verify all dimensions by field measurements.

D. Arrange for chases, slots, and openings in other building components during progress of construction, to allow for electrical installations.

E. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.

F. Sequence, coordinate and integrate installations of electrical materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing in the building.

G. Where mounting height is not detailed or dimensioned, contact the Architect for direction prior to proceeding with rough-in.

H. Coordinate connection of electrical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies and controlling agencies. Provide required connection for each service.

I. Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the construction documents, recognizing that portions of the Work are indicated only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Architect.

J. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.

K. Install electrical equipment to facilitate servicing, maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.

L. Coordinate electrical systems, equipment, and materials installations with other building components.

M. Provide access panel or doors where devices or equipment are concealed behind finished surfaces.

N. Install systems, materials and equipment giving right-of-way priority to other systems that are required to maintain a specified slope.

O. Conform to the National Electrical Contractors' Association "Standard of Installation" for general installation practice.

3.03 CUTTING, PATCHING, PAINTING, AND SEALING

A. Structural members shall in no case be drilled, bored, or notched in such a manner that will compromise their structural integrity. Cutting of holes, if required, shall be done with core drill and only with the approval of the Architect and Structural Engineer.

B. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.

C. Application of joint sealers:
1. General: Comply with joint sealer Manufacturers' printed application instructions applicable to products and applications indicated, except where more stringent requirements apply.
2. Installation of fire-stopping sealant: Install sealant, including forming, packing and other accessory materials, to fill openings around electrical services penetrating floors and walls, to provide fire-stops and fire-resistance ratings indicated for floor or wall assembly in which penetration occurs. Comply with installation requirements established by testing and inspecting agency.

3.04 FIELD QUALITY CONTROL

A. General testing requirements:
1. The purpose of testing is to ensure that all tested electrical equipment, both Contractor and Owner supplied, is operational and within industry and Manufacturer's tolerances and is installed in accordance with design Specifications.
2. Tests and inspections shall determine suitability for energization.
3. Perform tests in presence of the Owner's Representative and furnish test equipment, facilities and technical personnel required to perform tests.
4. Tests shall be conducted during the construction period and at completion to determine conformity with applicable codes and with these Specifications.

B. Tests: In addition to specific system test described elsewhere, tests shall include:
1. Equipment operations: Test motors for correct operation and rotation.
2. Lighting control circuits: Test lighting circuits for correct operation through their control devices.
3. Alarm and interlock systems: Produce malfunction symptoms in operating systems to test alarm and interlock systems. In addition, all specific tests described in the fire alarm system shall be performed.

4. Circuit numbering verification: Confirm all circuit breakers in the panelboards are correctly labeled in agreement with typed panel directories with actual field wiring.
5. Voltage check:
   a. At completion of job, check voltage at several points of utilization on the system that has been installed under this Contract. During test, energize all installed loads.
   b. Adjust taps on transformers to give proper voltage, which is 118 to 122 volts for 120 volt nominal systems and proportionately equivalent for higher voltage systems. If proper voltage cannot be obtained, inform the Owner and the serving Utility Company.

C. Contractor shall provide test power required when testing equipment before service energization and coordinate availability of test power with General Contractor after service energization. The Contractor shall provide any specialized test power as needed or specified herein.

D. Testing safety and precautions:
1. Safety practices shall include the following requirements:
   a. Applicable State and Local safety operating procedures.
   b. OSHA
   c. NSC
   d. NFPA 70E
2. All tests shall be performed with apparatus de-energized and grounded except where otherwise specifically required ungrounded by test procedure.

E. Calibration of test equipment:
1. Testing Agency shall have calibration program that assures test instruments are maintained within rated accuracy.
2. Instruments shall be calibrated in accordance with the following frequency schedule:
   a. Field instruments: Analog, 6 month maximum; Digital, 12 months maximum.
   b. Laboratory instruments: 12 months.
   c. Leased specialty equipment: 12 months where accuracy is guaranteed by lessor.
3. Dated calibration labels shall be visible on test equipment.
4. Records, which show date and results of instruments calibrated or tested, must be kept up-to-date.
5. Up-to-date instrument calibration instructions and procedures shall be maintained for test instrument.
6. Calibration standards shall be of higher accuracy than instrument tested.
7. Equipment used for field testing shall be more accurate than instrument being tested.

F. Coordinate with General Contractor regarding testing schedule and availability of equipment ready for testing.

G. Notify Owner one week in advance of any testing.

H. Any products which fail during the tests or are ruled unsatisfactory by the Owner's Representative shall be replaced, repaired, or corrected as prescribed by the Owner's Representative at the expense of the Contractor. Tests shall be performed after repairs, replacements or corrections until satisfactory performance is demonstrated.

I. Testing Agency shall maintain written record of tests and shall assemble and certify final test report. All test results/reports shall be submitted to the Electrical Engineer for review.

J. Include all test results in the maintenance manuals.

3.05 CLEANING

A. Prior to energizing of electrical equipment, the Contractor shall thoroughly clean the interior of enclosures from construction debris, scrap wire, etc. using Manufacturer's approved methods and materials.

B. Upon completion of Project, prior to final acceptance, the Contractor shall thoroughly clean both the interior and exterior of all electrical equipment per Manufacturers approved methods and materials. Remove paint splatters and other spots, dirt, and debris.

C. Touch-up paint any marks, blemishes or other finish damage suffered during installation.

3.06 ENERGY CODE COMPLIANCE

A. NRCC: Per Title 24, Part 6 California Energy Code (CENC) the Non-Residential Certificates of Compliance (NRCC) shall be included in the Contract Documents. The NRCC outlines the specific requirements for how the project meets or exceeds CENC. Including what equipment, fixtures, and controls must be installed and how they are installed. The Contractor shall review the NRCC forms and coordinate all requirements with the applicable parties.

B. NRCI: Upon installation of the applicable equipment, fixtures, and controls, the Contractor shall provide and complete the required Non-Residential Certificates of Installation (NRCI) as listed in the NRCC forms. The NRCI form verifies that what was installed matches what was specified in the NRCC.

C. Acceptance Tests (NRCA): After initial start-up of the applicable equipment, fixtures, and controls, the Contractor shall conduct Acceptance Testing per CENC requirements. The Contractor shall be responsible for all testing and ensure the testing

is documented in the applicable Non-Residential Certificate of Acceptance (NRCA) forms. The lighting Acceptance Testing shall be conducted by a technician that is certified with one of the California Energy Commission's approved Acceptance Test Technician Certification Providers (ATTCP).

D. Upon completion of the project, the Contractor shall provide all energy compliance forms to the Owner.

END OF SECTION

SECTION 26 05 33 – ELECTRICAL RACEWAYS AND BOXES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes conduit, surface raceways, J-hooks, wireways, outlet boxes, pull and junction boxes, concrete pullboxes and vaults, floor boxes.

1.02 REFERENCES

A. American National Standards Institute:
   1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
   2. ANSI C80.3 - Specification for Electrical Metallic Tubing, Zinc Coated.

B. National Electrical Manufacturers Association:
   1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
   2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
   3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
   4. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.
   5. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
   6. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
   7. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.03 SYSTEM DESCRIPTION

A. Raceway and boxes located as indicated on Drawings, and at other locations required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway to complete wiring system.

B. All wiring shall be installed in raceway.

C. Provide raceway as follows:
   1. Underground: Provide thickwall nonmetallic conduit. Provide cast metal boxes or nonmetallic handhole.
   2. In Slab Above Grade: Not permitted.
   3. Below Slab on Grade: Use thickwall nonmetallic conduit. Terminate with coated rigid steel elbows and short length of coated rigid steel conduit out of concrete.

4. Outdoor Locations, Above Grade: Provide galvanized rigid steel conduit. Provide cast metal outlet, pull, and junction boxes.
5. Wet and Damp Locations: Provide galvanized rigid steel conduit. Provide cast metal outlet, junction, and pull boxes. Provide flush mounting outlet box in finished areas.
6. Concealed Dry Locations: Provide electrical metallic tubing. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes where shown on drawings. Provide J-hooks when shown on plans.
7. Exposed Interior Dry Locations: Use rigid steel conduit or intermediate metal conduit below eight feet or where subject to damage. Use rigid steel conduit, intermediate metal conduit, or electrical metallic tubing above eight feet or in electrical, mechanical or telecommunication rooms. Use sheet-metal or cast metal boxes. Use flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.

1.04 DESIGN REQUIREMENTS

A. Minimum Raceway Size: 0.75 inch unless otherwise specified.

B. Minimum Raceway Size for Data Communications: 1.00 inch unless otherwise specified.

C. Minimum Raceway Size for Telecommunications: 1.00 inch unless otherwise specified.

D. Minimum Raceway Size for AV Systems: 1.00 inch unless otherwise specified.

1.05 CLOSEOUT SUBMITTALS

A. Project Record Documents:
1. Record actual routing of conduits larger than 2 inches.
2. Record actual locations and mounting heights of outlet, pull, and junction boxes.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

B. Protect PVC conduit from sunlight.

1.07 COORDINATION

A. Coordinate mounting heights, orientation and locations of outlets mounted above counters, benches, and backsplashes.

B. Coordinate Work of this Division and Work of other Divisions in advance of installation. Provide additional Work to overcome tight conditions at no increase in Contract Sum.

C. Coordinate installation of outlet boxes for equipment specified in other divisions.

PART 2 - PRODUCTS

2.01 METAL CONDUIT

A. Rigid Steel Conduit: ANSI C80.1.

B. Rigid Aluminum Conduit: ANSI C80.5.

C. Intermediate Metal Conduit (IMC): Rigid steel.

D. Fittings and Conduit Bodies: NEMA FB 1. Fittings shall be steel/malleable iron with threaded fittings. Use insulated metallic bushings with lug where ground connections are required. Use plastic bushing for non-bonding applications.

2.02 PVC COATED METAL CONDUIT

A. Product Description: NEMA RN 1; rigid steel conduit with external PVC coating, 40 mil thick.

B. Fittings and Conduit Bodies: NEMA FB 1; steel fittings with external PVC coating to match conduit.

2.03 FLEXIBLE METAL CONDUIT

A. Product Description: Interlocked steel construction.

B. Fittings: NEMA FB 1.

2.04 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

A. Product Description: Interlocked steel construction with PVC jacket.

B. Fittings: NEMA FB 1.

2.05 ELECTRICAL METALLIC TUBING (EMT)

A. Product Description: ANSI C80.3; galvanized tubing.

B. Fittings and Conduit Bodies: NEMA FB 1; steel couplings and connectors. Box connectors shall have with insulated throat. Set screw type couplings.

2.06 NONMETALLIC CONDUIT

A. Product Description: NEMA TC 2; Schedule 40 PVC.

B. Fittings and Conduit Bodies: NEMA TC 3.

2.07 SURFACE RACEWAY (WIREMOLD)

A. Product Description: Surface raceway as shown on plans. Raceway shall be Wiremold or equal.

B. Fittings: Provide all supports, adapters, clips, elbows, covers, device fittings, and other hardware as required for a complete installation. Provide B-Line “transition” boxes to clear offset surfaces. Supports shall be concealed, exposed straps are not allowed.

C. Finish:
1. Steel raceway and associated transition boxes and exposed hardware shall be spray painted with two coats of semi-gloss acrylic enamel paint, color as directed by Architect.
2. Aluminum raceway shall be provided with factory finish, color as directed by Architect. Transition boxes shall be spray painted with two coats of semi-gloss acrylic enamel paint, color as directed by Architect.
3. Plastic raceway shall be provided with factory finish, color as directed by Architect. Transition boxes shall be spray painted with two coats of semi-gloss acrylic enamel paint, color as directed by Architect.
4. Coordinate all colors with Architect prior to ordering.

2.08 J-HOOKS

A. Product Description: Low voltage signal cable J-Hooks shall be Panduit. Provide with support device for construction encountered.

2.09 WIREWAY

A. Product Description: General purpose for indoor applications and raintight type for outdoor locations wire way.

B. Knockouts: Manufacturer's standard.

C. Cover: Hinged cover with full gaskets.

D. Connector: Flanged.

E. Fittings: Lay-in type with removable top, bottom, and side; captive screws and drip shield for outdoor.

F. Finish: Rust inhibiting primer coating with gray enamel finish.

2.10 OUTLET BOXES

A. All boxes shall be suitable for the environment in which they are installed.

B. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 0.5-inch male fixture studs where required.
2. Boxes for shall be 1.5-inch-deep by 4-inch square minimum for single devices.
3. Boxes for shall be 1.5-inch-deep by 4-11/16 inch square minimum for two devices.
4. Boxes for data and signal outlets shall be 2-1/8-inch-deep by 4-11/16-inch square minimum.
5. Concrete Ceiling Boxes: Concrete type.
6. Provide rings as required.

C. Cast Boxes: NEMA FB 1, Type FD, aluminum. Furnish gasketed cover by box manufacturer. Furnish threaded hubs.

2.11 BOX EXTENSIONS

A. At rooms being remodeled and where existing walls are to receive new finish material, replace existing plaster rings with new rings.

2.12 PULL AND JUNCTION BOXES

A. Boxes having an internal volume less than 100 cubic inches shall be as specified for outlet boxes. Boxes having internal volume greater than 100 cubic inches shall be of panelboard type construction except that covers shall be secured by screws or bolts.

B. Boxes exposed to rain or installed in wet locations shall be specifically designed for the purpose.

C. All boxes shall be installed so that covers are accessible after completion of the installation.

D. Boxes shall not be installed in finished areas unless specific approval for such installation is granted by Architect.

2.13 CONCRETE PULLBOXES AND VAULTS

A. Boxes: Boxes shall be precast, high density reinforced concrete. In areas of vehicular traffic, boxes shall be H20 rated.

B. Extensions: Extensions shall be provided at each pullbox. Provide a minimum of (1) extension. Provide additional extension(s) as required to provide space in box for code required cable bending.

C. Covers: Covers in concrete or asphalt shall be galvanized. In all other areas, covers shall be steel checker plate. In areas of vehicular traffic, lids shall be galvanized steel, H20 rated. All covers shall be provided with hold-down bolts.

D. Floor: Provide poured concrete slab as detailed on plans. At H20 rated boxes, provide manufacturer's concrete slab.

E. Size: Provide size as noted on plans. If size is not shown, provide boxes sized per codes.

F. Labeling: Covers shall be factory marked as shown on plans.

2.14 FLUSH MULTI SERVICE FLOOR BOXES (4 PORT)

A. Floor boxes shall be cast iron, fully adjustable, Walker RFB4-CI-1 with FPBTCAL cover. Provide brackets required to mount devices shown on plans. Provide blank plates at unused ports.

2.15 FLUSH MULTI SERVICE FLOOR BOXES (11 GANG):

A. Floor boxes shall be steel, fully adjustable, Walker RFB11 with RFB119BTCAL cover. Provide brackets required to mount devices shown on plans. Provide blank plates at unused ports.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify outlet locations and routing and termination locations of raceway prior to rough-in.

3.02 EXISTING WORK

A. Remove exposed abandoned raceway, including abandoned raceway above accessible ceiling finishes. Cut raceway flush with walls and floors, and patch surfaces.

B. Remove concealed abandoned raceway to its source.

C. Disconnect abandoned outlets and remove devices. Remove abandoned outlets when raceway is abandoned and removed. Install blank cover for abandoned outlets not removed.

D. Maintain access to existing boxes and other installations remaining active and requiring access. Modify installation or provide access panel.

E. Extend existing raceway and box installations using materials and methods [compatible with existing electrical installations, or] as specified.

F. Clean and repair existing raceway and boxes to remain or to be reinstalled.

G. At rooms being remodeled and where existing walls are to receive new finish material, replace existing plaster rings with new rings with depth required to bring box flush with new finish. Contractor shall review Architectural drawings prior to bid to note walls receiving new finishes (tackboards, sheetrock, etc.) and include the necessary work in bid.

3.03 INSTALLATION

A. Ground and bond raceway and boxes.

B. Fasten raceway and box supports to structure and finishes.

C. Identify raceway and boxes.

D. Arrange raceway and boxes to maintain headroom and present neat appearance.

3.04 INSTALLATION - RACEWAY

A. Raceway routing is shown in approximate locations unless dimensioned. Route to complete wiring system.

B. Unless otherwise specified, all raceway shall be installed concealed. Raceway may be run exposed on unfinished walls, in attic spaces, in electrical rooms and when routed to surface panels, cabinets or gutters.

C. Arrange raceway supports to prevent misalignment during wiring installation.

D. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.

E. Group related raceway; support using conduit rack. Construct rack using steel channel and provide space on each for 25 percent additional raceways.

F. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports

G. Do not attach raceway to ceiling support wires or other piping systems.

H. Construct wire way supports from steel channel.

I. Route exposed raceway parallel and perpendicular to walls.

J. Route raceway installed above accessible ceilings parallel and perpendicular to walls.

K. Route conduit in and under slab from point-to-point.

L. Maintain clearance between raceway and piping for maintenance purposes.

M. Maintain 12-inch clearance between raceway and surfaces with temperatures exceeding 104 degrees F.

N. Cut conduit square using saw or pipe cutter; de-burr cut ends.

O. Bring conduit to shoulder of fittings; fasten securely.

P. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for minimum 20 minutes.

Q. Install conduit hubs to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.

R. Install no more than equivalent of three 90-degree bends between boxes. Install conduit bodies to make sharp changes in direction, as around beams. Install factory elbows for bends in metal conduit larger than 2-inch size.

S. Avoid moisture traps; install junction box with drain fitting at low points in conduit system.

T. Install fittings to accommodate expansion and deflection where raceway crosses seismic and expansion joints.

U. Install suitable pull string or cord in each empty raceway except sleeves and nipples.

V. Install suitable caps to protect installed conduit against entrance of dirt and moisture.

W. Surface Raceway:
   1. Anchor raceway to structural members using screws. Supports shall be concealed. Space screws 24” maximum on center. Each run shall have a minimum of (2) screws.
   2. Mount plumb and level.
   3. Install insulating bushings and inserts at connections to outlets and corner fittings.

4. Raceway shown on plans is schematic. Contractor shall coordinate exact routing and installation with building conditions and provide all parts, pieces, elbows, transition boxes and other items as required for a complete, closed and professionally installed installation.
5. Coordinate exact routing with Architect prior to installation.

X. J-Hooks:
1. Provide J-hooks 48” maximum on center.
2. All cable to be run parallel and perpendicular to building lines.
3. Provide mounting hardware as required.
4. Provide Unistrut channels between structural members as required.
5. Provide 24” long 2” conduit sleeves through walls, draft stops, etc. Provide as many as necessary to accommodate cables in contract plus two extra capped at each end for future cabling. All conduits shall be provided with bushed ends.

Y. Close ends and unused openings in wire way.

3.05 EXCAVATING AND TRENCHING:

A. Perform all excavations as required for the installation of the work included under this Section, including shoring of earth banks to prevent cave-ins and to protect workmen and equipment.

B. Restore all surfaces, roadways, walks, curbs, walls, existing underground installation, etc., damaged or cut as a result of the excavations to their original condition in a manner approved by the Architect.

C. Stop machine excavation for trenches, in solid ground, several inches above required grade line, then trim trench bottom by hand to accurate grade so that a firm and uniform bearing throughout entire length of duct is provided. In lieu of above hand excavation in bottom of trench, Contractor may excavate to depth no less than 6" below required grade line and place a bed of sand or granular soil, properly compacted to provide a uniform grade and to provide a firm support for duct throughout its entire length.

D. Minimum conduit depth of pipe crown shall be 2'0" below finished or natural grade, unless detailed otherwise on Drawings. Conduits under parking lots, roadways, driveways, fire truck access routes, and other areas subject to vehicular traffic shall be installed a minimum of 24" below grade.

3.06 BACKFILLING:

A. No backfilling operations shall begin until the required tests and inspection has been made. Should any of the work be enclosed or covered up before it has been approved, Contractor shall, at his expense, uncover the work.

B. After it has been inspected, tested, and approved, he shall make all repairs necessary to restore the work of other contractors to the condition in which it was found at the time of uncovering.

C. Except under existing paved area, walks, roads, or similar surfaces, and in cases where rock is encountered, backfill more than 12" above the top of the pipe shall be made using suitable excavated material placed in 6" layers measured before compaction, and tamped by machine.

D. Surface work shall be replaced to match the existing.

E. Entire backfill for bored excavations under existing pavement, walks, roads, or similar surfaces, shall be made with clean sand compacted by flooding.

F. The contractor shall install a marking tape 6” below grade and directly above all electrical conduits. The tape shall consist of a 4 mil insert plastic film specifically formulated for prolonged use underground. It shall be highly resistant to alkalis, acids and other destructive agents found in the soil. Tape shall have a minimum tensile strength of 20 lbs. per 3” with strips and a minimum elongation of 500%. Tape shall bear a continuous painted message repeated every 16” to 36” warning of the installation buried below. The message shall read “CAUTION – ELECTRICAL POWER LINE BURIED BELOW” or “CAUTION – ELECTRICAL SIGNAL LINES BURIED BELOW” as applies. Installation instruction for the tape shall be printed with each message along the entire length. The tape shall be as that manufactured by Reef Industries, Inc., or approved equal. For those installations involving non-metallic pipe, tape shall be aluminum foil encased in two layers of inert plastic film enabling the tape to be inductively located. Terre Tape “D” Warning Tapes are acceptable. When conduit below is plastic, tape shall have metallic content and shall respond to metal detectors. Do not exclude this. It will be required to verify the installation of this tape.

3.07 FLASHING AND SEALING:

A. Flash and counterflash roof and wall penetrations in manner described under other applicable sections of this Specification and as approved by the Architect.

B. Conduits, ducts, etc., passing through finished walls and ceilings shall be fitted with steel escutcheon plates, chrome or paint finish as directed.

C. Conduits which penetrate floor slabs and concrete or masonry walls shall be grouted and sealed watertight at penetration.

D. Conduits penetrating exterior walls other than concrete or masonry shall be sealed watertight with polyurethane sealant.

E. Underground conduits stubbing up into a room shall be sealed around cables or pullstring with foam sealant.

F. All flashing and sealing shall be provided by this Contractor.

3.08 INSTALLATION – BOXES

A. Boxes shall be accurately placed as shown on Drawings or as close thereto as possible. Contractor shall refer to Drawings, specifications, and submittals covering work of the other trades to coordinate outlet location. In the event of conflict between planned locations of outlet and other equipment or furnishing, Contractor shall not proceed until direction has been given by Architect.

B. Unless otherwise specified or shown on Drawings, boxes shall be flush mounted with front edge of box or ring flush with wall or ceiling finish. Use plaster ring of appropriate depth in plastered or gypboard applications. Contractor shall review architectural drawings and note wall and ceiling construction and finishes for each wall.

C. Boxes shall not be installed back-to-back in walls. To prevent sound transfer, outlets, switches, etc. shown on opposing sides of the same wall shall be installed in separate stud spaces, except that outlets installed at different elevations may occupy the same stud space when box separation exceeds 18". Where these requirements cannot be met, Contractor shall provide insulation material between boxes.

D. Orient boxes to accommodate wiring devices.

E. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.

F. In Accessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches from ceiling access panel or from removable recessed luminaire.

G. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

H. Install stamped steel bridges to fasten flush mounting outlet box between studs.

I. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

J. Install adjustable steel channel fasteners for hung ceiling outlet box.

K. Do not fasten boxes to ceiling support wires or other piping systems.

L. Support boxes independently of conduit.

M. Install gang box where more than one device is mounted together. Do not use sectional box.

N. Install gang box with plaster ring for single device outlets.

3.09 INSTALLATION CONCRETE PULLBOXES AND VAULTS

A. Install boxes flush with finished grade or surface material.

B. Install hold down bolts for all covers.

C. Ground bond steel cover plate with insulated green grounding conductor.

D. Grout between box and extension(s).

E. Any box installed in areas of vehicular traffic shall be H20 rated. Contractor shall verify this requirement prior to ordering.

3.10 INTERFACE WITH OTHER PRODUCTS

A. Install conduit to preserve fire resistance rating of partitions and other elements.

B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation.

C. Locate outlet boxes to allow luminaires positioned as indicated on reflected ceiling plan.

D. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

3.11 ADJUSTING

A. Adjust flush-mounting outlets to make front flush with finished wall material.

B. Install knockout closures in unused openings in boxes.

3.12 CLEANING

A. Clean interior of boxes to remove dust, debris, and other material.

B. Clean exposed surfaces and restore finish.

END OF SECTION

SECTION 26 05 53 – IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
1. Nameplates.
2. Device labels.
3. Wire markers.
4. Low voltage cable markers.
5. Underground warning tape.
6. Brass tags.

1.02 SUBMITTALS

A. Product Data:
1. Refer to section 26 01 00.

B. National Electrical Manufacturers Association:
1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
4. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.
5. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
6. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
7. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.03 QUALITY ASSURANCE

A. Perform Work in accordance with State, Municipality, Highways, Public Work's standard.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Accept identification products on site in original containers. Inspect for damage.

B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Install labels and nameplates only when ambient temperature and humidity conditions for adhesive are within range recommended by manufacturer.

PART 2 - PRODUCTS

2.01 NAMEPLATES

A. Product Description: Laminated three-layer plastic with engraved white letters on black contrasting background color.

B. Letter Size:
1. 0.125 inch high letters for identifying individual equipment and loads.
2. 0.25 inch high letters for identifying grouped equipment and loads.
3. Minimum nameplate thickness: 0.125 inch.

2.02 DEVICE LABELS

A. Labels: Embossed adhesive tape, with 0.125 inch white letters on black background.

2.03 WIRE MARKERS

A. Description: Self-adhering, pre-printed, machine printable or write-on, self-laminating vinyl wrap around strips. Blank markers shall be inscribed using the printer or pen recommended by manufacturer for this purpose.

2.04 LOW VOLTAGE CABLE MARKERS

A. Small markers: Open marker sleeve with label pocket for snap mounting on cable, yellow with white label, T&B PTC Series or as noted on Plans.

B. Large markers: Nomex, yellow, Brady B-508.

2.05 UNDERGROUND WARNING TAPE

A. Refer to applicable specification section for underground conduit or detail on plans.

2.06 BRASS TAGS

A. Description: 2” Round, 20 gauge brass.

B. Letter Size: 0.25 inch minimum.

PART 3 - EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 EXISTING WORK

A. Install identification on existing equipment to remain in accordance with this section.

B. Install identification on unmarked existing equipment.

C. Replace lost nameplates, labels, and markers.

3.03 INSTALLATION

A. Install identifying devices after completion of painting.

B. Nameplates
1. Install nameplate parallel to equipment lines.
2. Install nameplates with screws or rivets.
3. Secure nameplate to the front of equipment.
4. Install nameplates for the following:
    a. Switchboards.
    b. Switchgear.
    c. Motor Control Centers.
    d. Distribution Panelboards.
    e. Breakers at individual breakers in switchboards, switchgear and distribution panelboards.
    f. Panelboards.
    g. Transformers.
    h. Service Disconnects.
    i. Fused and Non-Fused Disconnects.
    j. Automatic Transfer Switches.
    k. Signal terminal backboards.
    l. Signal terminal cabinets.
    m. Terminal blocks at terminal backboards and cabinets.
    n. Boxes and cabinets containing control equipment.
    o. Signal system control panels, power supplies, amplifiers, etc.
5. Provide nameplates that present, as applicable, the following information:
    a. Equipment or device designation.
    b. Amperage, kVA, or horsepower rating where applicable.
    c. Voltage or signal system name.
    d. Source or power or control.
    e. Examples:
        1) Boards: PANEL HA; 1000A; 277/480V, 3-Phase, 4-Wire.

