B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

C. Research/Evaluation Reports: For post-installed anchors, from ICC-ES.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.7 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 ACCESSIBILITY REQUIREMENTS

A. Comply with applicable provisions in the CBC and the 2010 ADA Standards for Accessible Design.

2.2 PERFORMANCE REQUIREMENTS

A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.3 SUSTAINABILITY REQUIREMENTS

A. Comply with applicable provisions in the CGBC.

2.4 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

C. Steel Tubing: ASTM A500/A500M, cold-formed steel tubing.

D. Steel Pipe: ASTM A53/A53M, Standard Weight (Schedule 40) unless otherwise indicated.

E. Perforated Metal Basis-of-Design Product: McNichols, Quality Round Perforated, 11 Gauge Plain Steel, 1/2 inch Round on 11/16 inch staggered, Item No. 1612611141.

1. Product Line: Perforated.
2. Product Type: Round Hole.
3. Weight: 2.6 lb per sf.
4. Major Material: Plain Steel.
5. Gauge (Thickness): 11 gage, 0.1196 inch (3.04 mm) thick.
6. Hole Size: 0.5000 inch.
7. Hole Centers: 0.6875 inch.
8. Hole Pattern: Staggered.
9. Surface Finish: Mill.
10. Percent Open Area: 48 percent.
11. Width: 48.0000 inches.
12. Length (Span for Grating): 120.0000 inches.
13. Margins Parallel to Width: Minimum Safe Both Ends.
14. Straight Rows Parallel To: Length.
15. Margins Parallel to Length: Minimum Safe Both Sides.
16. End Pattern: Unfinished.

2.5 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use. Select fasteners for type, grade, and class required.

B. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F593; with hex nuts, ASTM F594; and, where indicated, flat washers; Alloy Group 1.

C. Anchors, General: Anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E488/E488M, conducted by a qualified independent testing agency.

D. Post-Installed Anchors: Torque-controlled expansion anchors.

1. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F593, and nuts, ASTM F594.

2.6 MISCELLANEOUS MATERIALS

A. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.

B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

C. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.7 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.8 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

C. Galvanize miscellaneous framing unless otherwise indicated.

D. Prime miscellaneous framing and supports unless otherwise indicated.

2.9 FINISHES, GENERAL

A. Finish metal fabrications after assembly.

B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.10 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.

C. Shop prime iron and steel items unless otherwise indicated.

D. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

3.3 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0 mil dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION 05 50 00

SECTION 09 91 13

EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes surface preparation and the application of paint systems on exterior substrates.

1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

B. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.

1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.

C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

1. Prefinished items include, but are not limited to, the following factory-finished components:

a. Metal lockers.
b. Elevator entrance doors and frames.
c. Elevator equipment.
d. Finished mechanical and electrical equipment.
e. Light fixtures.

2. Concealed surfaces include, but are not limited to, walls or ceilings in the following generally inaccessible spaces:

    a. Foundation spaces.
    b. Furred areas.
    c. Utility tunnels.
    d. Pipe spaces.
    e. Duct shafts.
    f. Elevator shafts.

3. Finished metal surfaces include, but are not limited to, the following:

    a. Anodized aluminum.
    b. Stainless steel.
    c. Chromium plate.
    d. Copper and copper alloys.
    e. Bronze and brass.

4. Operating parts include, but are not limited to, moving parts of operating equipment and the following:

    a. Valve and damper operators.
    b. Linkages.
    c. Sensing devices.
    d. Motor and fan shafts.

5. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

D. Related Requirements:

1. Section 055000 "Metal Fabrications" for shop priming metal fabrications.

1.3 DEFINITIONS

A. Flat: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.

B. Velvet: 5 to 10 units at 60 degrees and 10 to 15 units at 85 degrees, according to ASTM D 523.

C. Eggshell: 10 to 15 units at 60 degrees and 15 to 30 units at 85 degrees, according to ASTM D 523.

D. Low-Luster and Low-Sheen: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

E. Semigloss: 35 to 70 units at 60 degrees, according to ASTM D 523.

F. Gloss and Full Gloss: More than 75 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification. Use same designations indicated on Drawings and in schedules. Include color designations.
2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.

    a. VOC Content: Include VOC content for each product.

B. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

1. Submit Samples on rigid backing, 8-1/2 by 11 inches.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Applicator.

1.6 CLOSEOUT SUBMITTALS

A. Coating Maintenance Manual: Upon conclusion of the project, the Applicator, paint manufacturer, or paint supplier shall furnish a coating maintenance manual, such as Sherwin-Williams "Custodian Project Color and Product Information" or equal. Manual shall include:

1. Area summary with finish schedule.
2. Area detail designating where each product / color / finish was used.
3. Product data pages for each product used.
4. Material Safety Data Sheets (MSDS) for each product used.
5. Care and cleaning instructions.

6. Touch-up procedures.
7. Samples of each color and finish used.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Paint: 5 percent, but not less than 1 gallon of each material and color applied.

    a. Provide extra materials in unopened 1 gallon containers.

1.8 QUALITY ASSURANCE

A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

B. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system.

    a. Vertical and Horizontal Surfaces: Provide samples of not less than 100 sq. ft.
    b. Other Items: Architect will designate items or areas required.

2. Final approval of color selections will be based on mockups.

    a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:

1. Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. VOC content.

B. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.
3. Store on shelves or wood pallets.

1.10 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 degree F.

B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 degree F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers Names: Shortened versions (shown in parentheses) of the following manufacturers names are used in other Part 2 articles:

1. Behr Process Corporation (Behr).
2. Dunn-Edwards Corporation (Dunn-Edwards).
3. Frazee Paint/Comex Group (Frazee).
4. Glidden Professional (Glidden).
5. PPG Architectural Finishes, Inc. (PPG)
6. Sherwin-Williams Company (The) (Sherwin-Williams).

7. Vista Paint (Vista).

B. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles for the paint category indicated.

C. Source Limitations: Obtain block fillers and primers for each coating system from the same manufacturer as the finish coats.

2.2 SUSTAINABILITY REQUIREMENTS

A. Comply with applicable provisions in the CGBC.

2.3 PAINT, GENERAL

A. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

B. Material Quality:

1. Provide paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
2. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

C. Colors: As indicated on Drawings or, if not indicated, as selected by Architect from manufacturer's full range.

2.4 PRETREATMENT FOR GALVANIZED METAL

A. Galvanized Metal Pretreatment: Factory-formulated galvanized metal pretreatment for exterior and interior application.

1. Behr: Krud Kutter; Metal Clean & Etch.
2. Dunn-Edwards: Supreme Chemical; Metal Clean and Etch (SCME-01).
3. Frazee: Jasco; Prep N Prime.
4. Glidden: Jasco; Prep N Prime.
5. PPG: Duraprep Concentrated Multi-Purpose Cleaner Prep120.
6. Sherwin-Williams: DTM Wash Primer B71Y1.
7. Vista: Krud Kutter; Metal Clean & Etch.

2.5 METAL PRIMERS

A. Exterior Galvanized Metal Primer: Factory-formulated galvanized metal primer for exterior application.

1. Behr: Premium Plus Exterior Multi-Surface Primer & Sealer (436): Applied at a dry film thickness of not less than 1.8 mils.
2. Dunn-Edwards: Provide one of the following:

    a. GALV-ALUM Premium (GAPR00): Applied at a dry film thickness of not less than 2.0 mils.
    b. ULTRA-GRIP Premium Interior/Exterior Multi-Surface Primer UGPR00: Applied at a dry film thickness of not less than 1.5 mils.

3. Frazee: Provide one of the following:

    a. 561 Alkyd Acrylic Metal Primer: Applied at a dry film thickness of not less than 1.8 mils.
    b. 309 Ultratech Universal Water-Based Metal Primer: Applied at a dry film thickness of not less than 2.0 mils.

4. Glidden: Devflex Waterborne Acrylic DTM Primer 4020PF: Applied at a dry film thickness between 2.0 and 4.0 mils.
5. PPG: Pitt-Tech Plus DTM Industrial Primer 90-912: Applied at a dry film thickness between 2.0 and 4.0 mils.
6. Sherwin-Williams: Pro Industrial Pro-Cryl Primer, B66-310 Series: Applied at a dry film thickness between 2.0 and 4.0 mils.
7. Vista: 4800 Metal Pro Primer: Applied at a dry film thickness of not less than 2.5 mils.

2.6 WATER-BASED PAINTS

A. Exterior Semigloss Acrylic Enamel: Factory-formulated semigloss waterborne acrylic-latex enamel for exterior application. 35 to 70 units at 60 degrees, according to ASTM D 523.

1. Behr: Premium Plus Exterior Semi-Gloss (5050): Applied at a dry film thickness of not less than 1.4 mils.

2. Dunn-Edwards: SPARTASHIELD (SSHL50): Applied at a dry film thickness of not less than 1.5 mils.
3. Frazee: 124 Mirro Glide 100% Acrylic Semi-Gloss: Applied at a dry film thickness of not less than 1.4 mils.
4. Glidden: Ultra-Hide 150 Exterior Semi-Gloss Paint 2416V: Applied at a dry film thickness of not less than 1.6 mils.
5. PPG: Speedhide Exterior 100% Acrylic Latex Semi-Gloss 6-900XI: Applied at a dry film thickness of not less than 1.4 mils.
6. Sherwin-Williams: Provide one of the following:

    a. Sonoran Int/Ext Acrylic Latex Semi-Gloss, B40WJ9850 Series: Applied at a dry film thickness of not less than 1.5 mils.
    b. Solo 100% Acrylic Int/Ext S/G A76 Series: Applied at a dry film thickness of not less than 1.5 mils.

7. Vista: 7000 Acriglo Semigloss: Applied at a dry film thickness of not less than 1.4 mils.

2.7 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.

C. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

D. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.

B. Remove door and other hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.

1. Use applicators and techniques suited for paint and substrate indicated.

2. Paint faces, all four edges, edges of cutouts, and mortises of exterior doors and gates and entire exposed surface of exterior door frames.

    a. Paint all surfaces that will be covered by door hardware including, but not limited to, kick, mop, and armor protection plates.

3. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
4. Primers specified in painting schedules are required on items that are factory primed or factory finished.

B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.
2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 EXTERIOR PAINTING SCHEDULE

A. Zinc-Coated Metal: Provide the following finish systems over exterior zinc-coated metal surfaces:

1. Semigloss Acrylic-Enamel Finish: Two finish coats over a galvanized metal primer.

a. Pretreatment: Exterior galvanized metal pretreatment.
b. Primer: Exterior galvanized metal primer.
c. Finish Coats: Exterior semigloss acrylic enamel.

END OF SECTION 09 91 13

SECTION 26 01 20

GENERAL ELECTRICAL PROVISIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 1 - Specification sections, apply to the work of this section.

1.02 SCOPE

A. The Construction Documents shall include the drawings and specifications covering all related work in addition to the electrical. The Contractor shall carefully examine all of the Construction Documents to acquaint himself with the responsibilities of the various Contractors regarding the supply, installation and connection of the Components of the various electrical and other systems.

B. It is intended that all systems shall be complete and shall include all components necessary for the operation of the system. If components are indicated on the drawings or inferred from the system requirements but not specified by catalogue number, such components shall be furnished by the manufacturer furnishing the remainder of the system.

C. In the event of a conflict of the requirements detailed in the drawings and any sections of the specification the Contractor shall inform the Owner's Rep of such conflict in writing before ordering equipment. If such notification is not provided, the Contractor shall accept the Owner's Rep decision on the resolvement of such conflict without any further compensation.

1.03 DEMOLITION, ALTERATION AND EXTENSION WORK IN AN EXISTING STRUCTURE.

A. Contractor shall survey the entire project site and become thoroughly familiar with actual existing conditions. Check the locations of all existing structures, equipment, wiring, etc. The intent of the work is shown on the drawings and described hereinafter.

B. While the existing facility is being altered, keep the present power service and necessary life safety systems intact.

C. Provide and perform demolition, alteration, extension, preparatory and

miscellaneous work as indicated, specified or as required, complete. The work shall include:

1. Demolition and removal of existing electrical conduit, wiring and equipment required to complete the project.

2. Preparation of the existing building and electrical distribution to receive or connect the new work including relocation of existing electrical conduit, wiring, equipment, etc. where new work interferes with existing conditions.

3. Miscellaneous demolition, cutting, patching, alteration, and repair work in the existing building necessary for the completion of the entire project while maintaining electrical circuit continuity to all equipment, outlets, fixtures, etc. scheduled to remain.

4. Disconnecting, relocating, and reconnecting of electrical equipment as required by the construction modifications.

5. Coordination of power interruption with the Owner's representative or utility company where necessary.

D. Salvage and Disposal: All removed material other than items to be reused shall be returned to the Owner or disposed of in accordance with instructions from the Owner's representative. Dispose all hazardous materials per guideline of State of California Department of Health Services and other agencies having jurisdiction.

1.04 ELECTRICAL SPECIFICATIONS AND DRAWINGS

A. The documents are written in a brief form for the purpose of work economy. For example: "Motor starters" is used in place of "The Contractor shall provide all motor starters". Omitted words shall be determined by inference.

B. It should be particularly noted that the terms "furnish", "provide", and "install" are interchangeable and that each of these terms means to furnish, install, and connect, unless otherwise stated.

C. When a catalog or series numbers are shown they are intended to indicate the type and quality of product. The product furnished shall meet all specification requirements even if the product conforming to the given catalog number does not.

D. In the event of conflict between requirements, whether shown on drawings or in specifications the most stringent requirements shall govern.

E. Wherever tables or schedule show quantities of materials they shall not be used as the final count. These figures serve only as an aid to Contractor. Each Contractor shall be responsible for furnishing all material noted on drawings or specified.

F. A minimum size or performance requirement specified shall be superseded by requirements specified in other technical specification sections or shown on drawings. For example: A minimum control wire size specified for an alarm system shall take precedence over the minimum wire sizes listed in Section 16120 - Conductors.

G. When short circuit currents or interrupting capacities are indicated on drawings or specified they shall be considered as minimum R.M.S. symmetrical unless otherwise stated.

H. The electrical drawings are diagrammatic and show the general arrangement of all raceways, equipment and appurtenances. They shall be followed as closely as actual building construction, field conditions and the work of other trades will permit. The electrical work shall conform to the requirements shown on the drawings.

I. Architectural drawings shall take precedence over electrical drawings, because of the small scale of the electrical drawings it is not possible to indicate all offsets, fittings, and accessories which may be required. The Contractor shall investigate the existing conditions affecting the work and shall arrange his work accordingly, providing such fittings and accessories as may be required to meet such conditions.

1.05 CODE AND STANDARDS

A. Code Compliance

1. Installation must conform to all applicable National, State and local codes, rules, ordinances, regulations and manufacturer's recommendations which will govern the quality and the character of work, style and size of materials.

2. In case of difference between building codes, state laws, local ordinances, industry standards and utility company regulations the Contractor shall bear all costs arising in correcting the deficiencies.

3. Should the Contractor perform any work that does not comply with the requirements, ordinances, industry standards and utility

company regulations he shall bear all costs arising in correcting the deficiencies.

B. Building Codes

1. Comply with the latest editions of the following Codes promulgated by governing authority for the specific job site:

a. California State Safety Orders
b. California State Fire Prevention Commission Official Regulations
c. California Electrical Code – CEC
d. California Energy Regulations, Title 24
e. National Electrical Code - NFPA 70
f. Life Safety Code NFPA 101

C. Industry Codes

1. All electrical equipment shall be listed by Underwriters' Laboratories, Inc. and shall meet all requirements established by NEC, NEMA and ANSI, and as specified hereinafter.

2. Materials and installation procedures shall comply with all applicable requirements of the following nationally accepted codes and standards.

ANSI	American National Standards Institute, Inc.
ASTM	American Society of Testing Materials
ETL	Electrical Testing Laboratories
IEEE	Institute of Electrical and Electronic Engineers
IPCEA	Insulated Power Cable Engineers Association
ITL	Independent Testing Laboratories
NBS	National Bureau of Standards
NECA	National Electrical Contractor Association
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
NRTL	Nationally Recognized Testing Laboratory
UL	Underwriters' Laboratories
USASI	United States of America Standards Institute

1.06 WORK AND WORKMANSHIP

A. General

1. These specifications may not include every detail or operation considered to be standard high grade installation procedure as it is assumed that the Contractor is familiar with these procedures. In the absence of specified details in the Contract Documents regarding installation procedure, the National Electrical Contractors Association "Standard of Installation" manual and the latest edition of Crofts "American Electricians, Handbook" shall be considered as minimum requirements.
2. The Contractor shall comply with all applicable provisions of NFPA-70, National Electrical Code.
3. Locations of all equipment connections are shown for bidding purposes only. Contractor shall verify erection and connection requirements and details.
4. The Contractor shall read the specifications and drawings of all other trades and verify erection and connection requirements and details.
5. The Contractor shall take all field measurements as necessary for his work, and shall be responsible for the accurate location and size of all openings, recesses, slots, ferrules, and the like.
6. Should any structural difficulties prevent the setting of cabinets, running of conduit, etc., at points shown on drawings, necessary minor deviations as determined by the Owner's Rep may be permitted only if authorized in writing.
7. Specific emphasis must be made that if the equipment other than that which the drawings were designed around does not properly adapt to the space allotted or is not easily accessible for repair and maintenance the Contractor is responsible for providing all additional access panels, pipe, fittings, all materials, labor, etc. to achieve the desired end result.
8. Any extra costs which might result from deviations from the drawings to avoid interference shall be considered a "job condition" and no additional compensation will be considered applicable. In the event that any such interference occur in the course of the work due to an error, omission or oversight by the Contractor, no additional compensation shall be allowed.
9. Interference which may occur during the course of construction shall be brought to the immediate attention of the Owner's Rep and his decision confirmed in writing shall be final as to which trade shall take preference.
10. The finished job shall be functional and complete in every detail including any and all such items required for a complete system whether or not these items be specified or shown on drawings.
11. Special attention shall be given to the accessibility of working and controlling parts. Adjustable parts shall be within easy reach.

Removable parts shall have space for removal.

12. Underground utilities: Known underground services are shown at approximate locations on drawings. Contractor shall exercise extreme care to avoid damage in exposing underground services:
    a. Where an underground facility is encountered which is not shown on drawings or mentioned in any other contract document, Contractor shall immediately notify the Owner and Architect and responsible utility agency for direction.
    b. Do not proceed with Work until direction is received.

B. Quality Assurance:

1. Perform work in accordance with NECA Standard of Installation.
2. Manufacturer to be a company specialized in fabrication of respective production with a minimum of 10 years documented experience, or as indicated in the respective spec section.
3. Manufacturer to provide quality control production testing for each unit of major equipment in accordance with applicable standards.
4. Maintain one copy of each testing document on site.

1.07 COORDINATION BETWEEN CONTRACTORS

A. The Contractor shall acquaint himself with details of all work to be performed by other trades and take necessary steps to integrate and coordinate his work with these trades.

B. Special attention shall be given to points where ducts cross other ducts or piping, where lighting fixtures fit into ceilings and where pipes, ducts and conduit pass through walls and columns.

C. Each Contractor shall be responsible for informing himself of the nature and arrangement of the materials and construction to which his work attaches or passes through.

1.08 PROTECTION AND REPAIR

A. In addition to the provisions and stipulations of the General and Supplementary General Conditions of the Contract each Contractor and Subcontractor shall provide various types of protection as follows:

1. Protect finished floors from chips and cutting oil by the use of metal receiving pans and an oil proof floor covering.
2. Protect equipment and finished surfaces from welding and cutting spatters with baffles and spatter blankets.

3. Protect equipment and finished surfaces from paint droppings, insulation adhesive and size droppings, etc. by use of drop cloths.
4. Maintain fire rating of walls and structures; provide fire proof enclosure where required.

1.09 RUBBISH

A. All rubbish resulting from the work herein specified shall be removed from the premises by the trade which produced it, as fast as it accumulates.

B. On completion of his work each Contractor shall remove and see that each of his Subcontractors removes from the site all tools, equipment, surplus material and rubbish pertaining to his own operations. Each Contractor or Subcontractor shall pay all costs for such removal and disposition and shall cooperate with the General Contractor in final cleaning.

C. Disposal of hazardous material shall be per guideline of the state of California, Department of Health Services and other authorities having jurisdiction.

1.10 ELECTRICAL CONNECTIONS TO EQUIPMENT

A. Connections and wiring diagrams shown on drawings or described in the specifications are typical and are for reference purposes only. Detailed diagram instructions and construction shop drawings will be required from the Contractor supplying the equipment.

1.11 PRODUCTS AND MATERIAL

A. General

1. Electrical equipment shall be new, listed by Underwriters' Laboratories and shall conform to the standard of the National Electrical Manufacturer's Association.

2. Materials used for like service shall be by the same manufacturer, e.g., all motor starters to be from the same manufacturer.

B. Prefabricated Equipment: Unless noted as field fabricated all equipment shall be delivered completely factory assembled and wired.

C. Approval: A specification followed by one or more manufacturer "or approved equal" is open to all equal products or materials unless

otherwise noted. However, the Contractor shall supply one of the listed manufacturers' at no additional cost if the Engineer finds the substituted product unsatisfactory.

D. Material: The Contractor shall submit to the Owner's Rep, for his approval within 48 hours after request, a list of all materials he proposes to use.

E. Storage

1. Provide suitable protection from weather and vandalism for all materials and equipment to be installed. Storage shall be dry, clean and safe. Any materials or equipment damaged, deteriorated, rusted or defaced due to improper storage shall be fully repaired, refinished or replaced as directed by the Engineer.
2. Cover and protect all equipment, materials, raceways, etc., before and after installation to prevent injury and to prevent entrance of grit, dirt and foreign matter.

1.12 SHOP DRAWINGS

A. General

1. Drawings shall be accurately drawn large scale drawings, adequately dimensioned, showing external and internal features, mechanical provisions, materials, gauges, electrical characteristics, wiring diagrams and such other information necessary to show compliance with the intent of the specifications and drawings.
2. Generalized diagrams having several alternate methods of connection will not be acceptable.
3. Catalog data in lieu of certified prints shall be submitted for standard specialties, wire and cable, switches, starters, insulation and similar items.
4. Contractor's responsibility includes coordination of his work with all other trades, fabrication process and technique of construction. Contractor shall check all shop drawings for correct performance, size, capacity, clearance, and finish prior to submittal to Engineer. Drawings must be stamped or marked to indicate Contractor has reviewed these drawings.
5. Contractor review shall insure that equipment will fit into available space.
6. The Engineer will review submitted shop drawings as a further check and as a service to the Contractor. Such review does not relieve the Contractor of responsibility for correct ordering of material and equipment.

B. Shop Drawings

1. Contractor shall submit shop drawings of the following systems or equipment and other equipment requested by Owner's Rep within ten days after the award of Contracts:

   a. Switchboards and Panelboards
   b. Cabinets and Pull Boxes
   c. Devices and Conductors
   d. Transformers

2. Each submitted item shall refer to the specification section and paragraph number in which the item is specified.

3. Approval of a specific item does not include approval of the assembly of which the item is a component.

1.13 DELIVERY SCHEDULE

A. The Contractor shall submit, upon request, a schedule listing the equipment and materials required to complete the installation, quantity ordered, the date of placing the order and the promised delivery date.

PART 2 - PRODUCT

2.01 GENERAL

A. All equipment and materials shall be new and the current model or type of a manufacturer regularly engaged in their production. Where two or more units of the same class of equipment are required, they shall be products of the same manufacturer.

B. Equipment shall fit into the space allotted and shall have adequate and acceptable clearances for entry, servicing and maintenance. The work shall be provided in an arrangement which will not necessitate cutting of structural members which will not interfere with lighting, HVAC equipment or doors, and which will present the best appearance possible.

C. Where equipment or materials are specified to be approved by and constructed and/or tested in accordance with the published standard of the UL, NRTL, ANSI, ASTM, ETL or any similar nationally recognized agency, the Contractor shall submit proof that the items furnished under this specification conform to such requirements.

2.02 COLOR SCHEDULE AND SAMPLES

A. The Contractor shall submit, upon request, a list of available finishes, together with color samples, for all equipment where color finishes are requested by the Architect. The list of equipment will be made available to the Contractor before equipment delivery authorization is required.

PART 3 - EXECUTION

3.01 PROJECT CLOSE-OUT

A. AC Switchgear Test and Inspection

1. New breakers in the main switchboard shall be tested and inspected as follows:

   a. Circuit breakers shall be tested and inspected for proper trip operations on long delay, short delay and instantaneous trip. Test current for long delay tripping shall be 300% of rate trip. All circuits shall have Ductor readings made where possible.
   b. All bolted connections shall be checked and tightened for proper torque.
   c. A written report showing test results shall be submitted to Architect.

B. Tests

1. The Contractor shall furnish all necessary instruments and equipment required for making tests and shall make test of all wiring for shorts, open circuits, grounds, etc., and shall immediately correct any defective work.
2. When the entire installation has been completed and all lighting fixtures installed, test out all circuits and switching and demonstrate that the operation of the system is in accordance with the Contract Documents.

C. Spares

Fuses-Provide Owner with three (3) fuse refills for each size fuse used in the installation. Mount fuse clip in spare fuse cabinet. Locate in main electrical room or maintenance shop.

D. Cleaning and Touch-Up

1. All panelboards, cabinets, switchboards, motor controllers, control panels and other enclosures shall be cleaned and the paint touched up as necessary to duplicate a factory finished appearance. Touch-up paint shall match the color, composition and quality of the factory applied finish.
2. Label all electrical equipment or controls by means of engraved laminated plastic plates screwed or riveted to device. Height of letters to be not less than 1/4" unless otherwise specified or directed. Items to be labeled include the following:

    a. Main circuit breakers and switches
    b. All circuit breakers and switches in switchboards and distribution panels
    c. All panel boards (labeled on inside)
    d. Printed card labels may be used on items of equipment furnished with plastic windows. Labeling of the cards shall be neatly printed using a lettering device such as a "KROY" instrument.
    e. Directories on inside of panelboards shall be type-written and shall show list of circuits and points, equipment of areas supplied (1/8" letter height acceptable).
    f. Labels or tags inside the covers of safety switches or motor starters noting interlocks, conductor sizes, etc., may be of the embossed adhesive type.

E. Record Drawings - At the end of the project the Contractor's working drawings shall be brought up to date and a set of prints delivered to the Owner's Rep with written material certification that all corrections are true and accurately noted installed thereon. Each drawing shall be labeled Record Drawings, dated and signed by the Contractor.

F. Operation and Maintenance (O&M) Manuals

1. These requirements are supplemental to those listed or referred to in any foregoing sections of these specifications.
2. Contractor shall prepare suitable bound volumes pertaining to his systems and equipment. Submit one (1) copy to the Owner's Rep for approval. After approval, submit three (3) copies to the Owner's Rep for delivery to the Owner.
3. Volumes shall be properly bound, indexed and contained in hard, heavy duty 3 ring binders. The following shall be clearly printed on the front cover:

a. Project name, address and date
b. Name and address of Architect-Engineer
c. Telephone number of Contractor, including night or emergency

4. Bind the written operating instructions, shop drawings, equipment catalog cuts and manufacturer's instructions into the binder. Material to be assembled as follows:

   a. First page - Title of job, Owner, address, date of submittal, name of Contractor and name of Owner's Rep. Emergency operating instructions and/or list of service organizations (including address and telephone numbers) capable of rendering emergency service on 24 hour calls.
   b. Second page - Table of Contents.

5. Material shall be assembled in divisions according to the systems which are on the project (e.g., emergency distribution system, etc.). Each division shall include the following sections:

   a. First Section - Written description of system contents, where actually located in building, how each part functions individually and how system works as a whole. Conclude with a list of items requiring services and either state the service needed or refer to the manufacturer's data in the binder that describes the proper service.
   b. Second Section - A copy of each approved shop drawing (clearly marked for item furnished) with an index at the beginning of the section.
   c. Third Section - A copy of each manufacturer's operating instructions with an index at the beginning of the section.
   d. Fourth Section - A list of all equipment used in the system, Contractor's purchase order numbers, suppliers name and address.
   e. Field replacement parts list.

G. Guarantee and Warranty

1. These requirements are supplemental to those listed or referred to in any foregoing section of these specifications.
2. All wiring and conduit systems provided under Division 16 shall be guaranteed for a period of three (3) years.
3. Warranty period shall also apply to services, including instruction,

adjustment, testing, noise control, etc.

H. Special Requirements

1. No work shall be performed "HOT".
2. Any power outages shall be performed on an after-hours on an overtime basis, generally after midnight on weekends between the hours of 12.01 a.m. and 6:00 a.m. The Contractor shall coordinate the outage with the Owner, giving at least twenty (20) days notice. All overtime costs shall be included in the Contractors Bid.
3. Temporary service or service jumper to be provided when outage will be expected to last more than three hours. The cost of this service shall be addressed and shall be included in contract.

END OF SECTION 26 01 20

SECTION 26 05 19

CONDUCTORS

PART 1- GENERAL

1.1 SECTION INCLUDES

A. Building wires and cables.

B. Underground power and control wires and cables.

C. Wiring connectors and connections.

1.2 RELATED SECTIONS

A. Section 26 05 33.13 - Conduits.

B. Section 26 05 33.16 - Boxes.

1.3 REFERENCES

A. ANSI/NFPA 70 - National Electrical Code.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years of experience.

1.5 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI / NFPA 70.

1.6 PROJECT CONDITIONS

A. Verify that field measurements are as shown on Drawings.

B. Wire and cable routing shown on Drawings is approximate unless dimensioned. Route wire and cable as required to meet Project Conditions.

C. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.

1.7 COORDINATION

A. Determine required separation between cable and other work.

B. Determine cable routing to avoid interference with other work.

PART 2- PRODUCTS

2.1 EXTERIOR AND UNDERGROUND WIRE AND CABLE - #6 and SMALLER

A. Description: Single conductor insulated wire.

B. Conductor: Copper.

C. Insulation Voltage Rating: 600 volts.

D. Insulation: ANSI / NFPA 70, Type XHHW-2.

2.2 EXTERIOR AND UNDERGROUND WIRE AND CABLE - #4 and LARGER

A. Description: Single conductor insulated wire.

B. Conductor: Aluminum or Copper-Clad Aluminum.

C. Insulation Voltage Rating: 600 volts.

D. Insulation: ANSI / NFPA 70, Type XHHW-2.

PART 3- EXECUTION

3.1 EXAMINATION

A. Verify that interior of building has been protected from weather.

B. Verify that mechanical work likely to damage wire and cable has been completed.

3.2 PREPARATION

A. Completely and thoroughly swab raceway before installing wires.

3.3 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Use solid conductor for feeders and branch circuits 10 AWG and smaller.

C. Use stranded conductors for control circuits.

D. Use conductor not smaller than 12 AWG for power and lighting circuits.

E. Use conductor not smaller than 16 AWG for control circuits.

F. Use #10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet (23 m).

G. Use #10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet (61 m).

H. Pull all conductors into raceway at same time.

I. Use suitable wire pulling lubricant for building wire 4 AWG and larger.

J. Match existing wiring color scheme.

K. Protect exposed cable from damage.

L. Support cables above accessible ceiling, using spring metal clips or plastic cable ties to support cables from structure. Do not rest cable on ceiling panels.

M. Neatly train and lace wiring inside boxes, equipment, and panelboards.

N. Clean conductor surfaces before installing lugs and connectors.

O. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.

P. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, #8 AWG and smaller.

Q. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, #10 AWG and smaller.

R. Wiring connections to terminal blocks shall be made with crimp type locking-fork terminals for conductors #8 AWG or smaller.

S. All conductors #6 AWG or larger shall be terminated with compression type lugs.

3.4 INTERFACE WITH OTHER PRODUCTS

A. Identify each conductor with its circuit number or other designation indicated on Drawings.

3.5 FIELD QUALITY CONTROL

A. Inspect wire and cable for physical damage and proper connection.

B. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values.

C. Verify continuity of each branch circuit conductor.

D. Verify that all circuits are free from grounds and short circuits.

END OF SECTION 26 05 19

SECTION 26 05 26

GROUNDING

PART 1 - GENERAL

0.1 SECTION INCLUDES

A. Grounding electrodes and conductors.

B. Equipment grounding conductors.

C. Bonding.

1.2 RELATED SECTIONS

A. Section 26 01 20 - General Electrical Provisions.

1.3 REFERENCES

A. ANSI/NFPA 70 - National Electrical Code.

1.4 SUBMITTALS

A. Product Data: Provide data for grounding electrodes and connections.

B. Test Reports: Indicate overall resistance to ground.

C. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation and installation of exothermic connectors.

1.5 PROJECT RECORD DOCUMENTS

A. Accurately record actual locations of grounding electrodes.

1.6 GROUNDING ELECTRODE SYSTEM

A. Metal underground water pipe.

B. Concrete-encased electrode.

C. Rod electrode.

1.7 PERFORMANCE REQUIREMENTS

A. Grounding System Resistance: 25 ohms maximum.

PART 1 - PRODUCTS

1.1 ROD ELECTRODE

A. Material: Copper.

B. Diameter: 3/4 inch.

C. Length: 20 feet.

1.2 MECHANICAL CONNECTORS

A. Material: Bronze.

1.3 WIRE

A. Material: Stranded copper.

B. Grounding Electrode Conductor: Size to meet NFPA 70 requirements.

PART 2 - EXECUTION

2.1 EXAMINATION

A. Verify that final backfill and compaction has been completed before driving rod electrodes.

2.2 INSTALLATION

A. Install Products in accordance with manufacturer's instructions.

B. Install rod electrodes in addition to other required ground electrodes where required to achieve specified resistance to ground.

C. Equipment Grounding Conductor: Provide separate, insulated conductor within each feeder circuit raceway. Terminate each end on suitable lug, bus, or bushing.

2.3 FIELD QUALITY CONTROL

A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.

B. Use suitable test instrument to measure resistance to ground of system. Perform testing in accordance with test instrument manufacturer's recommendations using the fall-of-potential method.

C. Provide the owner with one copy of the test results

END OF SECTION 26 05 26

SECTION 26 05 29

SUPPORT DEVICES AND SEISMIC RESTRAINTS

PART 1- GENERAL

1.1 SECTION INCLUDES

A. Conduit and equipment supports.

B. Anchors and fasteners.

1.2 REFERENCES

A. NECA - National Electrical Contractors Association.

B. ANSI/NFPA 70 - National Electrical Code.

1.3 SUBMITTALS

A. Product Data: Provide manufacturer's catalog data for fastening systems.

B. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.

1.4 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Conform to SMACNA - Guidelines for seismic restraints of mechanical systems.

PART 2- PRODUCTS

2.1 PRODUCT REQUIREMENTS

A. Materials and Finishes: Provide adequate corrosion resistance.

B. Provide materials, sizes, and types of anchors, fasteners, supports and seismic supports to carry the loads of equipment and conduit. Consider weight of wire in conduit when selecting products.

C. Anchors and Fasteners:

1. Concrete Structural Elements: Use Epoxy stainless steel anchors.
2. Steel Structural Elements: Use stainless steel beam clamps, ramset fasteners and welded fasteners.
3. Concrete Surfaces: Use Epoxy stainless steel anchors.
4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use stainless steel toggle bolts and hollow wall fasteners.
5. Solid Masonry Walls: Use Epoxy anchors.
6. Sheet Metal: Use stainless steel sheet metal screws.
7. Wood Elements: Use stainless steel wood screws.

2.2 STEEL CHANNEL

A. Description: Stainless steel.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Provide stainless steel anchors, fasteners, and supports in accordance with NECA "Standard of Installation".

C. Do not fasten supports to pipes, ducts, mechanical equipment, and conduit.

D. Do not use spring steel clips and clamps.

E. Do not use powder-actuated anchors.

F. Do not drill or cut structural members.

G. Fabricate supports from structural stainless steel beam, angle or channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength, flexibility and/or rigidity. Use spring lock washers under all nuts.

H. Install surface-mounted cabinets and panelboards with minimum of four anchors.

I. In wet and damp locations use stainless steel channel supports to stand cabinets and panelboards one inch off wall.

J. Use stainless steel sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

K. Use neoprene washers, vibration isolators and seismic restraints where required.

END OF SECTION 26 05 29

SECTION 26 05 33.13

CONDUIT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Metal conduit.

B. Liquid tight flexible metal conduit.

C. Electrical metallic tubing.

D. Nonmetal conduit.

E. Fittings and conduit bodies.

1.2 RELATED SECTIONS

A. Section 26 05 33.16 - Boxes.

B. Section 26 05 26 - Grounding.

C. Section 26 05 29 - Support Devices.

1.3 REFERENCES

A. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.

B. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.

C. ANSI/NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.

D. ANSI/NFPA 70 - National Electric Code.

E. NECA "Standard of Installation".

1.4 DESIGN REQUIREMENTS

A. Conduit Size: ANSI/NFPA 70.

1.5 PROJECT RECORD DOCUMENTS

A. Accurately record actual routing of conduits larger than 2 inches (51 mm).

1.6 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

1.7 PROJECT CONDITIONS

A. Verify that field measurements are as shown on Drawings.

B. Verify routing and termination locations of conduit prior to rough-in.

PART 2 - PRODUCTS

2.1 CONDUIT REQUIREMENTS

A. Minimum Size: 1 inch (19 mm) unless otherwise specified.

B. Underground Installations:
1. More than Five Feet from Foundation Wall: Use Schedule 80 PVC
2. Within Five Feet from Foundation Wall: Use Schedule 80 PVC
3. In or Under Slab on Grade: Use Schedule 80 PVC
4. Minimum Size: 2 inch (25 mm).

C. Outdoor Locations, Above Grade: Use rigid steel.
1. Roof location: Refer to Section 3.2 part Y.

D. Wet and Damp Locations: Use Schedule 80 PVC conduit.

E. Dry Indoor Locations:

1. Concealed: Use rigid galvanized steel conduit (RGS).
2. Exposed: Use rigid galvanized steel conduit (RGS).

2.2 METAL CONDUIT

A. Rigid Steel Conduit: ANSI C80.1.

B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; material to match conduit. Conduit fittings shall be zinc coated and shall be of the threaded type. Double lock nuts with bushing caps shall be used on all conduit termination except where threaded hubs exist. For PVC coated conduit use plastic jacketed fittings.

2.3 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

A. Description: Interlocked steel construction with PVC jacket.

B. Fittings: ANSI/NEMA FB 1. Zinc coated steel type with insulated bushings by Burndy, Condulet, Steel City or Thomas & Betts.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install conduit in accordance with NECA "Standard of Installation."

B. Install nonmetallic conduit in accordance with manufacturer's instructions.

C. Arrange supports to prevent misalignment during wiring installation.

D. Support conduit using stainless steel or Aluminum straps, lay-in adjustable hangers, clevis hangers, and split hangers.

E. Group related conduits; support using conduit rack. Construct rack using stainless steel or Aluminum channels; provide space on each for 25 percent additional conduits.

F. Fasten conduit supports to building structure and surfaces under provisions of Section 16190.

G. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports

H. Do not attach conduit to ceiling support wires.

I. Arrange conduit to maintain headroom and present neat appearance.

J. Route conduit parallel and perpendicular to walls.

K. Route conduit installed above accessible ceilings parallel and perpendicular to walls.

L. Maintain adequate clearance between conduit and piping.

M. Maintain 12 inch (300 mm) clearance between conduit and surfaces with temperatures exceeding 104 degrees F (40 degrees C).

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

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

P. Use conduit hubs to fasten conduit.

Q. Install no more than equivalent of three 90-degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one-shot bender to fabricate bends in metal conduit larger than 2 inch (50 mm) size.

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

S. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic, control and expansion joints.

T. Provide suitable pull string and caps on both ends in each empty conduit except sleeves and nipples.

U. Use suitable caps to protect installed conduit against entrance of dirt and moisture.

V. Ground and bond conduit under provisions of Section 16450.

W. All equipment connections shall be made with a short section (18” minimum - 36” maximum) length of flexible conduit. These connections shall be made with Seal-Tight conduit and be kept as short as possible.

X. Ceiling and roof penetrations shall be installed with rigid steel per description below:

1. Install rubber grommet at ceiling/roof penetration for rigid steel conduit.
2. Provide and install outdoor flexible conduit per section 3.1 part X from rigid steel conduit ceiling/roof penetration to equipment connection.

3.2 INTERFACE WITH OTHER PRODUCTS

A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods under the provisions of Section 07900.

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

END OF SECTION 26 05 33.13

SECTION 26 05 33.16

BOXES

PART 1- GENERAL

1.1 SECTION INCLUDES

A. Wall and ceiling outlet boxes.

B. Pull and junction boxes.

1.2 RELATED SECTIONS: NONE

1.3 REFERENCES

A. NECA - Standard of Installation.

B. NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies.

C. NEMA OS 1 - Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports.

D. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.

E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

F. NFPA 70 - National Electrical Code.

1.4 SUBMITTALS FOR CLOSEOUT

A. Record actual locations and mounting heights of outlet, pull, and junction boxes on project record documents.

1.5 REGULATORY REQUIREMENTS Conform to requirements of NFPA 70.

PART 2- PRODUCTS

2.1 OUTLET BOXES

A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
   1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.

B. Nonmetallic Outlet Boxes: NEMA OS 2, PVC. Provide gasketed cover by box manufacturer. Applicable to all outlet boxes for damp, wet and outdoor installations.

C. Cast Boxes: NEMA FB 1, Type FS or FD, cast feralloy. Provide gasketed cover by box manufacturer. Applicable to all outlet boxes for damp, wet or outdoor installations.

C. Wall Plates for Finished Areas: As specified in Section 16140.

PART 3- EXECUTION

3.1 EXAMINATION Verify locations of outlets prior to rough-in.

3.2 INSTALLATION

B. Install boxes in accordance with NECA "Standard of Installation."

C. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.

D. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Adjust box location up to 10 (3 m) feet if required to accommodate intended purpose.

D. Orient boxes to accommodate wiring devices oriented as specified in Section 16140.

E. Maintain headroom and present neat mechanical appearance.

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

G. Install boxes to preserve fires resistance rating of partitions and other elements, using materials and methods specified in Section 07900.

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

I. Use adjustable steel channel fasteners for hung ceiling outlet box.

J. Do not fasten boxes to ceiling support wires.

K. Support boxes independently of conduit.

L. Use gang box where more than one device is mounted together. Do not use sectional box.

M. Use gang box with plaster ring for single device outlets.

N. Use cast or PVC outlet box in exterior locations and wet locations.

O. Large Pull Boxes: Use hinged enclosure in interior dry locations, surface-mounted cast metal box in other locations.

3.3 ADJUSTING Install knockout closures in unused box openings.

3.4 CLEANING

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

E. Clean exposed surfaces and restore finish.

END OF SECTION 26 05 33.16

SECTION 26 05 53

ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Nameplates and labels.

B. Wire and cable markers.

C. Conduit markers.

D. Conduit color-coding.

E. Panelboard directories.

F. Wiring diagrams.

1.2 RELATED SECTIONS

A. Section 26 01 20 - General Electrical Provisions.

PART 2 - PRODUCTS

2.1 NAMEPLATES AND LABELS

A. Type NP Nameplates: Engraved three-layer laminated plastic with white letters on black background.

B. Locations:

1. Each electrical distribution and control equipment enclosure.
2. Communication cabinets.

C. Letter Size:

1. Use 1/8 inch (3 mm) letters for identifying individual equipment and loads.
2. Use 1/4 inch (6 mm) letters for identifying grouped equipment and loads.

2.2 LEGEND PLATES

A. Type LP: Die-stamped metal legend plate with mounting hole and positioning key.

B. Paint-fill engraved characters.

2.3 WIRE AND TERMINAL MARKERS

A. Self-adhering, pre-printed, self-laminating vinyl wrap-around strips.

B. Locations: Each conductor at panelboard gutters, pull boxes, outlet and junction boxes, and each load connection.

C. Legend:

1. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings.
2. Control Circuits: Control wire number indicated on schematic and interconnection diagrams on drawings.

2.4 CONDUIT MARKERS

A. Description: High performance snap-on or pressure sensitive precoiled, preprinted suitable for indoor and outdoor conditiions.

B. Location: Furnish markers for each conduit longer than 10 feet.

C. Spacing: 20 feet on center.

D. Color:

1. 480 Volt System: Yellow.
2. 208 Volt System: Green.
3. Fire Alarm System: Red.
4. Telephone System: Brown.
5. Data System: Blue.

E. Legend:

1. 480 Volt System: 480 V.
2. 208 Volt System: 208 V.
3. Fire Alarm System: FA.
4. Telephone System: TEL.
5. Data System: DATA.

PART 3 - EXECUTION

3.1 PREPARATION

A. Degrease and clean surfaces to receive nameplates and labels.

3.2 INSTALLATION

A. Install nameplate and label parallel to equipment lines.

B. Secure nameplate to equipment front using two screws or adhesive.

C. Secure nameplate to inside surface of recessed panelboard doors in finished locations.

D. Secure clear plastic-laminated wiring diagrams on the inside of cabinets, enclosures, panelboards, and switchboards.

3.3 WIRE IDENTIFICATION

A. Provide wire markers on each conductor in panelboard gutters, pull boxes, outlet and junction boxes, and at load connection. Identify with branch circuit or feeder number for power and lighting circuits, and with control wire number as indicated on equipment manufacturer's shop drawings for control wiring.

B. Provide conductor phase color coding as per Section 16120.

3.4 NAMEPLATING ENGRAVING

A. Provide type "NP" nameplates of minimum letter height as noted below.

1. Panelboards, Switchboards and Motor Control Centers: 1/4-inch to identify equipment designation. 1/8-inch to identify voltage rating and source.
2. Individual Circuit Breakers, Switches and Motor Starters in Panelboards, Switchboards, and Motor Control Centers: 1/8-inch to identify circuit and load served, including location.
3. Individual Circuit Breakers, Enclosed Switches, and Motor Starters: 1/8-inch to identify voltage rating and load served.
4. Transformers: 1/4-inch to identify equipment designation. 1/8-inch to identify primary and secondary voltages, primary source, and secondary load and location.
5. Equipment Cabinets, Terminal Cabinets, Control Panels and other Cabinets enclosing apparatus: 3/8-inch to identify equipment and designation.

B. Provide type "LP" metal legend plates for attachment to panel mounted operator's devices such as pilot lights, push buttons, selector switches, etc.

3.5 CONDUIT COLOR CODING SCHEDULE

A. Coordinate color of paint with Section 09900 - Painting to identify conduit by system.

B. Fire Alarm System: Red.

3.6 PANELBOARD DIRECTORIES

A. Provide typewritten directories arranged in numerical order showing number of room in which each device served by each panelboard circuit is located.

B. Verify room numbers to be used with Owner. Room number will not necessarily be those used on the Drawings.

B. Mount directories in a 6 inch by 8 inch metal frame under a clear plastic cover inside each panelboard door.

3.7 PLASTIC-LAMINATED WIRING DIAGRAMS

A. Provide clear plastic-laminated wiring diagrams for cabinets, enclosures, panelboards, and switchboards.

B. Secure clear plastic-laminated wiring diagrams to the inside surface of metal cabinets, enclosures, panelboards, and switchboards with adhesive.

C. Mount diagrams clear of latches, hinges, and viewports.

END OF SECTION 26 05 53

SECTION 26 22 13

PAD MOUNTED DISTRIBUTION TRANSFORMERS

PART 1-GENERAL

1.1 SECTION INCLUDES

A. Dry type pad mounted distribution transformers.

1.2 RELATED SECTIONS

A. Section 03 30 00 - Cast-In-Place Concrete: Pads for transformer support.

1.3 REFERENCES

A. ANSI C37.47 - Specifications for Distribution Fuse Disconnecting Switches, Fuse Supports, and Current-Limiting Fuses.

B. 10 CFR 431.196 – Efficiency of Low Voltage Dry-Type Distribution Transformers.

C. NEMA ST 20 – Dry Type Transformers for General Applications.

D. NEMA AB1 - Molded Case Circuit Breakers.

E. NEMA 260 - Safety Labels for Pad Mounted Switchgear and Transformers Sited in Public Areas.

F. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment (International Electrical Testing Association).

G. NFPA 70 - National Electrical Code.

1.4 SUBMITTALS FOR REVIEW

A. Section 01 33 00 - Submittals: Procedures for submittals.

B. Shop Drawings: Indicate electrical characteristics and connection requirements, outline dimensions, connection and support points, weight, specified ratings and materials.

C. Product Data: Provide electrical characteristics and connection requirements, standard model design tests, and options.

1.5 SUBMITTALS FOR INFORMATION

A. Section 01 33 00 - Submittals: Submittals for information.

B. Test Reports: Indicate procedures and results for specified factory and field testing and inspection.

C. Submit manufacturer's installation instructions.

D. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

E. Manufacturer's Field Reports: Indicate activities on site, final adjustments and overcurrent protective device coordination curves, adverse findings, and recommendations.

1.6 PROJECT CLOSEOUT SUBMITTALS

A. Section 01 78 00 - Contract Closeout. Submittals for project closeout.

B. Include copy of manufacturer's certified drawings in project record documents.

C. Maintenance Data: Include maintenance instructions for cleaning methods; cleaning materials recommended; procedures for sampling and maintaining fluid.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience, and with service facilities within 100 miles of Project .

B. Testing Agency: Company member of International Electrical Testing Association and specializing in testing products specified in this section with minimum three years documented experience.

1.8 REGULATORY REQUIREMENTS

A. Conform to requirements of NFPA 70.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Material and Equipment: Transport, handle, store, and protect products.

B. Accept transformers on site. Inspect for damage.

1.10 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on shop drawings.

1.11 MAINTENANCE MATERIALS

A. Section 01 77 00 - Contract Closeout.

B. Furnish two each of any special tools required to operate and maintain transformer.

1.12 EXTRA PRODUCTS

A. Section 01 77 00 - Contract Closeout.

B. Furnish two of each size and type fuse.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Square D by Schneider Electric.

B. Eaton.

C. General Electric.

D. Siemens

2.2 TWO WINDING TRANSFORMERS

A. NEMA ST 20, factory-assembled, air cooled dry type transformers, ratings as indicated on Drawings.

B. Insulation System and Average Winding Temperature Rise for Rated kVA as Follows:

1. 1 to 15 kVA: Class 185 with 115 degrees C rise.
2. 16 to 500 kVA: Class 220 with 115 degrees C rise.

C. Case temperature: Do not exceed 35 degrees C rise above ambient at warmest point.

D. Winding Taps:

1. Transformers Less than 15 kVA: Two 5 percent below rated voltage, full capacity taps on primary winding.
2. Transformers 15 kVA and Larger: 2 to 2-1/2 percent taps minimum above and below nominal rated voltage.

E. Sound Levels: NEMA ST 20.

1. 1 to 5 kVA: 30 dB.
2. 6 to 25 kVA: 40 dB.
3. 26 to 150 kVA: 42 dB.
4. 151 top 225 kVA: 43 dB.

F. Basic Impulse Level: 10 kV for transformers less than 300 kVA.

G. Transformer minimum impedance:

SIZE (kVA)	PERCENT IMPEDANCE
15	5.1
30	4.0
45	4.5
75	4.75
112.5	4.9
150	4.5
225	5.3

H. Ground core and coil assembly to enclosure by means of a visible flexible copper grounding strap in accordance with Article 250 of NFPA 70.

I. Mounting: Suitable for wall, floor, or trapeze mounting, except transformers larger than 75 kVA, suitable for floor mounting.

J. Coil Conductors: Continuous windings with terminations brazed or welded.

K. Enclosure: NEMA ST 20; Type 1, Type 3R non-ventilated. Provide lifting eyes or brackets.

L. Isolate core and coil from enclosure using vibration-absorbing mounts.

M. Nameplate: Include transformer connection data and overload capacity based on rated allowable temperature rise.

2.2 SERVICE CONDITIONS

A. Meet requirements for usual service conditions described in ANSI C57.12.00 and for the specified unusual service conditions.

B. Maximum Ambient Temperature: 104 degrees F (40 degrees C).

C. Altitude: 660 feet (200 m).

D. Load Current Harmonic Factor: 0.05 per unit, maximum.

E. Transformer Loading Requirements: None.

F. Other Unusual Service Conditions: None.

2.3 RATINGS

A. Capacity: See Drawings.

B. Primary Voltage: 480 V, delta connected.

C. Taps: Standard primary taps.

D. Secondary Voltage: 120/240 volts, wye connected.

E. Impedance: 4 percent minimum.

F. Basic Impulse Level: 95 kV.

2.5 FABRICATION

A. Conform to the requirements of ANSI C57.12.28.

2.6 FACTORY FINISHING

A. Clean surfaces before applying paint.

B. Apply corrosion-resisting primer to all surfaces.

C. Apply finish coat of baked enamel paint to 4 mils (1 mm) thick.

D. Finish Color: Manufacturer's standard dark gray finish.

2.4 SOURCE QUALITY CONTROL

A. Provide testing and analysis of under provisions of Section 01 45 00.

B. Provide factory tests to ANSI C57.12.90. Include routine tests as defined in ANSI C57.12.00 and the following other tests:

1. Impedance voltage and load loss.
2. Dielectric tests.
3. Audible sound level.
4. Short circuit capability.
5. Telephone influence factor (TIF).

C. Test insulating liquid samples in accordance with IEEE C57.121.

D. Make completed unit substation available for inspection at manufacturer's factory prior to packaging for shipment. Notify Owner at least 14 days before inspection is allowed.

E. Allow witnessing of factory inspections and tests at manufacturer's test facility. Notify Owner at least 14 days before inspections and tests are scheduled.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Coordination and Meetings: Verification of existing conditions prior to beginning work.

B. Verify that support pads provided under Section 03 30 00 are ready to receive Products.

3.2 INSTALLATION

A. Install plumb and level.

B. Install safety labels to NEMA 260.

3.3 FIELD QUALITY CONTROL

A. Section 01 45 00 - Test and Quality Control.

B. Inspection and test in accordance with NETA ATS, except Section 4.

C. Perform inspections and tests listed in NEMA ATS, Section 7.2. Include the following optional tests:

1. Power factor or dissipation-factor tests in accordance with manufacturer's instructions.
2. Winding-resistance tests for each winding at nominal tap setting.
3. Individual excitation current tests on each phase.
4. Insulating liquid specific gravity, power factor, water content, dissolved gas, and total combustible gas.
5. Operational test and adjustments on fan and pump controls and alarm functions.
6. Percent oxygen test on nitrogen gas blanket.

3.4 ADJUSTING

A. Section 01 77 00 - Contract Closeout: Adjusting installed work.

B. Adjust primary taps so that secondary voltage is within 2 percent of rated voltage.

END OF SECTION

SECTION 26 24 16

PANELBOARDS

PART 1 - GENERAL

1.1 THIS SECTION INCLUDES:

A. NEMA Type 3R, 480/277 V, 3 phase, 4 wires, circuit breaker type, distribution panelboards in stainless steel enclosures.

B. NEMA Type 3R, 120/240 V, 3 phase, 4 wires, circuit breaker type, branch circuit panelboards in stainless steel enclosures.

1.2 RELATED SECTIONS

A. Section 26 01 20 - General Electrical Provisions.

B. Section 26 05 19 – Conductors.

C. Section 26 05 26 – Grounding.

D. Section 26 05 29 - Support Devices.

E. Section 26 05 53 – Electrical Identification

1.3 REFERENCES

A. NECA (National Electrical Contractors Association) "Standard of Installation."

B. UL 67 – Standard for Panelboards

C. UL 50 – Enclosures for Electrical Equipment

D. NEMA AB 1 - Molded Case Circuit Breakers.

E. NEMA ICS 2 - Industrial Control Devices, Controllers, and Assemblies.

F. NEMA KS 1 - Enclosed Switches.

G. NEMA PB 1 - Panelboards.

H. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.

I. NFPA 70 - National Electrical Code.

J. ASCE7-05, ASCE7-10, IBC2009, IBC2012, CBC 2019, BBCC 2015 Seismic Qualification, and OSHPD Special Seismic Certification Pre-approval OSP-0016-10.

1.4 MAINTENANCE MATERIALS

A. Provide two of each panelboard key.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. General Electric.

B. Eaton.

C. Schneider Electric Square "D".

D. Siemens.

E. Or Approved Equal.

2.2 DISTRIBUTION PANELBOARDS

A. Panelboards: NEMA Type 3R, 480/277 V, 3 phase, 4 wires, circuit breaker type.

B. Panelboard Bus: Copper, ratings as indicated. Provide copper ground bus in each panelboard.

C. Minimum integrated short circuit rating: As noted on drawings.

D. Molded Case Circuit Breakers: NEMA AB 1. Provide circuit breakers with integral thermal and instantaneous magnetic trip in each pole.

E. Provide circuit breaker accessory trip units and auxiliary switches as indicated.

F. Enclosure: NEMA Type 3R stainless steel.

G. Cabinet Front: Gasketed door with lockable vault handle.

2.3 BRANCH CIRCUIT PANELBOARDS

A. Branch Circuit Panelboard: NEMA 3R 120/240 V, 3 phase, 4 wires, circuit breaker type.

B. Panelboard Bus: Copper, ratings as indicated.

C. Minimum short circuit rating: As noted on drawings.

D. Molded Case Circuit Breakers: NEMA AB 1. Provide circuit breakers with integral thermal and instantaneous magnetic trip in each pole.

E. Enclosure: NEMA Type 3R stainless steel.

F. Cabinet Front: Gasketed door with lockable vault handle.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install panelboard in accordance with NEMA PB 1.1.

B. Install panelboard plumb. Provide supports in accordance with Section 26 05 29.

C. Height: 6 ft to top of panelboard.

D. Provide filler plates for unused spaces in panelboards.

D. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.

3.2 FIELD QUALITY CONTROL

A. Measure steady state load currents at each panelboard feeder; rearrange circuits in the panelboard to balance the phase loads to within 20 percent of each other. Maintain proper phasing for multi-wire branch circuits.

B. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

END OF SECTION 26 24 16

SECTION 26 27 26

WIRING DEVICES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Wall switches.

B. Wall dimmers.

C. Receptacles.

D. Device plates and decorative box covers.

1.2 RELATED SECTIONS

A. Section 26 01 20 - General Electrical Provisions.

B. Section 26 05 33.16 - Boxes.

1.3 REFERENCES

A. NECA - Standard of Installation.

B. NEMA WD 1 - General Requirements for Wiring Devices.

C. NEMA WD 6 - Wiring Device -- Dimensional Requirements.

D. NFPA 70 - National Electrical Code.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years of experience.

PART 2 - PRODUCTS

2.1 WALL SWITCHES

A. Manufacturers:
   1. Hubbell.
   2. General Electric.
   3. Leviton.
   4. Bryant

B. Description: NEMA WD 1, Heavy-Duty, AC only general-use switch.

C. Body and Handle: Plastic with rocker handle. Finish: as required by Architect.

D. Ratings:
   1. Voltage: 120-277 volts, AC.
   2. Current: 20 amperes.

2.2 WALL DIMMERS

A. Manufacturers:
   1. Lutron
   2. Lightolier
   3. Prescolite
   4. Leviton
   5. or approved equal.

B. Description: NEMA WD1 and as specified on drawings.

C. Body and Handle: as indicated on drawings;

D. Finish: Per Architect requirements.

E. Voltage: 120V.

F. Power rating: Match load shown on drawings; 600 watts minimum.

2.3 RECEPTACLES

A. Manufacturers:
   1. Hubbell.
   2. General Electric.
   3. Leviton
   4. Bryant

B. Description: NEMA WD 1, Heavy-duty general use receptacle. Finish: as required by Architect.

C. Configuration: NEMA WD 6, type as specified and indicated.

D. Convenience Receptacle: Type 5-20.

E. GFCI Receptacle: Convenience receptacle with integral ground fault circuit interrupter to meet regulatory requirements.

2.4 WALL PLATES

A. Decorative Cover Plate: Plastic. Finish: as required by Architect.
1. Hubbell.
2. Or equivalent.

B. Weatherproof Cover Plate: Gasketed cast metal with hinged gasketed device cover.
1. Hubbell.
2. Or equivalent.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that outlet boxes are installed at proper height.

B. Verify that wall openings are neatly cut and will be completely covered by wall plates.

C. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.2 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean debris from outlet boxes.

3.3 INSTALLATION

A. Install in accordance with NECA "Standard of Installation."

B. Install devices plumb and level.

C. Install switches with OFF position down.

D. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.

E. Do not share neutral conductor on load side of dimmers.

F. Install receptacles with grounding pole on bottom.

G. Connect wiring device grounding terminal to outlet box with bonding jumper.

H. Install decorative plates on switch, receptacle, and blank outlets in finished areas.

I. Connect wiring devices by wrapping conductor around screw terminal.

J. Use jumbo size plates for outlets installed in masonry walls.

K. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

3.4 INTERFACE WITH OTHER PRODUCTS

A. Install wall switch 48 inches above finished floor.

B. Install convenience receptacle 18 inches above finished floor.

C. Install convenience receptacle 6 inches above backsplash of counter.

D. Install dimmer 48 inches above finished floor.

E. Install telephone jack 18 inches above finished floor.

F. Install telephone jack for side-reach wall telephone to position top of telephone at 54 inches above finished floor.

G. Install telephone jack for forward-reach wall telephone to position top of telephone at 48 above finished floor.

H. Coordinate the installation of wiring devices with underfloor duct service fittings provided under Section 16112.

3.5 FIELD QUALITY CONTROL

A. Inspect each wiring device for defects.

B. Operate each wall switch with circuit energized and verify proper operation.

C. Verify that each receptacle device is energized.

D. Test each receptacle device for proper polarity.

E. Test each GFCI receptacle device for proper operation.

F. Verify that each telephone jack is properly connected and circuit is operational.

3.6 ADJUSTING

A. Adjust devices and wall plates to be flush and level.

3.7 CLEANING

A. Clean exposed surfaces to remove splatters and restore finish.

END OF SECTION 26 27 26

SECTION 26 28 16.13

ENCLOSED CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Enclosed circuit breakers.

1.2 RELATED SECTIONS

A. Section 26 01 20 - General Electrical Provisions.

B. Section 26 05 29 - Support Devices.

1.3 REFERENCES

A. NEMA AB 1 - Molded Case Circuit Breakers.

1.4 EXTRA MATERIALS

A. Provide three of each size and type current limiter.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Eaton

B. Square "D".

C. General Electric.

D. Siemens.

Or approved equal.

2.2 MOLDED CASE CIRCUIT BREAKER

A. Circuit Breaker: NEMA AB 1.

B. Service Conditions

1. Temperature: -5ºC to + 60ºC.
2. Altitude: up to 2000 meters above sea level.

2.3 TRIP UNIT CIRCUIT BREAKERS

A. Field - adjustable trip circuit breaker: Provide circuit breakers with frame sizes 200 amperes and larger with mechanism for adjusting setting for automatic operation.