2) Transformers: TRANSFORMER T-1; 112.5kVA; 480V to 120/208V, 3-
3) Phase, 4-Wire; Served from H2A; Load Served L2A.
4) Disconnects and Individual Motor Starters: AC-A1; 25HP; 480V, 3-Phase, 3-Wires; Served from HA-4/6/8.
5) Available Fault Current: XX,XXX Amperes. Date Calculated: XX/XX/XX.
6) Breakers: 200A; 3-POLE.
7) Terminal Backboards: SIGNAL TERMINAL BACKBOARD STB-A.
8) Terminal Cabinets: SIGNAL TERMINAL CABINET STC-A.

C. Device Labels
1. Install label parallel to equipment lines.
2. Install labels for permanent adhesion and seal with clear lacquer.
3. Install labels on device faceplate.
4. Install labels to indicate the circuit number of device.
5. Install labels for the following:
   a. Receptacles
   b. Controlled receptacles
   c. Fire alarm devices located above ceilings. Install label on access door or on t-bay at lay-in ceilings.
   d. As noted on plans
6. Examples:
   a. Receptacle: LA1-15.
   b. Controlled Receptacle: CONTROLLED.
   c. FA device above ceiling: DETECTOR ABOVE CEILING.

D. Wire Markers
1. Install wire marker for each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.
2. Power and Lighting Circuits: Branch circuit or feeder number as indicated on Drawings.
3. Signal and Control Circuits: Control wire number as indicated on shop drawings.

E. Low Voltage Cable Markers
1. Install at each cable in terminal cabinets and terminal backboards.
2. Install at each bundle of cables in each underground vault or pullbox. Provide one marker for each system.

F. Junction Boxes
1. Identify all junction boxes located above suspended ceilings and below ceilings in non-public areas.
2. Boxes shall be identified with permanent felt tip marker on cover indicating panel and circuit numbers or signal system.

G. Underground Warning Tape

1. Refer to applicable specification section for underground conduit or to detail on plans.

H. Brass Tags:
1. Provide brass tags for all feeder cables in underground vaults and pull boxes.
2. Example: PANEL LA FEEDER.

END OF SECTION

SECTION 26 27 16 – CABINETS AND ENCLOSURES

PART 1 - GENERAL

1.01 SUMMARY

A. This section describes the requirements for the cabinets and enclosures for this project.

1.02 REFERENCES

A. National Electrical Manufacturer's Association (NEMA):
   1. NEMA 250; Enclosures for Electrical Equipment.
   2. NEMA ICS 1; Industrial Control and Systems.
   3. NEMA ICS 4; Terminal Blocks and Industrial use.
   4. NEMA ICS 6; Enclosures for Industrial Controls and Systems.

B. Underwriters Laboratories (UL):
   1. UL 50; Enclosures for Electrical Equipment.
   2. UL 65; Standards for Wired Cabinets.
   3. UL 1059; Terminal Blocks.
   4. UL 1773; Termination Boxes.

1.03 SUBMITTALS

A. Product Data

B. Operation and Maintenance (O&M) Manuals

1.04 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

PART 2 - PRODUCTS

2.01 CABINETS AND ENCLOSURES

A. Description: Interior Locations: NEMA 1. Exterior locations: NEMA 3R

B. Construction: Shall be code gauge galvanized steel with standard concentric knockouts for conduit terminations. Size shall be as indicated on Drawings.

C. Finish: Manufacturer's standard gray baked enamel finish.

D. Covers: Continuous hinged steel door, lockable and keyed to match panelboard locks. Provide padlock hasp at exterior locations.

E. Mounting:
1. Flush cabinets shall be furnished with concealed trim clamps and shall be not less than 4 inches deep.
2. Surface cabinets shall be furnished with screw cover trim, flush hinged door and shall not be less than 6 inches deep.

2.02 TERMINAL BLOCKS AND ACCESSORIES

A. Terminal blocks: NEMA ICS 4; UL listed.

B. Power terminals: Unit construction type, closed-back with tubular pressure screw connections, rated 600 volts.

C. Identification: Identify terminal strips with permanent numbers.

D. Wiring diagram: Provide wiring diagram in protective pocket on inside front cover of cabinet. Diagram shall indicate control wiring, connections, and layout of components within enclosure.

2.03 HINGED COVER ENCLOSURES

A. Description: NEMA 250, Type 1 (Interior) and 3R (Exterior) steel enclosure
1. Covers: Continuous hinge, held closed by flush latch operable by key.
2. Furnish interior plywood panel for mounting terminal blocks and electrical components; finish with white enamel.
3. Enclosure Finish: Manufacturer's standard enamel.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of cabinets and enclosures installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 INSTALLATION

A. Set cabinets and enclosures plumb and symmetrical with building lines. Furnish and install all construction channel bolts, angles, etc. required to mount all equipment furnished under this Section of the Specifications.

B. Cabinets and enclosures shall be anchored and braced to withstand seismic forces calculated in accordance with that referenced in Section 26 0100: Basic Electrical Requirement.

C. "Train" interior wiring, bundle and clamp using specified plastic wire wraps.

D. Install interior cabinets with top of enclosure 6’6” above finished floor.

E. Install exterior cabinets with top of enclosure 6’6” above finished grade.

F. Replace doors or trim exhibiting dents, bends, warps or poor fit that may impede ready access, security or integrity.

G. Terminate conduit in cabinet with lock nut and grounding bushing.

H. Terminate wiring on terminal blocks and identify each with heat shrink tags.

3.03 CLEANING

A. Touch up scratched or marred surfaces to match original finish.

B. Clean electrical parts to remove conductive and harmful materials.

C. Remove dirt and debris from enclosure.

D. Clean existing panelboards and load centers to remain or to be reinstalled.

END OF SECTION

SECTION 26 28 00 – CIRCUIT PROTECTIVE DEVICES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes
   1. This section describes the requirements for the circuit protective devices for this project.

1.02 REFERENCES

A. Federal Specification (FS):
   1. FS W-C-375; Circuit Breakers, Molded Case, Branch Circuit and Service.
   2. FS W-F-870; Fuseholders (for Plug and Enclosed Cartridge Fuses).

B. Underwriters Laboratories, Inc. (UL):
   1. UL 248(1-16); Low-Voltage Fuses.
   2. UL 489; Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures.
   3. UL 512; Fuseholders.
   4. UL 1066; Low Voltage AC and DC Power Circuit Breakers Used in Enclosures.

C. National Electrical Manufacturer Association (NEMA):
   1. NEMA AB 1; Molded Case Circuit Breakers.

1.03 SUBMITTALS

A. Product Data

B. Operation and Maintenance (O&M) Manuals

1.04 QUALITY ASSURANCE

A. All materials, equipment and parts comprising the units specified herein shall be new, unused, and currently under production.

B. Only products and applications listed in this Section may be used on the Project unless otherwise submitted.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Delivery: Overcurrent Protective Device components shall not be delivered to the Project site until protected storage space is available. Storage outdoors covered by

rainproof material is not acceptable. Equipment damaged during shipment shall be replaced and returned to Manufacturer at no cost to Owner.

B. Storage: Store in a clean, dry, ventilated space free from temperature extremes. Maintain factory wrapping or provide a heavy canvas/plastic cover to protect units from dirt, water, construction debris and traffic. Provide heat where required to prevent condensation.

C. Handling: Handle in accordance with Manufacturer's written instructions. Be careful to prevent internal component damage, breakage, denting and scoring. Damaged units shall not be installed. Replace damaged units and return equipment to Manufacturer.

PART 2 - PRODUCTS

2.01 FUSES

A. General: All power fuses shall be time-delay, high interrupting (300 K AIC), current limiting type, unless otherwise noted on the Drawings. All fuses shall be the product of a single Manufacturer and shall be selectively coordinated when applied in 2:1 ratios. Types of fuses shall be as follows:
1. 0 - 600 amperes: UL Class J, dual element, time delay type fuse with separate overload and short-circuit elements. The fuse shall hold 500% of rated current for a minimum of 10 seconds.
2. 601 - 4000 amperes: UL Class L, time delay type fuses with 99.9% pure silver fuse links and "O-rings" to seal between the end bells and the fuse barrel. Fuses shall hold 500% of rated current for a minimum of 4 seconds, clear 20 times rated current in 0.01 seconds or less.
3. Motor branch circuit fuses (0-600 amperes): UL Class J dual element, time delay type fuse. Motor branch circuit fuses shall be sized for Type 2 coordination for the motor controller and back-up motor overload protection and shall be coordinated with motor starter overload relay heaters.

B. Control and instrument fuses shall be suitable for installing in blocks or fuse holders. Exact type and rating shall be as recommended by the Manufacturer of the equipment being protected.

C. Fuses for installation in current limiting circuit breakers or motor circuit protectors shall meet the specific requirements of the Manufacturers of that equipment to ensure compatibility.

2.02 MOLDED CASE CIRCUIT BREAKERS

A. Unless noted otherwise, circuit breakers shall be molded case, bolt on and trip indicating.

B. Where stationary molded case circuit breakers are indicated on the Drawings to be current limiting type, they shall be current limiting as defined by UL 489 and shall not employ any fusible elements.

C. Circuit breakers shall have interrupting capacity not less than that indicated on the Drawings or if not indicated, not less than 25,000 RMS symmetrical amps for 480 volt systems and 10,000 RMS symmetrical amps for 208 volt systems.

D. Covers shall be sealed on non-interchangeable breakers and trip unit covers shall be sealed on interchangeable trip breakers to prevent tampering. Circuit breaker ratings shall be clearly visible after installation or engraved nameplates shall be provided stating the rating. All ferrous parts shall be plated to minimize corrosion.

E. Circuit breakers shall be toggle, quick-make and quick-break operating mechanisms with trip-free feature to prevent contacts being held closed against overcurrent conditions in the circuit. Trip position of the breakers shall be clearly indicated by operating handles moving to a center position.

F. Multipole breakers shall have a single handle to open and close all contacts simultaneously in both manual operation and under automatic tripping. Interpole barriers shall be provided inside the breaker to prevent any phase-to-phase flashover. Each pole of the breaker shall have means for Arc extinguishing.

G. All terminals shall be rated for aluminum or copper wire.

H. Unless noted otherwise, circuit breakers with trip ratings 400 amp and smaller shall be ambient temperature compensated, thermal magnetic type unless otherwise noted. Breakers shall be of full size, 1" per pole type. Panels with more than one branch breaker larger than 100 amps shall be installed in distribution type panels.

I. Accessories: Provide accessories as noted on the Drawings, i.e. shunt-trip, auxiliary contacts, undervoltage trip, alarm switch, etc.

J. Spaces in the boards shall be able to accept any combination of 1, 2 or 3 pole circuit breakers as indicated. Provide all necessary bus, device supports and mounting hardware sized for frame, not trip rating.

K. Series rated breakers are not acceptable unless specifically noted on the Drawings.

L. Provide lockable breakers for equipment disconnects as indicated on the Drawings.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Contractor shall thoroughly examine Project site conditions for acceptance of cabinets and enclosures installation to verify conformance with Manufacturer and Specification tolerances. Do not commence with installation until all conditions are made satisfactory.

3.02 INSTALLATION

A. Install overcurrent protective devices in accordance with Manufacturer's written instructions, as indicated on the Drawings and as specified herein.

B. Tighten electrical connectors and terminals; including screws and bolts, in accordance with equipment Manufacturers published torque-tightening values for equipment connectors. Where Manufacturers torque requirements are not indicated tighten connectors and terminals to comply with tightening torque specified in UL Standard 486A.

C. Install overcurrent protective devices and accessories in accordance with Manufacturer's written instructions and with recognized industry practices to ensure that protective devices comply with requirements. All devices shall be installed in accordance with applicable CEC and NEMA standards for installation.

D. Circuit breakers serving "Fire Alarm Control Panel(s)" shall be red in color.

3.03 FIELD QUALITY CONTROL

A. The Contractor shall supply a suitable and stable source of electrical power to each test site.

B. Testing of overcurrent protective devices shall be done only after all devices are installed and system is energized.

C. Prefunctional testing:
   1. Visual and mechanical inspection:
      a. Inspect for physical damage, defects alignment and fit.
      b. Perform mechanical operational tests in accordance with Manufacturer's instructions.
      c. Compare nameplate information and connections to Contract Documents.
      d. Check tightness of all control and power connections.
      e. Check that all covers, barriers and doors are secure.
   2. Electrical tests:
      a. Circuit continuity: All feeders shall be tested for continuity. All neutrals shall be tested for improper grounds.

b. Determine that circuit breaker will trip under overcurrent condition, with tripping time in conformance with NEMA AB 1 requirements.
c. Test all circuit breakers with frame size 225 amps and larger and 10 percent of all circuit breakers with frame sizes less than 225 amps in each panelboard, distribution board, switchboard, etc. unless otherwise noted.

D. Contractor shall replace at no costs to the Owner all devices which are found defective or do not operate within factory specified tolerances.

E. Contractor shall submit the final test report for review prior to Project closeout and final acceptance by the Owner. Test report shall indicate test dates, devices tested, results, observation, deficiencies and remedies. Test report shall be included in the operation and maintenance manuals.

3.04 ADJUSTING

A. Adjust circuit breaker trip settings for coordination with other overcurrent protective devices in system.

B. Adjust circuit breaker trip settings for adequate protection from overcurrent and fault currents.

3.05 CLEANING

A. Upon completion of Project prior to final acceptance the Contractor shall thoroughly clean overcurrent protective devices per Manufacturer's approved methods and materials. Remove paint splatters and other spots, dirt and debris.

END OF SECTION

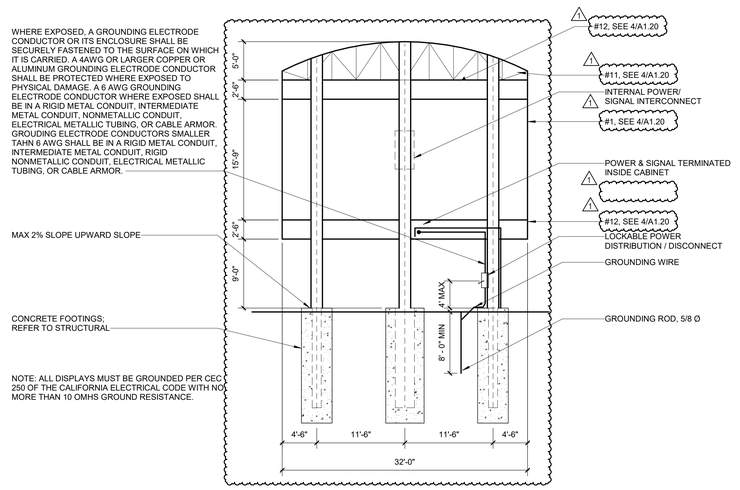
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PRODUCT INFO. SHEET:
DAKTRONICS LIVE VIDEO DISPLAY

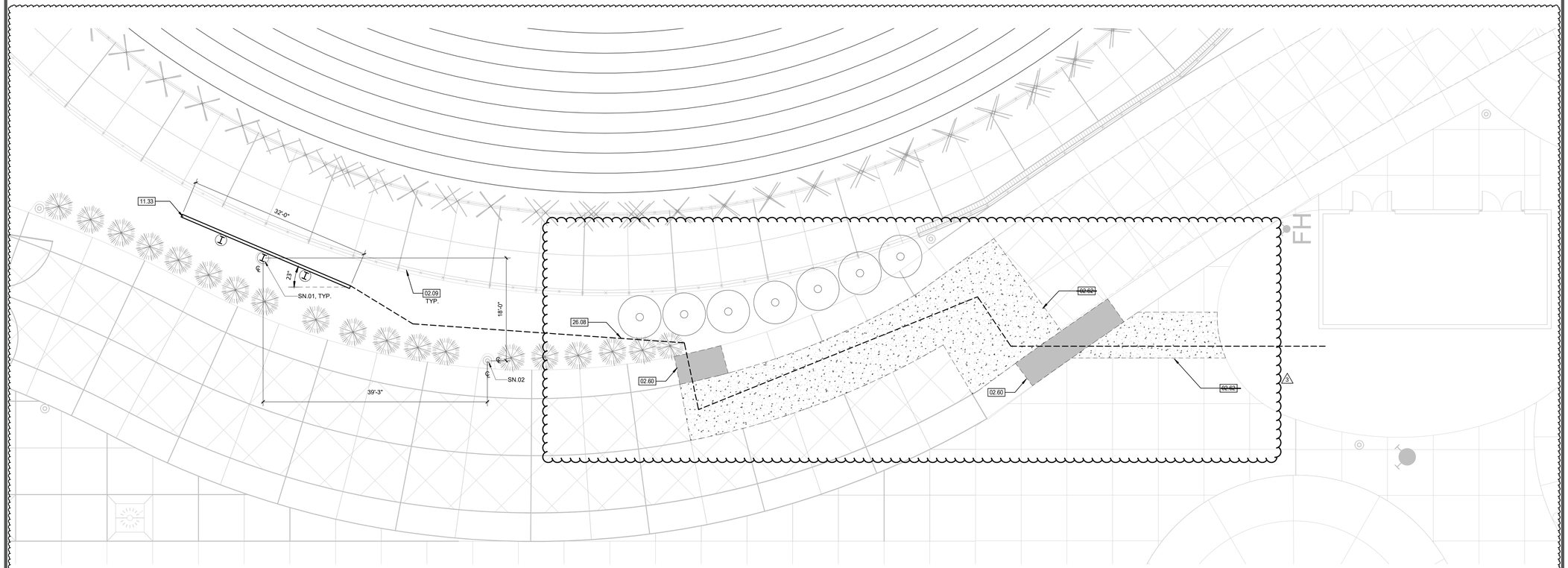
MODEL		DESCRIPTION	
1.	LVX-3000-480X840-10SMD-AP-32.0, 15.8'x2.2' AD PANELS	MATRIX: LINE SPACING: LED COLOR: CABINET DIMENSIONS: MAX POWER: WEIGHT:	480 LINES BY 840 COLUMNS 10 mm RGB - 281 TRILLION COLORS 15' 9" H X 32' 0" W X 0' 11" D (APPROX) 26910 WATTS/DISPLAY UNPACKAGED 4875 LBS PER DISPLAY; PACKAGED 6395 LBS PER DISPLAY
2.	CONTROL -1 VIDEO INPUT 1080P (PRIMARY/BACKUP PLAYER & PROCESSOR) w/LAPTOP	STANDARD DEFINITION OR HIGH DEFINITION (1080p); 1 VIDEO INPUT FOR ALL SPORT PRO	
3.	OUTDOOR SCORBOARD RADIO COMMUNICATION (TRANSMITTER)	FREQUENCY OF 2.4 GHz	
4.	ALL SPORT PRO KIT	HARDWARE AND SOFTWARE BUNDLE TO CONTROL VIDEO/ SCORING INFORMATION w/TABLET	
5.	ALL SPORT PRO WIRELESS ACCESS POINT	TP-LINK WIRELESS ACCESS POINT	
6.	W-1489	FIBER OPTIC CABLE; 50um MULTIMODE; 6 FIBER WITH NON TERMINATED ENDS	
9.	OUTDOOR SCOREBOARD RADIO COMMUNICATION TRANSMITTER	FREQUENCY OF 2.4GHz	
10.	STAND-ALONE 120 VAC TRUMPET HORN	FOR OUTDOOR SCOREBOARDS	
11.	DA-1001-32 WITH NON-BACKLIT LETTERING AND SCREEN BACKING	ARCH TRUSS; ALUM, 5' TALL X 32' LONG W 50% NON-BACKLIT LETTERING/LOGO & SCREEN BACKING. CABINET DIMENSIONS:	5' 0" H X 32' 0" W X 0' 3" D (APPROX) UNPACKAGED 465 LBS PER DISPLAY PACKAGED 1130 LBS PER DISPLAY
12.	OUTDOOR NON-BACKLIT 2'6" X 32' 0" HORIZONTAL	AD PANEL, ABOVE OR BELOW DISPLAY CABINET DIMENSIONS: WEIGHT:	2' 6" H X 32' 0" W X 0' 8" D PACKAGED 256 LBS PER DISPLAY (QTY. 2, ONE ABOVE AND ONE BELOW)
13.	WARRANTY & SERVICES	1 YEAR ON-SITE LABOR INCLUDES CUSTOMER CARE LEVEL 1,	
	G5C5-W - FIVE (5) YEAR PARTS ONLY - INCLUDES CUSTOMER CARE LEVEL 3		
	STANDAARD VIDEO WITH SCS ONE-ON-ONE WEBINAR TRAINING		
	CUSTOM RTD FRAMES -- SINGLE LOGO BACKGROUND	CUSTOM LOGO RTD FRAMES. 1-3 RTD FRAMES	
	TEAM SPIRIT VOL. 1 ANIMATIONS STARTER PACKAGE	PERSONALIZED PACKAGE - YOUR SCHOOL COLORS, MASCOT/LOGO - 20 PRE-SELECTED POPULAR/ ESSENTIAL ANIMATION INCLUDED	

DAKTRONICS PRODUCT INFO. SHEET 4 — 1/4" = 1'-0"

REAR VIEW



GROUNDING DETAIL 3 — 1/8" = 1'-0"



PARTIAL SITE PLAN - NEW 1 — 1/8" = 1'-0"

PLEASE RECYCLE

Autodesk Docs://3595003000 TUSD TRACY HS FOOTBALL FIELD SCOREBOARD R22/3595005000-A-TUSD-SCORE BOARD.rvt
1/30/2025 4:49:37 PM

AGENCY APPROVAL:

APPROVED
DIV. OF THE STATE ARCHITECT
APP: 02-122844 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☐
DATE: 02/05/2026

AGENCIES HERE

TRACY UNIFIED SCHOOL DISTRICT

HMC Architects
3595-003-000
2101 CAPITOL AVENUE, SUITE 100,
SACRAMENTO, CA, 95816
916 368 7990 / www.hmcarchitects.com

LICENSED ARCHITECT — JEFFREY ALAN GRAU — C-14648 — 5 / 31 / 2027 RENEWAL DATE — STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
1	ADDENDUM 01	12/09/25
3	ADDENDUM 03	05/19/26

GENERAL NOTES

CONTRACTOR RESPONSIBLE FOR CONDUCTING RADAR UTITLITY UNDERGROUND INVESTIGATION PRIOR TO CONSTRCUTION. THIS INCLUDES IDENTIFYING AND MAPPING UNDERGROUND UTILITIES TO ENSURE SAFE AND ACCURATE EXCAVATION AND CONSTRUCTION PLANNING

SHEET NOTES

1
SN.01 NEW PIERS FOR SCOREBOARD, SEE STRUCTURAL
SN.02 EXISTING SITE LIGHT POLE

KEYNOTES

02.09 (E) CHAIN LINK FENCING TO REMAIN; PROTECT IN PLACE

~~02.60 PROTECT PORTION OF COLORED CONCRETE AND SLEEVE ELECTRICAL WORK UNDERNEATH.~~

~~02.62 REMOVE (E) FULL CONCRETE PANELS FOR ELECTRICAL WORK. REPLACE TO MATCH (E) PAVING (6" PCC O' 6" AB. W#4 BARS @ 18" O.C.) NEW CONCRETE TO MEET FLUSH WITH (E) PAVING. CROSS SLOPE SHALL NOT EXCEED 2% IN ANY DIRECTION ALONG THE PATH OF TRAVEL~~ 3

11.33 NEW SCOREBOARD | 3/A1.20; SEE STRUCTURAL

26.08 COORDINATE CONDUIT PATH W/ELECTRICAL DRAWINGS. TO ENSURE THAT THE TREE ROOTS ARE NOT DAMAGED - REMOVE SHRUBS AS NEEDED

NOTES

1
1. REFER TO STRUCTURAL FOR SCOREBOARD SUPPORT & FOOTING DETAILS

ADDENDUM 03 NOTE:
NO CONCRETE DEMO. COORDINATE CONDUIT PATH AND BORING W/ELECTRICAL DRAWINGS. 3

FACILITY:
TRACY HIGH SCHOOL
315 E 11TH ST,
TRACY, CA 95376

PROJECT:
TRACY HS FOOTBALL FIELD SCOREBOARD REPLACEMENT

SHEET NAME:
PARTIAL SITE PLANS - NEW & DEMO

DATE: **01/30/2025**
CLIENT PROJ NO: **39-H8**

SHEET:

A1.20

AD3.01

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ELECTRICAL GENERAL NOTES

1) ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS AMENDED AND ADOPTED BY THE AUTHORITY(IES) HAVING JURISDICTION: 2025 CALIFORNIA ADMINISTRATIVE CODE (CAC), 2022 CALIFORNIA BUILDING CODE (CBC), 2022 CALIFORNIA FIRE CODE (CFC), 2022 CALIFORNIA MECHANICAL CODE (CMC), 2022 CALIFORNIA PLUMBING CODE (CPC), 2022 CALIFORNIA ELECTRICAL CODE (CEC), 2022 CALIFORNIA ENERGY CODE (CENC), 2022 CALIFORNIA GREEN BUILDING CODE (CGC), NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), TITLE 19 C.C.R. PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS, AND ANY OTHER LOCAL CODES, ORDINANCES, REGULATIONS, OR AUTHORITIES HAVING JURISDICTION. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES OR OTHER CODES AND REGULATIONS APPLICABLE TO THIS PROJECT. THESE CODES SHALL DETERMINE MINIMUM REQUIREMENTS FOR MATERIALS, METHODS, AND LABOR PRACTICES NOT OTHERWISE DEFINED IN THESE SPECIFICATIONS.

2) ALL CONDUCTORS SHALL BE PER DESIGN SHEETS. CEC AND MAXIMUM VOLTAGE DROP OF 5% WILL DEFINE CONDUCTOR SIZING.