B. Current limiting circuit breaker: Provide circuit breaker with automatically - resetting current limiting elements in each pole. Let - through current and energy: Less then permitted for same size class RK-5 fuse.

C. Solid - State circuit breaker: Provide circuit breaker with electronic sensing, timing and tripping circuits for adjustable current settings instantaneous trip and adjustable short time trip.

2.4 CURRENT LIMITERS

A. Current Limiter: Designed for application with molded case circuit breaker.

B. Coordinate limiter size with trip rating of circuit breaker to prevent nuisance tripping and to achieve interrupting current rating specified for circuit breaker.

C. Provide interlocks to trip circuit breaker and to prevent closing circuit breaker when limiter compartment cover is removed or when one or more limiter is not in place or has operated.

2.5 PRODUCT OPTIONS AND FEATURES

A. Provide accessories as needed.

B. Handle Lock: Include provisions for padlocking.

C. Provide mechanical trip device.

D. Provide grounding lug in each enclosure.

E. Provide Products suitable for use as service entrance equipment where so applied.

2.6 ENCLOSURE

A. Enclosure: NEMA AB 1: Type 1 for indoor installation.
Type 4 for outdoor installation.

B. Fabricate enclosure from steel.

C. Finish using manufacturer's standard enamel finish: color per Engineer’s requirements.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install enclosed circuit breakers where indicated, in accordance with manufacturer's instructions.

B. Install enclosed circuit breakers plumb. Provide supports in accordance with Section 26 05 29.

C. Height: 5 ft to operating handle.

D. Provide engraved plastic nameplates.

3.2 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 01 45 00.

B. Inspect and test each circuit breaker to NEMA AB 1.

C. Inspect each circuit breaker visually.

D. Perform several mechanical ON-OFF operations on each circuit breaker.

E. Verify circuit continuity on each pole in closed position.

F. Determine that circuit breaker will trip on overcurrent condition, with tripping time to NEMA AB 1 requirements.

G. Include description of testing and results in test report.

3.3 ADJUSTING

A. Adjust trip settings so that circuit breakers coordinate with other overcurrent protective devices in circuit.

B. Adjust trip settings to provide adequate protection from overcurrent and fault currents.

END OF SECTION

SECTION 26 33 44

ELECTRIC VEHICLE CHARGERS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Owner-Furnished-Equipment - NEMA 3R Level 2 Single Electric Vehicle Charging Stations (EVCSs) furnished complete with LED indicators for Wifi, fault per UL and status, wireless communication gateway, cloud plan, fleet plan, initial activation, and dynamic power and remote energy management.

B. Owner-Furnished-Equipment - NEMA 3R Level 2 Dual Electric Vehicle Charging Stations (EVCSs) furnished complete with LED indicators for Wifi, fault per UL and status, wireless communication gateway, cloud plan, fleet plan, initial activation, and dynamic power and remote energy management.

C. Owner-Furnished-Equipment - NEMA 3R Level 2 Fast DC Electric Vehicle Charging Stations (EVCSs) furnished complete with LCD display for driver interaction, LED display for notification, wireless communication gateway, cloud plan, fleet plan, configuration, validation and activation, and dynamic power and remote energy management.

D. The above Owner-Furnished-Equipment electric vehicle charging stations (EVCSs) shall be installed by the Contractor under this Agreement **C-0-2071**.

1.2 RELATED SECTIONS

A. Section 01 33 00 – Submittal Procedures

B. Section 01 60 00 – Product Requirements

C. Section 26 01 20 - General Electrical Provisions.

D. Section 26 05 33.13 – Conduits

E. Section 26 05 19 - Conductors

F. Section 26 05 29 - Support Devices.

G. Section 26 05 53 – Electrical Identification

H. Section 26 05 26 - Grounding

1.3 REFERENCES

A. NECA (National Electrical Contractors Association) "Standard of Installation."

B. NEMA AB 1 - Molded Case Circuit Breakers.

C. NEMA ICS 2 - Industrical Control Devices, Controllers, and Assemblies.

D. NEMA KS 1 - Enclosed Switches.

E. NEMA PB 1 - Panelboards.

F. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.

G. NFPA 70 - National Electrical Code.

1.4 MAINTENANCE MATERIALS

A. Provide five (5) maintenance manuals for Electric Vehicle Charging Stations (EVCs) and all installed components.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. ChargePoint Model CPF25-L23-CMK8-PD-Single or Approved Equal.

Input Current: 32 A Electrical Output: 7.7 kW (240 V AC @ 32 A)

Enclosure Ratings: Type 3R per UL 50E Surge Protection: 6 kV @ 3000 A

Operating Temperature: -30 degree C to +50 degree C

B. ChargePoint Model CPF25-L23-CMK8-PD-Dual or Approved Equal.

Input Current: 32 A x 2 Electrical Output: 7.7 kW x2 (240 V AC @ 32 A x2)

Enclosure Ratings: Type 3R per UL 50E Surge Protection: 6 kV @ 3000 A

Operating Temperature: -30 degree C to +50 degree C

C. ChargePoint Model CPE250-625-CCS1-CHD Fast DC or Approved Equal.

Input Current: 37.6 A Electrical Output: 31.25 kW (480 V 3 PH AC @ 37.6 A)

Enclosure Ratings: Type 3R per UL 50E Surge Protection: 6 kV @ 3000 A

Operating Temperature: -30 degree C to +50 degree C

2.2 ELECTRIC VEHICLE CHARGING STATIONS

A. Electric vehicle charging stations (EVCSs) shall be Level 2 charging stations capable of charging electric vehicles (EVs) in less than four hours, and shall have standard SAE J1772 connectors that charge any EV on the road.

B. EVCSs shall be the ENERGY STAR certified EV charger and shall have Intelligent Dynamic Power and Remote Energy Management capabilities.

1. Scheduled charging and demand response.
2. Panel sharing.
3. Power select.
4. Power sharing algorithms to share power among stations so every vehicle charges as fast as possible, without ever exceeding the rated electrical capacity for the facility.

C. EVCSs shall have pedestal mount configuration with 23 foot long cords on self-retracting, maintenance –free cord management system that has gravity-operated mechanism and -40 degree C to +60 degree C temperature range.

D. EVCSs shall be of Smart Networked Stations type.

E. EVCSs shall be U.L. listed, NEMA 3R, Safe, Reliable and Energy Efficient type, and rugged, built to withstand public utilization.

F. EVCSs including accessories and components shall withstand seismic forces defined in the California Building Code (CBC). The Manufacturer Seismic Qualification Certification shall include the following:

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
    a. The term “withstand” means “the unit shall remain in place without separation of any parts from the device when

subjected to the seismic forces specified and the unit shall be fully operational after the seismic event."

2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

G. The electric charging station interface shall include:

1. Ability to view charging status via a screen display on the station.
2. Ability to start or stop a charging session.
3. Support multiple user-selectable languages.

H. The EV driver interface shall include:

1. Ability to view and find charging stations on mapping software such as Google Maps.
2. Ability to view the status of the charging station availability and operational status.
3. Ability to reserve a charging station if reservations are enabled on the station.
4. Ability to view a history of all charging sessions at various locations.
5. Ability to set up a pre-paid billing account to pay for charging.
6. Ability to manage the account online.
7. The charging system shall provide a notification mechanism to EV drivers on charging events such as charging complete, plug out, GFCI fault or demand fault event.
8. The charging system shall include a "waitlist" function that allows drivers to reserve a space in a virtual queue and is notified when a station is made available.
9. Ability to remind user automatically to move vehicle when charging is completed or preset elapsed time for charging period is met.

I. The EV service provider interface shall include:

1. Ability to view all charging sessions at the charging stations owned by the service provider.
2. Ability to view inventory and status of all charging stations.

3. Ability to configure stations to restrict access to specific drivers or specific groups of drivers, and the ability to identify drivers connected to the stations.
4. Ability to create, modify or delete various pricing options for charging on the stations.
5. Ability to view energy usage and greenhouse gas savings on all charging stations owned by the service provider.
6. Ability to set and accept reservations on charging stations.
7. The EV charging stations shall provide 365x24x7 customer service support to help resolve any issues for drivers and station owners

J. The EV charger network shall provide”|:

1. A comprehensive reporting capability available to EV drivers or EV service providers.
2. Detailed reports on all charging sessions with details such as station ID, address, energy consumed, GHG savings, start time, stop time, total sessions by day, waitlist queue length, waitlist queue time, driver information, and number of customers.

K. Manufacturer’s field service report.

L. Manufacturer’s test reports.

M. Maintenance Data: For electric vehicle charging station, all installed devices, and components to include in maintenance manuals including routine maintenance requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and surfaces to receive battery charger for compliance with requirements, installation tolerances, and other conditions affecting performance.

B. Examine electric vehicle charging stations for physical damage upon receipt. Provide information on any damaged components required replacement to the Owner.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Anchor each assembly according to manufacturer's written instructions. Attach by bolting.

B. Comply with mounting and anchoring requirements specified in Section 26 05 29 – Support Devices and Seismic Restraints.

3.3 IDENTIFICATION

A. Identify EVCS components and wiring according to Section 26 05 53 – Electrical Identification.

3.4 CONNECTION

A. Conduit installation requirements are specified in Section 26 05 33.13 – Conduits. Drawings shall indicate general arrangement of conduits, fittings, and specialties.

B. Ground equipment in accordance with Section 26 05 26 – Grounding. Drawings shall indicate general arrangement of grounding rods, cables and connections.

C. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.5 FIELD QUALITY CONTROL

A. Prepare for acceptance tests as follows:

1. Test insulation resistance for each bus, connecting supply and circuit.
2. Test continuity of each circuit.
3. Other Testing: In accordance with Section 01 45 00 – Quality Control.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including testing and adjusting solid-state controllers.

1. Test Reports: Prepare a written report in accordance with Section 01 45 00 – Quality Control and Section 01 79 00 – Demonstration

and Training.

3.6 ADJUSTING

A. Set field-adjustable switches and controls in accordance with manufacturer's instructions.

3.7 CLEANING

A. Clean charger internally, on completion of installation, according to manufacturer's written instructions. Vacuum dirt and debris: do not use compressed air to assist in cleaning.

3.8 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

B. Verify that EVCs are installed and connected according to the Contract Documents.

C. Verify that electrical wiring installation complies with manufacturer's submittal and installation requirements in Division 26 Sections.

D. Verify and confirm that EVCs are installed, connected and tested in compliance with the limits for Class B Digital Device pursuant to Part 15 of the FCC Rules.

E. Complete installation and startup checks according to manufacturer's written instructions.

3.9 DEMONSTRATION

A. Engage a factory-authorized service representative to train the City's operation personnel to adjust, operate, and maintain electric vehicle charging stations.

1. Train City's operation personnel on procedures and schedules for float and equalize charging, troubleshooting, servicing, and maintaining equipment and schedules.

END OF SECTION

SECTION 26 36 23

AUTOMATIC TRANSFER SWITCH

PART 1 - GENERAL

1.1 SCOPE

Furnish and install NEMA 3R automatic transfer switch (ATS) with number of poles, amperage, voltage, and withstand current ratings as shown on the plans. Each automatic transfer shall consist of an inherently double throw power transfer switch unit and a microprocessor controller, interconnected to provide complete automatic operation. All transfer switch and control panels shall be the product of the same manufacturer.

1.2 RELATED SECTIONS

A. Section 26 01 20 - General Electrical Provisions.

1.3 REFERENCES

A. UL1008 – Standard for Transfer Switch Equipment

B. CSA certified to CSA 22.2 No. 178 – 1978 Automatic Transfer Switches

C. IEC 60947-6-1 Low-voltage Switchgear and Controlgear; Multifunction equipment; Automatic Transfer Switching Equipment

D. NFPA 70 - National Electrical Code.

E. NFPA 110 – Emergency and Standby Power Systems

F. IEEE Standard 446 – IEEE Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications

G. NEMA Standards ICS10-1993 (formerly ICS2-447) – AC Automatic Transfer Switches

H. UL 508 Industrial Control Equipment

1.4 SUBMITTALS

A. Product Data: Provide catalog sheets showing voltage, switch size, ratings and size of switching and overcurrent protective devices, operating logic,

short circuit ratings, dimensions, and enclosure details.

B. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of Product.

1.5 OPERATION AND MAINTENANCE DATA

A. Operation Data: Include instructions for operating equipment. Include instructions for operating equipment under normal and emergency conditions when engine generator is running.

B. Maintenance Data: Include routine preventative maintenance and lubrication schedule. List special tools, maintenance materials, and replacement parts.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

B. Handle in accordance with manufacturer's written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to internal components, enclosure and finish.

1.7 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on shop drawings.

1.8 MAINTENANCE SERVICE

A. Furnish service and maintenance of transfer switch for one year from Date of Substantial Completion.

1.9 MAINTENANCE MATERIALS

A. Provide two of each special tool required for maintenance.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. ASCO.

B. Or approved equal.

2.2 MECHANICALLY HELD TRANSFER SWITCH

A. The transfer switch shall be electrically operated and mechanically held. The electrical operator shall be a single-solenoid mechanism, momentarily energized. Main operators which include overcurrent disconnect devices will not be accepted. The switch shall be mechanically interlocked to ensure only one of two possible positions, normal or emergency.

B. The switch shall be positively locked and unaffected by momentary outages so that contact pressure is maintained at a constant value and temperature rise at the contacts is minimized for maximum reliability and operating life.

C. All main contacts shall be silver composition. Switches rated 600 amperes and above shall have segmented, blow-on construction for high withstand current capability and be protected by separate arcing contacts.

D. Inspection of all contacts shall be possible from the front of the switch without disassembly of operating linkages and without disconnection of power conductors. A manual operating handle shall be provided for maintenance purposes. The handle shall permit the operator to manually stop the contacts at any point throughout their entire travel to inspect and service the contacts when required.

E. Designs utilizing components of molded-case circuit breakers, contactors, or parts thereof which are not intended for continuous duty, repetitive switching or transfer between two active power sources are not acceptable.

F. Where neutral conductors must be switched, the ATS shall be provided with fully-rated neutral transfer contacts.

G. Where neutral conductors are to be solidly connected, a neutral terminal plate with fully-rated AL-CU pressure connectors shall be provided.

2.3 MICROPROCESSOR CONTROLLER WITH MEMBRANE INTERFACE PANEL

A. The controller's sensing and logic shall be controlled by a single built-in microprocessor for maximum reliability, minimum maintenance, and the ability to communicate serially through an optional serial communication module.

B. A single controller shall provide twelve selectable nominal voltages for maximum application flexibility and minimal spare part requirements. Voltage sensing shall be true RMS type and shall be accurate to $\pm$ 1% of nominal voltage. Frequency sensing shall be accurate to $\pm$ 0.2%. The panel shall be capable of operating over a temperature range of -20 to +60 degrees C and storage from -55 to +85 degrees C.

C. The controller shall be connected to the transfer switch by an interconnecting wiring harness. The harness shall include a keyed disconnect plug to enable the controller to be disconnected from the transfer switch for routine maintenance. Sensing and control logic shall be provided on multi-layer printed circuit boards. Interfacing relays shall be industrial grade plug-in type with dust covers. The panel shall be enclosed with a protective cover and be mounted separately from

the transfer switch unit for safety and ease of maintenance. The protective cover shall include a built-in pocket for storage of the operator's manuals.

D. All customer connections shall be wired to a common terminal block to simplify field-wiring connections.

C. The controller shall meet or exceed the requirements for Electromagnetic Compatibility (EMC) as follows:

1.	EN 55011:1991	Emission standard - Group 1, Class A
2.	EN 50082-2:1995	Generic immunity standard, from which:
	EN 61000-4-2:1995	Electrostatic discharge (ESD) immunity
	ENV 50140:1993	Radiated Electro-Magnetic field immunity
	EN 61000-4-4:1995	Electrical fast transient (EFT) immunity
	EN 61000-4-5:1995	Surge transient immunity
	EN 61000-4-6:1996	Conducted Radio-Frequency field immunity

2.4 ENCLOSURE

A. The ATS shall be furnished in a NEMA type 3R enclosure unless otherwise shown on the plans.

B. Provide strip heater with thermostat for Type 3R enclosure requirements.

C. Controller shall be flush-mounted display with LED indicators for switch position and source acceptability. It shall also include test and time delay bypass switches.

PART 3 - OPERATION

3.1 CONTROLLER DISPLAY and KEYPAD

A. A four line, 20 character LCD display and keypad shall be an integral part of the controller for viewing all available data and setting desired operational parameters. Operational parameters shall also be available for viewing and limited control through the serial communications input port. The following parameters shall only be adjustable via DIP switches on the controller:

1. Nominal line voltage and frequency

2. Single or three phase sensing

3. Operating parameter protection

4. Transfer operating mode configuration
(Open transition, Closed transition, or Delayed transition)

All instructions and controller settings shall be easily accessible, readable and accomplished without the use of codes, calculations, or instruction manuals.

3.2 VOLTAGE, FREQUENCY and PHASE ROTATION SENSING

A. Voltage and frequency on both the normal and emergency sources (as noted below) shall be continuously monitored, with the following pickup, dropout, and trip setting capabilities (values shown as % of nominal unless otherwise specified):

Parameter	Sources	Dropout / Trip	Pickup / Reset
Undervoltage	N&E,3ϕ	70 to 98%	85 to 100%
Overvoltage	N&E,3ϕ	102 to 115%	2% below trip
Underfrequency	N&E	85 to 98%	90 to 100%
Overfrequency	N&E	102 to 110%	2% below trip
Voltage unbalance	N&E	5 to 20%	1% below dropout

B. Repetitive accuracy of all settings shall be within ± 0.5% over an operating temperature range of -20°C to 60°C.

C. Voltage and frequency settings shall be field adjustable in 1% increments either locally with the display and keypad or remotely via serial communications port access.

D. The controller shall be capable (when activated by the keypad or through the serial port) of sensing the phase rotation of both the normal and emergency sources. The source shall be considered unacceptable if the phase rotation is not the preferred rotation selected (ABC or CBA).

E. Source status screens shall be provided for both normal & emergency to provide digital readout of voltage on all 3 phases, frequency, and phase rotation.

F. The controller shall include a user selectable algorithm to prevent repeated transfer cycling to a source on an installation which experiences primary side, single phase failures on a Grounded Wye – Grounded Wye transformer which regenerates voltage when unloaded. The algorithm shall also inhibit retransfer to the normal (utility) source upon detection of a single phasing condition until a dedicated timer expires, the alternate source fails, or the normal source fails completely and is restored during this time delay period. The time delays associated with this feature shall be adjustable by the user through the controller keypad and LCD.

3.3 TIME DELAYS

A. An adjustable time delay of 0 to 6 seconds shall be provided to override momentary normal source outages and delay all transfer and engine starting signals. Capability shall be provided to extend this time delay to 60 minutes by providing an external 24 VDC power supply.

B. A time delay shall be provided on transfer to emergency, adjustable from 0 to 60 minutes, for controlled timing of transfer of loads to emergency.

C. Two time delay modes (which are independently adjustable) shall be provided on re-transfer to normal. One time delay shall be for actual normal power failures and the other for the test mode function. The time delays shall be

adjustable from 0 to 60 minutes. Time delay shall be automatically bypassed if the emergency source fails and the normal source is acceptable.

D. A time delay shall be provided on shut down of engine generator for cool down, adjustable from 0 to 60 minutes.

E. A time delay activated output signal shall also be provided to drive an external relay(s) for selective load disconnect control. The controller shall have the ability to activate an adjustable 0 to 5 minute time delay in any of the following modes:

1. Prior to transfer only.
2. Prior to and after transfer.
3. Normal to emergency only.
4. Emergency to normal only.
5. Normal to emergency and emergency to normal.
6. All transfer conditions or only when both sources are available.

3.4 ADDITIONAL FEATURES

A. A three position momentary-type test switch shall be provided for the ***test / automatic / reset*** modes. The test position will simulate a normal source failure. The reset position shall bypass the time delays on either transfer to emergency or retransfer to normal.

B. A SPDT contact, rated 5 amps at 30 VDC, shall be provided for a low-voltage engine start signal. The start signal shall prevent dry cranking of the engine by requiring the generator set to reach proper output, and run for the duration of the cool down setting, regardless of whether the normal source restores before the load is transferred.

C. Auxiliary contacts, rated 10 amps, 250 VAC shall be provided consisting of one contact, closed when the ATS is connected to the normal source and one contact closed, when the ATS is connected to the emergency source.

D. LED indicating lights (16 mm industrial grade, type 12) shall be provided; one to indicate when the ATS is connected to the normal source (green) and one to indicate when the ATS is connected to the emergency source (red).

E. LED indicating lights (16 mm industrial grade, type 12) shall be provided and energized by controller outputs. The lights shall provide true source availability of the normal and emergency sources, as determined by the voltage sensing trip and reset settings for each source.

F. An Inphase monitor shall be provided in the controller. The monitor shall control transfer so that motor load inrush currents do not exceed normal starting currents, and shall not require external control of power sources. The inphase monitor shall be specifically designed for and be the product of the ATS manufacturer. The inphase monitor shall be equal to ASCO Feature 27.

G. The controller shall be capable of accepting a normally open contact that will allow the transfer switch to function in a non-automatic mode using an external control device.

H. **Engine Exerciser -** The controller shall provide an internal engine exerciser. The engine exerciser shall allow the user to program up to seven different exercise routines. For each routine, the user shall be able to:

1. Enable or disable the routine.
2. Enable or disable transfer of the load during routine.
3. Set the start time, .
   - time of day
   - day of week
   - week of month (1st, 2nd, 3rd, 4th, alternate or every)
4. Set the duration of the run.

At the end of the specified duration the switch shall transfer the load back to normal and run the generator for the specified cool down period. A 10-year life battery that supplies power to the real time clock in the event of a power loss will maintain all time and date information.

I. **System Status -** The controller LCD display shall include a “System Status” screen which shall be readily accessible from any point in the menu by depressing the “ESC” key a maximum of two times. This screen shall display a clear description of the active operating sequence and switch position. For example,

Normal Failed
Load on Normal
TD Normal to Emerg
2min15s

Controllers that require multiple screens to determine system status or display “coded” system status messages, which must be explained by references in the operator’s manual, are not permissible.

J. Self Diagnostics - The controller shall contain a diagnostic screen for the purpose of detecting system errors. This screen shall provide information on the status input signals to the controller which may be preventing load transfer commands from being completed..

K. Data Logging – The controller shall have the ability to log data and to maintain the last 99 events, even in the event of total power loss. The following events shall be time and date stamped and maintained in a non-volatile memory:

1. Event Logging
   1. Data and time and reason for transfer normal to emergency.
   2. Data and time and reason for transfer emergency to normal.
   3. Data and time and reason for engine start.
   4. Data and time engine stopped.
   5. Data and time emergency source available.
   6. Data and time emergency source not available.

2. Statistical Data

    1. Total number of transfers.
    2. Total number of transfers due to source failure.
    3. Total number of days controller is energized.
    4. Total number of hours both normal and emergency sources are available.

L. Communications Module – Shall provide remote interface module to support monitoring of vendor's transfer switch, controller and optional power meter. Module shall provide status, analog parameters, event logs, equipment settings & configurations over embedded webpage and open protocol. Features shall include:

1. Email notifications and SNMP traps of selectable events and alarms may be sent to a mobile device or PC.
2. Modbus TCP/IP, SNMP, HTTP, SMTP open protocols shall be simultaneously supported.
3. Web app interface requiring user credentials to monitor and control the transfer switch supporting modern smart phones, tablets and PC browsers. User will be able to view the dynamic one-line; ATS controls status, alarms, metering, event logging as well as settings.
4. Secure access shall be provided by requiring credentials for a minimum of 3 user privilege levels to the web app, monitor (view only), control (view and control) and administrator (view, control and change settings). 128-Bit AES encryption standard shall be supported for all means of connectivity.
5. Shall allow for the initiating of transfers, retransfers, bypassing of active timers and the activating/deactivating of engine start signal shall be available over the embedded webpage and to the transfer switch vendor's monitoring equipment.
6. An event log displaying a minimum of ninety-nine (99) events shall be viewable and printable from the embedded webpages and accessible from supported open protocols.
7. Four (4) 100 Mbps Ethernet copper RJ-45 ports, five (5) serial ports, Termination dip-switches and LEDs for diagnostics.
8. DIN rail mountable.

This option shall be equivalent to ASCO accessory 72EE2

O. External DC Power Supply – An optional provision shall be available to connect an external 24 VDC power supply to allow the LCD and the door mounted control indicators to remain functional when both power sources are dead. This option shall be equivalent to ASCO accessory 1G.

PART 4 - ADDITIONAL REQUIREMENTS

4.1 WITHSTAND AND CLOSING RATINGS

A. The ATS shall be rated to close on and withstand the available rms symmetrical short circuit current at the ATS terminals with the type of overcurrent protection shown on the plans. WCR ATS ratings as be as follows when used with specific circuit breakers:

ATS Size	Withstand & Closing Rating MCCB	W/CLF
30	22,000A	100,000
70 - 200	22,000A	200,000
230	22,000A	100,000
260 – 400	42,000A	200,000
600 – 1200	65,000A	200,000
1600 – 2000	85,000A	200,000
2600 – 3000	100,000A	200,000

4.2 TESTS AND CERTIFICATION

A. The complete ATS shall be factory tested to ensure proper operation of the individual components and correct overall sequence of operation and to ensure that the operating transfer time, voltage, frequency and time delay settings are in compliance with the specification requirements.

B. Upon request, the manufacturer shall provide a notarized letter certifying compliance with all of the requirements of this specification including compliance with the above codes and standards, and withstand and closing ratings. The certification shall identify, by serial number(s), the equipment involved. No exceptions to the specifications, other than those stipulated at the time of the submittal, shall be included in the certification.

C. The ATS manufacturer shall be certified to ISO 9001: 2000 International Quality Standard and the manufacturer shall have third party certification verifying quality assurance in design/development, production, installation and servicing in accordance with ISO 9001: 2000.

4.3 SERVICE REPRESENTATION

A. The ATS manufacturer shall maintain a national service organization of company-employed personnel located throughout the contiguous United States. The service center's personnel must be factory trained and must be on call 24 hours a day, 365 days a year.

B. The manufacturer shall maintain records of each switch, by serial number, for a minimum of 20 years.

C. For ease of maintenance, the transfer switch nameplate shall include drawing numbers and serviceable part numbers.

END OF SECTION

SECTION 31 20 00

EARTHWORK

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Section 02 41 00 “Demolition”

1.2 REFERENCE STANDARDS

A. The following is a list of standards which may be referenced in this section:

1. Standard Specifications for Public Works Construction (“Standard Specifications”), 2018 Edition
2. American Society for Testing and Materials

1.3 SUBMITTALS

A. Contractor shall submit a job mix design for all rock and import fill material to be used on project as required in these Special Provisions:

1. Provide copies of gradation reports and material certificates signed by material producer and Contractor, certifying that each material complies with, or exceeds, specified requirements.
2. Provide samples upon request.

B. Traffic and Safety Plan: Contractor shall prepare a Traffic and Safety Plan showing barricades, traffic cones and striping for construction equipment entering the project site and using the public roads.

1.4 QUALTITY ASSURANCE

A. Contractor shall hire an independent Geotechnical Testing Agency for daily on-site monitoring and testing during earthwork and compaction efforts.

B. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E 329 and ASTM D 3740 for testing indicated.

C. Geotechnical Testing Agency shall monitor and test the following:

1. Inspect and test Class A Topsoil material and confirm that it complies with the Project requirements.

2. Inspect and test placement of Class A Topsoil and confirm that the maximum lift thickness, placement, and compaction of engineering fill complies with the Project requirements
3. Inspect and test all subgrades and confirm that compaction and bearing capacities comply with the Project requirements

1.5 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.
   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from the Engineer.
   2. Provide alternate routes around closed or obstructed traffic ways if required by the Engineer.
   3. Coordinate work with phasing plan.

B. Utility Locator Service: Notify local “811” before beginning earth moving operations.

C. Do not commence earth moving operations until temporary erosion- and sedimentation-control measures.

D. The Engineer shall be present during grading operations to evaluate the suitability of the various soil types exposed during excavation at the site for use as Class A Topsoil. Do not commence earth moving operations without the presence of the Engineer.

E. Blasting shall not be permitted.

1.6 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
   1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
   2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Class A Topsoil: Imported satisfactory soil material for landscaping and planting.

C. Structures: Footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

D. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill, drainage fill, drainage structure, drainage course, or topsoil materials.

E. Utilities: On-site underground pipes, conduits, ducts, and cables.

F. Clearing and Grubbing: Trimming and removal of trees, brush, weeds, stumps, trash, sod, grass, stumps, roots, other vegetation on or below the ground surface, and other debris.

PART 2 - PRODUCTS

2.1 CLASS A TOPSOIL

A. Provide Class A Topsoil materials only when satisfactory soil materials are not available from excavations.

B. Material shall be evaluated by the Engineer for its suitability as Class A Topsoil prior to importation to the project site.

C. Material shall conform to Section 800-1.1.2 of the Standard Specifications for Public Works Construction (“Standard Specifications”), 2018 Edition.

2.2 SUBGRADE BRIDGING MATERIAL, 3 IN. MINUS

A. Imported Subgrade Bridging Material, 3 in. minus or crushed PCC pavement to be used as stabilization layer shall conform to the following gradations:

Sieve Size	Percent Passing (by weight)
125mm (5”)	100
100mm (4”)	100
75mm (3”)	100
62.5mm (2-1/2”)	89
50mm (2”)	55
37.5mm (1-1/2”)	24
25mm (1”)	4
19mm (3/4”)	1
12.5mm (1/2”)	1
9.5mm (3/8”)	1
4.75mm (No.4)	1

2.3 3/4" MINUS ROCK

A. For gradation refer to Table 200-1.2 (A) of the Standard Specifications as specified in Geotechnical Report (latest revision) recommendations.

PART 3 - EXECUTION

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. The work includes implementation and maintenance of a Storm Water Pollution Prevention Plan (SWPPP), including QSP and QSD services, and implementation and maintenance of SWPPP Best Management Practices (BMPs) required to prevent and control discharges of dust, soil, sediment, debris, and other pollutant from the project site onto adjacent areas and/or into the storm water conveyance system from construction activities shown on the project drawings.

The SWPPP and BMPs shall apply to all construction related areas and activities associated with the project, such as staging areas, equipment and material storage sites, waste management areas, temporary plant sites, and borrow pit operations which may be outside the construction limits.

B. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent condition has been established.

C. When permanent conditions are established, remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

D. Prevent sediment inundation from construction activities into infiltration and rock gallery trenches.

3.2 PROTECTION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.

B. Protect and maintain erosion and sedimentation controls during earth moving operations.

C. Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

D. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by the Engineer; reshape and recompact.

E. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration.

3.3 DEWATERING AND FLOW CONTROL

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.4 UNCLASSIFIED EXCAVATION

A. Unclassified excavation shall consist of excavation of all earth, rock, and buried recycled concrete or asphalt pavement within the project limits that is required for the construction of the parking lot as shown on the plans.

B. Excavation not designated as unclassified excavation include the following: structure excavation, utility trench excavation, PCC concrete pavement removal, AC pavement removal, temporary or back cut excavations, minor excavations to remove existing site elements, excavations for new footings and foundations, and any excavation separately designated in these Special Provisions.

C. Excavate, shape and finish all earthwork to new subgrade and top of slopes in conformance with the lines and grades shown on the plans. Slopes shall be excavated per Section 300-2.5 “Slopes” of the Standard Specifications.

D. No excavation beyond the limits shown on the plans shall take place without authorization of the Engineer.

E. Excavated material that meets the criteria for Import Fill Material per this 2.1 “Import Fill Material” and is deemed acceptable by the Engineer shall be reused on-site in applicable Work.

F. It is anticipated that a portion of the excavated material will be unsatisfactory due to high moisture content and/or unsuitable soils characteristics

3.5 EXCAVATION FOR NON-BUILDING STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavations for Non-Building Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

2. Excavation for Underground Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.

3.6 PLACEMENT OF CLASS A TOPSOIL

A. Grading and placement of Class A Topsoil shall conform to Section 801-2 of the Standard Specifications for Public Works Construction (“Standard Specifications”), 2018 Edition.

3.7 GRADING

A. Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.

2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

3.8 SUBGRADE PREPARATION

A. Finish subgrades to required elevations within the following tolerances:

1. Subgrade for pavement, curb and gutter, driveways, or other roadway structures shall not vary more than 0.02 feet from the specified grade and cross section.

2. Subgrade for subbase or base material shall not vary more than 0.04 feet from the specified grade and cross section.

B. Subgrade stabilization indicated on plans and within these special provisions are based upon limited geotechnical data and are subject to change. Unstable subgrade soils shall be identified during the initial grading by the Engineer. After the existing AC, concrete and other construction debris have been removed, the bottom of the excavations shall be proof rolled with heavy grading equipment or loaded water truck, to check for yielding or soft areas that flex or pump under load. Engineer shall make the final determination of the subgrade stabilization method after reviewing the soil types exposed at the site during demolition and excavation operations.

3.9 CLEARING AND GRUBBING

A. Contractor shall remove all trees, brush, weeds, stumps, trash, sod, grass, stumps, roots, other vegetation on or below the ground surface, and other debris. Removal limits shall extend to grading limits. Any vegetation damaged or removed outside the grading limits shall be replaced in kind at no additional expense to OCTA.

END OF SECTION 31 20 00

SECTION 32 17 26

SURFACE APPLIED TACTILE / DETECTABLE WARNING SURFACE TILES

PART 1 − GENERAL

1.1 DESCRIPTION

A. This Section includes Specifications for furnishing and installing Surface Applied Tactile / Detectable Warning Surface Tiles (SA) in an inline truncated dome pattern on all curb ramps and walking surfaces at the locations and to the dimensions shown on the Drawings, in accordance with the Contract Documents and as directed by the Engineer. (Surface Applied Tactile is also known as Surface Mount Tactile Warning Tiles or Retrofit Tactile Warning Tiles)

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and Division 1 Specifications, apply to this Section.

B. Americans with Disabilities Act (ADA) Title 49 CFR Transportation, Part 37.9 Standards for Accessible Transportation Facilities, Appendix A, Section 4.29.2 Detectable Warnings on Walking Surfaces. FHA Memo (5-06-02) titled Truncated Domes. Federal Register Volume 71, No. 209, 49 CFR Part 37 (10-30-06), ADA Standards for Transportation Facilities (11-29-06, DOT): Sections 406, 705, and 810. ADA Standards for Accessible Design – 2010 (9/05/11, DOJ), ADAAG: Sections 705 and 810. Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board), PROWAG: Sections R208, R304, R305, R308, and R309.

C. American Society for Testing and Materials (ASTM) Test Methods B117, C501, C1028, D543, D570, D638, D695, D790, G151, G155, and E84.

D. American Association of State Highway and Transportation Officials (AASHTO): Test Method AASHTO-H20.

E. California Code of Regulations (CCR 2007) Title 24 Part 1 Articles 2, 3 and 4, and Part 2 Section 205 definition of “Detectable Warning”, Section 1127B.5 for “Curb Ramps”, and Section 1133B.8.5 for “Detectable Warnings at Hazardous Vehicle Areas”. California Department of Transportation Detectable Warning Surface Authorized Material List. Division of the State Architect IR 11B-3 (1/26/05) and IR 11B-4 (1/01/11).

IR 11B-4 (1/01/11) removed the requirement for a “staggered” pattern and now calls for the “square grid” (in-line) pattern.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer’s literature describing products, installation procedures and maintenance instructions.

B. Samples for Verification Purposes: Submit two (2) Tactile Warning Surface samples minimum 8” x 8” of the kind proposed for use. Samples shall be properly labeled and shall contain the following information: Name of Project, Submitted by, Date of Submittal, Manufacturer’s Name, and Catalog Number.

C. Shop Drawings: Submit Standard Manufacturer Shop Drawings showing all pertinent characteristics of the Surface Applied Tactile Warning Tile (SA) including profile, sound on cane contact amplification feature, fastener locations and installation methods.

D. Material Test Reports: Submit current test reports from qualified, accredited independent testing laboratory in accordance with ASTM guidelines and indicating that materials proposed for use are in compliance with specification requirements and meet the properties indicated. All test reports submitted shall be representative of the Surface Applied Tactile Warning Tile (SA) delivered to the Project.

E. Maintenance Instructions: Submit copies of manufacturer’s specified maintenance practices for each type of Tactile Warning Surface Tile and accessory.

1.4 QUALITY ASSURANCE

A. Provide composite Surface Applied Tactile Warning Tiles (SA) as produced by a single manufacturer with a minimum of five years experience in manufacturing Surface Applied Tactile Warning Tiles (SA).

B. Installer’s Qualifications: Engage an experienced installer certified in writing by the Tactile Warning Surface manufacturer, who has successfully completed Tactile Warning Surface installations similar in material, design, and extent to that indicated for the Contract.

C. Surface Applied Tactile Warning Tiles (SA) must be compliant with ADAAG, PROWAG, and CA \Title 24 requirements. Division of the State Architect IR 11B-3 (1/26/05) and IR 11B-4 (1/01/11). IR 11B-4 (1/01/11) removed the requirement for a “staggered” pattern and now calls for the “square grid” (in-line) pattern.

D. Surface Applied Tactile Warning Tiles (SA) shall meet or exceed the following test criteria using the most current test methods:

1. Compressive Strength: 28,900 psi minimum, when tested in accordance with ASTM D695.

2. Flexural Strength: 29,300 psi minimum, when tested in accordance with ASTM D790.

3. Water Absorption: Not to exceed 0.10%, when tested in accordance with ASTM-D570.

4. Slip Resistance: 1.05 minimum wet and 1.18 dry static coefficient of friction when tested in accordance with ASTM C1028.

5. Flame Spread: 25 maximum, when tested in accordance with ASTM E84.

6. Salt and Spray Performance of Tactile Warning Surface: No deterioration or other defects after 200 hours of exposure, when tested in accordance with ASTM-B117.

7. Chemical Stain Resistance: No reaction to 1% hydrochloric acid, motor oil, calcium chloride, gum, soap solution, bleach, and antifreeze, when tested in accordance with ASTM D543.

8. Abrasion Resistance: 500 minimum, when tested in accordance with ASTM C501.

9. Accelerated Weathering of Tactile Warning Surface when tested by ASTM-G155 or ASTM G151 shall exhibit the following result: $\Delta E<5.0$ at 2,000 hours minimum exposure.

10. Tensile Strength: 11,600 psi minimum, when tested in accordance with ASTM D638.

11. AASHTO-H20 Load Bearing Test: No Damage at 16,000# loading.

12. Freeze/Thaw/Heat: No deterioration when tested in accordance with ASTM C 1026.

1.5 DELIVERY, STORAGE AND HANDLING

A. Surface Applied Tactile Warning Tiles (SA) shall be suitably packaged or crated to prevent damage in shipment or handling. Finished surfaces shall

be protected by sturdy wrappings.

B. Storage Facility

1. Store SA Tiles in an area that is within an acceptable temperature range (40-90 degrees). In particular, protect sealants from freezing.

2. Maintain Storage Facility in a clean dry condition to prevent contamination or damage to SA Tiles and incidentals.

1.6 GUARANTEE

A. SA Tiles shall be guaranteed in writing for a period of five (5) years from date of Contract's final completion. The guarantee includes manufacturing defects, breakage, and deformation.

PART 2 − PRODUCTS

2.1 MATERIALS

A. Composition: SA Tiles shall be manufactured using a matte finish exterior grade homogeneous (uniform color throughout thickness of product) glass and carbon reinforced polyester based Sheet Molding Compound (SMC) composite material. Truncated domes must contain fiberglass reinforcement within the truncated dome for superior structural integrity and impact resistance. A matte finish will be required on the Tactile Warning Surface for superior slip resistance performance superior to that offered by a gloss finish. Use of Tactile Warning Surface Products employing coatings or featuring layers of material with differing composition, performance, or color properties is expressly prohibited under this Section.

B. Color: Federal Yellow (Y) per Federal Standard 595B Table IV, Color No. 33538. Color shall be homogeneous throughout SA Tile.

C. Domes: Square grid pattern of raised truncated domes of 0.2"nominal height, base diameter of 0.9" and top diameter of 0.45". The Federal Code of Regulations permits a truncated dome spacing range of 1.6"-2.4." For superior wheelchair, walker and shopping cart mobility, the preferred truncated dome spacing shall have a center-to-center (horizontally and vertically) spacing of 2.35", measured between the most adjacent domes on square grid.

D. Configuration: SA Tile sizes shall be as indicated on the Contract Drawings. The field area shall consist of a non-slip textured surface with a

minimum static coefficient of friction of 0.80, wet and dry. At a minimum, the thickness of the body of SA Tile shall measure 3/16" (nominal). The SA Tile thickness shall not exceed ½" maximum when measured from the curb ramp surface to the top of the truncated dome.

1. The field area shall consist of a non-slip textured surface with a minimum static coefficient of friction of 0.80, wet and dry.

E. In compliance with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board, "PROWAG") Section R302.7.2 and California Code of Regulations (CCR 2007) Section 1127B.5.5 and Section 1133B.8.5, the Composite Tactile Warning Surface Tiles shall have a perimeter beveled edge with a maximum slope of 1:2 in order to minimize the potential for a pedestrian tripping.

F. Radius SA Tile:

1. Radius SA Tile measures 24"x 33.25" and features reverse score lines on each 24" dimension for a 10', 15', and 20' radius condition. The Radius SA Tile out of the box measures 11' - 6" radius.

2. Truncated domes feature proper dome alignment for a radius application. Radius SA Tile shall be cut to the appropriate configuration using the reverse score lines as a guide.

G. Follow Tactile Warning Surface Manufacturer's installation procedures. 1. ADA Solutions, Inc. Installation Procedure (http://adatile.com/pdf/ADA-SurfaceMount-Installation.pdf)

H. Dimensions: SA Tiles shall be held within the following dimensions and tolerances:

Specifiers Note: Edit section below by selecting desired length and width. Delete non-relevant dimensions.

1. Lengths and Width:

Rectangular SA Tile:
1.67" Dome Spacing: [24"x36"] [24"x48"] [24"x60"] [36"x48"] [36"x60"]
2.35" Dome Spacing: [24"x36"] [24"x48"] [24"x60"] [36"x48"] [36"x60"]

Radius SA Tile:
1.6" - 2.4" Dome Spacing [24"x33.25"]

I. Fasteners: The Tactile Warning Surface Tile shall have minimum twelve (2'x3' Tactile Warning Surface Tile) to twenty-four (3'x5' Tactile Warning Surface Tile) countersunk fastening holes. Color matched, stainless steel 304, flat head drive anchor: ¼" diameter x 1 1/2" long.

J. Adhesive:

1. Polyether Structural Adhesive/Sealant by Chem Link (M-1)

2. Urethane Elastomeric Adhesive by Bostik (Hydroment Ultra-Set Advanced or Durabond D-818)

3. Approved equal.

K. Sealants:

1. Single Component Urethane Sealant:

i. Sources: BASF NP1 by BASF Building Systems or Sikaflex 1A by Sika Corp.
ii. Colors: Black, Limestone, Redwood Tan

2. Polyether Structural Adhesive/Sealant by Chem Link (M-1) i. Colors: Black, Gray, Limestone, White

3. Approved Equal

L. Cleaning materials used on site shall have code acceptable low VOC solvent content and low flammability.

M. The Specifications of the concrete, sealants and related materials shall be in accordance with the Contract Documents and the guidelines set by their respective manufacturers.

2.2 MANUFACTURERS

A. Available manufacturers, subject to compliance with these Specifications include, but are not limited to, the following:

1. ADA Solutions Inc. of Chelmsford, MA (Phone: 800-372-0519, Fax: 978-262-9125, Web Site: www.adatile.com , E: info@adatile.com), or approved equal.

2. Requests for Approved Equal Status must be submitted and approved by the Owner during the Bid Phase of the Project.

2.03 EQUIPMENT

A. Contractor shall provide all tools, equipment and services required for satisfactory installation per the Tactile Warning Surface Product manufacturer's instruction.

PART 3 − EXECUTION

3.1 PREPARATION

A. Transmit submittals and deliverables required by this Section.

B. Furnish products as indicated.

C. Substrate Condition: Ensure substrate is in suitable condition, and in compliance with the Tactile Warning Surface manufacturer recommendations, to receive work of this Section. Prior to construction, refer any and all discrepancies to the Engineer for further action.

3.2 INSTALLATION

A. Contractor will not be allowed to install Tactile Warning Surface Tiles until all submittals have been reviewed and approved by the Engineer.

B. SA Tile shall be installed per manufacturer's instructions.

C. To the maximum extent possible, the SA Tiles shall be oriented such that the rows of in-line truncated domes are parallel with the direction of the ramp. When multiple SA Tiles regardless of size are used, the truncated domes shall be aligned between the tactile warning surface tiles and throughout the entire tactile warning surface installation.

D. In accordance with the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights of Way (7/23/11, Access Board): Sections 304 + 305), Tactile Warning Surface Tile shall be located relative to the curb line as shown within Sections 304+305 of the Guidelines.

E. Cutting of SA Tiles may be required to accommodate specific site conditions. All possible attempts shall be made to minimize cutting of the SA Tiles. Minimum acceptable width of the cut SA Tile shall be 9".

F. Environmental Conditions: Air and substrate temperatures must exceed 40 degrees for at least 8 daytime hours for a sound and proper installation. A "weed torch" may be used to boost the substrate temperature to expedite cure of adhesives and sealants.

G. Immediately prior to installing the SA Tiles, the concrete surfaces must be inspected to ensure that they are clean, dry, free of voids, curing compounds, projections, loose material, dust, oil, grease, sealers and determined to be structurally sound with a minimum four (4) day concrete cure period (unless otherwise directed by the SA Tile manufacturer) and that the surface is flat. As necessary, substrate may be mechanically cleaned with a diamond cup grinder or shot blaster to remove any dirt or foreign material although a broom or leaf blower is usually adequate for cleaning of the substrate.

H. Apply adhesive on the backside of the SA Tiles following the perimeter border and internal cross pattern established by the SA Tile manufacturer. Sufficient adhesive must be placed on the prescribed areas to have full coverage across the 2 inch width of the adhesive locator.

1. For certain applications, generally encountered in the retail environment, the Tactile Warning Surface manufacturer may direct that full coverage adhesive be applied so as to optimize the tactile warning surface Tile's performance and load bearing capacity.

I. Set the SA Tile(s) true and square to the curb ramp areas as detailed in the Drawings. Allow 1/8" separation between successive SA Tiles for expansion/contraction.

J. Drill holes true and straight to a depth of 2" by 1/4" using the recommended bit. As necessary, additional countersunk holes may be added to the SA Tile by using a 5 point ½" (82 degree) countersink to create the necessary holes.

K. Mechanically fasten SA Tile to the concrete substrate using a 32oz. to 48oz. hammer to set the composite sleeve anchors. Ensure that the fastener has been set to full depth, straight and true. Care should be taken when setting the fastener to avoid any advertent blows with the hammer to the SA Tile.

L. Following the installation of the SA Tile, the sealant system should be applied to the perimeter edge. Follow the Tactile Warning Surface manufacturer's recommendations when applying the sealant in a cove type profile to blend and seal the SA Tile edge to the adjoining surfaces.

M. Do not allow foot traffic on installed SA Tile until the perimeter edge sealant has cured sufficiently to avoid tracking. If the SA Tile must be placed into immediate pedestrian service, apply baby powder to the sealant to minimize the possibility of tracking while the sealant cures. Foot imprints may appear in the fully cured sealant application

N. A Urethane Sealant such as Sikaflex 1a or BASF NP1 shall be applied to the edge treatment for a watertight Tactile Warning Surface Tile installation.

3.3 CLEANING AND PROTECTING

A. Protect SA Tiles against damage during construction period to comply with SA Tiles manufacturer's Specifications.

B. As necessary, while the Project remains under construction, protect SA Tiles against damage from rolling loads following installation by covering with plywood or hardwood.

C. If requested by the Project Manager, clean SA Tiles not more than four (4) days prior to date scheduled for inspection intended to establish date of substantial completion in each area of project. Clean SA Tile by method specified by Tactile Warning Surface Products manufacturer.

END OF SECTION 32 17 26

SECTION IX: LIST OF DRAWINGS - EXHIBIT C

LIST OF DRAWINGS

By this reference, the following drawings are incorporated in this Invitation For Bids.

Garden Grove Bus Base		
Sheet Identification	Description	Number of Sheets
GG-T-1	Title Sheet, Drawing Index, Scope of Work, Project Location and Vicinity Map	1
GG-GN-1	General Notes	1
A-0.1	General Information + Notes	1
A-0.2	OCTA General Notes	1
A-0.3	Accessibility Notes + Details 1	1
A-0.4	Accessibility Notes + Details 2	1
A-0.5	Accessibility Notes + Details 3	1
A-0.6	Accessibility Notes + Details 4	1
A-0.7	Accessibility Notes + Detail - EVCS	1
A-1.0	Site Plan	1
A-1.1	Enlarged Site Plan	1
A-1.2	Enlarged Site Plan	1
GG-E-1	Electrical Abbreviations, Symbols and Notes	1
GG-E-2	Demolition Single Line Diagram	1
GG-E-3	Modified Single Line Diagram	1
GG-E-4	New Panel Schedules	1
GG-E-5	Electrical Utility Site Plan	1
GG-E-6	Enlarged Electrical Service Equipment Plan	1
GG-E-7	Existing Partial Flood Control Channel Plan and Profile	1
GG-E-8	Enlarged Partial Site Plan-Electric Vehicle Charging Stations	1
GG-E-9	Enlarged Partial Site Plan-Electric Vehicle Charging Stations	1
GG-E-10	Electric Vehicle Charging Station-Details and Sections	1
GG-E-11	Electric Vehicle Charging Station-Details and Sections	1
GG-E-12	Electric Vehicle Charging Station-Details and Sections	1
GG-E-13	Electric Vehicle Charging Stations-Wiring Diagrams	1

Santa Ana Bus Base		
Sheet Identification	Description	Number of Sheets
SA-T-1	Title Sheet, Drawing Index, Scope of Work, Project Location and Vicinity Map	1
SA-GN-1	General Notes	1
A-0.1	General Information + Notes	1
A-0.2	Accessibility Notes + Details 1	1
A-0.3	Accessibility Notes + Details 2	1
A-0.4	Accessibility Notes + Details 3	1
A-0.5	Accessibility Notes + Details 4	1
A-0.6	Accessibility Notes + Detail - EVCS	1
A-1.0	Site Plan	1
A-1.1	Enlarged Site Plan	1
A-1.2	Enlarged Site Plan	1
SA-E-1	Electrical Abbreviations, Symbols and Notes	1
SA-E-2	Modified Single Line Diagram	1
SA-E-3	Electric Vehicle Charger and Panelboard Schedules	1
SA-E-4	Utility Site Plan	1
SA-E-5	Enlarged Electrical Equipment Plan-Electric Vehicle Charging Stations	1
SA-E-6	Enlarged Electrical Equipment Plan-Electric Vehicle Charging Stations	1
SA-E-7	Enlarged Electrical Equipment Plan-Electric Vehicle Charging Stations	1
SA-E-8	Enlarged Electrical Service Equipment Plan and Elevations	1
SA-E-9	Electric Vehicle Charging Stations-Details and Sections	1
SA-E-10	Electric Vehicle Charging Stations-Details and Sections	1
SA-E-11	Electric Vehicle Charging Stations-Details and Sections	1
SA-E-12	Electric Vehicle Charging Stations-Wiring Diagrams	

ORANGE COUNTY TRANSPORTATION AUTHORITY

GARDEN GROVE BASE

BATTERY ELECTRIC CAR CHARGING SYSTEMS

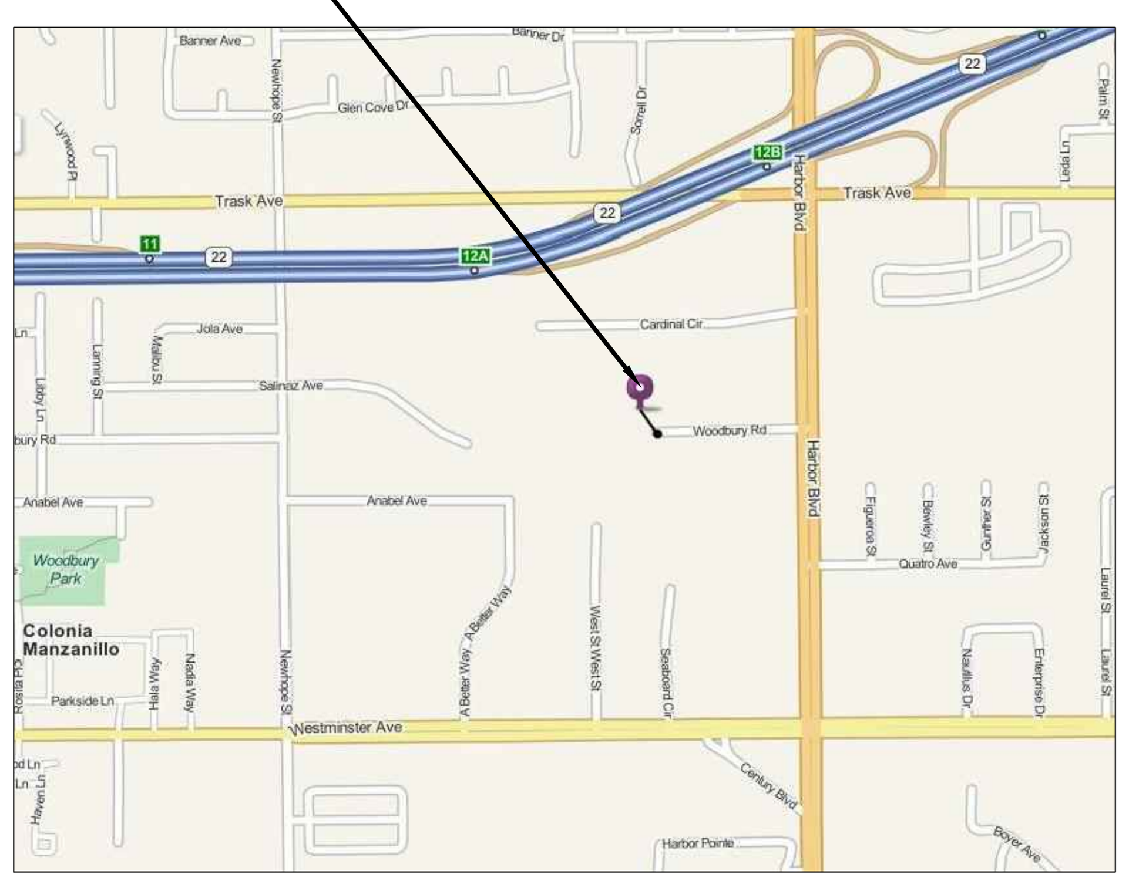
11790 CARDINAL CIRCLE

GARDEN GROVE, CA 92843

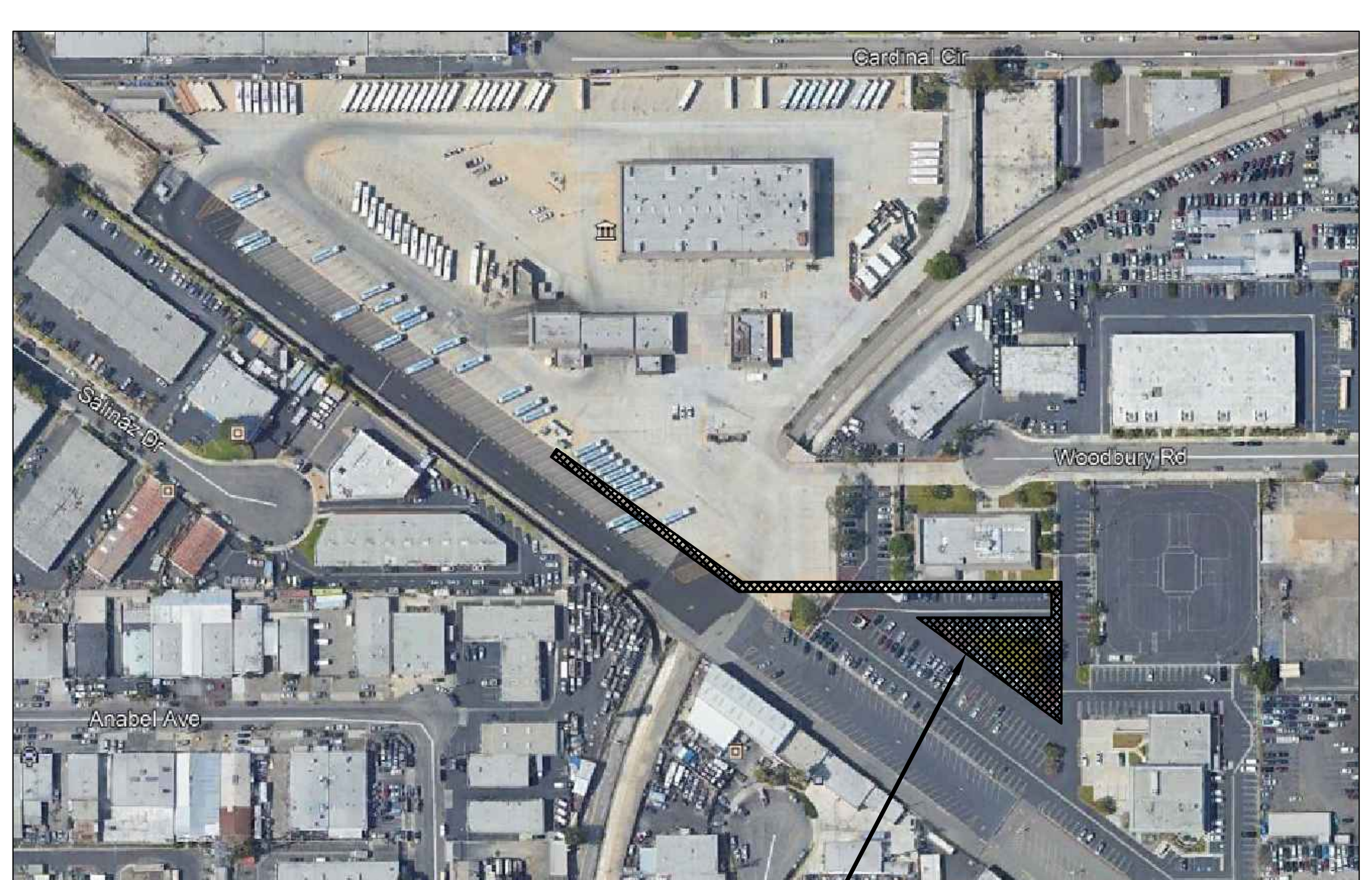
CONTRACT No. C-0-2071

VICINITY MAP

PROJECT SITE



PROJECT LOCATION



PROJECT LOCATION

PROJECT INFORMATION

OWNER:	ORANGE COUNTY TRANSPORTATION AUTHORITY
SITE ADDRESS:	11790 CARDINAL CIRCLE, GARDEN GROVE, CA 92843
FACILITY USE:	BUS MAINTENANCE
ZONE:	INDUSTRIAL
REFERENCE:	–
BUILDING FOOT PRINT:	N/A
ALLOWABLE FLOOR AREA:	N/A
TYPE OF CONSTRUCTION:	N/A
SPRINKLERS REQUIREMENT:	N/A
HAZARD MATERIAL:	NO HAZARDOUS MATERIAL IS STORED NEARBY

PROJECT TEAM

CLIENT
ORANGE COUNTY TRANSPORTATION AUTHORITY
550 S. MAIN STREET
ORANGE, CA 92868
CONTACT: GEORGE OLIVO
PHONE: (714) 560–5872
EMAIL: golivo@octa.net

ELECTRICAL
DAHL, TAYLOR & ASSOCIATES
2960 DAIMLER STREET
SANTA ANA, CA 92705
CONTACT: QUANG D. VU, P.E.
PHONE: (949) 254–8016
EMAIL: qvu@dahltaylor.com

ARCHITECT
STERN ARCHITECTS, INC.
2961 W. MacArthur BLVD. SUITE 120
SANTA ANA, CA 92704
CONTACT: SYAIRAH SHAHARUDDIN
PHONE: (714) 556–2656
EMAIL: sshaharuddin@sternarchitects.com

BUILDING CODES AND STANDARDS

2019 BUILDING STANDARDS ADMINISTRATIVE CODE, PART 1, TITLE 24 C.C.R.

2019 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R.

2019 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R.

2019 CALIFORNIA MECHANICAL CODE (CMC) PART 4, TITLE 24 C.C.R.

2019 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24. C.C.R

2019 CALIFORNIA ENERGY CODE, PART 6, TITLE 24 C.C.R.
2019 CALIFORNIA FIRE CODE, PART 9, TITLE 24 C.C.R.

2019 CALIFORNIA REFERENCED STANDARDS, PART 12, TITLE 24 C.C.R.
TITLE 19 C.C.R., PUBLIC GGFETY, STATE FIRE MARSHAL REGULATIONS.

2019 CALGreen

ALL WORK AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH THESE CODES AND ALL APPLICABLE LOCAL ORDINANCES. WHERE CONTRACT DOCUMENTS EXCEED THESE REQUIREMENTS WITHOUT VIOLATING CODE AND REGULATION REQUIREMENTS, CONTRACT DOCUMENTS SHALL TAKE PRECEDENCE. WHERE CODES CONFLICT, THE MORE STRINGENT SHALL APPLY.

CONTRACTORS BID NOTES

1. THE DRAWINGS AS PROVIDED WERE PUT TOGETHER AS A SINGLE PACKAGE.
2. CONTRACTORS BIDDING ON THIS PROJECT SHALL REVIEW THE ENTIRE SET OF DRAWINGS IN PREPARATION OF THEIR BID. REMOVAL OF ANY PORTION OF THE DRAWING IS PROHIBITED.
3. GENERAL CONTRACTOR WILL BE RESPONSIBLE FOR THE SCOPE OF WORK AS DESCRIBED IN THE ENTIRE SET AND WILL BE RESPONSIBLE TO COORDINATE ALL TRADES.
4. GENERAL CONTRACTOR AND ABATEMENT CONTRACTOR ARE TO COORDINATE ALL RELATED WORK.

SCOPE OF WORK

1. REMOVAL OF THE EXISTING TREES, LANDSCAPE, AND IRRIGATION PIPING.
2. REMOVAL OF THE EXISTING CIRCUIT BREAKERS, AUTOMATIC TRANSFER SWITCH ATS–3, AND WIRING.
3. INSTALLATION OF NEW CIRCUIT BREAKERS, AUTOMATIC TRANSFER SWITCH ATS–3, PANELBOARDS, TRANSFORMER, RECEPTACLES, CONDUITS, AND WIRING.
4. SAW–CUTTING THE EXISTING AC PAVEMENT AND CONCRETE PAVEMENT; EXCAVATION OF TRENCHES; INSTALLATION OF CONDUITS, PULL BOXES, VAULT, MANHOLES, SUPPORT FRAMES, AND WEATHERPROOF CABINETS; AND BACKFILL AND COMPACTION OF TRENCHES.
5. CONSTRUCTION OF CONCRETE FOUNDATIONS, SAFETY BOLLARDS, ADA ACCESSIBLE CONCRETE PATHWAYS, CONCRETE PAVEMENT PATCHES, AC PAVEMENT PATCHES, ACCESS AISLES, SIGNS, AND PARKING STALL LETTERINGS, SYMBOLS AND STRIPES.
6. INSTALLATION OF NEW ELECTRIC VEHICLE CHARGING STATIONS, GATEWAYS, POWER WIRING, NEMA 3R CABINETS, RECEPTACLES, AND ACTIVATION.
7. COORDINATION FOR AND INSTALLATION OF DIGITAL PROGRAMS FOR AUTOMATIC CONTROLS, ELECTRIC CHARGING MONITORING, AND ENERGY MANAGEMENT.
8. CONSTRUCTION OF ARTIFICIAL TURF.

DRAWING INDEX

SHEET		DESCRIPTION
1	GG–T–1	TITLE SHEET, DRAWING INDEX, SCOPE OF WORK, PROJECT LOCATION AND VICINITY MAP
2	GG–GN–1	GENERAL NOTES
3	A–0.1	ABBREVIATIONS + SYMBOLS
4	A–0.2	ACCESSIBILITY NOTES + DETAILS 1
5	A–0.3	ACCESSIBILITY NOTES + DETAILS 2
6	A–0.4	ACCESSIBILITY NOTES + DETAILS 3
7	A–0.5	ACCESSIBILITY NOTES + DETAILS 4
8	A–0.6	ACCESSIBILITY NOTES + DETAIL – EVCS
9	A–1.0	SITE PLAN
10	A–1.1	ENLARGED SITE PLAN
11	A–1.2	ENLARGED SITE PLAN
12	A–5.0	DETAILS
13	GG–E–1	ELECTRICAL ABBREVIATIONS, SYMBOLS AND NOTES
14	GG–E–2	DEMOLITION SINGLE LINE DIAGRAM
15	GG–E–3	MODIFIED SINGLE LINE DIAGRAM
16	GG–E–4	ELECTRICAL VEHICLE CHARGER AND PANELBOARD SCHEDULES
17	GG–E–5	ELECTRICAL UTILITY SITE PLAN
18	GG–E–6	ENLARGED ELECTRICAL SERVICE EQUIPMENT PLAN
19	GG–E–7	EXISTING PARTIAL FLOOD CONTROL CHANNEL PLAN AND PROFILE
20	GG–E–8	ENLARGED PARTIAL SITE PLAN – ELECTRIC VEHICLE CHARGING STATIONS FOR EMPLOYEES
21	GG–E–9	ENLARGED PARTIAL SITE PLAN – ORV ELECTRIC VEHICLE CHARGING STATIONS
22	GG–E–10	ELECTRIC VEHICLE CHARGING STATION – DETAILS AND SECTIONS
23	GG–E–11	FAST DC ELECTRIC VEHICLE CHARGING STATION (EVCS) – ELEVATIONS AND DETAILS
24	GG–E–12	EXTERIOR SUPPORT FOR ELECTRICAL EQUIPMENT
25	GG–E–13	UNDERGROUND CABLE VAULT AND PULL BOX – INSTALLATION DETAILS AND SECTIONS
26	GG–E–14	UNDERGROUND CONDUIT, CABLE VAULT & PULL BOX – CONSTRUCTION NOTES AND DETAIL
27	GG–E–15	ELEVATIONS AND DETAILS – ATS–1 THROUGH ATS–4
28	GG–E–16	ELECTRIC VEHICLE CHARGING STATIONS – TYPICAL WIRING DIAGRAMS

REGISTERED PROFESSIONAL ENGINEER QUANG D. VU NO. E15360 EXP. 12–30–2020 ELECTRICAL STATE OF CALIFORNIA

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254–8016
qvu@dahltaylor.com

MARK	DATE	BY	REVISIONS
1	-	-	-

Sheet Title TITLE SHEET, DRAWING INDEX, SCOPE OF WORK, PROJECT LOCATION AND VICINITY MAP

Project OCTA GARDEN GROVE BUS BASE BATTERY ELECTRIC CAR CHARGING SYSTEMS 11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02–13–2020
SCALE	AS NOTED
SHEET	GG-T-1

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET

GENERAL NOTES

GENERAL NOTES:

1) THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, TOOLS, AND EQUIPMENT TO PROVIDE A COMPLETE AND FINISHED PRODUCT. ALL MATERIALS SHALL BE NEW, UNLESS NOTED OTHERWISE.

2) ALL WORK PERTAINING TO THIS PROJECT SHALL BE DONE IN ACCORDANCE WITH THESE PLANS AND THE SPECIFICATIONS, AND CONTRACT DOCUMENTS, AND THE LOCAL AGENCY OF JURISDICTION BUILDING CODE REQUIREMENTS. CONTRACTOR IS REQUIRED TO OBTAIN CONSTRUCTION PERMIT AND BUSINESS LICENSE FROM THE CITY BEFORE BEGINNING CONSTRUCTION WORK.

3) THE CONTRACTOR SHALL INFORM THE PROJECT MANAGER 72 HOURS BEFORE STARTING CONSTRUCTION WORK. THE PROJECT ENGINEER WILL SCHEDULE A MEETING BETWEEN CONTRACTOR AND OCTA FACILITY AND OPERATION STAFF BEFORE WORK BEGINS.

4) THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, FENCES AROUND WORK AREA, WARNING SIGNS, AND OTHER PROTECTIVE DEVICES, AND TAKE ALL NECESSARY PRECAUTIONARY MEASURES TO PROTECT ALL OCTA PERSONNEL, PUBLIC, PROPERTY AND THE WORK.

5) DUST CONTROL SHALL BE REQUIRED DURING CONSTRUCTION. DUST SHALL BE CONTROLLED BY THE CONTRACTOR BY ENCLOSING AREA OF WORK WITH PLASTIC SHEET OR CANVAS BARRICADES TO PREVENT DUST SPREAD TO ADJACENT BUSES, BUILDINGS, EQUIPMENT AND OCTA WORKERS.

6) DEMOLITION NECESSARY FOR COMPLETION OF CONSTRUCTION SHALL BE A PART OF THIS PROJECT. THE EXISTING MATERIAL REMOVED DURING CONSTRUCTION, SHALL BE LEGALLY DISPOSED OFF-SITE DAILY. ALL DEBRIS SHALL BE REMOVED FROM PREMISES DAILY AND ALL AREAS SHALL BE LEFT IN A CLEAN (BROOM) CONDITION AT ALL TIMES, AND AT THE END OF EACH WORK DAY, CLEAN THE WORK AND SURROUNDING AREAS WHERE CONSTRUCTION DEBRIS HAS SPREAD DURING THE WORK DAY.

7) ALL DRAINAGE FROM NEW CONSTRUCTION WORK SHALL BE PREVENTED FROM ENTERING EXISTING STORM DRAINS ON SITE.

8) THE CONTRACTOR IS REQUIRED TO TAKE ALL PRECAUTIONARY MEASURES TO LOCATE AND PROTECT ABOVE AND BELOW GROUND UTILITIES, EQUIPMENT, AND STRUCTURES SHOWN OR NOT SHOWN ON THESE PLANS. THE PROTECTION OF ALL UTILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR. AT EACH OCTA'S PROPERTY, THE CONTRACTOR SHALL UTILIZE AN INDEPENDENT UNDERGROUND UTILITY LOCATING SERVICE, WHICH USES STANDARD LOCATING TECHNIQUES OTHER THAN EXCAVATING, TO IDENTIFY THE LOCATION OF UNDERGROUND UTILITIES IN THE AREAS OF THE WORK PRIOR TO EXCAVATING. THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION OF UTILITIES IDENTIFIED IN THE WORK AREA BY POTHOLING USING HAND TOOLS BEFORE USING ANY POWER OPERATED EXCAVATING EQUIPMENT. UTILITIES NOT SHOWN ON THE PLANS WHICH ARE IN DIRECT CONFLICT WITH THE WORK WILL BE DEALT WITH BY CHANGE ORDER. THE CONTRACTOR SHALL BEAR ALL EXPENSE FOR THE REPAIR OR REPLACEMENT OF UTILITIES OR OTHER PROPERTY DAMAGE BY HIS OPERATIONS IN CONJUNCTION WITH THE EXECUTION OF THE CONTRACT WORK.

9) THE CONTRACTOR SHALL DELINEATE TRAFFIC THROUGH THE CONSTRUCTION WORK AREA, AND SHALL COOPERATE WITH THE OCTA FACILITY, OPERATIONS, AND MAINTENANCE PERSONNEL TO KEEP THE FACILITY OPERATIONAL AT ALL TIMES. PROVIDE A 20 FEET WIDE DRIVE-WAY ADJACENT TO WORK AREA FOR BUS AND OTHER TRAFFIC TO PASS AROUND WORK AREA. PROVIDE ACCESS FOR BUS AND CAR PARKING IN ADJACENT PARKING STALLS. CONTRACTOR IS REQUIRED TO KEEP OCTA BUS AND FACILITY TRAFFIC OPERATIONAL AT ALL TIMES. DO NOT PARK TRUCKS EQUIPMENT IN BUS DRIVEWAYS, ENTRANCE OR EXITS.

10) ALL WORK SHALL BE COMPLETED BETWEEN THE HOURS OF 7:00 A.M. AND 3:30 P.M. ALL EXISTING FACILITIES, EQUIPMENT, AND UTILITIES DISCONNECTED BY CONTRACTOR DURING THE WORK DAY SHALL BE RE-CONNECTED AT 3:30 PM FOR OCTA TO CONTINUE ITS NORMAL AFTER HOURS OPERATIONS.

11) PLANS HAVE BEEN PREPARED FROM VISUAL AND ACTUAL MEASUREMENT OF THE WORK AREA. THE CONTRACTOR SHALL REPORT TO THE PROJECT MANAGER ANY ERROR, INCONSISTENCY, OR OMISSION HE MAY DISCOVER IN THE DRAWINGS BEFORE BEGINNING WORK. THE CONTRACTOR IS RESPONSIBLE FOR CORRECTING ANY ERROR AT NO COST TO THE AUTHORITY AFTER THE START OF CONSTRUCTION. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS BEFORE SUBMITTING HIS BID. IN CASE OF DISCREPANCIES, CONTRACTOR SHALL OBTAIN CLARIFICATION FROM THE PROJECT MANAGER. SUBMITTAL OF BID INDICATES CONTRACTOR IS AWARE OF SITE AND WORK CONDITIONS AND UNDERSTANDS THE WORK REQUIRED BY THE CONTRACT.

12) ON SITE VERIFICATION OF ALL DIMENSIONS AND CONDITIONS SHALL BE RESPONSIBILITY OF THE CONTRACTOR, NOTIFY PROJECT MANAGER OF ANY DISCREPANCY BEFORE STARTING WORK.

13) THE CONTRACTOR SHALL PROVIDE TEMPORARY WATER, POWER, AND OTHER FACILITIES REQUIRED TO COMPLETE THE PROJECT. CONTRACTOR SHALL PROVIDE TEMPORARY TOILET FACILITIES ON SITE FOR HIS WORKERS WHICH SHALL BE CLEANED ON A DAILY BASIS.

14) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE SECURITY OF THE WORK WHILE THE WORK IS IN PROGRESS AND UNTIL COMPLETED.

15) THE CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL REPLACE OR REMEDY ANY FAULTY, IMPROPER OR INFERIOR MATERIAL OR WORKMANSHIP, OR ANY DAMAGE TO WORK OR ADJACENT AREAS OR STRUCTURES.

16) CONTRACTOR SHALL COMPLY WITH ALL SAFETY CODE REGULATIONS AND THE STATE DEPARTMENT OF INDUSTRIAL RELATIONS, DIVISION OF INDUSTRIAL SAFETY (O.S.H.A.) REQUIREMENTS.

17) VERIFY ALL MEASUREMENTS ON SITE BEFORE PREPARING AND SUBMITTING SHOP DRAWINGS.

18) THE CONTRACTOR SHALL POST ADVANCE CONSTRUCTION WARNING SIGNS. THE CONTRACTOR SHALL PROVIDE ALL BARRICADES, WARNING SIGNS, AND PROTECTIVE DEVICES AND SHALL TAKE ALL NECESSARY MEASURES TO PROTECT ALL PERSONNEL, PROPERTY, AND THE WORK SITE DURING CONSTRUCTION. CONTRACTOR SHALL PROVIDE FLASHING LIGHTS AROUND THE CONSTRUCTION WORK AREA ON THE BARRICADES FROM DUSK (4:00 PM) TO DAWN (7:00 AM) EVERYDAY WHEN WORK IS IN PROGRESS. COMPLETELY CLOSE WITH BARRICADES ENTRANCE AND EXITS OF THE CONSTRUCTION AREA, AND INSTALL NOTIFICATION SIGNS IN ADVANCE OF CLOSURE OF THE AREA FOR CONSTRUCTION, INSTALL NOTIFICATION SIGNS ONE WEEK BEFORE CONSTRUCTION BEGINS.

19) WORK UNDER THIS CONTRACT SHALL BE DONE SO THAT EXISTING BUS OPERATIONS AND BUS MAINTENANCE SHALL REMAIN IN FULL OPERATIONS DURING CONSTRUCTION. OCTA'S BUS OPERATION AND BUS MAINTENANCE, REPAIR SHALL REMAIN UNINTERRUPTED, ONGOING, AND IN FULL OPERATION DURING CONSTRUCTION. CONTRACTOR SHALL ARRANGE HIS WORK TO OFFER LEAST INTERFERENCE TO OCTA'S CONTINUED DAILY BUS OPERATION AT THE BUS BASE. KEEP NON-CONSTRUCTION AREAS OPEN TO OCTA STAFF WORK.

20) CONTRACTOR SHALL ARRANGE HIS WORK TO OFFER LEAST INTERFERENCE WITH OCTA DAILY BUS OPERATIONS. OCTA PROJECT MANAGER WILL COORDINATE WORK ACTIVITIES, AND TEMPORARY CHANGES IN FACILITY ACTIVITY WHICH ARE NECESSARY FOR CONTRACTOR'S WORK. CONTRACTOR SHALL COORDINATE HIS WORK ACCORDINGLY.

21) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES TO EXISTING FACILITIES RESULTING FROM HIS CONSTRUCTION. ALL DISTURBED OR DAMAGED AREAS SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE AND/OR PATCHED TO MATCH ADJACENT MATERIALS, OR AS EXISTED BEFORE CONSTRUCTION.

22) IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL UTILITIES WHETHER SHOWN ON THE DRAWINGS OR NOT, AND TO PROTECT THEM AS NECESSARY. THE CONTRACTOR SHALL BEAR ALL EXPENSE OF REPAIR OR REPLACEMENT OF UTILITIES DAMAGED BY HIS OPERATIONS OR CONSTRUCTION WORK. CONTRACTOR SHALL LOCATE ALL UTILITIES IN THE WORK AREA AND PROTECT THEM FROM DAMAGE. IF DAMAGED BY CONSTRUCTION, CONTRACTOR WILL BE REQUIRED TO REPAIR DAMAGED UTILITY IMMEDIATELY SO THAT OCTA BUS OPERATIONS IS NOT INTERRUPTED. PROVIDE TEMPORARY UTILITIES DURING BREAKDOWN PERIOD. CONTRACTOR SHALL FULLY CO-OPERATE WITH OCTA BUS AND FACILITY MAINTENANCE STAFF TO COMPLETE THE WORK. IF REQUIRED BY OCTA STAFF, PROVIDE TEMPORARY FACILITIES, UTILITIES, OR EQUIPMENTS DURING TEMPORARY DISCONNECTION, BREAKDOWN, OR DAMAGE OF OCTA FACILITIES, UTILITIES, OR EQUIPMENTS DUE TO CONTRACTOR'S WORK.

23) NO OMISSION OF THE WORK SHALL BE MADE WITHOUT WRITTEN APPROVAL OF OCTA.

24) NO SUBSTITUTION OF THE WORK SHALL BE MADE WITHOUT WRITTEN APPROVAL OF OCTA. CHANGES TO THE CONTRACT DRAWINGS OR SPECIFICATIONS SHALL BE MADE BY A WRITTEN ADDENDUM OR CHANGE ORDER APPROVED BY OCTA.

25) ALL WORKMANSHIP SHALL BE PERFORMED BY SKILLED MECHANICS USING THE BEST STANDARD PRACTICES OF THE TRADE AND CONSTRUCTION INDUSTRY.

26) WHERE NO SPECIFIC DETAIL IS SHOWN, THE CONSTRUCTION SHALL BE SIMILAR TO THAT INDICATED OR NOTED FOR SIMILAR CONDITIONS OF CONSTRUCTION ON THE PROJECT. REFERENCES OF NOTES AND DETAILS TO SPECIFIC CONDITIONS AND LOCATIONS SHALL NOT LIMIT THEIR APPLICABILITY.

27) THE STRUCTURE IS DESIGNED AS A STABLE UNIT AFTER ALL COMPONENTS ARE INSTALLED. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL TEMPORARY SHORING, BRACING, SCAFFOLDING, AND OTHER SUPPORTS NECESSARY. CONTRACTOR SHALL PROVIDE ALL NECESSARY TEMPORARY BACKING, SUPPORTS, SLEEVES, FRAMING FOR SUPPORTING THE WORK DURING INSTALLATION.

28) CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT OCTA STAFF AND BUSES FROM ENTERING CONSTRUCTION AREA DURING DEMOLITION AND CONSTRUCTION. SIGNS SHALL BE POSTED TO NOTIFY OCTA WORKERS OF CONSTRUCTION. PROVIDE BARRIERS AROUND GENERAL AREA OF CONSTRUCTION WHILE WORK IS IN PROGRESS. FENCES, BARRICADES, ENCLOSURES, WARNING SIGNS, ETC. SHALL BE PROVIDED AROUND THE LOCAL WORK AREA BY THE CONTRACTOR TO KEEP THE PUBLIC OUT OF CONTRACTOR'S WORK AREA AND WARN THE PUBLIC OF CONSTRUCTION WORK IN PROGRESS.

29) THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT INCLUDING SAFETY OF ALL PERSONS AND PROPERTY AND THAT THE REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

30) THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFETY AND SECURITY OF THE PROPERTY AND ALL WORKERS ON SITE. CONTRACTOR SHALL PROVIDE ALL SAFETY EQUIPMENT FOR HIS WORKERS.

31) THE SCHEDULE OF THE PROJECT IS CRITICAL. EACH SUB-CONTRACTOR SHALL START HIS WORK PER THE SCHEDULE AND PURSUE IT DILIGENTLY AND COMPLETE IT IN ACCORDANCE WITH THE GENERAL CONTRACTOR'S SCHEDULE OF CONSTRUCTION. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR THE SUPERVISION OF THE WORK OF ALL ITS SUB-CONTRACTORS.

32) CARE SHALL BE EXERCISED TO PREVENT DAMAGE DUE TO CARELESSNESS OR VANDALISM. ALL MATERIALS AND EQUIPMENT SHALL BE SECURED AFTER WORKING HOURS. NO CONSTRUCTION MATERIALS OR EQUIPMENT ARE TO BE LEFT UNSECURED AT ANY TIME. THE CONTRACTOR SHALL PROVIDE FOR HIS OWN SECURITY, STORAGE ENCLOSURES AS NECESSARY IN DESIGNATED LAY-DOWN OR STORAGE ENCLOSURE AREA APPROVED BY THE OCTA FACILITY MAINTENANCE MANAGER. THE CONTRACTOR SHALL BE RESPONSIBLE TO FENCE AND SECURE HIS STORAGE AND EQUIPMENT AT ALL TIMES. OCTA IS NOT RESPONSIBLE FOR CONTRACTOR'S MATERIAL OR EQUIPMENT LOSS ON OCTA PROPERTY. CONTRACTOR'S MATERIALS, TRUCKS, OR EQUIPMENTS SHALL NOT BLOCK TRAFFIC DRIVEWAYS OR OCTA BUS OPERATIONS AND MAINTENANCE WORK DURING CONSTRUCTION.

33) DO NOT BLOCK BUS ENTRANCE, EXITS AND DRIVEWAYS OR BUS PARKING STALLS WITH CONTRACTOR'S MATERIAL, EQUIPMENT OR TRUCKS. KEEP ALL MATERIALS, TOOLS, EQUIPMENT, AND TRUCKS WITHIN LIMIT OF CONSTRUCTION OR IN ASSIGNED SPACE BY FACILITY MANAGER.

34) DO NOT LOAD OR STORE NEW EQUIPMENT (TO BE INSTALLED) AT ONE SPOT OR LOCATION ON THE ROOF.

35) WHEN WORKING ON ROOF TO INSTALL EQUIPMENT DURING CONSTRUCTION, CONTRACTOR IS REQUIRED TO CORDON OFF (WITH TRAFFIC DELINEATORS AND YELLOW WARNING TAPE) WORKING AREA BELOW IN THE SHOP (MAINTENANCE BUILDING) SO THAT OCTA WORKERS ARE AWARE OF CONSTRUCTION WORK OVERHEAD ON ROOF. PREVENT TOOLS, EQUIPMENT AND DEBRIS FROM FALLING BELOW IN WORK AREAS OF MAINTENANCE BUILDING.

36) THIS TASK SHALL BE COORDINATED WITH THE PROJECT MANAGER, BUS BASE MANAGER, AND FACILITY MANAGER

A JOB HAZARD ANALYSIS SHALL BE DEVELOPED FOR THE TASK THAT IDENTIFIES DAILY SAFETY TAILGATE BRIEFINGS, BARRICADES, VEHICLE AND EQUIPMENT STAGING (DIAGRAM), COMMUNICATIONS, EVACUATING EFFECTED PERSONNEL INSIDE THE BUILDING, CRANE ACTIVITY, REMOVING OLD EQUIPMENT, INSTALLING NEW EQUIPMENT, FALL PROTECTION, ALLOWING EFFECTED EVACUATED PERSONNEL BACK INTO THEIR AREA OF BUILDING, HOUSEKEEPING/CLEAN-UP, DEMOBILIZATION. THE JOB HAZARD ANALYSIS IS REQUIRED TO BE SUBMITTED TO THE OCTA PROJECT MANAGER 10 WORKING DAYS PRIOR TO THE SCHEDULED HVAC TASK ACTIVITY FOR OCTA REVIEW.

NO LATER THAN TEN (10) WORKING DAYS PRIOR TO THE ARRIVAL OF A CRANE, THE CONTRACTOR MUST PROVIDE THE MOST RECENT ANNUAL AND QUADRENNIAL CERTIFICATES. THE CONTRACTOR MUST ALSO PROVIDE CRANE OPERATOR CERTIFICATES FROM THE NATIONAL COMMISSION FOR THE CERTIFYING OF CRANE OPERATORS (NCCCO), AS OUTLINED IN CIIPP, NO LATER THAN TEN WORKING DAYS PRIOR TO A CRANE OPERATOR WORKING ON SITE.

PICK AND CARRY WITH RUBBER TIRED CRANES IS FORBIDDEN ON OCTA PROJECTS.

A RIGGING PLAN DEVELOPED BY THE CRANE COMPANY OR CRANE OWNER IS REQUIRED FOR ALL LIFTS. THE RIGGING PLAN SHALL BE SUBMITTED NO LATER THAN 10 WORKING DAYS PRIOR TO THE SCHEDULED CRANE ACTIVITY FOR OCTA REVIEW.

THE PLAN SHALL INCLUDE:

- THE VERIFIED LOAD WEIGHT AND THE RIGGING WEIGHTS
- BOTTOM ANGLE AND REACH IN FEET FOR THIS LOAD PLACEMENT
- COPY OF THE LOAD CHART APPLICABLE TO THE ANGLE, REACH AND LOAD
- THE PERCENTAGE OF CRANE RATED CAPACITY FOR THIS LOAD PLACEMENT
- A PLOT PLAN OR GOOGLE MAP DIAGRAM OF THE CRANE SET-UP LOCATION AND THE LOAD PLACEMENT LOCATIONS
- IDENTIFY THE COMMUNICATION METHOD (RADIO, HAND SIGNAL, ECT.)
- DELIVERY TRUCK/TRAILER LOCATION

CRITICAL LIFTS REQUIRE AN ENGINEERED PLAN DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN CALIFORNIA. A CRITICAL LIFT INCLUDES, BUT IS NOT LIMITED TO:

1. ANY LIFT LOCATION THAT COULD RESULT IN THE BOOM OR LOAD FALLING INTO A HAZARDOUS AREA IN THE EVENT OF A MISHAP, INCLUDING ENERGIZED ELECTRICAL WIRING AND EQUIPMENT, GAS MANIFOLDS, AND OPERATING MACHINERY,
2. LIFTS EQUAL TO OR GREATER THAN 10 TONS,
3. LIFTS EQUAL TO OR GREATER THAN 75% OF RATED CAPACITY,
4. LIFTS OVER OCCUPIED BUILDINGS, RAILWAYS OR PUBLIC ROAD WAYS,
5. THE USE OF MULTIPLE CRANES FOR ONE LIFT, AND/OR
6. LIFT AND TRANSIT OF LOAD GREATER THAN 75% OF RATED CAPACITY OF TRACK CRAWLER CRANE.

37) DURING CONSTRUCTION REMOVE EQUIPMENT, DISCONNECT OR REMOVE UTILITIES, AND ROOF ACCESSORIES TO FACILITATE AND INSTALL NEW EQUIPMENT. REINSTALL ALL THE ABOVE AFTER NEW EQUIPMENT HAS BEEN INSTALLED AND OPERATIONAL. INFORM OCTA, SEVEN DAYS AHEAD OF EQUIPMENT OF UTILITY DISCONNECTION.

38) THE PROTECTION OF ALL OCTA PROPERTY, STRUCTURES, EQUIPMENT, UTILITIES, AND ACCESSORIES IS THE RESPONSIBILITY OF THE CONTRACTOR.

39) THE EXTENT OF THE WORK IS ONLY INDICATED GENERALLY ON THE DRAWINGS ARE BASED ON EXISTING CONDITIONS AND RECORD DRAWINGS.

40) IT IS THE INTENT OF THESE CONSTRUCTION DOCUMENTS TO INCLUDE ITEMS AND COMPONENTS FOR THE PROPER EXECUTION OF THE WORK, AND FOR THE PROVISION FOR A COMPLETE FUNCTIONING SYSTEM. IN THAT REGARD ALL APPURTENANT AND ACCESSORY ITEMS AND COMPONENTS REQUIRED FOR THE CONSTRUCTION OF COMPLETE AND FUNCTIONING SYSTEM SHALL BE PROVIDED WHETHER SPECIFICALLY IDENTIFIED IN THESE DOCUMENTS OR NOT.

41) BEFORE SUBMITTING A BID, CONTRACTOR SHALL VISIT THE SITE IN THE PRE-BID JOB-WALK AND VERIFY ALL EXISTING ITEMS SHOWN ON THE PLANS, CONDITIONS, HAZARDS, ELEVATIONS, STRUCTURES, EQUIPMENT, UTILITIES, AND LOCAL REQUIREMENTS. SUBMISSION OF A BID BY THE CONTRACTOR SHALL BE DEEMED EVIDENCE OF SUCH VISIT AND REVIEW OF SITE. ALL BIDDERS SHALL TAKE THESE EXISTING CONDITIONS INTO CONSIDERATION AND A LACK OF SPECIFIC INFORMATION ON THE DRAWING SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY. NO REQUEST FOR ADDITIONAL PAYMENT SHALL BE CONSIDERED AS VALID DUE TO FAILURE TO ALLOW FOR CONDITIONS WHICH CURRENTLY EXISTS ON SITE.

42) LOCATIONS AND ELEVATIONS OF THE VARIOUS ITEMS INCLUDED WITHIN THE WORK HAVE BEEN OBTAINED FROM EXISTING DRAWINGS AND LIMITED FIELD SURVEY. CONTRACTOR SHALL EXAMINE THE SITE, VERIFY FIELD CONDITIONS, STRUCTURES, EQUIPMENT UTILITIES AND SERVICES REQUIRED AND BE ADEQUATELY INFORMED AS TO THEIR RELATION TO THE WORK. THE SUBMISSION OF BID SHALL BE DEEMED OF EVIDENCE OF SUCH A VISIT.

43) OCTA STAFF WILL CONTINUE TO WORK ON BUS MAINTENANCE AND REPAIR DURING CONSTRUCTION IN THE MAINTENANCE BUILDING. CONTRACTOR'S WORK SHALL NOT DISRUPT OCTA BUS MAINTENANCE WORK.

44) CONTRACTOR WILL BE ALLOWED TO WORK ON REMOVING AND REPLACING ONE HV UNIT AT A TIME. CONTRACTOR SHALL REMOVE AND REPLACE ONE FAN AND COMPLETE ALL WORK ON THE FAN INCLUDING MAKING IT OPERATIONAL BEFORE PROCEEDING TO THE NEXT HV UNIT REPLACEMENT. THE CONTRACTOR SHALL COORDINATE THE WORK WITH OCTA PROJECT MANAGER AND FACILITY MAINTENANCE TO SEQUENCE HIS DAILY WORK SCHEDULE.

45) CONTRACTOR SHALL SCHEDULE DEACTIVATION OF UTILITIES WITH THE OCTA PROJECT MANAGER AND FACILITY MAINTENANCE. DEACTIVATION OR RELOCATION OF UTILITIES, SYSTEMS, EQUIPMENT, OR OTHER ACCESSORIES SHALL BE SCHEDULE A WEEK IN ADVANCE WITH THE PROJECT MANAGER. PROVIDE TEMPORARY SERVICE DURING DEACTIVATION PERIOD. MINIMIZE DEACTIVATION DOWN TIME.

46) CONTRACTOR SHALL COVER ALL OCTA EQUIPMENT, STRUCTURES BELOW IN BUS MAINTENANCE BAYS WHEN WORKING ON ROOF TO PREVENT DUST SPREAD AND DAMAGE TO OCTA TOOLS, EQUIPMENT. CLEAN ALL ABOVE ITEMS AND WORK AREA AT END OF WORK DAY.

47) THE GENERAL CONTRACTOR SHALL TAKE ALL PREVENTIVE MEASURES DURING CONSTRUCTION TO PREVENT DAMAGE TO OCTA PROPERTY AND STAFF WORKING IN AND AROUND THE BUILDING. THE MAINTENANCE BUILDING STAFF WILL BE WORKING IN THE BUILDING DURING CONSTRUCTION WORK. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL REPLACE OR REPAIR ANY FAULTY IMPROPER OR INFERIOR MATERIAL OR WORKMANSHIP OR ANY DAMAGE TO THE WORK OR ADJACENT AREAS, OR STRUCTURES IN AND AROUND THE MAINTENANCE BUILDING.

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qv@dahltaylor.com

MARK	DATE	BY	REVISIONS
			-
			-
			-

Sheet Title GENERAL NOTES

Project OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-13-2020
SCALE	AS NOTED
SHEET	GG-GN-1

550 South Main Street
Orange, CA 92668
714/560/OCTA

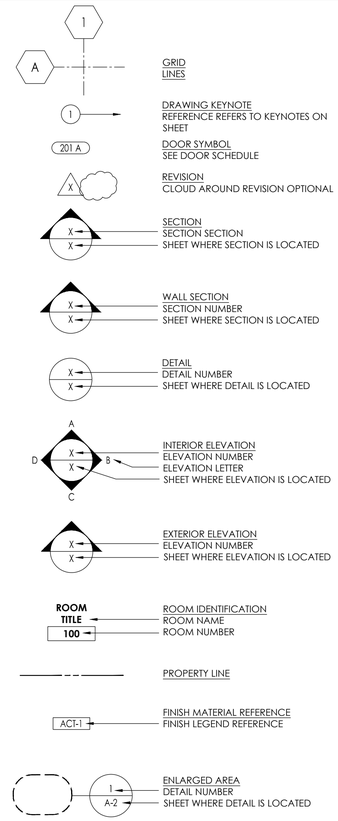
OCTA

100% DRAWING SET

ABBREVIATIONS

A.B.	Anchor Bolt
ACOUS	Acoustical
ADJ	Adjustable
ALUM	Aluminum
&	And
L	Angle
APPROX	Approximate
A.C.	Asphaltic Concrete
@	At
ANOD	Anodized
ASB	Asbestos
A/C	Air Conditioning
ARCH	Architect (ural)
BLK'G	Blocking
BM	Beam
BLK	Block
BTWN	Between
BOT	Bottom
BD	Board
BLDG	Building
CAB	Cabinet
CLG.	Ceiling
℄	Centerline
CLR	Clear
COL	Column
COMPO	Composition
CONC	Concrete
C.M.U.	Concrete Masonry Unit
CF/CI	Contractor Furnished/ Contractor Installed
CONT.	Continuous
(D)	Demolish
DIAG	Diagonal
DIA. Ø	Diameter
DIM	Dimension
D.F.	Douglas Fir
DWR	Drawer
(E)	Existing
EA	Each
ELEC	Electrical
ELEV	Elevation
EQ.	Equal
EQUIP	Equipment
EXT	Exterior
EMER	Emergency
EST	Estimate
EXP	Expansion
E.I.F.S.	Exterior Insulation & Finishing System
F.O.S.	Face of Stud
FIN	Finish
F.F.	Finish Floor
F.G.	Finish Grade
F.O.F.	Face of Finish
F.S.	Finish Surface
F.E.C.	Fire Extinguisher Cabinet
FLR	Floor
FURR	Furred
FTG	Footing
F.O.C.	Face of Concrete
GALV	Galvanized
G.I.	Galvanized Iron
GA	Gauge
G.C.	General Contractor
GR	Grade
GYP. BD	Gypsum Board
GRVL	Gravel
HDW	Hardware
HWD	Hardwood
HGT	Height
HDR	Header
HTG	Heating
H.D.	Heavy Duty
H.C.	Hollow Core
H.M.	Hollow Metal
HORIZ	Horizontal
H.B.	Hose Bibb
INFO	Information
INCL	Including
INSUL	Insulation
INT	Interior
LAV	Lavatory
LAB	Laboratory
L.B.	Lag Bolt
L.P.	Laminated Plastic
MAX	Maximum
MIN.	Minimum
MTL	Metal
MISC	Miscellaneous
(N)	New
N.I.C.	Not In Contract
N.T.S.	Not to Scale
NOM	Nominal
O.C.	On Center
OPNG	Opening
P	Paint
PLAS	Plaster
℄	Plate
PLYWD	Plywood
(R)	Relocate/Relocated
REQ'D	Required
S.C.	Solid Core
SECT	Section
SHTG	Sheathing
SHT	Sheet
SIM	Similar
SPECS	Specifications
SQ. FT.	Square Foot
SQ. IN.	Square Inch
S S.	Stainless Steel
STD	Standard
STL	Steel
STRUCT	Structural
THK	Thick
THRU	Through
T.O.W.	Top of Wall
TYP	Typical
UNO	Unless Noted Otherwise
VERT	Vertical
V.W.C.	Vinyl Wall Covering
V.C.T.	Vinyl Composition Tile
W.C.	Water Closet
W.H.	Water Heater
W.P.	Water Proof
WF	Wide Flange
W	Wide
W/	With
WD	Wood
W.M.	Water Main

SYMBOLS



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DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qv@dahltaylor.com

STERN ARCHITECTS
2961 W. MacArthur Blvd.
Suite 120
Santa Ana, California 92704
t. (714) 556-2656
f. (714) 556-2696

LICENSED ARCHITECT
JAMES LOUIS STERN
NO. C16792
REN. 4-30-21
STATE OF CALIFORNIA

MARK	DATE	BY	REVISIONS

Sht Title ABBREVIATIONS + SYMBOLS

Project OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	SHS
DRAWN BY:	SHS
CHECKED BY:	QV
DATE	02-12-2020
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SHEET	A-0.1

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET

DETECTABLE WARNINGS + DETECTABLE DIRECTIONAL TEXTURE

1. CURB RAMPS SHALL HAVE DETECTABLE WARNINGS THAT EXTEND 36 INCHES IN THE DIRECTION OF TRAVEL FOR THE FULL WIDTH OF THE RAMP RUN EXCLUDING ANY FLARED SIDES. 11B-247.1.2.2, 11B-705.1.2.2
2. ON PERPENDICULAR CURB RAMPS, DETECTABLE WARNINGS SHALL BE LOCATED SO THE EDGE NEAREST THE CURB IS 6 TO 8 INCHES FROM THE LINE AT THE FACE OF THE CURB MARKING THE TRANSITION BETWEEN THE CURB AND THE GUTTER, STREET OR HIGHWAY. 11B-247.1.2.2, 11B-705.1.2.2
3. ON PARALLEL CURB RAMPS, DETECTABLE WARNINGS SHALL BE PLACED ON THE TURNING SPACE AT THE FLUSH TRANSITION BETWEEN THE STREET AND SIDEWALK. 11B-247.1.2.2., 11B-705.1.2.2, FIGURE 11B-406.3.2
4. ISLANDS OF CUT-THROUGH MEDIANS 96 INCHES OR LONGER IN LENGTH IN THE DIRECTION OF PEDESTRIAN TRAVEL SHALL HAVE DETECTABLE WARNINGS THAT ARE 36 INCHES MINIMUM IN DEPTH EXTENDING THE FULL WIDTH OF THE PEDESTRIAN PATH OR CUT-THROUGH, PLACED AT THE EDGES OF THE PEDESTRIAN ISLAND OR CUT-THROUGH MEDIAN, AND SEPARATED BY 24 INCHES MINIMUM OF WALKING SURFACE WITHOUT DETECTABLE WARNINGS. 11B-247.1.2.3, 11B-705.1.2.3
5. WALKS THAT CROSS OR ADJOIN A ROUTE PROVIDED FOR VEHICULAR TRAFFIC, SUCH AS IN A STREET, DRIVEWAY OR PARKING FACILITY, SHALL BE SEPARATED BY DETECTABLE WARNINGS, CURBS, RAILINGS OR OTHER ELEMENTS BETWEEN THE PEDESTRIAN AREAS AND VEHICULAR AREAS. 202, 11B-247.1.2.5, 11B-705.1.2.5
6. DETECTABLE WARNINGS PROVIDED TO SEPARATE WALKS THAT CROSS OR ADJOIN A ROUTE PROVIDED FOR VEHICULAR TRAFFIC, SUCH AS IN A STREET, DRIVEWAY OR PARKING FACILITY, SHALL BE 36 INCHES IN WIDTH AND CONTINUOUS AT THE BOUNDARY BETWEEN THE PEDESTRIAN AREAS AND VEHICULAR AREAS. 202, 11B-247.1.2.5, 11B-705.1.2.5
7. PROVIDE DETECTABLE WARNING DETAILS SHOWING COMPLIANCE WITH THE FOLLOWING:
   7.1. DETECTABLE WARNING SURFACES SHALL VISUALLY CONTRAST LIGHT-ON-DARK OR DARK-ON-LIGHT WITH ADJACENT WALKING SURFACES OR BE SEPARATED FROM ADJACENT SURFACES BY A 1 INCH WIDE BLACK STRIP. MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE SURFACE. 11B-705.1.1.3
   7.2. DETECTABLE WARNING PRODUCTS AND DIRECTIONAL SURFACES MUST ENSURE CONSISTENCY AND UNIFORMITY FOR SHAPE, COLOR FASTNESS, CONFORMATION, SOUND-ON-CANE ACOUSTIC QUALITY, RESILIENCE, AND THAT ATTACHMENT WILL NOT DEGRADE SIGNIFICANTLY (<10%) FOR AT LEAST FIVE YEARS. 12-11B.209, 12-11B210
8. WALKS THAT CROSS OR ADJOIN A ROUTE PROVIDED FOR VEHICULAR TRAFFIC, SUCH AS A STREET, DRIVEWAY OR PARKING FACILITY, SHALL BE SEPARATED BY DETECTABLE WARNINGS, CURBS, RAILINGS OR OTHER ELEMENTS BETWEEN THE PEDESTRIAN AREAS AND VEHICULAR AREAS. 2020, 11B-247.1.2.5, 11B-705.1.2.5
9. DETECTABLE WARNINGS PROVIDED TO SEPARATE WALKS THAT CROSS OR ADJOIN A ROUTE PROVIDED FOR VEHICULAR TRAFFIC, SUCH AS IN A STREET, DRIVEWAY OR PARKING FACILITY, SHALL BE 36 INCHES IN WIDTH AND CONTINUOUS AT THE BOUNDARY BETWEEN THE PEDESTRIAN AREAS AND VEHICULAR AREAS. 202, 11B-247.1.25., 11B-705.1.2.5
10. AT REFLECTING POOLS, DETAIL COMPLIANCE WITH THE FOLLOWING:
    EDGES OF REFLECTING POOLS SHALL BE PROTECTED BY RAILINGS WALLS, WARNING CURBS OR DETECTABLE WARNINGS. 11B-247.1.2.6, 11B-705.1.2.6

    DETECTABLE EDGES PROVIDED TO PROTECT REFLECTING POOLS SHALL BE 24 TO 36 INCHES IN WIDTH. 11B-247.1.2.6, 11B-705.1.2.6
11. PROVIDE DETECTABLE WARNING DETAILS SHOWING COMPLIANCE WITH THE FOLLOWING:
    TRUNCATED DOMES IN A DETECTABLE WARNING SURFACE SHALL BE A BASE DIAMETER OF 0.9 TO 0.92 INCHES, A TOP DIAMETER OF 0.45 TO 0.47 INCHES, AND A HEIGHT OF 0.18 TO 0.22 INCHES. 11B-705.1.1.1, FIGURE 11B-705.1

    TRUNCATED DOMES PLACED IN A GRID PATTERN IN A DETECTABLE WARNING SURFACE SHALL HAVE A CENTER-TO-CENTER SPACING OF 2.3 TO 2.4 INCHES, AND A MINIMUM BASE-TO-BASE SPACING OF 0.65 INCHES, MEASURED BETWEEN THE MOST ADJACENT DOMES ON A SQUARE GRID. 11B-705.1.1.2, FIGURE 11B-705.1

DETECTABLE WARNING SURFACES SHALL DIFFER FROM ADJOINING SURFACES IN RESILIENCY OR SOUND-ON-CANE CONTACT EXCEPT AT CURB RAMPS, ISLANDS OR CUT-THROUGH MEDIANS. 11B-705.1.1.4

DETECTABLE WARNING SURFACES SHALL BE YELLOW CONFORMING TO FS 33538 OF FEDERAL STANDARD 595C EXCEPT AT CURB RAMPS, ISLANDS OR CUT-THROUGH MEDIANS. 11B-705.1.1.5

DETECTABLE WARNING PRODUCTS AND DIRECTIONAL SURFACES SHALL BE APPROVED BY THE DIVISION OF THE STATE ARCHITECT. 11B-705.3

DETECTABLE WARNING PRODUCTS AND DIRECTIONAL SURFACES INSTALLED AFTER JANUARY 1, 2001, SHALL BE EVALUATED BY AN INDEPENDENT ENTITY, SELECTED BY THE DIVISION OF THE STATE ARCHITECT, TO CONFIRM COMPLIANCE WITH THE PRESCRIPTIVE AND PERFORMANCE STANDARDS OF TITLE 24. 12-CHAPTERS 12A AND 12-11B.

INDEPENDENT ENTITIES FOR TESTING OF DETECTABLE WARNING PRODUCTS AND DIRECTIONAL SURFACES SHALL BE A NOT-FOR-PROFIT PRODUCT SAFETY TESTING AND CERTIFICATION ORGANIZATION, DEDICATED TO TESTING FOR PUBLIC SAFETY THAT OPERATES FOR THE TESTING, CERTIFICATION AND QUALITY ASSESSMENT OF PRODUCTS, SYSTEMS AND SERVICES. 12-11B.205, 12-11B.211

INDEPENDENT ENTITIES FOR TESTING OF DETECTABLE WARNING PRODUCTS AND DIRECTIONAL SURFACES SHALL BE RECOGNIZED AS HAVING APPROPRIATE EXPERTISE IN DETERMINING WHETHER PRODUCTS COMPLY WITH THE CALIFORNIA CODE OF REGULATIONS, TITLE 24. 12-11B.205, 12-11B.211

DETECTABLE WARNING PRODUCTS AND DIRECTIONAL SURFACES MUST ENSURE CONSISTENCY AND UNIFORMITY FOR SHAPE, COLOR FASTNESS, CONFORMATION, SOUND-ON-CANE ACOUSTIC QUALITY, RESILIENCE, AND THAT ATTACHMENT WILL NOT DEGRADE SIGNIFICANTLY (<10%) FOR AT LEAST FIVE YEARS. 12-11B.209, 12-11B-210

DETECTABLE WARNING

02-AA-09 | N.T.S. | **3**

REACH RANGES

1. ELECTRICAL CONTROLS AND SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF A ROOM OR AREA TO CONTROL LIGHTING AND RECEPTACLE OUTLETS, APPLIANCES OR COOLING , HEATING AND VENTILATING EQUIPMENT SHALL BE LOCATED WITHIN ALLOWABLE REACH RANGES. LOW REACH SHALL BE MEASURED TO THE BOTTOM OF THE OUTLET BOX AND HIGH REACH SHALL BE MEASURED TO THE TOP OF THE OUTLET BOX. 11B-308.1.1
2. ELECTRICAL RECEPTACLE OUTLETS ON BRANCH CIRCUITS OF 30 AMPERES OF LESS AND COMMUNICATION SYSTEM RECEPTACLES SHALL BE LOCATED WITHIN ALLOWABLE REACH RANGES. LOW REACH SHALL BE MEASURED TO THE BOTTOM OF THE OUTLET BOX AND HIGH REACH SHALL BE MEASURED TO THE TOP OF THE OUTLET BOX. 11B-308.1.2
3. HIGH FORWARD REACH THAT IS UNOBSTRUCTED SHALL BE 48 INCHES MAXIMUM AND THE LOW FORWARD REACH SHALL BE 15 INCHES MINIMUM ABOVE THE FINISH FLOOR OR GROUND 11B-308.2.1, FIGURE 11B-308.2.1.
4. HIGH FORWARD REACH SHALL BE 48 INCHES MAXIMUM WHERE THE REACH DEPTH IS 20 INCHES OR LESS AND 44 INCHES MAXIMUM WHERE THE REACH DEPTH EXCEEDS 20 INCHES. HIGH FORWARD REACH SHALL NOT EXCEED 25 INCHES IN DEPTH. 11B-308.2.2, FIGURE 11B-308.2.2
5. HIGH SIDE REACH SHALL BE 48 INCHES MAXIMUM AND THE LOW SIDE REACH SHALL BE 15 INCHES MINIMUM ABOVE THE FINISH FLOOR WHERE THE SIDE REACH IS UNOBSTRUCTED OR THE DEPTH OF ANY OBSTRUCTION DOES NOT EXCEED 10 INCHES. 11B-308.3.1, FIGURE 11B-308.3.1
6. HIGH SIDE REACH SHALL BE 46 INCHES MAXIMUM ABOVE THE FINISH FLOOR OR GROUND WHERE THE HIGH SIDE REACH OS OVER AN OBSTRUCTION MORE THAN 10 INCHES BUT NOT MORE THAN 24 INCHES IN DEPTH. 11B-308.3.2, FIGURE 11B-308.3.2
7. OBSTRUCTIONS FOR HIGH SIDE REACH SHALL NOT EXCEED 34 INCHES IN HEIGHT AND 24 INCHES IN DEPTH. 11B-308.3.2, FIGURE 11B-308.3.2
8. OBSTRUCTED HIGH SIDE REACH FOR THE TOP OF WASHING MACHINES AND CLOTHES DRYERS SHALL BE PERMITTED TO BE 36 INCHES MAXIMUM ABOVE THE FINISH FLOOR. 11B-308.3.2
9. OBSTRUCTED HIGH SIDE REACH FOR THE OPERABLE PARTS OF FUEL DISPENSERS SHALL BE PERMITTED TO BE 54 INCHES MAXIMUM MEASURED FROM THE SURFACE OF THE VEHICULAR WAY WHERE THE FUEL DISPENSERS ARE INSTALLED ON EXISTING CURB. 11B-308.3.2

OPERABLE PARTS

1. OPERABLE PARTS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST. FORCE REQUIRED TO ACTIVATE OPERABLE PARTS SHALL BE 5 POUNDS MAXIMUM. 11B-309.4

1. WALKS AND SIDEWALKS SUBJECT TO THESE REGULATIONS SHALL HAVE A CONTINUOUS COMMON SURFACE, NOT INTERRUPTED BY STEPS OR BY ABRUPT CHANGES IN LEVEL EXCEEDING 1/2".
2. WALKS AND SIDEWALKS SHALL BE A MINIMUM OF 48" (1219mm) IN WIDTH.
3. CHANGES IN LEVEL UP TO 1/4" MAY BE VERTICAL AND WITHOUT EDGE TREATMENT.
4. CHANGES IN LEVEL BETWEEN 1/4" AND 1/2" SHALL BE BEVELED WITH A SLOPE NO GREATER THAN ONE UNIT VERTICAL IN 2 UNITS HORIZONTAL (50% SLOPE).
5. CHANGES IN LEVEL GREATER THAN 1/2" SHALL BE ACCOMPLISHED BY MEANS OF A CURB RAMP, RAMP OR ELEVATOR THAT COMPLIES WITH SECTION 11B-405, 11B-406 OR 11B-407 RESPECTIVELY.
6. WHEN THE SLOPE IN THE DIRECTION OF TRAVEL OF ANY WALK EXCEEDS ONE UNIT VERTICAL IN 20 UNITS HORIZONTAL (5% SLOPE) IT SHALL COMPLY WITH THE PROVISIONS OF SECTION 11B-405.
7. WALK AND SIDEWALK SURFACE CROSS SLOPES SHALL NOT EXCEED ONE UNIT VERTICAL IN 48 UNITS HORIZONTAL (2.083% SLOPE).
8. ALL WALKS WITH CONTINUOUS GRADIENTS SHALL HAVE LEVEL AREAS AT LEAST 5 FEET IN LENGTH AT INTERVALS OF 400 FEET MAXIMUM.
9. WALKS, SIDEWALKS AND PEDESTRIAN WAYS SHALL BE FREE OF GRATINGS, WHENEVER POSSIBLE. FOR GRATINGS LOCATED IN THE SURFACE OF ANY OF THESE AREAS, GRID OPENINGS IN GRATINGS SHALL BE LIMITED TO 1/2" IN THE DIRECTION OF TRAFFIC FLOW. IF GRATINGS HAVE ELONGATED OPENINGS, THEY SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.
10. WALK AND SIDEWALK SURFACES SHALL BE SLIP-RESISTANT AS FOLLOWS:
    10.1. SURFACES WITH LESS THAN 6% SLOPE SHALL BE AT LEAST AS SLIP-RESISTANT AS THAT DESCRIBED AS A MEDIUM SALTED FINISH.
    10.2. SURFACES WITH A 6% OR GREATER SLOPE SHALL BE SLIP-RESISTANT.

WALKS & SIDEWALKS

02-AA-05 | N.T.S. | **6**

REACH RANGES

02-C-17 | N.T.S. | **5**

ENTRANCES & EXITS

EXIT, IS DEFINED AS "THAT PORTION OF A MEANS OF EGRESS SYSTEM WHICH IS SEPARATED FROM OTHER INTERIOR SPACES OF A BUILDING OR STRUCTURE BY FIRE RESISTANCE RATED CONSTRUCTION AND OPENING PROTECTIVES AS REQUIRED TO PROVIDE A PROTECTED PATH OF EGRESS TRAVEL BETWEEN THE EXIT ACCESS AND THE EXIT DISCHARGE. EXITS INCLUDE EXTERIOR DOORS AT THE LEVEL OF EXIT DISCHARGE, VERTICAL EXIT ENCLOSURES, EXIT PASSAGEWAYS, EXTERIOR EXIT STAIRWAYS, EXTERIOR EXIT RAMPS AND HORIZONTAL EXITS."

PUBLIC WAY, IS DEFINED AS "A STREET, ALLEY OR OTHER PARCEL OF LAND OPEN TO THE OUTSIDE AIR LEADING TO A STREET, THAT HAS BEEN DEEDED, DEDICATED OR OTHERWISE PERMANENTLY APPROPRIATED TO THE PUBLIC FOR PUBLIC USE AND WHICH HAS A CLEAR WIDTH AND HEIGHT FO NOT LESS THAN 10 FEET.

1. ALL ENTRANCES AND EXTERIOR GROUND FLOOR EXIT DOORS TO BUILDINGS AND FACILITIES SHALL BE MADE ACCESSIBLE TO PERSONS WITH DISABILITIES.
2. REVOLVING DOORS SHALL NOT BE USED AS A REQUIRED ENTRANCE FOR PERSONS WITH DISABILITIES.
3. DURING PERIODS OF PARTIAL OR RESTRICTED USE OF A BUILDING OR FACILITY, THE ENTRANCES USED FOR PRIMARY ACCESS SHALL BE ACCESSIBLE TO AND USABLE BY PERSON WITH DISABILITIES.
4. RECESSED DOORMATS SHALL BE ADEQUATELY ANCHORED TO PREVENT INTERFERENCE WITH WHEELCHAIR TRAFFIC.
5. ALL GATES, INCLUDING TICKET GATES, SHALL MEET ALL APPLICABLE ACCESSIBILITY SPECIFICATIONS OF DOORS.
6. EVERY REQUIRED EXIT DOORWAY SHALL BE CAPABLE OF OPENING AT LEAST 90 DEGREES, SHALL HAVE A MINIMUM CLEAR OPENING OF 32", AND SHALL BE OF A SIZE AS TO PERMIT THE INSTALLATION OF A DOOR NOT LESS THAN 3 FEET IN WIDTH AND 6'-8" IN HEIGHT.
7. THE SPACE BETWEEN TWO CONSECUTIVE DOOR OPENINGS IN A VESTIBULE, SERVING OTHER THAN A REQUIRED EXIT STAIRWAY, SHALL PROVIDE A MINIMUM OF 48" OF CLEAR SPACE FROM ANY DOOR OPENING INTO SUCH VESTIBULE WHEN THE DOOR IS POSITIONED AT AN ANGLE OF 90 DEGREES FROM ITS CLOSED POSITION. DOORS IN A SERIES SHALL SWING EITHER IN THE SAME DIRECTION OR AWAY FROM THE SPACE BETWEEN THE DOORS.

ENTRANCES & EXITS

02-AA-08 | N.T.S. | **4**

INTERNATIONAL SYMBOL OF ACCESSIBILITY

NOTE: THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL BE STANDARD USED TO IDENTIFY FACILITIES THAT ARE ACCESSIBLE TO AND USABLE BY PHYSICALLY DISABLED PERSONS AS SET FORTH IN TITLE 24 AND AS SPECIFICALLY REQUIRED BELOW.

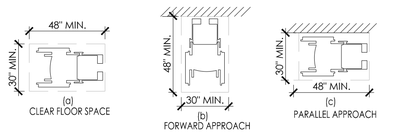
1. THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL CONSIST OF A WHILE FIGURE ON A BLUE BACKGROUND. THE BLUE SHALL BE EQUAL TO COLOR NO. 15090 IN FEDERAL STANDARD 595B.
2. LETTERS AND NUMBERS ON SIGNS SHALL HAVE A WIDTH RATIO BETWEEN 3:5 AND 1:1 AND A STROKE WIDTH RATIO BETWEEN 1:5 AND 1:10.
3. CHARACTERS AND NUMBERS ON SIGNS SHALL BE SIZED ACCORDING TO THE VIEWING DISTANCE FROM WHICH THEY ARE TO BE READ. THE MIN. HEIGHT IS MEASURED USING ON UPPERCASE X. LOWERCASE CHARACTERS ARE PERMITTED. FOR SIGNS SUSPENDED OR PROJECTED ABOVE THE FINISH FLOOR IN COMPLIANCE WITH SECTION 11B-703, THE MIN. CHARACTER HEIGHT SHALL BE 3".
4. CHARACTERS AND SYMBOLS SHALL CONTRAST WITH THEIR BACKGROUND, EITHER LIGHT CHARACTERS ON A DARK BACKGROUND OR DARK CHARACTERS ON A LIGHT BACKGROUND.
5. WHEN RAISED CHARACTERS OR SYMBOLS ARE USED, THEY SHALL CONFORM TO THE FOLLOWING:
   A. LETTERS AND NUMBERS AND SIGNS SHALL BE RAISED 1/32" MIN. AND SHALL BE SANS-SERIF UPPERCASE CHARACTERS ACCOMPANIED BY GRADE 2 BRAILLE.
   B. RAISED CHARACTERS OR SYMBOLS SHALL BE A MIN. OF 5/8" HIGH.
   C. PICTORIAL SYMBOL SIGNS (PICTOGRAMS) SHALL BE ACCOMPANIED BY THE EQUIVALENT VERBAL DESCRIPTION PLACED DIRECTLY BELOW THE PICTOGRAM SHALL BE MIN. OF 6" IN HEIGHT.
6. CONTRACTED GRADE 2 BRAILLE SHALL BE USED WHEREVER BRAILLE SYMBOLS ARE SPECIFICALLY REQUIRED IN OTHER PORTIONS OF THESE STANDARDS. DOTS SHALL BE 1/10" ON CENTERS IN EACH CELL WITH 3/10" SPACE BETWEEN CELLS. DOTS SHALL BE RAISED A MIN. OF 1/40" ABOVE THE BACKGROUND.
7. ALL BUILDING ENTRANCES THAT ARE ACCESSIBLE TO AND USABLE BY PERSONS WITH DISABILITIES ROUTE OF TRAVEL SHALL BE IDENTIFIED WITH A SIGN DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY AND WITH ADDITIONAL DIRECTIONAL SIGNS, AS REQ'D, TO BE VISIBLE TO PERSONS ALONG APPROACHING PEDESTRIAN WAYS.
8. WHEN PERMANENT IDENTIFICATION IS PROVIDED FOR ROOMS AND SPACES RAISED LETTER SHALL BE PROVIDED AND SHALL BE ACCOMPANIED BY BRAILLE IN CONFORMANCE WITH SECTIONS 11B-703.3 & 11B-703.4. SIGNS SHALL BE INSTALLED ON THE WAY ADJACENT TO THE LATCH OUTSIDE OF THE DOOR. WHERE THERE IS NO WALL SPACE ON THE LATCH SIDE, INCLUDING AT DOUBLE LEAF DOORS, SIGNS SHALL BE PLACED ON THE NEAREST ADJACENT WALL, PREFERABLY ON THE RIGHT. MOUNTING HEIGHT SHALL BE 58" TO 60" ABOVE THE FINISHED FLOOR TO THE CENTERLINE OF THE SIGN. MOUNTING LOCATION SHALL BE DETERMINED SO THAT A PERSON MAY APPROACH WITHIN 3" SIGNAGE WITHOUT ENCOUNTERING PROTRUDING OBJECTS OR STANDING WITHIN THE SWING OF A DOOR.

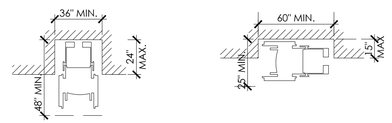
ACCESSIBILITY SYMBOL

02-C-09 | N.T.S. | 2

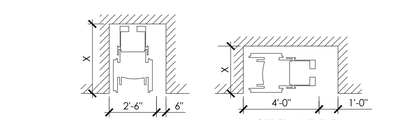
CLEAR FLOOR SPACE FOR WHEELCHAIRS

1. MINIMUM CLEAR FLOOR OR GROUND SPACE REQUIRED TO ACCOMMODATE A SINGLE, STATIONARY WHEELCHAIR AND OCCUPANT IS 30" MIN. X 48" MIN. MINIMUM CLEAR FLOOR OR GROUND SPACE FOR WHEELCHAIRS MAY BE POSITIONED FOR FORWARD OR PARALLEL APPROACH TO AN OBJECT. CLEAR FLOOR OR GROUND SPACE FOR WHEELCHAIRS MAY BE PART OF THE KNEE SPACE REQUIRED UNDER SOME OBJECTS.
2. PROVIDE AN ADDITIONAL 12 INCHES WIDTH ON ONE SIDE FOR ALCOVES GREATER THAN 15 INCHES DEEP AND DESIGNED FOR SIDE APPROACH.
3. PROVIDE AN ADDITIONAL 6 INCHES WIDTH ON ONE SIDE FOR ALCOVES GREATER THAN 24 INCHES DEEP AND DESIGNED FOR FRONT APPROACH.
4. ONE FULL UNOBSTRUCTED SIDE OF A CLEAR FLOOR OR GROUND SPACE FOR A WHEELCHAIR SHALL ADJOIN OR OVERLAP AN ACCESSIBLE ROUTE OR ADJOIN ANOTHER WHEELCHAIR CLEAR FLOOR SPACE. IF A CLEAR FLOOR OR GROUND SPACE IS LOCATED IN AN ALCOVE OR OTHERWISE CONFINED ON ALL OR PART OF THREE SIDES, ADDITIONAL MANUVERING CLEARANCES SHALL BE PROVIDED.
5. THE SPACE REQUIRED FOR A WHEELCHAIR TO MAKE A 180 DEG. TURN IS A CLEAR SPACE OF 60" DIAMETER OR A T-SHAPED SPACE.
6. THE MINIMUM CLEAR WIDTH REQUIRED FOR A WHEEL CHAIR TO TURN AROUND AN OBSTRUCTION SHALL BE 36" MINIMUM WHERE THE OBSTRUCTION IS 48" OR MORE IN LENGTH AND 42" MINIMUM WHERE THE OBSTRUCTION IS LESS THAN 48" IN LENGTH.
7. THE MINIMUM CLEAR WIDTH FOR SINGLE WHEELCHAIR PASSAGE SHALL BE 32" AT A POINT (24" MAXIMUM LENGTH) AND 36" CONTINUOUSLY.
8. THE MINIMUM WIDTH FOR TWO WHEELCHAIRS TO PASS IS 60".
9. IF THE CLEAR FLOOR SPACE ONLY ALLOWS FORWARD APPROACH TO AN OBJECT, THE MAXIMUM HIGH FORWARD REACH ALLOWED SHALL BE 48". THE MINIMUM LOW REACH IS 15".
10. IF THE CLEAR FLOOR SPACE ALLOWS PARALLEL APPROACH BY A PERSON IN A WHEELCHAIR, THE MAXIMUM HIGH SIDE REACH ALLOWED SHALL BE 54" AND THE LOW REACH SHALL BE NO LESS THAN 9" ABOVE THE FLOOR.