3) ALL CONDUCTORS SHALL BE IN CONDUITS, U.O.N. CONDUITS SHALL BE USED IN THE FOLLOWING METHODS:
   - POLYVINYL CHLORIDE (PVC) CONDUITS ALLOWED FOR UNDERGROUND OTHERWISE PROVIDE RMC OR IMC, INSTALL PER CEC TABLE 300.5 BURIAL DEPTH REQUIREMENTS
   - ELECTRICAL METALLIC TUBING (EMT) WITH COMPRESSION FITTINGS MAY BE USED IN OR ON WALLS OR CEILINGS WHERE NOT SUBJECT TO MECHANICAL DAMAGE, DAMP CONDITIONS OR CORROSIVE CONDITIONS;
   - LIQUID TIGHT FLEXIBLE METAL CONDUIT WHERE REQUIRED;
   - FLEXIBLE METALLIC CONDUIT, WHERE REQUIRED BY CEC, IN DRY LOCATIONS. NOTE: ALL CONDUITS IN HAZARDOUS LOCATIONS (PER CEC) SHALL MEET THE REQUIREMENTS OF CEC CHAPTER 5.
   - CONNECTION TO LIGHT FIXTURES ABOVE LAY-IN CEILING MAY USE 3/8" FLEXIBLE METAL CONDUIT PER CEC 348.20(A)(2)
   - ALL EXPOSED CONDUIT SUBJECT TO WEAR OR COLLISION SHALL BE RIGID GALVANIZED STEEL (RGS) OR INTERMEDIATE METALLIC TUBING (IMT). APPLY BITUMASTIC COATING TO ALL METALLIC CONDUITS IN SLABS OR UNDERGROUND.
   - PROVIDE FIRE RETARDANT U.L. APPROVED SEALANT ON ALL RACEWAY PENETRATIONS OF FIRE RATED CEILINGS, PARTITIONS, WALLS AND STRUCTURAL SLABS.

4) FOR TELEPHONE SYSTEM: PROVIDE GROUNDING FOR ALL TELEPHONE BACKBOARDS, TERMINAL CABINETS AND EQUIPMENT PER REQUIREMENTS OF CEC 800 AND TELEPHONE COMPANY.

5) ALL EQUIPMENT SHALL BE PROVIDED WITH AN APPROVED DISCONNECTING MEANS PER CEC. ALL DISCONNECT SWITCHES SHALL BE SIZED PER CEC TO ACCOMMODATE EQUIPMENT SERVED, INCLUDING REQUIRED FUSES, U.O.N. SWITCHES SHALL BE HORSE POWER RATED, OF HEAVY DUTY TYPE. PROVIDE MEANS FOR PAD LOCKING IN THE OPEN POSITION.

6) ALL CIRCUIT BREAKERS SHALL BE INVERSE TIME (THERMAL MAGNETIC) "PERMANENT TRIP" TYPE. TWO AND THREE POLE CIRCUIT BREAKERS SHALL BE COMMON TRIP. AMPACITY IS EQUAL TO OR GREATER THAN CIRCUIT BREAKER FRAME AMPERE RATING.

7) ALL CONNECTIONS TO GROUND RODS AND GRID, ETC., SHALL BE MADE WITH U.L. APPROVED WELDED CONNECTIONS, UNLESS NOTED OTHERWISE.

8) LIGHTING SYSTEMS SHALL COMPLY WITH CENC. ALL LIGHTING FIXTURES, LAMPS, BALLASTS, DIMMER SWITCHES, AND CONTROLS SHALL BE CERTIFIED WITH THE CALIFORNIA ENERGY COMMISSION AS MEETING ALL CENC REQUIREMENTS AND BE LISTED IN THE APPLICABLE ENERGY COMMISSION DIRECTORY. ALL SUCH DEVICES AND EQUIPMENT SHALL BE INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS. LIGHT FIXTURES IN SUSPENDED CEILINGS SHALL BE SUPPORTED IN STRICT ACCORDANCE WITH CBC SEISMIC REQUIREMENTS.

9) LIGHT POLLUTION REDUCTION: OUTDOOR LIGHTING SYSTEMS SHALL BE INSTALLED TO COMPLY WITH THE FOLLOWING:
   1) THE MINIMUM REQUIREMENTS IN CENC FOR LIGHTING ZONES 0-4 AS DEFINED IN CH. 10 OF CAC
   2) BACKLIGHT RATINGS AS DEFINED IN IES TM-15-11
   3) UPLIGHT AND GLARE RATINGS AS DEFINED IN CEC TABLES 130.2-A AND 130.2B
   4) ALLOWABLE BUG RATING NOT EXCEEDING THOSE SHOWN IN TABLE 5.106.8, OR

   COMPLY WITH A LOCAL ORDINANCE LAWFULLY ENACTED PURSUANT TO SECTION 101.7, WHICHEVER IS MORE STRINGENT.

10) ALL ELECTRICAL EQUIPMENT, DEVICES, WIRE, ETC., SHALL BE LISTED, FOR THE INTENDED USE, WITH UNDERWRITER'S LABORATORIES, INC., (U.L.), WHERE STANDARDS HAVE BEEN ESTABLISHED BY UL. ALL EQUIPMENT SHALL BE RAIN TIGHT WHERE EXPOSED TO THE WEATHER. ALL FLEX CONDUITS CONNECTED TO SUCH EQUIPMENT SHALL BE METALLIC LIQUID TIGHT. ALL EQUIPMENT IN HAZARDOUS LOCATIONS, PER CEC, CHAPTER 5, SHALL BE IN ACCORDANCE WITH THE CEC. ALL EQUIPMENT IN CORROSIVE ENVIRONMENTS SHALL BE IN ENCLOSURES (SUCH AS NEMA 4X) RATED FOR THE ENVIRONMENT.

11) RECEPTACLES AND SWITCHES INTENDED TO BE ACCESSIBLE TO THE PUBLIC SHALL BE INSTALLED IN ACCORDANCE WITH CBC 11B-308. INSTALLATION HEIGHT ABOVE FINISHED FLOOR OR GROUND SHALL BE AS FOLLOWS: TOP OF UNOBSTRUCTED OUTLET BOXES SHALL BE NO MORE THAN 48 INCHES, BOTTOM OF UNOBSTRUCTED OUTLET BOXES SHALL BE NO LESS THAN 15 INCHES, ETC.

12) UTILITY SERVICE AND REQUIREMENTS SHALL BE COORDINATED WITH POWER SERVICE WITH POWER COMPANY; PROVIDE FOR ALL STANDARD POWER COMPANY REQUIREMENTS. FAULT CURRENT RATINGS SHALL BE PROVIDED BY UTILITY.

13) THE LAYOUTS OF THE CONTRACT DRAWINGS ARE DIAGRAMMATIC. IT IS NOT INTENDED TO SHOW EVERY OFFSET AND FITTING, NOR EVERY STRUCTURAL DIFFICULTY THAT WILL BE ENCOUNTERED DURING THE INSTALLATION OF THE WORK. ALIGNMENT OF EQUIPMENT AND ROUTING OF RACEWAYS MAY BE VARIED SLIGHTLY TO ACCOMMODATE ARCHITECTURAL CONDITIONS OR TO AVOID THE WORK OF OTHER TRADES. IF ANY CONFLICTS OCCUR NECESSITATING DEPARTURES FROM CONTRACT DRAWINGS, DETAILS OF DEPARTURES AND REASONS THEREFORE SHALL BE SUBMITTED AS SOON AS PRACTICABLE FOR WRITTEN APPROVAL OF THE ENGINEER.

14) THE WORD "CONTRACTOR", AS USED IN THE ELECTRICAL CONTRACT DOCUMENTS, SHALL MEAN THE PRIME (I.E. GENERAL) CONTRACTOR AND HIS/HER SUBCONTRACTORS FOR THE APPROPRIATE TRADE. WHERE THE OWNER ACTS AS HIS OWN CONTRACTOR, THE WORD CONTRACTOR APPLIES TO THE OWNER.

15) CONTRACTOR SHALL PROVIDE EVIDENCE OF LICENSING, BONDING, AND INSURANCE, AND PROVIDE OTHER NECESSARY ADMINISTRATIVE FUNCTIONS FOR CONTRACTOR'S WORK.

16) CONTRACTOR SHALL PROCURE AND PAY FOR ALL REQUIRED PERMITS AND SERVICE CHARGES.

17) COORDINATION: CONFORM TO GENERAL CONSTRUCTION CONTRACT DOCUMENTS EXCEPT AS MODIFIED HEREIN. REFER ALSO TO STRUCTURAL AND MECHANICAL CONTRACT DOCUMENTS. COORDINATE ALL WORK WITH OTHER TRADES.

18) CUTTING AND PATCHING: ANY CUTTING, ATTACHING, OR WELDING TO BUILDING STRUCTURE SHOULD BE COORDINATED AND APPROVED BY A CALIFORNIA LICENSED STRUCTURAL ENGINEER. PATCHING SUBJECT TO ACCEPTANCE BY OWNER.

19) SAW CUT TRENCHES IN SLAB SHALL BE FULLY RESTORED AND REINFORCED TO PREVENT SAGGING. ROUGHEN SAW CUT EDGES PRIOR TO RE-POURING CONCRETE.

20) COORDINATE ALL WORK WITH OTHER TRADES TO PROVIDE A COMPLETE INSTALLATION. CONNECT ALL EQUIPMENT FURNISHED BY OTHERS AS REQUIRED. INSTALL ALL WORK TO CLEAR ARCHITECTURAL AND STRUCTURAL MEMBERS. INSTALL ALL ABOVE GRADE (OVERHEAD) PIPING AS HIGH AS PRACTICAL.

21) RESTORE ALL DAMAGE RESULTING FROM THE WORK AND LEAVE PREMISES IN CLEAN CONDITION WHEN FINISHED WITH WORK. ADJUST, CLEAN, REPAIR, OR REPLACE PRODUCTS, WHICH HAVE BEEN DAMAGED.

22) PROVIDE FLASHING AND COUNTER FLASHING FOR ALL WALL AND ROOF PENETRATIONS.

23) WARRANTY: ALL MATERIALS AND EQUIPMENT INSTALLED UNDER THIS CONTRACT SHALL BE GUARANTEED FREE FROM ALL MECHANICAL, ELECTRICAL, AND WORKMANSHIP DEFECTS FOR A MINIMUM OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES TO THE PREMISES CAUSED BY WORK UNDER THIS CONTRACT, AS WELL AS ANY DAMAGE FROM LEAKS VIA ROOF PENETRATIONS MADE AND SEALED UNDER CONTRACTOR'S SCOPE.

MEP ANCHORAGE NOTE

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA-APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26, AND 30:

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS, OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.

B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL, AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

MEP BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7 SECTION 13.3 AS DEFINED IN ASCE 7 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2022 CBC, SECTIONS 1617A.1.24, 1617A.1.25, AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. THE MEP DESIGN PROFESSIONAL ENGINEER RESPONSIBLE FOR CONTENT ON THESE SHEETS HAS VERIFIED THAT THE DESIGN METHODS IDENTIFIED BELOW ARE IN ACCORDANCE WITH DSA IR 16-13.

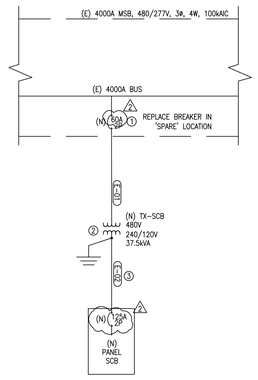
MECHANICAL PIPING (MP), MECHANICAL DUCTWORK (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP☐ MD☐ PP☐ E☒ OPTION 1: PROJECT-SPECIFIC DESIGN

MP☐ MD☐ PP☐ E☐ OPTION 2: DESIGN BASED ON OSHPD OPM, WITHIN PROJECT SUBMITTAL

MP☐ MD☐ PP☐ E☐ OPTION 3: DESIGN BASED ON OSHPD OPM, DEFERRED SUBMITTAL

PARTIAL ONE-LINE DIAGRAM



ONE-LINE KEY NOTES:

1. PROVIDE LOCKABLE BREAKER FOR TRANSFORMER TX-SCB PRIMARY SIDE DISCONNECT
2. MINIMUM #4 AWG CU GEC TO GROUND ELECTRODE SYSTEM, PROVIDE #4 AWG CU SBJ PER CEC 250.30(A)(7)(6)
3. SECONDARY CONDUCTORS MAX LENGTH SHALL BE 25' PER CEC 240.21(C)(6)

FEEDER SCHEDULE

TAG	# OF SETS	CONDUIT (PER SET)	CONDUCTORS (PER SET)		REMARKS
			PHASE/NEUTRAL	GROUND	
E-01	1	3/4"ø	(2) #6 AWG CU	(1) #8 AWG CU	
E-02	1	2"ø	(3) #1 AWG CU	(1) #4 AWG CU SSBJ	

ELECTRICAL LEGEND

	2X4 LIGHT FIXTURE (SURFACE, RECESSED)
	2X2 LIGHT FIXTURE (SURFACE, RECESSED)
	FIXTURE W/ BATTERY BACKUP (TYP. ALL SHADED FIXTURES)
	RECESSED DOWNLIGHT
	ROUND SURFACE MOUNT LIGHT
	PENDANT LIGHT
	TRACK LIGHT
	SIGNLIGHT
	WALL MOUNT LIGHT
	POLE MOUNT LIGHT - 2 HEAD
	POLE MOUNT LIGHT - 1 HEAD
	EXIT/EMERGENCY COMBO LIGHT
	EMERGENCY FIXTURE
	EXIT LIGHT
	CEILING EXHAUST FAN
S_{x}	WALL MOUNTED SWITCH
$S_{3,x}$	WALL MOUNTED 3-WAY SWITCH
(P)	PHOTOCELL
	PRIMARY AND SECONDARY DAYLIT ZONES
"x"	CEILING MOUNTED SENSOR
	RECEPTACLE - DUPLEX
	RECEPTACLE - QUADRUPLEX
	RECEPTACLE - DEDICATED
	RECEPTACLE - 2-POLE
	RECEPTACLE - SPECIALTY, SEE PLANS FOR TYPE
	RECEPTACLE WITH USB PORT
	FLOOR MOUNTED RECEPTACLE
	CEILING MOUNTED RECEPTACLE
	PHONE-DATA PORT
(S)	SMOKE DETECTOR
(C)	CARBON MONOXIDE DECTECTOR
(J)	JUNCTION BOX
3P 60	DISCONNECT - POLES (CAPACITY/FUSE)
"x"-1,3,5	HOME RUN - PANEL-CIRCUIT(S)
	WIRE/CONDUIT - OVERHEAD
	WIRE/CONDUIT - UNDERGROUND
	POWER PANEL
T	TRANSFORMER
AFF	ABOVE FINISHED FLOOR
+XX"	HEIGHT (INCHES) AFF
D	DIMMER
M	OCCUPANCY SENSOR
V	VACANCY SENSOR
GFCI	GROUND FAULT CURRENT INTERRUPTER
WP	WEATHERPROOF
HP	HORSEPOWER
BHP	BRAKE HORSEPOWER
NTS	NOT TO SCALE
GND	GROUND
GEC	GROUNDING ELECTRODE CONDUCTOR
MSB	MAIN SWITCHBOARD
SBJ	SYSTEM BONDING JUMPER
SSBJ	SUPPLY SIDE BONDING JUMPER
BCPM	BRANCH CIRCUIT POWER METER
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED

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ISSUE

Δ	DESCRIPTION	DATE
1	ADDENDUM 01	12/02/25
3	ADDENDUM 03	05/19/26

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EXP.12-31-2027
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TRACY, CA 95376

PROJECT:
TRACY HS FOOTBALL FIELD SCOREBOARD REPLACEMENT

SHEET NAME:
ELECTRICAL GENERAL NOTES & ONE-LINE DIAGRAM

CONSTRUCTION DOCUMENTS

DATE: **12/02/25** | CLIENT PROJ NO: **39-H8**

SHEET:

E0.0

AD3.02

PLEASE RECYCLE

IF THIS LINE SHOWN ABOVE IS
EXACTLY 1" LONG, THEN THIS
SHEET IS ORIGINAL MADE SIZE

EQUIPMENT SCHEDULE

TAG	TYPE	MANU.	MODEL	SERVES	RATINGS	DIMENSIONS (L"xW"xH")	WEIGHT (LBS)	REMARKS
TX-SCB	TRANSFORMER	SQUARE D	EE37S3H	PANEL SCB	37.5 kVA, 1-PHASE 480V -> 240/120V, NEMA 3R	20"x20"x37"	340	UL LISTED, PROVIDE WEATHERHELD ACCESSORY FOR TYPE 3R RATING

PANEL 'SCB' SCHEDULE

Panel Name:	SCB	Bus Rating:	125A
Voltage & Phase:	120/240V - 1Ø - 3W	AIC Rating:	22kAIC
Mounting:	Surface	Main Type:	Circuit Breaker
Enclosure Rating:	NEMA 3R	MCB Rating:	125A

Code	VA	Description	BRK	Ckt	PHASE	Ckt	BRK	Description	VA	Code
O	6727	Scoreboard Power 1	70/2	1	A	2	70/2	Scoreboard Power 2	6727	O
O	6727		-	3	B	4	-		6727	O
				5	A	6				
				7	B	8				
				9	A	10				
				11	B	12				
				13	A	14				
				15	B	16				

Largest Motor VA	0
Largest Motor Phases:	A,B
Subfeed Breaker to Panel:	

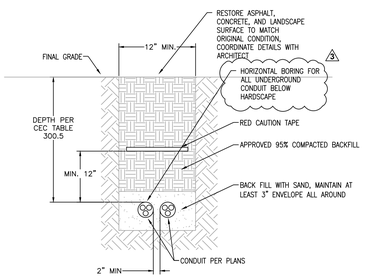
Load Code	VA Load per Phase A	B	C	Calculation Total VA	Mult.	VA Load
R = Recept	0	0	0	0	1.00	0
K = Kitchen	0	0	0	0	1.00	0
M = Motor	0	0	0	0	1.00	0
L = Lighting	0	0	0	0	1.25	0
H = Heat	0	0	0	0	1.25	0
PV = Solar	0	0	0	0	1.25	0
EV = Elec. Vehicle	0	0	0	0	1.25	0
O = Other	13454	13454	0	26908	1.00	26908
Load Totals	13454	13454	0	26908	1.00	26908
VA of Largest Motor				0	0.25	0
Subfeed VA Loads	0.0	0.0	0.0			
Total VA Loads	13454.0	13454.0	0.0			
Load Balance	100.0%	100.0%	0.0%			
VA Load This Panel						26908.0
Amperage This Panel Per Largest Phase VA						112.1

VOLTAGE DROP SUMMARY

Total Feeder Voltage Drop		Worst Case Branch Circuit		Worst Case Voltage Drop
MSB-->TX-SCB-->SCB	0.46%	SCB-1,3	2.89%	3.35%

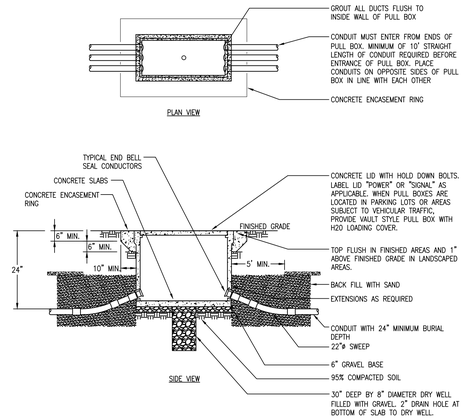
CABLE SCHEDULE

TAG	DESCRIPTION	USE
F	12 STRAND SINGLE MODE FIBER OPTIC CABLE	MDF TO VIDEO CONTROL, VIDEO CONTROL TO SCOREBOARD VIDEO DISPLAY

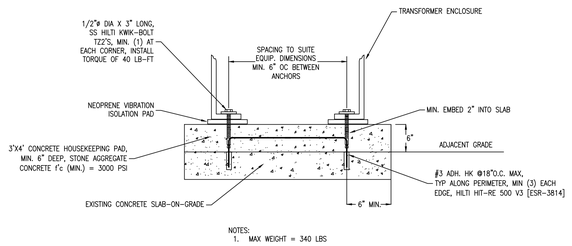


NOTES:
1. BOTTOM OF TRENCH SHALL BE SQUARE AND CLEAN
2. REFER TO PLANS FOR QUANTITY AND SIZES OF CONDUITS
3. SAND SHALL BE FINE GRANULAR MATERIAL, FREE OF ORGANIC MATTER, MICA, LOAM OR CLAY
4. PROVIDE MIN. 12" CLEARANCE ELECTRICAL AND OTHER UTILITIES (GAS, WATER, ETC.)
5. CONTRACTOR SHALL TRENCH FOR NEW UNDERGROUND CONDUIT(S). PRIOR TO TRENCHING COORDINATE EXISTING UTILITIES AND ALL FIELD CONDITIONS. NOTIFY ENGINEER OF RECORD OF ANY DISCREPANCIES OR CONFLICTS

ELECTRICAL TRENCH — 1 / E0.1

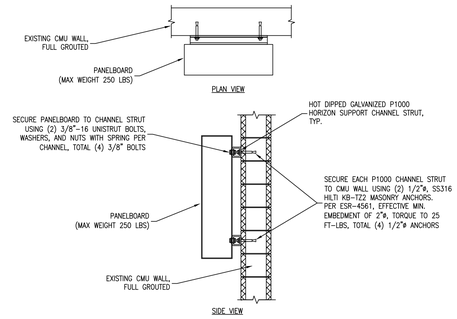


PULL BOX — 2 / E0.1



NOTES:
1. MAX WEIGHT = 340 LBS

TRANSFORMER MOUNTING — 3 / E0.1



PANELBOARD MOUNTING TO CMU WALL — 4 / E0.1

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FACILITY:
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315 E 11TH ST,
TRACY, CA 95376

PROJECT:
TRACY HS FOOTBALL FIELD SCOREBOARD REPLACEMENT

SHEET NAME:
ELECTRICAL SCHEDULES AND DETAILS

CONSTRUCTION DOCUMENTS

DATE: **12/02/25** | CLIENT PROJ NO: **39-H8**

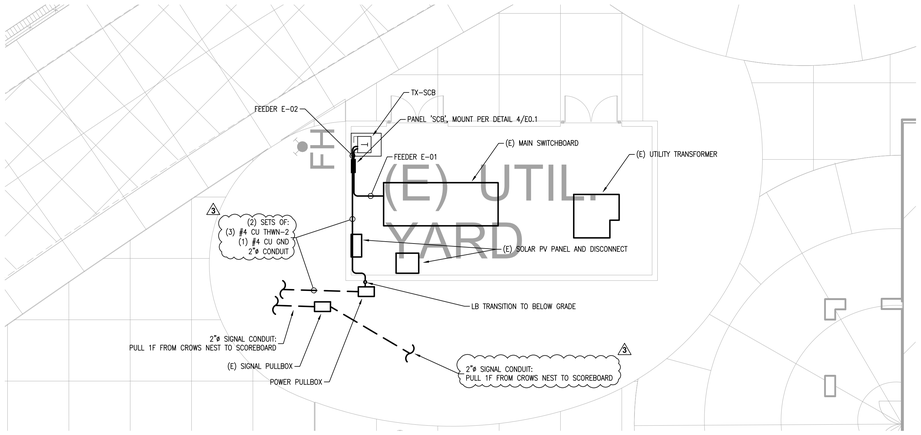
SHEET:

E0.1

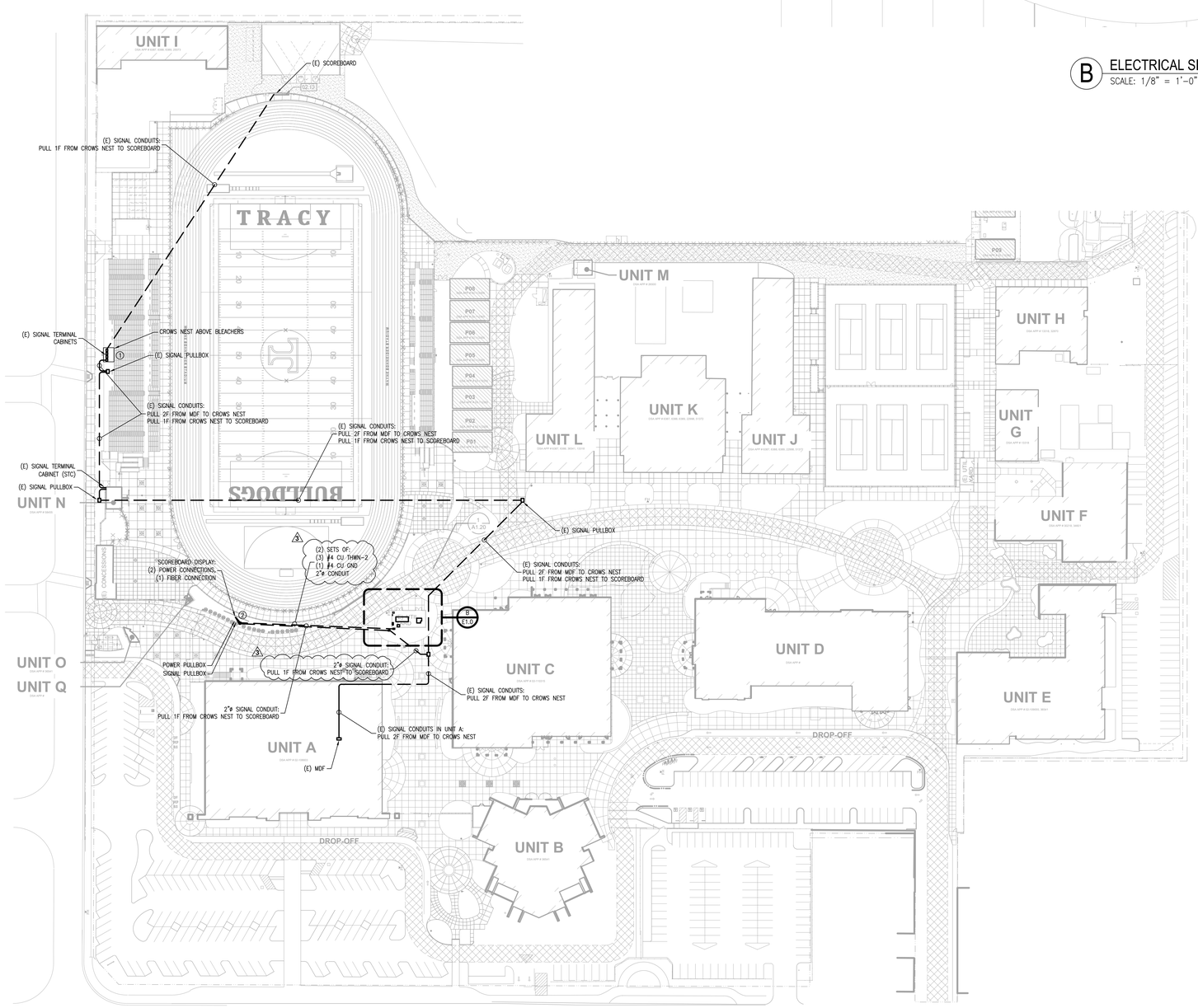
AD3.03

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY 1" LONG ON ANSI D (24"x36") SHEETS ORIGINAL IMAGE SIZE



B ELECTRICAL SITE PLAN - ENLARGED ELEC YARD
SCALE: 1/8" = 1'-0"



A ELECTRICAL SITE PLAN - OVERALL
SCALE: 1" = 60'-0"

NORTH

SHEET NOTES:

1. (E) EXISTING
   (N) NEW
   (R) RELOCATED
   (D) DEMO
2. ALL EQUIPMENT, PULL BOXES, AND POWER/CABLES/ CONDUIT SHOWN ARE (N) AND CONTRACTOR FURNISHED--CONTRACTOR INSTALLED (CFCI) U.O.N.
3. ALL UNDERGROUND CONDUIT SHALL BE PVC U.O.N. AND HAVE A MINIMUM BURIAL DEPTH PER CEC TABLE 300.5
4. PULL BOX LOCATIONS ARE DIAGRAMMATIC AND NOT DIMENSIONED. LOCATE NEW PULL BOXES IN CLOSEST LANDSCAPED AREA WHEREVER POSSIBLE. COORDINATE WITH EXACT FIELD CONDITIONS
5. PULL BOXES FOR POWER DISTRIBUTION SHALL BE TYPE NO9 MINIMUM, LID SHALL BE ENGRAVED "POWER", U.O.N.
6. PULL BOXES FOR SIGNAL DISTRIBUTION SHALL BE TYPE NO9 MINIMUM, LID SHALL BE ENGRAVED "SIGNAL", U.O.N.
7. PROVIDE PULL STRINGS IN ALL EMPTY CONDUITS
8. PRIOR TO COMMENCING TRENCHING OPERATIONS, CONTACT THE UTILITIES UNDERGROUND SERVICE ALERT BUREAU AND DETERMINE THE EXACT LOCATION OF ANY EXISTING UTILITY LINES WHICH MIGHT BE DAMAGED DURING THE INSTALLATION OF THIS WORK. HAND TRENCH, BACKFILL, AND COMPACT IN AREAS OF EXISTING UTILITY LINES TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING THE LOCATION OF ALL CUSTOMER SIDE UNDERGROUND UTILITIES, INCLUDING BUT NOT LIMITED TO, DOMESTIC WATER PIPING, FIRE PROTECTION PIPING, STORM DRAINAGE PIPING, GAS PIPING, SEWER PIPING, ELECTRICAL CONDUIT, ETC. CONDUIT PATHWAYS SHOWN ARE SCHEMATIC IN NATURE AND SHALL BE FIELD VERIFIED TO AVOID EXISTING UTILITIES, TREES, AND MINIMIZE THE AMOUNT OF HARDSCAPE REPAIR AS MUCH AS POSSIBLE
9. RESTORE LANDSCAPE SURFACE TO MATCH ORIGINAL CONDITION.
10. THE CONTRACTOR SHALL UTILIZE HORIZONTAL "TRENCHLESS" BORING FOR UNDERGROUND CONDUIT RUNS BELOW HARDSCAPE (CONCRETE AND ASPHALT). COORDINATE BORING DETAILS WITH OWNER PRIOR TO CONSTRUCTION

KEY NOTES:

1. PULL FIBER CABLES THRU EXISTING SIGNAL CONDUITS UP TO THE EXISTING CROWS NEST ABOVE BLEACHERS. FURNISH AND INSTALL A DAKTRONICS VIDEO CONTROL (120V, 184 WATTS), COORDINATE POWER WITH EXISTING CIRCUITRY/RECEPTACLES. COORDINATE FIBER CONNECTIONS WITH DISTRICT FOR NEW AND EXISTING SCOREBOARDS
2. CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING ALL POWER, SIGNAL, AND GROUNDING REQUIREMENTS FOR THE NEW SCOREBOARD PER MANUFACTURER REQUIREMENTS

AGENCY APPROVAL:

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EXP. 12-31-2027
ELECTRICAL
STATE OF CALIFORNIA

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TRACY HIGH SCHOOL
315 E 11TH ST,
TRACY, CA 95376

PROJECT:
TRACY HS FOOTBALL FIELD SCOREBOARD REPLACEMENT

SHEET NAME:
ELECTRICAL SITE PLAN

CONSTRUCTION DOCUMENTS

DATE: **12/02/25** | CLIENT PROJ NO: **39-H8**

SHEET:

E1.0

AD3.04

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ADDENDUM 02
ATTACHMENT A

GEOTECHNICAL ENGINEERING INVESTIGATION
TRACY UNIFIED SCHOOL DISTRICT
SOLAR CARPORTS
TRACY HIGH SCHOOL
TRACY, CALIFORNIA

BSK PROJECT G20-145-11S

PREPARED FOR:

FOREFRONT POWER
100 MONTGOMERY STREET #1400
SAN FRANCISCO, CA 94104

OCTOBER 5, 2020

GEOTECHNICAL ENGINEERING INVESTIGATION REPORT
TRACY UNIFIED SCHOOL DISTRICT SOLAR CARPORTS
TRACY HIGH SCHOOL
TRACY, CALIFORNIA

Prepared for:

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Sacramento Project: G20-145-11S

October 5, 2020

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2. Field Investigation and Laboratory Testing 1
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Tables

Table 1: Seismic Design Parameters
Table 2: Recommended Static Lateral Earth Pressures for Footings

Appendices

Appendix A: Field Exploration

Table A-1:	Apparent Relative Density Coarse-Grained Soil by Sampler Blow Count
Table A-2:	Consistency Fine-Grained Soil by Sampler Blow Count
Figure A-1:	Site Vicinity Map
Figure A-2:	Boring and CPT Location Map
Figure A-3:	Soil Classification Chart and Key to Test Data
Boring Logs:	Borings B-1 through B-4
CPT Logs:	CPT-1 and CPT-2

Appendix B: Laboratory Testing

Table B-1:	Summary of Corrosion Test Results
Figure B-1:	TXUU Test Results
Figure B-2:	Expansion Index Test Results

Appendix C: Geologic and Seismic Hazards Evaluation

1. INTRODUCTION

This report presents the results of a Geotechnical Engineering Investigation conducted by BSK Associates (BSK), for the proposed solar carports at Tracy Unified School District, Tracy High School in Tracy, California (Site). The Site is located next to the existing school at 315 E 11th Street in Tracy, California, as shown on the Site Vicinity Map, Figure A-1. The geotechnical engineering investigation was conducted in accordance with BSK Proposal GS20-20247, dated June 22, 2020.

This report provides a description of the geotechnical conditions at the Site and provides specific recommendations for earthwork and foundation design with respect to the planned structures. In the event that changes occur in the design of the project, this report's conclusions and recommendations will not be considered valid unless the changes are reviewed with BSK and the conclusions and recommendations are modified or verified in writing. Examples of such changes would include location, size of structures, foundation loads, etc.

1.1. Planned Construction

Based on the site plan provided by you, the planned solar carports have a system size of 574.56 kW DC. BSK also understands the system will be a canopy type. The PV panels will be supported on cast-in-drilled-hole (CIDH) piers or pole-type foundations. AC electrical equipment will be supported on drilled piers, shallow foundations, or mat foundations.

The elevated canopy solar panels are relatively light; however, wind and seismic loads will create lateral forces which are likely to control the foundation dimensions. The structural loads were not available at the time of investigation. The planned construction will also include electric trenching and inverter mounted on a shallow foundation.

In the event that significant changes occur in the design of the proposed improvements, this report's conclusions and recommendations will not be considered valid unless the changes are reviewed with BSK and the conclusions and recommendations are modified or verified in writing.

1.2. Purpose and Scope of Services

The objective of this geotechnical investigation was to characterize the subsurface conditions in the areas of the proposed structures and provide geotechnical engineering recommendations for the preparation of plans and specifications and bearing and lateral earth pressure conditions. The scope of the investigation included a field exploration, laboratory testing, engineering analyses, and preparation of this report.

2. FIELD INVESTIGATION AND LABORATORY TESTING

2.1. Field Exploration

The field exploration for this investigation was conducted under the oversight of a BSK staff member. Four (4) borings were drilled at the site on August 5, 2020 using a truck-mounted drill rig provided by Baja Exploration of Escondido, California. The borings were drilled to a maximum depth of

approximately 21.5 feet below ground surface (bgs). Two (2) CPTs were pushed at the site on August 7, 2020 using a 25-ton truck-mounted CPT rig with a 15 cm^2 cone provided by Middle Earth Geo Testing from Hayward, California. Well permits were obtained from San Joaquin County Environmental Health Department.

The soil materials encountered in the Borings were visually classified in the field, and the logs were recorded during the drilling and sampling operations. Visual classification of the materials encountered in the borings were made in general accordance with the Unified Soil Classification System (ASTM D 2488). A soil classification chart is presented in Appendix A.

Boring logs are presented in Appendix A and should be consulted for more details concerning subsurface conditions. Stratification lines were approximated by the field staff based on observations made at the time of drilling, while the actual boundaries between soil types may be gradual and soil conditions may vary at other locations.

2.2 Laboratory Testing

Laboratory tests were performed on selected soil samples to evaluate moisture content, dry density, shear strength, expansion index, and corrosion characteristics. A description of the laboratory test methods and results are presented in Appendix B.

3. SITE AND SUBSURFACE CONDITIONS

The following sections address the Site descriptions and surface conditions, subsurface conditions, and groundwater conditions at the Site. This information is based on BSK's field exploration and published maps and reports.

3.1 Site Description and Surface Conditions

The Site is located in an existing asphalt concrete parking lot. The site is located in the southeast quarter of the southeast quarter of Section 21, Township 2 South, Range 5 East of the Mount Diablo Meridian. The NAD 83 GPS coordinates for the center of the Site are 37.7402 degrees North latitude and 121.4182 degrees West longitude.

3.2 Subsurface Conditions

The subsurface material generally consisted of 3 inches of asphalt concrete and 8 inches of aggregate base. In the borings, the pavement section is underlain by medium stiff to very stiff clay to 10 to 21 feet then medium dense clayey sand, silty sand or sand to the maximum depth of exploration (21.5 feet bgs). In the CPT, the pavement section is underlain by clay, silty clay and sandy silt to 14 to 17 feet then sand and gravelly clay to 20 to 22 feet then clay to silty clay to 30 feet then sand and gravelly sand to 34 feet then clay, silty clay, and sandy silt to the maximum depth of exploration (51.0 feet bgs).

The upper 5 feet of on-site soil is considered to have a medium expansion potential with an expansion index of 80 at Boring B-1.

The boring logs in Appendix A provide a more detailed description of the materials encountered, including the applicable Unified Soil Classification System symbols. The CPT logs in Appendix C provide a more detailed description of the materials encountered.

3.3 Groundwater Conditions

Groundwater was encountered at the time of pushing the CPTs on August 7, 2020 at an estimated depth of 13 feet bgs and at the time of drilling the borings on August 5, 2020 at an estimated depth of 13 to 15 feet. To ascertain groundwater levels for the area during other time periods, groundwater elevation data from the California Department of Water Resources (DWR) was obtained for comparison. The depth to groundwater was approximately 6 feet bgs in 1970 in the site vicinity.

Please note that the groundwater level may fluctuate both seasonally and from year to year due to variations in rainfall, temperature, pumping from wells and possibly as the result of other factors such as irrigation, that were not evident at the time of our investigation.

4. CONCLUSIONS AND RECOMMENDATIONS

Based upon the data collected during this investigation, and from a geotechnical engineering standpoint, it is our opinion that the soil conditions would not preclude the construction of the proposed improvements.

The proposed improvements may be supported on shallow or mat foundations or drilled pier foundations if the recommendations presented herein are incorporated into the design and construction of the project.

4.1 Seismic Design Criteria

Based on Section 1613.2.2 of the 2019 California Building Code (CBC), the Site shall be classified as Site Class A, B, C, D, E or F based on the Site soil properties and in accordance with Chapter 20 of ASCE 7-16. Based on the averaged shear wave velocity of 805 ft/s (245 m/s) as measured in the seismic cone test from CPT-1, as per Table 20.3-1 of ASCE 7-16, the Site is Class D (600 ft/s ≤ Vs ≤ 1,200 ft/s).

The 2019 CBC utilizes ground motion based on the Risk-Targeted Maximum Considered Earthquake (MCER) that is defined in the 2019 CBC as the most severe earthquake effects considered by this code, determined for the orientation that results in the largest maximum response to horizontal ground motions and with adjustment for targeted risk. Ground motion parameters in the 2019 CBC are based on ASCE 7-16, Chapter 11.

The Structural Engineers Associates of California (SEAOC) has prepared maps presenting the Risk-Targeted MCE spectral acceleration (5 percent damping) for periods of 0.2 seconds (S_S) and 1.0 seconds (S_1). The values of S_S and S_1 can be obtained from the Occupational Safety Health Planning and Development (OSHPD) Seismic Design Maps Tool at: https://seismicmaps.org/.

The OSHPD Seismic Design Maps Tool and Chapter 16 of the 2019 CBC based on ASCE 7-16 produced the spectral acceleration parameters risk targeted maximum considered earthquake values in Table 1 based on Site Class D conditions.

As per Section 1803.5.12 of the 2019 CBC, peak ground acceleration (PGA) utilized for dynamic lateral earth pressures and liquefaction, shall be based on a site-specific study (ASCE 7-16, Section 21.5) or ASCE 7-16, Section 11.8.3. The OSHPD Seismic Design Maps Tool and based on ASCE 7-16, Section 11.8.3 produced the Geometric Mean PGA value in Table 1 based on Site Class D conditions.

Table 1: Seismic Design Parameters

Seismic Design Parameter	2019 CBC Value		Reference
MCE Mapped Spectral Acceleration (g)	S_S = 1.113	S_1 = 0.391	USGS Mapped Value
Amplification Factors (Site Class D)	F_a = 1.055	F_V = null[1](1.909)[2]	ASCE Table 11.4
Site Adjusted MCE Spectral Acceleration (g)	S_{MS} = 1.174	S_{M1} = null[1](0.746)[2]	ASCE Equations 11.4.1-2
Design Spectral Acceleration (g)	S_{DS} = 0.783	S_{D1} = null[1] (0.498)[2]	ASCE Equations 11.4.1-4
Geometric Mean PGA (g)	PGA_M = 0.527		Section 11.8.3, ASCE 7-16
Site Short Period – T_S (seconds)	T_S = 0.636		$T_S = S_{D1}/ S_{DS}$
Site Long Period – T_L (seconds)	T_L = 8		USGS Mapped Value

Notes: [1] Requires site-specific ground motion procedure or exception as per ASCE 7-16 Section 11.4.8
[2] Values from ASCE 7-16 supplement, shall only be used to calculate T_S

4.2 Soil Corrosivity

A surface soil sample obtained from the Site were tested to provide a preliminary screening of the potential for concrete deterioration or steel corrosion due to attack by soil-borne soluble salts. The test results are presented in Appendix B.

The corrosivity evaluation was performed by BSK on a composite soil sample from B-3 in the upper 5 feet obtained at the time of drilling. The soil was evaluated for pH (ASTM D4972), and soluble sulfate and chlorides (CT 417 and CT 422). The sample has a minimum resistivity of 740 cm-ohm, pH is 8.1, sulfate was 220 mg/kg, and chloride was 18 mg/kg.

The water-soluble sulfate content severity class is considered moderately severe to concrete (Exposure Category S1 per Table 4.2.1 of ACI 318-11). The site soils minimum resistivity is considered very severely corrosive to buried metal. Therefore, buried metal conduits, ferrous metal pipes, and exposed steel should have a protective coating in accordance with the manufacturer's specification. The above are general discussions. A more detailed investigation may include more or fewer concerns and should be directed by a corrosion expert. BSK does not practice corrosion engineering.

4.3 Site Preparation Recommendations

The following procedures must be implemented during Site preparation for the proposed Site improvements. References to maximum dry density, optimum moisture content, and relative compaction are based on ASTM D 1557 (latest test revision) laboratory test procedures.

1. The areas of proposed improvements must be cleared of surface vegetation and debris. Materials resulting from the clearing and stripping operations must be removed and properly disposed of off-site. All landscape irrigation should be shut off one month prior to construction. In addition, all undocumented fills should be removed where encountered and where fills or structural improvements will be placed. Following the stripping operations, the areas where shallow foundations are proposed, the Site must be overexcavated to a minimum depth of four feet below existing grade or a minimum of one foot below the bottom of the footing elevation, whichever is greater. Overexcavation should extend laterally at least five feet beyond the edge of footings. Yielding areas should be observed by the geotechnical consultant and removed and recompacted if necessary.
2. Following the required stripping and overexcavation, the exposed ground surface must be inspected by the Geotechnical Engineer to evaluate if loose or soft zones are present that will require over excavation. The bottom of the overexcavation should be scarified a minimum of 8 inches and compacted to 90 percent relative compaction (based on ASTM D1557).
3. Imported soils, free of organic materials or deleterious substances, may be placed as compacted engineered fill. The material must be free of oversized fragments greater than 3-inches in greatest dimension. Engineered fill must be placed in uniform layers not exceeding 8-inches in loose thickness, moisture conditioned to within 2 percent of the optimum moisture content, and compacted to at least 90 percent relative compaction.
4. BSK must be called to the site to verify the import material properties through laboratory testing.
5. If possible, earthwork operations should be scheduled during a dry, warm period of the year. Should these operations be performed during or shortly following periods of inclement weather, unstable soil conditions may result in the soils exhibiting a “pumping” condition. This condition is caused by excess moisture in combination with moving construction equipment, resulting in saturation and zero air voids in the soils. If this condition occurs, the adverse soils will need to be over-excavated to the depth at which stable soils are encountered and replaced with suitable soils compacted as engineered fill. Alternatively, the Contractor may proceed with grading operations after utilizing a method to stabilize the soil subgrade, which should be subject to review and approval by BSK prior to implementation.
6. Import fill materials must be free from organic materials or deleterious substances. The project specifications must require the contractor to contact BSK to review the proposed import fill materials for conformance with these recommendations at least one week prior to importing to the Site, whether from on-site or off-site borrow areas. Imported fill soils must be non-hazardous and derived from a single, consistent soil type source conforming to the following criteria:

Plasticity Index:	< 12
Expansion Index:	< 20 (Very Low Expansion Potential)

Maximum Particle Size:	3 inches
Percent Passing #4 Sieve:	65 - 100
Percent Passing #200 Sieve:	20 - 45
Low Corrosion Potential:	Soluble Sulfates < 1,500 ppm
	Soluble Chlorides < 150 ppm
	Minimum Resistivity > 3,000 ohm-cm

4.4 Foundations

Provided the recommendations contained in this report are implemented during design and construction, it is our opinion that the structures can be supported on shallow or mat foundations or drilled piers. A structural engineer should evaluate reinforcement, embedment depth, and pier diameter based on the requirements for the structural loadings, shrinkage and temperature stresses.

4.4.1 Shallow Foundations

Continuous and isolated spread footings must have a minimum width of 12 inches and 24 inches, respectively. The minimum foundation depth for spread footings is 18 inches. Continuous and isolated spread footing foundations may be designed using a net allowable bearing pressure of 3,000 pounds per square foot (psf). The net allowable bearing pressure applies to the dead load plus live load (DL + LL) condition; it may be increased by 1/3 for wind or seismic loads. Total foundation settlements are expected to be less than 0.5 and differential settlements between similarly loaded (DL + LL) and sized footings are anticipated to be less than 0.25. Differential settlement of continuous footings, expressed in terms of angular distortion, is estimated to be approximately 1/600. Seismic settlement should also be considered in design. For slab on grades, a soil modulus of 200 pci may be used for design.

4.4.2 Mat Foundations

We understand that the structure may be supported on a concrete mat foundation. The mat foundation may be designed to impose a maximum allowable pressure of 1,500 pounds per square foot (psf) due to dead plus live loads. This value may be increased by one-third for transient loads such as seismic or wind. The concrete mat foundation should be embedded at least 12 inches below the lowest adjacent grade.

Settlements: Based on the results of our laboratory tests and analyses, total static settlements of the mat foundation under the allowable bearing pressure are expected to be approximately 1-inch, and maximum differential settlements are expected to be about 1/2-inch. Seismic settlement should be considered in design.

4.4.3 Pole-Type Foundations

The canopy structures may be supported on pole-type foundations. Pole-type foundations should be designed for Soil Class V (per Teichert Soil Class Table) corresponding to an allowable lateral soil bearing pressure of 400 psf per foot of embedment and max lateral bearing pressure of 6,000 psf. This value takes into consideration CBC Section 1806.3.4 for pole type foundations not adversely affected by ½-inch of movement at the ground surface, to include doubling the allowable lateral bearing pressure and with an allowable 1/3 increase using the alternative basic load combinations of CBC Section 1605A.3.2

that include wind or earthquake loads. The upper foot of soil should be ignored when calculating the minimum embedment depth. If the pole-type foundation is in the asphalt concrete pavement, the upper one foot can be used for design. The site designer should review the anticipated surface conditions and Section 3.1 of this report.

Pole-type foundations should have a minimum embedment length of 7-feet and minimum diameter of 24-inches but should be sized according to design loads. Pole-type foundations should be spaced a minimum of 3 pile diameters apart. To support vertical loads applied to the pile foundations, an allowable static downward skin friction value of 300 psf may be used, which includes a factor of safety of 1.5, per the 2019 CBC and an allowable static end bearing pressure of 3,000 psf which includes a factor of safety of 3. End bearing and skin friction may be increased by 1/3 where used with the alternative basic load combinations of CBC Section 1605A.3.2 that include wind or earthquake loads. The total settlement of pile foundations designed in accordance with these recommendations should not exceed one-half inch and a differential settlement should not exceed one-quarter inch for static conditions. Total and differential seismic settlement discussed in Appendix C of this report should also be considered in design.

Where uplift is due to wind or seismic loading, an allowable skin friction of 300 psf may be used, which includes a factor of safety of 1.5, to resist transient uplift loads, per the 2019 CBC. Skin friction may be increased by 1/3 where used with the alternative basic load combinations of CBC Section 1605A.3.2 that include wind or earthquake loads. The weight of the pile may be taken into consideration when determining resistance to uplift loads.

4.4.4 Drilled Pier Foundation Considerations

Casing may be required when drilling in loose and/or dry sands or below the ground water table. BSK recommends that the means and method be determined by an experienced drilling contractor in the area. If the casing is left in place, BSK recommends under drilling the hole and driving casing to ensure cohesion between the casing and the soil. For this condition, skin friction in both up and down directions may be considered in the design. The allowable downward skin friction value of 300 psf and allowable uplift skin friction of 300 psf may be increased by 1/3 where used with the alternative basic load combinations of CBC Section 1605A.3.2 that include wind or earthquake loads. These values are applicable both above and below the historic ground water table during seismic loading and all other applicable loads.

For drilled pier foundations, prior to placing reinforcing steel or concrete, loose or disturbed soils should be removed from drilled pier excavations. If end bearing is used to provide vertical support for the planned structures, a clean out bucket should be used to remove loose soil from the bottom of the pier holes. Alternatively, the bottom of the holes should be tamped to the satisfaction of the Geotechnical Engineer to compact loose soil at the bottom of the pier holes. A representative of BSK should observe the drilling and clean-out associated with the construction of pier foundations to assess whether the actual bearing conditions are compatible with the conditions anticipated during the preparation of this report. We recommend that construction of the drilled piers be completed on the same day the holes

are drilled to reduce the potential for drying of the soil along the sides of the hole. In the event the construction of drilled piers is not completed on the same day, the holes shall be viewed by the Geotechnical Engineer prior to pouring concrete to determine if holes require any additional modifications (e.g. if the soil is allowed to dry out, the pier holes should be reamed to remove any cracked, desiccated soil). A concrete mix with a low water/cement ratio should be used via tremie pipe in the construction of the piers to reduce shrinkage of the concrete. To increase the fluidity of the mix for improved consolidation and bond with the reinforcing steel, an increased slump may be desirable. This should be achieved by using a plasticizer as opposed to adding water to the mix.

If water is encountered within the drilled pier holes, whether from surface or subsurface sources, no more than 6 inches of standing water should be present during concrete placement. Otherwise, the water needs to be pumped out or the concrete needs to be placed into the hole using tremie methods. If tremie methods are used, the end of the tremie pipe must remain below the surface of the in-place concrete at all times. In order to develop the design skin friction value previously provided, concrete used for pier construction should have a slump of 6 to 8 inches.

Drilling mud and/or sand cement slurry may also be considered to maintain excavation stability. BSK recommends that the means and method be determined by an experienced drilling contractor in the area. For the drilling mud option, a tremie pipe must be used and drilling mud controlled during concrete placement. For the sand cement slurry option, BSK recommends using a sand cement slurry mix sufficient to maintain stability during drilled pier installation. If the sand cement slurry mixed selected by the contractor is observed to slough or cave, the excavation bottom will require cleaning and potentially the re-drilling and replacement prior to drilled pier installation. BSK further recommends over drilling the excavation by a factor of at least three pile diameters and to allow the sand cement slurry mix to achieve the specified design strength prior to drilled pier installation. For the drilling mud and/or sand cement slurry options, BSK should be contacted to observe excavation cleanouts and concrete placement.

4.5 Lateral Earth Pressures and Frictional Resistance

Provided the Site is prepared as recommended above, the following earth pressure parameters for footings may be used for design purposes. The parameters shown in the table below are for drained conditions of select engineered fill or undisturbed native soil.

Table 2: Recommended Static Lateral Earth Pressures for Footings

Lateral Pressure Condition	Equivalent Fluid Density (pcf) Drained Condition
Active Pressure	50
At Rest Pressure	70
Passive Pressure	300

The lateral earth pressures listed herein are obtained by the conventional equation for active, at rest, and passive conditions assuming level backfill and a bulk unit weight of 120 pcf for the Site soils. A coefficient of friction of 0.22 may be used between soil sub-grade and the bottom of footings.

The coefficient of friction and passive earth pressure values given above represent ultimate soil strength values. BSK recommends that a safety factor consistent with the design conditions be included in their usage in accordance with Sections 1806.3.1 through 1806.3.3 of the 2019 CBC. For stability against lateral sliding that is resisted solely by the passive earth pressure against footings or friction along the bottom of footings, a minimum safety factor of 1.5 is recommended. For stability against lateral sliding that is resisted by combined passive pressure and frictional resistance, a minimum safety factor of 2.0 is recommended. For lateral stability against seismic loading conditions, a minimum safety factor of 1.2 is recommended.

4.6 Excavation Stability

Soils encountered within the depth explored are generally classified as Type C soils in accordance with OSHA (Occupational Safety and Health Administration). The slopes surrounding or along temporary excavations may be vertical for excavations that are less than five feet deep and exhibit no indication of potential caving, but should be no steeper than 1.5H:1V for excavations that are deeper than five feet, up to a maximum depth of 15 feet. Certified trench shields or boxes may also be used to protect workers during construction in excavations that have vertical sidewalls and are greater than 5 feet deep. Temporary excavations for the project construction should be left open for as short a time as possible and should be protected from water runoff. In addition, equipment and/or soil stockpiles must be maintained at least 10 feet away from the top of the excavations. Because of variability in soils, BSK must be afforded the opportunity to observe and document sloping and shoring conditions at the time of construction. Slope height, slope inclination, and excavation depths (including utility trench excavations) must in no case exceed those specified in local, state, or federal safety regulations, (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations).