(d)
CLEAR FLOOR SPACE IN ALCOVES



NOTE: IF X>24", THEN AN ADDITIONAL MANEUVERING CLEARANCE OF 6" SHALL BE PROVIDED AS SHOWN

NOTE: IF X>15", THEN AN ADDITIONAL MANEUVERING CLEARANCE OF 12" SHALL BE PROVIDED AS SHOWN

(e)
ADDITIONAL MANEUVERING CLEARANCES FOR ALCOVES

CLEAR FLOOR SPACE

02-C-04 | N.T.S. | 1

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

STERN ARCHITECTS
2961 W. MacArthur Blvd.
Suite 120
Santa Ana, California 92704
t. (714) 556-2656
f. (714) 556-2696

LICENSED ARCHITECT — JAMES LOUIS JENNINGS — NO. C16792 — REN. 4-30-21 — STATE OF CALIFORNIA

MARK	DATE	BY	REVISIONS

Sht Title ACCESSIBILITY NOTES + DETAILS 1

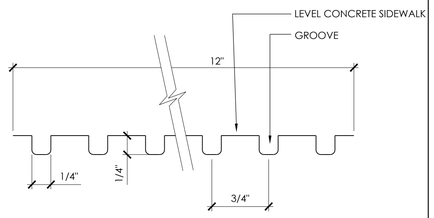
Project OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

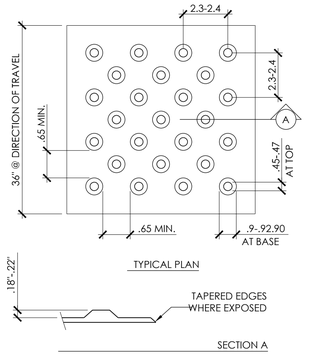
JOB #	1.19.6
DESIGN BY:	SHS
DRAWN BY:	SHS
CHECKED BY:	QV
DATE	02-12-2020
SCALE	AS NOTED
SHEET	A-0.2

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET



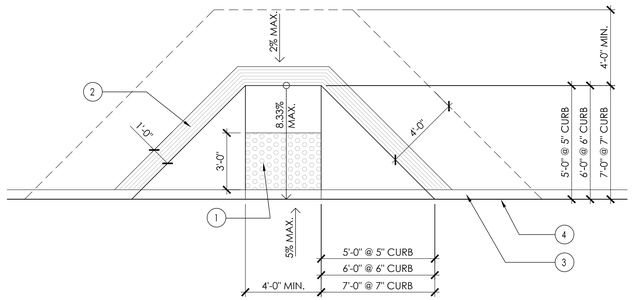


GROOVING DETAIL

02-AA-23	5
1"=1"	

TRUNCATED DOME (DWS)

-	4
3"=1'-0"	

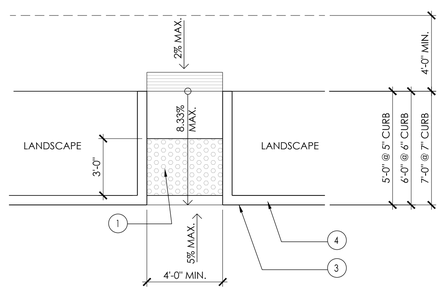


1. DETECTABLE WARNING SURFACE (DWS). SEE DETAIL 4/A-0.3B
2. GROOVED WARNING. SEE DETAIL 5/A-0.3B
3. CURB
4. FACE OF CURB

NOTES:
SEE BID NOTES & APWA STANDARDS

STANDARD CURB RAMP

02-AA-18	3
1/4"=1'-0"	



1. DETECTABLE WARNING SURFACE (DWS). SEE DETAIL D-1
2. GROOVED WARNING. SEE DETAIL D-10
3. CURB
4. FACE OF CURB

NOTES:
SEE BID NOTES & APWA STANDARDS

CURB RAMP

02-AA-20	2
1/4"=1'-0"	

ACCESSIBILITY DETAILS FOR CURBS, BLENDED TRANSITIONS, ISLANDS + DETECTABLE WARNINGS

1. **GENERAL -** CURB RAMPS, BLENDED TRANSITIONS + ISLANDS ON ACCESSIBLE ROUTES SHALL COMPLY WITH SECTION 11B-406. CURB RAMPS MAY BE PERPENDICULAR, PARALLEL, OR A COMBINATION OF PERPENDICULAR AND PARALLEL.
2. **LANDINGS -** LANDINGS SHALL BE PROVIDED AT THE TOPS OF CURB RAMPS AND BLENDED TRANSITIONS. THE LANDING CLEAR LENGTH SHALL BE 48" MINIMUM. THE LANDING CLEAR WIDTH SHALL BE AT LEAST AS WIDE AS THE CURB RAMP, EXCLUDING ANY FLARED SIDES, OR THE BLENDED TRANSITION LEADING TO THE LANDING. **THE SLOPE OF THE LANDING IN ALL DIRECTIONS SHALL BE 1:48 MAXIMUM.**
3. **TURNING SPACE.** A TURNING SPACE 48" MIN x 48" MIN. SHALL BE PROVIDED AT THE BOTTOM OF THE CURB RAMP. THE SLOPE OF THE TURNING SPACE IN ALL DIRECTIONS SHALL BE 1:48 MAX.
4. **LOCATION.** CURB RAMPS AND THE FLARED SIDES OF CURB RAMPS SHALL BE LOCATED SO THAT THEY DO NOT PROJECT INTO VEHICULAR TRAFFIC LANES, PARKING SPACES OR PARKING ACCESS AISLES. CURB RAMPS AT MARKED CROSSINGS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARED SIDES.
5. CURB RAMPS SHALL BE GROOVED BORDER 12" WIDE ALONG THE TOP OF THE CURB RAMP AT THE LEVEL SURFACE OF THE TOP LANDING AND AT THE OUTSIDE EDGES OF THE FLARED SIDES.
6. COUNTER SLOPE OF ADJOINING GUTTERS AND ROAD SURFACES IMMEDIATELY ADJACENT TO AND WITHIN 24" OF THE CURB RAMP SHALL NOT BE STEEPER THAN 1:20. THE ADJACENT SURFACES AT TRANSITIONS AT CURB RAMPS TO WALKS, GUTTERS AND STREETS SHALL BE AT THE SAME LEVEL. 11B-406.5.8.
7. CLEAR SPACE AT DIAGONAL CURB RAMPS. THE BOTTOM OF DIAGONAL CURB RAMPS SHALL HAVE A CLEAR SPACE 48" MIN. OUTSIDE ACTIVE TRAFFIC LANES OF THE ROADWAY. DIAGONAL CURB RAMPS PROVIDED AT MARKED CROSSINGS SHALL PROVIDE THE 48" MIN. CLEAR SPACE WITHIN THE MARKINGS. 11B-406.5.9
8. DIAGONAL CURB RAMPS. DIAGONAL OR CORNER TYPE CURB RAMPS WITH RETURNED CURBS OR OTHER WELL-DEFINED EDGES SHALL HAVE THE EDGES PARALLEL TO THE DIRECTION OF PEDESTRIAN FLOW. DIAGONAL CURB RAMPS WITH FLARED SIDES SHALL HAVE A SEGMENT OF CURB 24" LONG MIN. LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING. 11B-406.5.10
9. 11B-406.5.11. GROOVED BORDER. CURB RAMPS SHALL HAVE A GROOVED BORDER 12" WIDE ALONG THE TOP OF THE CURB RAMP AT THE LEVEL SURFACE OF THE TOP LANDING AND AT THE OUTSIDE EDGES OF THE FLARED SIDES. THE GROOVED BORDER SHALL CONSIST OF A SERIES OF GROOVES 1/4" WIDE BY 1/4" DEEP, AT 3/4" ON CENTER.
   EXCEPTIONS:
   A. AT PARALLEL CURB RAMPS, THE GROOVED BORDER SHALL BE ON THE UPPER APPROACH IMMEDIATELY ADJACENT TO THE CURB RAMP ACROSS THE FULL WIDTH OF THE CURB RAMP.
   B. A GROOVED BORDER SHALL NOT BE REQUIRED AT BLENDED TRANSITIONS.
10. 11B-406.6 ISLANDS. RAISED ISLANDS IN CROSSINGS SHALL BE CUT THROUGH LEVEL WITH THE STREET OR HAVE CURB RAMPS AT BOTH SIDES. THE CLEAR WIDTH OF THE ACCESSIBLE ROUTE AT ISLANDS SHALL BE 60" WIDE MIN. WHERE CURB RAMPS ARE PROVIDED, THEY SHALL COMPLY WITH SECTION 11B-406. LANDINGS COMPLYING WITH SECTION 11B-406.5.3 AND THE ACCESSIBLE ROUTE SHALL BE PERMITTED TO OVERLAP. ISLANDS SHALL HAVE DETECTABLE WARNINGS COMPLYING WITH SECTION 11B-705.
11. DETECTABLE WARNINGS SHALL CONSIST OF A SURFACE OF TRUNCATED DOMES AND SHALL COMPLY WITH SECTION 11B-705.
12. 11B-705.1.1.3 CONTRAST. DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT WALKING SURFACES EITHER LIGHT ON DARK, OR DARK ON LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE SURFACE. CONTRAST SHALL BE DETERMINED BY:
    CONTRAST = [(B1-B2)/B1 X 100 PERCENT WHERE B1 = LIGHT REFLECTANCE VALUE (LRV) OF THE LIGHTER AREA AND B2 = LIGHT REFLECTANCE VALUE (LRV) OF THE DARKER AREA.
    EXCEPTION: WHERE THE DETECTABLE WARNING SURFACE DOES NOT ADEQUATELY CONTRAST WITH ADJACENT SURFACE. A 1" WIDE BLACK STRIP SHALL SEPARATE YELLOW DETECTABLE WARNING FROM ADJACENT SURFACES.
13. 11B-705.1.1.4 RESILIENCY. DETECTABLE WARNING SURFACE SHALL DIFFER FROM ADJOINING SURFACES IN RESILIENCY OR SOUND-ON-CANE CONTACT.
    EXCEPTION: DETECTABLE WARNING SURFACES AT CURB RAMPS, ISLANDS OR CUT-THROUGH MEDIANS SHALL NOT BE REQUIRED TO COMPLY WITH SECTION 11B-705.1.1.4.
14. 11B-105.1.1.5 COLOR. DETECTABLE WARNING SURFACE SHALL BE YELLOW CONFORMING TO FS 33538 OF FEDERAL STANDARD 595C.
    EXCEPTION: DETECTABLE WARNING SURFACES AT CURB RAMPS, ISLANDS OR CUT-THROUGH MEDIANS SHALL NOT BE REQUIRED TO COMPLY WITH SECTION 11B-705.1.1.5.
15. 11B-705.2 DETECTABLE DIRECTIONAL TEXTURE. DETECTABLE DIRECTIONAL TEXTURE AT TRANSIT BOARDING PLATFORMS SHALL COMPLY WITH FIGURE 11B-705.2 AND SHALL BE 0.1 INCH IN HEIGHT THAT TAPERS OFF TO 0.04 INCH, WITH BARS RAISED 0.2 INCH FROM THE SURFACE. THE RAISED BARS SHALL BE 1.3 INCHES WIDE AND 3 INCHES FROM CENTER-TO-CENTER OF EACH BAR. THIS SURFACE SHALL DIFFER FROM ADJOINING WALKING SURFACES IN RESILIENCY OR SOUND-ON-CANE CONTACT. THE COLOR SHALL BE YELLOW CONFORMING TO THE FEDERAL COLOR NO. 33538. THE SURFACE WILL BE PLACED DIRECTLY BEHIND THE YELLOW DETECTABLE WARNING TEXTURE SPECIFIED IN SECTION 11B-705.1.2.1, ALIGNING WITH THE DOORS OF THE TRANSIT VEHICLES WHERE PASSENGERS WILL EMBARK. THE WIDTH OF THE DIRECTIONAL TEXTURE SHALL BE EQUAL TO THE WIDTH TRANSIT VEHICLE'S DOOR OPENING. THE DEPTH OF THE TEXTURE SHALL NOT BE LESS THAN 36 INCHES.

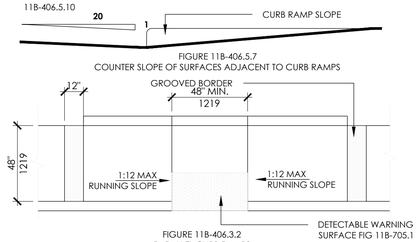


FIGURE 11B-406.5.7
COUNTER SLOPE OF SURFACES ADJACENT TO CURB RAMPS

FIGURE 11B-406.3.2
PARALLEL CURB RAMPS

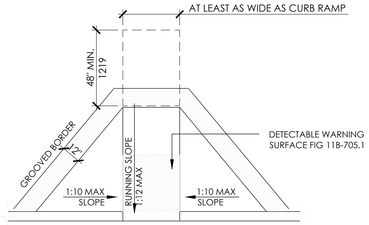


FIGURE 11B-406.5.3
LANDINGS AT THE TOP OF CURB RAMPS

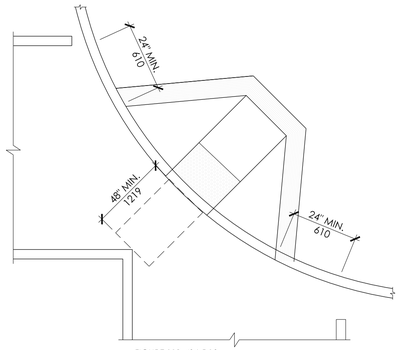
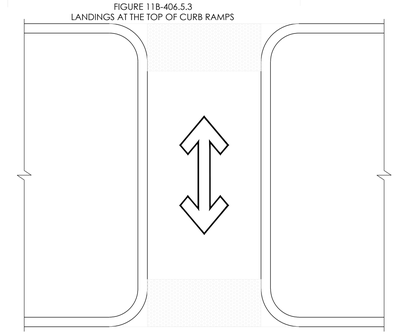
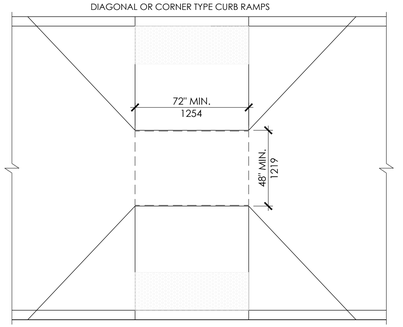


FIGURE 11B-406.5.10
DIAGONAL OR CORNER TYPE CURB RAMPS



(A)
CUT THROUGH AT ISLAND

FIGURE 11B-406.6
ISLANDS IN CROSSINGS



(B)
CURB RAMP AT ISLAND

CURB RAMP

02-AA-12	1
N.T.S	

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qv@dahltaylor.com

STERN ARCHITECTS
2961 W. MacArthur Blvd.
Suite 120
Santa Ana, California 92704
t. (714) 556-2656
f. (714) 556-2696

LICENSED ARCHITECT
JAMES LOUIS STERN
NO. C16792
REN. 4-30-21
STATE OF CALIFORNIA

MARK	DATE	BY	REVISIONS

Sht Title ACCESSIBILITY NOTES + DETAILS 2

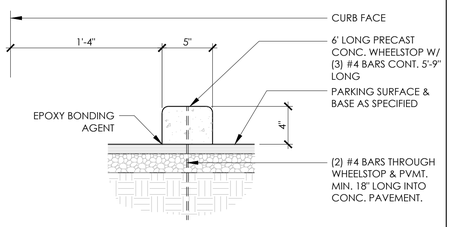
Project OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	SHS
DRAWN BY:	SHS
CHECKED BY:	QV
DATE	02-12-2020
SCALE	AS NOTED
SHEET	A-0.3

550 South Main Street
Orange, CA 92668
714/560/OCTA

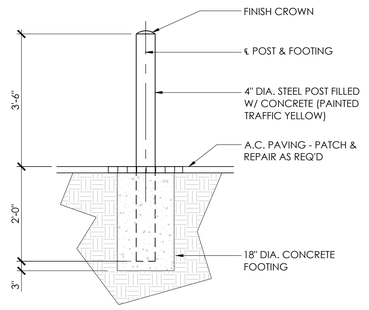
OCTA

100% DRAWING SET



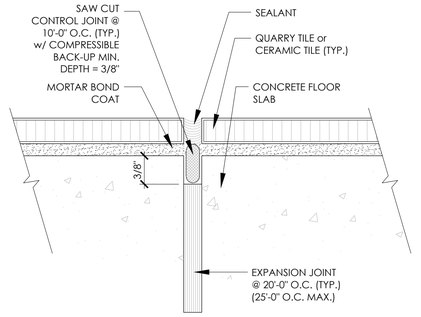
CONC. WHEEL STOP

01-AA-05	9
1-1/2"=1'-0"	



PIPE BOLLARD

01-BB-01	7
1/2"=1'-0"	



CONTROL JOINT

01-AA-01	5
N.T.S.	

PROCEDURE:

1. DRILL HOLE OF PROPER DIAMETER AND DEPTH USING A CARBIDE TIPPED DRILL OR CORING BIT. AVOID ANY EXISTING REINFORCING STEEL BY RELOCATING HOLE SLIGHTLY.

2. CLEAN HOLE THOROUGHLY BY VACUUM OR AIR PRESSURE.

3. MAKE SURE THAT HOLE IS DRY AND CLEAN BEFORE GROUTING.

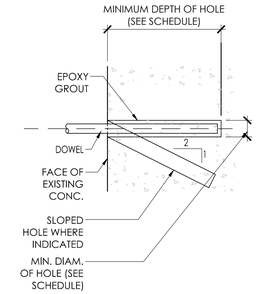
4. PLACE EPOXY GROUT IN HOLE WITH CAULKING GUN OR SIMILAR EQUIPMENT. STARTING AT BOTTOM, FILL HOLE APPROX. 2/3 FULL.

5. COAT DOWEL WITH SAME EPOXY GROUT AND INSERT INTO HOLE, FORCING MATERIAL AROUND THE SIDES OF THE BAR AND COMPLETELY FILLING ALL VOIDS.

6. PROVIDE SUPPORT FOR DOWEL BY TYING TO REBAR OR OTHER ELEMENT UNTIL GROUT HAS CURED.

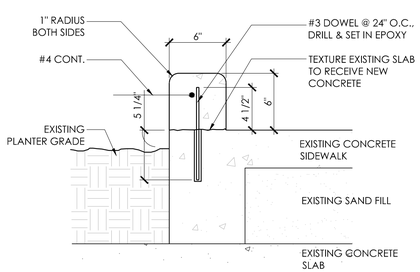
7. EPOXY GROUT SHALL BE "CIA GEL" BY COVERT OPERATIONS (LARR #25113) "ET22 EPOXY" BY SIMPSON STRONG TIE (LARR #25185) OR APPROVED EQUAL. "HIT-HY-150" BY HILTI CORP. (LARR #25257)

8. SPECIAL INSPECTION REQUIRED.



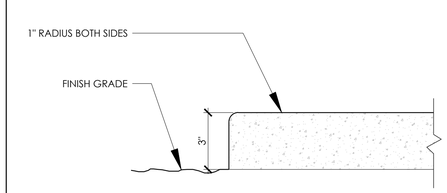
BAR SIZE	MIN. DIAM.	MIN. DEPTH
#3	~8"	5~4"
#4	~0"	6~0"
#5	~w"	7~8"
#6	1"	10"

NOTES:
1. ALL CURBING TO BE 2000 P.S.I. @ 28 DAY



CONCRETE CURB

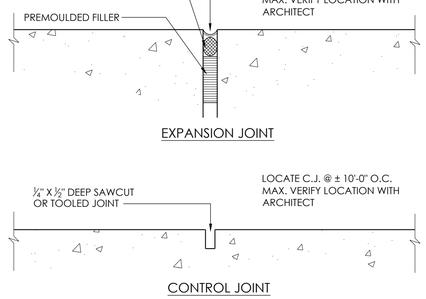
01-AA-04	8
1-1/2"=1'-0"	



NOTES:
1. ALL CURBING TO BE 2000 P.S.I. @ 28 DAY.
2. PROVIDE EXPANSION JOINTS @ 20'-0" O.C.

CONCRETE CURB

01-AA-03	6
3"=1'-0"	



CONCRETE JOINTS

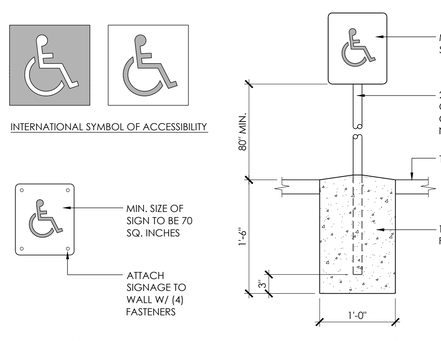
01-AA-02	4
6'=1'-0"	

FLOOR + GROUND SURFACES

1. FLOOR + GROUND SURFACES SHALL BE STABLE, FIRM + SLIP RESISTANCE.
2. WALKS AND SIDEWALKS SUBJECT TO THESE REGULATIONS SHALL HAVE A CONTINUOUS COMMON SURFACE, NOT INTERRUPTED BY STEPS OR BY ABRUPT CHANGES IN LEVEL EXCEEDING ½"
3. WALKS AND SIDEWALKS SHALL BE A MINIMUM OF 48" (1219mm) IN WIDTH.
4. CHANGES IN LEVEL UP TO 1/4" MAY BE VERTICAL AND WITHOUT EDGE TREATMENT.
5. CHANGES IN LEVEL BETWEEN 1/4" AND 1/2" SHALL BE BEVELED WITH A SLOPE NO GREATER THAN ONE UNIT VERTICAL IN 2 UNITS HORIZONTAL (50% SLOPE).
6. CHANGES IN LEVEL GREATER THAN 1/2" SHALL BE ACCOMPLISHED BY MEANS OF A CURB RAMP, RAMP OR ELEVATOR THAT COMPLIES WITH SECTION 11B-405, 11B-406 OR 11B-407 RESPECTIVELY.
7. ABRUPT CHANGES IN LEVEL EXCEEDING 4"1 VERTICAL DIMENSION BETWEEN WALKS, SIDEWALKS OR OTHER PEDESTRIAN WAYS AND ADJACENT SURFACES OR FEATURES SHALL BE IDENTIFIED BY WARNING CURBS AT LEAST 6" IN HEIGHT ABOVE THE WALK OR SIDEWALK SURFACE OR BY GUARDS OR HANDRAILS WITH A GUIDE RAILS CENTERED 2" MIN. AND 4" MAX. ABOVE THE SURFACE OF THE WALK OR SIDEWALK. THESE REQUIREMENTS DO NO APPLY BETWEEN A WALK OR SIDEWALK AND AN ADJACENT STREET OR DRIVEWAY.
8. WALK AND SIDEWALK SURFACES SHALL BE SLIP-RESISTANT AS FOLLOWS:
   A. SURFACES WITH LESS THAN 6% SLOPE SHALL BE AT LEAST AS SLIP-RESISTANT AS THAT DESCRIBED AS A MEDIUM SALTED FINISH.
   B. SURFACES WITH A 6% OR GREATER SLOPE SHALL BE SLIP-RESISTANT.
7. WHEN THE SLOPE IN THE DIRECTION OF TRAVEL OF ANY WALK EXCEEDS ONE UNIT VERTICAL IN 20 UNITS HORIZONTAL (5% SLOPE) IT SHALL COMPLY WITH THE PROVISIONS OF SECTION 11B-405.
8. WALK AND SIDEWALK SURFACE CROSS SLOPES SHALL NOT EXCEED ONE UNIT VERTICAL IN 48 UNITS HORIZONTAL (2.083% SLOPE).
9. ALL WALKS WITH CONTINUOUS GRADIENTS SHALL HAVE LEVEL AREAS AT LEAST 5 FEET IN LENGTH AT INTERVALS OF 400 FEET MAXIMUM.
10. WALKS, SIDEWALKS AND PEDESTRIAN WAYS SHALL BE FREE OF GRATINGS, WHENEVER POSSIBLE. FOR GRATINGS LOCATED IN THE SURFACE OF ANY OF THESE AREAS, GRID OPENINGS IN GRATINGS SHALL BE LIMITED TO 1/2" IN THE DIRECTION OF TRAFFIC FLOW. IF GRATINGS HAVE ELONGATED OPENINGS, THEY SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.
11. CARPET OR CARPET TILE SHALL BE SECURELY ATTACHED + SHALL HAVE A FIRM CUSHION, PAD, OR BACKING OR NO CUSHION OR PAD. CARPET OR CARPET TILE SHALL HAVE A LEVEL LOOP, TEXTURED LOOP, LEVEL CUT PILE OR LEVEL CUT/UCUT PILE TEXTURE. PILE HEIGHT SHALL BE 1/2" MIN.

GROUND SURFACE

02-AA-05	2
N.T.S.	



ACCESSIBLE ROUTE OF TRAVEL SIGNAGE

02-AA-22	3
NTS	

THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL CONSIST OF A FIGURE ON A CONTRASTING BACKGROUND. CHARACTERS, SYMBOLS, AND THEIR BACKGROUNDS SHALL HAVE A NON-GLARE FINISH AND SHALL CONTRAST WITH THEIR BACKGROUND, EITHER WHITE CHARACTERS ON A BLUE BACKGROUND OR BLUE CHARACTER ON A WHITE BACKGROUND. THE BLUE SHALL BE EQUAL TO COLOR NO. 15090 IN FEDERAL STANDARD 595B.

ALL BUILDING ENTRANCES THAT ARE ACCESSIBLE TO AND USABLE BY PERSONS WITH DISABILITIES AND AT EVERY MAJOR JUNCTION ALONG OR LEADING TO AN ACCESSIBLE ROUTE OF TRAVEL SHALL BE IDENTIFIED WITH A SIGN DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY AND WITH ADDITIONAL DIRECTIONAL SIGNS, AS REQUIRED, TO BE VISIBLE TO PERSONS ALONG APPROACHING PEDESTRIAN WAYS.

CHARACTERS ON A SIGN SHALL HAVE A WIDTH TO HEIGHT RATION OF BETWEEN 3:5 AND 1:1 AND A STROKE WIDTH TO HEIGHT RATIO BETWEEN 1:5 AND 1:10.

CHARACTERS AND NUMBER ON SIGNS ARE APPROPRIATELY SIZED ACCORDING TO THE VIEWING DISTANCE FROM WHICH THEY ARE READ.

ACCESSIBLE ROUTES

1. AT LEAST ONE ACCESSIBLE ROUTE SHALL BE PROVIDED WITHIN THE SITE FROM ACCESSIBLE PARKING SPACES AND ACCESSIBLE PASSENGER LOADING ZONES; PUBLIC STREETS AND SIDEWALKS; AND PUBLIC TRANSPORTATION STOPS TO THE ACCESSIBLE BUILDING OR FACILITY ENTRANCE THEY SERVE. WHERE MORE THAN ONE ROUTE IS PROVIDED, ALL ROUTES MUST BE ACCESSIBLE. 11B-206.2.1
2. AT LEAST ONE ACCESSIBLE ROUTE SHALL CONNECT ACCESSIBLE BUILDINGS, ACCESSIBLE FACILITIES, ACCESSIBLE ELEMENTS AND ACCESSIBLE SPACES THAT ARE ON THE SAME SITE. 11B-206.2.2
3. AT LEAST ONE ACCESSIBLE ROUTE SHALL CONNECT EACH STORY AND MEZZANINE IN MULTI-STORY BUILDINGS AND FACILITIES. 11B-206.2.3
4. IN NEW CONSTRUCTION OF BUILDINGS WHERE ELEVATORS ARE REQUIRED BY 11B-206.2.3 MULTI-STORY BUILDINGS AND FACILITIES, AND WHICH EXCEED 10,000 SQUARE FEET ON ANY FLOOR, AN ACCESSIBLE MEANS OF VERTICAL ACCESS VIA RAMP, ELEVATOR OR LIFT SHALL BE PROVIDED WITHIN 200 FEET OF TRAVEL OF EACH STAIR AND EACH ESCALATOR.
5. IN EXISTING BUILDINGS THAT 10,000 SQUARE FEET ON ANY FLOOR AND IN WHICH ELEVATORS ARE REQUIRED BY 11B-206.2.3 MULTI-STORY BUILDINGS AND FACILITIES, WHENEVER A NEWLY CONSTRUCTED MEANS OF VERTICAL ACCESS IS PROVIDED VIA STAIRS OR AN ESCALATOR, AN ACCESSIBLE MEANS OF VERTICAL ACCESS VIA RAMP, ELEVATOR OR LIFT SHALL BE PROVIDED WITHIN 200 FEET OF TRAVEL OF EACH NEW STAIR OR ESCALATOR. 11B-206.2.3.2
6. AT LEAST ONE ACCESSIBLE ROUTE SHALL CONNECT ACCESSIBLE BUILDING OR FACILITY ENTRANCES WITH ALL ACCESSIBLE SPACES AND ELEMENTS WITHIN THE BUILDING OR FACILITY, INCLUDING MEZZANINES, WHICH ARE OTHERWISE CONNECTED BY A CIRCULATION PATH. 11B-206.2.4
7. ACCESSIBLE ROUTES SHALL COINCIDE WITH OR BE LOCATED IN THE SAME AREA AS GENERAL CIRCULATION PATHS. WHERE CIRCULATION PATHS ARE INTERIOR, REQUIRED ACCESSIBLE ROUTES SHALL ALSO BE INTERIOR; AN ACCESSIBLE ROUTE SHALL NOT PASS THROUGH KITCHENS, STORAGE ROOMS, RESTROOMS, CLOSETS OR OTHER SPACES USED FOR SIMILAR PURPOSES, EXCEPT AS PERMITTED BY CHAPTER 10. 11B-206.3

ACCESSIBLE ROUTES

02-C-18	1
N.T.S.	

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

STERN ARCHITECTS
2961 W. MacArthur Blvd.
Suite 120
Santa Ana, California 92704
t. (714) 556-2656
f. (714) 556-2696

LICENSED ARCHITECT JAMES L. OUTS JOHNS NO. C16792 REN. 4-30-21 STATE OF CALIFORNIA

MARK	DATE	BY	REVISIONS

Sht Title ACCESSIBILITY NOTES + DETAILS 3

Project OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	SHS
DRAWN BY:	SHS
CHECKED BY:	QV
DATE	02-12-2020
SCALE	AS NOTED
SHEET	A-0.4

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET

SIGNS

1. WHERE PERMANENT IDENTIFICATION IS PROVIDED FOR ROOMS AND SPACES, RAISED LETTERS SHALL ALSO BE PROVIDED AND SHALL BE ACCOMPANIED BY BRAILLE. SECTION 11B-703.

2. THE SIGNAGE REQUIREMENTS OF SECTION 11B-703 ARE TO BE SATISFIED AT DOORWAYS LEADING ALL SANITARY FACILITIES.

3. THE SURFACE OF EACH ACCESSIBLE PARKING STALL SHALL HAVE A SURFACE IDENTIFICATION MEETING REQUIREMENTS OF SECTION 11B-703.7.2.1. CONTRACTOR SHALL OUTLINE A PROFILE VIEW OF A WHEELCHAIR WITH OCCUPANT IN WHITE ON BLUE BACKGROUND. THE PROFILE VIEW SHALL BE LOCATED SO THAT IT IS VISABLE TO A TRAFFIC ENFORCEMENT OFFICER WHEN A VEHICLE IS PROPERLY PARKED IN THE SPACE AND SHALL BE 36" HIGH BY 36" WIDE.

4. THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL CONSIST OF A WHITE FIGURE ON A BLUE BACKGROUND. THE BLUE SHALL BE EQUAL TO COLOR NO. 15090 IN FEDERAL STANDARD 595B.

5. ALL BUILDING AND FACILITY ENTRANCES THAT ARE ACCESSIBLE TO AND USABLE BY PERSONS WITH DISABILITIES AND AT EVERY MAJOR JUNCTION ALONG OR LEADING TO AN ACCESSIBLE ROUTE OF TRAVEL SHALL BE IDENTIFIED WITH A SIGN DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY AND WITH ADDITIONAL DIRECTIONAL SIGNS TO BE VISIBLE TO PERSONS ALONG APPROACHING CIRCULATION PATHS.

6. WHERE PERMANENT IDENTIFICATION SIGNS ARE PROVIDED FOR ROOMS AND SPACES, SIGNS SHALL BE INSTALLED ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR. WHERE THERE IS NO WALL SPACE ON THE LATCH SIDE, INCLUDING AT DOUBLE LEAF DOORS, SIGNS SHALL BE PLACED ON THE NEAREST ADJACENT WALL, PREFERABLY ON THE RIGHT. WHERE PERMANENT IDENTIFICATION SIGNAGE IS PROVIDED FOR ROOMS AND SPACES THEY SHALL BE LOCATED ON THE APPROACH SIDE OF THE DOOR AS ONE ENTERS THE ROOM OR SPACE. SIGNS THAT IDENTIFY EXITS SHALL BE LOCATED ON THE APPROACH SIDE OF THE DOOR AS ONE EXITS THE ROOM OR SPACE. SIGNS WITH RAISED CHARACTERS AND BRAILLE SHALL BE LOCATED 48" MIN. ABOVE THE FINISH FLOOR OR GROUND SURFACE, MEASURED FROM THE BASELINE OF THE LOWEST LINE OF BRAILLE AND58" TO 60" MAX. ABOVE THE FINISH FLOOR OR GROUND SURFACE, MEASURED FROM THE BASELINE OF THE HIGHEST LINE OF RAISED CHARACTERS. MOUNTING LOCATION SHALL BE DETERMINED SO THAT A PERSON MAY APPROACH WITHIN 3" OF SIGNAGE WITHOUT ENCOUNTERING PROTRUDING OBJECTS OR STANDING WITHIN THE SWING OF A DOOR.

7. WHEN SIGNS DIRECT TO OR GIVE INFORMATION ABOUT PERMANENT ROOMS AND FUNCTIONAL SPACES OF A BUILDING OR SITE, THEY SHALL COMPLY WITH SECTION 11B-703.

8. WHEN RAISED CHARACTERS OR WHEN PICTOGRAM SYMBOLS ARE USED, THEY SHALL CONFORM TO THE FOLLOWING:
   A. CHARACTERS ON SIGNS SHALL BE RAISED OR RECESSED 1/32" MINIMUM AND SHALL BE SANS-SERIF UPPERCASE CHARACTERS ACCOMPANIED BY CONTRACTED(GRADE 2) BRAILLE COMPLYING WITH SECTION 11B-703.3.
   B. RAISED CHARACTERS OR SYMBOLS SHALL BE MINIMUM OF 5/8" HIGH AND A MAXIMUM OF 2' HIGH.
   C. PICTORAL SYMBOLS SIGNS (PICTOGRAMS) SHALL BE ACCOMPANIED BY THE VERBAL DESCRIPTION PLACED DIRECTLY BELOW THE PICTOGRAM. THE OUTSIDE DIMENSION OF THE PICTOGRAM FIELD SHALL BE A MIN. OF 6" IN HEIGHT.
   D. CHARACTERS AND BRAILLE SHALL BE IN A HORIZONTAL FORMAT. BRAILLE SHOULD BE PLACED A MINIMUM OF 3/8" AND A MAXIMUM OF 1/2" DIRECTLY BELOW THE TACTILE CHARACTERS; FLUSH LEFT OR CENTERED. WHEN TACTILE SIGN IS MULTI-LINED, ALL BRAILLE SHALL BE PLACED TOGETHER BELOW ALL LINES OF TACTILE TEXT.
   E. RAISED CHARACTERS ON SIGNS SHALL BE SELECTED FROM FONTS WHERE THE WIDTH OF THE UPPERCASE LETTER "O" IS 60% MIN. AND 110% MAX. OF THE HEIGHT OF THE UPPERCASE LETTER "I". STROKE THICKNESS OF THE UPPERCASE LETTER "I" SHALL BE 15% MAX. OF THE HEIGHT OF THE CHARACTER.

9. VISUAL CHARACTERS ON A SIGNS SHALL BE SELECTED FROM FONTS WHERE THE WIDTH OF THE UPPERCASE LETTER "O" IS 60% MIN. AND 110% MAX. OF THE HEIGHT OF THE UPPERCASE LETTER "I". STROKE THICKNESS OF THE UPPERCASE LETTER "I" SHALL BE 10% MIN. AND 20% MAX. OF THE HEIGHT OF THE CHARACTER.

10. CHARACTERS, SYMBOLS, AND THEIR BACKGROUNDS SHALL HAVE A NON GLARE FINISH. CHARACTERS AND SYMBOLS SHALL CONTRAST WITH THEIR BACKGROUND, EITHER LIGHT CHARACTERS ON A DARK BACKGROUND OR DARK CHARACTER ON A LIGHT BACKGROUND.

11. CHARACTERS AND NUMBERS ON SIGNS REQUIRED TO BE ACCESSIBLE BY SECTION 11B-703.5 AND SHALL BE SIZED ACCORDING TO THE TABLE 11B-703.5.5.

12. CONTRACTED (GRADE 2) BRAILLE SHALL BE USED WHEREVER BRAILLE IS REQUIRED IN OTHER PORTIONS OF THESE STANDARDS. DOTS SHALL BE 1/10" ON CENTERS IN EACH CELL WITH 2/10" SPACE BETWEEN CELLS. DOTS SHALL BE RAISED A MINIMUM OF 1/40" ABOVE THE BACKGROUND.

13. WHERE BOTH VISUAL AND TACTILE CHARACTERS ARE REQUIRED, EITHER ONE SIGN WITH BOTH VISUAL AND TACTILE CHARACTERS, OR TWO SEPARATE SIGNS, ONE WITH VISUAL, AND ONE WITH TACTILE CHARACTERS, SHALL BE PROVIDED. (11B-703.1). PROVIDE AND REFERENCE EXIT SIGNAGE ACCORDINGLY.

14. SIGNS REQUIRED BY SECTION 1007.10 TO PROVIDE DIRECTIONS TO ACCESSIBLE MEANS OF EGRESS SHALL COMPLY WITH SECTION 11B-703.5. (11B-216.434). PROVIDE DETAILS AND SHOW LOCATION OF SIGNS ON FLOOR PLAN.

15. GENERAL, ALL ACCESSIBLE SANITARY FACILITIES SHALL BE IDENTIFIED BY THE 'INTERNATIONAL SYMBOL OF ACCESSIBILITY'. SIGNS NEED NOT BE PROVIDED FOR FACILITIES WITHIN A DWELLING UNIT OR GUESTROOM.

16. IDENTIFICATION SYMBOLS. DOORWAYS LEADING TO SANITARY FACILITIES SHALL BE IDENTIFIED BY A GEOMETRIC SYMBOL OF COMPLIANCE. GEOMETRIC SYMBOL SHALL BE CENTERED HORIZONTALLY ON THE FLOOR AT A HEIGHT OF 58" TO 60" ABOVE THE FINISH FLOOR OR GROUND SURFACE MEASURED TO THE CENTER OF THE SYMBOL. EDGES OF ACCESSIBILITY SIGNAGE SHALL BE ROUNDED, CHAMFERED OR EASED. CORNERS SHALL HAVE A MINIMUM RADIUS OF 1/8". SEE SECTION 11B-703 FOR ADDITIONAL INFORMATION.

17. MEN'S SANITARY FACILITIES SHALL BE IDENTIFIED BY AN EQUILATERAL TRIANGE 1/4"THICK WITH EDGES 12" LONG AND A VERTEX POINTING UPWARD. THE TRIANGLE SYMBOL SHALL CONTRAST WITH THE DOOR, EITHER LIGHT ON A DARK BACKGROUND OR DARK ON A LIGHT BACKGROUND.

18. WOMEN'S SANITARY FACILITIES SHALL BE IDENTIFIED BY A CIRCLE 1/4" THICK AND 12" IN DIAMETER. THE CIRCLE SYMBOL SHALL CONTRACT WITH THE DOOR, EITHER LIGHT ON A DARK BACKGROUND OR DARK ON A LIGHT BACKGROUND.

19. GENDER NEUTRAL SANITARY FACILITIES SHALL BE IDENTIFIED BY A CIRCLE 1/4" THICK AND 12" IN DIAMETER WITH A 1/4" THICK TRIANGLE SUPERIMPOSED ON THE CIRCLE AND WITHIN THE 12" DIAMETER. THE TRIANGLE SYMBOL SHALL CONTRAST WITH THE CIRCLE SYMBOL, EITHER LIGHT ON A DARK BACKGROUND OR DARK ON A LIGHT BACKGROUND. THE CIRCLE SYMBOL SHALL CONTRAST WITH THE DOOR, EITHER LIGHT ON A DARK BACKGROUND OR DARK ON A LIGHT BACKGROUND.

20. THESE ARE MINIMUM STANDARDS FOR THESE SIGNS. SIGNS ARE REQUIRED TO BE MOUNTED BOTH CENTERED ON THE DOOR INTO THE RESTROOM AND ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR.

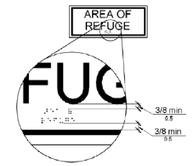
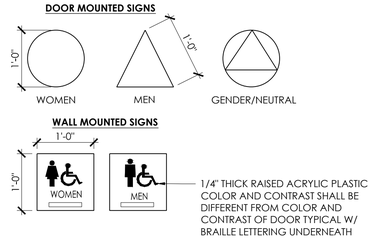
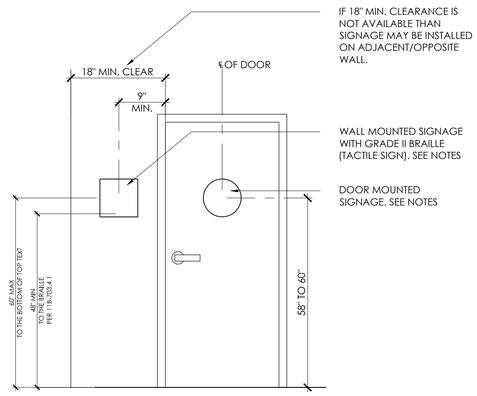


FIGURE 11B-703.3.2
POSITION OF BRAILLE





SIGNAGE LOCATION

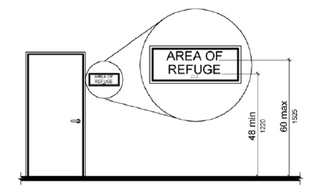


FIGURE 11B-703.4.1
HEIGHT OF TACTILE CHARACTERS ABOVE FINISH FLOOR OR GROUND

SIGNAGE

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SIGNS

1. WHERE PERMANENT IDENTIFICATION IS PROVIDED FOR ROOMS AND SPACES, RAISED LETTERS SHALL ALSO BE PROVIDED AND SHALL BE ACCOMPANIED BY BRAILLE. SECTION 11B-703.

2. THE SIGNAGE REQUIREMENTS OF SECTION 11B-703 ARE TO BE SATISFIED AT DOORWAYS LEADING ALL SANITARY FACILITIES.

3. THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL CONSIST OF A WHITE FIGURE ON A BLUE BACKGROUND. THE BLUE SHALL BE EQUAL TO COLOR NO. 15090 IN FEDERAL STANDARD 595B.

4. ALL BUILDING AND FACILITY ENTRANCES THAT ARE ACCESSIBLE TO AND USABLE BY PERSONS WITH DISABILITIES AND AT EVERY MAJOR JUNCTION ALONG OR LEADING TO AN ACCESSIBLE ROUTE OF TRAVEL SHALL BE IDENTIFIED WITH A SIGN DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY AND WITH ADDITIONAL DIRECTIONAL SIGNS TO BE VISIBLE TO PERSONS ALONG APPROACHING CIRCULATION PATHS.

5. WHERE PERMANENT IDENTIFICATION SIGNS ARE PROVIDED FOR ROOMS AND SPACES, SIGNS SHALL BE INSTALLED ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR. WHERE THERE IS NO WALL SPACE ON THE LATCH SIDE, INCLUDING AT DOUBLE LEAF DOORS, SIGNS SHALL BE PLACED ON THE NEAREST ADJACENT WALL, PREFERABLY ON THE RIGHT. WHERE PERMANENT IDENTIFICATION SIGNAGE IS PROVIDED FOR ROOMS AND SPACES THEY SHALL BE LOCATED ON THE APPROACH SIDE OF THE DOOR AS ONE ENTERS THE ROOM OR SPACE. SIGNS THAT IDENTIFY EXITS SHALL BE LOCATED ON THE APPROACH SIDE OF THE DOOR AS ONE EXITS THE ROOM OR SPACE. SIGNS WITH RAISED CHARACTERS AND BRAILLE SHALL BE LOCATED 48" MIN. ABOVE THE FINISH FLOOR OR GROUND SURFACE, MEASURED FROM THE BASELINE OF THE LOWEST LINE OF BRAILLE AND58" TO 60" MAX. ABOVE THE FINISH FLOOR OR GROUND SURFACE, MEASURED FROM THE BASELINE OF THE HIGHEST LINE OF RAISED CHARACTERS. MOUNTING LOCATION SHALL BE DETERMINED SO THAT A PERSON MAY APPROACH WITHIN 3" OF SIGNAGE WITHOUT ENCOUNTERING PROTRUDING OBJECTS OR STANDING WITHIN THE SWING OF A DOOR.

6. WHEN SIGNS DIRECT TO OR GIVE INFORMATION ABOUT PERMANENT ROOMS AND FUNCTIONAL SPACES OF A BUILDING OR SITE, THEY SHALL COMPLY WITH SECTION 11B-703.

7. WHEN RAISED CHARACTERS OR WHEN PICTOGRAM SYMBOLS ARE USED, THEY SHALL CONFORM TO THE FOLLOWING:
   A. CHARACTERS ON SIGNS SHALL BE RAISED OR RECESSED 1/32" MINIMUM AND SHALL BE SANS-SERIF UPPERCASE CHARACTERS ACCOMPANIED BY CONTRACTED(GRADE 2) BRAILLE COMPLYING WITH SECTION 11B-703.3.
   B. RAISED CHARACTERS OR SYMBOLS SHALL BE MINIMUM OF 5/8" HIGH AND A MAXIMUM OF 2' HIGH.
   C. PICTORAL SYMBOLS SIGNS (PICTOGRAMS) SHALL BE ACCOMPANIED BY THE VERBAL DESCRIPTION PLACED DIRECTLY BELOW THE PICTOGRAM. THE OUTSIDE DIMENSION OF THE PICTOGRAM FIELD SHALL BE A MIN. OF 6" IN HEIGHT.
   D. CHARACTERS AND BRAILLE SHALL BE IN A HORIZONTAL FORMAT. BRAILLE SHOULD BE PLACED A MINIMUM OF 3/8" AND A MAXIMUM OF 1/2" DIRECTLY BELOW THE TACTILE CHARACTERS; FLUSH LEFT OR CENTERED. WHEN TACTILE SIGN IS MULTI-LINED, ALL BRAILLE SHALL BE PLACED TOGETHER BELOW ALL LINES OF TACTILE TEXT.
   E. RAISED CHARACTERS ON SIGNS SHALL BE SELECTED FROM FONTS WHERE THE WIDTH OF THE UPPERCASE LETTER "O" IS 60% MIN. AND 110% MAX. OF THE HEIGHT OF THE UPPERCASE LETTER "I". STROKE THICKNESS OF THE UPPERCASE LETTER "I" SHALL BE 15% MAX. OF THE HEIGHT OF THE CHARACTER.

9. VISUAL CHARACTERS ON A SIGNS SHALL BE SELECTED FROM FONTS WHERE THE WIDTH OF THE UPPERCASE LETTER "O" IS 60% MIN. AND 110% MAX. OF THE HEIGHT OF THE UPPERCASE LETTER "I". STROKE THICKNESS OF THE UPPERCASE LETTER "I" SHALL BE 10% MIN. AND 20% MAX. OF THE HEIGHT OF THE CHARACTER.

10. CHARACTERS, SYMBOLS, AND THEIR BACKGROUNDS SHALL HAVE A NON GLARE FINISH. CHARACTERS AND SYMBOLS SHALL CONTRAST WITH THEIR BACKGROUND, EITHER LIGHT CHARACTERS ON A DARK BACKGROUND OR DARK CHARACTER ON A LIGHT BACKGROUND.

11. CHARACTERS AND NUMBERS ON SIGNS REQUIRED TO BE ACCESSIBLE BY SECTION 11B-703.5 AND SHALL BE SIZED ACCORDING TO THE TABLE 11B-703.5.5.

12. CONTRACTED (GRADE 2) BRAILLE SHALL BE USED WHEREVER BRAILLE IS REQUIRED IN OTHER PORTIONS OF THESE STANDARDS. DOTS SHALL BE 1/10" ON CENTERS IN EACH CELL WITH 2/10" SPACE BETWEEN CELLS. DOTS SHALL BE RAISED A MINIMUM OF 1/40" ABOVE THE BACKGROUND.

13. WHERE BOTH VISUAL AND TACTILE CHARACTERS ARE REQUIRED, EITHER ONE SIGN WITH BOTH VISUAL AND TACTILE CHARACTERS, OR TWO SEPARATE SIGNS, ONE WITH VISUAL, AND ONE WITH TACTILE CHARACTERS, SHALL BE PROVIDED. (11B-703.1). PROVIDE AND REFERENCE EXIT SIGNAGE ACCORDINGLY.

14. SIGNS REQUIRED BY SECTION 1007.10 TO PROVIDE DIRECTIONS TO ACCESSIBLE MEANS OF EGRESS SHALL COMPLY WITH SECTION 11B-703.5. (11B-216.434). PROVIDE DETAILS AND SHOW LOCATION OF SIGNS ON FLOOR PLAN.

15. GENERAL, ALL ACCESSIBLE SANITARY FACILITIES SHALL BE IDENTIFIED BY THE 'INTERNATIONAL SYMBOL OF ACCESSIBILITY'. SIGNS NEED NOT BE PROVIDED FOR FACILITIES WITHIN A DWELLING UNIT OR GUESTROOM.

16. IDENTIFICATION SYMBOLS. DOORWAYS LEADING TO SANITARY FACILITIES SHALL BE IDENTIFIED BY A GEOMETRIC SYMBOL OF COMPLIANCE. GEOMETRIC SYMBOL SHALL BE CENTERED HORIZONTALLY ON THE FLOOR AT A HEIGHT OF 58" TO 60" ABOVE THE FINISH FLOOR OR GROUND SURFACE MEASURED TO THE CENTER OF THE SYMBOL. EDGES OF ACCESSIBILITY SIGNAGE SHALL BE ROUNDED, CHAMFERED OR EASED. CORNERS SHALL HAVE A MINIMUM RADIUS OF 1/8". SEE SECTION 11B-703 FOR ADDITIONAL INFORMATION.

17. MEN'S SANITARY FACILITIES SHALL BE IDENTIFIED BY AN EQUILATERAL TRIANGE 1/4"THICK WITH EDGES 12" LONG AND A VERTEX POINTING UPWARD. THE TRIANGLE SYMBOL SHALL CONTRAST WITH THE DOOR, EITHER LIGHT ON A DARK BACKGROUND OR DARK ON A LIGHT BACKGROUND.

18. WOMEN'S SANITARY FACILITIES SHALL BE IDENTIFIED BY A CIRCLE 1/4" THICK AND 12" IN DIAMETER. THE CIRCLE SYMBOL SHALL CONTRACT WITH THE DOOR, EITHER LIGHT ON A DARK BACKGROUND OR DARK ON A LIGHT BACKGROUND.

19. GENDER NEUTRAL SANITARY FACILITIES SHALL BE IDENTIFIED BY A CIRCLE 1/4" THICK AND 12" IN DIAMETER WITH A 1/4" THICK TRIANGLE SUPERIMPOSED ON THE CIRCLE AND WITHIN THE 12" DIAMETER. THE TRIANGLE SYMBOL SHALL CONTRAST WITH THE CIRCLE SYMBOL, EITHER LIGHT ON A DARK BACKGROUND OR DARK ON A LIGHT BACKGROUND. THE CIRCLE SYMBOL SHALL CONTRAST WITH THE DOOR, EITHER LIGHT ON A DARK BACKGROUND OR DARK ON A LIGHT BACKGROUND.

20. THESE ARE MINIMUM STANDARDS FOR THESE SIGNS. SIGNS ARE REQUIRED TO BE MOUNTED BOTH CENTERED ON THE DOOR INTO THE RESTROOM AND ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR.

SIGNAGE

02-C-23
N.T.S.

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DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qv@dahltaylor.com

STERN ARCHITECTS
2961 W. MacArthur Blvd.
Suite 120
Santa Ana, California 92704
t. (714) 556-2656
f. (714) 556-2696

LICENSED ARCHITECT
JAMES LOUIS STERN
NO. C16792
REN. 4-30-21
STATE OF CALIFORNIA

MARK	DATE	BY	REVISIONS

Sht Title ACCESSIBILITY NOTES + DETAILS 4

Project OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	SHS
DRAWN BY:	SHS
CHECKED BY:	QV
DATE	02-12-2020
SCALE	AS NOTED
SHEET	**A-0.5**

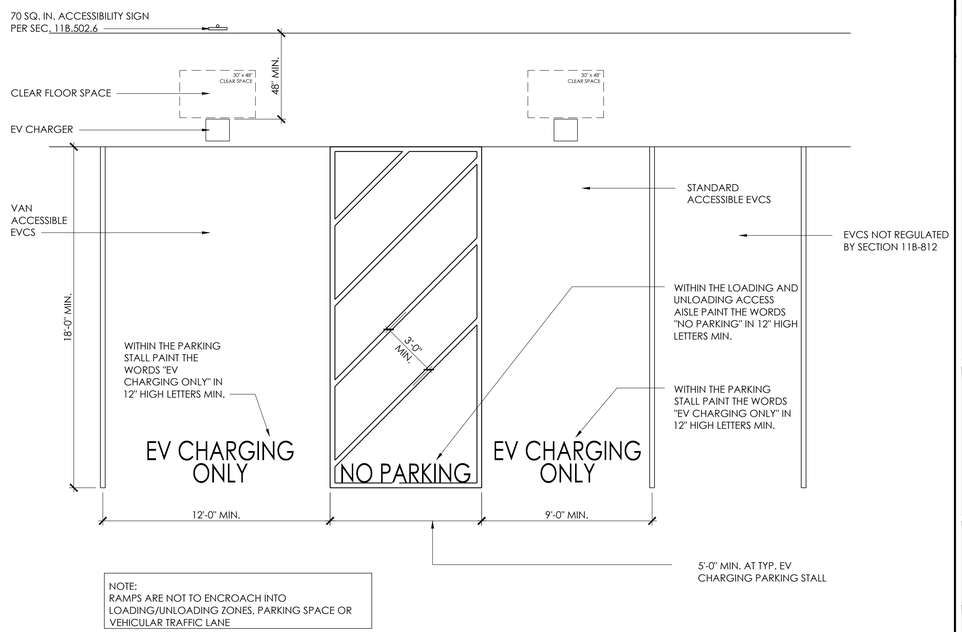
550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET

ELECTRIC VEHICLE CHARGING STATIONS SHALL CONFORM TO SECTION 11B-812

1. 11B-812.1 GENERAL: ELECTRIC VEHICLE CHARGING STATIONS (EVCS) SHALL COMPLY WITH SECTION 11B-812 AS REQUIRED BY SECTION 11B-228.3. WHERE VEHICLE SPACES AND ACCESS AISLES ARE MARKED WITH LINES, MEASUREMENTS SHALL BE MADE FROM THE CENTERLINE OF THE MARKINGS.
   EXCEPTION: WHERE VEHICLE SPACES OR ACCESS AISLES ARE NOT ADJACENT TO ANOTHER VEHICLE SPACE, ACCESS AISLE OR PARKING SPACE.MEASUREMENTS SHALL BE PERMITTED TO INCLUDE THE FULL WIDTH OF THE LINE DEFINING THE VEHICLE SPACE OR ACCESS AISLE.
2. 11B-812.3 FLOOR OR GROUND SURFACES: VEHICLE SPACES AND ACCESS AISLES SERVING THEM SHALL COMPLY WITH SECTION 11B-302. ACCESS AISLES SHALL BE AT THE SAME LEVEL AS THE VEHICLE SPACE THEY SERVE. CHANGES IN LEVEL, SLOPES EXCEEDING 1:48, AND DETECTABLE WARNINGS SHALL NOT BE PERMITTED IN VEHICLE SPACES AND ACCESS AISLE.
3. 11B-812.5.1 ACCESSIBLE ROUTE TO BUILDING OR FACILITY: EVCS COMPLYING WITH SECTION 11B-812 THAT SERVE A PARTICULAR BUILDING OR FACILITY SHALL BE LOCATED ON AN ACCESSIBLE ROUTE TO AN ENTRANCE COMPLYING WITH SECTION 11B-206.4. WHERE EVCS DO NOT SERVE A PARTICULAR BUILDING OR FACILITY EVCS COMPLYING WITH SECTION 11B-812 SHALL BE LOCATED ON AN ACCESSIBLE ROUTE TO AN ACCESSIBLE PEDESTRIAN ENTRANCE OF THE EV CHARGING FACILITY.
   EXCEPTION: EVCS COMPLYING WITH SECTION 11B-812 SHALL BE PERMITTED TO BE LOCATED IN DIFFERENT EV CHARGING FACILITIES IF SUBSTANTIALLY EQUIVALENT OR GREATER ACCESSIBILITY IS PROVIDED IN TERMS OF DISTANCE FROM AN ACCESSIBLE ENTRANCE OR ENTRANCES, CHARGING FEE AND USER CONVENIENCE.
4. 11B-812.5.2 ACCESSIBLE ROUTE TO EV CHARGER: AN ACCESSIBLE ROUTE COMPLYING WITH SECTION 11B-402 SHALL BE PROVIDED BETWEEN THE VEHICLE SPACE AND THE EV CHARGER WHICH IT SERVES.
5. 11B-812.5.3 RELATIONSHIP TO ACCESSIBLE ROUTES: VEHICLE SPACES AND ACCESS AISLES SHALL BE DESIGNED SO THAT WHEN THE VEHICLE SPACE IS OCCUPIED THE REQUIRED CLEAR WIDTH OF ADJACENT ACCESSIBLE ROUTES IS NOT OBSTRUCTED. A CURB, WHEEL STOP, BOLLARDS OR OTHER BARRIER SHALL BE PROVIDED IF REQUIRED TO PREVENT ENCROACHMENT OF VEHICLES OVER THE REQUIRED CLEAR WIDTH OF ADJACENT ACCESSIBLE ROUTES.
6. 11B-812.5.4 ARRANGEMENT: VEHICLE SPACES AND ACCESS AISLES SHALL BE DESIGNED SO THAT PERSONS USING THEM ARE NOT REQUIRED TO TRAVEL BEHIND VEHICLE SPACES OR PARKING SPACES OTHER THAN THE VEHICLE SPACE IN WHICH THEIR VEHICLE HAS BEEN LEFT TO CHARGE.
   EXCEPTIONS: AMBULATORY EVCS SHALL NOT BE REQUIRED TO COMPLY WITH SECTION 11B-812.5.4. VEHICLE SPACES INSTALLED IN EXISTING FACILITIES SHALL COMPLY WITH SECTION 11B-812.5.4 TO THE MAXIMUM EXTENT FEASIBLE.
7. 11B-812.6 VEHICLE SPACES: VEHICLE SPACES SERVING VAN ACCESSIBLE, STANDARD ACCESSIBLE, AMBULATORY AND DRIVE-UP EVCS SHALL BE 216 INCHES LONG MINIMUM AND SHALL COMPLY WITH SECTIONS 11B-812.6.1 THROUGH 11B-812.6.4 AS APPLICABLE. ALL VEHICLE SPACES SHALL BE MARKED TO DEFINE THEIR WIDTH.
   EXCEPTIONS: WHERE THE LONG DIMENSION OF VEHICLE SPACES IS PARALLEL TO THE TRAFFIC FLOW IN THE ADJACENT VEHICULAR WAY, THE LENGTH OF VEHICLE SPACES SHALL BE 240 INCHES MINIMUM. VEHICLE SPACES AT DRIVE-UP EVCS SHALL BE 240 INCHES LONG MINIMUM AND SHALL NOT BE REQUIRED TO BE MARKED TO DEFINE THEIR WIDTH.
8. 11B-812.6.1 VAN ACCESSIBLE: VEHICLE SPACES SERVING VAN ACCESSIBLE EVCS SHALL BE 144 INCHES WIDE MINIMUM AND SHALL HAVE AN ADJACENT ACCESS AISLE COMPLYING WITH SECTION 11B-812.7.
9. 11B-812.6.2 STANDARD ACCESSIBLE: VEHICLE SPACES SERVING STANDARD ACCESSIBLE EVCS SHALL BE 108 INCHES WIDE MINIMUM AND SHALL HAVE AN ADJACENT ACCESS AISLE COMPLYING WITH SECTION 11B-812.7.
10. 11B-812.6.3 AMBULATORY: VEHICLE SPACES SERVING AMBULATORY EVCS SHALL BE 120 INCHES WIDE MINIMUM AND SHALL NOT BE REQUIRED TO HAVE AN ADJACENT ACCESS AISLE.
11. 11B-812.6.4 DRIVE-UP: VEHICLE SPACES SERVING DRIVE-UP EVCS SHALL BE 204 INCHES WIDE MINIMUM AND SHALL NOT BE REQUIRED TO HAVE AN ADJACENT ACCESS AISLE.
12. 11B-812.7 ACCESS AISLE: ACCESS AISLES SHALL ADJOIN AN ACCESSIBLE ROUTE. TWO VEHICLE SPACES SHALL BE PERMITTED TO SHARE A COMMON ACCESS AISLE. ACCESS AISLES SHALL BE 60 INCHES WIDE MINIMUM AND SHALL EXTEND THE FULL REQUIRED LENGTH OF HTE VEHICLE SPACES THEY SERVE.
13. 11B-812.7.1 LOCATION: ACCESS AISLES AT VEHICLE SPACES SHALL NOT OVERLAP THE VEHICULAR WAY AND MAY BE PLACED ON EITHER SIDE OF THE VEHICLE SPACE THEY SERVE EXCEPT FOR VAN ACCESSIBLE SPACES WHICH SHALL HAVE ACCESS AISLES LOCATED ON THE PASSENGER SIDE OF THE VEHICLE SPACES.
14. 11B-812.7.2 MARKING: ACCESS AISLES AT VEHICLE SPACES SHALL BE MARKED WITH A PAINTED BORDERLINE AROUND THEIR PERIMETER, THE AREA WITHIN THE BORDERLINES SHALL BE MARKED WITH HATCHED LINES A MAXIMUM OF 36 INCHES ON CENTER, THE COLOR OF THE BORDERLINES, HATCHED LINES AND LETTERS SHALL CONTRAST WITH THAT OF THE SURFACE OF THE ACCESS AISLE. THE BLUE COLOR REQUIRED FOR IDENTIFICATION OF ACCESS AISLES FOR ACCESSIBLE PARKING SHALL NOT BE USED. ACCESS AISLE MARKINGS MAY EXTEND BEYOND THE MINIMUM REQUIRED LENGTH.
15. 11B-812.7.3 LETTERING: THE WORDS "NO PARKING" SHALL BE PAINTED ON THE SURFACE WITHIN EACH ACCESS AISLE IN LETTERS A MINIMUM OF 12 INCHES IN HEIGHT AND LOCATED TO BE VISIBLE FROM THE ADJACENT VEHICULAR WAY.
16. 11B-812.8 IDENTIFICATION SIGNS: EVCS IDENTIFICATION SIGNS SHALL BE PROVIDED IN COMPLIANCE WITH SECTION 11B-812.8.
17. 11B-812.8.1 FOUR OR FEWER: WHERE FOUR OR FEWER TOTAL EVCS ARE PROVIDED, IDENTIFICATION WITH AN INTERNATIONAL SYMBOL OF ACCESSIBILITY (ISA) SHALL NOT BE REQUIRED.
18. 11B-812.8.2 FIVE TO TWENTY-FIVE: WHERE FIVE TO TWENTY-FIVE TOTAL EVCS ARE PROVIDED, ONE VAN ACCESSIBLE EVCS SHALL BE IDENTIFIED BY AN ISA COMPLYING WIHT SECTION 11B-703.7.2.1. THE REQUIRED STANDARD ACCESSIBLE EVCS SHALL NOT BE REQUIRED TO BE IDENTIFIED WITH AN ISA.
19. 11B-812.8.3 TWENTY-SIX OR MORE: WHERE TWENTY-SIX OR MORE TOTAL EVCS ARE PROVIDED, ALL REQUIRED VAN ACCESSIBLE AND ALL STANDARD ACCESSIBLE AVCS SHALL BE IDENTIFIED BY AN ISA COMPLYING WITH SECTION 11B-703.7.2.1.
20. 11B-812.8.4 AMBULATORY: AMBULATORY EVCS SHALL NOT BE REQUIRED TO BE IDENTIFIED BY AN ISA.
21. 11B-812.8.5 DRIVE-UP: DRIVE-UP EVCS SHALL NOT BE REQUIRED TO BE IDENTIFIED BY AN ISA.
22. 11B-812.8.7 FINISH AND SIZE: IDENTIFICATION SIGNS SHALL BE REFLECTORIZED WITH A MINIMUM AREA OF 70 SQUARE INCHES.
23. 11B-812.8.7 LOCATION: REQUIRED IDENTIFICATION SIGNS SHALL BE VISIBLE FROM THEEVCS IT SERVES. SIGNS SHALL BE PERMANENTLY POSTED EITHER IMMEDIATELY ADJACENT TO THE VEHICLE SPACE OR WITHIN THE PROJECTED VEHICLE SPACE WIDTH AT THE HEAD END OF THE VEHICLE SPACE. SIGNS IDENTIFYING VAN ACCESSIBLE VEHICLE SPACES SHALL CONTAIN THE DESIGNATION "VAN ACCESSIBLE". SIGNS SHALL BE 60 INCHES MINIMUM ABOVE THE FINISH FLOOR OR GROUND SURFACE MEASURED TO THE BOTTOM OF THE SIGN. SIGNS LOCATED WITHIN AN ACCESSIBLE ROUTE SHALL BE 80 INCHES MINIMUM ABOVE THE FINISH FLOOR OR GROUND SURFACE MEASURED TO THE BOTTOM OF THE SIGNS, SIGNS MAY ALSO BE PERMANENTLY POSTED ON A WALL AT THE INTERIOR END OF THE VEHICLE SPACE.
24. 11B-812.9 SURFACE MARKING: EVCS VEHICLE SPACES SHALL PROVIDE SURFACE MARKING STATING "EV CHARGING ONLY" IN LETTERS 12 INCHES HIGH MINIMUM. THE CENTERLINE OF THE TEXT SHALL BE A MAXIMUM OF 6 INCHES FROM THE CENTERLINE OF THE VEHICLE SPACE AND ITS LOWER CORNER AT, OR LOWER SIDE ALIGNED WITH THE END OF THE PARKING SPACE LENGTH.
25. 11B-812.10.1 ELECTRIC VEHICLE CHARGER GENERAL: EV CHARGERS SHALL COMPLY WITH SECTION 11B-812.10.
26. 11B-812.10.2 ELECTRIC VEHICLE CHARGER OPERABLE PARTS: OPERABLE PARTS AND CHARGING CORD STORAGE SHALL COMPLY WITH SECTION 11B-309.
27. 11B-812.10.3 ELECTRIC VEHICLE CHARGER POINT-OF-SALE DEVICES: WHERE PROVIDED, POINT-OF-SALE DEVICES SHALL COMPLY WITH SECTION 11B-707.2, 11B-707.3, 11B-707.7.2 AND 11B-707.9.
28. 11B-812.10.4 ELECTRIC VEHICLE CHARGER LOCATION: EV CHARGERS SHALL BE ADJACENT TO AND WITHIN THE PROJECTED WIDTH OF THE VEHICLE SPACE BEING SERVED.
   EXCEPTIONS: EV CHARGERS SERVING MORE THAN ONE EVCS SHALL BE ADJACENT TO AND WITHIN THE COMBINED PROJECTED WIDTH OF THE VEHICLE SPACES BEING SERVED. FOR ALTERATIONS AT EXISTING FACILITIES WHERE AN ACCESSIBLE ROUTE OR GENERAL CIRCULATION PATH IS NOT PROVIDED ADJACENT TO THE HEAD END OF THE VEHICLE OR ACCESS AISLE. THE EV CHARGER MAY BE LOCATED WITHIN THE PROJECTED WIDTH OF THE ACCESS AISLE 36 INCHES MAXIMUM FROM THE HEAD OF THE SPACE. WHERE THE LONG DIMENSION OF A VEHICLE SPACE IS PARALLEL TO THE VEHICULAR WAY, THE EV CHARGER SHALL BE ADJACENT TO AND 48 INCHES MAXIMUM FROM THE HEAD END OR FOOT END OF THE VEHICLE SPACE OR ACCESS AISLE BEING SERVED.



NOTE:
RAMPS ARE NOT TO ENCROACH INTO LOADING/UNLOADING ZONES, PARKING SPACE OR VEHICULAR TRAFFIC LANE

EV CHARGING PARKING

02-AA-25
N.T.S.

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DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

STERN ARCHITECTS
2961 W. MacArthur Blvd.
Suite 120
Santa Ana, California 92704
t. (714) 556-2656
f. (714) 556-2696

LICENSED ARCHITECT
JAMES LOUIS STERN
NO. C16792
REN. 4-30-21
STATE OF CALIFORNIA

MARK	DATE	BY	REVISIONS

Sht Title ACCESSIBILITY NOTES + DETAIL - EVCS

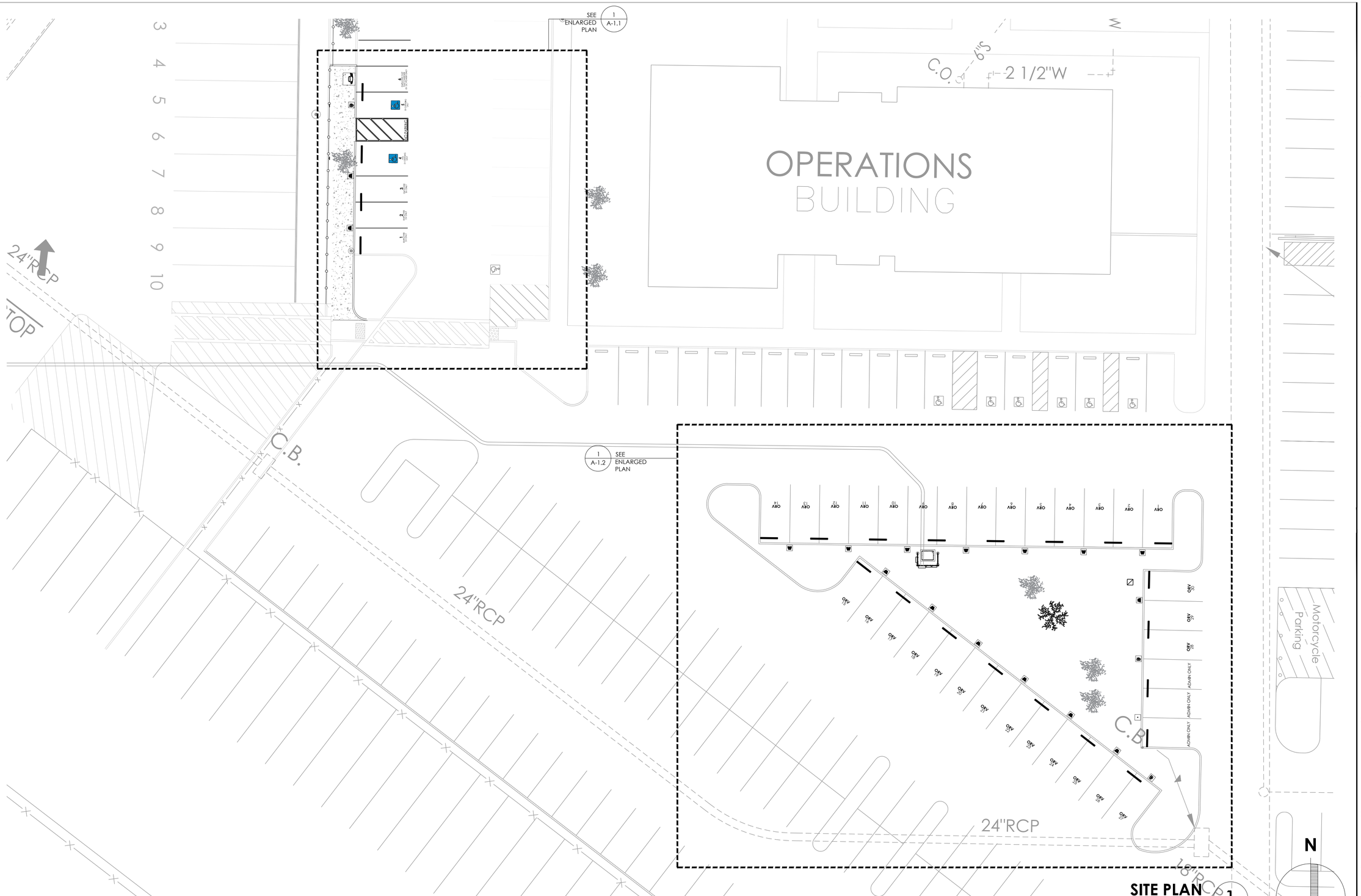
Project OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	SHS
DRAWN BY:	SHS
CHECKED BY:	QV
DATE	02-12-2020
SCALE	AS NOTED
SHEET	A-0.6

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET



SITE PLAN 1
1/16" = 1'-0"

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

STERN ARCHITECTS
2961 W. MacArthur Blvd.
Suite 120
Santa Ana, California 92704
t. (714) 556-2656
f. (714) 556-2696

LICENSED ARCHITECT
JAMES LOUIS STERN
NO. C16792
REN. 4-30-21
STATE OF CALIFORNIA

MARK	DATE	BY	REVISIONS

Sht Title SITE PLAN

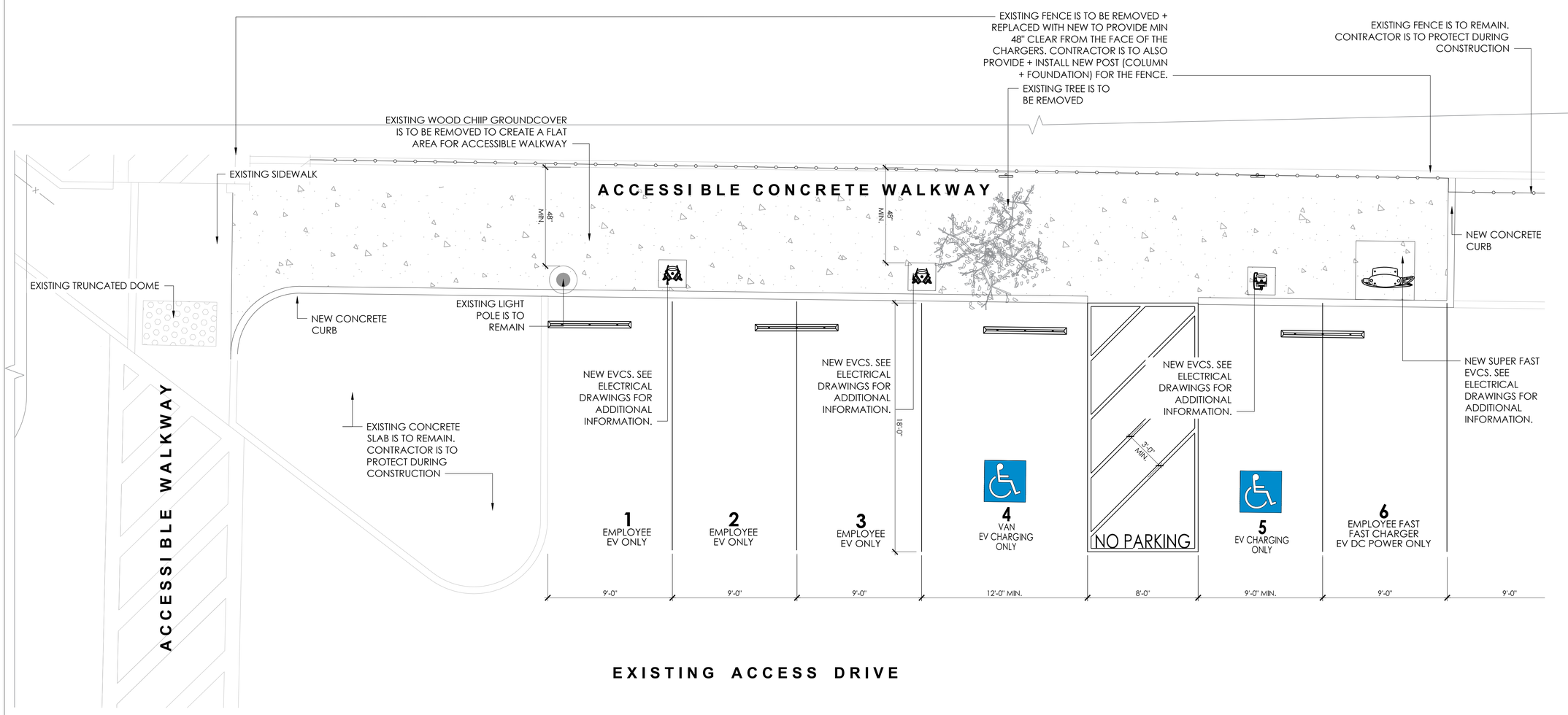
Project OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	SHS
DRAWN BY:	SHS
CHECKED BY:	QV
DATE	02-12-2020
SCALE	AS NOTED
SHEET	A-1.0

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET



ENLARGED SITE PLAN

1/16" = 1'-0"

1

N

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

STERN ARCHITECTS
2961 W. MacArthur Blvd.
Suite 120
Santa Ana, California 92704
t. (714) 556-2656
f. (714) 556-2696

LICENSED ARCHITECT
JAMES LOUIS STERN
NO. C16792
REN. 4-30-21
STATE OF CALIFORNIA

MARK	DATE	BY	REVISIONS

Sht Title: ENLARGED SITE PLAN

Project: OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

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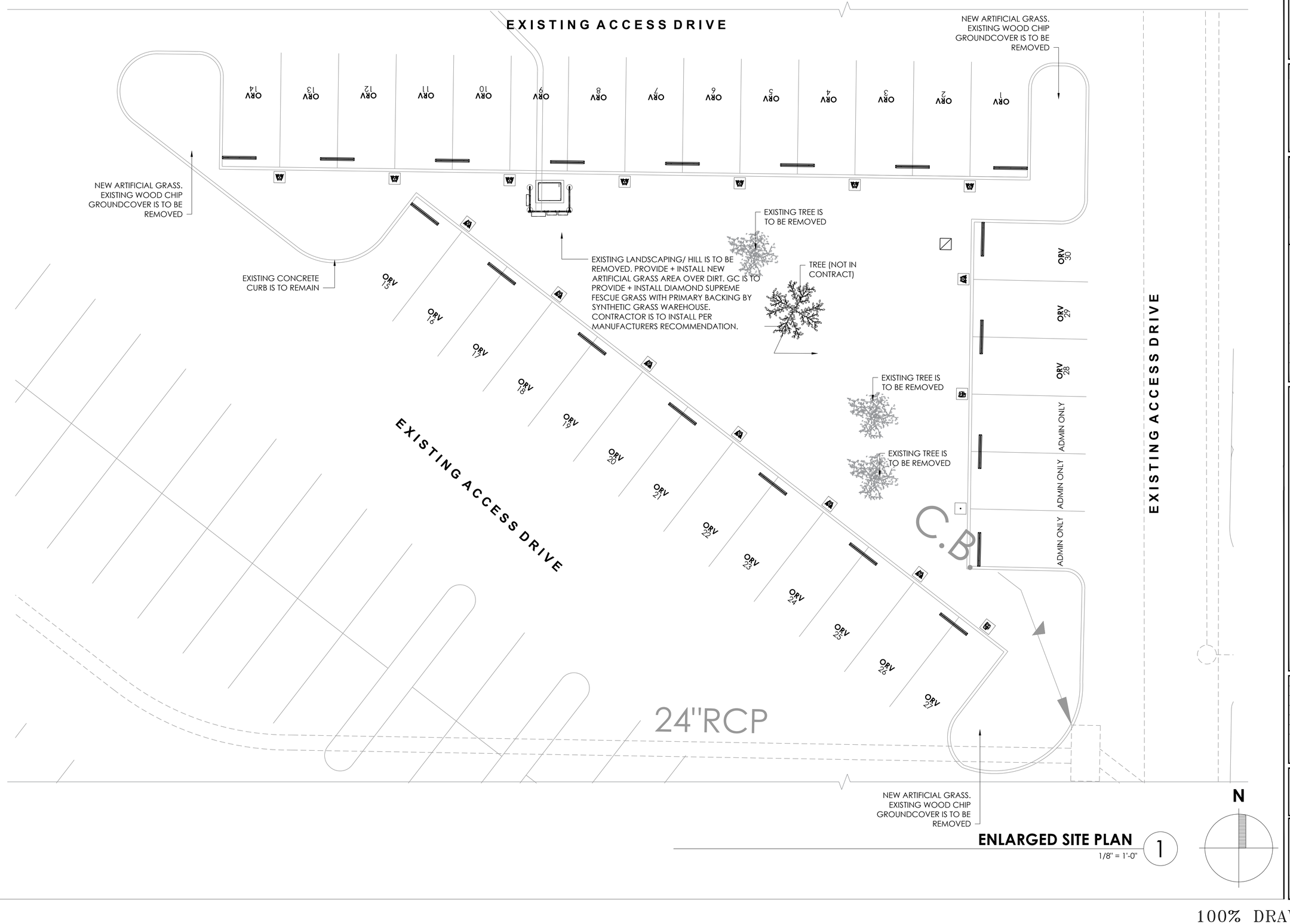

ENLARGED SITE PLAN

1/8" = 1'-0"

1

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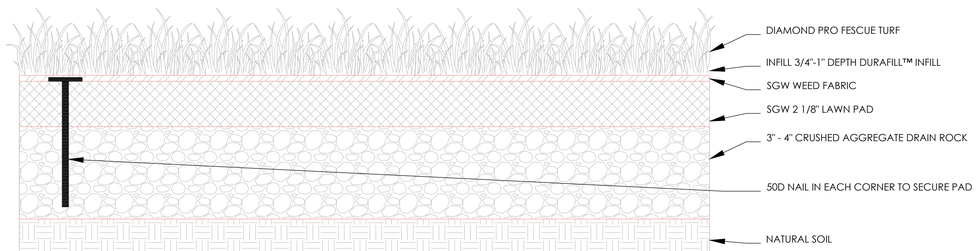


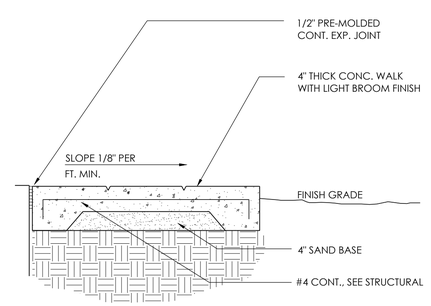
INSTALLATION WITH PAD

SPECIFICATIONS:
BRAND: TIGER EXPRESS
MODEL: DIAMOND PRO FESCUE
RECOMMENDED USE: MODERATE TO HEAVY TRAFFIC
YARN COLORS: FIELD GREEN / OLIVE GREEN, BROWN THATCH
YARN TYPE: MONOFILAMENT

YARN COMPOSITION: PE WITH THATCH
THATCH COLOR: BROWN
YARN DENIER: 10800 / 5000
FACE WEIGHT: APPROX. 75 OZ/YD
TOTAL WEIGHT: 102 OZ/YD
PILE HEIGHT: APPROX. 1 7/8"

GAUGE: 3/8"
ROLL WIDTH: 15'
ROLL LENGTH: 100'
ROLL WEIGHT: 1209 LB
RECOMMENDED INFILL: 1.5 ~ 2.5 LBS/S.F.
WEIGHT/SQ.FT: 0.81 LB

NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWING.
3. THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.
4. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
5. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info AND ENTER REFERENCE NUMBER 5028-002.



SYNTHETIC GRASS WAREHOUSE		NTS	2	**TYP. WALKWAY**	01-ABD-01 1" = 1'-0"	1

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GENERAL NOTES

1. THE ELECTRICAL DRAWINGS, SPECIFICATIONS AND GENERAL NOTES DESCRIBE THE SCOPE OF WORK; CONSTRUCTION DOCUMENTS ARE TO BE USED FOR THE PURPOSE OF BIDDING, BUILDING DEPARTMENT REVIEW, AND TO SECURE THE NECESSARY CONSTRUCTION PERMIT. ALL EQUIPMENT SHOWN IS NEW, CONTRACTOR FURNISHED AND INSTALLED, UNLESS NOTED OTHERWISE (U.N.O.).

2. THE CONTRACTOR SHALL VERIFY THE INPUT VOLTAGE AND AMPERAGE (HORSEPOWER) RATING OF ALL EQUIPMENT PRIOR TO INSTALLATION, AND NOTIFY THE ENGINEER FOR DIRECTION PRIOR TO PROCEEDING.

3. PROVIDE AN ADDITIONAL JUNCTION BOX (SIZE AS REQUIRED) WHERE THE NUMBER OF CONDUCTORS EXCEEDS THE MAXIMUM ALLOWED FOR A GIVEN JUNCTION POINT OR OUTLET.

4. ELECTRICAL CONTRACTOR SHALL PROVIDE CONSTRUCTION AND SHOP DRAWINGS FOR APPROVAL BY THE OWNER BASED ON THESE DRAWINGS, SPECIFICATIONS AND ADDITIONAL DESIGN CRITERIA FURNISHED BY OWNER.

5. CONTRACTOR'S BID SHALL INCLUDE ALL PREMIUM OVERTIME COSTS, UTILITY CHARGES, COST FOR TEMPORARY UTILITY SERVICES, ALTERATION, DEMOLITION AND EXTENSION WORK, PLANCHECK/INSPECTION FEES, MISCELLANEOUS CONTINGENCY COSTS, ETC.

6. IF CONTRACTOR PROPOSES TO SUBSTITUTE FOR EQUIPMENT SPECIFIED, CONTRACTOR SHALL SUBMIT A REQUEST FOR CONSIDERATION TO THE OWNER AND ENGINEER IN WRITING PRIOR TO COMMENCEMENT OF WORK. ALL SUBSTITUTIONS MUST BE SUBMITTED TO THE ENGINEER FOR HIS REVIEW AND APPROVAL. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR FROM COMPLYING WITH THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE AT HIS OWN EXPENSE FOR ANY CHANGES RESULTING FROM HIS PROPOSED SUBSTITUTIONS WHICH AFFECT OTHER PARTS OF HIS OWN WORK OR THE WORK OF OTHER CONTRACTORS.

7. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY. DO NOT SCALE THE ELECTRICAL DRAWINGS TO DETERMINE THE LOCATION OF EQUIPMENT OR OUTLETS. COMPLY WITH ALL THE CLEARANCES AND MOUNTING HEIGHT REQUIREMENTS. ROUTE CONDUITS PER FIELD CONDITIONS, PREVENTING CONFLICTS WITH STRUCTURAL ELEMENTS AND EXISTING EQUIPMENT AND UTILITIES. COMPLY WITH THE NATIONAL ELECTRICAL CODE.

8. ALL FINAL CONNECTIONS TO FURNISHED EQUIPMENT SHALL BE MADE BY THE CONTRACTOR UNLESS OTHERWISE NOTED. VERIFY ELECTRICAL CHARACTERISTICS AND U.L. LISTING PRIOR TO CONNECTION.

9. SEAL ALL PENETRATIONS THROUGH FIRE RATED WALLS, CEILINGS, FLOORS, ETC., TO MAINTAIN THE EXISTING FIRE RATING. FURNISH AND INSTALL FIRE RATED ENCLOSURE FOR ALL EQUIPMENT PENETRATING INTO FIRE RATED ENVELOPES, SPACES, ETC. PER NEC 300-21.

10. ELECTRICAL OUTLETS ON OPPOSITE SIDES OF FIRE RATED WALLS AND PARTITIONS MUST BE SEPARATED BY A DISTANCE OF 24 INCHES HORIZONTAL. OPENINGS IN FIRE RATED WALLS MUST BE FIRE STOPPED.

11. CONDUCTORS SHALL BE COPPER XHHW/XHWW-2 600 VOLT INSULATION, UNLESS NOTED. USE PROPER TEMPERATURE RATING OF CONDUCTORS BASED ON THE AMBIENT AIR TEMPERATURE WHERE CONDUCTORS ARE LOCATED. HIGHER AMPACITY CONDUCTORS AND LARGER RACEWAY SHALL BE PROVIDED AS REQUIRED TO MEET THE AMPACITY CORRECTION FACTORS AS INDICATED IN NEC TABLE 310 AND ELSEWHERE IN CODE.

12. THE SEISMIC BRACING AND ANCHORAGE OF ELECTRICAL CONDUITS, BUS DUCTS, WIREWAYS AND CABLE TRAYS SHALL BE IN ACCORDANCE WITH THE "GUIDELINE FOR SEISMIC RESTRAINS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS" PUBLISHED BY SMACNA LATEST VERSION.

13. WHERE BRACING AND ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS OR IN THE GUIDELINE, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE PROJECT ENGINEER. ALL EQUIPMENT ANCHORAGE SHALL BE DESIGNED PER 2019 CBC & ASCE 7-05 FORMULA 13.3-1, 13.3-2, AND 13.3-3.

14. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL SURVEY THE ENTIRE PROJECT SITE AND BECOME THOROUGHLY FAMILIAR WITH ACTUAL EXISTING CONDITIONS. THE INTENT OF THE WORK IS SHOWN ON THE DRAWINGS AND DESCRIBED HEREIN. THE CONTRACTOR SHALL BE DEEMED TO HAVE MADE SUCH A STUDY AND EXAMINATION AND TO ACCEPT ALL CONDITIONS PRESENT AT THE SITE. NO REQUEST FOR ADDITIONAL PAYMENT SHALL BE CONSIDERED VALID, DUE TO CONTRACTOR FAILURE TO ALLOW IN COST ESTIMATE FOR CONDITIONS WHICH MAY EXIST.

15. EXISTING CONDITIONS SHOWN ARE FROM AVAILABLE RECORD DRAWINGS AND VISUAL FIELD SURVEYS AND SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY ACTUAL EXISTING CONDITIONS AT SITE PRIOR TO STARTING WORK.

16. ALL ELECTRICAL WORK SHALL BE PERFORMED PER NEC, UTILIZING THE CODE ISSUED IN FORCE AT THE LOCATION OF THE CONSTRUCTION SITE. ELECTRICAL WORK SHALL COMPLY WITH ALL APPLICABLE CURRENT BASE CODES AND REGULATIONS.

17. ALL ELECTRICAL EQUIPMENT UTILIZED AT THIS PROJECT SHALL BE U.L. LABELED OR U.L. LISTED.

18. INSTALL ALL WIRING IN CONDUITS.

19. ALL ELECTRICAL PANEL BOARD BUSES SHALL BE COPPER.

20. ALL ELECTRICAL DEVICES AND EQUIPMENT MOUNTED ON THE EXTERIOR OF THE BUILDING OR EXPOSED TO WEATHER SHALL BE NEMA 3R WEATHERPROOF TYPE.

21. CONSTRUCTION WORK SHALL BE DONE IN A MANNER WHICH WILL NOT CAUSE INCONVENIENCE OR DANGER TO USERS OF THE PREMISES AND ADJACENT AREAS AND NOT INTERFERE WITH THEIR WORK. ANY CONSTRUCTION WORK TO BE PERFORMED MUST BE PLANNED IN ADVANCE. SCHEDULING SHALL BE DONE IN COOPERATION WITH AUTHORIZED ISD'S PROJECT MANAGER, WHO WILL BE AVAILABLE BEFORE AND DURING THE PERFORMANCE OF THE WORK. INCLUDE ALL PREMIUM TIME CHARGES IN BID TO COVER THE AFTER-HOURS AND WEEKEND WORK.

22. DO ALL DRILLING, CUTTING, CHANNELING AND PATCHING REQUIRED TO INSTALL ELECTRICAL WORK AS INDICATED OR HEREIN SPECIFIED. ALL HOLES, CURBS, ETC., IN FLOORS, CEILINGS AND WALLS SHALL BE PATCHED, UNLESS INDICATED OTHERWISE. PAINT ALL NEW EXPOSED ELECTRICAL RACEWAYS, CABINETS, ENCLOSURES AND FITTINGS TO MATCH THE COLOR OF ADJACENT SURFACES IN FINISHED AREAS.

ABBREVIATIONS

A	AMPERE
AC	AIR CONDITIONING
AF	AMPERE FUSE OR AMP FRAME
AFC	AVAILABLE FAULT CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERES INTERRUPTING CAPACITY (SYMMETRICAL)
ALT	ALTERNATE
ARCH	ARCHITECTURAL
AS	AMPERE SWITCH
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BCC	BARE COPPER CONDUCTOR
BD	BOARD
BFG	BELOW FINISHING GRADE
BKBD.	BACKBOARD
BLDG.	BUILDING
C	CONDUIT
CAT	CATALOG
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CEC	CALIFORNIA ELECTRICAL CODE
CL	CURRENT LIMITING
CLF	CURRENT LIMITING FUSES
CLG	CEILING
CLK	CLOCK
C.O.	CONDUIT ONLY
COMM.	COMMUNICATION
CONT.	CONTINUATION
CT	CURRENT TRANSFORMER
CTC	COMMUNICATION TERMINAL CABINET
CTRL	CONTROL
CU	COPPER
CW	COLD WATER
DB	DECIBEL
DC	DIRECT CURRENT
DE	DUAL ELEMENT
DEF	DUAL ELEMENT SWITCH
DISC. SW.	DISCONNECT SWITCH
DN	DOWN
DP	DEPTH
DPP	DISTRIBUTION POWER PANEL
DWG.	DRAWING
(E)	EXISTING
EA	EACH
E.C.	EMPTY CONDUIT
EF	EXHAUST FAN
ELECT.	ELECTRICAL
ELEV	ELEVATION
EMAC	ENERGY MANAGEMENT AND CONTROL
EMRG.	EMERGENCY
EMS	ENERGY MANAGEMENT AND ENVIRONMENTAL CONTROL SYSTEM
EMT	ELECTRICAL METALLIC TUBING
EN	EXISTING AT NEW LOCATION
EQPT.	EQUIPMENT
EXIST.	EXISTING
EXT	EXTERIOR
F	FUSE
FA	FIRE ALARM, FORCED AIR
FACP	FIRE ALARM CONTROL PANEL
FAU	FURNACE
FBO	FURNISHED BY OTHERS
FD	FIRE DEPARTMENT
FDR	FEEDER
FL	FLOOR
FLA	FULL LOAD AMPERES
FOC	FLOOR MATERIAL CHANGE
FOS	FACE OF STUD
FS	FUSIBLE SWITCH
FT.	FOOT/FEET
G	GROUND
GA	GAUGE
GFI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GND	GROUND
GSA	GENERAL SERVICES AGENCY
H	HOOD (KITCHEN)
HD	HEAVY DUTY
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
HW	HOT WATER
HZ	HERTZ
IC	INTERCOM
IG	ISOLATED GROUND
IMC	INTERMEDIATE METALLIC CONDUIT
INC	INCANDESCENT
J-BOX	JUNCTION BOX
KVA	KILOVOLT AMPERES
KW	KILOWATT
LA	LIGHTING ARRESTOR
LCL	LONG CONTINUOUS LOAD
L.O.	LUGS ONLY
LTG.	LIGHTING
MCB	MAIN CIRCUIT BREAKER
MCC	THOUSAND CIRCULAR MIL(S)
MECH	MECHANICAL
MH	MANHOLE OR MOUNTING HEIGHT
	NEUTRAL, OR METAL HALIDE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MOD	MOTOR OPERATED DAMPER
MTD	MOUNTED
MTG	MOUNTING
N	NEUTRAL
(N)	NEW
NA	NON-AUTOMATIC
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
N.I.C.	NOT IN CONTRACT
NL	NIGHT LIGHT
N.O.	NORMALLY OPEN
NTS	NOT TO SCALE
O.C.	ON CENTER
OD	OUTSIDE DIAMETER
OL	OVER LOAD
P	POLE
PB	PULLBOX
P/B	PUSH BUTTON
PH	PHASE
PL	PHILIPS FLUORESCENT LAMPS
PIV	POST INDICATING VALVE
PNL	PANEL
POC	POINT OF CONNECTION
PP	POWER PANEL
PR	PAIR
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
PVS	PHOTO VOLTAIC SYSTEM
PWR	POWER
R	EXISTING TO BE RELOCATED
RECEPT.	RECEPTACLE
REQ'D	REQUIRED
REQMT'S	REQUIREMENTS
RF	RETURN FAN
RGS	RIGID GALVANIZED STEEL
RLA	RUNNING LOAD AMPS
RM.	ROOM
RMS	ROOT-MEAN-SQUARE
RR	REMOVE AND RELOCATE
RSC	RIGID STEEL CONDUIT
SEC	SECURITY
SF	SQUARE FEET
SHT.	SHEET
SP	SINGLE POLE
ST	SINGLE THROW
STA	STATION
SURF	SURFACE
SW.	SWITCH
TCL	TOTAL CONNECTED LOAD
TD	TIME DELAY
TEL	TELEPHONE
TEMP	TEMPORARY
TTB	TELEPHONE TERMINAL BOARD
TV	TELEVISION
TYP.	TYPICAL
UE	UNDERGROUND ELECTRICAL
UG	UNDERGROUND
U.L.	UNDERWRITERS LABORATORIES
U.O.N.	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTED POWER SUPPLY
UT	UNDERGROUND TELEPHONE
V	VOLT
VA	VOLTAMP(S)
VAR	VARIABLE
VL	VERIFY LOCATION
VISCO	VALLEY IRON STEEL CO.
W	WATTS OR WIRE
W/	WITH
WH	WATER HEATE
W/O	WITHOUT
WP	WEATHERPROOF
X	EXISTING TO BE REMOVED
XFMR	TRANSFORMER
+12"	HEIGHT FROM FINISHED FLOOR TO CENTER LINE OF DEVICE
1P, 2P	SINGLE OR DOUBLE POLE
ø	PHASE PROVIDE FURNISH & INSTALL

SYMBOLS LEGEND

- PANEL BOARD
- (E) RECESSED MOUNTED BRANCH CIRCUIT PANEL BOARD
- (E) SURFACE MOUNTED BRANCH CIRCUIT PANEL BOARD
- (N) SURFACE MOUNTED BRANCH CIRCUIT PANEL BOARD
- (N) RECESSED MOUNTED BRANCH CIRCUIT PANEL BOARD
- WP WEATHERPROOF
- A-4 HOMERUN TO PANEL "A", CIRCUIT 4
- CONDUIT CONCEALED IN WALL OR CEILING
- CONDUIT BELOW FLOOR OR GRADE, OR IN SLAB
- CONDUIT EXPOSED
- WIREMOLD
- CONDUIT EXPOSED
- 3/4"C-2#12, 1#12N, 1#12G
- 3/4"C-3#12, 1#12N, 1#12G
- CONDUIT STUBBED AND CAPPED
- CONDUIT RUNNING UP
- CONDUIT RUNNING DOWN
- WEATHERTIGHT FLEX CONDUIT TO EQUIPMENT
- CONDUIT, FLEXIBLE WITH WIRING AS INDICATED
- PULLBOX, SIZE AS SHOWN ON PLAN
- (M) METER
- (G) GENERATOR
- CONTACTOR
- OVERLOAD RELAY
- GROUND
- (5) ELECTRICAL MOTOR OR EXHAUST FAN (5 HORSEPOWER)
- TRANSFORMER
- (T) THERMOSTAT
- PHOTOCELL
- WALL MOUNTED COMBINATION DATA TELEPHONE OUTLET AT +15" U.O.N
- WALL MOUNTED TELEPHONE OUTLET AT +15" U.O.N
- PROVIDE FLEXIBLE FINAL CONNECTION. LIQUID TIGHT FOR EXTERIOR OR DAMP LOCATIONS.
- S SINGLE POLE SWITCH. +48" AFF. UNLESS OTHERWISE NOTED
- S^3 THREE WAY SWITCH. +48" AFF. UNLESS OTHERWISE NOTED
- Sab SUB-LETTERS AT SWITCH IDENTIFIED SWITCH LEG
- Sm MOTOR RATED SWITCH
- S^8 NEW WALL SWITCH OCCUPANCY SENSOR. +48" AFF. UNLESS OTHERWISE NOTED. LEVITON OSSMT-MDA OR APPROVE EQUAL.
- DUPLEX RECEPTACLE. +26"AFF., U.O.N 1 = CIRCUIT NUMBER
- DOUBLE DUPLEX RECEPTACLE. +26"AFF., U.O.N 1 = CIRCUIT NUMBER
- WP GFI DUPLEX RECEPTACLE. WEATHERPROOF, GROUND FAULT CIRCUIT INTERRUPTER. +15" AFF UON. 1 = CIRCUIT NUMBER
- 208/230V RECEPTACLE. +26"AFF., U.O.N 1 = CIRCUIT NUMBER
- 250V RECEPTACLE. +26"AFF., U.O.N 1 = CIRCUIT NUMBER
- 480V RECEPTACLE. +15"AFF., U.O.N 1 = CIRCUIT NUMBER
- SWITCHED DUPLEX RECEPTACLE
- SPECIAL RECEPTACLE. SIZE AS NOTED.
- DUPLEX-RECEPTACLE IN NON-METALLIC BOX WITH STAINLESS STEEL COVER IN CONCRETE (MANUFACTURE: CARLON, ROUND FLOOR BOX MODEL #E971FB, TWO-DOOR COVER MODEL #E97SS2).
- (1) NOTE REFERENCE CALL OUT
- LIGHT LINE WEIGHT INDICATES EXISTING TO REMAIN
- HEAVY THICK LINE INDICATES NEW WORK
- DASHED LINE INDICATES DEMOLITION

- (E) INDICATES EXISTING
- (N) INDICATES NEW
- A/22 LIGHT FIXTURE CALL-OUT. TOP NUMBER: IDENTIFICATION NUMBER. BOTTOM NUMBER: INPUT WATTAGE.
- NON-FUSED DISCONNECT SWITCH
- F FUSED DISCONNECT SWITCH, FUSED PER EQUIPMENT MANUFACTURER'S NAMEPLATE RATING
- 1 MOTOR STARTER, NEMA SIZE AS INDICATED.
- 1 MOTOR STARTER WITH O.L. PROTECTION, H.O.A SWITCH A RED PILOT LIGHT, AUXILARY CONTACTS AND L.V. TRANSFORMER, PROVIDE NAMEPLATES. NUMBER ADJACENT INDICATES STARTER SIZE.
- COMBINATION MOTOR STARTER WITH THERMAL/MAGNETIC C/B AND ELECTRONIC OVERLOAD RELAYS
- MOLDED CASE CIRCUIT BREAKER SIZE AS INDICATED ON SINGLE LINE DIAGRAM.
- 100AS 90AFU FUSED SWITCH. "AS" INDICATES AMPERE SWITCH RATING, "AFU" AMPERE FUSE RATING, NUMBER OF POLES AS INDICATED.
- SWITCH
- (M) UTILITY METER SOCKET, WITH C.T.S, CLIPS, ETC., PER SERVING UTILITY COMPANY.
- NEW CEILING-MOUNT DAYLIGHT SENSOR. WATT STOPPER MODEL # LS-101 OR APPROVED EQUAL.
- (J) JUNCTION BOX, CEILING MOUNTED OR WALL MOUNTED
- S^t NEW WALL TIMER SWITCH. +48" AFF. UNLESS OTHERWISE NOTED. LEVITON 6124H OR APPROVE EQUAL.
- S_M NEW MOTOR RATED SNAP SWITCH
- A-012 NEW LIGHTING FIXTURE A=PANEL NAME 01=CIRCUIT NUMBER 2=TIMER SWITCH CONTROLING FIXTURE
- A-0123 NEW LIGHTING FIXTURE A=PANEL NAME 01=CIRCUIT NUMBER 2=TIMER SWITCH CONTROLING FIXTURE 3=DAYLIGHT SENSOR CONTROLING FIXTURE
- A-01 NEW FLUORESCENT LIGHTING FIXTURE A=PANEL NAME 01=CIRCUIT NUMBER
- P/1 MECHANICAL EQUIPMENT CALL OUT, SEE MECHANICAL DRAWINGS FOR FULL RATING

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Sheet Title: ELECTRICAL ABBREVIATIONS, SYMBOLS AND NOTES

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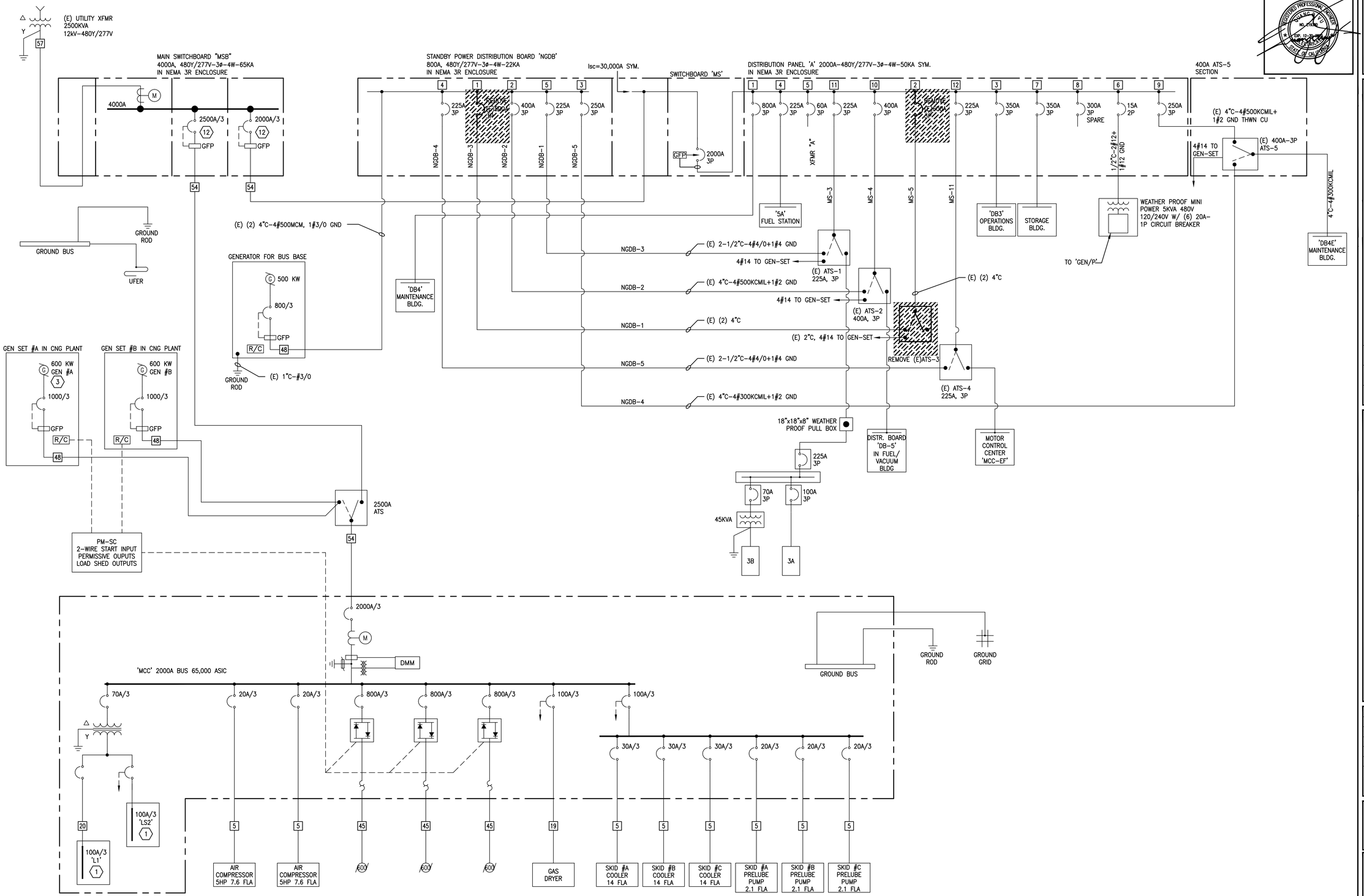

DEMOLITION SINGLE LINE DIAGRAM

SCALE NONE 1

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REVISIONS

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Sheet Title: DEMOLITION SINGLE LINE DIAGRAM

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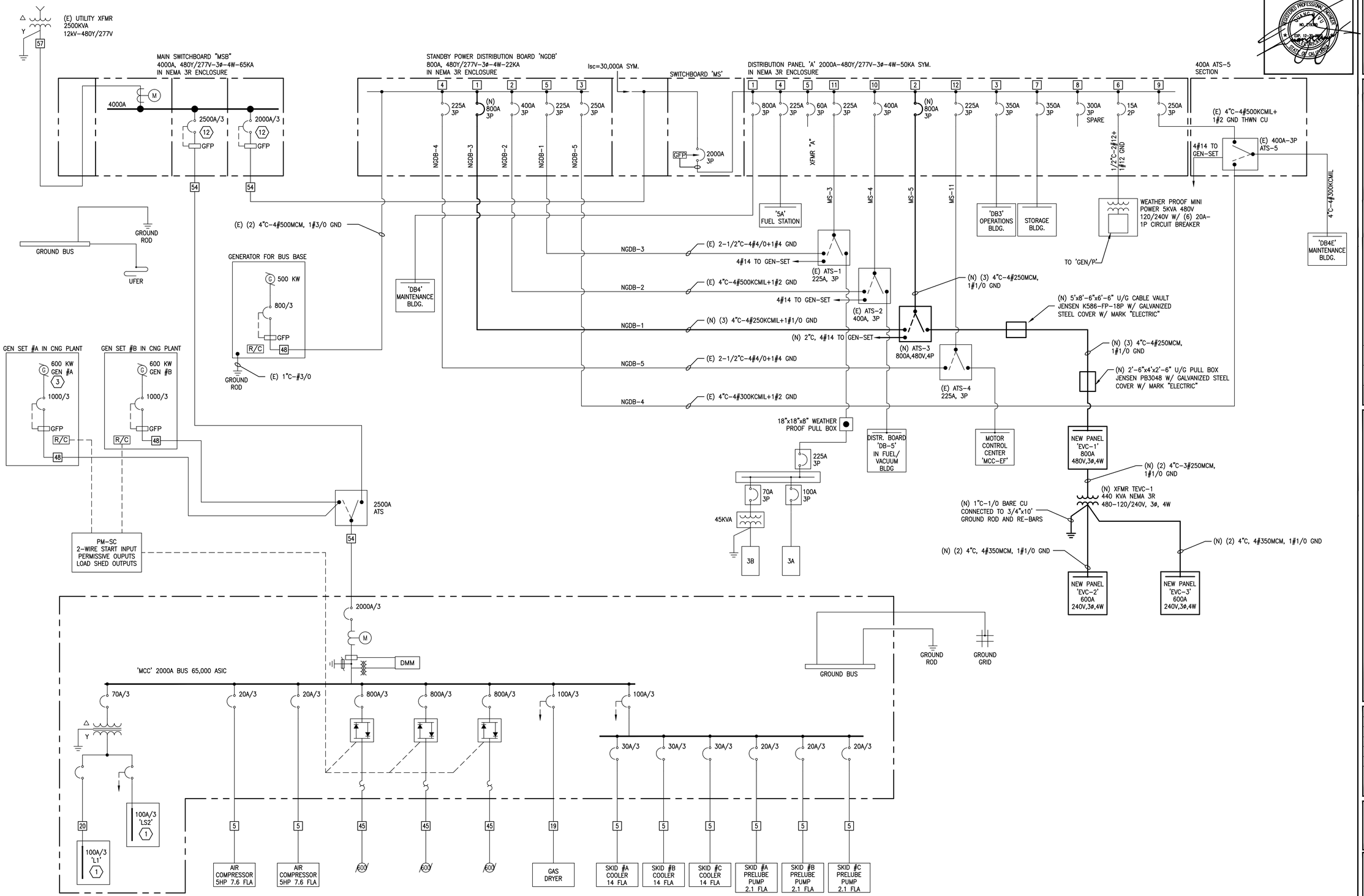

MODIFIED SINGLE LINE DIAGRAM

SCALE NONE

1

100% DRAWING SET

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254–8016
qvr@dahltaylor.com

MARK	DATE	BY	REVISIONS

Sheet Title: MODIFIED SINGLE LINE DIAGRAM

Project: OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02–13–2020
SCALE	AS NOTED
SHEET	GG-E-3

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

PANELBOARD NAME: PANEL 'EVC-1'																	
MOUNTING: SURFACE	OVERSIZED NEUTRAL BUS: NO.	SPECIAL ENCLOSURE: NEMA 3R ENCLOSURE															
BUS: 800 A COPPER	VOLTAGE: 277/480 VOLTS, 3-Ph, 4-W	MAIN (Amps): 800 / 3 P	KAIC 35	TOP OR BOTTOM FEED: BOTTOM													
LOCATION	FED FORM:																
DESCRIPTION	LOAD VA A	LOAD VA B	LOAD VA C	CONT.	QT'Y	BRKR TRIP	BRKR P	CKT REF	CKT REF	BRKR P	BRKR TRIP	QT'Y	CONT.	LOAD VA A	LOAD VA B	LOAD VA C	DESCRIPTION
EVC-1	10420			–	–	100	3	1	2	3	500	–	–	138500			TRANSFORMER TEVC-1
EVC-1		10420		–	–	100	"	3	4	"	500	–	–		138500		TRANSFORMER TEVC-1
EVC-1			10420	–	–	100	"	5	6	"	500	–	–			138500	TRANSFORMER TEVC-1
–	–			–	–	–	–	7	8	–	–	–	–	–			–
–		–		–	–	–	–	9	10	–	–	–	–		–		–
–			–	–	–	–	–	11	12	–	–	–	–			–	–
–	–			–	–	–	–	13	14	–	–	–	–	–			–
–		–		–	–	–	–	15	16	–	–	–	–		–		–
–			–	–	–	–	–	17	18	–	–	–	–			–	–
PARTITAL TOTAL	10420	10420	10420											138500	138500	138500	PARTIAL TOTALS
TOTAL CONNECTED/PHASE	148920	148920	148920														
TOTAL CONNECTED VA = TOTAL VA + 0.25 x CONT. VA =	446,760	+	111,690	=	558,450 VA									AVERAGE AMPS/PH	=	672 A	

PANELBOARD NAME: PANEL 'EVC-2'																	
MOUNTING: SURFACE	OVERSIZED NEUTRAL BUS: NO.	SPECIAL ENCLOSURE: NEMA 3R ENCLOSURE															
BUS: 600 A COPPER	VOLTAGE: 120/240 VOLTS, 3-Ph, 4-W	MAIN (Amps): 600 / 3 P	KAIC 65	TOP OR BOTTOM FEED: BOTTOM													
LOCATION	FED FORM:																
DESCRIPTION	LOAD VA A	LOAD VA B	LOAD VA C	CONT.	QT'Y	BRKR TRIP	BRKR P	CKT REF	CKT REF	BRKR P	BRKR TRIP	QT'Y	CONT.	LOAD VA A	LOAD VA B	LOAD VA C	DESCRIPTION
EVC-2-1	3850				–	40	–	1	2	–	40	–	–	3850			EVC-3A-1
EVC-2-1		3850			–	40	–	3	4	–	40	–	–		3850		EVC-3A-1
EVC-3A-2			3850		–	40	–	5	6	–	40	–	–			3850	EVC-3B-1
EVC-3A-2	3850				–	40	–	7	8	–	40	–	–	3850			EVC-3B-1
EVC-3B-2		3850			–	40	–	9	10	–	40	–			3850		EVC-2-2
EVC-3B-2			3850		–	40	–	11	12	–	40	–				3850	EVC-2-2
EVC-3A-3	3850				–	40	–	13	14	–	40	–		3850			EVC-3A-4
EVC-3A-3		3850			–	40	–	15	16	–	40	–			3850		EVC-3A-4
EVC-3B-3			3850		–	40	–	17	18	–	40	–				3850	EVC-3B-4
EVC-3B-3	3850				–	40	–	19	20	–	40	–		3850			EVC-3B-4
EVC-3A-5		3850			–	40	–	21	22	–	40	–			3850		EVC-3A-6
EVC-3A-5			3850		–	40	–	23	24	–	40	–				3850	EVC-3A-6
EVC-3B-5	3850				–	40	–	25	26	–	40	–		3850			EVC-3B-6
EVC-3B-5		3850			–	40	–	27	28	–	40	–			3850		EVC-3B-6
EVC-3A-7			3850		–	40	–	29	30	–	40	–				3850	EVC-3A-8
EVC-3A-7	3850				–	40	–	31	32	–	40	–		3850			EVC-3A-8
EVC-3B-7		3850			–	40	–	33	34	–	40	–			3850		EVC-3B-8
EVC-3B-7			3850		–	40	–	35	36	–	40	–				3850	EVC-3B-8
–	–				–	40	–	37	38	–	40	–		–			–
–		–			–	40	–	39	40	–	40	–			–		–
–			–		–	40	–	41	42	–	40	–				–	–
PARTITAL TOTAL	23100	23100	23100											23100	23100	23100	PARTIAL TOTALS
TOTAL CONNECTED/PHASE	46200	46200	46200														
TOTAL CONNECTED VA = TOTAL VA + 0.25 x CONT. VA =	138,600	+	34,650	=	173,250 VA									AVERAGE AMPS/PH	=	481.25 A	

PANELBOARD NAME: PANEL 'EVC-3'																	
MOUNTING: SURFACE	OVERSIZED NEUTRAL BUS: NO.	SPECIAL ENCLOSURE: NEMA 3R ENCLOSURE															
BUS: 600 A COPPER	VOLTAGE: 120/240 VOLTS, 3-Ph, 4-W	MAIN (Amps): 600 / 3 P	KAIC 65	TOP OR BOTTOM FEED: BOTTOM													
LOCATION	FED FORM:																
DESCRIPTION	LOAD VA A	LOAD VA B	LOAD VA C	CONT.	QT'Y	BRKR TRIP	BRKR P	CKT REF	CKT REF	BRKR P	BRKR TRIP	QT'Y	CONT.	LOAD VA A	LOAD VA B	LOAD VA C	DESCRIPTION
EVC-3A-9	3850				–	40	–	1	2	–	40	–	X	3850			EVC-3A-10
EVC-3A-9		3850			–	40	–	3	4	–	40	–	X		3850		EVC-3A-10
EVC-3B-9			3850		–	40	–	5	6	–	40	–	X			3850	EVC-3B-10
EVC-3B-9	3850				–	40	–	7	8	–	40	–	X	3850			EVC-3B-10
EVC-3A-11		3850			–	40	–	9	10	–	40	–			3850		EVC-3A-12
EVC-3A-11			3850		–	40	–	11	12	–	40	–				3850	EVC-3A-12
EVC-3B-11	3850				–	40	–	13	14	–	40	–		3850			EVC-3B-12
EVC-3B-11		3850			–	40	–	15	16	–	40	–			3850		EVC-3B-12
EVC-3A-13			3850		–	40	–	17	18	–	40	–				3850	EVC-3A-14
EVC-3A-13	3850				–	40	–	19	20	–	40	–		3850			EVC-3A-14
EVC-3B-13		3850			–	40	–	21	22	–	40	–			3850		EVC-3B-14
EVC-3B-13			3850		–	40	–	23	24	–	40	–				3850	EVC-3B-14
EVC-3A-15	3850				–	40	–	25	26	–	40	–		3850			EVC-3A-16
EVC-3A-15		3850			–	40	–	27	28	–	40	–			3850		EVC-3A-16
EVC-3B-15			3850		–	40	–	29	30	–	–	–				3850	EVC-3B-16
EVC-3B-15	3850				–	40	–	31	32	–	–	–		3850			EVC-3B-16
EVC-2-3		3850			–	–	–	33	34	–	–	–			360		RECEPT.-CHARGEPOINT GATEWAY WP PNL
EVC-2-3			3850		–	–	–	35	36	–	–	–				360	RECEPT.-CHARGEPOINT GATEWAY WP PNL
–	–				–	–	–	37	38	–	–	–		360			RECEPT.-CHARGEPOINT GATEWAY WP PNL
–		–			–	–	–	39	40	–	–	–			–		–
–			–		–	–	–	41	42	–	–	–				–	–
PARTITAL TOTAL	23100	23100	23100											23460	19610	19610	PARTIAL TOTALS
TOTAL CONNECTED/PHASE	46560	42710	42710														
TOTAL CONNECTED VA = TOTAL VA + 0.25 x CONT. VA =	131,980	+	32,995	=	164,975 VA									AVERAGE AMPS/PH	=	485 A	

PANELBOARD SCHEDULES

SCALE NONE (1)

OWNER-FURNISHED-EQUIPMENT ELECTRIC VEHICLE CHARGER SCHEDULE

SYMBOL	QUANTITY	MAKE	MODEL	PORT	INPUT CAPACITY KW	ELECTRICAL VOLT/P/AMP	OUTPUT VOLTAGE	REQUIRED CIRCUIT BREAKER AMPS	CONNECTOR	CABLE LENGTH	LCD DISPLAY	CARD READER	REMARKS
EVC 1	1	CHARGEPOINT	CPE250C-625-CCS1-CHD	SINGLE	31.25	480/3/37.6	200-1000V DC	100	CHAdeMO, CCS1 (SAE J1772 COMBO), CCS2 (IEC 61851-2)	14.5'	-DRIVER INTERACTION DISPLAY: FULL-COLOR 10" LCD DISPLAY -TOP DISPLAY: FULL-COLOR 20" LED DISPLAY FOR NOTIFICATION	RFID: NFC ISO 15693 ISO 14443	FURNISHED COMPLETE WITH CHARGEPOINT CLOUD PLAN, INSTALLATION & VALIDATION (CPE250-INSTALLVALID), ASSURE (EXPRESS-ASSURE-n1), AND STATION ACTIVATION & CONFIGURATION (CPSUPPORT-ACTIVE) DYNAMIC POWER AND REMOTE ENERGY MANAGEMENT
EVC 2 (1)	3	CHARGEPOINT	CPF25-L23-CMK8-PD	SINGLE	7.7	240/1/32	240V AC	40	SAE J1772	23'	N/A	ISO 15693 ISO 14443	LED INDICATORS - WiFi, FAULT per UL, AND STATUS FURNISHED COMPLETE WITH CHARGEPOINT GATEWAY (CPGW1) AND ASSURE (CPF25-ASSURE-n2), FLEET PLAN (CPCLD-FLEET-n1), STATION INITIAL ACTIVATION (CPSUPPORT-ACTIVE)
EVC 3 (1, A, B)	16	CHARGEPOINT	CPF25-L23-CMK8-PD-DUAL	DUAL	2x 7.7	2x 240/1/32	240V AC	2x 40	2x SAE J1772	2x 23'	N/A	ISO 15693 ISO 14443	LED INDICATORS - WiFi, FAULT per UL, AND STATUS FURNISHED COMPLETE WITH CHARGEPOINT GATEWAY (CPGW1) AND ASSURE (CPF25-ASSURE-n2), FLEET PLAN (CPCLD-FLEET-n1), STATION INITIAL ACTIVATION (CPSUPPORT-ACTIVE)

EVC 3 — 1: NUMERICAL ORDER; A: PORT "A" FOR DUAL STATION; B: PORT "B" FOR DUAL STATION

= EVC-3A-1 AND EVC-3B-1 ARE CALLED OUT ON THE PANEL SCHEDULE

OWNER-FURNISHED-EQUIPMENT ELECTRIC VEHICLE CHARGER SCHEDULE

SCALE NONE (2)

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

MARK | DATE | BY | REVISIONS

Sheet Title: ELECTRIC VEHICLE CHARGER AND PANELBOARD SCHEDULES

Project: OCTA GARDEN GROVE BUS BASE BATTERY ELECTRIC CAR CHARGING SYSTEMS 11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-13-2020
SCALE	AS NOTED
SHEET	GG-E-4