4.7 Trench Backfill and Compaction

Processed on-Site soils, which are free of organic material, are suitable for use as general trench backfill above the pipe envelope. Native soil with particles less than three inches in the greatest dimension may be incorporated into the backfill and compacted as specified above, provided they are properly mixed into a matrix of friable soils. The backfill must be placed in thin layers not exceeding 12 inches in loose thickness, be well-blended and consistent texture, moisture conditioned to at least optimum moisture content, and compacted to at least 90 percent of the maximum dry density as determined by the ASTM D1557. The uppermost 12 inches of trench backfill below pavement sections must be compacted to at least 95 percent of the maximum dry density as determined by ASTM D1557. Moisture content within two percent of optimum must be maintained while compacting this upper 12-inch trench backfill zone.

We recommend that trench backfill be tested for compliance with the recommended Relative Compaction and moisture conditions. Field density testing should conform to ASTM Test Methods D1556 or D6938. We recommend that field density tests be performed in the utility trench bedding,

envelope and backfill for every vertical lift, at an approximate longitudinal spacing of not greater than 150 feet. Backfill that does not conform to the criteria specified in this section should be removed or reworked, as applicable over the trench length represented by the failing test so as to conform to BSK recommendations.

4.8 Drainage Considerations

The control surface drainage in the project areas is an important design consideration. BSK recommends that final grading around shallow foundations must provide for positive and enduring drainage away from the structures, and ponding of water must not be allowed around, or near the shallow foundations. Ground surface profiles next to the shallow foundations must have at least a 2 percent gradient away from the structures.

5. PLANS AND SPECIFICATIONS REVIEW

BSK recommends that it be retained to review the draft plans and specifications for the project, with regard to foundations and earthwork, prior to their being finalized and issued for construction bidding.

6. CONSTRUCTION TESTING AND OBSERVATIONS

Geotechnical testing and observation during construction is a vital extension of this geotechnical investigation. BSK recommends that it be retained for those services. Field review during Site preparation and grading allows for evaluation of the exposed soil conditions and confirmation or revision of the assumptions and extrapolations made in formulating the design parameters and recommendations. BSK's observations must be supplemented with periodic compaction tests to establish substantial conformance with these recommendations. BSK must also be called to the Site to observe foundation excavations, prior to placement of reinforcing steel or concrete, in order to assess whether the actual bearing conditions are compatible with the conditions anticipated during the preparation of this report. BSK must also be called to the Site to observe placement of foundation and slab concrete.

If a firm other than BSK is retained for these services during construction, then that firm must notify the owner, project designers, governmental building officials, and BSK that the firm has assumed the responsibility for all phases (i.e., both design and construction) of the project within the purview of the Geotechnical Engineer. Notification must indicate that the firm has reviewed this report and any subsequent addenda, and that it either agrees with BSK's conclusions and recommendations, or that it will provide independent recommendations.

7. LIMITATIONS

The analyses and recommendations submitted in this report are based upon the data obtained from the Borings performed at the locations shown on the Boring and CPT Location Map, Figure A-2. The report does not reflect variations which may occur between or beyond the Borings and CPTs. The nature and extent of such variations may not become evident until construction is initiated. If variations then

appear, a re-evaluation of the recommendations of this report will be necessary after performing on-Site observations during the excavation period and noting the characteristics of the variations.

The validity of the recommendations contained in this report is also dependent upon an adequate testing and observation program during the construction phase. BSK assumes no responsibility for construction compliance with the design concepts or recommendations unless it has been retained to perform the testing and observation services during construction as described above.

The findings of this report are valid as of the present. However, changes in the conditions of the Site can occur with the passage of time, whether caused by natural processes or the work of man, on this property or adjacent property. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation, governmental policy or the broadening of knowledge.

BSK has prepared this report for the exclusive use of the Client and members of the project design team. The report has been prepared in accordance with generally accepted geotechnical engineering practices which existed in San Joaquin County at the time the report was written. No other warranties either expressed or implied are made as to the professional advice provided under the terms of BSK's agreement with Client and included in this report.

8. REFERENCES

Earth Point. http://earthpoint.us/townships.aspx, Public Land Survey System, Google Earth, 2020.

Lee, Norman. California Geomorphic Provinces (2012): n. pag. California Department of Conservation. California Geological Survey. <http://www.conservation.ca.gov/cgs/information/publications/cgs_notes/note_36/Documents/note_36.pdf>.

USGS/OSHPD, U.S. Seismic Design Maps, https://seismicmaps.org/. 2020.
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APPENDIX A

FIELD EXPLORATION

APPENDIX A

FIELD EXPLORATION

The field exploration for this investigation was conducted under the oversight of a BSK staff member. Four (4) borings were drilled at the site on August 5, 2020 using a truck-mounted drill rig provided by Baja Exploration of Escondido, California. The borings were drilled to a maximum depth of approximately 21.5 feet below ground surface (bgs). Two (2) CPTs were pushed at the site on August 7, 2020 using a 25-ton truck-mounted CPT rig with a 15 cm^2 cone provided by Middle Earth Geo Testing from Hayward, California. Well permits were obtained from San Joaquin County Environmental Health Department.

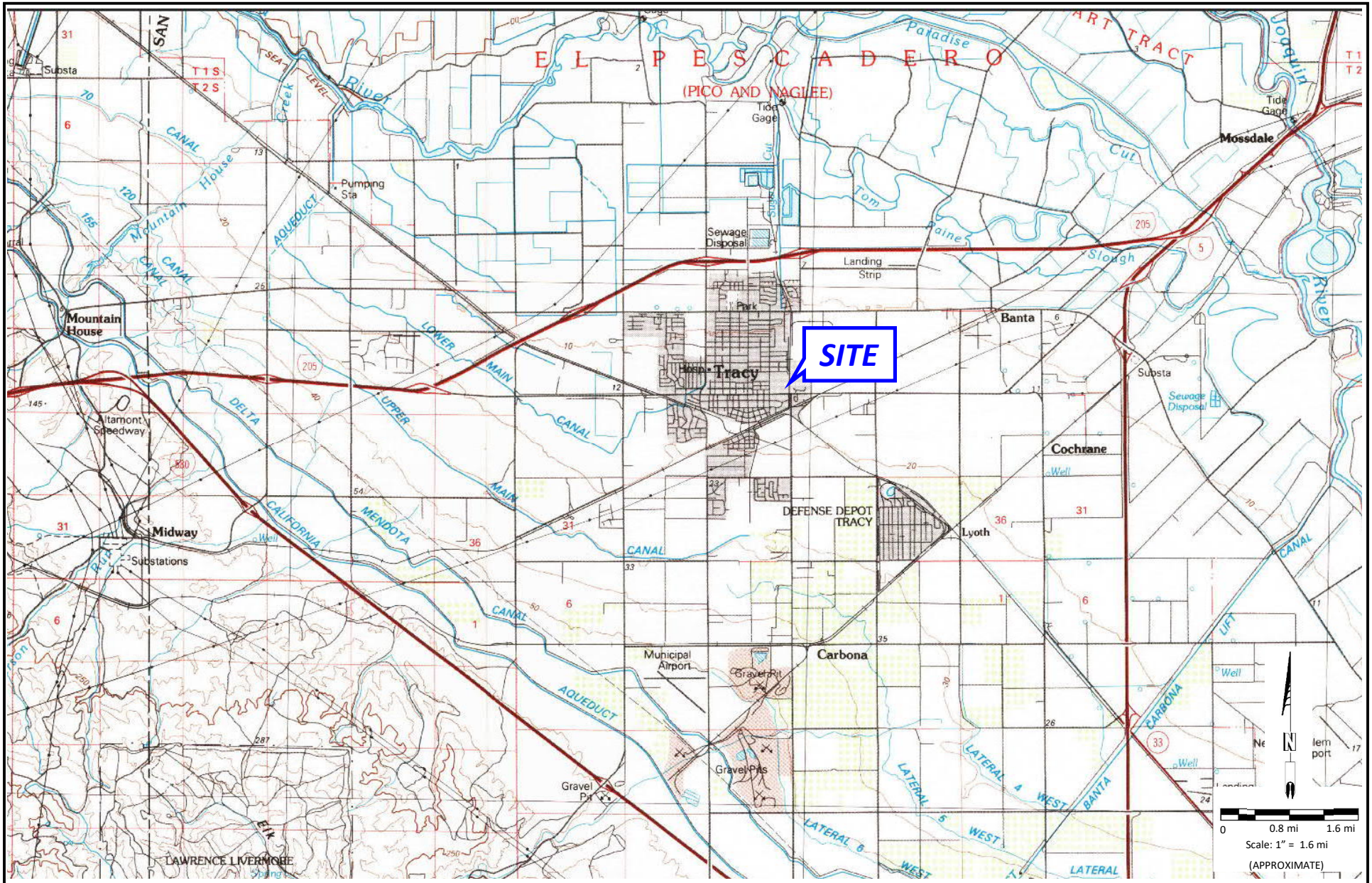
The soil materials encountered in the test borings were visually classified in the field, and the logs were recorded during the drilling and sampling operations. Visual classification of the materials encountered in the test borings was made in general accordance with the Unified Soil Classification System (ASTM D 2488). A soil classification chart is presented herein. Boring logs are presented herein and should be consulted for more details concerning subsurface conditions. Stratification lines were approximated by the field staff based on observations made at the time of drilling, while the actual boundaries between soil types may be gradual and soil conditions may vary at other locations.

Subsurface samples were obtained at the successive depths shown on the boring logs by driving samplers which consisted of a 2.5-inch inside diameter (I.D.) California Sampler and a 1.4-inch I.D. Standard Penetration Test (SPT) Sampler. The samplers were driven 18 inches using a 140-pound hammer dropped from a height of 30 inches by means of either an automatic hammer or a down-hole safety hammer. The number of blows required to drive the last 12 inches was recorded as the blow count (blows/foot) on the boring logs. The relatively undisturbed soil core samples were capped at both ends to preserve the samples at their natural moisture content. Soil samples were also obtained using the SPT Sampler lined with metal tubes or unlined in which case the samples were placed and sealed in polyethylene bags. At the completion of the field exploration, the test borings were backfilled with the excavated soil cuttings and the CPTs were backfilled with bentonite.

It should be noted that the use of terms such as “loose”, “medium dense”, “dense” or “very dense” to describe the consistency of a soil is based on sampler blow count and is not necessarily reflective of the in-place density or unit weight of the soils being sampled. The relationship between sampler blow count and consistency is provided in the following Tables A-1 and A-2 for coarse-grained (sandy and gravelly) soils and fine grained (silty and clayey) soils, respectively.

Table A-1: Apparent Relative Density of Coarse-Grained Soil by Sampler Blow Count		
Consistency Descriptor	SPT Blow Count (#Blows / Foot)	2.5" I.D. California Sampler Blow Count (#Blows / Foot)
Very Loose	<4	<6
Loose	4 – 10	6 – 15
Medium Dense	10 – 30	15 – 45
Dense	30 – 50	45 – 80
Very Dense	>50	>80

Table A-2: Consistency of Fine-Grained Soil by Sampler Blow Count		
Consistency Descriptor	SPT Blow Count (#Blows / Foot)	2.5" I.D. California Sampler Blow Count (#Blows / Foot)
Very Soft	<2	<3
Soft	2 – 4	3 – 6
Firm	4 – 8	6 – 12
Very Firm	8 – 15	12 – 24
Hard	15 – 30	24 – 45



REFERENCE IMAGE: USGS Topo

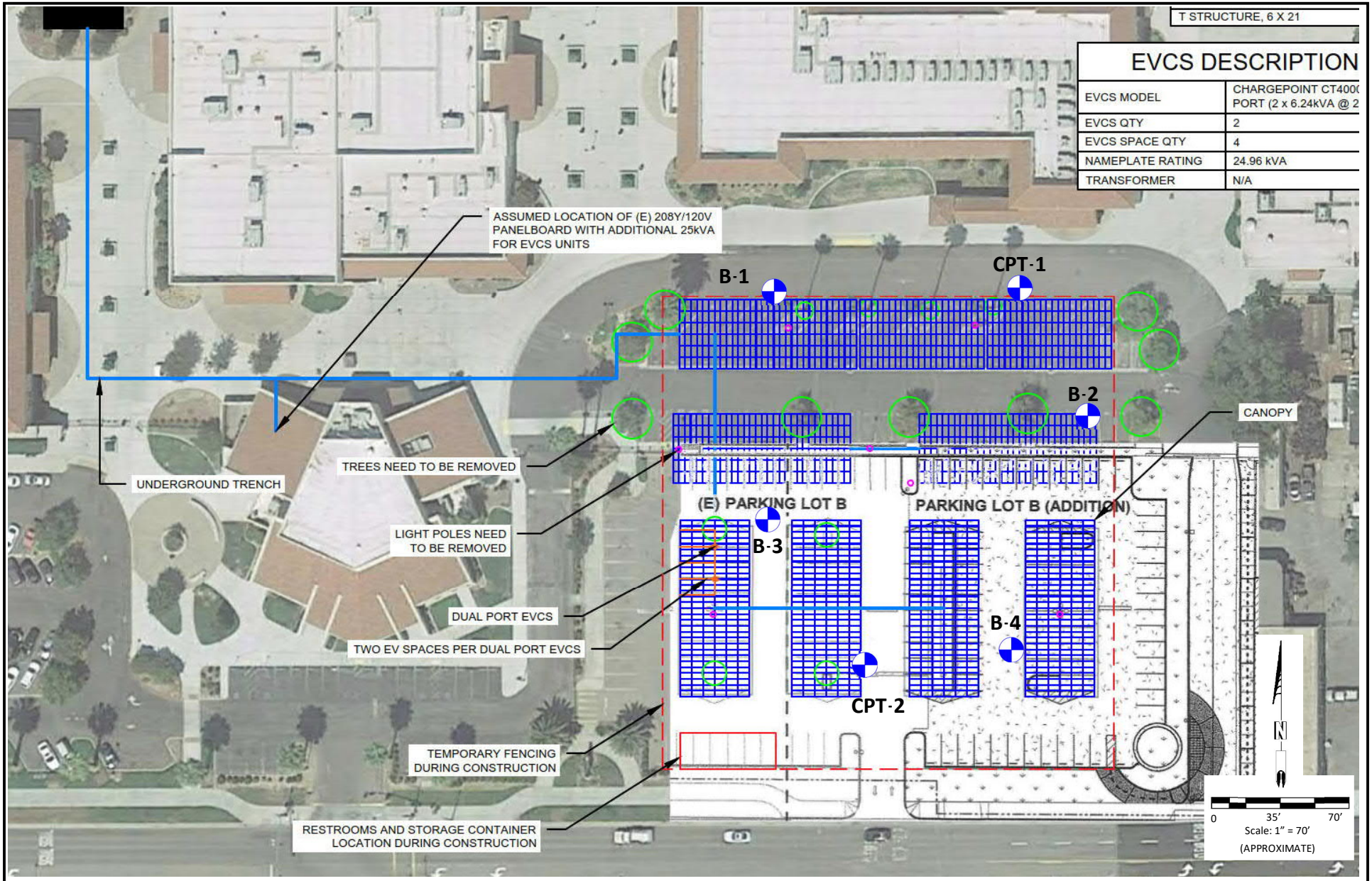
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SITE VICINITY MAP

Tracy USD - Tracy High School
315 E 11th Street
Tracy, California

FIGURE A-1

JOB NO. G20-145-11S
DATE July 2020
DR. BY CG
CH. BY OML
SCALE AS SHOWN
SHEET NO. 1 OF 2 SHEETS



LEGEND:

APPROXIMATE BORING AND CPT LOCATIONS

B-1

REFERENCE IMAGE: Forefront Power - Layout

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BORING & CPT LOCATION MAP

FIGURE A-2

Tracy USD - Tracy High School
315 E 11th Street
Tracy, California

JOB NO. G20-145-11S
DATE July 2020
DR. BY CG
CH. BY OML
SCALE AS SHOWN

SHEET NO. 2 OF 2 SHEETS

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS More than Half >#200	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP	POORLY GRADED GRAVELS, GRAVEL- SAND MIXTURES
		GRAVELS WITH OVER 15% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 15% FINES	SM	SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS More than Half <#200 sieve	SILTS AND CLAYS LIQUID LIMIT LESS THAN 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, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS , MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

Note: Dual symbols are used to indicate borderline soil classifications.

	Pushed Shelby Tube		Water Level measured at time of Drilling (with date noted)
	Standard Penetration Test (2-inch outside diameter)		Water Level measured after Drilling (with date noted)
	Modified California (3-inch outside diameter)		Hand Auger Cuttings
	Split Barrel Sampler (2 ½-inch outside diameter)		Grab Sample
	Undisturbed Sample		Sample Attempt with No Recovery
	Continuous Core Sample		

SOIL CLASSIFICATION CHART AND LOG KEY
Unified Soil Classification System (ASTM D 2487)
Figure A-1

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Project: Tracy USD Solar Carports

Location: Tracy, CA

Project No.: G20 145 11S

Logged By: S. Jue

Checked By: C. Goodwin

Boring: **B-1.012**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
1								GW	**ASPHALT CONCRETE:** AC = 3 inches	
									AGGREGATE BASE: AB = 8 inches	
								CH	**CLAY:** brown, moist, stiff, high plasticity, white striations	
2										
3			17							
4										
5										
6			13	108.9	17.0					
7										
8										
9										
10										
11			20							
12										
13										
14										
15								SC	**Clayey SAND:** brown, wet, medium dense, fine grained	
16			14							
17									Boring terminated at 16.5 feet. Groundwater encountered at 13 feet bgs. Backfilled with neat cement, soil cuttings, and cold patch.	
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61 Drill Rig with autotrip hammer
Drilling Equipment: Hollow Stem Auger
Date Started: 8/3/20
Date Completed: 8/3/20

Surface Elevation:
Sample Method: 2.5" ID California Modified
Groundwater Depth: Not Encountered
Completion Depth: 16.5 Feet
Borehole Diameter: 6 inches

* See key sheet for symbols and abbreviations used above.

GEO_BORING LOGS.GPJ_BSK.GDT 9/10/20

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Project: Tracy USD Solar Carports

Location: Tracy, CA

Project No.: G20 145 11S

Logged By: S. Jue

Checked By: C. Goodwin

Boring: **B-2.012**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
1								GW	**ASPHALT CONCRETE:** AC = 3 inches **AGGREGATE BASE:** AB = 8 inches	
2								CL-CH	**CLAY:** brown, moist, stiff, medium plasticity	
3	■		15							
4										
5	■		12						medium stiff, trace fine grained sand	
6										Fig B-1: TXUU
7										
8										
9										
10	■		11	94.0	28.0					
11										
12										
13										
14								SP	**Poorly Graded SAND:** brown, wet, medium dense, fine to coarse grained	
15	⊠									
16			21						Boring terminated at 16.5 feet. Groundwater encountered at 13 feet bgs. Backfilled with neat cement, soil cuttings, and cold patch.	
17										
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61 Drill Rig with autotrip hammer
Drilling Equipment: Hollow Stem Auger
Date Started: 8/5/20
Date Completed: 8/5/20

Surface Elevation:
Sample Method: 2.5" ID California Modified
Groundwater Depth: Not Encountered
Completion Depth: 16.5 Feet
Borehole Diameter: 6 inches

* See key sheet for symbols and abbreviations used above.

GEO_BORING LOGS.GPJ_BSK.GDT 9/10/20

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Project: Tracy USD Solar Carports

Location: Tracy, CA

Project No.: G20 145 11S

Logged By: S. Jue

Checked By: C. Goodwin

Boring: **B-3.012**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
1								GW	**ASPHALT CONCRETE:** AC = 3 inches	
									AGGREGATE BASE: AB = 8 inches	
2								CH	**CLAY:** dark brown, moist, very stiff, high plasticity	Fig B-2: Expansion Index = 80
3			25	105.9	20.4					
4										
5									brown, stiff, medium plasticity	
6			15							
7										
8										
9								CL	**CLAY:** brown, moist, medium stiff, low plasticity	
10										
11			12	96.8	28.0					
12										
13										
14										
15										
16			6							
17										
18										
19										
20										
21			31					SM	**Silty SAND:** brown, wet, medium dense, fine to medium grained sand	
22									Boring terminated at 21.5 feet. Groundwater encountered at 15 feet. Backfilled with neat cement, soil cuttings, and cold patch.	
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61 Drill Rig with autotrip hammer
Drilling Equipment: Hollow Stem Auger
Date Started: 8/5/20
Date Completed: 8/5/20

Surface Elevation:
Sample Method: 2.5" ID California Modified
Groundwater Depth: Not Encountered
Completion Depth: 21.5 Feet
Borehole Diameter: 6 inches

* See key sheet for symbols and abbreviations used above.

GEO_BORING LOGS.GPJ_BSK.GDT 9/10/20

BSK Associates
3140 Gold Camp Dr. #160
Rancho Cordova, CA
P: 916.853.9293
F: 916.853.9297

Project: Tracy USD Solar Carports

Location: Tracy, CA

Project No.: G20 145 11S

Logged By: S. Jue

Checked By: C. Goodwin

Boring: **B-4.012**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
1								GW	**ASPHALT CONCRETE:** AC = 3 inches **AGGREGATE BASE:** AB = 8 inches	
2								CH	**CLAY:** dark brown, moist, stiff, high plasticity	
3	■		21	111.8	17.8					
4										
5								CL	**CLAY:** brown, moist, stiff, low plasticity, trace fine grained sand	
6	■		15	113.1	13.4					
7										
8										
9										
10	■							SP	**Poorly Graded SAND:** brown, moist, medium dense, fine to coarse grained	
11			21							
12										
13										
14										
15	⊠								wet, trace silt	
16			24							
17									Boring terminated at 16.5 feet. Groundwater encountered at 15 feet. Backfilled with neat cement, soil cuttings, and cold patch.	
18										
19										
20										
21										
22										
23										
24										

Drilling Contractor: Baja Exploration
Drilling Method: Mobile B-61 Drill Rig with autotrip hammer
Drilling Equipment: Hollow Stem Auger
Date Started: 8/6/20
Date Completed: 8/6/20

Surface Elevation:
Sample Method: 2.5" ID California Modified
Groundwater Depth: Not Encountered
Completion Depth: 16.5 Feet
Borehole Diameter: 6 inches

* See key sheet for symbols and abbreviations used above.

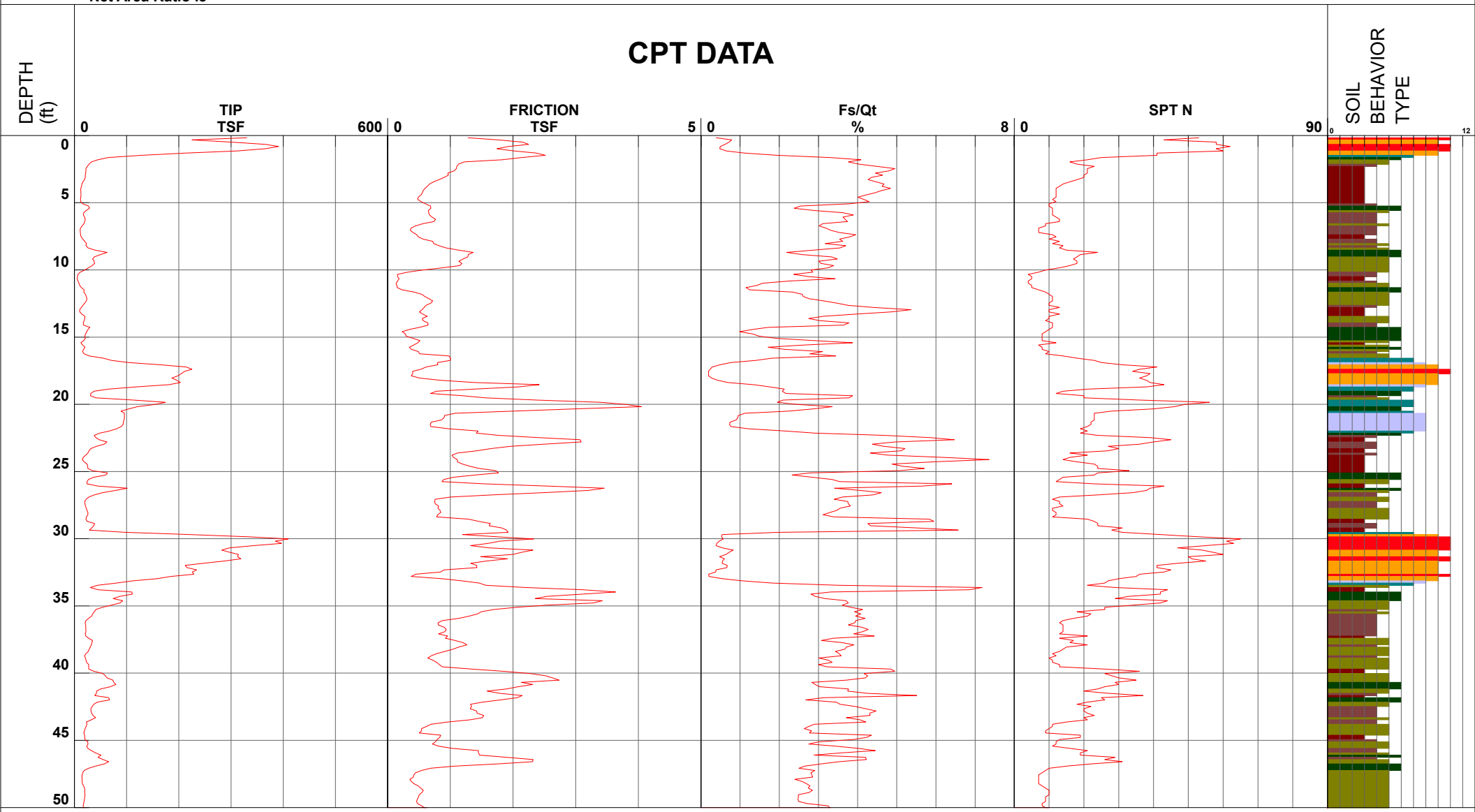
GEO_BORING LOGS.GPJ_BSK.GDT 9/10/20

BSK Associates

Project	Tracy USD - Tracy High School	Operator	BH-ZG	Filename	SDF(275).cpt
Job Number	G2014511S	Cone Number	DDG1530	GPS	
Hole Number	CPT-01	Date and Time	8/7/2020 12:09:39 PM	Maximum Depth	51.02 ft
EST GW Depth During Test		13.00 ft			

Net Area Ratio .8

CPT DATA



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 (*)

Cone Size 10cm squared

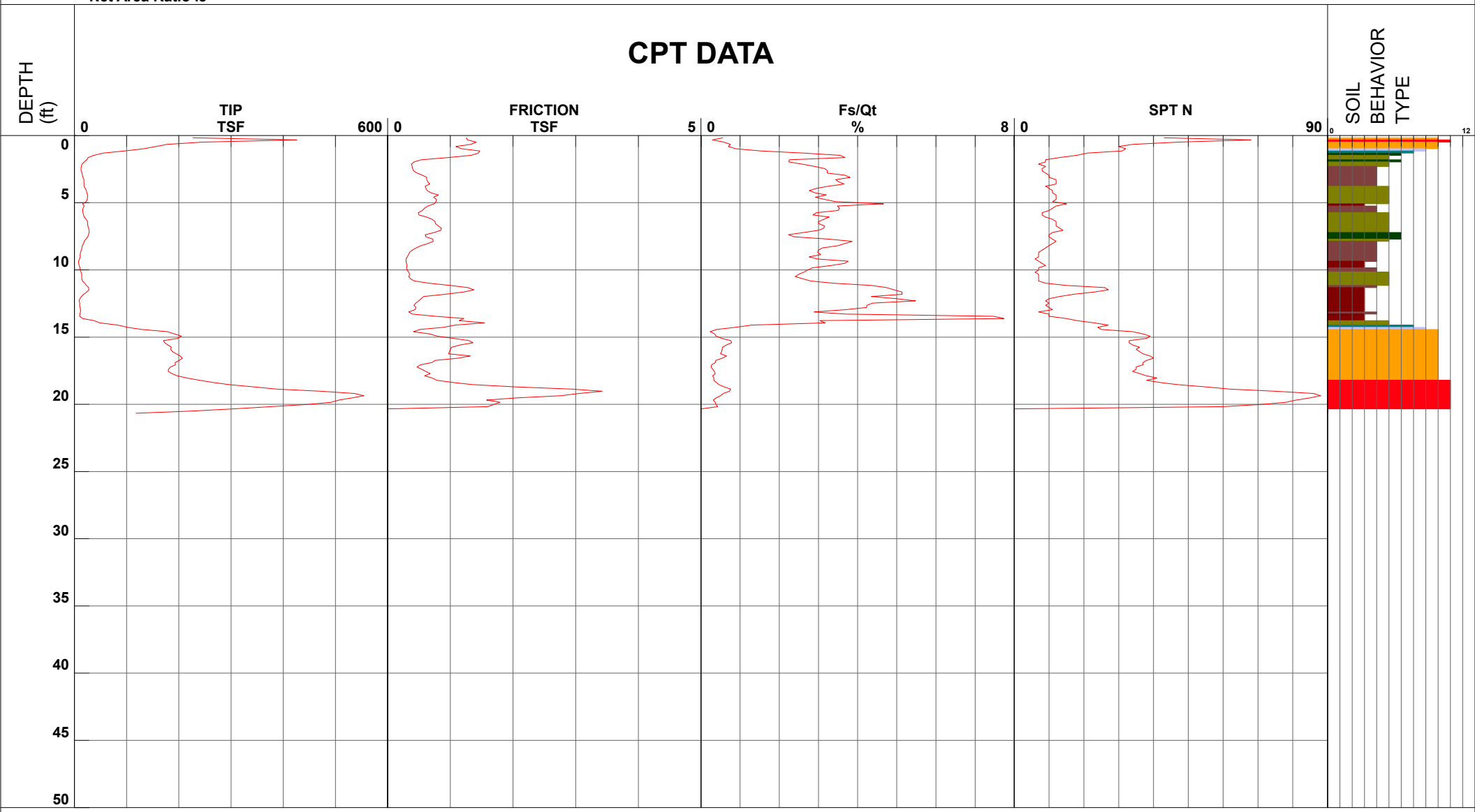
S*Soil behavior type and SPT based on data from UBC-1983

BSK Associates

Project	Tracy USD - Tracy High School	Operator	BH-ZG	Filename	SDF(274).cpt
Job Number	G2014511S	Cone Number	DDG1530	GPS	
Hole Number	CPT-02	Date and Time	8/7/2020 11:19:00 AM	Maximum Depth	20.67 ft
EST GW Depth During Test		13.00 ft			

Net Area Ratio .8

CPT DATA



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 (*)

Cone Size 10cm squared

S*Soil behavior type and SPT based on data from UBC-1983

APPENDIX B

LABORATORY TESTING RESULTS

APPENDIX B

LABORATORY TESTING

Moisture-Density Tests

The field moisture content, as a percentage of dry weight of the soils, was determined by weighing the samples before and after oven drying in accordance with ASTM D 2216 test procedures. Dry densities, in pounds per cubic foot, were also determined for undisturbed core samples in general accordance with ASTM D 2937 test procedures. Test results are presented on the boring logs in Appendix A.