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

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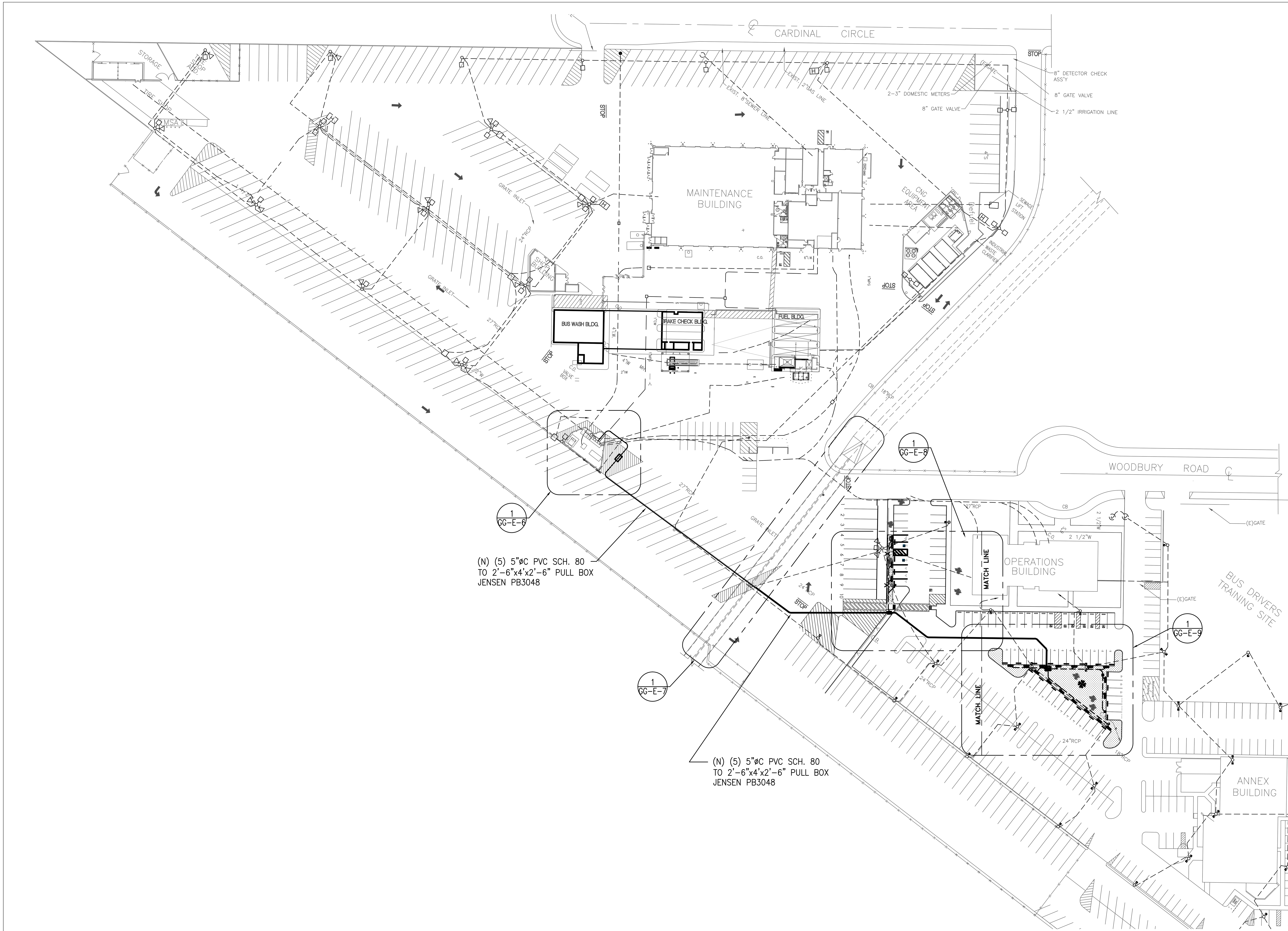

ELECTRICAL UTILITY SITE PLAN

SCALE 1"=60'-0" 1

REGISTERED PROFESSIONAL ENGINEER
QUANG D. VU
NO. E19380
EXP. 12-30-2020
ELECTRICAL
STATE OF CALIFORNIA

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

MARK	DATE	BY	REVISIONS

Sheet Title ELECTRICAL UTILITY SITE PLAN

Project OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	TMP
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DATE	02-13-2020
SCALE	AS NOTED
SHEET	GG-E-5

550 South Main Street
Orange, CA 92668
714/560/OCTA

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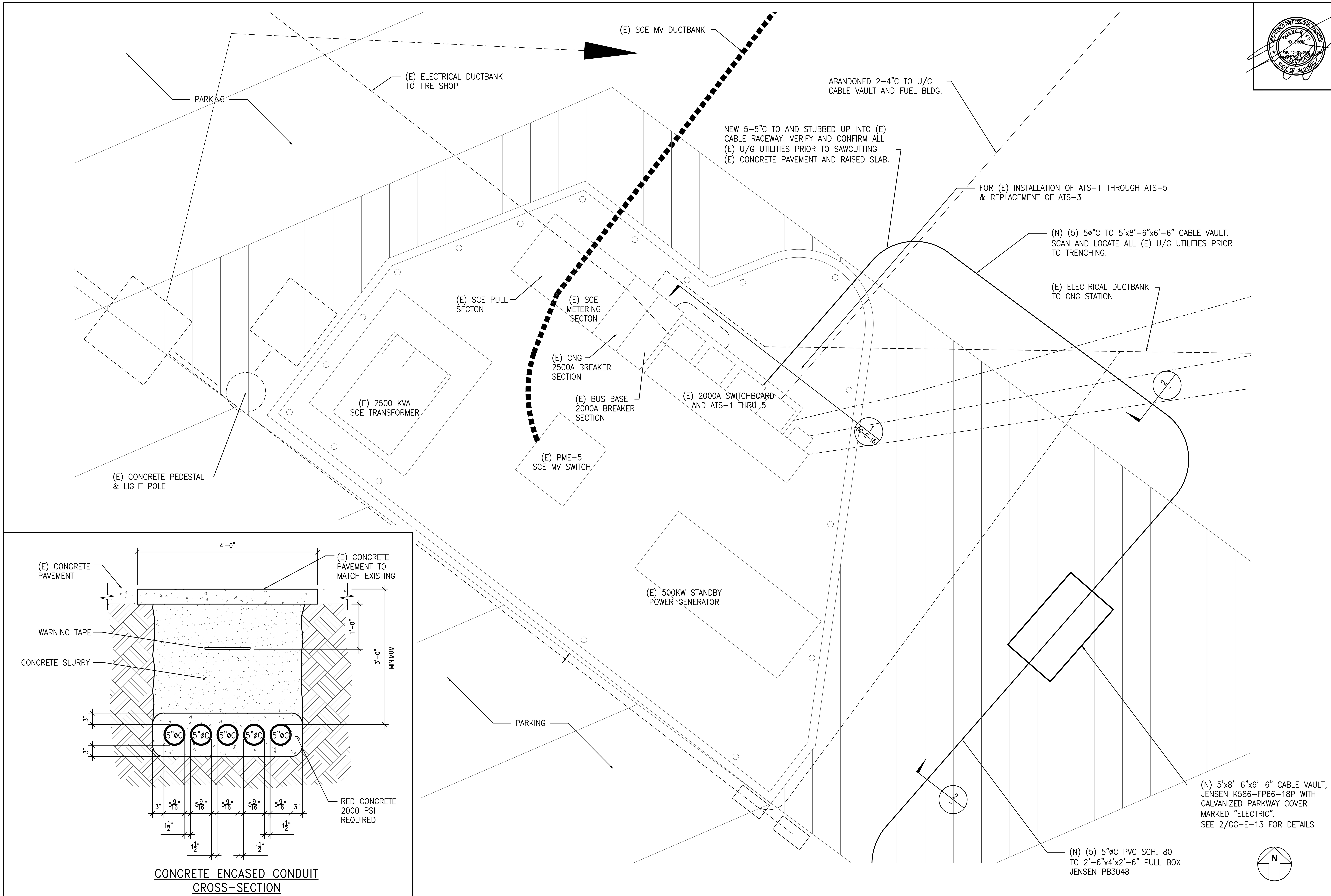

ENLARGED ELECTRICAL SERVICE EQUIPMENT PLAN

SCALE 1/4"=1'-0" (1)

CONCRETE ENCASED CONDUIT CROSS-SECTION

SECTION

SCALE 1"=1'-0" (2)

REGISTERED PROFESSIONAL ENGINEER QUANG VU NO. E15280 EXP. 12-31-2020 ELECTRICAL STATE OF CALIFORNIA

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

MARK	DATE	BY	REVISIONS

Sheet Title ENLARGED ELECTRICAL SERVICE EQUIPMENT PLAN

Project OCTA GARDEN GROVE BUS BASE BATTERY ELECTRIC CAR CHARGING SYSTEMS 11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
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SCALE	AS NOTED
SHEET	GG-E-6

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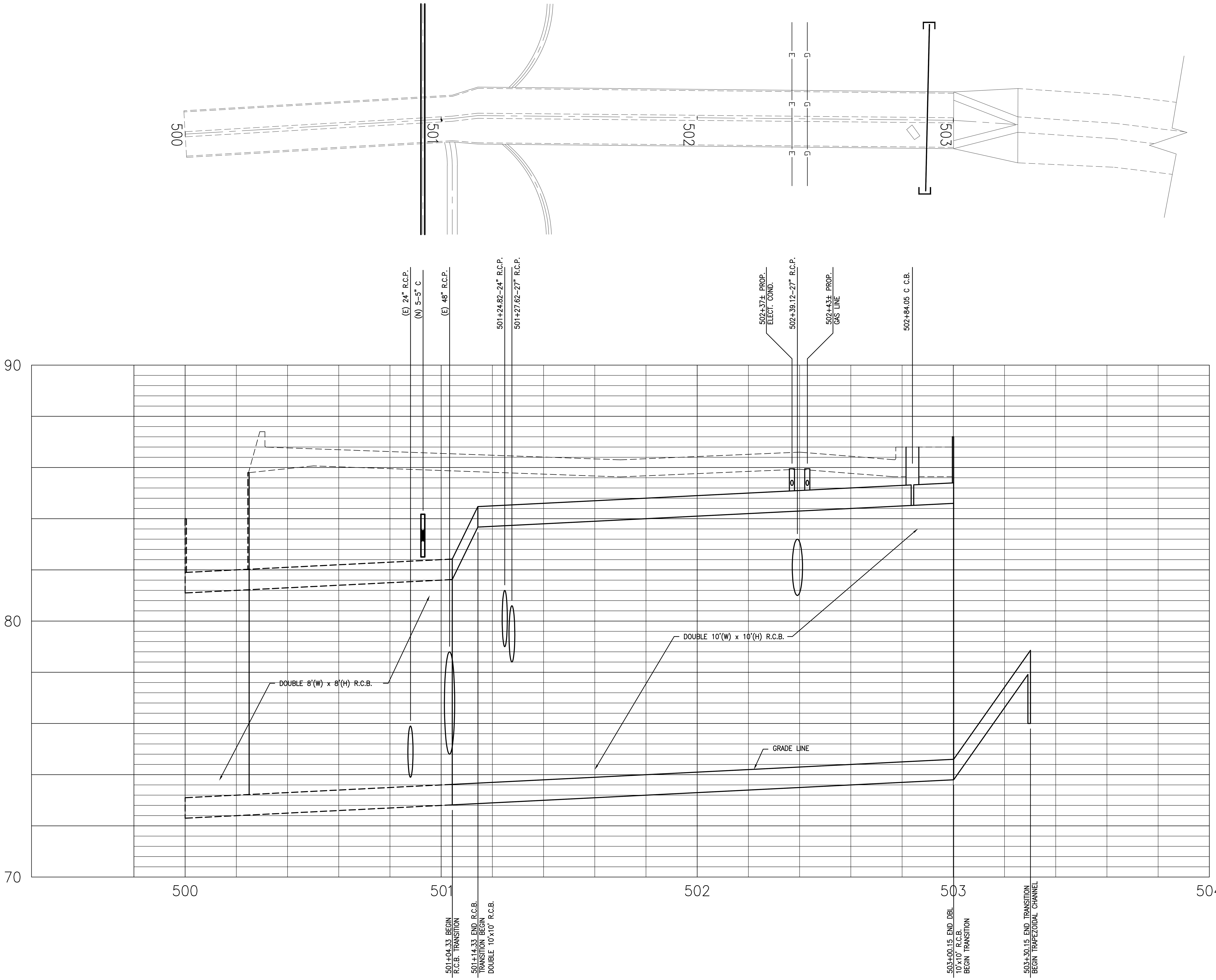

EXISTING PARTIAL FLOOD CONTROL CHANNEL PLAN AND PROFILE – STATIONS 500+00.00 TO 503+30.15

SCALE 1"=20'-0" (1)

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CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

MARK	DATE	BY	REVISIONS
	.	.	.

Sheet Title
EXISTING PARTIAL FLOOD CONTROL CHANNEL PLAN AND PROFILE

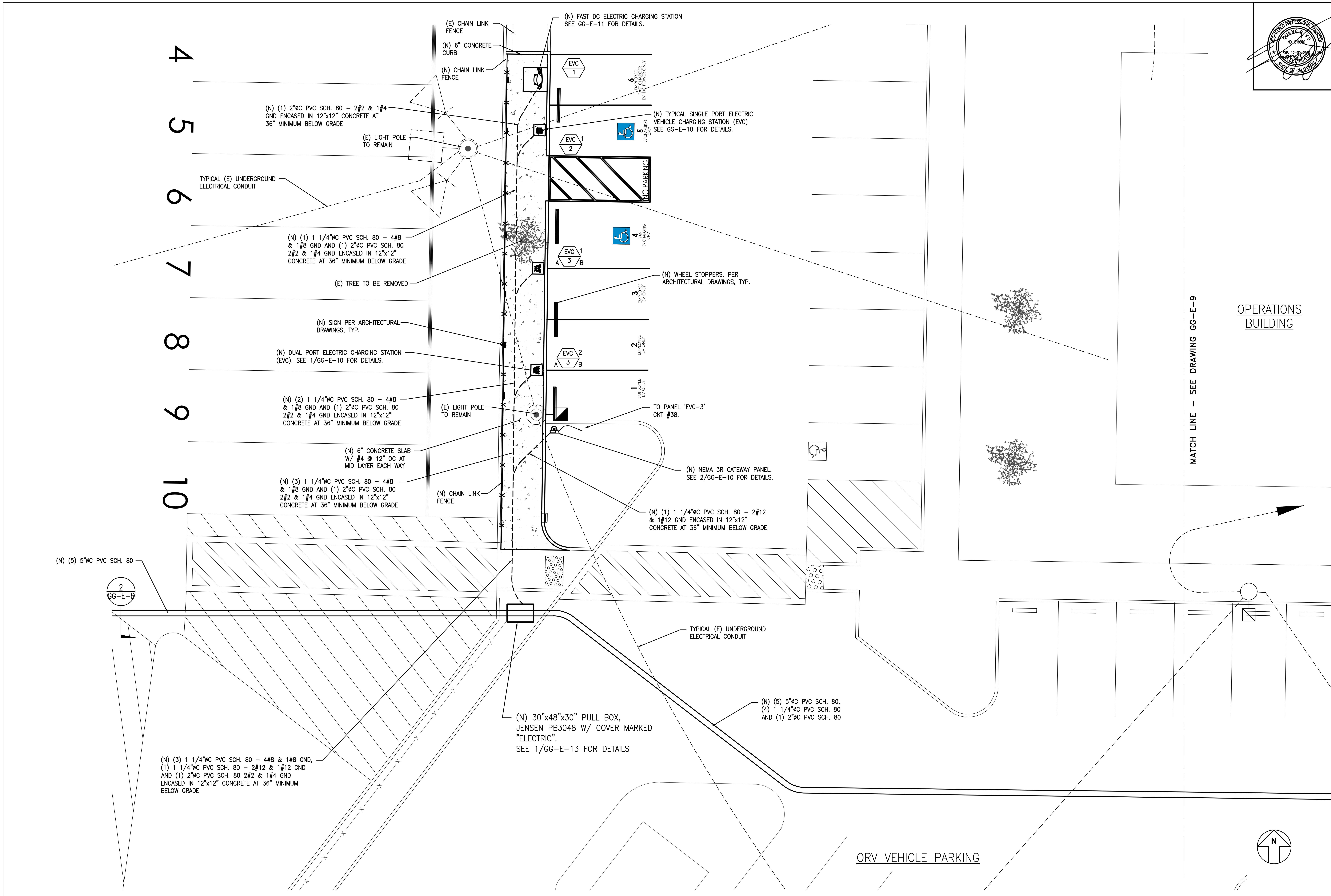
Project
OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-13-2020
SCALE	AS NOTED
SHEET	GG-E-7

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET


4
5
6
7
8
9
10
(E) CHAIN LINK FENCE
(N) 6" CONCRETE CURB
(N) CHAIN LINK FENCE
(N) FAST DC ELECTRIC CHARGING STATION SEE GG-E-11 FOR DETAILS.
(N) (1) 2"ØC PVC SCH. 80 – 2#2 & 1#4 GND ENCASED IN 12"x12" CONCRETE AT 36" MINIMUM BELOW GRADE
(E) LIGHT POLE TO REMAIN
TYPICAL (E) UNDERGROUND ELECTRICAL CONDUIT
(N) TYPICAL SINGLE PORT ELECTRIC VEHICLE CHARGING STATION (EVC) SEE GG-E-10 FOR DETAILS.
EVC 1
EVC 2
EVC 3
NO PARKING
(N) (1) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND AND (1) 2"ØC PVC SCH. 80 2#2 & 1#4 GND ENCASED IN 12"x12" CONCRETE AT 36" MINIMUM BELOW GRADE
(E) TREE TO BE REMOVED
(N) WHEEL STOPPERS. PER ARCHITECTURAL DRAWINGS, TYP.
(N) SIGN PER ARCHITECTURAL DRAWINGS, TYP.
(N) DUAL PORT ELECTRIC CHARGING STATION (EVC). SEE 1/GG-E-10 FOR DETAILS.
(N) (2) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND AND (1) 2"ØC PVC SCH. 80 2#2 & 1#4 GND ENCASED IN 12"x12" CONCRETE AT 36" MINIMUM BELOW GRADE
(E) LIGHT POLE TO REMAIN
TO PANEL 'EVC-3' CKT #38.
(N) 6" CONCRETE SLAB W/ #4 @ 12" OC AT MID LAYER EACH WAY
(N) NEMA 3R GATEWAY PANEL. SEE 2/GG-E-10 FOR DETAILS.
(N) (3) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND AND (1) 2"ØC PVC SCH. 80 2#2 & 1#4 GND ENCASED IN 12"x12" CONCRETE AT 36" MINIMUM BELOW GRADE
(N) CHAIN LINK FENCE
(N) (1) 1 1/4"ØC PVC SCH. 80 – 2#12 & 1#12 GND ENCASED IN 12"x12" CONCRETE AT 36" MINIMUM BELOW GRADE
MATCH LINE – SEE DRAWING GG-E-9
OPERATIONS BUILDING
(N) (5) 5"ØC PVC SCH. 80
2 GG-E-6
TYPICAL (E) UNDERGROUND ELECTRICAL CONDUIT
(N) (5) 5"ØC PVC SCH. 80, (4) 1 1/4"ØC PVC SCH. 80 AND (1) 2"ØC PVC SCH. 80
(N) 30"x48"x30" PULL BOX, JENSEN PB3048 W/ COVER MARKED "ELECTRIC". SEE 1/GG-E-13 FOR DETAILS
(N) (3) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND, (1) 1 1/4"ØC PVC SCH. 80 – 2#12 & 1#12 GND AND (1) 2"ØC PVC SCH. 80 2#2 & 1#4 GND ENCASED IN 12"x12" CONCRETE AT 36" MINIMUM BELOW GRADE
ORV VEHICLE PARKING
N

ENLARGED PARTIAL SITE PLAN – ELECTRIC VEHICLE CHARGING STATIONS FOR EMPLOYEES

SCALE 1/8"=1'-0" — 1

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
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qvu@dahltaylor.com

MARK	DATE	BY	REVISIONS

Sheet Title ENLARGED PARTIAL SITE PLAN
ELECTRIC VEHICLE CHARGING STATIONS FOR EMPLOYEES

Project OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-13-2020
SCALE	AS NOTED
SHEET	GG-E-8

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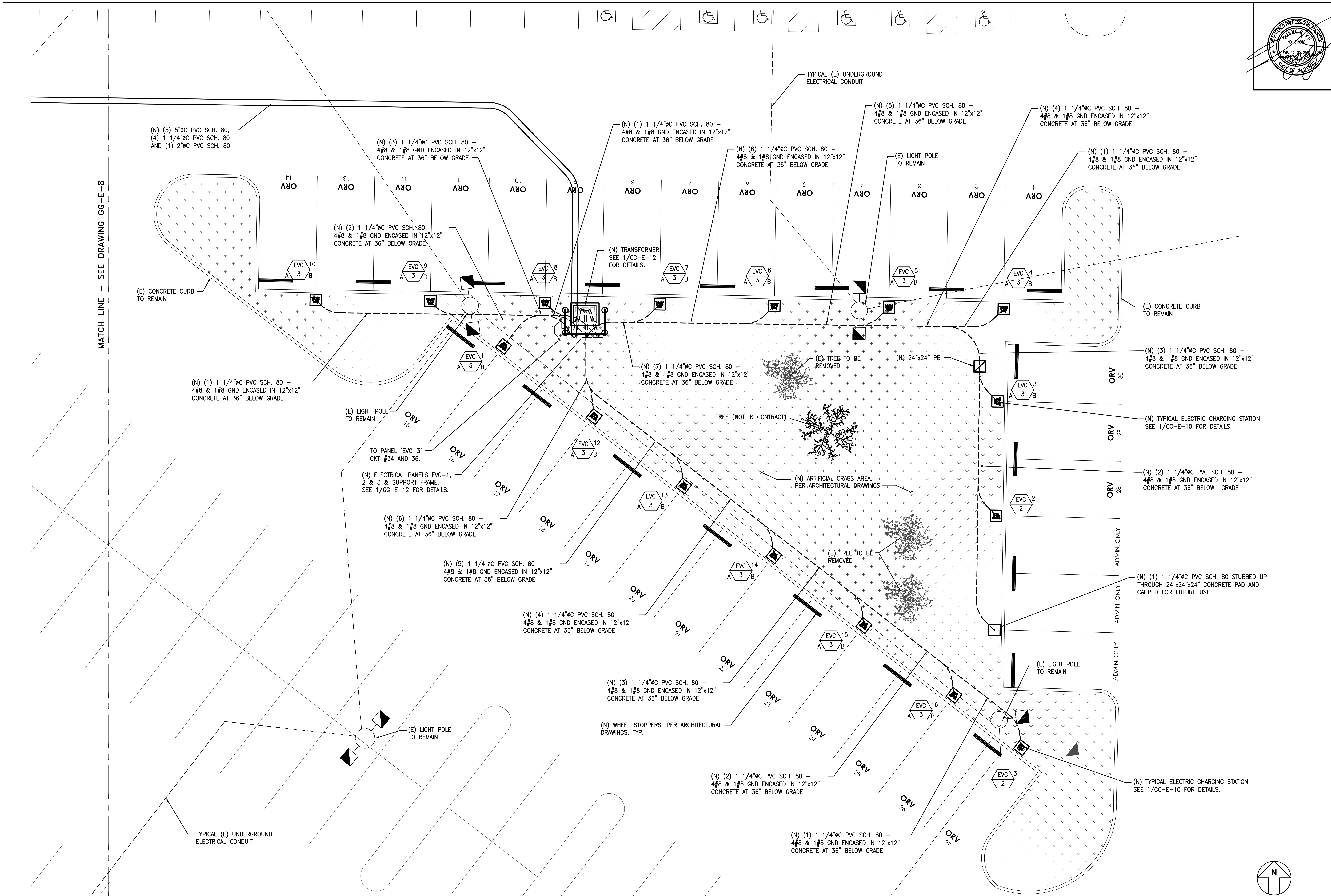


MATCH LINE – SEE DRAWING GG-E-8
(N) (5) 5"ØC PVC SCH. 80, (4) 1 1/4"ØC PVC SCH. 80 AND (1) 2"ØC PVC SCH. 80
(N) (3) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
(N) (1) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
TYPICAL (E) UNDERGROUND ELECTRICAL CONDUIT
(N) (6) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
(N) (5) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
(E) LIGHT POLE TO REMAIN
(N) (4) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
(N) (1) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
ORV 14
ORV 13
ORV 12
ORV 11
ORV 10
ORV 9
ORV 8
ORV 7
ORV 6
ORV 5
ORV 4
ORV 3
ORV 2
ORV 1
(N) (2) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
(N) TRANSFORMER. SEE 1/GG-E-12 FOR DETAILS.
EVC 3 A B 10
EVC 3 A B 9
EVC 3 A B 8
EVC 3 A B 7
EVC 3 A B 6
EVC 3 A B 5
EVC 3 A B 4
(E) CONCRETE CURB TO REMAIN
(E) CONCRETE CURB TO REMAIN
(N) (1) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
EVC 3 A B 11
(N) (7) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
(E) TREE TO BE REMOVED
(N) 24"x24" PB
(N) (3) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
ORV 30
EVC 3 A B 3
(E) LIGHT POLE TO REMAIN
ORV 15
TREE (NOT IN CONTRACT)
(N) TYPICAL ELECTRIC CHARGING STATION SEE 1/GG-E-10 FOR DETAILS.
TO PANEL 'EVC-3' CKT #34 AND 36.
ORV 16
EVC 3 A B 12
ORV 29
(N) ELECTRICAL PANELS EVC-1, 2 & 3 & SUPPORT FRAME. SEE 1/GG-E-12 FOR DETAILS.
(N) ARTIFICIAL GRASS AREA. PER ARCHITECTURAL DRAWINGS
(N) (2) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
ORV 17
EVC 3 A B 13
ORV 28
EVC 2 2
(N) (6) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
ORV 18
ADMIN. ONLY
(E) TREE TO BE REMOVED
(N) (5) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
ORV 19
EVC 3 A B 14
(N) (1) 1 1/4"ØC PVC SCH. 80 STUBBED UP THROUGH 24"x24"x24" CONCRETE PAD AND CAPPED FOR FUTURE USE.
ORV 20
ADMIN. ONLY
(N) (4) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
ORV 21
EVC 3 A B 15
ADMIN. ONLY
ORV 22
(E) LIGHT POLE TO REMAIN
(N) (3) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
ORV 23
EVC 3 A B 16
(N) WHEEL STOPPERS. PER ARCHITECTURAL DRAWINGS, TYP.
(E) LIGHT POLE TO REMAIN
ORV 24
ORV 25
(N) (2) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
EVC 2 3
(N) TYPICAL ELECTRIC CHARGING STATION SEE 1/GG-E-10 FOR DETAILS.
ORV 26
TYPICAL (E) UNDERGROUND ELECTRICAL CONDUIT
(N) (1) 1 1/4"ØC PVC SCH. 80 – 4#8 & 1#8 GND ENCASED IN 12"x12" CONCRETE AT 36" BELOW GRADE
ORV 27
N

ENLARGED PARTIAL SITE PLAN – ELECTRIC VEHICLE CHARGING STATIONS AT ORV PARKING AREA

SCALE 1/8"=1'-0" 1

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

REVISIONS | MARK | DATE | BY

Sheet Title ENLARGED PARTIAL SITE PLAN ORV ELECTRIC VEHICLE CHARGING STATIONS

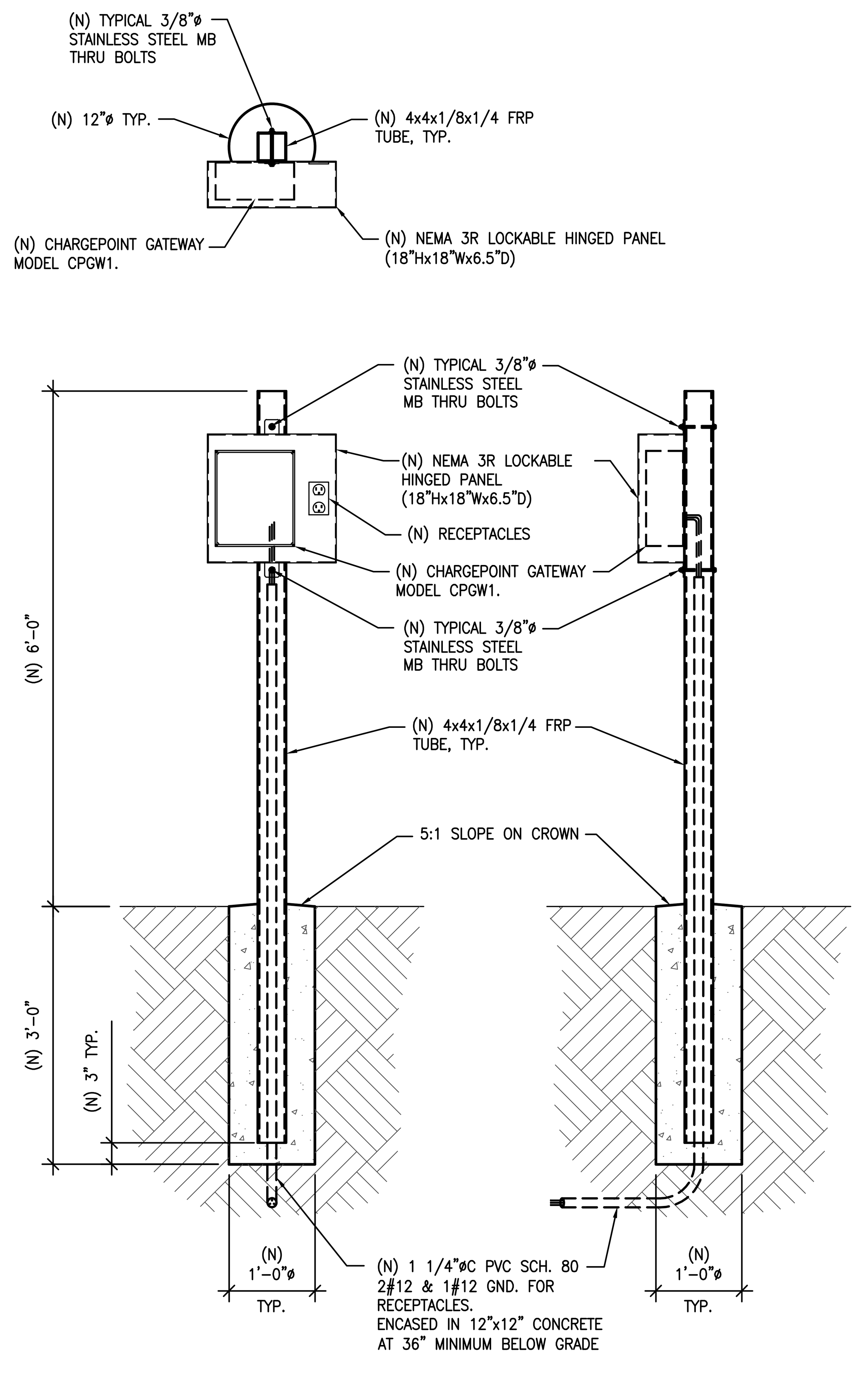
Project OCTA GARDEN GROVE BUS BASE BATTERY ELECTRIC CAR CHARGING SYSTEMS 11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-13-2020
SCALE	AS NOTED
SHEET	GG-E-9

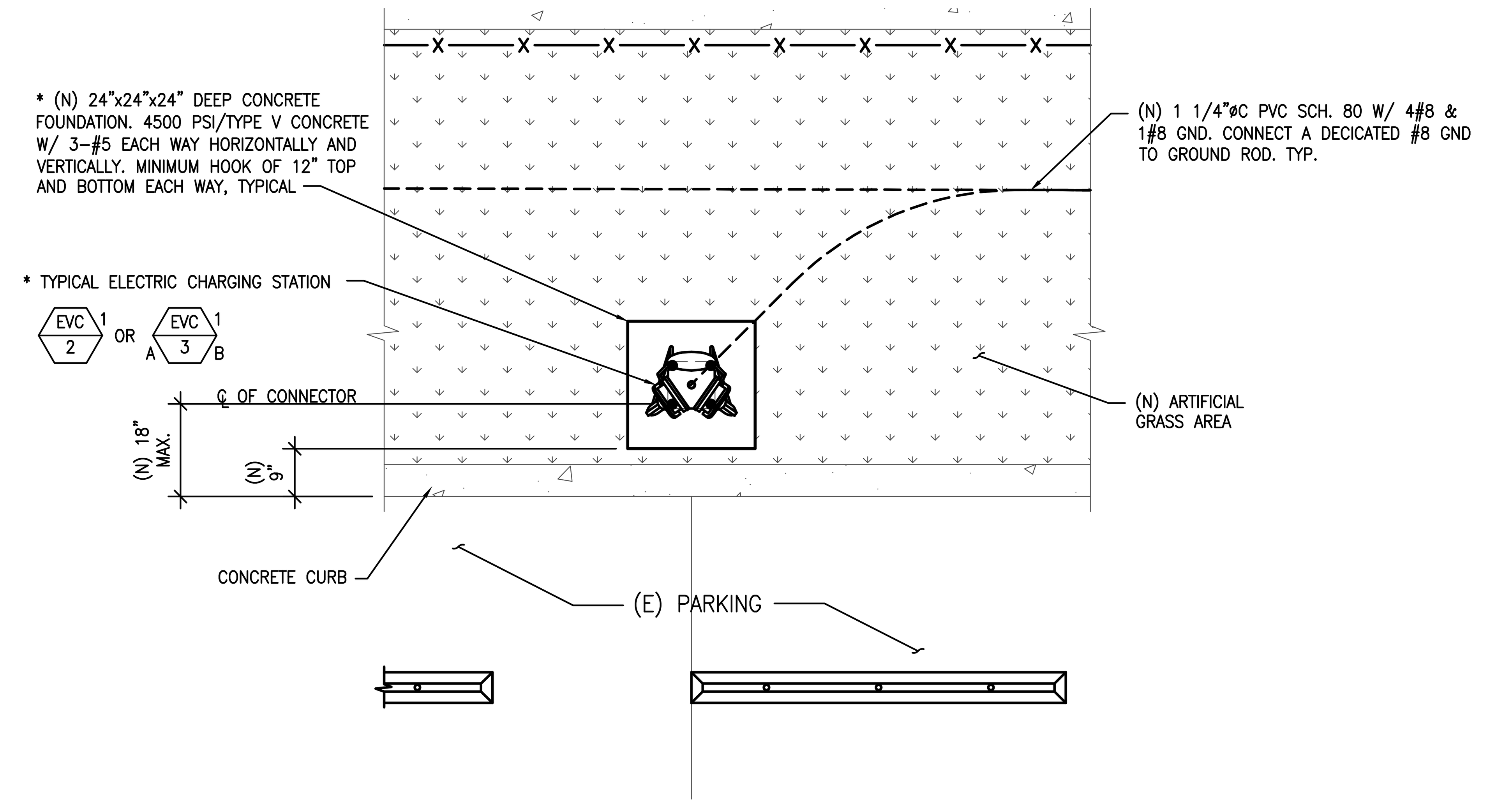
550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET

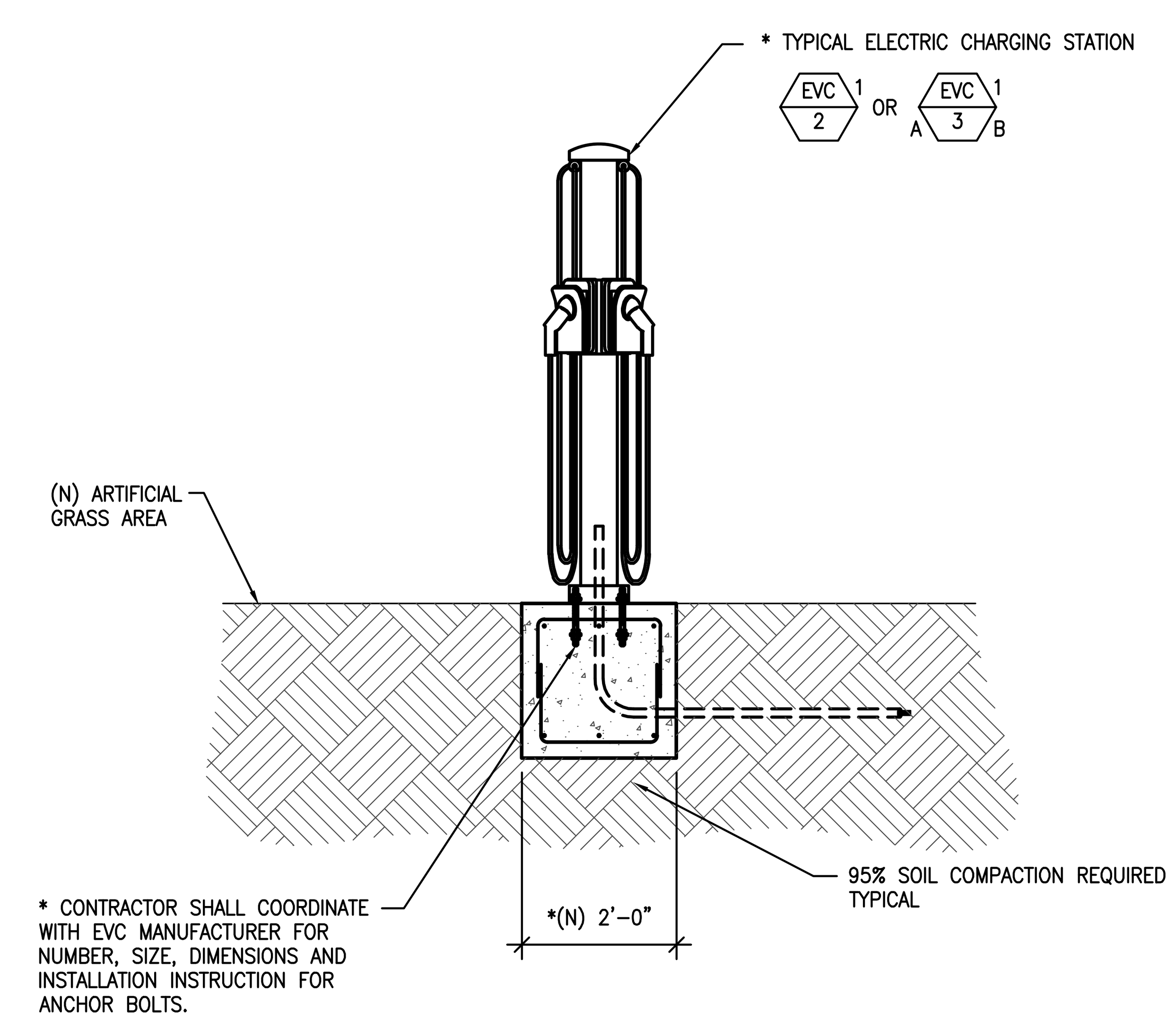


CHARGEPOINT GATEWAY MOUNTING DETAIL — SCALE 3/4"=1'-0" — 2

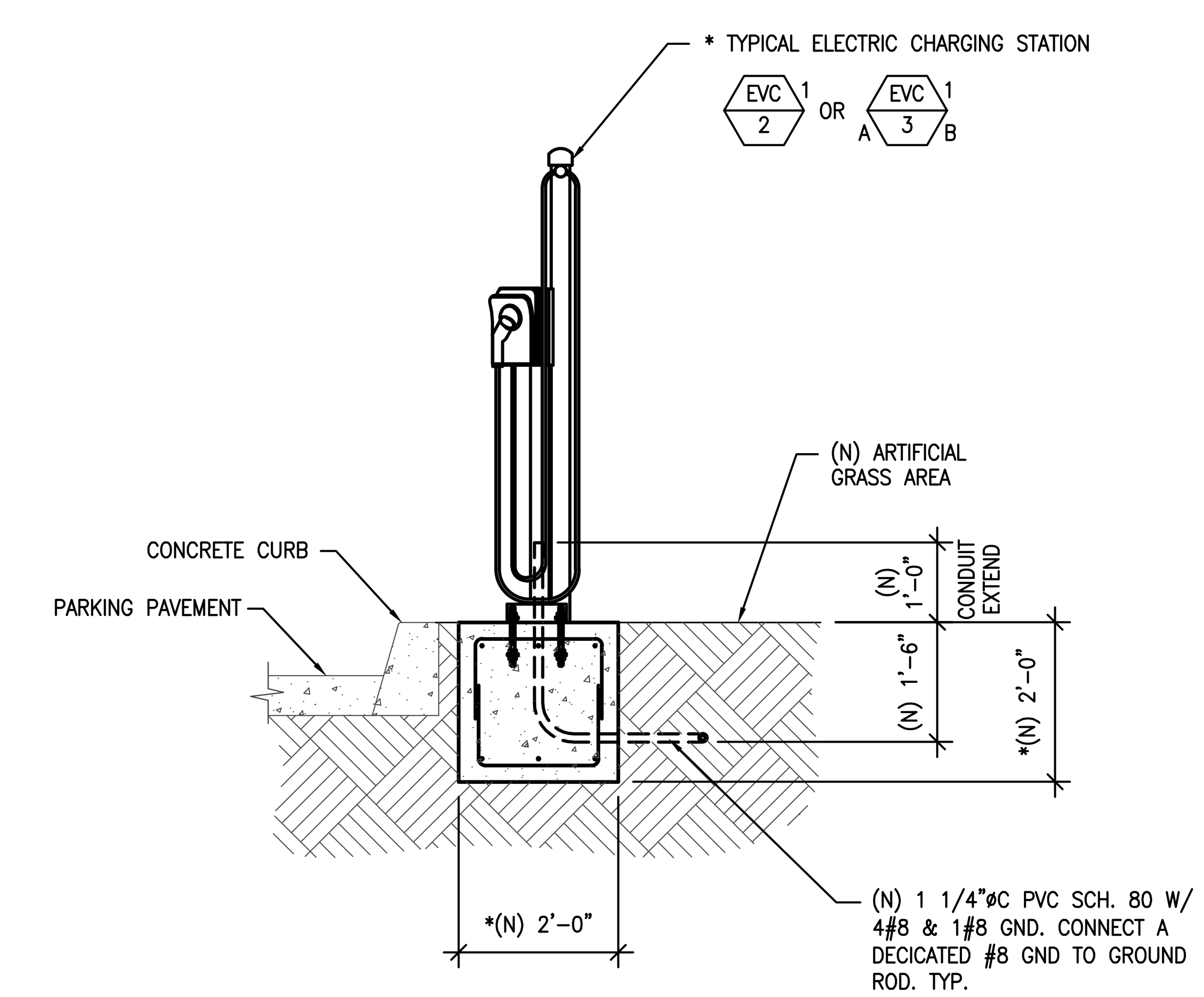


TOP VIEW

* CONTRACTOR SHALL COORDINATE WITH EVC MANUFACTURER'S INSTALLATION GUIDE FOR INSTRUCTIONS.



FRONT VIEW



SIDE VIEW

ELECTRIC VEHICLE CHARGERS (EVCs) — SCALE 1/2"=1'-0" — 1

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CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

MARK	DATE	BY	REVISIONS

Sheet Title: ELECTRIC VEHICLE CHARGING STATION DETAILS AND SECTIONS

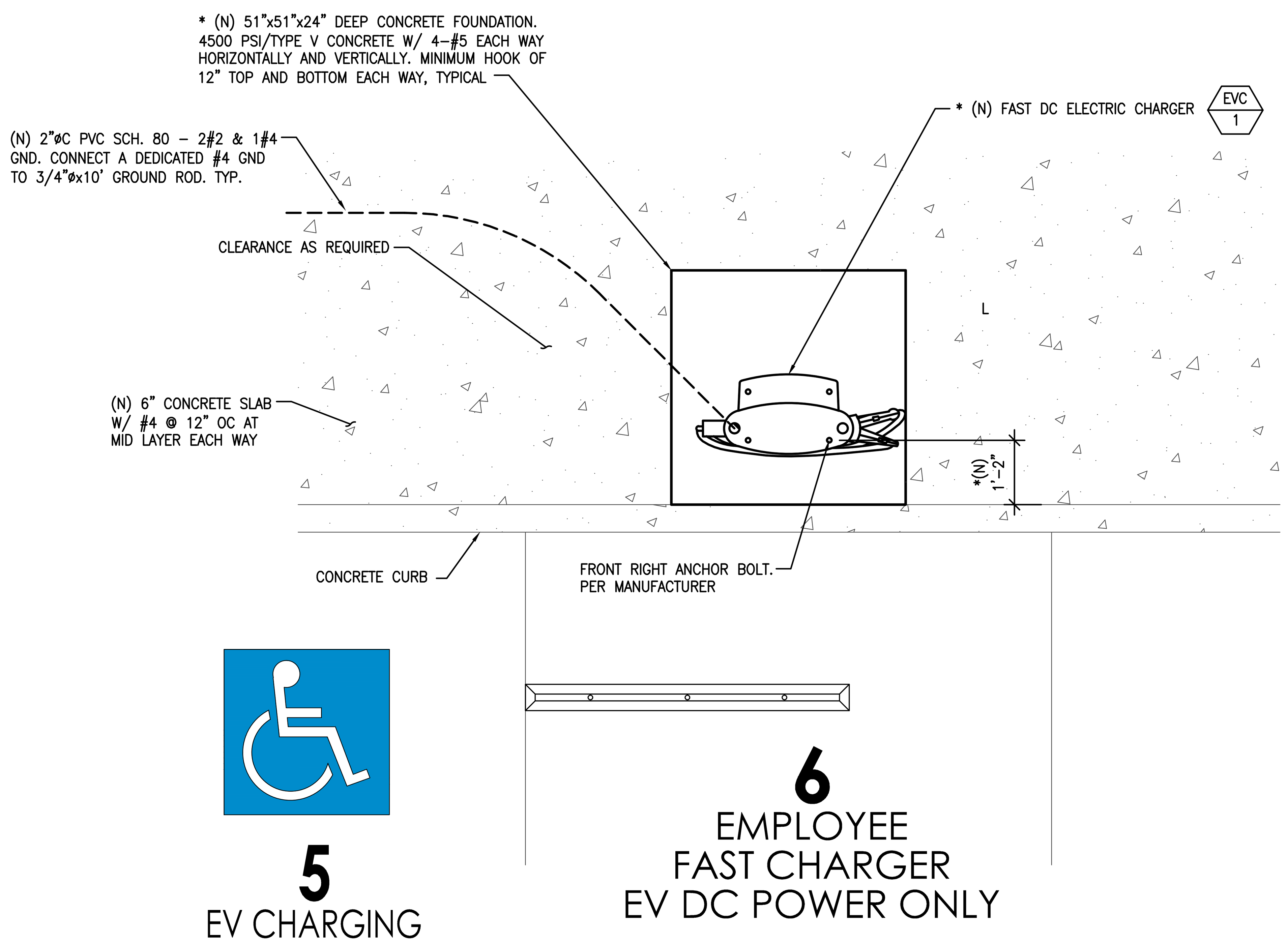
Project: OCTA GARDEN GROVE BUS BASE BATTERY ELECTRIC CAR CHARGING SYSTEMS 11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-13-2020
SCALE	AS NOTED
SHEET	GG-E-10

550 South Main Street
Orange, CA 92668
714/560/OCTA

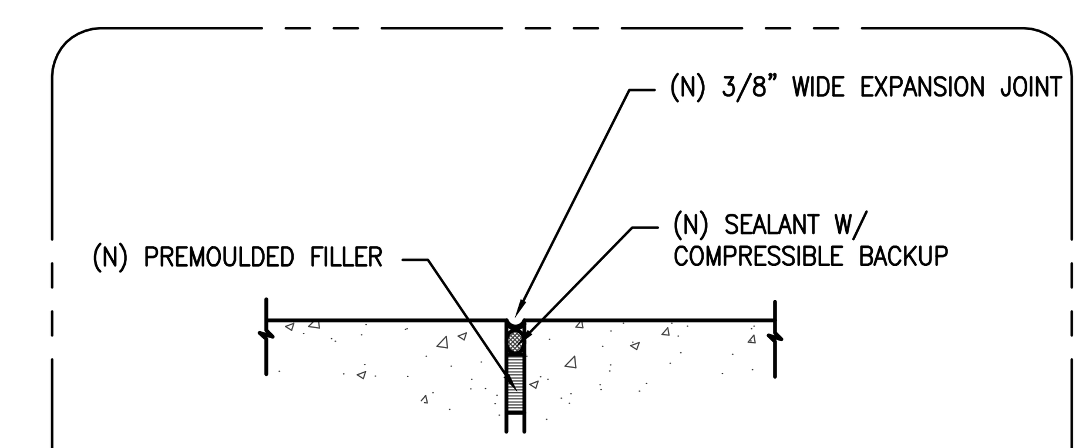
OCTA

100% DRAWING SET

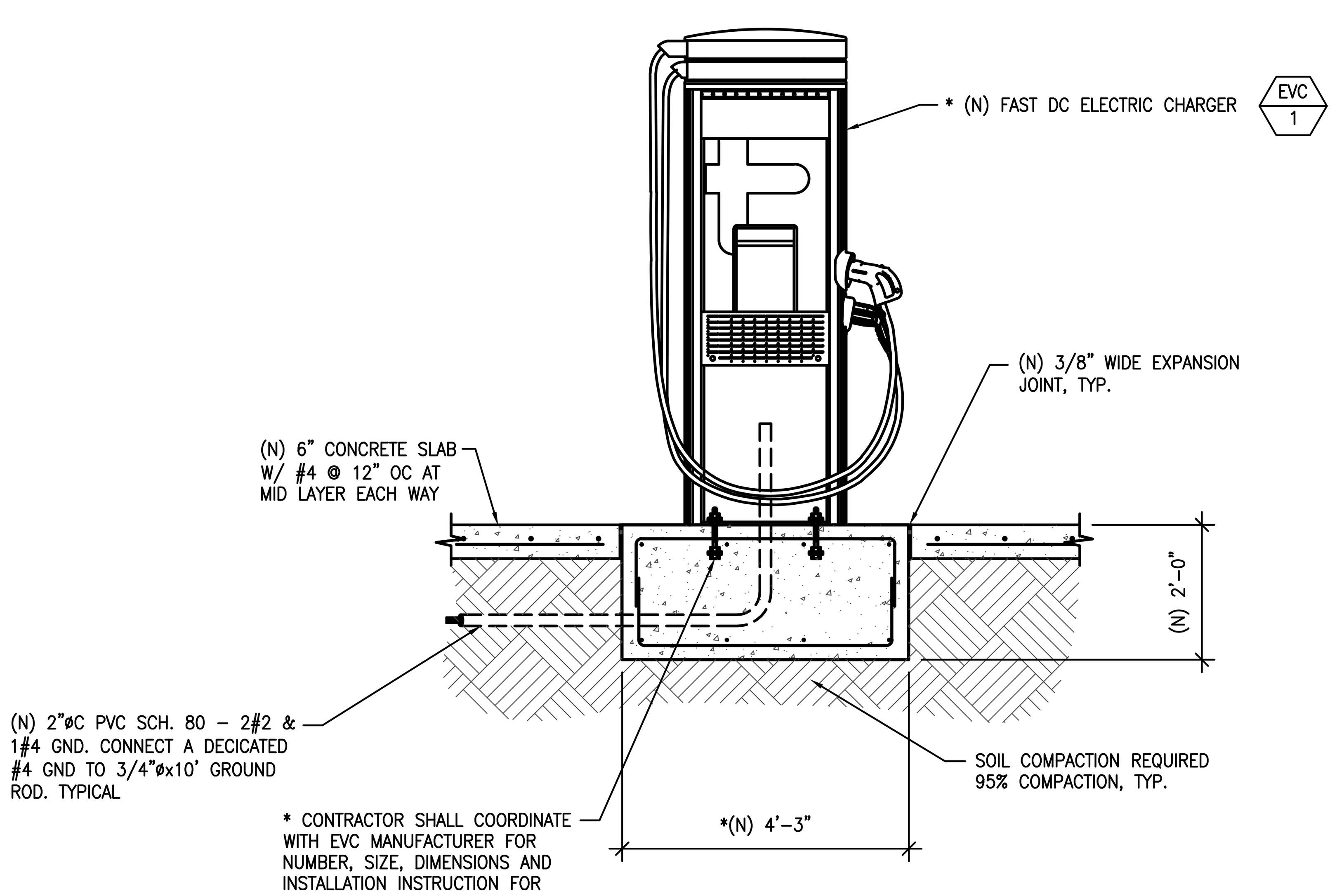


TOP VIEW

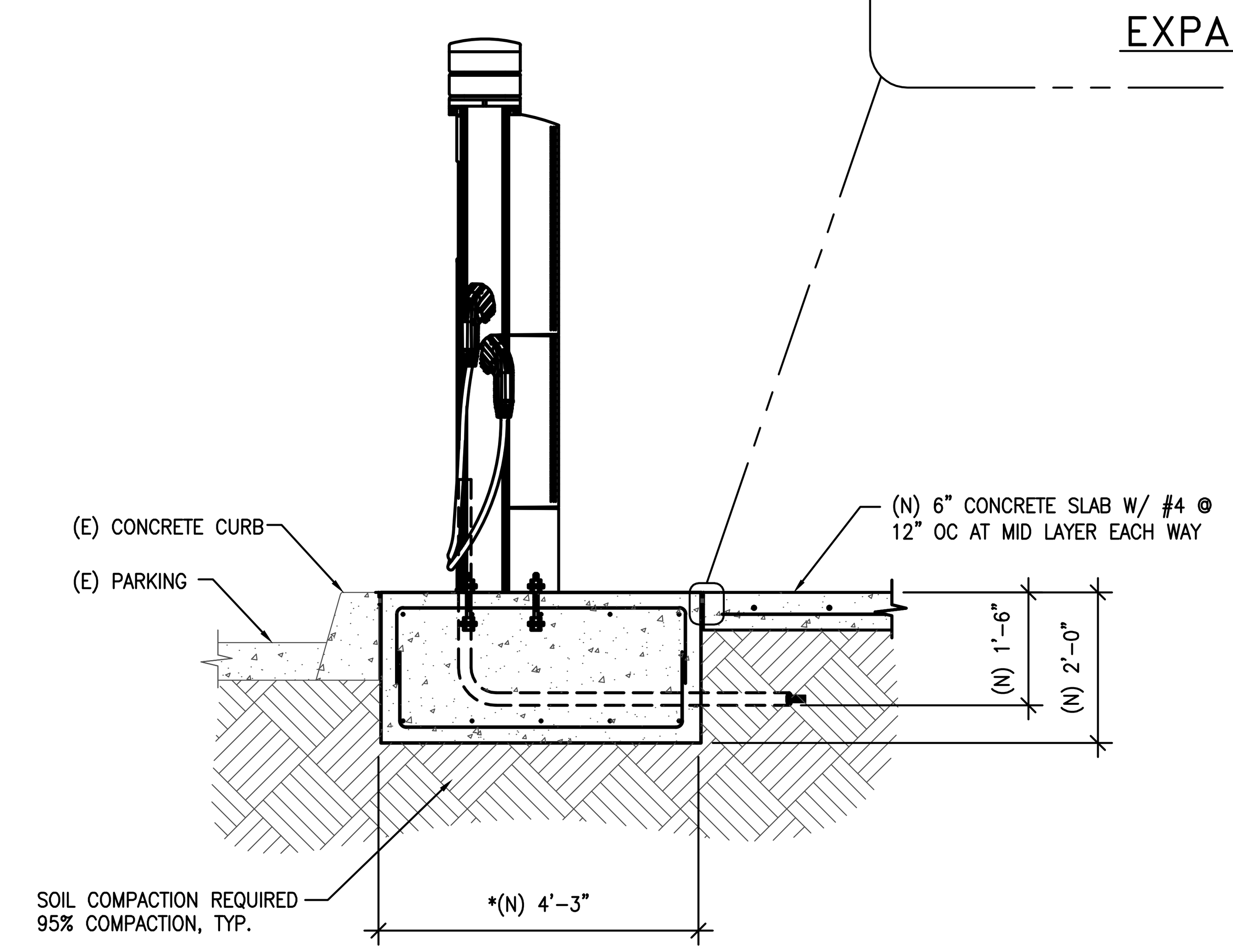
* CONTRACTOR SHALL COORDINATE WITH EVC MANUFACTURER'S INSTALLATION GUIDE FOR INSTRUCTIONS.



EXPANSION JOINT



FRONT VIEW



SIDE VIEW

FAST DC ELECTRIC VEHICLE CHARGING (EVC) STATION

SCALE 1/2"=1'-0" 1

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

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Sheet Title
FAST DC ELECTRIC VEHICLE CHARGING STATION (EVCS)
ELEVATIONS AND DETAILS

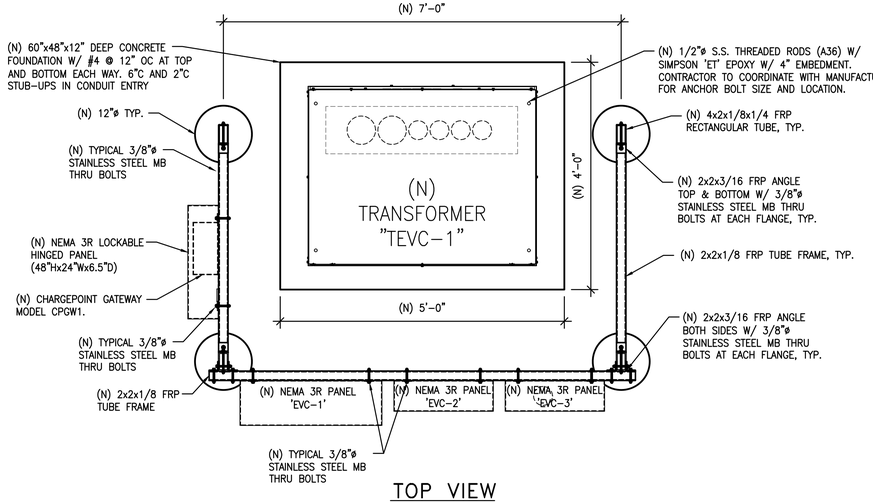
Project
OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-13-2020
SCALE	AS NOTED
SHEET	GG-E-11

550 South Main Street
Orange, CA 92668
714/560/OCTA

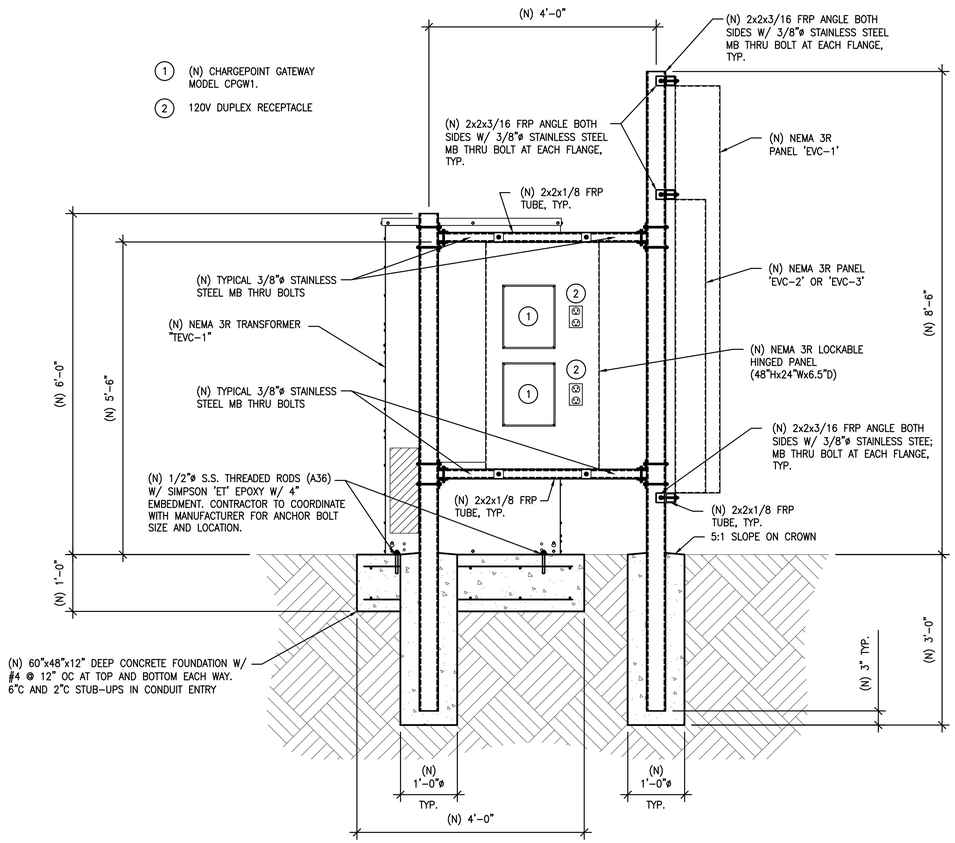
OCTA

100% DRAWING SET

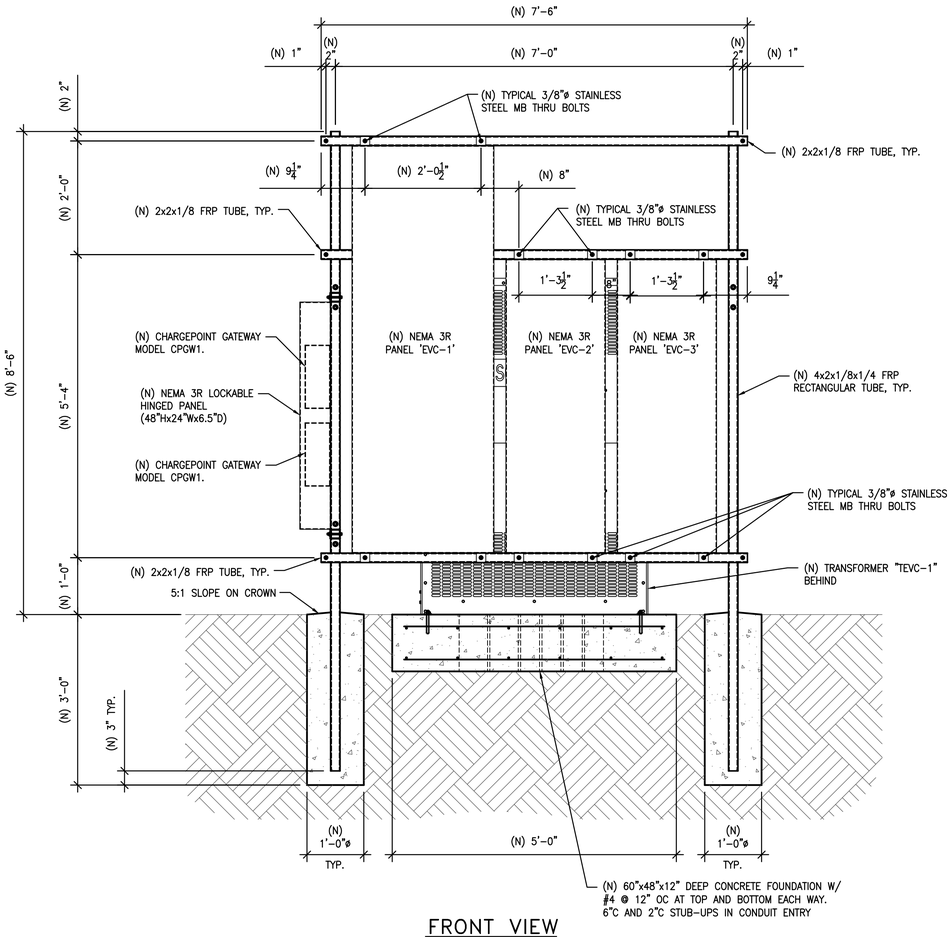


TOP VIEW

1. (N) CHARGEPOINT GATEWAY MODEL CPGW1.
2. 120V DUPLEX RECEPTACLE



SIDE VIEW



FRONT VIEW

EXTERIOR SUPPORT FOR ELECTRICAL EQUPMENT

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

100% DRAWING SET

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CONSULTING ENGINEERS
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SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
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MARK	DATE	BY	REVISIONS
	-	-	-
	-	-	-
	-	-	-

Sheet Title EXTERIOR SUPPORT FOR ELECTRICAL EQUIPMENT

Project OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-13-2020
SCALE	AS NOTED
SHEET	GG-E-12

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

5'-0" x 8'-6" PARKWAY PULL BOX x 66" DEEP

NOTES:

- DESIGNED IN ACCORDANCE WITH AASHTO H-20-44 BRIDGE LOADING USING 5,500 PSI COMPRESSIVE STRENGTH CONCRETE AND 60,000 PSI YIELD STRENGTH GRADE 60 A-706 REINFORCEMENT PER CALC. #31584
- COVER DESIGNED FOR PARKWAY LOADING.
- VAULT TO BE PLACED ON A MIN. 6" BASE OF CRUSHER RUN FOR EASE OF INSTALLATION AND EVEN LOAD DISTRIBUTION.
- MARK PRODUCT: -DATE OF POUR
  -PART NUMBER
  -WEIGHT
  -JENSEN PRECAST

ORDERING INFORMATION:

K586-FP66-18P FOR ASSEMBLY AS SHOWN.
TOTAL WEIGHT OF ASSEMBLY IS 17,768 LBs.