Triaxial Test

One (1) Unconsolidated-Undrained Triaxial Test was performed on a sample obtained in the Site area at the time of drilling by Cooper Testing Labs of Palo Alto, California. The test was conducted to determine the soil strength and stress-strain relationships. The standard test method is ASTM D2850, Unconsolidated-Undrained Triaxial Compression Test for Cohesive Soils. The test results are presented graphically on Figure B-1.

Expansion Index Test

One (1) Expansion Index Test was performed on a bulk soil sample obtained at the time of drilling in the area of planned construction to determine the expansion characteristics of the sample. The test was performed in general accordance with UBC Standard 18-2/ ASTM Test Method D4829. The test results are presented on Figure B-2.

Soil Corrosivity

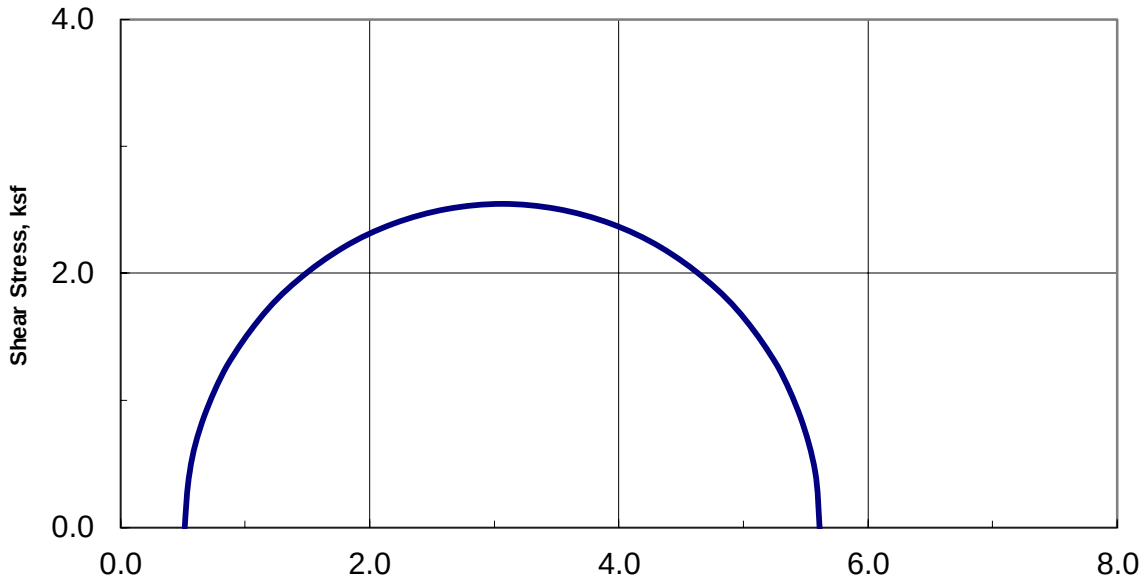
One (1) Corrosivity Evaluation was performed on a bulk soil sample obtained at the time of drilling in the area of planned construction. The soil was evaluated for minimum resistivity (ASTM G57), sulfate ion concentration (CT 417), chloride ion concentration (CT 422), and pH of soil (ASTM D4972). The test is in results are presented in Table B-1.

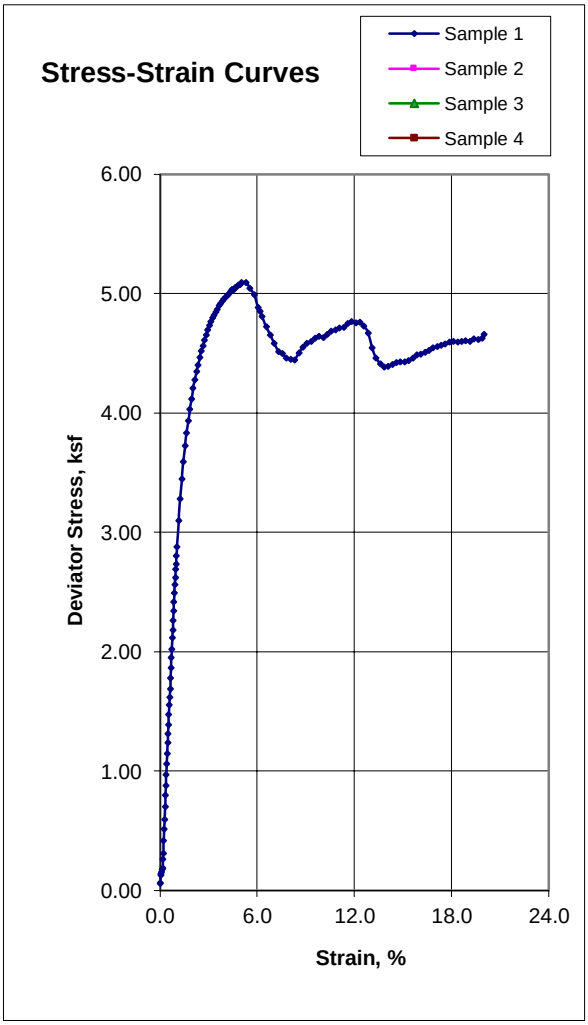
Table B-1: Summary of Corrosion Test Results

Sample Location	Minimum Resistivity (ohm-cm)	pH	Sulfate, mg/kg	Chloride, mg/kg
B-3 @ 1-5 feet bgs	740	8.1	220	18

COOPER TESTING LABORATORY

Unconsolidated-Undrained Triaxial Test
ASTM D2850





Sample Data				
	1	2	3	4
Moisture %	16.3			
Dry Den,pcf	113.1			
Void Ratio	0.491			
Saturation %	89.5			
Height in	5.01			
Diameter in	2.40			
Cell psi	3.6			
Strain %	5.30			
Deviator, ksf	5.096			
Rate %/min	1.00			
in/min	0.050			
Job No.:	664-344			
Client:	BSK Associates			
Project:	G2014511S			
Boring:	B-2			
Sample:	Tracy HS			
Depth ft:	6			

Visual Soil Description	
Sample #	
1	Yellowish Brown Clayey SAND
2	
3	
4	

Remarks:

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

BSK ASSOCIATES

Expansion Index of Soils

ASTM D 4829 / UBC Standard 18-2

FIGURE B-2

550 W. Locust Avenue
Fresno, CA 93650
Ph: (559) 497-2868
Fax: (559) 485-6140

Project Name: Tracy High School
Project Number: G20 - 145 - 11S
Lab Tracking ID:
Sample Location: B - 3 @ 0 - 5'
Sample Source
Sampled By: S. Jue **Tested By:** D.Messfin **Reviewed By:** C. Goodwin

Report Date: 8/18/2020
Sample Date: 8/5/2020
Test Date: 8/13/2020

TEST DATA

INITIAL SET-UP DATA			
Sample + Tare Weight (g)	749.8		
Tare Weight (g)	368.6	**FINAL TAKE-DOWN DATA**	
Moisture Content Data		**Moisture Content Data**	
Wet Weight + Tare	100.0	Wet Weight + Tare	662.9
Dry Weight + Tare	90.2	Dry Weight + Tare	603.6
Tare Weight (g)	0	Tare Weight (g)	380.4
Moisture Content (%)	10.9%	Moisture Content (%)	26.6%
Initial Volume (ft^3)	0.007272	Final Volume (ft^3)	0.007866
Remolded Wet Density (pcf)	115.6	Final Wet Density (pcf)	122.0
Remolded Dry Density (pcf)	104.2	Final Dry Density (pcf)	96.4
Degree of Saturation	**48**	**Degree of Saturation**	**96**

EXPANSION READINGS

Initial Gauge Reading (in)	0.34575
Final Gauge Reading (in)	0.42735
Expansion (in)	0.0816

Uncorrected Expansion Index	**82**
Corrected Expansion Index, EI	**80**

Classification of Expansive Soil

EI	Potential Expansion
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

APPENDIX C

GEOLOGIC AND SEISMIC HAZARDS EVALUATION

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C1. INTRODUCTION

This report presents the geologic and seismic hazards assessment prepared in accordance with the 2019 California Building Code (CBC), CCR Title 24, Chapters 16A and 18A requirements for a Geotechnical/Engineering Geologic Report. The assessment was performed in conformance with California Geological Survey (CGS) Note 48 (2019).

C1.1 Purpose and Scope of Services

The purpose of the geologic and seismic hazards assessment is to provide the Client with an evaluation of potential geologic or seismic hazards which may be present at the site or due to regional influences. BSK's scope of services for this assessment included the following:

1. Review of published geologic literature, and current and past investigations at the site;
2. Evaluation of the data collected and preparation of geologic cross sections;
3. Evaluation of potential geologic hazards affecting the site;
4. Determination of Site Class and seismic design parameters.

The observations and conclusions presented in this report specifically exclude the assessment of environmental characteristics, particularly those involving hazardous substances, and a high-pressure pipeline risk evaluation.

C1.2 Site Location

Tracy High School is located at 315 E 11th Street, in Tracy, San Joaquin County, California (Site). The center of the Site coordinates are:

Latitude 37.74022°N
Longitude 121.4182°W

The surrounding area is mostly residential housing with some commercial properties. Adjacent properties are residential with commercial properties located east of the Site.

C1.3 Site Topography

As shown on Figure C-1, the site and surrounding area topography is relatively flat with a ground surface elevation of approximately 48 feet, USGS datum.

C1.4 Groundwater Conditions

The Site is within the Tracy sub-basin of the San Joaquin Basin Hydrologic Study Area. This includes approximately the southern two-thirds of the Great Valley. Within the Study Area, 39 groundwater basins and areas of potential storage have been identified. The boundaries of these areas are based largely on hydrologic as well as political considerations.

Groundwater was observed in our CPT test holes at 13 feet below ground surface (bgs) at the time of our borings were completed in August 2020. Please note that the groundwater level may fluctuate both seasonal and from year to year due to variations in rainfall, temperature, pumping from wells and possibly as the result of other factors that were not evident at the time of our investigation.

To ascertain groundwater levels for the area during other time periods, groundwater elevation data from the California Department of Water Resources (DWR) were obtained for the period 1960 to 1990. The water level hydrograph from well 02S05E29B001M is presented on Figure C-2. The hydrograph indicates that the shallowest historic groundwater elevation in the general area of the site was approximately 42 feet in 1970. Using a Site Elevation of 48 feet, the shallowest historical depth to groundwater was approximately 6 feet bgs.

C2.0 GEOLOGIC SETTING

The Site is located in the California Delta region of the Great Valley geomorphic province near the eastern boundary of the Coastal Ranges geomorphic province. The area lies within the structural region identified by Bartow, 1991, as the San Joaquin Valley portion of the southern Sierran block. This area forms a broad syncline with deposits of marine and overlying continental sediments, Jurassic to Holocene in age. The thickness of the sediments increases to the west and reach a thickness of as much as 20,000 feet on the west side of the San Joaquin Valley syncline. West of the site, the relatively flat geomorphology transitions into the Coast Ranges province that is characterized by northwest trending ridges and valleys that are typically highly folded with numerous faults.

As shown on Figure C-4, the site is situated on recent alluvial fan deposits that are the result of alluvial fans derived from the Coast Range to the west.

Nearby major active faults include the Greenville fault zone located approximately 13.6 miles southwest of the Site, the Great Valley 7 (Orestimba) fault located approximately 6.4 miles southwest of the Site and the Calaveras fault located approximately 27 miles southwest of the Site.

C2.1 Subsurface Conditions

Subsurface conditions are described in the 2020 geotechnical investigation report prepared by BSK Associates (BSK) to which this geologic and seismic hazards report is appended. The site was the subject of a current field investigation of four soil borings and two CPT holes completed to a maximum depth of approximately 50 feet bgs. The soil units present at the site are predominately interbedded fine-grained clay, silty clay and clayey silt with layers of sand and gravelly sand. A cross section presenting the subsurface conditions in the proposed improvement area is presented on Figure C-5, Geologic Cross Section.

C3.0 GEOLOGIC/SEISMIC HAZARDS

The types of geologic and seismic hazards assessed include surface ground fault rupture, liquefaction, seismically induced settlement, slope failure, flood hazards and inundation hazards.

C3.1 Fault Rupture Hazard Zones in California

The purpose of the Alquist-Priolo Geologic Hazards Zones Act, as summarized in CDMG Special Publication 42 (SP 42), is to "prohibit the location of most structures for human occupancy across the traces of active faults and to mitigate thereby the hazard of fault-rupture." As indicated by SP 42, "the State Geologist is required to delineate "earthquake fault zones" (EFZs) along known active faults in California. Cities and counties affected by the zones must regulate certain development 'projects' within the zones. They must withhold development permits for sites within the zones until geologic investigations demonstrate that the sites are not threatened by surface displacement from future faulting.

The Site is not located in a Fault-Rupture Hazard Zone. The closest Fault-Rupture Hazard Zone is associated with the Greenville fault, approximately 13.6 miles southwest of the Site.

C3.2 State of California Seismic Hazard Zones (Liquefaction and Landslides)

Zones of Required Investigation referred to as "Seismic Hazard Zones" (SHZ) in CCR Article 10, Section 3722, are areas shown on Seismic Hazard Zone Maps where site investigations are required to determine the need for mitigation of potential liquefaction and/or earthquake-induced landslide ground displacements.

The site is within the Tracy 7.5 Minute Quadrangle and there are no mapped areas that have Seismic Hazard Zones in the project area.

C3.3 Local General Plans Safety Element

The 2011 City of Tracy General Plan, Safety Element did not identify specific areas that are considered geologic hazard zones. The 2017 San Joaquin County General Plan did not identify specific areas that are considered geologic hazard zones.

C3.4 Slope Stability and Potential for Slope Failure

The project area is essentially flat and the potential hazard due to landslides from adjacent properties is not applicable.

C3.5 Flood and Inundation Hazards

An evaluation of flooding at the site includes review of potential hazards from flooding during periods of heavy precipitation and flooding due to a catastrophic dam breach from up-gradient surface impoundments.

C3.5.1 Flood Hazards

Federal Emergency Management Agency (FEMA) flood hazard data was obtained to present information regarding the potential for flooding at the Site. As shown on Figure C-6, the Site lies in Zone X, an area of minimal flood hazard, outside the 100-year and 500-year floodplains (FEMA D-Firm GIS data, dated 10/20/2016).

C3.5.2 Inundation Hazards - Dams

As shown on Figure C-6, the Site is not located in the pathway of inundation from a catastrophic breach of a dam (Dam Inundation GIS data from California Emergency Management Agency, dated 2013).

C3.6 Volcanic Hazards

According to USGS Bulletin 1847, dated 1989, the site is not located in an area which would be subject to hazards from volcanic eruptions (Miller, 1989).

C3.7 Corrosion

Please refer to the section titled "Corrosion Assessment" in the geotechnical report for discussion of the corrosivity of the site soils.

C3.8 Expansive Soils

As discussed in the geotechnical report, the near-surface soils encountered within the current borings throughout the site exhibit a medium expansion potential.

C3.9 Land Subsidence

Four types of subsidence are known to occur in the San Joaquin Valley (Galloway, 1999). In order of decreasing magnitude, they are:

(1) Subsidence caused by aquifer system compaction due to the lowering of ground-water levels by sustained groundwater overdraft;
(2) Subsidence caused by the hydrocompaction of moisture-deficient deposits above the water table;
(3) Subsidence related to fluid withdrawal from oil and gas fields; and
(4) Subsidence related to crustal neotectonic movements.

The site is not located in an area known to be susceptible to subsidence due to petroleum withdrawal, groundwater pumping or from peat oxidation (USGS, 2018). The site is not located in an area in which soils are known to be impacted by hydrocompaction.

C4. SEISMIC HAZARD ASSESSMENT

C4.1 Seismic Source Deaggregation

Figures C-7 and C-8 present fault maps showing the major faults that may impact the site in the future. Seismically induced ground motion at a site can be caused by earthquakes on any of the sources

surrounding the site. Deaggregation of the seismic hazard was performed by using the USGS Interactive Deaggregation website. The deaggregation determination, at the maximum considered earthquake (MCE) hazard level, results in distance, magnitude and epsilon (ground-motion uncertainty) for each source that contributes to the hazard. Each source has a corresponding epsilon, which is the probabilistic value relative to the mean value of ground motion for that source.

Deaggregation based on a probabilistic model developed by the USGS indicates that the extreme seismic source with the highest magnitude that contributes to the peak ground acceleration (PGA) is a magnitude 7.09 earthquake from the Greenville fault. For liquefaction and seismic settlement, the modal magnitude (Mw) of 6.29 with a distance of 11 km would be appropriate for probabilistic input parameter that is consistent with the design earthquake ground motion.

C4.2 Historical Seismicity

Table C-1 provides the location, earthquake magnitude, site to earthquake distances, dates and the resulting site peak horizontal acceleration for the period 1800 to 2016. Figure C-9 presents historical earthquake magnitudes and locations relative to the site.

TABLE C-1
HISTORIC EARTHQUAKES WITHIN 100 MILES OF THE SITE
GROUND MOTION GREATER THAN 0.10G

File Code	Latitude (North)	Longitude (West)	Date	Depth (km)	Earthquake Magnitude	Site Acceleration (g)	Distance mi (km)
DMG	37.700	122.500	4/18/1906	0	8.3	0.22	59.1(95.2)
DMG	37.500	121.300	07/15/1866	0	5.8	0.15	17.8(28.6)
DMG	37.700	122.100	10/21/1868	0	6.8	0.15	37.3(60.1)
DMG	37.400	121.400	04/10/1881	0	5.9	0.13	23.5(37.8)
DMG	37.250	121.750	7/1/1911	0	6.6	0.13	38.4(61.8)
BRK	37.830	121.810	1/24/1980	0	5.8	0.13	22.3(35.8)
BRK	37.760	121.730	1/27/1980	0	5.4	0.13	17.1(27.5)
DMG	37.600	122.400	06/01/1838	0	7.0	0.12	54.5(87.7)
GSB	37.036	121.883	10/18/1989	18.5	7.0	0.12	54.9(88.3)
GSB	37.483	121.690	3/31/1986	8	5.7	0.12	23.2(37.3)
GSB	37.320	121.698	4/24/1984	8	6.2	0.12	32.8(52.8)
DMG	37.680	121.600	5/2/1946	0	4.6	0.12	10.8(17.3)
DMG	37.500	121.900	11/26/1858	0	6.1	0.12	31.1(50.1)
DMG	38.000	121.900	05/19/1889	0	6.0	0.11	31.8(51.2)
T-A	36.830	121.570	10/18/1800	0	7.0	0.11	63.4(102.0)
DMG	37.600	121.800	6/11/1903	0	5.5	0.11	23.0(37.0)
DMG	37.300	121.900	10/08/1865	0	6.3	0.11	40.2(64.8)

The Table C-1 shows that the site has experienced mean plus one sigma peak horizontal acceleration up to 0.22g from the 8.3 magnitude 1906 earthquake on the San Andreas fault. In general, the site has been subjected to relatively low intensity ground motion, primarily from large earthquakes on distance faults and low magnitude earthquakes closer to the site.

C4.3 Earthquake Ground Motion, 2019 California Building Code

C4.3.1 Site Class

Based on Section 1613A.2.2 of the 2019 California Building Code (CBC), the Site shall be classified as Site Class A, B, C, D, E or F based on the Site soil properties and in accordance with Chapter 20 of ASCE 7-16. Based on the averaged shear wave velocity of 805 ft/s (245 m/s) as measured in the seismic cone test from CPT-1, as per Table 20.3-1 of ASCE 7-16, the Site is Class D (600 ft/s ≤ Vs ≤ 1,200 ft/s).

C4.3.2 Seismic Design Criteria

The 2019 California Building Code (CBC) utilizes ground motion based on the Risk-Targeted Maximum Considered Earthquake (MCE_R) that is define in the 2019 CBC as the most severe earthquake effects considered by this code, determined for the orientation that results in the largest maximum response to horizontal ground motions and with adjustment for targeted risk. Ground motion parameters in the 2019 CBC are based on ASCE 7-16, Chapter 11.

The United States Geologic Survey (USGS) has prepared maps presenting the Risk-Targeted MCE spectral acceleration (5% damping) for periods of 0.2 seconds (S_S) and 1.0 seconds (S_1). The values of S_S and S_1 can be obtained from the OSHPD Seismic Design Maps Application available at:
https://seismicmaps.org/

Table C-2 below presents the spectral acceleration parameters produced for Site Class D by the OSHPD Ground Motion Parameter Application and Chapter 16 of the 2019 CBC based on ASCE 7-16.

TABLE C-2
SPECTRAL ACCELERATION PARAMETERS
RISK TARGETED MAXIMUM CONSIDERED EARTHQUAKE

Criteria	Value		Reference
MCE Mapped Spectral Acceleration (g)	S_S = 1.113	S_1 = 0.391	USGS Mapped Value
Site Coefficients (Site Class D)	F_a = 1.055	F_v = Null[1](1.909)[2]	ASCE Table 11.4
Site Adjusted MCE Spectral Acceleration (g)	S_{MS} = 1.174	S_{M1} = Null[1](0.746)[2]	ASCE Equations 11.4.1-2
Design Spectral Acceleration (g)	S_{DS} = 0.783	S_{D1} = Null[1](0.498)[2]	ASCE Equations 11.4.3-4
Site Short Period - T_S (Seconds)	Ts = 0.636		Ts = S_{D1}/ S_{DS}
Site Long-Period - T_L (Seconds)	T_L = 8		USGS Mapped Value

[1] Requires site-specific ground motion procedure or exception as per ASCE 7-16 Section 11.4.8
[2] Values from ASCE 7-16 supplement, shall only be used to calculate Ts

It is our understanding that the project design team has selected to use the ASCE 7-16 Section 11.4.8 exception in leu of a site-specific ground motion analysis.

C4.3.3 Geometric Mean Peak Ground Acceleration

As per Section 1803A.5.12 of the CBC, peak ground acceleration (PGA) utilized for dynamic lateral earth pressures and liquefaction, shall be based on a site-specific study (ASCE 7-16, Section 21.5) or ASCE 7-16, Section 11.8.3. The USGS Ground Motion Parameter Application based on ASCE 7-16, Section 11.8.3 produced the values shown in Table C-3 based on Site Class D.

TABLE C-3
GEOMETRIC MEAN PEAK GROUND ACCELERATION
MAXIMUM CONSIDERED EARTHQUAKE

Criteria	Value	Reference
Mapped Peak Ground Acceleration (g)	PGA = 0.464	USGS Mapped Value
Site Coefficients (Site Class D)	F_{PGA} = 1.136	ASCE Table 11.8-1
Geometric Mean PGA (g)	PGA_M = 0.527	ASCE Equations 11.8-1

C4.4 Seismically Induced Ground Failure

C4.4.1 Liquefaction

Settlement of the ground surface with consequential differential movement of structures is a major cause of seismic damage for buildings founded on alluvial deposits. Vibration settlement of relatively dry and loose granular deposits beneath structures can be readily induced by the horizontal components of ground shaking associated with even moderate intensity earthquakes. Silver and Seed (1971) have demonstrated that settlement of dry sands due to cyclic loading is a function of 1) the relative density of the soil; 2) the magnitude of the cyclic shear stress; and 3) the number of strain cycles. As indicated above, seismically-induced ground settlement can also occur due to the liquefaction of relatively loose, saturated granular deposits.

In order for liquefaction triggering to occur due to ground shaking, it is generally accepted that four conditions will exist:

1. The subsurface soils are in a relatively loose state
2. The soils are saturated
3. The soils have low plasticity
4. Ground shaking is of sufficient intensity to act as a triggering mechanism

We estimate the historical depth to groundwater to be 6 feet bgs. A liquefaction/seismic settlement analysis was performed using the program Liquefy Pro version 5.8k using data from CPT-1 and CPT-2.

Input parameters for the liquefaction and settlement analysis were based upon:

- Soil densities estimated from CPT-1 and CPT-2.
- PGA based upon the geometric mean peak ground acceleration or 0.527.
- Magnitude 6.29 of controlling earthquake from Deaggregation of the seismic hazard.
- Assumed depth to groundwater of 6 feet bgs from historical high.
- A Factor-of-Safety of 1.3 was used for analysis.

The results of our liquefaction and seismic settlement analysis based upon data from CPT-1 are provided on Figure C-10. Some of the subsurface units in CPT-2 contained gravel fractions in the sandy interval from 18 feet bgs to 20 feet bgs. To eliminate the gravel bias on the CPT values, the gravelly layer values were replaced with average values of the non-gravelly sand layer from 13 feet bgs to 18 feet bgs. Based on our liquefaction analysis, liquefaction may occur in some of the thin discontinuous zones below a depth of 7 feet bgs, during the design earthquake.

C4.4.2 Lateral Spread

Lateral spreading is a potential hazard commonly associated with liquefaction where extensional ground cracking and settlement occur as a response to lateral migration of subsurface liquefiable material. These phenomena typically occur adjacent to free faces such as slopes and creek channels. Sloped ground or channel free-faces are not present in the area, therefore the potential for lateral spreading to take place at the site is low.

C4.4.3 Dynamic Compaction/Seismic Settlement

Another type of seismically induced ground failure, which can occur as a result of seismic shaking, is dynamic compaction, or seismic settlement. Such phenomena typically occur in unsaturated, loose granular material or uncompacted fill soils.

A seismic settlement analysis was performed using the program Liquefy Pro version 5.8k using soil boring data from CPT-1 and CPT-2. Input parameters for the liquefaction and settlement analysis were based upon:

- Soil densities estimated from CPT-1 and CPT-2.
- PGA based upon the geometric mean peak ground acceleration or 0.527.
- Magnitude 6.29 of controlling earthquake from Deaggregation of the seismic hazard.
- Assumed depth to groundwater of 6 feet bgs from historical high.
- A Factor-of-Safety of 1.3 was used for analysis.

Based on the analysis the total seismic settlement is estimated to be 0.8 inch (CPT-1) and 0.2 inch (CPT-2) with a maximum differential settlement of 0.4 inch over 30 feet.

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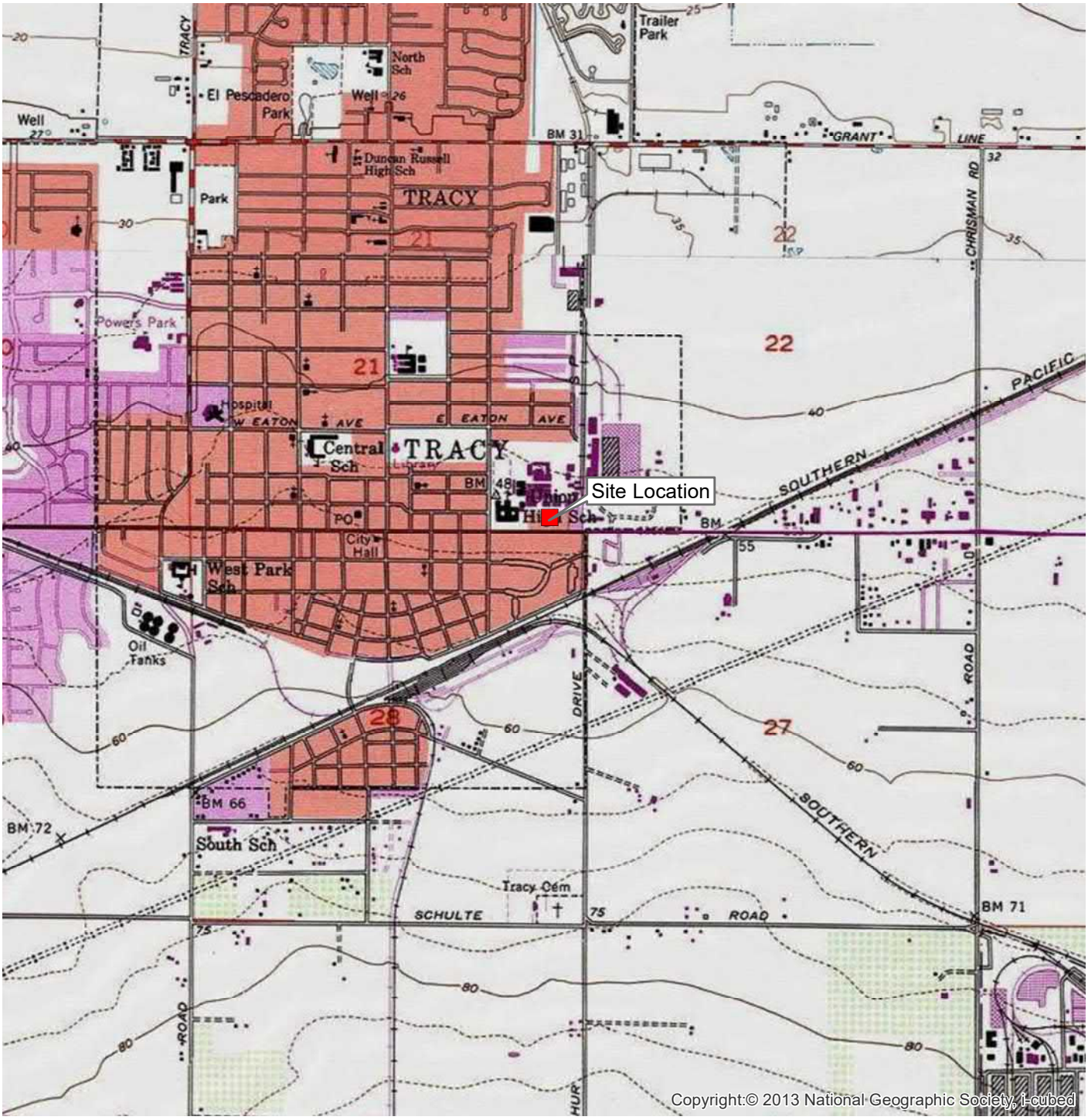
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N
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S

0 1,000 2,000 4,000

Feet

Reference: ESRI Base Map
http://goto.arcgisonline.com/maps/USA_Topo_Maps

Map Date: 7/16/2020

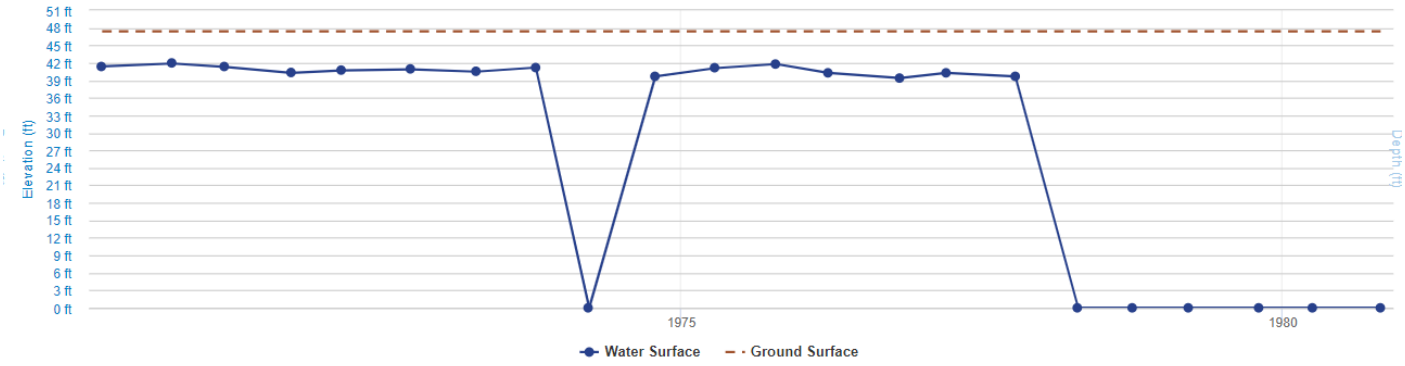
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Geologic/Seismic Hazard Evaluation
Tracy Unified School District
Tracy High School
315 E 11th Street
Tracy, California

Figure C-1
Topographic Map
BSK Project G2014511S

Document Path: T:\GIS-Files\Project-Files\Geotech\G2014511S - Tracy USD Solar Carports\Tracy HS\Figure C-1 Topomap.mxd

Groundwater Levels for Well 377391N1214400W001



Download Data in CSV format

Date	RPE	GSE	RPWS	WSE	GS to WS	Msmt code	Agency	Comments
10/09/1970 00:00:00	47.390	47.390	5.5	41.89	5.5		624	
10/16/1975 00:00:00	47.390	47.390	5.6	41.79	5.6		624	
03/09/1970 00:00:00	47.390	47.390	6	41.39	6		624	
03/17/1971 00:00:00	47.390	47.390	6.1	41.29	6.1		624	
10/16/1973 00:00:00	47.390	47.390	6.2	41.19	6.2		624	
04/14/1975 00:00:00	47.390	47.390	6.3	41.09	6.3		624	

State Well Number: 02S05E29B001M
Latitude (NAD83): 37.7391
Longitude (NAD83): -121.44
Groundwater Basin (Code): Tracy (5-022.15)
Reference Point Elevation (NAVD88 ft): 47.390
Ground Surface Elevation (NAVD88 ft): 47.390
Located 1.2 miles W of Site
Highest GW Elev. = 41.9 feet

Map Date: 7/16/2020

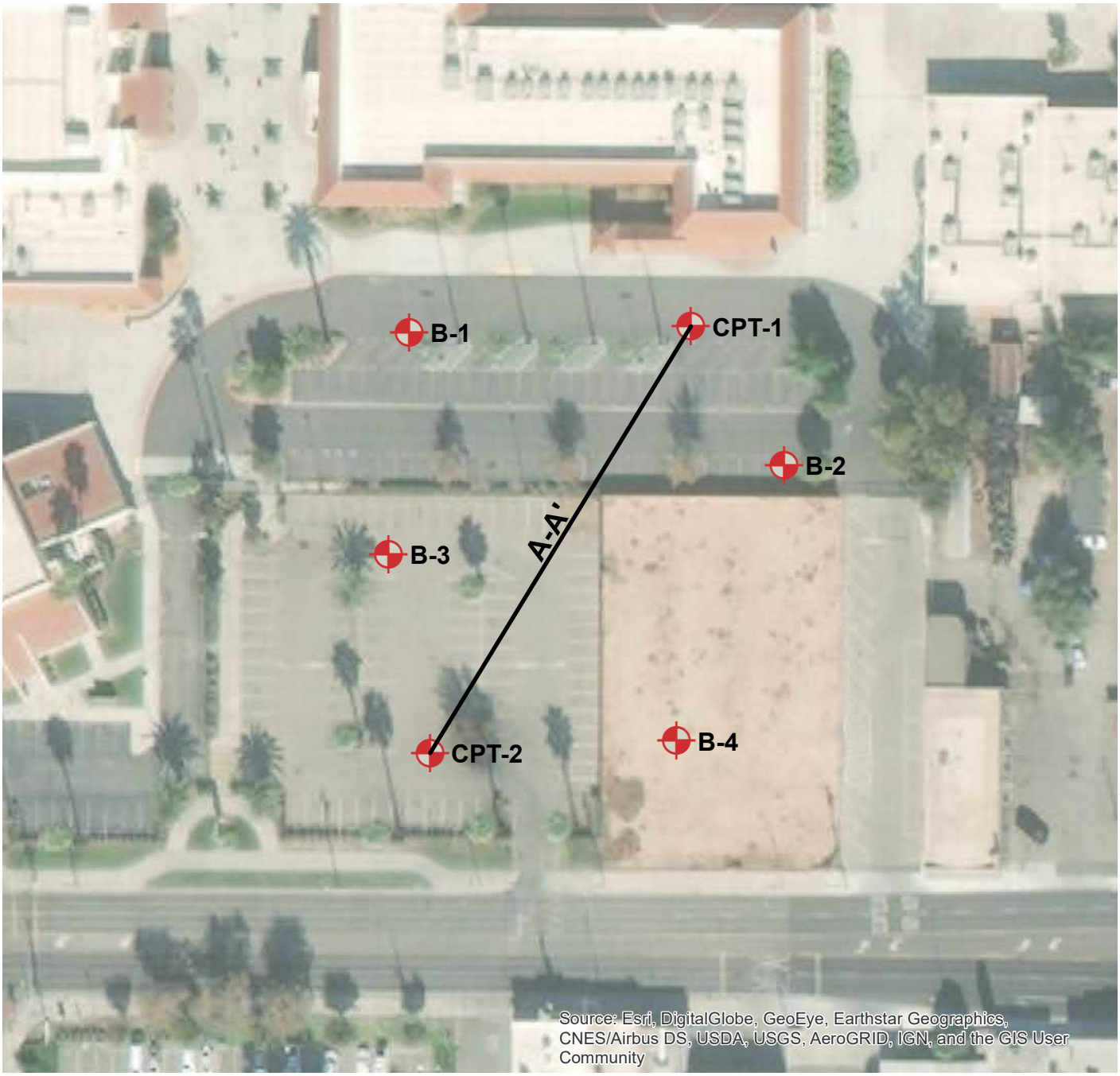
Reference: http://wdl.water.ca.gov/waterdatalibrary/

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Figure C-2
Area Hydrographs
BSK Project G2014511S

Document Path: T:\GIS-Files\Project-Files\Geotech\G2014511S - Tracy USD Solar Carports\Stein Continuation HS\Figure C-2 Hydro.mxd



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0 40 80 160

Feet

Legend

Borings

Cross Section Line

Map Date: 10/1/2020

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Tracy, California

Figure C-3
Site Map
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LEGEND

Qf - Recent Fan Deposits
Q - Holocene Alluvium
Qdp - Holocene Dos Palos Alluvium
Mf - Miocene Fanglomerate
Msp - Miocene San Pablo Group (Marine Sandstone)
Km - Creataceous Moreno Formation (Marine Shale)
Kp - Cretaceous Berryessa Formation (Marine SS and Shale)

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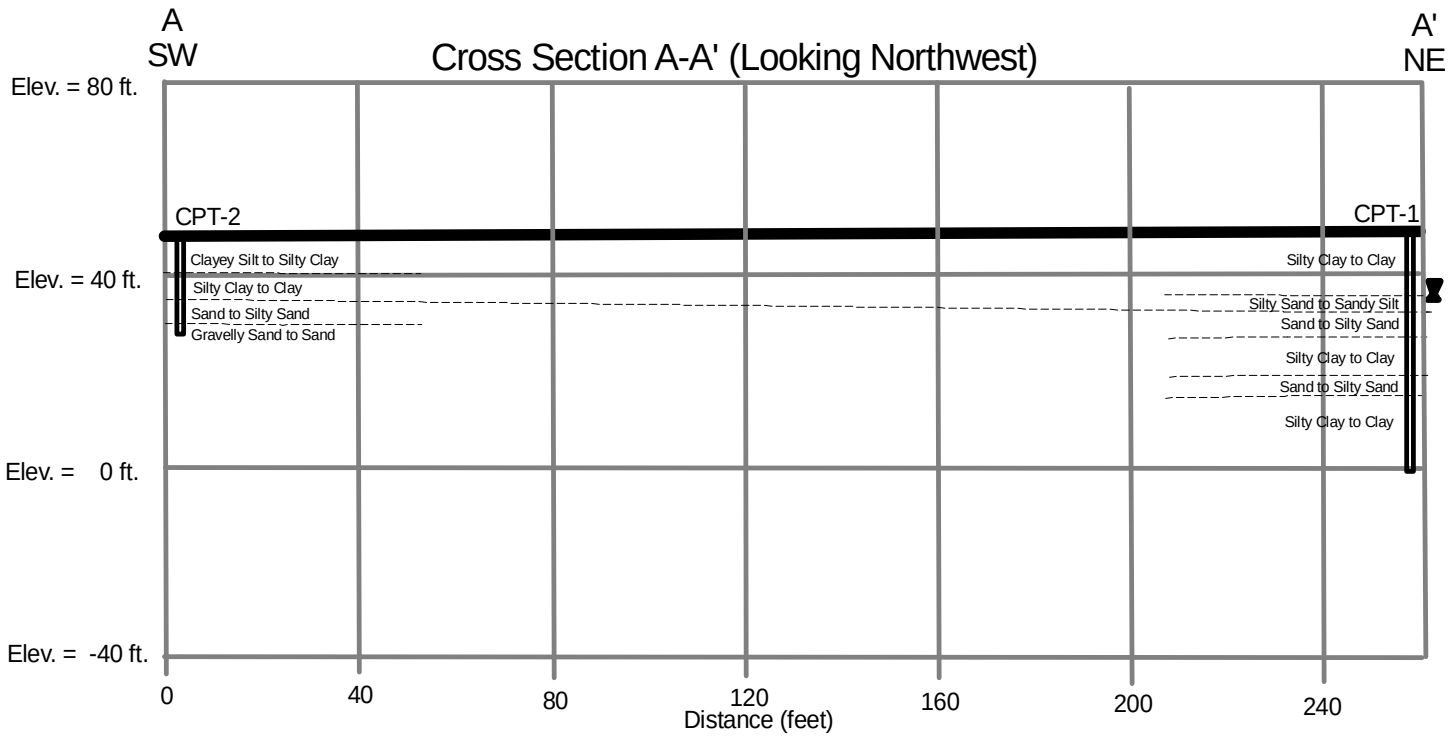
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Figure C-4
Geologic Map
BSK Project G2014511S

Document Path: T:\GIS-Files\Project-Files\Geotech\G2014511S - Tracy USD Solar Carports\Tracy HS\Figure C-4 geologic.mxd



LEGEND

Unit Contact

Soil Boring/CPT Location

Groundwater Level

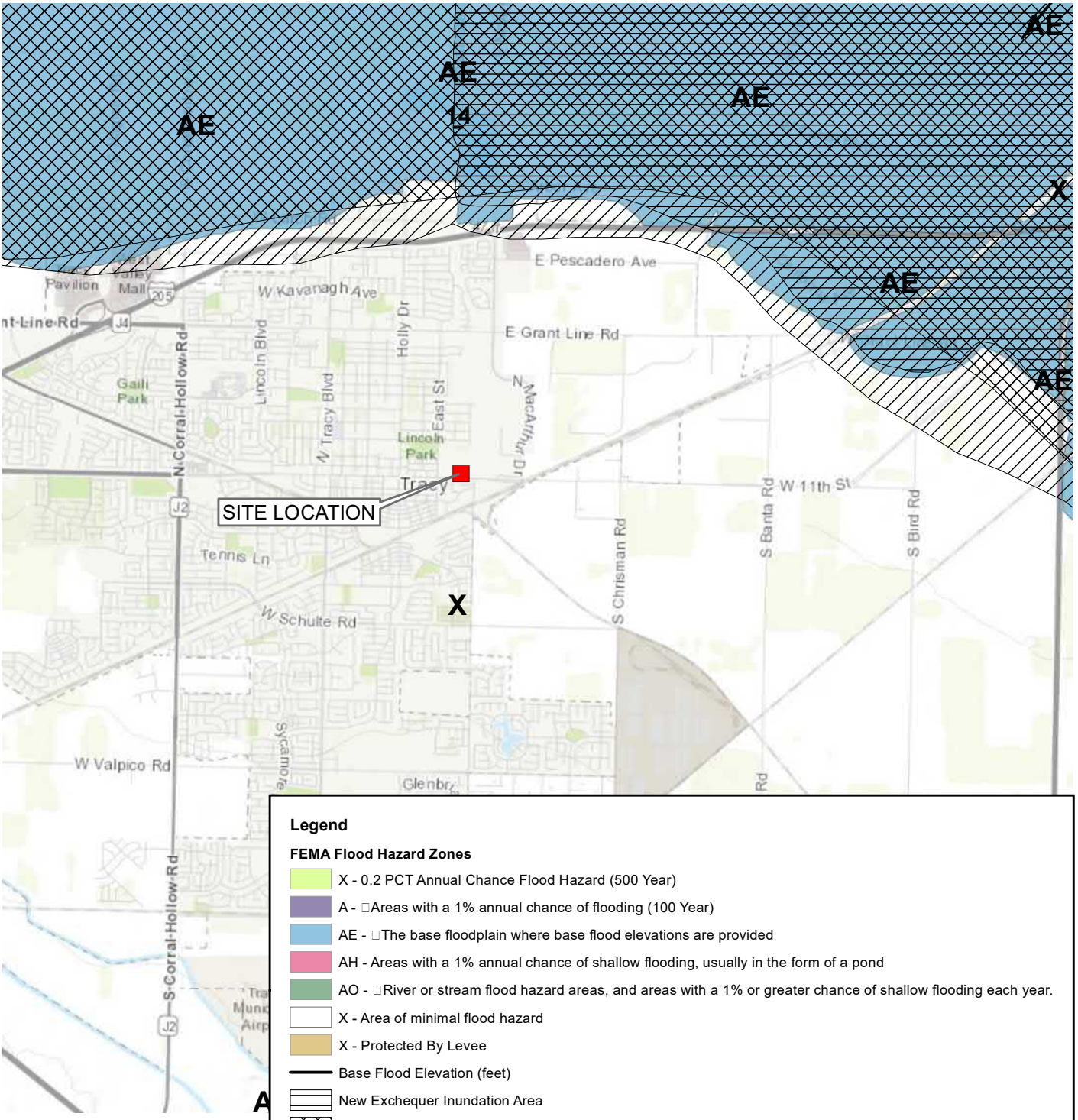
NOTES:
1) Locations are Approximate.

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0 40 80
Approximate Scale in Feet
Horizontal=Vertical

Geologic/Seismic Hazard Evaluation
Tracy Unified School District
Tracy High School
315 E 11th Street
Tracy, California

BSK Project G2014511S
Geologic Cross Section
A-A'
Figure C-5



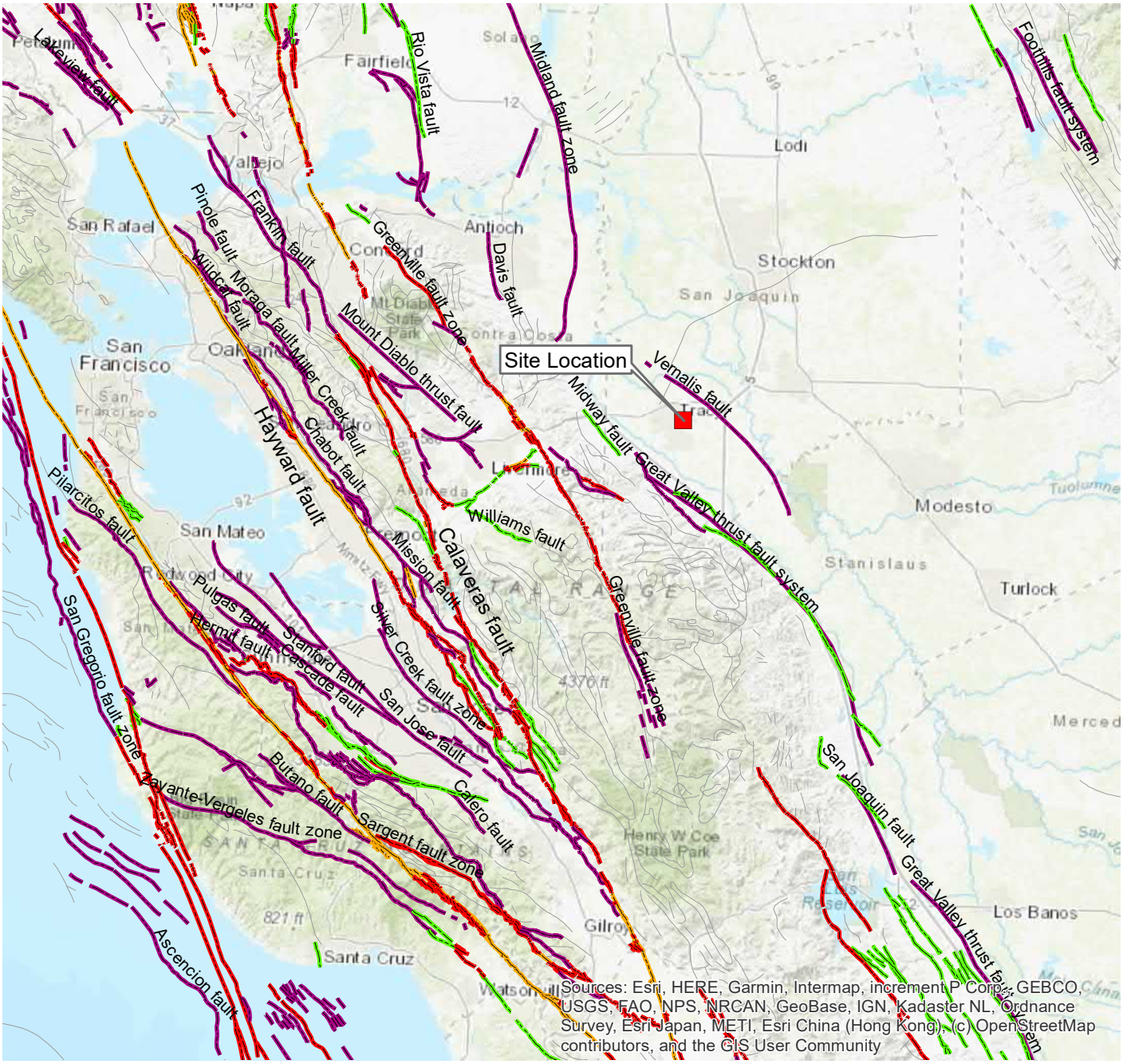
Reference: Federal Emergency Management Agency (FEMA), Flood Hazard Layer NFHL_06077C, 10/20/2016
California Emergency Management Agency, Flood Inundation GIS files

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Tracy Unified School District
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Tracy, California

Figure C-6
Flood Hazard Map
BSK Project G2014511S



N
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0 7.5 15 30

Scale in Miles

Reference: Quaternary Faults=USGS Quaternary Fault Database
ftp://hazards.cr.usgs.gov/maps/qfault/
Pre-Quarternary Faults= Fault Activity Map of California (2010) California Geological Survey
https://maps.conservation.ca.gov/cgs/fam/app/

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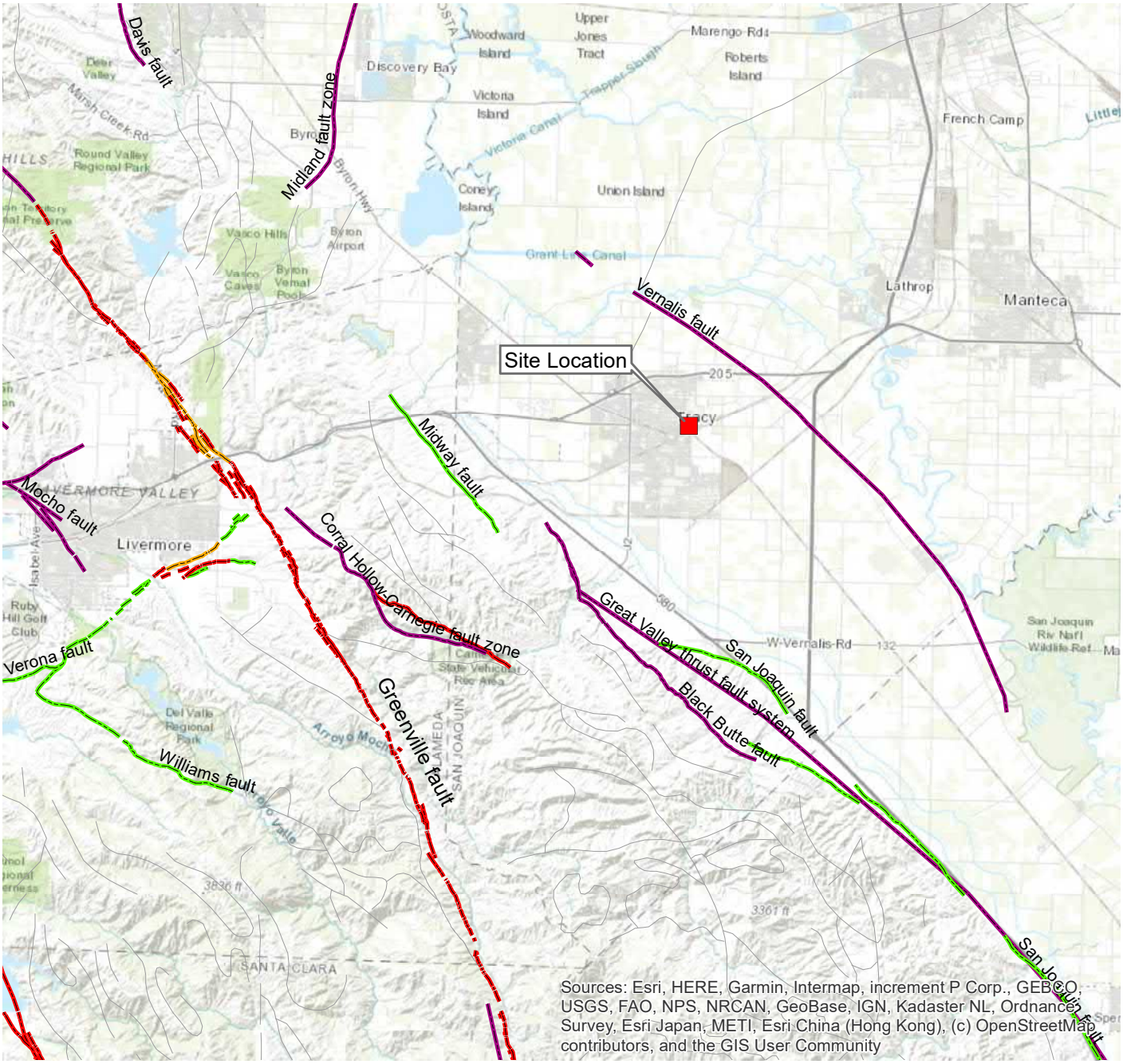
Fault Activity Age

- Historic
- Latest Quaternary
- Late Quaternary
- Middle and Late Quaternary
- Undifferentiated Quaternary
- Pre-Quaternary Faults

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Geologic/Seismic Hazard Evaluation
Tracy Unified School District
Tracy High School
315 E 11th Street
Tracy, California

Figure C-7
Area Fault Map
BSK Project G2014511S



N
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0 2.5 5 10

Scale in Miles

Reference: Quaternary Faults=USGS Quaternary Fault Database
ftp://hazards.cr.usgs.gov/maps/qfault/
Pre-Quarternary Faults= Fault Activity Map of California (2010) California Geological Survey
https://maps.conservation.ca.gov/cgs/fam/app/

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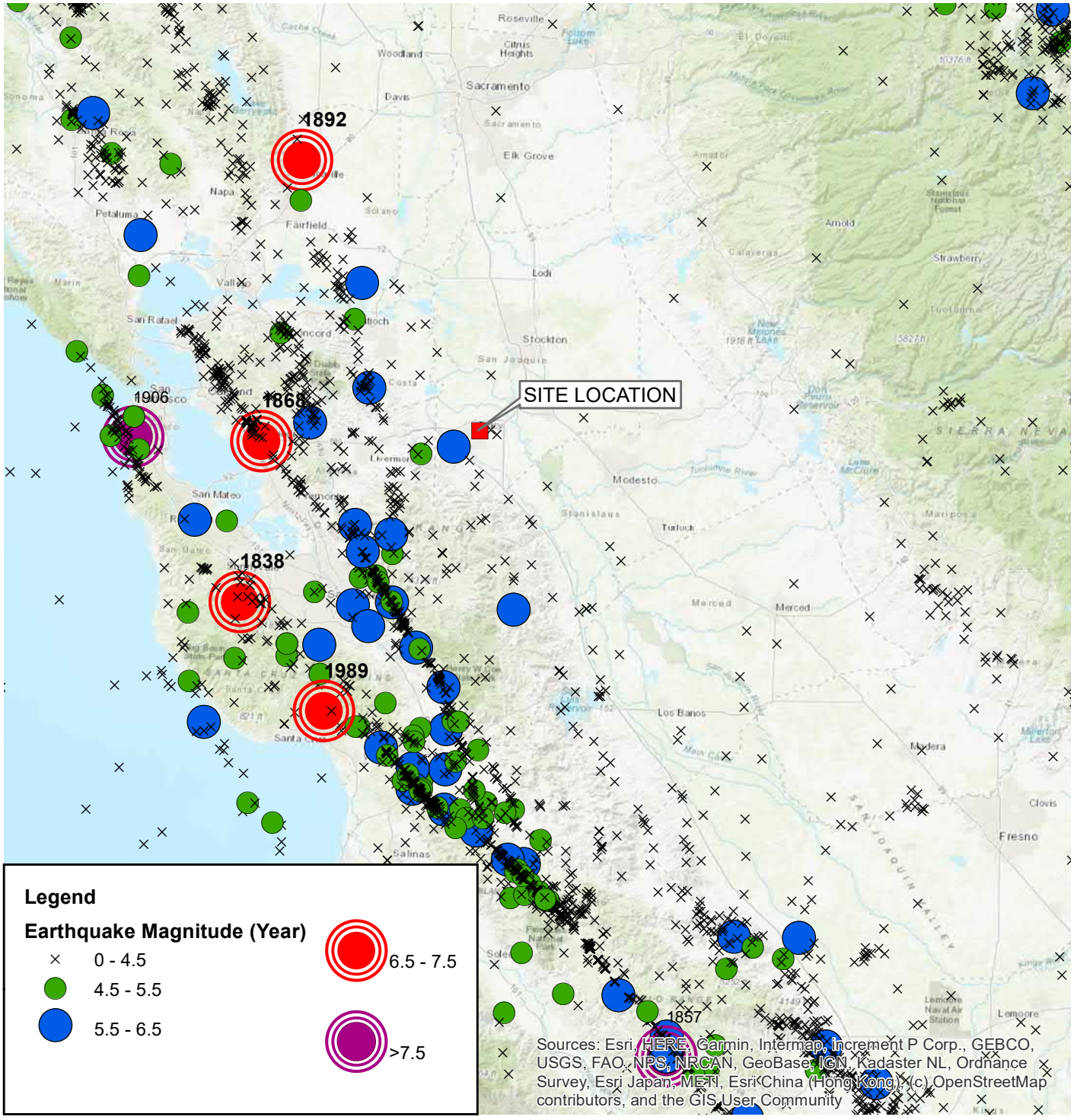
Fault Activity Age

- Historic
- Latest Quaternary
- Late Quaternary
- Middle and Late Quaternary
- Undifferentiated Quaternary
- Pre-Quaternary Faults

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Geologic/Seismic Hazard Evaluation
Tracy Unified School District
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Tracy, California

Figure C-8
Local Fault Map
BSK Project G2014511S



Source: National Seismic Hazard Model (NSHM) Earthquake Catalogs, 2014 NSHM Catalogs, USGS, https://github.com/usgs/nshmp-haz-catalogs

Map Date: 8/31/2020

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Geologic/Seismic Hazard Evaluation
Tracy Unified School District
Tracy High School
315 E 11th Street
Tracy, California

Figure C-9
Earthquake Epicenter Map
BSK Project G2014511S

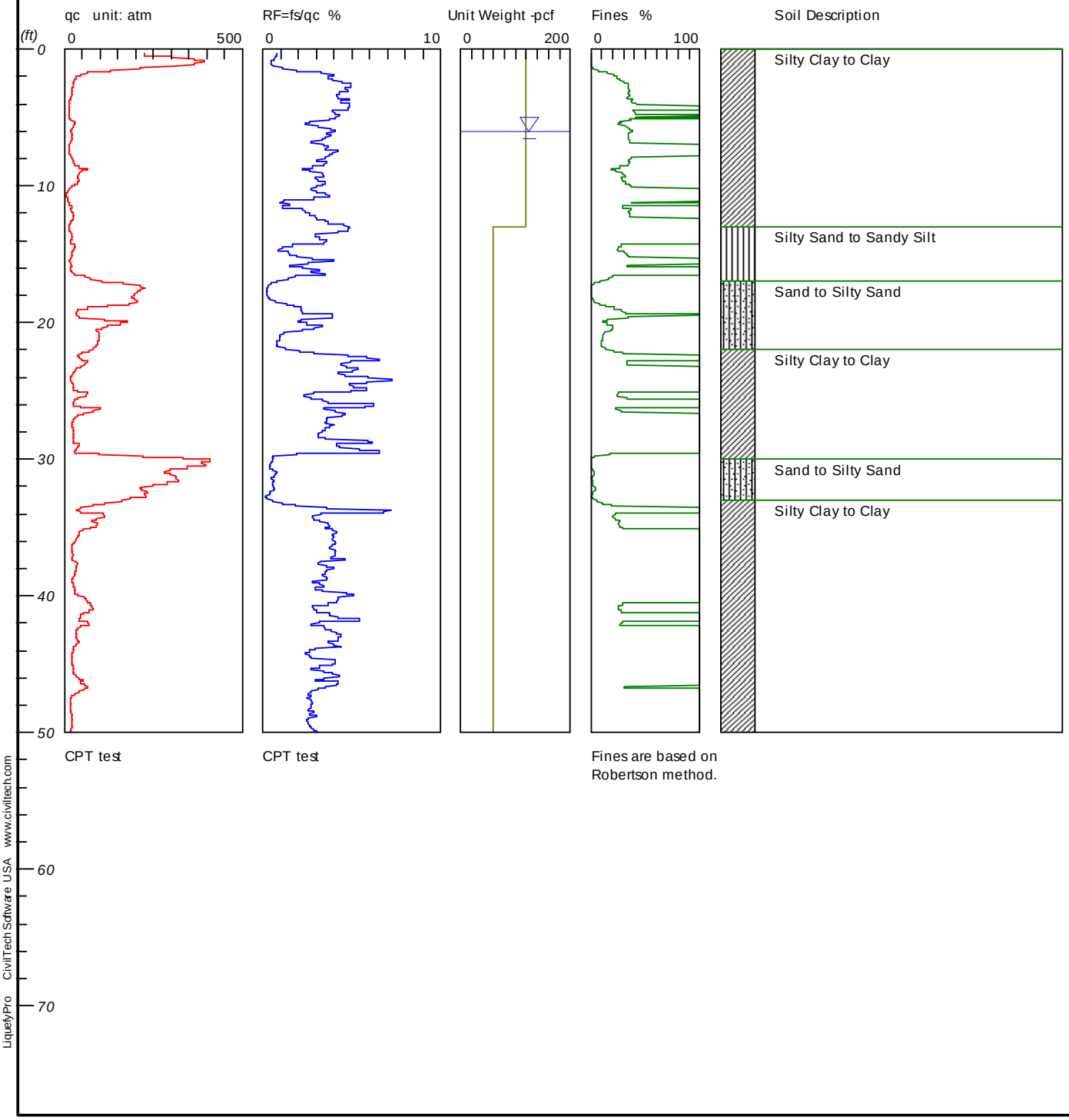
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LIQUEFACTION ANALYSIS

Tracy High School

Hole No.=CPT-1 Water Depth=6 ft

Magnitude=6.29
Acceleration=0.527g



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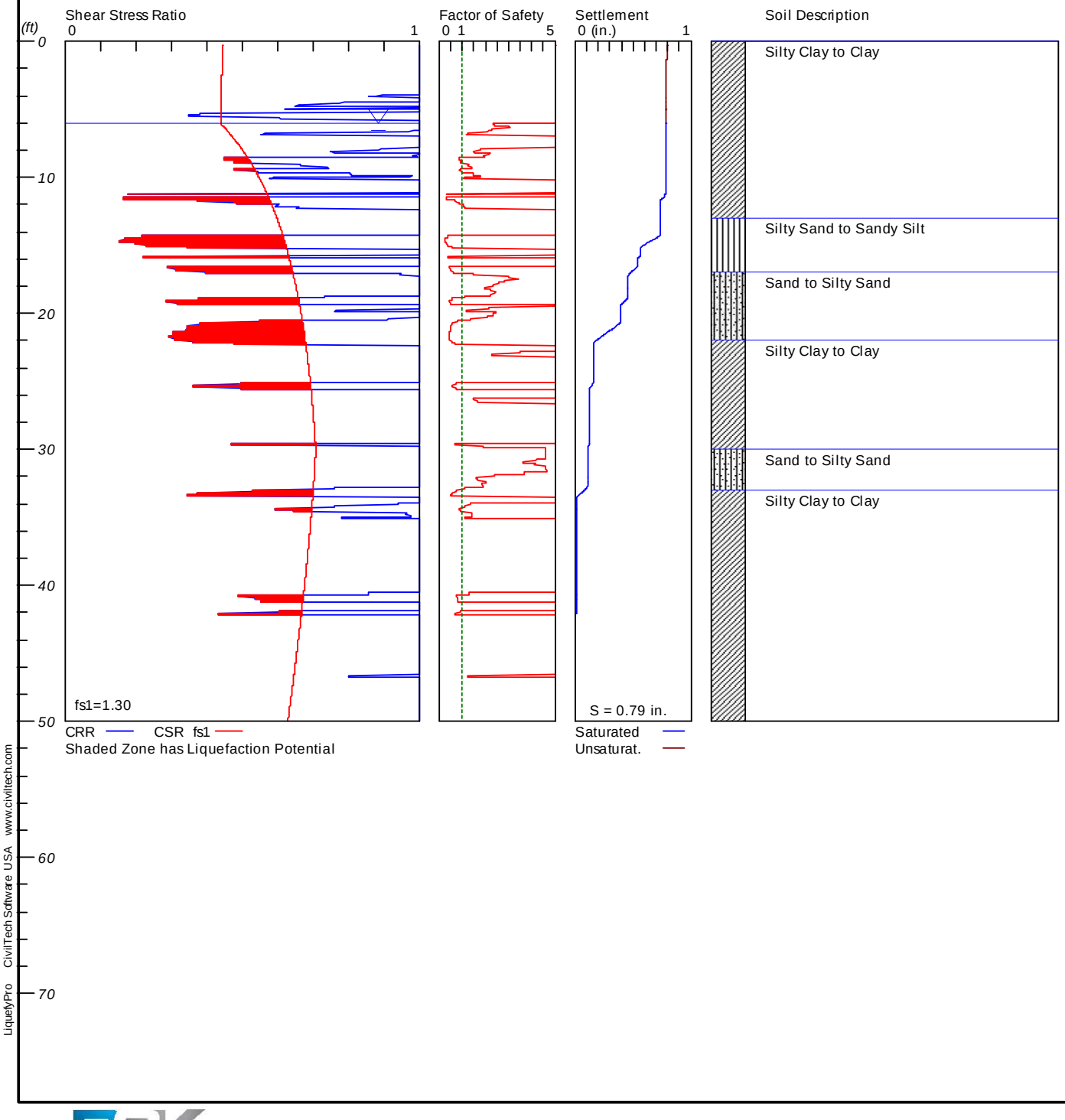
Figure C-10

LIQUEFACTION ANALYSIS

Tracy High School

Hole No.=CPT-1 Water Depth=6 ft

Magnitude=6.29
Acceleration=0.527g



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Figure C-10

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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: T:\Project Docs\G2014511S - Tracy USD Solar Carports\11 Stein Continuation HS\CPT-1.liq
Title: Tracy High School
Subtitle:

Surface Elev.=
Hole No.=CPT-1
Depth of Hole= 50.00 ft
Water Table during Earthquake= 6.00 ft
Water Table during In-Situ Testing= 13.00 ft
Max. Acceleration= 0.53 g
Earthquake Magnitude= 6.29

Input Data:
Surface Elev.=
Hole No.=CPT-1
Depth of Hole=50.00 ft
Water Table during Earthquake= 6.00 ft
Water Table during In-Situ Testing= 13.00 ft
Max. Acceleration=0.53 g
Earthquake Magnitude=6.29
No-Liquefiable Soils: Based on Analysis

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: No
* Recommended Options

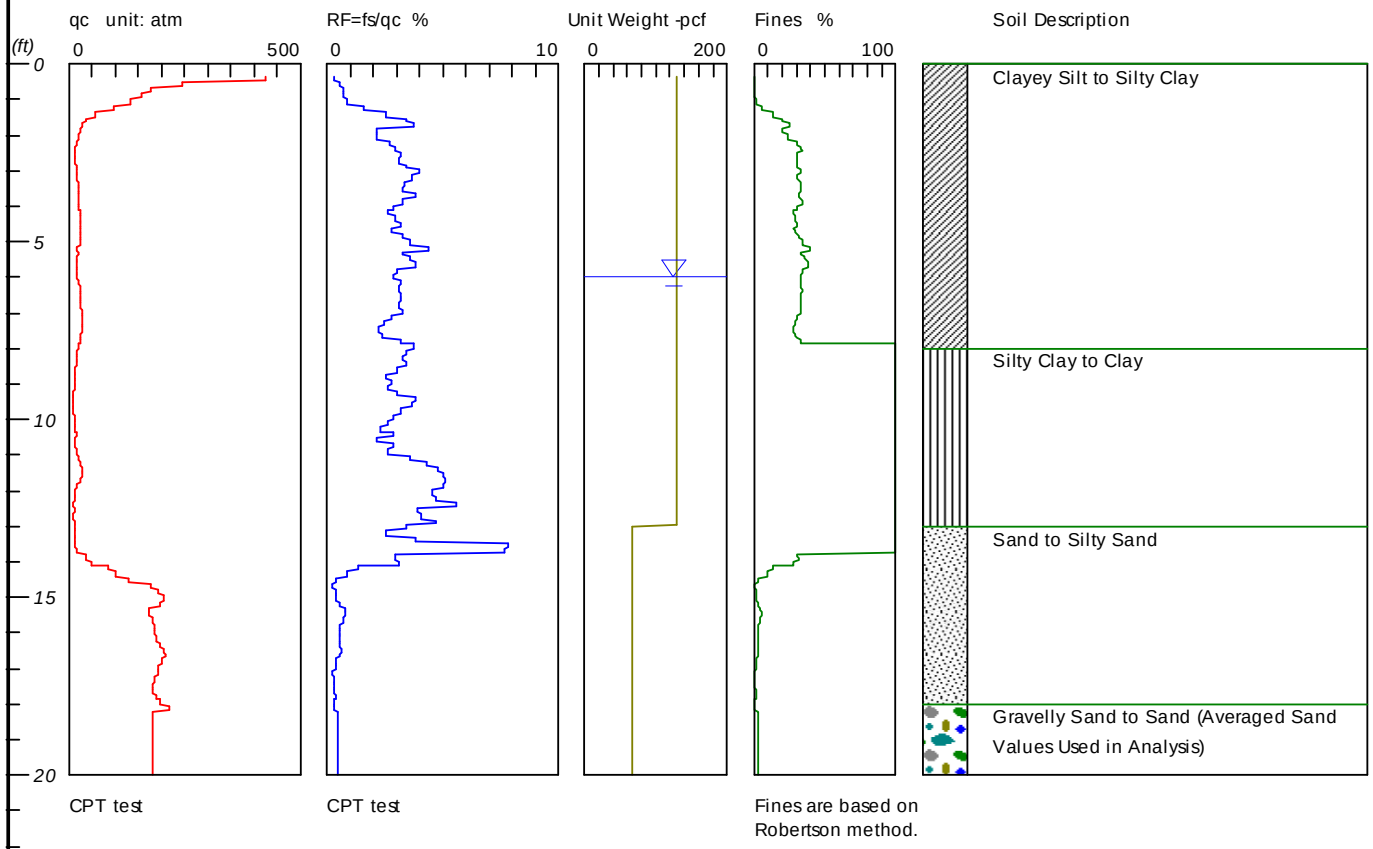
Output Results:
Settlement of Saturated Sands=0.78 in.
Settlement of Unsaturated Sands=0.01 in.
Total Settlement of Saturated and Unsaturated Sands=0.79 in.
Differential Settlement=0.395 to 0.522 in.

LIQUEFACTION ANALYSIS

Tracy High School

Hole No.=CPT-2 Water Depth=6 ft

Magnitude=6.29
Acceleration=0.527g



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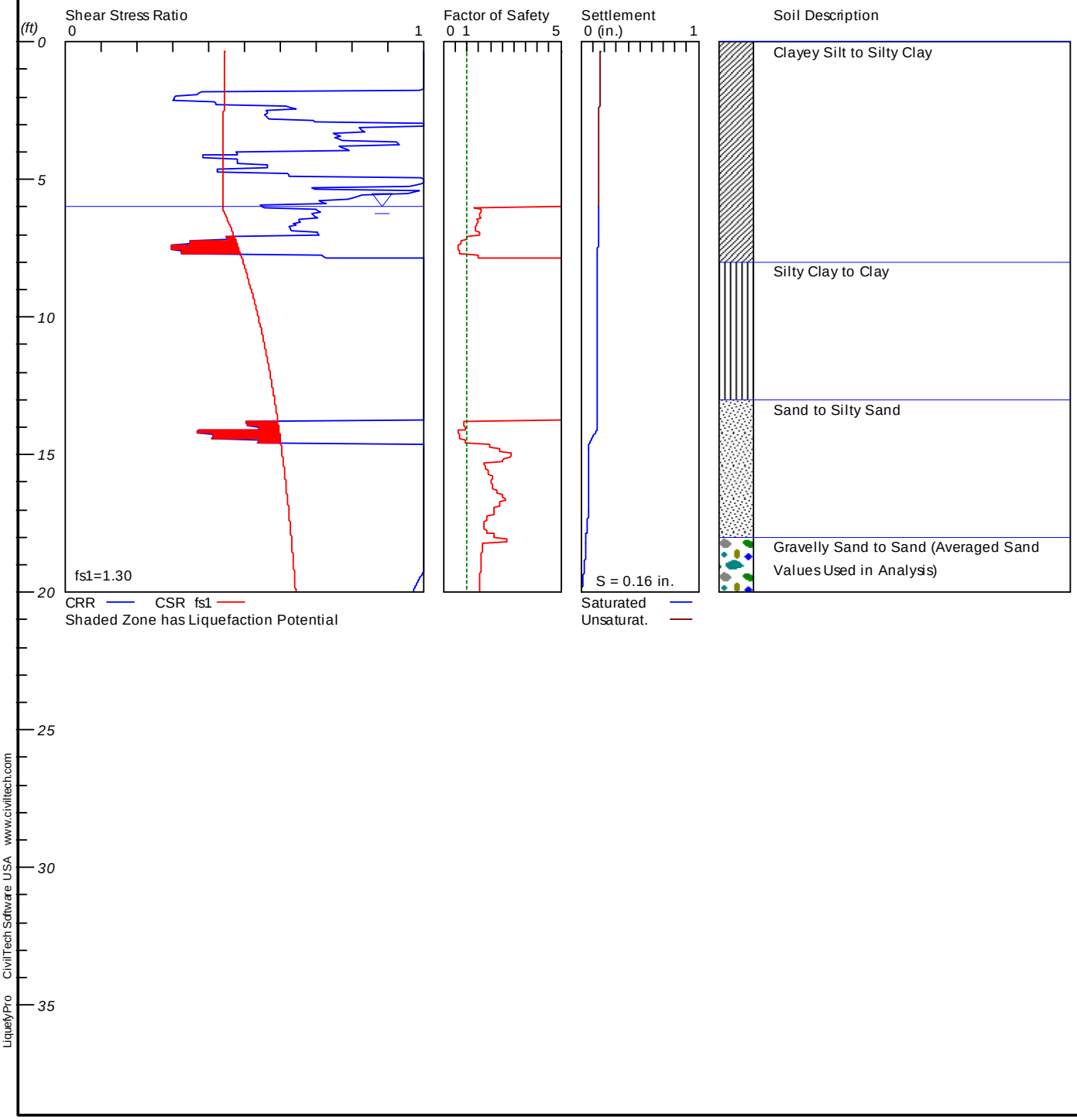
Figure C-11

LIQUEFACTION ANALYSIS

Tracy High School

Hole No.=CPT-2 Water Depth=6 ft

Magnitude=6.29
Acceleration=0.527g



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Figure C-11

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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: T:\Project Docs\G2014511S - Tracy USD Solar Carports\12 Tracy HS\CPT-2.liq
Title: Tracy High School
Subtitle:

Surface Elev.=
Hole No.=CPT-2
Depth of Hole= 20.00 ft
Water Table during Earthquake= 6.00 ft
Water Table during In-Situ Testing= 13.00 ft
Max. Acceleration= 0.53 g
Earthquake Magnitude= 6.29

Input Data:
Surface Elev.=
Hole No.=CPT-2
Depth of Hole=20.00 ft
Water Table during Earthquake= 6.00 ft
Water Table during In-Situ Testing= 13.00 ft
Max. Acceleration=0.53 g
Earthquake Magnitude=6.29
No-Liquefiable Soils: Based on Analysis

1. CPT Calculation Method: Modify Robertson*
2. Settlement Analysis Method: Tokimatsu, M-correction
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: No
* Recommended Options

Output Results:
Settlement of Saturated Sands=0.15 in.
Settlement of Unsaturated Sands=0.01 in.
Total Settlement of Saturated and Unsaturated Sands=0.16 in.
Differential Settlement=0.078 to 0.103 in.