1. PB586-B42-18, 42" BOTTOM SECTION. WT. 11,888 Lbs.
2. PB586-T24-18, 24" TOP SECTION. WT. 4,350 Lbs.
3. CA586-PG-18, (4) PIECE PARKWAY GALV. COVER & FRAME ASMB W/ADJUSTMENT BOLTS, (12) 1/2" STAINLESS STEEL PENTA HEAD BOLTS x 2 1/2", GALV. TAMPER PLATE BELOW LIFT HOLES, MARKED "COLTON ELECTRIC" WT. 1,530 Lbs.
4. 8" x 9" DIA. SUMP x 5" DEEP W/GRATE & RECESS. LOCATE AS FOLLOWS;BOTTOM SECTION (1) CORE MTD.
5. 6" DIA. TERMINATORS (GREY). LOCATE AS FOLLOWS; BOTTOM SECTION (32) SHELL MTD.
6. 1" DIA. COIL THR'D. INSERT. LOCATE AS FOLLOWS; BOTTOM SECTION,(6) CORE MTD.
7. 1" DIA. x 5" DEEP GROUND ROD KNOCKOUT. LOCATE AS FOLLOWS: BOTTOM SECTION (2) CORE MTD.

GENERAL NOTES:

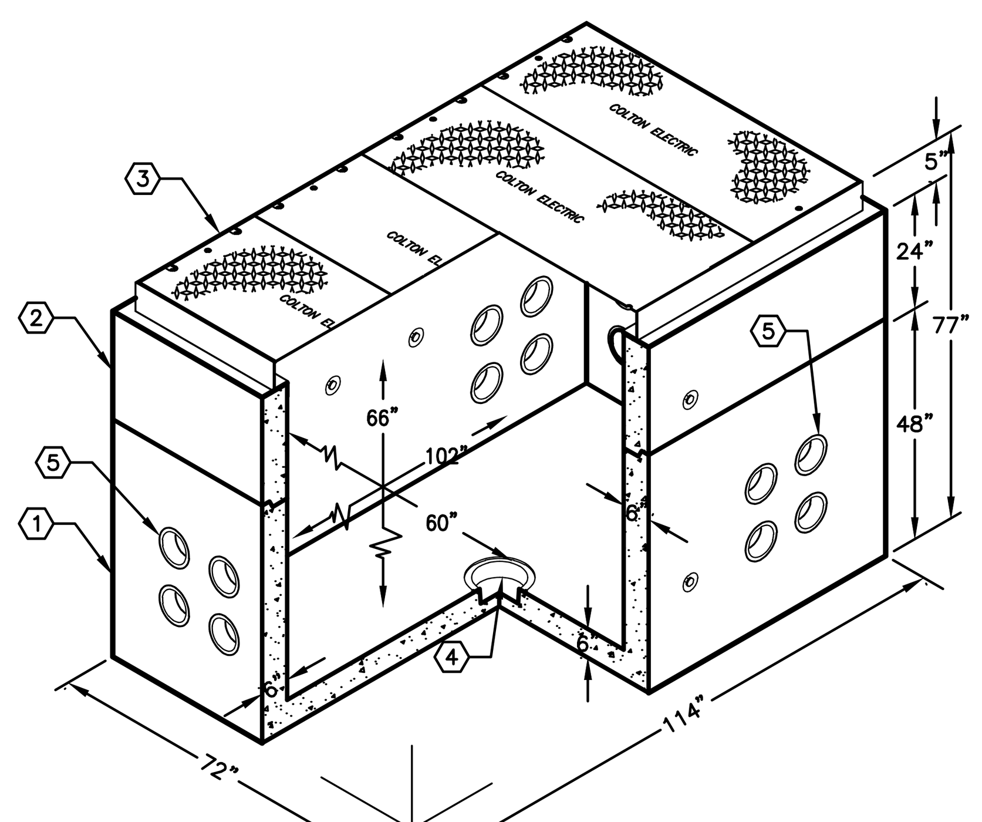
1. Minimum soil bearing capacity is hereby assumed to be 2000 PSF unless otherwise documented by a geotechnical report that shall be provided to Jensen Precast by the end user. Jensen Precast shall not be held responsible for the soil bearing capacity.
2. Installation of Manholes, Vaults, Handholes, Meter Boxes etc. will be as per Jensen installation procedures.
3. Structural modification to the Jensen line of products is not permitted without prior written approval from Jensen Engineering Department.
4. Do not scale the drawings, verify all dimensions including rough openings, if any discrepancies are found, notify the Jensen Engineer immediately.
5. The Jensen Engineer will interpret the intent of the drawings in case of possible conflict or discrepancy.
6. Permissible Variations:
   Dimensional Tolerances — The length, width, height, or dia. measurements of the structure when measured on the inside surfaces shall not deviate from design dimensions by more than the following:

Dimensions:	Tolerance:
0 to 5 Feet	1/4"
5 to 10 Feet	3/8"

   10 to 20 Feet as agreed upon between the supplier and purchaser.
7. Squareness Tolerance:
   The inside of the precast concrete component shall be square as determined by diagonal measurements. The difference between such measurements shall not exceed the following:

Measured Length:	Allowable Difference
0 to 10 Feet	1/2"
10 to 20 Feet	3/4"

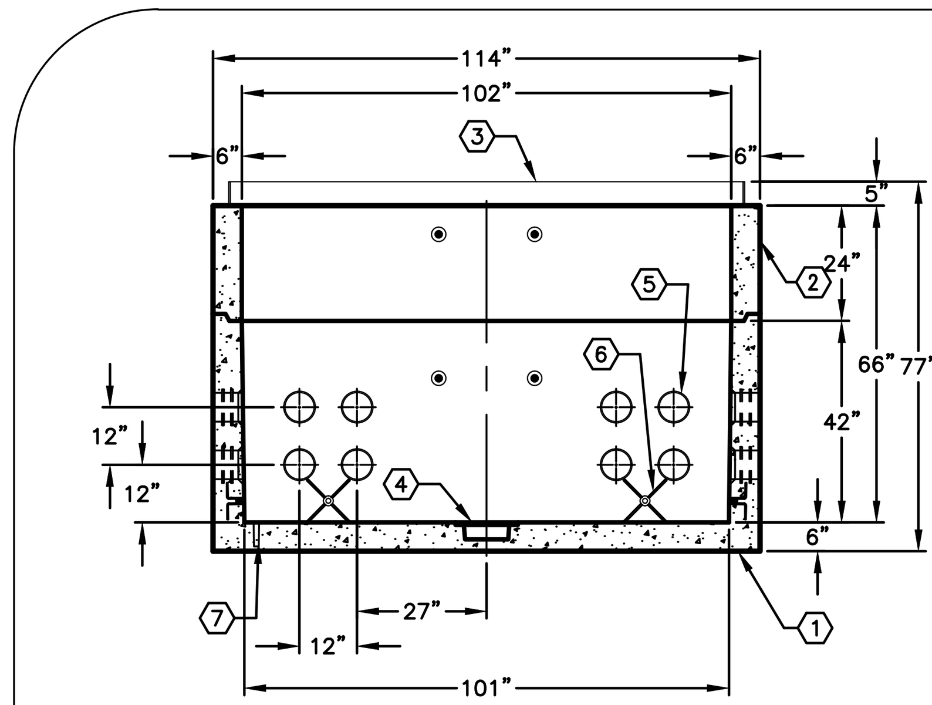
   20 Feet and over as agreed upon between the supplier and purchaser.



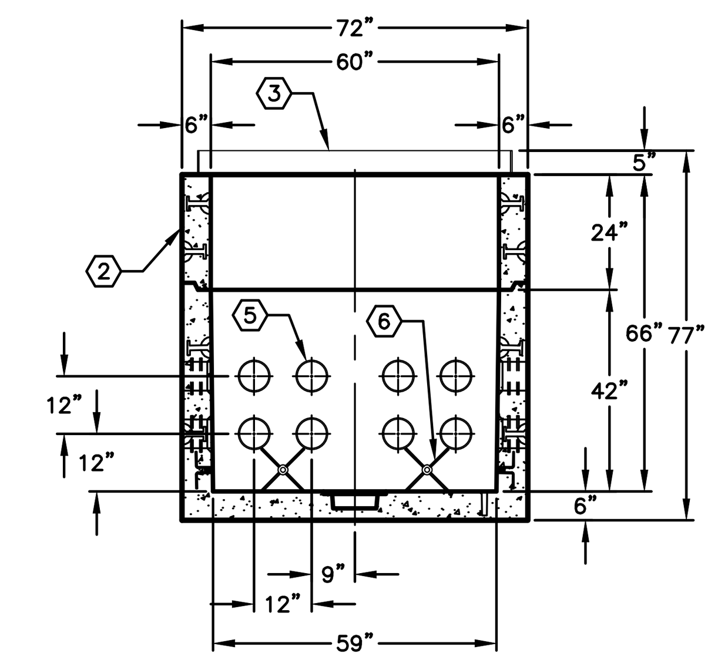
JENSEN PRECAST

AUTOCAD REL. 14

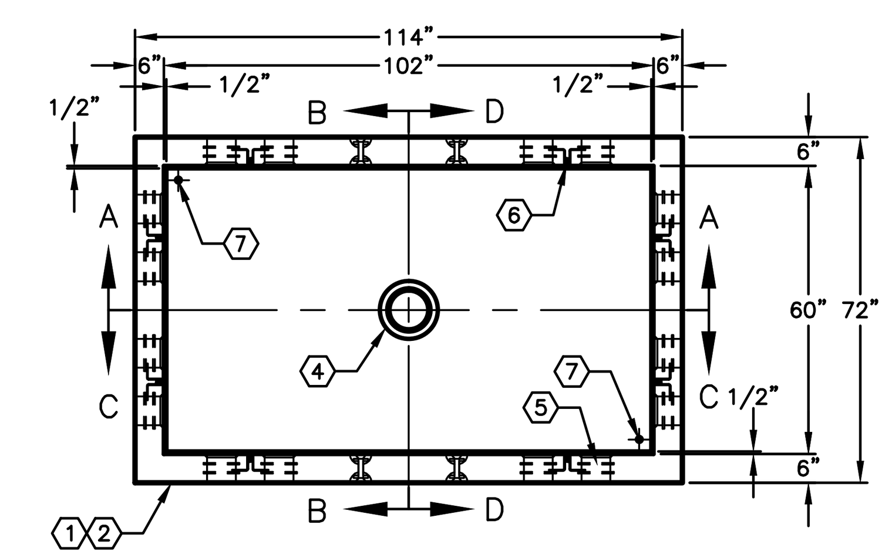
K586-FP66-18P



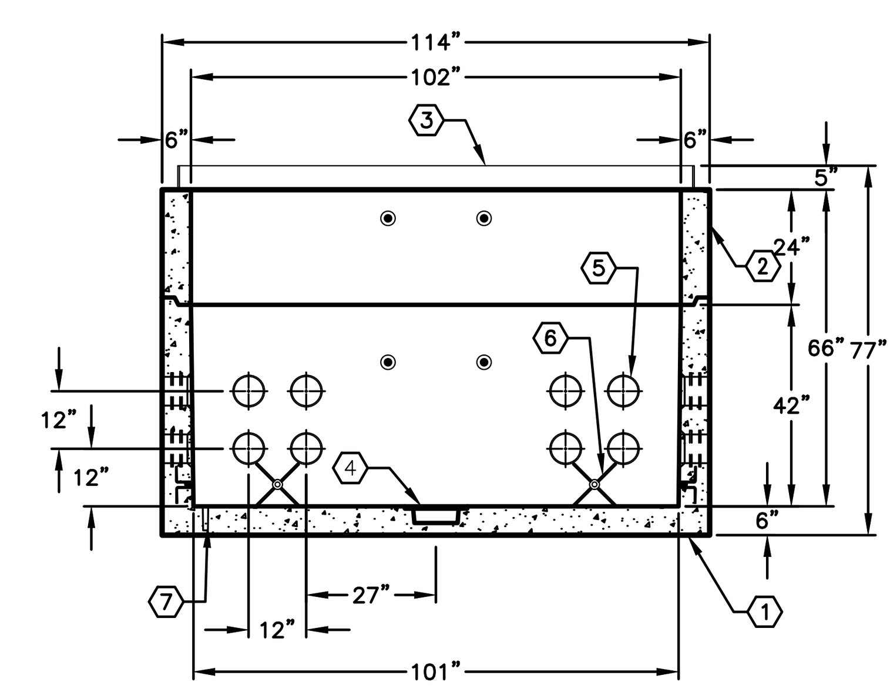
SECTION A-A



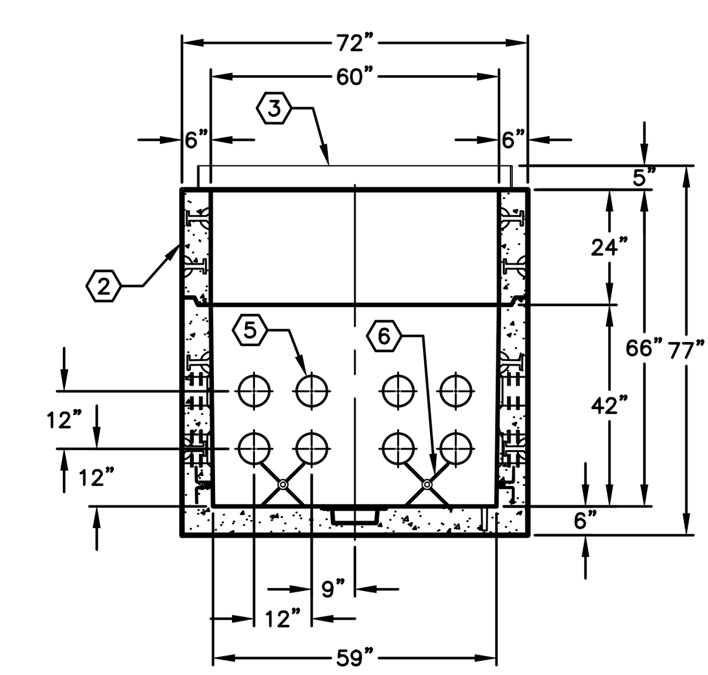
SECTION B-B



PLAN VIEW



SECTION C-C



SECTION D-D

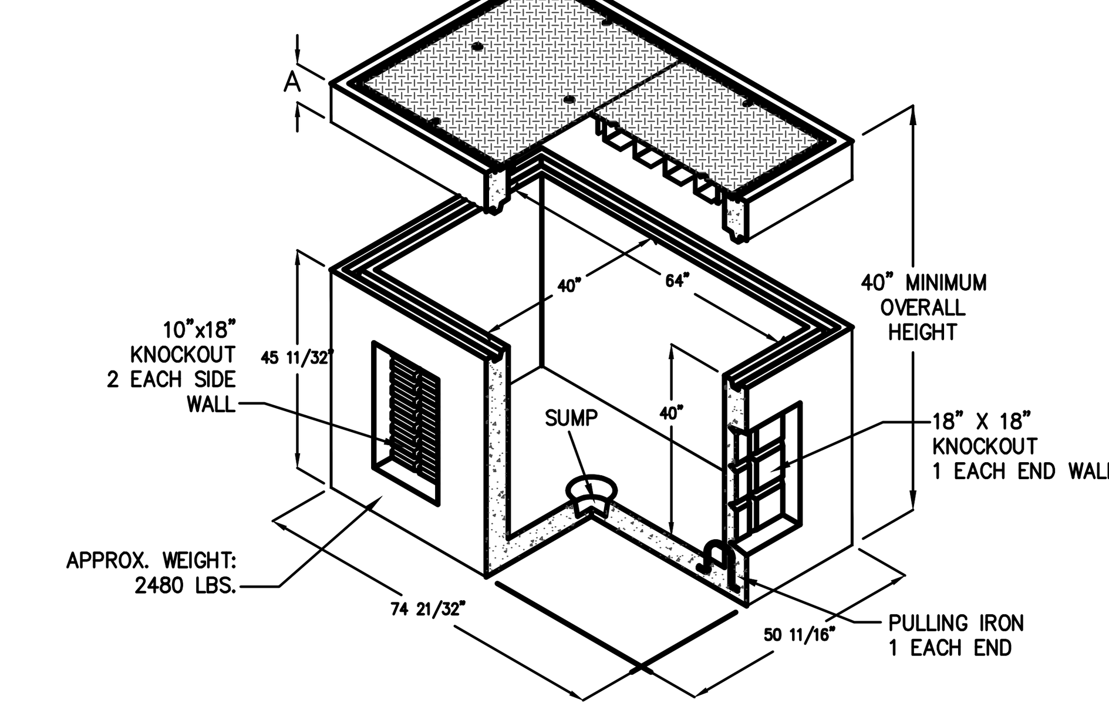
JENSEN PRECAST

K586-FP66-18P

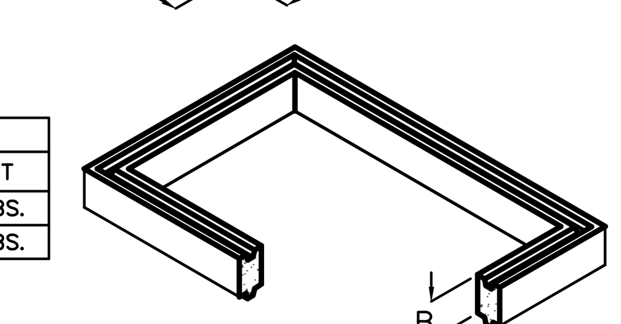
2'-6" x 4'-0" PULL BOX x 66" DEEP

3048 PULLBOX
MODEL PB3048
2'-6" x 4'-0" x 2'-6" I.D.

STANDARD NON ADJUSTABLE COVERS			
MODEL NO.	A	DESIGN LOAD	WEIGHT
CA3048C6I	6"	INCIDENTAL H-20	560 LBS.
CA3048C6P	6"	PEDESTRIAN	490 LBS.



RISERS		
MODEL NO.	B	WEIGHT
RS304806	6"	283 LBS.
RS304812	12"	567 LBS.



FOR COMPLETE DESIGN AND PRODUCT INFORMATION, CONTACT JENSEN PRECAST.

4/17/02
3048PB.dwg

JENSEN PRECAST

PB3048

DETAIL — SCALE NONE — 2

DETAIL — SCALE NONE — 1

DAHIL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

MARK	DATE	BY	REVISIONS
1	-	-	-

Sheet Title UNDERGROUND CABLE VAULT AND PULL BOX INSTALLATION DETAILS AND SECTIONS

Project OCTA GARDEN GROVE BUS BASE BATTERY ELECTRIC CAR CHARGING SYSTEMS 11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-13-2020
SCALE	AS NOTED
SHEET	GG-E-13

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET

CONSTRUCTION NOTES:

1. FOR GENERAL SPECIFICATIONS SEE OCTA DIVISION I SPECIFICATIONS.

2. CONDUIT:
   - A. MINIMUM COVER IN STREET OR PARKWAY IS 30" BELOW GUTTER GRADE, UNLESS NOTED OTHERWISE.
   - B. MINIMUM COVER ON PRIVATE PROPERTY IS 30" BELOW FINISHED GRADE, UNLESS NOTED OTHERWISE.
   - C. CONTRACTOR IS TO FURNISH AND INSTALL APPROVED CONDUIT TO OCTA SPECIFICATIONS.
   - D. FOR THE TYPE OF CONDUIT FOR THIS JOB, SEE SPECIFICATIONS.
   - E. INSTALL ALL RISERS AS SPECIFIED.
   - F. CAP ALL MAINLINE CONDUITS PER SPECIFICATION AND SERVICE CONDUITS PER SPECIFICATIONS.
   - G. INSTALL BLANK CONDUIT PLUGS IN ALL CONDUITS TERMINATING INTO VAULTS, MANHOLES, PULL BOXES AND ALL CAP LOCATIONS.
   - H. INSTALL PULL ROPE IN ALL CONDUIT RUNS. PULL ROPE TO BE 1/4" POLYPROPYLENE OR POLYETHYLENE ROPE, BRAIDED OR TWISTED.
   - I. ALL CONDUIT MUST BE MANDRELED WITH THE APPROVED MANDREL.

3. CONDUIT RADIUS REQUIREMENTS:
   - A. THE MINIMUM RADIUS FOR BENDS ARE:
     - 36" FOR CONDUITS 3" IN DIAMETER OR SMALLER.
     - 48" FOR CONDUITS 4" AND 5" IN DIAMETER
     - 60" FOR 6" DIAMETER CONDUIT.
   - B. THE MINIMUM RADIUS FOR ALL SWEEPS OF ALL MAINLINE CONDUITS IS 12'-6" (UNLESS NOTED OTHERWISE).

4. EXCAVATION AND BACKFILL:
   - A. WORK AREA SHALL BE CLEARED AND ROUGH GRADED TO WITHIN FOUR INCHES OF FINAL GRADE PRIOR TO INSTALLATION OF CONDUITS OR STRUCTURES.
   - B. ALL EXCAVATIONS SHALL BE IN ACCORDANCE WITH THE CALIFORNIA STATE CONSTRUCTION SAFETY ORDERS (WHEN APPLICABLE), OCTA SPECIFICATIONS, AND ALL GOVERNING LOCAL ORDINANCES.
   - C. EACH TRENCH TO BE A UNIFORM DEPTH BELOW FINAL GRADE PRIOR TO INSTALLATION OF CONDUIT OR STRUCTURES.
   - D. BACKFILL SHALL BE PROVIDED BY THE CONTRACTOR FOR ALL EXCAVATIONS AND SHALL INCLUDE CRUSHED ROCK, CONCRETE AND/OR IMPORTED BACKFILL WHEN REQUIRED.
   - E. BACKFILL WITH A MINIMUM OF ONE SACK PER YARD SAND CEMENT SLURRY AROUND ALL OVER VAULTS AND MANHOLES WITHIN ONE FOOT OF FINISHED GRADE.
   - F. BACKFILL SHALL IMMEDIATELY FOLLOW CONDUIT OR SUBSTRUCTURE INSTALLATION. AT NO TIME SHALL CONDUIT BE LEFT EXPOSED OVER 24 HOURS.
   - G. NO ROCKS ARE ALLOWED WITHIN 12 INCHES OF ANY CONDUIT WITHOUT CONCRETE ENCASEMENT. NATIVE BACKFILL CAPABLE OF PASSING THROUGH A ONE-HALF INCH MESH SCREEN SHALL BE CONSIDERED TO BE "ROCK FREE". IF EXISTING BACKFILL DOES NOT PASS THROUGH A 1/2" SCREEN, PLACE IMPORTED SAND 3" BELOW AND 12" ABOVE CONDUITS. AFTER THIS POINT, NO ROCKS LARGER THAN 12" DIAMETER ARE PERMITTED.
   - H. ALL BACKFILL SHALL BE COMPACTED TO MEET OR EXCEED LOCAL ORDINANCES OR OTHER REQUIREMENTS. IT SHALL BE PLACED IN A MANNER THAT WILL NOT DAMAGE THE CONDUIT OR SUBSTRUCTURE OR ALLOW FUTURE SUBSIDENCE OF THE TRENCH OR STRUCTURES.

5. PAVING:
   REPAVING, WHERE REQUIRED, SHALL BE PLACED IN SUCH A MANNER THAT INTERFERENCE WITH TRAFFIC, INCLUDING PEDESTRIAN TRAFFIC, WILL BE KEPT TO A MINIMUM. THE CONTRACTOR SHALL ESTABLISH A PROGRAM OF REPAVING ACCEPTABLE TO THE MUNICIPALITY, COUNTY, OR OTHER AUTHORITY HAVING JURISDICTION AND WHICH IS ACCEPTABLE TO OCTA.

6. STRUCTURES:
   - A. ALL SUBSTRUCTURES SHALL BE CONSTRUCTED OR INSTALLED TO SPECIFICATIONS.
   - B. INSTALL PROTECTION BARRIERS WHEN REQUIRED IN AREAS EXPOSED TO TRAFFIC, PER OCTA INSPECTOR.
   - C. ALL CONDUIT LINES AND CONCRETE FLOORED SUBSTRUCTURES SHALL BE WATER TIGHT.
   - D. ALL GROUNDING MATERIALS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.

7. RETAINING WALLS:
   WHEN REQUIRED, RETAINING WALLS SHALL BE PROVIDED BY THE CONTRACTOR. WALLS ARE REQUIRED WHENEVER GRADE RISES MORE THAN 18 INCHES ABOVE THE STRUCTURE OR 24" ABOVE THE PAD SURFACE AT A DISTANCE OF 5 FEET FROM THE SAME, OR IN AREAS SUBJECT TO EROSION. DESIGN AND INSTALLATION MUST COMPLY WITH LOCAL BUILDING ORDINANCES.

8. PERMITS:
   ALL PERMITS NECESSARY FOR EXCAVATION SHALL BE PROVIDED BY THE CONTRACTOR.

9. ACCESS:
   HEAVY TRUCK ACCESS SHALL BE MAINTAINED TO EQUIPMENT LOCATIONS. STRUCTURES MUST BE CLEAR OF ALL APPURTENANCES THAT WOULD OBSTRUCT THE LOADING OR UNLOADING OF EQUIPMENT.

10. SERVICES:
    - A. METERS AND SERVICES SHALL COMPLY WITH EDISON ELECTRICAL SERVICES REQUIREMENTS.
    - B. WIRING MUST BE IN ACCORDANCE WITH APPLICABLE LOCAL ORDINANCES AND APPROVED BY LOCAL INSPECTION AUTHORITIES.

11. LOCATION:
    - A. THE LOCATION OF EXCAVATIONS AND STRUCTURES SHALL BE SHOWN ON THE WORKING DRAWING. NO DEVIATION FROM THE PLANNED LOCATIONS WILL BE PERMITTED UNLESS APPROVED BY THE OCTA INSPECTOR.
    - B. ACTUAL LOCATION OF OBSTRUCTIONS, STORM DRAINS, AND/OR OTHER FOREIGN UTILITIES TO BE THE RESPONSIBILITY OF THE CONTRACTOR.

12. CONTRACTOR IS TO VERITY LOCATION AND WIDTHS OF ALL SIDEWALKS AND DRIVEWAYS PRIOR TO DEMOLITION AND CONSTRUCTION.

13. SURVEY:
    SURVEYING OF PARKING LOT IMPROVEMENTS, PROPERTY CORNERS, LOT LINES, FINISHED GRADE, ETC., NECESSARY FOR THE INSTALLATION OF UNDERGROUND FACILITIES MUST BE COMPLETED AND MARKERS OR STAKES PLACED PRIOR TO THE START OF THE INSTALLATION. IN ADDITION, CONTRACTOR SHALL MAINTAIN THE MARKERS DURING THE INSTALLATION AND INSPECTION BY OCTA. GRADE AND PROPERTY LINE STAKES MUST SHOW ANY OFFSET MEASUREMENTS.

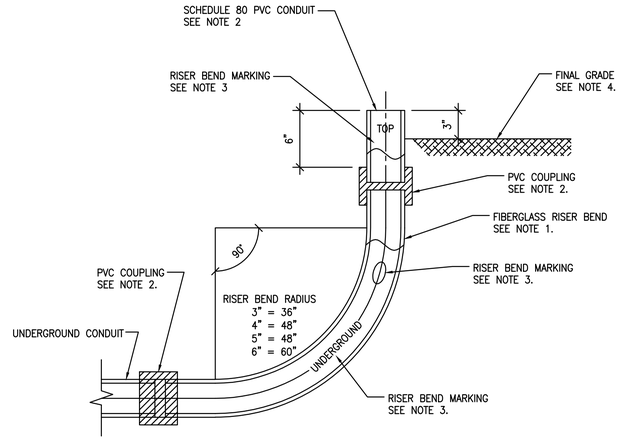
14. COORDINATION AND SUPERVISION:
    THE CONTRACTOR SHALL PROVIDE SUPERVISION OVER AND COORDINATION AMONG THE VARIOUS CONTRACTORS WORKING WITHIN THE FACILITY IN ORDER TO PREVENT DAMAGE TO OCTA FACILITIES. HE IS RESPONSIBLE FOR THE COST OF REPAIRS, REPLACEMENT, RELOCATION, OR OTHER CORRECTIONS TO OCTA FACILITIES MADE NECESSARY BY HIS FAILURE TO PROVIDE SUPERVISION OR TO OTHERWISE COMPLY WITH THESE SPECIFICATIONS.

15. TELEPHONE AND OTHER UTILITY REQUIREMENTS:
    THE DRAWING PREPARED FOR THIS JOB MAY ALSO COVER THE TELEPHONE AND DATA FACILITIES. ANY QUESTIONS CONCERNING DETAILS OF THESE INSTALLATIONS SHOULD BE REFERRED TO OCTA.

16. WARRANTY:
    CONTRACTOR EXPRESSLY REPRESENT AND WARRANT THAT ALL WORK PERFORMED AND ALL MATERIAL USED IN MEETING CONTRACTOR'S OBLIGATIONS HEREIN ARE FREE FROM DEFECTS IN WORKMANSHIP AND ARE IN CONFORMITY WITH OCTA REQUIREMENTS. THIS WARRANTY SHALL COMMENCE UPON RECEIPT BY CONTRACTOR OF OCTA'S FINAL ACCEPTANCE AND SHALL EXPIRE ONE YEAR FROM THAT DATE. CONTRACTOR AGREES TO PROMPTLY CORRECT TO THE OCTA'S SATISFACTION AND THAT OF ANY GOVERNMENTAL AGENCY HAVING JURISDICTION AND AT CONTRACTOR'S EXPENSE ANY BREACH OF THIS WARRANTY WHICH MAY BECOME APPARENT THROUGH INSPECTION OR OPERATION OF UNDERGROUND ELECTRIC SYSTEM BY OCTA DURING THIS WARRANTY PERIOD.

17. INSPECTION:
    INSPECTION IS REQUIRED DURING THE CONSTRUCTION PERIOD. A 48 HOUR ADVANCE NOTICE OF INTENT TO START CONSTRUCTION IS REQUIRED FROM THE CONTRACTOR TO OCTA. STANDARDS OF OCTA CONSTRUCTION REQUIREMENTS ARE AVAILABLE UPON REQUEST.

    DUCT AND STRUCTURE INSPECTOR: PHONE:
    CABLING CONSTRUCTION COORDINATOR: PHONE:



NOTE(S):

1. THE RISER BEND IS AVAILABLE IN THREE, FOUR, FIVE, OR SIX-INCH. THE MAIN BODY OF THE BEND IS MANUFACTURED FROM FIBERGLASS MATERIAL AND IS MEDIUM GRAY IN COLOR.
2. THE TOP AND BOTTOM OF RISER IS FURNISHED WITH PVC COUPLINGS PERMANENTLY EPOXY BONDED TO THE FIBERGLASS BEND. A SCHEDULE 80 PVC SIX-INCH LONG STUB-OUT IS SOLVENT WELDED INTO THE TOP PVC COUPLING.
3. THE TOP SCHEDULE 80 PVC STUB OUT OF BEND IS STENCILED "TOP", AND BOTTOM OF BEND IS STENCILED "UNDERGROUND." MANUFACTURERS NAME, SIZE, AND DATE (MONTH AND YEAR) WILL BE STENCILED ON THE CENTER OF THE RISER BEND.
4. THE TOP SCHEDULE 80 PVC STUB OUT WILL BE PLACED THREE INCHES ABOVE FINAL GRADE. NO PORTION OF THE FIBERGLASS MATERIAL OF THE BEND WILL BE EXPOSED ABOVE THE FINISH GRADE.
5. THE APPROVED MANUFACTURERS AND SUPPLIERS ARE:
   - A. MANUFACTURERS: FREE CONDUIT, SMITH PRODUCT COMPANY, AND CHAMPION FIBERGLASS, INC.
   - B. SUPPLIERS:

     ARMORCAST PRODUCTS COMPANY
     13230 SATICOY STREET
     NORTH HOLLYWOOD, CA 91605

     CAL-DUCT, INC.
     2522 LEE AVENUE
     SOUTH EL MONTE, CA 91733

     SAF-T-CO SUPPLY, INC.
     1300 E. NORMANDY PLACE
     SANTA ANA, CA 92705

WARNING

THE EXCAVATION MUST TAKE ALL STEPS NECESSARY TO AVOID CONTACT WITH UNDERGROUND FACILITIES WHICH MAY RESULT IN INJURY TO PERSONS OR DAMAGE TO FACILITIES IN THE AREA. THE INDICATED LOCATIONS OF EDISON UNDERGROUND FACILITIES AS PROVIDED, ARE BELIEVED TO BE ACCURATE, HOWEVER, THE FINAL DETERMINATION OF EXACT LOCATIONS AND THE COST OF REPAIR TO DAMAGE FACILITIES IS THE RESPONSIBILITY OF THE EXCAVATOR.

WHERE CONDUITS ARE PICKED UP OR INTERCEPTED, CONDUIT SHALL BE MANDRELLED AND PULL ROPE INSTALLED FROM TERMINAL TO TERMINAL.

CONCRETE PRODUCTS

PRECAST CONCRETE ITEM COMPLETE WITH NECK. COVER AND INSERTS MAY BE OBTAINED FROM ANY OF THE FOLLOWING LISTED AND APPROVED MANUFACTURERS.

JENSEN PRECAST
14221 SAN BERNADINO AVE.,
FONTANA, CALIFORNIA 92335
PHONE: (909) 350-4111
(800) 257-6100

UTILITY VAULT CO.
10650 HEMLOCK AVE.,
FONTANA, CALIFORNIA 92337
PHONE: (909) 428-3700
(800) 626-3860

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

MARK	DATE	BY	REVISIONS

Sheet Title UNDERGROUND CONDUIT, CABLE VAULT & PULL BOX CONSTRUCTION NOTES AND DETAIL

Project OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-13-2020
SCALE	AS NOTED
SHEET	GG-E-14

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

CONSTRUCTION NOTES AND DETAIL

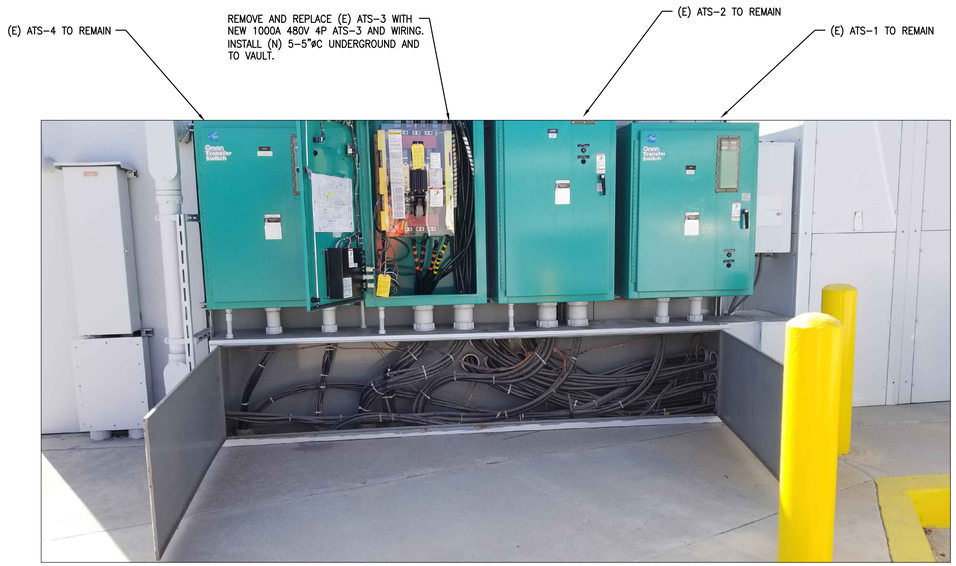
SCALE NONE

1

100% DRAWING SET

CONSTRUCTION NOTES:

1. COORDINATE WITH OCTA PROJECT MANAGER AND FACILITIES MAINTENANCE MANAGER FOR SHUT-DOWN OF EXISTING AUTOMATIC TRANSFER SWITCHES (ATSs) PRIOR TO REMOVAL AND INSTALLATION.
2. AFTER REMOVING EXISTING ATS-3, ADJUST EXISTING ATS-4, CONDUITS AND WIRING TO ALLOW SPACE FOR INSTALLATION OF NEW ATS-3.
3. REPAIR, PAINT AND RESTORE SWITCHBOARDS, CABINETS, CONDUITS, RACEWAYS AND WIRING TO MATCH THE EXISTING CONDITIONS PRIOR TO CONSTRUCTION OR BETTER.



EXISTING ATS-1 THROUGH ATS-4 ELEVATIONS

SCALE NONE

1

100% DRAWING SET

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CONSULTING ENGINEERS
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SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

MARK	DATE	BY	REVISIONS

Sheet Title ELEVATIONS AND DETAILS - ATS-1 THROUGH ATS-4

Project OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
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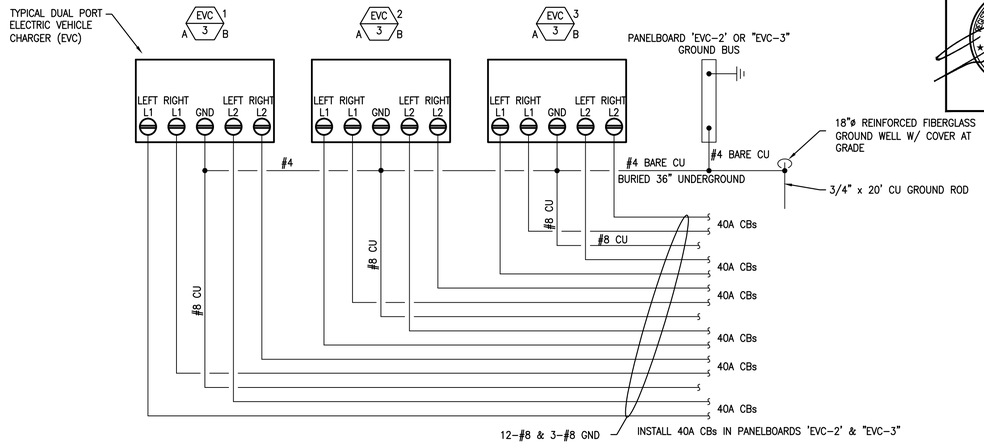
SCALE	AS NOTED
SHEET	GG-E-15

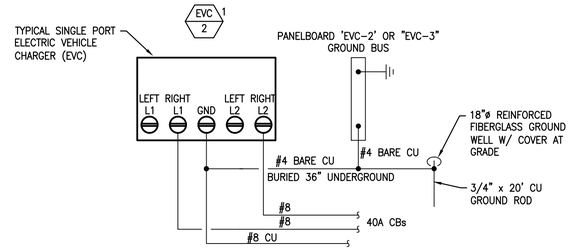
550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA



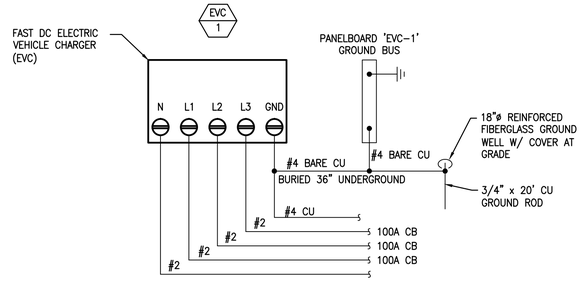
TYPICAL POWER WIRING DIAGRAM FOR DUAL PORT EVC STATIONS

SCALE NONE | 1



TYPICAL POWER WIRING DIAGRAM FOR SINGLE PORT EVC STATION

SCALE NONE | 2



TYPICAL POWER WIRING DIAGRAM FOR SINGLE PORT FAST DC EVC STATION

SCALE NONE | 3

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CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

MARK	DATE	BY	REVISIONS
	-	-	-

Sheet Title
ELECTRIC VEHICLE CHARGING STATIONS
TYPICAL WIRING DIAGRAMS

Project
OCTA GARDEN GROVE BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
11790 CARDINAL CIRCLE, GARDEN GROVE, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-13-2020
SCALE	AS NOTED
SHEET	GG-E-16

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET

ORANGE COUNTY TRANSPORTATION AUTHORITY

SANTA ANA BUS BASE

BATTERY ELECTRIC CAR CHARGING SYSTEMS

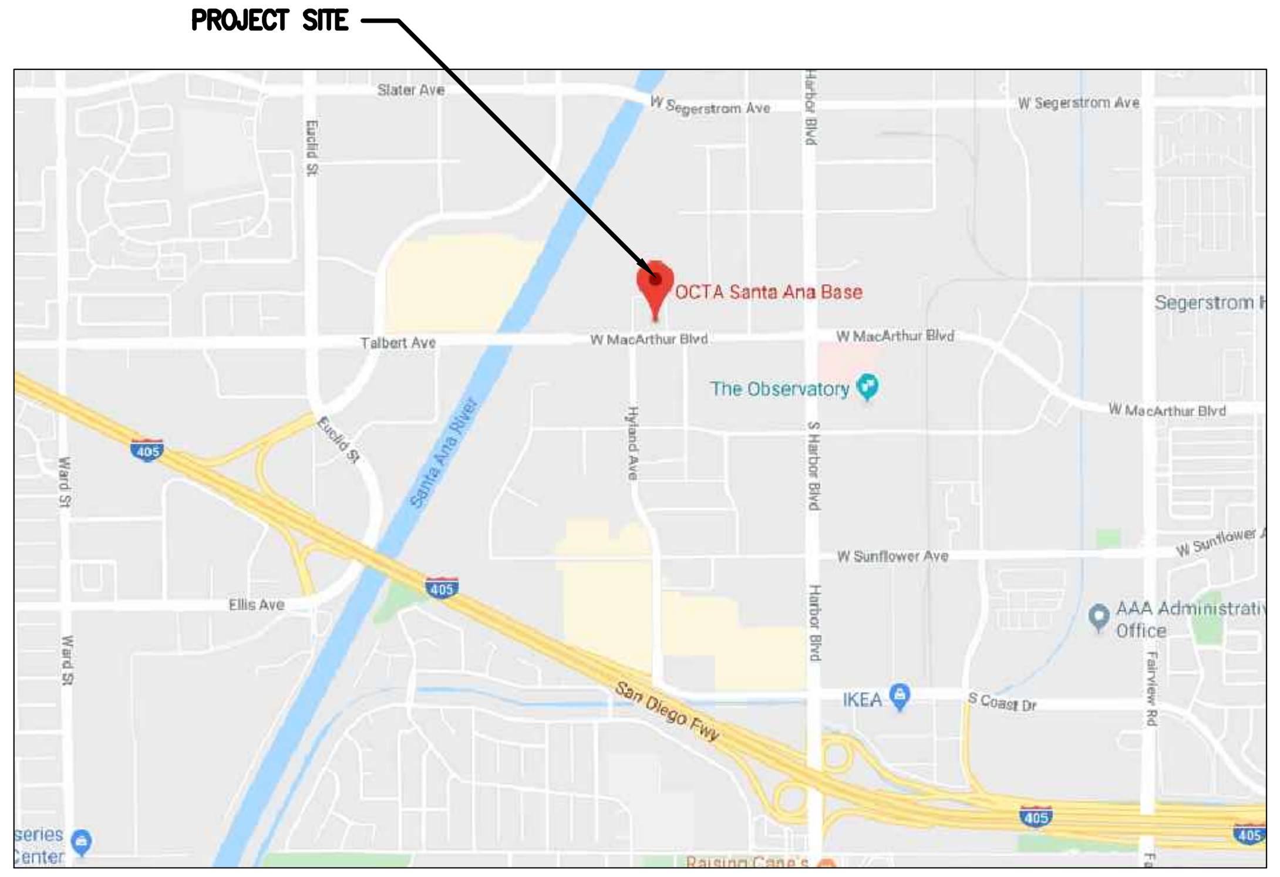
4301 WEST MACARTHUR BOULEVARD

SANTA ANA, CA 92704

CONTRACT No. C-0-2071

VICINITY MAP

PROJECT SITE



PROJECT LOCATION

PROJECT LOCATION

PROJECT INFORMATION

OWNER:	ORANGE COUNTY TRANSPORTATION AUTHORITY
SITE ADDRESS:	4301 WEST MACARTHUR BLVD., SANTA ANA, CA 92704
FACILITY USE:	BUS MAINTENANCE
ZONE:	INDUSTRIAL
REFERENCE:	–
BUILDING FOOT PRINT:	N/A
ALLOWABLE FLOOR AREA:	N/A
TYPE OF CONSTRUCTION:	N/A
SPRINKLERS REQUIREMENT:	N/A
HAZARD MATERIAL:	NO HAZARDOUS MATERIAL IS STORED NEARBY

CLIENT
ORANGE COUNTY TRANSPORTATION AUTHORITY
550 S. MAIN STREET
ORANGE, CA 92868
CONTACT: GEORGE OLIVO
PHONE: (714) 560-5872
EMAIL: golivo@octa.net

ELECTRICAL
DAHL, TAYLOR & ASSOCIATES
2960 DAIMLER STREET
SANTA ANA, CA 92705
CONTACT: QUANG D. VU, P.E.
PHONE: (949) 254-8016
EMAIL: qvu@dahltaylor.com

ARCHITECT
STERN ARCHITECTS, INC.
2961 W. MacArthur BLVD. SUITE 120
SANTA ANA, CA 92704
CONTACT: SYAIRAH SHAHARUDDIN
PHONE: (714) 556-2656
EMAIL: sshaharuddin@sternarchitects.com

BUILDING CODES AND STANDARDS

2019 BUILDING STANDARDS ADMINISTRATIVE CODE, PART 1, TITLE 24 C.C.R.

2019 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R.

2019 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R.

2019 CALIFORNIA MECHANICAL CODE (CMC) PART 4, TITLE 24 C.C.R.

2019 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24. C.C.R

2019 CALIFORNIA ENERGY CODE, PART 6, TITLE 24 C.C.R.
2019 CALIFORNIA FIRE CODE, PART 9, TITLE 24 C.C.R.

2019 CALIFORNIA REFERENCED STANDARDS, PART 12, TITLE 24 C.C.R.
TITLE 19 C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS.

2019 CALGreen

ALL WORK AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH THESE CODES AND ALL APPLICABLE LOCAL ORDINANCES. WHERE CONTRACT DOCUMENTS EXCEED THESE REQUIREMENTS WITHOUT VIOLATING CODE AND REGULATION REQUIREMENTS, CONTRACT DOCUMENTS SHALL TAKE PRECEDENCE. WHERE CODES CONFLICT, THE MORE STRINGENT SHALL APPLY.

CONTRACTORS BID NOTES

1. THE DRAWINGS AS PROVIDED WERE PUT TOGETHER AS A SINGLE PACKAGE.
2. CONTRACTORS BIDDING ON THIS PROJECT SHALL REVIEW THE ENTIRE SET OF DRAWINGS IN PREPARATION OF THEIR BID. REMOVAL OF ANY PORTION OF THE DRAWING IS PROHIBITED.
3. GENERAL CONTRACTOR WILL BE RESPONSIBLE FOR THE SCOPE OF WORK AS DESCRIBE IN THE ENTIRE SET AND WILL BE RESPONSIBLE TO COORDINATE ALL TRADES.
4. GENERAL CONTRACTOR AND ABATEMENT CONTRACTOR ARE TO COORDINATE ALL RELATED WORK.

SCOPE OF WORK

1. REMOVAL OF THE EXISTING TREES, LANDSCAPE, AND IRRIGATION PIPING. INSTALLATION OF DRIP IRRIGATION FOR TREES TO REMAIN IN ISOLATED AREAS.
2. RELOCATION OF THE EXISTING WROUGHT IRON FENCE, GATE, HARDWARE, CONTROLS, POSTS, AND FOUNDATIONS.
3. INSTALLATION OF NEW CIRCUIT BREAKERS, PANELBOARDS, TRANSFORMER, CONDUITS, AND WIRING.
4. SAW-CUTTING THE EXISTING AC PAVEMENT AND CONCRETE PAVEMENT; EXCAVATION OF TRENCHES; INSTALLATION OF CONDUITS, PULL BOXES, SUPPORT FRAMES, AND WEATHERPROOF CABINETS; AND BACKFILL AND COMPACTION OF TRENCHES.
5. CONSTRUCTION OF CONCRETE FOUNDATIONS, SAFETY BOLLARDS, ADA ACCESSIBLE CONCRETE PATHWAYS, CONCRETE PAVEMENT PATCHES, AC PAVEMENT PATCHES, ACCESS AISLES, SIGNS, AND PARKING STALL STRIPES.
6. INSTALLATION OF NEW ELECTRIC VEHICLE CHARGING STATIONS AND COMMUNICATION GATEWAYS.
7. COORDINATION FOR AND INSTALLATION OF DIGITAL PROGRAMS FOR AUTOMATIC CONTROLS, ELECTRIC CHARGING MONITORING, AND ENERGY MANAGEMENT.

DRAWING INDEX

	SHEET	DESCRIPTION
1	SA-T-1	TITLE SHEET, DRAWING INDEX, SCOPE OF WORK, PROJECT LOCATION AND VICINITY MAP
2	SA-GN-1	GENERAL NOTES
3	A-0.1	GENERAL INFORMATION + NOTES
4	A-0.2	ACCESSIBILITY NOTES + DETAILS 1
5	A-0.3	ACCESSIBILITY NOTES + DETAILS 2
6	A-0.4	ACCESSIBILITY NOTES + DETAILS 3
7	A-0.5	ACCESSIBILITY NOTES + DETAILS 4
8	A-0.6	ACCESSIBILITY NOTES + DETAIL - EVCS
9	A-1.0	SITE PLAN
10	A-1.1	ENLARGED SITE PLAN
11	A-1.2	ENLARGED SITE PLAN
12	SA-E-1	ELECTRICAL ABBREVIATIONS, SYMBOLS AND NOTES
13	SA-E-2	MODIFIED SINGLE LINE DIAGRAM
14	SA-E-3	ELECTRIC VEHICLE CHARGER AND PANELBOARD SCHEDULES
15	SA-E-4	UTILITY SITE PLAN
16	SA-E-5	ENLARGED ELECTRICAL EQUIPMENT PLAN-ELECTRIC VEHICLE CHARGING STATIONS
17	SA-E-6	ENLARGED ELECTRICAL EQUIPMENT PLAN-ELECTRIC VEHICLE CHARGING STATIONS
18	SA-E-7	ENLARGED ELECTRICAL EQUIPMENT PLAN-ELECTRIC VEHICLE CHARGING STATIONS
19	SA-E-8	ENLARGED ELECTRICAL SERVICE EQUIPMENT PLAN AND ELEVATIONS
20	SA-E-9	ELECTRIC VEHICLE CHARGING STATIONS-DETAILS AND SECTIONS
21	SA-E-10	ELECTRIC VEHICLE CHARGING STATIONS-DETAILS AND SECTIONS
22	SA-E-11	ELECTRIC VEHICLE CHARGING STATIONS-DETAILS AND SECTIONS
23	SA-E-12	ELECTRIC VEHICLE CHARGING STATIONS-WIRING DIAGRAMS

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 756-8654
FAX: # (949) 502-0777

MARK	DATE	BY	REVISIONS
△	-	-	-

Sheet Title TITLE SHEET, DRAWINGS INDEX, SCOPE OF WORK, PROJECT LOCATION AND VICINITY MAP

Project OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-14-2020
SCALE	AS NOTED
SHEET	SA-T-1

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET

GENERAL NOTES

GENERAL NOTES:

1) THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, TOOLS, AND EQUIPMENT TO PROVIDE A COMPLETE AND FINISHED PRODUCT. ALL MATERIALS SHALL BE NEW, UNLESS NOTED OTHERWISE.

2) ALL WORK PERTAINING TO THIS PROJECT SHALL BE DONE IN ACCORDANCE WITH THESE PLANS AND THE SPECIFICATIONS, AND CONTRACT DOCUMENTS, AND THE LOCAL AGENCY OF JURISDICTION BUILDING CODE REQUIREMENTS. CONTRACTOR IS REQUIRED TO OBTAIN CONSTRUCTION PERMIT AND BUSINESS LICENSE FROM THE CITY BEFORE BEGINNING CONSTRUCTION WORK.

3) THE CONTRACTOR SHALL INFORM THE PROJECT MANAGER 72 HOURS BEFORE STARTING CONSTRUCTION WORK. THE PROJECT ENGINEER WILL SCHEDULE A MEETING BETWEEN CONTRACTOR AND OCTA FACILITY AND OPERATION STAFF BEFORE WORK BEGINS.

4) THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, FENCES AROUND WORK AREA, WARNING SIGNS, AND OTHER PROTECTIVE DEVICES, AND TAKE ALL NECESSARY PRECAUTIONARY MEASURES TO PROTECT ALL OCTA PERSONNEL, PUBLIC, PROPERTY AND THE WORK.

5) DUST CONTROL SHALL BE REQUIRED DURING CONSTRUCTION. DUST SHALL BE CONTROLLED BY THE CONTRACTOR BY ENCLOSING AREA OF WORK WITH PLASTIC SHEET OR CANVAS BARRICADES TO PREVENT DUST SPREAD TO ADJACENT BUSES, BUILDINGS, EQUIPMENT AND OCTA WORKERS.

6) DEMOLITION NECESSARY FOR COMPLETION OF CONSTRUCTION SHALL BE A PART OF THIS PROJECT. THE EXISTING MATERIAL REMOVED DURING CONSTRUCTION, SHALL BE LEGALLY DISPOSED OFF-SITE DAILY. ALL DEBRIS SHALL BE REMOVED FROM PREMISES DAILY AND ALL AREAS SHALL BE LEFT IN A CLEAN (BROOM) CONDITION AT ALL TIMES, AND AT THE END OF EACH WORK DAY, CLEAN THE WORK AND SURROUNDING AREAS WHERE CONSTRUCTION DEBRIS HAS SPREAD DURING THE WORK DAY.

7) ALL DRAINAGE FROM NEW CONSTRUCTION WORK SHALL BE PREVENTED FROM ENTERING EXISTING STORM DRAINS ON SITE.

8) THE CONTRACTOR IS REQUIRED TO TAKE ALL PRECAUTIONARY MEASURES TO LOCATE AND PROTECT ABOVE AND BELOW GROUND UTILITIES, EQUIPMENT, AND STRUCTURES SHOWN OR NOT SHOWN ON THESE PLANS. THE PROTECTION OF ALL UTILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR. AT EACH OCTA'S PROPERTY, THE CONTRACTOR SHALL UTILIZE AN INDEPENDENT UNDERGROUND UTILITY LOCATING SERVICE, WHICH USES STANDARD LOCATING TECHNIQUES OTHER THAN EXCAVATING, TO IDENTIFY THE LOCATION OF UNDERGROUND UTILITIES IN THE AREAS OF THE WORK PRIOR TO EXCAVATING. THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION OF UTILITIES IDENTIFIED IN THE WORK AREA BY POTHOLING USING HAND TOOLS BEFORE USING ANY POWER OPERATED EXCAVATING EQUIPMENT. UTILITIES NOT SHOWN ON THE PLANS WHICH ARE IN DIRECT CONFLICT WITH THE WORK WILL BE DEALT WITH BY CHANGE ORDER. THE CONTRACTOR SHALL BEAR ALL EXPENSE FOR THE REPAIR OR REPLACEMENT OF UTILITIES OR OTHER PROPERTY DAMAGE BY HIS OPERATIONS IN CONJUNCTION WITH THE EXECUTION OF THE CONTRACT WORK.

9) THE CONTRACTOR SHALL DELINEATE TRAFFIC THROUGH THE CONSTRUCTION WORK AREA, AND SHALL COOPERATE WITH THE OCTA FACILITY, OPERATIONS, AND MAINTENANCE PERSONNEL TO KEEP THE FACILITY OPERATIONAL AT ALL TIMES. PROVIDE A 20 FEET WIDE DRIVE-WAY ADJACENT TO WORK AREA FOR BUS AND OTHER TRAFFIC TO PASS AROUND WORK AREA. PROVIDE ACCESS FOR BUS AND CAR PARKING IN ADJACENT PARKING STALLS. CONTRACTOR IS REQUIRED TO KEEP OCTA BUS AND FACILITY TRAFFIC OPERATIONAL AT ALL TIMES. DO NOT PARK TRUCKS EQUIPMENT IN BUS DRIVEWAYS, ENTRANCE OR EXITS.

10) ALL WORK SHALL BE COMPLETED BETWEEN THE HOURS OF 7:00 A.M. AND 3:30 P.M. ALL EXISTING FACILITIES, EQUIPMENT, AND UTILITIES DISCONNECTED BY CONTRACTOR DURING THE WORK DAY SHALL BE RE-CONNECTED AT 3:30 PM FOR OCTA TO CONTINUE ITS NORMAL AFTER HOURS OPERATIONS.

11) PLANS HAVE BEEN PREPARED FROM VISUAL AND ACTUAL MEASUREMENT OF THE WORK AREA. THE CONTRACTOR SHALL REPORT TO THE PROJECT MANAGER ANY ERROR, INCONSISTENCY, OR OMISSION HE MAY DISCOVER IN THE DRAWINGS BEFORE BEGINNING WORK. THE CONTRACTOR IS RESPONSIBLE FOR CORRECTING ANY ERROR AT NO COST TO THE AUTHORITY AFTER THE START OF CONSTRUCTION. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS BEFORE SUBMITTING HIS BID. IN CASE OF DISCREPANCIES, CONTRACTOR SHALL OBTAIN CLARIFICATION FROM THE PROJECT MANAGER. SUBMITTAL OF BID INDICATES CONTRACTOR IS AWARE OF SITE AND WORK CONDITIONS AND UNDERSTANDS THE WORK REQUIRED BY THE CONTRACT.

12) ON SITE VERIFICATION OF ALL DIMENSIONS AND CONDITIONS SHALL BE RESPONSIBILITY OF THE CONTRACTOR, NOTIFY PROJECT MANAGER OF ANY DISCREPANCY BEFORE STARTING WORK.

13) THE CONTRACTOR SHALL PROVIDE TEMPORARY WATER, POWER, AND OTHER FACILITIES REQUIRED TO COMPLETE THE PROJECT. CONTRACTOR SHALL PROVIDE TEMPORARY TOILET FACILITIES ON SITE FOR HIS WORKERS WHICH SHALL BE CLEANED ON A DAILY BASIS.

14) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE SECURITY OF THE WORK WHILE THE WORK IS IN PROGRESS AND UNTIL COMPLETED.

15) THE CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL REPLACE OR REMEDY ANY FAULTY, IMPROPER OR INFERIOR MATERIAL OR WORKMANSHIP, OR ANY DAMAGE TO WORK OR ADJACENT AREAS OR STRUCTURES.

16) CONTRACTOR SHALL COMPLY WITH ALL SAFETY CODE REGULATIONS AND THE STATE DEPARTMENT OF INDUSTRIAL RELATIONS, DIVISION OF INDUSTRIAL SAFETY (O.S.H.A.) REQUIREMENTS.

17) VERIFY ALL MEASUREMENTS ON SITE BEFORE PREPARING AND SUBMITTING SHOP DRAWINGS.

18) THE CONTRACTOR SHALL POST ADVANCE CONSTRUCTION WARNING SIGNS. THE CONTRACTOR SHALL PROVIDE ALL BARRICADES, WARNING SIGNS, AND PROTECTIVE DEVICES AND SHALL TAKE ALL NECESSARY MEASURES TO PROTECT ALL PERSONNEL, PROPERTY, AND THE WORK SITE DURING CONSTRUCTION. CONTRACTOR SHALL PROVIDE FLASHING LIGHTS AROUND THE CONSTRUCTION WORK AREA ON THE BARRICADES FROM DUSK (4:00 PM) TO DAWN (7:00 AM) EVERYDAY WHEN WORK IS IN PROGRESS. COMPLETELY CLOSE WITH BARRICADES ENTRANCE AND EXITS OF THE CONSTRUCTION AREA, AND INSTALL NOTIFICATION SIGNS IN ADVANCE OF CLOSURE OF THE AREA FOR CONSTRUCTION, INSTALL NOTIFICATION SIGNS ONE WEEK BEFORE CONSTRUCTION BEGINS.

19) WORK UNDER THIS CONTRACT SHALL BE DONE SO THAT EXISTING BUS OPERATIONS AND BUS MAINTENANCE SHALL REMAIN IN FULL OPERATIONS DURING CONSTRUCTION. OCTA'S BUS OPERATION AND BUS MAINTENANCE, REPAIR SHALL REMAIN UNINTERRUPTED, ONGOING, AND IN FULL OPERATION DURING CONSTRUCTION. CONTRACTOR SHALL ARRANGE HIS WORK TO OFFER LEAST INTERFERENCE TO OCTA'S CONTINUED DAILY BUS OPERATION AT THE BUS BASE. KEEP NON-CONSTRUCTION AREAS OPEN TO OCTA STAFF WORK.

20) CONTRACTOR SHALL ARRANGE HIS WORK TO OFFER LEAST INTERFERENCE WITH OCTA DAILY BUS OPERATIONS. OCTA PROJECT MANAGER WILL COORDINATE WORK ACTIVITIES, AND TEMPORARY CHANGES IN FACILITY ACTIVITY WHICH ARE NECESSARY FOR CONTRACTOR'S WORK. CONTRACTOR SHALL COORDINATE HIS WORK ACCORDINGLY.

21) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES TO EXISTING FACILITIES RESULTING FROM HIS CONSTRUCTION. ALL DISTURBED OR DAMAGED AREAS SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE AND/OR PATCHED TO MATCH ADJACENT MATERIALS, OR AS EXISTED BEFORE CONSTRUCTION.

22) IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL UTILITIES WHETHER SHOWN ON THE DRAWINGS OR NOT, AND TO PROTECT THEM AS NECESSARY. THE CONTRACTOR SHALL BEAR ALL EXPENSE OF REPAIR OR REPLACEMENT OF UTILITIES DAMAGED BY HIS OPERATIONS OR CONSTRUCTION WORK. CONTRACTOR SHALL LOCATE ALL UTILITIES IN THE WORK AREA AND PROTECT THEM FROM DAMAGE. IF DAMAGED BY CONSTRUCTION, CONTRACTOR WILL BE REQUIRED TO REPAIR DAMAGED UTILITY IMMEDIATELY SO THAT OCTA BUS OPERATIONS IS NOT INTERRUPTED. PROVIDE TEMPORARY UTILITIES DURING BREAKDOWN PERIOD. CONTRACTOR SHALL FULLY CO-OPERATE WITH OCTA BUS AND FACILITY MAINTENANCE STAFF TO COMPLETE THE WORK. IF REQUIRED BY OCTA STAFF, PROVIDE TEMPORARY FACILITIES, UTILITIES, OR EQUIPMENTS DURING TEMPORARY DISCONNECTION, BREAKDOWN, OR DAMAGE OF OCTA FACILITIES, UTILITIES, OR EQUIPMENTS DUE TO CONTRACTOR'S WORK.

23) NO OMISSION OF THE WORK SHALL BE MADE WITHOUT WRITTEN APPROVAL OF OCTA.

24) NO SUBSTITUTION OF THE WORK SHALL BE MADE WITHOUT WRITTEN APPROVAL OF OCTA. CHANGES TO THE CONTRACT DRAWINGS OR SPECIFICATIONS SHALL BE MADE BY A WRITTEN ADDENDUM OR CHANGE ORDER APPROVED BY OCTA.

25) ALL WORKMANSHIP SHALL BE PERFORMED BY SKILLED MECHANICS USING THE BEST STANDARD PRACTICES OF THE TRADE AND CONSTRUCTION INDUSTRY.

26) WHERE NO SPECIFIC DETAIL IS SHOWN, THE CONSTRUCTION SHALL BE SIMILAR TO THAT INDICATED OR NOTED FOR SIMILAR CONDITIONS OF CONSTRUCTION ON THE PROJECT. REFERENCES OF NOTES AND DETAILS TO SPECIFIC CONDITIONS AND LOCATIONS SHALL NOT LIMIT THEIR APPLICABILITY.

27) THE STRUCTURE IS DESIGNED AS A STABLE UNIT AFTER ALL COMPONENTS ARE INSTALLED. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL TEMPORARY SHORING, BRACING, SCAFFOLDING, AND OTHER SUPPORTS NECESSARY. CONTRACTOR SHALL PROVIDE ALL NECESSARY TEMPORARY BACKING, SUPPORTS, SLEEVES, FRAMING FOR SUPPORTING THE WORK DURING INSTALLATION.

28) CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT OCTA STAFF AND BUSES FROM ENTERING CONSTRUCTION AREA DURING DEMOLITION AND CONSTRUCTION. SIGNS SHALL BE POSTED TO NOTIFY OCTA WORKERS OF CONSTRUCTION. PROVIDE BARRIERS AROUND GENERAL AREA OF CONSTRUCTION WHILE WORK IS IN PROGRESS. FENCES, BARRICADES, ENCLOSURES, WARNING SIGNS, ETC. SHALL BE PROVIDED AROUND THE LOCAL WORK AREA BY THE CONTRACTOR TO KEEP THE PUBLIC OUT OF CONTRACTOR'S WORK AREA AND WARN THE PUBLIC OF CONSTRUCTION WORK IN PROGRESS.

29) THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT INCLUDING SAFETY OF ALL PERSONS AND PROPERTY AND THAT THE REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

30) THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFETY AND SECURITY OF THE PROPERTY AND ALL WORKERS ON SITE. CONTRACTOR SHALL PROVIDE ALL SAFETY EQUIPMENT FOR HIS WORKERS.

31) THE SCHEDULE OF THE PROJECT IS CRITICAL. EACH SUB-CONTRACTOR SHALL START HIS WORK PER THE SCHEDULE AND PURSUE IT DILIGENTLY AND COMPLETE IT IN ACCORDANCE WITH THE GENERAL CONTRACTOR'S SCHEDULE OF CONSTRUCTION. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR THE SUPERVISION OF THE WORK OF ALL ITS SUB-CONTRACTORS.

32) CARE SHALL BE EXERCISED TO PREVENT DAMAGE DUE TO CARELESSNESS OR VANDALISM. ALL MATERIALS AND EQUIPMENT SHALL BE SECURED AFTER WORKING HOURS. NO CONSTRUCTION MATERIALS OR EQUIPMENT ARE TO BE LEFT UNSECURED AT ANY TIME. THE CONTRACTOR SHALL PROVIDE FOR HIS OWN SECURITY, STORAGE ENCLOSURES AS NECESSARY IN DESIGNATED LAY-DOWN OR STORAGE ENCLOSURE AREA APPROVED BY THE OCTA FACILITY MAINTENANCE MANAGER. THE CONTRACTOR SHALL BE RESPONSIBLE TO FENCE AND SECURE HIS STORAGE AND EQUIPMENT AT ALL TIMES. OCTA IS NOT RESPONSIBLE FOR CONTRACTOR'S MATERIAL OR EQUIPMENT LOSS ON OCTA PROPERTY. CONTRACTOR'S MATERIALS, TRUCKS, OR EQUIPMENTS SHALL NOT BLOCK TRAFFIC DRIVEWAYS OR OCTA BUS OPERATIONS AND MAINTENANCE WORK DURING CONSTRUCTION.

33) DO NOT BLOCK BUS ENTRANCE, EXITS AND DRIVEWAYS OR BUS PARKING STALLS WITH CONTRACTOR'S MATERIAL, EQUIPMENT OR TRUCKS. KEEP ALL MATERIALS, TOOLS, EQUIPMENT, AND TRUCKS WITHIN LIMIT OF CONSTRUCTION OR IN ASSIGNED SPACE BY FACILITY MANAGER.

34) DO NOT LOAD OR STORE NEW EQUIPMENT (TO BE INSTALLED) AT ONE SPOT OR LOCATION ON THE ROOF.

35) WHEN WORKING ON ROOF TO INSTALL EQUIPMENT DURING CONSTRUCTION, CONTRACTOR IS REQUIRED TO CORDON OFF (WITH TRAFFIC DELINEATORS AND YELLOW WARNING TAPE) WORKING AREA BELOW IN THE SHOP (MAINTENANCE BUILDING) SO THAT OCTA WORKERS ARE AWARE OF CONSTRUCTION WORK OVERHEAD ON ROOF. PREVENT TOOLS, EQUIPMENT AND DEBRIS FROM FALLING BELOW IN WORK AREAS OF MAINTENANCE BUILDING.

36) THIS TASK SHALL BE COORDINATED WITH THE PROJECT MANAGER, BUS BASE MANAGER, AND FACILITY MANAGER

A JOB HAZARD ANALYSIS SHALL BE DEVELOPED FOR THE TASK THAT IDENTIFIES DAILY SAFETY TAILGATE BRIEFINGS, BARRICADES, VEHICLE AND EQUIPMENT STAGING (DIAGRAM), COMMUNICATIONS, EVACUATING EFFECTED PERSONNEL INSIDE THE BUILDING, CRANE ACTIVITY, REMOVING OLD EQUIPMENT, INSTALLING NEW EQUIPMENT, FALL PROTECTION, ALLOWING EFFECTED EVACUATED PERSONNEL BACK INTO THEIR AREA OF BUILDING, HOUSEKEEPING/CLEAN-UP, DEMOBILIZATION. THE JOB HAZARD ANALYSIS IS REQUIRED TO BE SUBMITTED TO THE OCTA PROJECT MANAGER 10 WORKING DAYS PRIOR TO THE SCHEDULED HVAC TASK ACTIVITY FOR OCTA REVIEW.

NO LATER THAN TEN (10) WORKING DAYS PRIOR TO THE ARRIVAL OF A CRANE, THE CONTRACTOR MUST PROVIDE THE MOST RECENT ANNUAL AND QUADRENNIAL CERTIFICATES. THE CONTRACTOR MUST ALSO PROVIDE CRANE OPERATOR CERTIFICATES FROM THE NATIONAL COMMISSION FOR THE CERTIFYING OF CRANE OPERATORS (NCCCO), AS OUTLINED IN CIIPP, NO LATER THAN TEN WORKING DAYS PRIOR TO A CRANE OPERATOR WORKING ON SITE.

PICK AND CARRY WITH RUBBER TIRED CRANES IS FORBIDDEN ON OCTA PROJECTS.

A RIGGING PLAN DEVELOPED BY THE CRANE COMPANY OR CRANE OWNER IS REQUIRED FOR ALL LIFTS. THE RIGGING PLAN SHALL BE SUBMITTED NO LATER THAN 10 WORKING DAYS PRIOR TO THE SCHEDULED CRANE ACTIVITY FOR OCTA REVIEW.

THE PLAN SHALL INCLUDE:

- THE VERIFIED LOAD WEIGHT AND THE RIGGING WEIGHTS
- BOTTOM ANGLE AND REACH IN FEET FOR THIS LOAD PLACEMENT
- COPY OF THE LOAD CHART APPLICABLE TO THE ANGLE, REACH AND LOAD
- THE PERCENTAGE OF CRANE RATED CAPACITY FOR THIS LOAD PLACEMENT
- A PLOT PLAN OR GOOGLE MAP DIAGRAM OF THE CRANE SET-UP LOCATION AND THE LOAD PLACEMENT LOCATIONS
- IDENTIFY THE COMMUNICATION METHOD (RADIO, HAND SIGNAL, ECT.)
- DELIVERY TRUCK/TRAILER LOCATION

CRITICAL LIFTS REQUIRE AN ENGINEERED PLAN DESIGNED BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN CALIFORNIA. A CRITICAL LIFT INCLUDES, BUT IS NOT LIMITED TO:

1. ANY LIFT LOCATION THAT COULD RESULT IN THE BOOM OR LOAD FALLING INTO A HAZARDOUS AREA IN THE EVENT OF A MISHAP, INCLUDING ENERGIZED ELECTRICAL WIRING AND EQUIPMENT, GAS MANIFOLDS, AND OPERATING MACHINERY,
2. LIFTS EQUAL TO OR GREATER THAN 10 TONS,
3. LIFTS EQUAL TO OR GREATER THAN 75% OF RATED CAPACITY,
4. LIFTS OVER OCCUPIED BUILDINGS, RAILWAYS OR PUBLIC ROAD WAYS,
5. THE USE OF MULTIPLE CRANES FOR ONE LIFT, AND/OR
6. LIFT AND TRANSIT OF LOAD GREATER THAN 75% OF RATED CAPACITY OF TRACK CRAWLER CRANE.

37) DURING CONSTRUCTION REMOVE EQUIPMENT, DISCONNECT OR REMOVE UTILITIES, AND ROOF ACCESSORIES TO FACILITATE AND INSTALL NEW EQUIPMENT. REINSTALL ALL THE ABOVE AFTER NEW EQUIPMENT HAS BEEN INSTALLED AND OPERATIONAL. INFORM OCTA, SEVEN DAYS AHEAD OF EQUIPMENT OF UTILITY DISCONNECTION.

38) THE PROTECTION OF ALL OCTA PROPERTY, STRUCTURES, EQUIPMENT, UTILITIES, AND ACCESSORIES IS THE RESPONSIBILITY OF THE CONTRACTOR.

39) THE EXTENT OF THE WORK IS ONLY INDICATED GENERALLY ON THE DRAWINGS ARE BASED ON EXISTING CONDITIONS AND RECORD DRAWINGS.

40) IT IS THE INTENT OF THESE CONSTRUCTION DOCUMENTS TO INCLUDE ITEMS AND COMPONENTS FOR THE PROPER EXECUTION OF THE WORK, AND FOR THE PROVISION FOR A COMPLETE FUNCTIONING SYSTEM. IN THAT REGARD ALL APPURTENANT AND ACCESSORY ITEMS AND COMPONENTS REQUIRED FOR THE CONSTRUCTION OF COMPLETE AND FUNCTIONING SYSTEM SHALL BE PROVIDED WHETHER SPECIFICALLY IDENTIFIED IN THESE DOCUMENTS OR NOT.

41) BEFORE SUBMITTING A BID, CONTRACTOR SHALL VISIT THE SITE IN THE PRE-BID JOB-WALK AND VERIFY ALL EXISTING ITEMS SHOWN ON THE PLANS, CONDITIONS, HAZARDS, ELEVATIONS, STRUCTURES, EQUIPMENT, UTILITIES, AND LOCAL REQUIREMENTS. SUBMISSION OF A BID BY THE CONTRACTOR SHALL BE DEEMED EVIDENCE OF SUCH VISIT AND REVIEW OF SITE. ALL BIDDERS SHALL TAKE THESE EXISTING CONDITIONS INTO CONSIDERATION AND A LACK OF SPECIFIC INFORMATION ON THE DRAWING SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY. NO REQUEST FOR ADDITIONAL PAYMENT SHALL BE CONSIDERED AS VALID DUE TO FAILURE TO ALLOW FOR CONDITIONS WHICH CURRENTLY EXISTS ON SITE.

42) LOCATIONS AND ELEVATIONS OF THE VARIOUS ITEMS INCLUDED WITHIN THE WORK HAVE BEEN OBTAINED FROM EXISTING DRAWINGS AND LIMITED FIELD SURVEY. CONTRACTOR SHALL EXAMINE THE SITE, VERIFY FIELD CONDITIONS, STRUCTURES, EQUIPMENT UTILITIES AND SERVICES REQUIRED AND BE ADEQUATELY INFORMED AS TO THEIR RELATION TO THE WORK. THE SUBMISSION OF BID SHALL BE DEEMED OF EVIDENCE OF SUCH A VISIT.

43) OCTA STAFF WILL CONTINUE TO WORK ON BUS MAINTENANCE AND REPAIR DURING CONSTRUCTION IN THE MAINTENANCE BUILDING. CONTRACTOR'S WORK SHALL NOT DISRUPT OCTA BUS MAINTENANCE WORK.

44) CONTRACTOR WILL BE ALLOWED TO WORK ON REMOVING AND REPLACING ONE HV UNIT AT A TIME. CONTRACTOR SHALL REMOVE AND REPLACE ONE FAN AND COMPLETE ALL WORK ON THE FAN INCLUDING MAKING IT OPERATIONAL BEFORE PROCEEDING TO THE NEXT HV UNIT REPLACEMENT. THE CONTRACTOR SHALL COORDINATE THE WORK WITH OCTA PROJECT MANAGER AND FACILITY MAINTENANCE TO SEQUENCE HIS DAILY WORK SCHEDULE.

45) CONTRACTOR SHALL SCHEDULE DEACTIVATION OF UTILITIES WITH THE OCTA PROJECT MANAGER AND FACILITY MAINTENANCE. DEACTIVATION OR RELOCATION OF UTILITIES, SYSTEMS, EQUIPMENT, OR OTHER ACCESSORIES SHALL BE SCHEDULE A WEEK IN ADVANCE WITH THE PROJECT MANAGER. PROVIDE TEMPORARY SERVICE DURING DEACTIVATION PERIOD. MINIMIZE DEACTIVATION DOWN TIME.

46) CONTRACTOR SHALL COVER ALL OCTA EQUIPMENT, STRUCTURES BELOW IN BUS MAINTENANCE BAYS WHEN WORKING ON ROOF TO PREVENT DUST SPREAD AND DAMAGE TO OCTA TOOLS, EQUIPMENT. CLEAN ALL ABOVE ITEMS AND WORK AREA AT END OF WORK DAY.

47) THE GENERAL CONTRACTOR SHALL TAKE ALL PREVENTIVE MEASURES DURING CONSTRUCTION TO PREVENT DAMAGE TO OCTA PROPERTY AND STAFF WORKING IN AND AROUND THE BUILDING. THE MAINTENANCE BUILDING STAFF WILL BE WORKING IN THE BUILDING DURING CONSTRUCTION WORK. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL REPLACE OR REPAIR ANY FAULTY IMPROPER OR INFERIOR MATERIAL OR WORKMANSHIP OR ANY DAMAGE TO THE WORK OR ADJACENT AREAS, OR STRUCTURES IN AND AROUND THE MAINTENANCE BUILDING.

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2980 DAMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: ∮ (949) 756-8654
FAX: ∮ (949) 502-0777

MARK	DATE	BY	REVISIONS
1	-	-	-

Sheet Title GENERAL NOTES

Project OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-14-2020
SCALE	AS NOTED
SHEET	SA-GN-1

550 South Main Street
Orange, CA 92668
714/560/OCTA

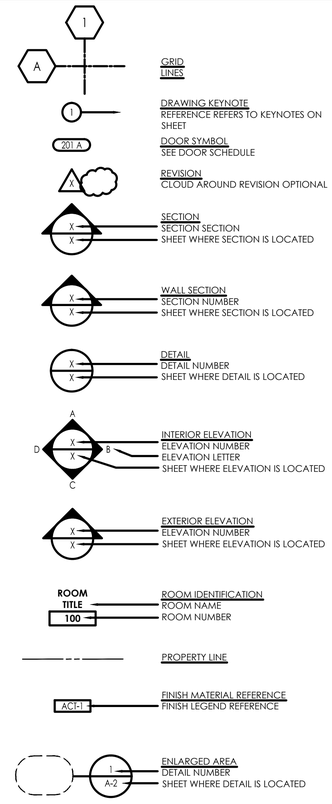
OCTA

100% DRAWING SET

ABBREVIATIONS

A.B.	Anchor Bolt
ACOUS	Acoustical
ADJ	Adjustable
ALUM	Aluminum
&	And
L	Angle
APPROX	Approximate
A.C.	Asphaltic Concrete
@	At
ANOD	Anodized
ASB	Asbestos
A/C	Air Conditioning
ARCH	Architect (ural)
BLK'G	Blocking
BM	Beam
BLK	Block
BTWN	Between
BOT	Bottom
BD	Board
BLDG	Building
CAB	Cabinet
CLG.	Ceiling
℄	Centerline
CLR	Clear
COL	Column
COMPO	Composition
CONC	Concrete
C.M.U.	Concrete Masonry Unit
CF/CI	Contractor Furnished/ Contractor Installed
CONT.	Continuous
(D)	Demolish
DIAG	Diagonal
DIA. Ø	Diameter
DIM	Dimension
D.F.	Douglas Fir
DWR	Drawer
(E)	Existing
EA	Each
ELEC	Electrical
ELEV	Elevation
EQ.	Equal
EQUIP	Equipment
EXT	Exterior
EMER	Emergency
EST	Estimate
EXP	Expansion
E.I.F.S.	Exterior Insulation & Finishing System
F.O.S.	Face of Stud
FIN	Finish
F.F.	Finish Floor
F.G.	Finish Grade
F.O.F.	Face of Finish
F.S.	Finish Surface
F.E.C.	Fire Extinguisher Cabinet
FLR	Floor
FURR	Furred
FTG	Footing
F.O.C.	Face of Concrete
GALV	Galvanized
G.I.	Galvanized Iron
GA	Gauge
G.C.	General Contractor
GR	Grade
GYP. BD	Gypsum Board
GRVL	Gravel
HDW	Hardware
HWD	Hardwood
HGT	Height
HDR	Header
HTG	Heating
H.D.	Heavy Duty
H.C.	Hollow Core
H.M.	Hollow Metal
HORIZ	Horizontal
H.B.	Hose Bibb
INFO	Information
INCL	Including
INSUL	Insualation
INT	Interior
LAV	Lavatory
LAB	Laboratory
L.B.	Lag Bolt
L.P.	Laminated Plastic
MAX	Maximum
MIN.	Minimum
MTL	Metal
MISC	Miscellaneous
(N)	New
N.I.C.	Not In Contract
N.T.S.	Not to Scale
NOM	Nominal
O.C.	On Center
OPNG	Opening
P	Paint
PLAS	Plaster
℗	Plate
PLYWD	Plywood
(R)	Relocate/Relocated
REQ'D	Required
S.C.	Solid Core
SECT	Section
SHTG	Sheathing
SHT	Sheet
SIM	Similar
SPECS	Specifications
SQ. FT.	Square Foot
SQ. IN.	Square Inch
S S.	Stainless Steel
STD	Standard
STL	Steel
STRUCT	Structural
THK	Thick
THRU	Through
T.O.W.	Top of Wall
TYP	Typical
UNO	Unless Noted Otherwise
VERT	Vertical
V.W.C.	Vinyl Wall Covering
V.C.T.	Vinyl Composition Tile
W.C.	Water Closet
W.H.	Water Heater
W.P.	Water Proof
WF	Wide Flange
W	Wide
W/	With
WD	Wood
W.M.	Water Main

SYMBOLS



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DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: ∮ (949) 254-8016
qvu@dahltaylor.com

STERN ARCHITECTS
2961 W. MacArthur Blvd.
Suite 120
Santa Ana, California 92704
t. (714) 556-2656
f. (714) 556-2696

MARK	DATE	BY	REVISIONS
	-	-	-

Sht Title: GENERAL INFORMATION + NOTES

Project: OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

JOB #	1.19.6
DESIGN BY:	SHS
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550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET

DETECTABLE WARNINGS + DETECTABLE DIRECTIONAL TEXTURE

1. CURB RAMPS SHALL HAVE DETECTABLE WARNINGS THAT EXTEND 36 INCHES IN THE DIRECTION OF TRAVEL FOR THE FULL WIDTH OF THE RAMP RUN EXCLUDING ANY FLARED SIDES. 11B-247.1.2.2, 11B-705.1.2.2
2. ON PERPENDICULAR CURB RAMPS, DETECTABLE WARNINGS SHALL BE LOCATED SO THE EDGE NEAREST THE CURB IS 6 TO 8 INCHES FROM THE LINE AT THE FACE OF THE CURB MARKING THE TRANSITION BETWEEN THE CURB AND THE GUTTER, STREET OR HIGHWAY. 11B-247.1.2.2, 11B-705.1.2.2
3. ON PARALLEL CURB RAMPS, DETECTABLE WARNINGS SHALL BE PLACED ON THE TURNING SPACE AT THE FLUSH TRANSITION BETWEEN THE STREET AND SIDEWALK. 11B-247.1.2.2., 11B-705.1.2.2, FIGURE 11B-406.3.2
4. ISLANDS OF CUT-THROUGH MEDIANS 96 INCHES OR LONGER IN LENGTH IN THE DIRECTION OF PEDESTRIAN TRAVEL SHALL HAVE DETECTABLE WARNINGS THAT ARE 36 INCHES MINIMUM IN DEPTH EXTENDING THE FULL WIDTH OF THE PEDESTRIAN PATH OR CUT-THROUGH, PLACED AT THE EDGES OF THE PEDESTRIAN ISLAND OR CUT-THROUGH MEDIAN, AND SEPARATED BY 24 INCHES MINIMUM OF WALKING SURFACE WITHOUT DETECTABLE WARNINGS. 11B-247.1.2.3, 11B-705.1.2.3
5. WALKS THAT CROSS OR ADJOIN A ROUTE PROVIDED FOR VEHICULAR TRAFFIC, SUCH AS IN A STREET, DRIVEWAY OR PARKING FACILITY, SHALL BE SEPARATED BY DETECTABLE WARNINGS, CURBS, RAILINGS OR OTHER ELEMENTS BETWEEN THE PEDESTRIAN AREAS AND VEHICULAR AREAS. 202, 11B-247.1.2.5, 11B-705.1.2.5
6. DETECTABLE WARNINGS PROVIDED TO SEPARATE WALKS THAT CROSS OR ADJOIN A ROUTE PROVIDED FOR VEHICULAR TRAFFIC, SUCH AS IN A STREET, DRIVEWAY OR PARKING FACILITY, SHALL BE 36 INCHES IN WIDTH AND CONTINUOUS AT THE BOUNDARY BETWEEN THE PEDESTRIAN AREAS AND VEHICULAR AREAS. 202, 11B-247.1.2.5, 11B-705.1.2.5
7. PROVIDE DETECTABLE WARNING DETAILS SHOWING COMPLIANCE WITH THE FOLLOWING;
   7.1. DETECTABLE WARNING SURFACES SHALL VISUALLY CONTRAST LIGHT-ON-DARK OR DARK-ON-LIGHT WITH ADJACENT WALKING SURFACES OR BE SEPARATED FROM ADJACENT SURFACES BY A 1 INCH WIDE BLACK STRIP. MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE SURFACE, 11B-705.1.1.3
   7.2. DETECTABLE WARNING PRODUCTS AND DIRECTIONAL SURFACES MUST ENSURE CONSISTENCY AND UNIFORMITY FOR SHAPE, COLOR FASTNESS, CONFORMATION, SOUND-ON-CANE ACOUSTIC QUALITY, RESILIENCE, AND THAT ATTACHMENT WILL NOT DEGRADE SIGNIFICANTLY (<10%) FOR AT LEAST FIVE YEARS. 12-11B.209, 12-11B210
8. WALKS THAT CROSS OR ADJOIN A ROUTE PROVIDED FOR VEHICULAR TRAFFIC, SUCH AS A STREET, DRIVEWAY OR PARKING FACILITY, SHALL BE SEPARATED BY DETECTABLE WARNINGS, CURBS, RAILINGS OR OTHER ELEMENTS BETWEEN THE PEDESTRIAN AREAS AND VEHICULAR AREAS. 2020, 11B-247.1.2.5, 11B-705.1.2.5
9. DETECTABLE WARNINGS PROVIDED TO SEPARATE WALKS THAT CROSS OR ADJOIN A ROUTE PROVIDED FOR VEHICULAR TRAFFIC, SUCH AS IN A STREET, DRIVEWAY OR PARKING FACILITY, SHALL BE 36 INCHES IN WIDTH AND CONTINUOUS AT THE BOUNDARY BETWEEN THE PEDESTRIAN AREAS AND VEHICULAR AREAS. 202, 11B-247.1.25., 11B-705.1.2.5
10. AT REFLECTING POOLS, DETAIL COMPLIANCE WITH THE FOLLOWING;
    EDGES OF REFLECTING POOLS SHALL BE PROTECTED BY RAILINGS WALLS, WARNING CURBS OR DETECTABLE WARNINGS. 11B-247.1.2.6, 11B-705.1.2.6

    DETECTABLE EDGES PROVIDED TO PROTECT REFLECTING POOLS SHALL BE 24 TO 36 INCHES IN WIDTH. 11B-247.1.2.6, 11B-705.1.2.6
11. PROVIDE DETECTABLE WARNING DETAILS SHOWING COMPLIANCE WITH THE FOLLOWING;
    TRUNCATED DOMES IN A DETECTABLE WARNING SURFACE SHALL BE A BASE DIAMETER OF 0.9 TO 0.92 INCHES, A TOP DIAMETER OF 0.45 TO 0.47 INCHES, AND A HEIGHT OF 0.18 TO 0.22 INCHES. 11B-705.1.1.1, FIGURE 11B-705.1

    TRUNCATED DOMES PLACED IN A GRID PATTERN IN A DETECTABLE WARNING SURFACE SHALL HAVE A CENTER-TO-CENTER SPACING OF 2.3 TO 2.4 INCHES, AND A MINIMUM BASE-TO-BASE SPACING OF 0.65 INCHES, MEASURED BETWEEN THE MOST ADJACENT DOMES ON A SQUARE GRID. 11B-705.1.1.2, FIGURE 11B-705.1

DETECTABLE WARNING SURFACES SHALL DIFFER FROM ADJOINING SURFACES IN RESILIENCY OR SOUND-ON-CANE CONTACT EXCEPT AT CURB RAMPS, ISLANDS OR CUT-THROUGH MEDIANS. 11B-705.1.1.4

DETECTABLE WARNING SURFACES SHALL BE YELLOW CONFORMING TO FS 33538 OF FEDERAL STANDARD 595C EXCEPT AT CURB RAMPS, ISLANDS OR CUT-THROUGH MEDIANS. 11B-705.1.1.5

DETECTABLE WARNING PRODUCTS AND DIRECTIONAL SURFACES SHALL BE APPROVED BY THE DIVISION OF THE STATE ARCHITECT. 11B-705.3

DETECTABLE WARNING PRODUCTS AND DIRECTIONAL SURFACES INSTALLED AFTER JANUARY 1, 2001, SHALL BE EVALUATED BY AN INDEPENDENT ENTITY, SELECTED BY THE DIVISION OF THE STATE ARCHITECT, TO CONFIRM COMPLIANCE WITH THE PRESCRIPTIVE AND PERFORMANCE STANDARDS OF TITLE 24, 12-CHAPTERS 12A AND 12-11B.

INDEPENDENT ENTITIES FOR TESTING OF DETECTABLE WARNING PRODUCTS AND DIRECTIONAL SURFACES SHALL BE A NOT-FOR-PROFIT PRODUCT SAFETY TESTING AND CERTIFICATION ORGANIZATION, DEDICATED TO TESTING FOR PUBLIC SAFETY THAT OPERATES FOR THE TESTING, CERTIFICATION AND QUALITY ASSESSMENT OF PRODUCTS, SYSTEMS AND SERVICES. 12-11B.205, 12-11B.211

INDEPENDENT ENTITIES FOR TESTING OF DETECTABLE WARNING PRODUCTS AND DIRECTIONAL SURFACES SHALL BE RECOGNIZED AS HAVING APPROPRIATE EXPERTISE IN DETERMINING WHETHER PRODUCTS COMPLY WITH THE CALIFORNIA CODE OF REGULATIONS, TITLE 24, 12-11B.205, 12-11B.211

DETECTABLE WARNING PRODUCTS AND DIRECTIONAL SURFACES MUST ENSURE CONSISTENCY AND UNIFORMITY FOR SHAPE, COLOR FASTNESS, CONFORMATION, SOUND-ON-CANE ACOUSTIC QUALITY, RESILIENCE, AND THAT ATTACHMENT WILL NOT DEGRADE SIGNIFICANTLY (<10%) FOR AT LEAST FIVE YEARS. 12-11B.209, 12-11B-210

DETECTABLE WARNING

02-AA-09	3
N.T.S.	

REACH RANGES

1. ELECTRICAL CONTROLS AND SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF A ROOM OR AREA TO CONTROL LIGHTING AND RECEPTACLE OUTLETS, APPLIANCES OR COOLING , HEATING AND VENTILATING EQUIPMENT SHALL BE LOCATED WITHIN ALLOWABLE REACH RANGES. LOW REACH SHALL BE MEASURED TO THE BOTTOM OF THE OUTLET BOX AND HIGH REACH SHALL BE MEASURED TO THE TOP OF THE OUTLET BOX. 11B-308.1.1
2. ELECTRICAL RECEPTACLE OUTLETS ON BRANCH CIRCUITS OF 30 AMPERES OF LESS AND COMMUNICATION SYSTEM RECEPTACLES SHALL BE LOCATED WITHIN ALLOWABLE REACH RANGES. LOW REACH SHALL BE MEASURED TO THE BOTTOM OF THE OUTLET BOX AND HIGH REACH SHALL BE MEASURED TO THE TOP OF THE OUTLET BOX. 11B-308.1.2
3. HIGH FORWARD REACH THAT IS UNOBSTRUCTED SHALL BE 48 INCHES MAXIMUM AND THE LOW FORWARD REACH SHALL BE 15 INCHES MINIMUM ABOVE THE FINISH FLOOR OR GROUND 11B-308.2.1, FIGURE 11B-308.2.1.
4. HIGH FORWARD REACH SHALL BE 48 INCHES MAXIMUM WHERE THE REACH DEPTH IS 20 INCHES OR LESS AND 44 INCHES MAXIMUM WHERE THE REACH DEPTH EXCEEDS 20 INCHES. HIGH FORWARD REACH SHALL NOT EXCEED 25 INCHES IN DEPTH. 11B-308.2.2, FIGURE 11B-308.2.2
5. HIGH SIDE REACH SHALL BE 48 INCHES MAXIMUM AND THE LOW SIDE REACH SHALL BE 15 INCHES MINIMUM ABOVE THE FINISH FLOOR WHERE THE SIDE REACH IS UNOBSTRUCTED OR THE DEPTH OF ANY OBSTRUCTION DOES NOT EXCEED 10 INCHES. 11B-308.3.1, FIGURE 11B-308.3.1
6. HIGH SIDE REACH SHALL BE 46 INCHES MAXIMUM ABOVE THE FINISH FLOOR OR GROUND WHERE THE HIGH SIDE REACH OS OVER AN OBSTRUCTION MORE THAN 10 INCHES BUT NOT MORE THAN 24 INCHES IN DEPTH. 11B-308.3.2, FIGURE 11B-308.3.2
7. OBSTRUCTIONS FOR HIGH SIDE REACH SHALL NOT EXCEED 34 INCHES IN HEIGHT AND 24 INCHES IN DEPTH. 11B-308.3.2, FIGURE 11B-308.3.2
8. OBSTRUCTED HIGH SIDE REACH FOR THE TOP OF WASHING MACHINES AND CLOTHES DRYERS SHALL BE PERMITTED TO BE 36 INCHES MAXIMUM ABOVE THE FINISH FLOOR. 11B-308.3.2
9. OBSTRUCTED HIGH SIDE REACH FOR THE OPERABLE PARTS OF FUEL DISPENSERS SHALL BE PERMITTED TO BE 54 INCHES MAXIMUM MEASURED FROM THE SURFACE OF THE VEHICULAR WAY WHERE THE FUEL DISPENSERS ARE INSTALLED ON EXISTING CURB. 11B-308.3.2

OPERABLE PARTS

1. OPERABLE PARTS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST. FORCE REQUIRED TO ACTIVATE OPERABLE PARTS SHALL BE 5 POUNDS MAXIMUM. 11B-309.4

ENTRANCES & EXITS

EXIT, IS DEFINED AS "THAT PORTION OF A MEANS OF EGRESS SYSTEM WHICH IS SEPARATED FROM OTHER INTERIOR SPACES OF A BUILDING OR STRUCTURE BY FIRE RESISTANCE RATED CONSTRUCTION AND OPENING PROTECTIVES AS REQUIRED TO PROVIDE A PROTECTED PATH OF EGRESS TRAVEL BETWEEN THE EXIT ACCESS AND THE EXIT DISCHARGE. EXITS INCLUDE EXTERIOR DOORS AT THE LEVEL OF EXIT DISCHARGE, VERTICAL EXIT ENCLOSURES. EXIT PASSAGEWAYS, EXTERIOR EXIT STAIRWAYS, EXTERIOR EXIT RAMPS AND HORIZONTAL EXITS."

PUBLIC WAY, IS DEFINED AS "A STREET, ALLEY OR OTHER PARCEL OF LAND OPEN TO THE OUTSIDE AIR LEADING TO A STREET, THAT HAS BEEN DEEDED, DEDICATED OR OTHERWISE PERMANENTLY APPROPRIATED TO THE PUBLIC FOR PUBLIC USE AND WHICH HAS A CLEAR WIDTH AND HEIGHT FO NOT LESS THAN 10 FEET.

1. ALL ENTRANCES AND EXTERIOR GROUND FLOOR EXIT DOORS TO BUILDINGS AND FACILITIES SHALL BE MADE ACCESSIBLE TO PERSONS WITH DISABILITIES.
2. REVOLVING DOORS SHALL NOT BE USED AS A REQUIRED ENTRANCE FOR PERSONS WITH DISABILITIES.
3. DURING PERIODS OF PARTIAL OR RESTRICTED USE OF A BUILDING OR FACILITY, THE ENTRANCES USED FOR PRIMARY ACCESS SHALL BE ACCESSIBLE TO AND USABLE BY PERSON WITH DISABILITIES.
4. RECESSED DOORMATS SHALL BE ADEQUATELY ANCHORED TO PREVENT INTERFERENCE WITH WHEELCHAIR TRAFFIC.
5. ALL GATES, INCLUDING TICKET GATES, SHALL MEET ALL APPLICABLE ACCESSIBILITY SPECIFICATIONS OF DOORS.
6. EVERY REQUIRED EXIT DOORWAY SHALL BE CAPABLE OF OPENING AT LEAST 90 DEGREES, SHALL HAVE A MINIMUM CLEAR OPENING OF 32", AND SHALL BE OF A SIZE AS TO PERMIT THE INSTALLATION OF A DOOR NOT LESS THAN 3 FEET IN WIDTH AND 6'-8" IN HEIGHT.
7. THE SPACE BETWEEN TWO CONSECUTIVE DOOR OPENINGS IN A VESTIBULE, SERVING OTHER THAN A REQUIRED EXIT STAIRWAY, SHALL PROVIDE A MINIMUM OF 48" OF CLEAR SPACE FROM ANY DOOR OPENING INTO SUCH VESTIBULE WHEN THE DOOR IS POSITIONED AT AN ANGLE OF 90 DEGREES FROM ITS CLOSED POSITION. DOORS IN A SERIES SHALL SWING EITHER IN THE SAME DIRECTION OR AWAY FROM THE SPACE BETWEEN THE DOORS.

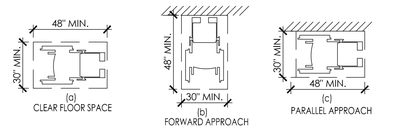
INTERNATIONAL SYMBOL OF ACCESSIBILITY

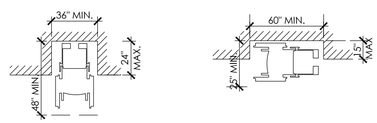
NOTE: THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL BE STANDARD USED TO IDENTIFY FACILITIES THAT ARE ACCESSIBLE TO AND USABLE BY PHYSICALLY DISABLED PERSONS AS SET FORTH IN TITLE 24 AND AS SPECIFICALLY REQUIRED BELOW.

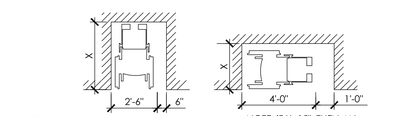
1. THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL CONSIST OF A WHILE FIGURE ON A BLUE BACKGROUND. THE BLUE SHALL BE EQUAL TO COLOR NO. 15090 IN FEDERAL STANDARD 595B.
2. LETTERS AND NUMBERS ON SIGNS SHALL HAVE A WIDTH RATIO BETWEEN 3:5 AND 1:1 AND A STROKE WIDTH RATIO BETWEEN 1:5 AND 1:10.
3. CHARACTERS AND NUMBERS ON SIGNS SHALL BE SIZED ACCORDING TO THE VIEWING DISTANCE FROM WHICH THEY ARE TO BE READ. THE MIN. HEIGHT IS MEASURED USING ON UPPERCASE X. LOWERCASE CHARACTERS ARE PERMITTED. FOR SIGNS SUSPENDED OR PROJECTED ABOVE THE FINISH FLOOR IN COMPLIANCE WITH SECTION 11B-703, THE MIN. CHARACTER HEIGHT SHALL BE 3".
4. CHARACTERS AND SYMBOLS SHALL CONTRAST WITH THEIR BACKGROUND, EITHER LIGHT CHARACTERS ON A DARK BACKGROUND OR DARK CHARACTERS ON A LIGHT BACKGROUND.
5. WHEN RAISED CHARACTERS OR SYMBOLS ARE USED, THEY SHALL CONFORM TO THE FOLLOWING:
   A. LETTERS AND NUMBERS AND SIGNS SHALL BE RAISED 1/32" MIN. AND SHALL BE SANS-SERIF UPPERCASE CHARACTERS ACCOMPANIED BY GRADE 2 BRAILLE.
   B. RAISED CHARACTERS OR SYMBOLS SHALL BE A MIN. OF 2" HIGH.
   C. PICTORIAL SYMBOL SIGNS (PICTOGRAMS) SHALL BE ACCOMPANIED BY THE EQUIVALENT VERBAL DESCRIPTION PLACED DIRECTLY BELOW THE PICTOGRAM SHALL BE MIN. OF 6" IN HEIGHT.
6. CONTRACTED GRADE 2 BRAILLE SHALL BE USED WHEREVER BRAILLE SYMBOLS ARE SPECIFICALLY REQUIRED IN OTHER PORTIONS OF THESE STANDARDS. DOTS SHALL BE 1/10" ON CENTERS IN EACH CELL WITH 1/10" SPACE BETWEEN CELLS. DOTS SHALL BE RAISED A MIN. OF 1/40" ABOVE THE BACKGROUND.
7. ALL BUILDING ENTRANCES THAT ARE ACCESSIBLE TO AND USABLE BY PERSONS WITH DISABILITIES ROUTE OF TRAVEL SHALL BE IDENTIFIED WITH A SIGN DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY AND WITH ADDITIONAL DIRECTIONAL SIGNS, AS REQ'D, TO BE VISIBLE TO PERSONS ALONG APPROACHING PEDESTRIAN WAYS.
8. WHEN PERMANENT IDENTIFICATION IS PROVIDED FOR ROOMS AND SPACES RAISED LETTER SHALL BE PROVIDED AND SHALL BE ACCOMPANIED BY BRAILLE IN CONFORMANCE WITH SECTIONS 11B-703.3 & 11B-703.4. SIGNS SHALL BE INSTALLED ON THE WAY ADJACENT TO THE LATCH OUTSIDE OF THE DOOR. WHERE THERE IS NO WALL SPACE ON THE LATCH SIDE, INCLUDING AT DOUBLE LEAF DOORS, SIGNS SHALL BE PLACED ON THE NEAREST ADJACENT WALL, PREFERABLY ON THE RIGHT. MOUNTING HEIGHT SHALL BE 58" TO 60" ABOVE THE FINISHED FLOOR TO THE CENTERLINE OF THE SIGN. MOUNTING LOCATION SHALL BE DETERMINED SO THAT A PERSON MAY APPROACH WITHIN 3" SIGNAGE WITHOUT ENCOUNTERING PROTRUDING OBJECTS OR STANDING WITHIN THE SWING OF A DOOR.

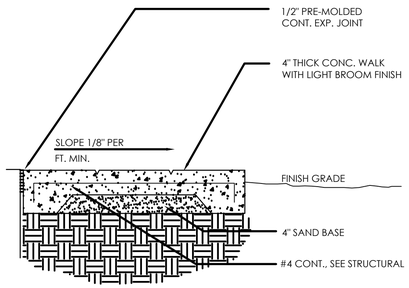
CLEAR FLOOR SPACE FOR WHEELCHAIRS

1. MINIMUM CLEAR FLOOR OR GROUND SPACE REQUIRED TO ACCOMMODATE A SINGLE, STATIONARY WHEELCHAIR AND OCCUPANT IS 30" MIN. X 48" MIN. MINIMUM CLEAR FLOOR OR GROUND SPACE FOR WHEELCHAIRS MAY BE POSITIONED FOR FORWARD OR PARALLEL APPROACH TO AN OBJECT. CLEAR FLOOR OR GROUND SPACE FOR WHEELCHAIRS MAY BE PART OF THE KNEE SPACE REQUIRED UNDER SOME OBJECTS.
2. PROVIDE AN ADDITIONAL 12 INCHES WIDTH ON ONE SIDE FOR ALCOVES GREATER THAN 15 INCHES DEEP AND DESIGNED FOR SIDE APPROACH.
3. PROVIDE AN ADDITIONAL 6 INCHES WIDTH ON ONE SIDE FOR ALCOVES GREATER THAN 24 INCHES DEEP AND DESIGNED FOR FRONT APPROACH.
4. ONE FULL UNOBSTRUCTED SIDE OF A CLEAR FLOOR OR GROUND SPACE FOR A WHEELCHAIR SHALL ADJOIN OR OVERLAP AN ACCESSIBLE ROUTE OR ADJOIN ANOTHER WHEELCHAIR CLEAR FLOOR SPACE. IF A CLEAR FLOOR OR GROUND SPACE IS LOCATED IN AN ALCOVE OR OTHERWISE CONFINED ON ALL OR PART OF THREE SIDES, ADDITIONAL MANUVERING CLEARANCES SHALL BE PROVIDED.
5. THE SPACE REQUIRED FOR A WHEELCHAIR TO MAKE A 180 DEG. TURN IS A CLEAR SPACE OF 60" DIAMETER OR A T-SHAPED SPACE.
6. THE MINIMUM CLEAR WIDTH REQUIRED FOR A WHEEL CHAIR TO TURN AROUND AN OBSTRUCTION SHALL BE 36" MINIMUM WHERE THE OBSTRUCTION IS 48" OR MORE IN LENGTH AND 42" MINIMUM WHERE THE OBSTRUCTION IS LESS THAN 48" IN LENGTH.
7. THE MINIMUM CLEAR WIDTH FOR SINGLE WHEELCHAIR PASSAGE SHALL BE 32" AT A POINT (24" MAXIMUM LENGTH) AND 36" CONTINUOUSLY.
8. THE MINIMUM WIDTH FOR TWO WHEELCHAIRS TO PASS IS 60".
9. IF THE CLEAR FLOOR SPACE ONLY ALLOWS FORWARD APPROACH TO AN OBJECT, THE MAXIMUM HIGH FORWARD REACH ALLOWED SHALL BE 48". THE MINIMUM LOW REACH IS 15".
10. IF THE CLEAR FLOOR SPACE ALLOWS PARALLEL APPROACH BY A PERSON IN A WHEELCHAIR, THE MAXIMUM HIGH SIDE REACH ALLOWED SHALL BE 54" AND THE LOW REACH SHALL BE NO LESS THAN 9" ABOVE THE FLOOR.









TYP. WALKWAY

01-ABD-01	7
1" = 1'-0"	

1. WALKS AND SIDEWALKS SUBJECT TO THESE REGULATIONS SHALL HAVE A CONTINUOUS COMMON SURFACE, NOT INTERRUPTED BY STEPS OR BY ABRUPT CHANGES IN LEVEL EXCEEDING 1/2".
2. WALKS AND SIDEWALKS SHALL BE A MINIMUM OF 48" (1219mm) IN WIDTH.
3. CHANGES IN LEVEL UP TO 1/4" MAY BE VERTICAL AND WITHOUT EDGE TREATMENT.
4. CHANGES IN LEVEL BETWEEN 1/4" AND 1/2" SHALL BE BEVELED WITH A SLOPE NO GREATER THAN ONE UNIT VERTICAL IN 2 UNITS HORIZONTAL (50% SLOPE).
5. CHANGES IN LEVEL GREATER THAN 1/2" SHALL BE ACCOMPLISHED BY MEANS OF A CURB RAMP, RAMP OR ELEVATOR THAT COMPLIES WITH SECTION 11B-405, 11B-406 OR 11B-407 RESPECTIVELY.
6. WHEN THE SLOPE IN THE DIRECTION OF TRAVEL OF ANY WALK EXCEEDS ONE UNIT VERTICAL IN 20 UNITS HORIZONTAL (5% SLOPE) IT SHALL COMPLY WITH THE PROVISIONS OF SECTION 11B-405.
7. WALK AND SIDEWALK SURFACE CROSS SLOPES SHALL NOT EXCEED ONE UNIT VERTICAL IN 48 UNITS HORIZONTAL (2.083% SLOPE).
8. ALL WALKS WITH CONTINUOUS GRADIENTS SHALL HAVE LEVEL AREAS AT LEAST 5 FEET IN LENGTH AT INTERVALS OF 400 FEET MAXIMUM.
9. WALKS, SIDEWALKS AND PEDESTRIAN WAYS SHALL BE FREE OF GRATINGS, WHENEVER POSSIBLE. FOR GRATINGS LOCATED IN THE SURFACE OF ANY OF THESE AREAS, GRID OPENINGS IN GRATINGS SHALL BE LIMITED TO 1/2" IN THE DIRECTION OF TRAFFIC FLOW. IF GRATINGS HAVE ELONGATED OPENINGS, THEY SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.
10. WALK AND SIDEWALK SURFACES SHALL BE SLIP-RESISTANT AS FOLLOWS;
    10.1. SURFACES WITH LESS THAN 6% SLOPE SHALL BE AT LEAST AS SLIP-RESISTANT AS THAT DESCRIBED AS A MEDIUM SALTED FINISH.
    10.2. SURFACES WITH A 6% OR GREATER SLOPE SHALL BE SLIP-RESISTANT.

WALKS & SIDEWALKS	02-AA-05	6
	N.T.S.	

REACH RANGES	02-C-17	5
	N.T.S.	

ENTRANCES & EXITS	02-AA-08	4
	N.T.S.	

ACCESSIBILITY SYMBOL	02-C-09	2
	N.T.S.	

CLEAR FLOOR SPACE	02-C-04	1
	N.T.S.	

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: (949) 254-8016
qvu@dahltaylor.com

STERN ARCHITECTS
2961 W. MacArthur Blvd.
Suite 120
Santa Ana, California 92704
t. (714) 556-2656
f. (714) 556-2696

MARK	DATE	BY	REVISIONS
	-	-	-

Sht Title: ACCESSIBILITY NOTES + DETAILS 1

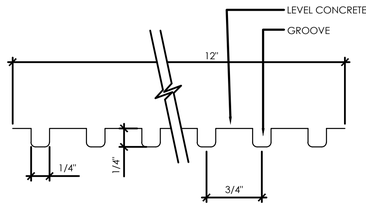
Project: OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

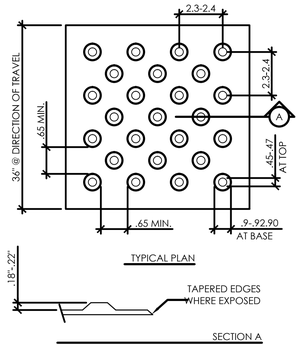
JOB #	1.19.6
DESIGN BY:	SHS
DRAWN BY:	SHS
CHECKED BY:	QV
DATE	02.14.2020
SCALE	AS NOTED
SHEET	A-0.2

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET



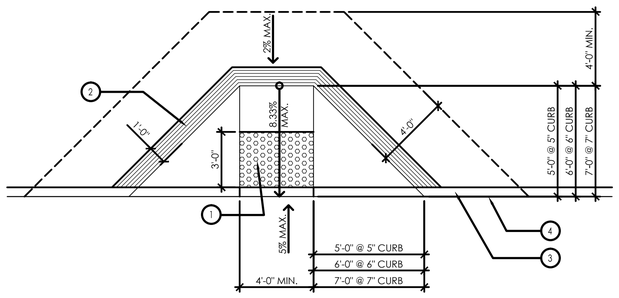


GROOVING DETAIL

02-AA-23 | 1"=1" | 5

TRUNCATED DOME (DWS)

- | 3"=1'-0" | 4

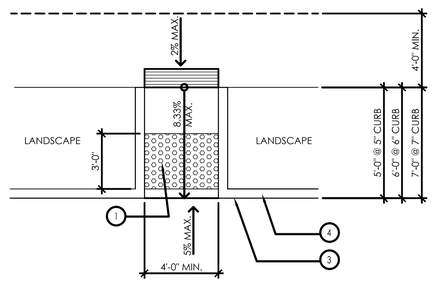


1. DETECTABLE WARNING SURFACE (DWS). SEE DETAIL 4/A-0.3B
2. GROOVED WARNING. SEE DETAIL 5/A-0.3B
3. CURB
4. FACE OF CURB

NOTES:
SEE BID NOTES & APWA STANDARDS

STANDARD CURB RAMP

02-AA-18 | 1/4"=1'-0" | 3



1. DETECTABLE WARNING SURFACE (DWS). SEE DETAIL D-1
2. GROOVED WARNING. SEE DETAIL D-10
3. CURB
4. FACE OF CURB

NOTES:
SEE BID NOTES & APWA STANDARDS

CURB RAMP

02-AA-20 | 1/4"=1'-0" | 2

ACCESSIBILITY DETAILS FOR CURBS, BLENDED TRANSITIONS, ISLANDS + DETECTABLE WARNINGS

1. **GENERAL -** CURB RAMPS, BLENDED TRANSITIONS + ISLANDS ON ACCESSIBLE ROUTES SHALL COMPLY WITH SECTION 11B-406, CURB RAMPS MAY BE PERPENDICULAR, PARALLEL, OR A COMBINATION OF PERPENDICULAR AND PARALLEL.
2. **LANDINGS** - LANDINGS SHALL BE PROVIDED AT THE TOPS OF CURB RAMPS AND BLENDED TRANSITIONS. THE LANDING CLEAR LENGTH SHALL BE 48" MINIMUM, THE LANDING CLEAR WIDTH SHALL BE AT LEAST AS WIDE AS THE CURB RAMP, EXCLUDING ANY FLARED SIDES, OR THE BLENDED TRANSITION LEADING TO THE LANDING. **THE SLOPE OF THE LANDING IN ALL DIRECTIONS SHALL BE 1:48 MAXIMUM.**
3. **TURNING SPACE**. A TURNING SPACE 48" MIN x 48" MIN. SHALL BE PROVIDED AT THE BOTTOM OF THE CURB RAMP. THE SLOPE OF THE TURNING SPACE IN ALL DIRECTIONS SHALL BE 1:48 MAX.
4. **LOCATION**. CURB RAMPS AND THE FLARED SIDES OF CURB RAMPS SHALL BE LOCATED SO THAT THEY DO NOT PROJECT INTO VEHICULAR TRAFFIC LANES, PARKING SPACES OR PARKING ACCESS AISLES. CURB RAMPS AT MARKED CROSSINGS SHALL BE WHOLLY CONTAINED WITHIN THE MARKINGS, EXCLUDING ANY FLARED SIDES.
5. CURB RAMPS SHALL BE GROOVED BORDER 12" WIDE ALONG THE TOP OF THE CURB RAMP AT THE LEVEL SURFACE OF THE TOP LANDING AND AT THE OUTSIDE EDGES OF THE FLARED SIDES.
6. COUNTER SLOPE OF ADJOINING GUTTERS AND ROAD SURFACES IMMEDIATELY ADJACENT TO AND WITHIN 24" OF THE CURB RAMP SHALL NOT BE STEEPER THAN 1:20. THE ADJACENT SURFACES AT TRANSITIONS AT CURB RAMPS TO WALKS, GUTTERS AND STREETS SHALL BE AT THE SAME LEVEL. 11B-406.5.8.
7. CLEAR SPACE AT DIAGONAL CURB RAMPS. THE BOTTOM OF DIAGONAL CURB RAMPS SHALL HAVE A CLEAR SPACE 48" MIN. OUTSIDE ACTIVE TRAFFIC LANES OF THE ROADWAY. DIAGONAL CURB RAMPS PROVIDED AT MARKED CROSSINGS SHALL PROVIDE THE 48" MIN. CLEAR SPACE WITHIN THE MARKINGS. 11B-406.5.9
8. DIAGONAL CURB RAMPS. DIAGONAL OR CORNER TYPE CURB RAMPS WITH RETURNED CURBS OR OTHER WELL-DEFINED EDGES SHALL HAVE THE EDGES PARALLEL TO THE DIRECTION OF PEDESTRIAN FLOW. DIAGONAL CURB RAMPS WITH FLARED SIDES SHALL HAVE A SEGMENT OF CURB 24" LONG MIN. LOCATED ON EACH SIDE OF THE CURB RAMP AND WITHIN THE MARKED CROSSING. 11B-406.5.10
9. 11B-406.5.11. GROOVED BORDER. CURB RAMPS SHALL HAVE A GROOVED BORDER 12" WIDE ALONG THE TOP OF THE CURB RAMP AT THE LEVEL SURFACE OF THE TOP LANDING AND AT THE OUTSIDE EDGES OF THE FLARED SIDES. THE GROOVED BORDER SHALL CONSIST OF A SERIES OF GROOVES 1/4" WIDE BY 1/4" DEEP, AT 3/4" ON CENTER.
   EXCEPTIONS:
   A. AT PARALLEL CURB RAMPS, THE GROOVED BORDER SHALL BE ON THE UPPER APPROACH IMMEDIATELY ADJACENT TO THE CURB RAMP ACROSS THE FULL WIDTH OF THE CURB RAMP.
   B. A GROOVED BORDER SHALL NOT BE REQUIRED AT BLENDED TRANSITIONS.
10. 11B-406.6 ISLANDS. RAISED ISLANDS IN CROSSINGS SHALL BE CUT THROUGH LEVEL WITH THE STREET OR HAVE CURB RAMPS AT BOTH SIDES. THE CLEAR WIDTH OF THE ACCESSIBLE ROUTE AT ISLANDS SHALL BE 60" WIDE MIN. WHERE CURB RAMPS ARE PROVIDED, THEY SHALL COMPLY WITH SECTION 11B-406. LANDINGS COMPLYING WITH SECTION 11B-406.5.3 AND THE ACCESSIBLE ROUTE SHALL BE PERMITTED TO OVERLAP. ISLANDS SHALL HAVE DETECTABLE WARNINGS COMPLYING WITH SECTION 11B-705.
11. DETECTABLE WARNINGS SHALL CONSIST OF A SURFACE OF TRUNCATED DOMES AND SHALL COMPLY WITH SECTION 11B-705.
12. 11B-705.1.1.3 CONTRAST. DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT WALKING SURFACES EITHER LIGHT ON DARK, OR DARK ON LIGHT. THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE SURFACE. CONTRAST SHALL BE DETERMINED BY:
    CONTRAST = [(B1-B2)/B1 X 100 PERCENT WHERE B1 = LIGHT REFLECTANCE VALUE (LRV) OF THE LIGHTER AREA AND B2 = LIGHT REFLECTANCE VALUE (LRV) OF THE DARKER AREA.
    EXCEPTION: WHERE THE DETECTABLE WARNING SURFACE DOES NOT ADEQUATELY CONTRAST WITH ADJACENT SURFACE, A 1" WIDE BLACK STRIP SHALL SEPARATE YELLOW DETECTABLE WARNING FROM ADJACENT SURFACES.
13. 11B-705.1.1.4 RESILIENCY. DETECTABLE WARNING SURFACE SHALL DIFFER FROM ADJOINING SURFACES IN RESILIENCY OR SOUND-ON-CANE CONTACT.
    EXCEPTION: DETECTABLE WARNING SURFACES AT CURB RAMPS, ISLANDS OR CUT-THROUGH MEDIANS SHALL NOT BE REQUIRED TO COMPLY WITH SECTION 11B-705.1.1.4.
14. 11B-105.1.1.5 COLOR. DETECTABLE WARNING SURFACE SHALL BE YELLOW CONFORMING TO FS 33538 OF FEDERAL STANDARD 595C.
    EXCEPTION: DETECTABLE WARNING SURFACES AT CURB RAMPS, ISLANDS OR CUT-THROUGH MEDIANS SHALL NOT BE REQUIRED TO COMPLY WITH SECTION 11B-705.1.1.5.
15. 11B-705.2 DETECTABLE DIRECTIONAL TEXTURE. DETECTABLE DIRECTIONAL TEXTURE AT TRANSIT BOARDING PLATFORMS SHALL COMPLY WITH FIGURE 11B-705.2 AND SHALL BE 0.1 INCH IN HEIGHT THAT TAPERS OFF TO 0.04 INCH, WITH BARS RAISED 0.2 INCH FROM THE SURFACE. THE RAISED BARS SHALL BE 1.3 INCHES WIDE AND 3 INCHES FROM CENTER-TO-CENTER OF EACH BAR. THIS SURFACE SHALL DIFFER FROM ADJOINING WALKING SURFACES IN RESILIENCY OR SOUND-ON-CANE CONTACT. THE COLOR SHALL BE YELLOW CONFORMING TO THE FEDERAL COLOR NO. 33538. THE SURFACE WILL BE PLACED DIRECTLY BEHIND THE YELLOW DETECTABLE WARNING TEXTURE SPECIFIED IN SECTION 11B-705.1.2.1, ALIGNING WITH THE DOORS OF THE TRANSIT VEHICLES WHERE PASSENGERS WILL EMBARK. THE WIDTH OF THE DIRECTIONAL TEXTURE SHALL BE EQUAL TO THE WIDTH TRANSIT VEHICLE'S DOOR OPENING. THE DEPTH OF THE TEXTURE SHALL NOT BE LESS THAN 36 INCHES.

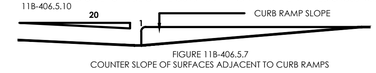


FIGURE 11B-406.5.7
COUNTER SLOPE OF SURFACES ADJACENT TO CURB RAMPS

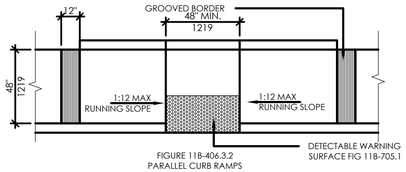


FIGURE 11B-406.3.2
PARALLEL CURB RAMPS

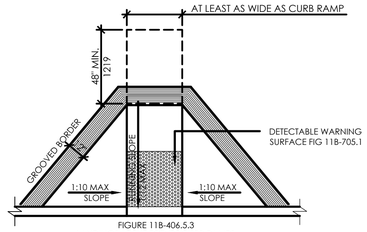
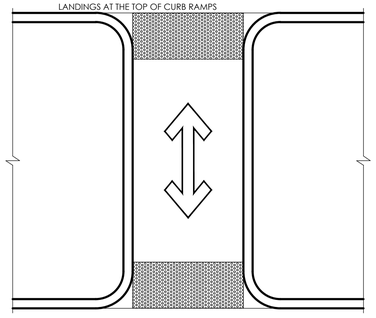


FIGURE 11B-406.5.3
LANDINGS AT THE TOP OF CURB RAMPS



(A)
CUT THROUGH AT ISLAND

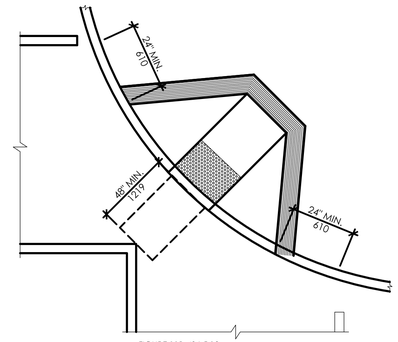
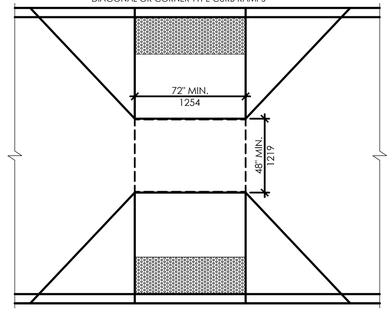


FIGURE 11B-406.5.10
DIAGONAL OR CORNER TYPE CURB RAMPS



(B)
CURB RAMP AT ISLAND

FIGURE 11B-406.6
ISLANDS IN CROSSINGS

CURB RAMP

02-AA-12 | N.T.S | 1

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: (949) 254-8016
qvu@dahltaylor.com

STERN ARCHITECTS
2961 W. MacArthur Blvd.
Suite 120
Santa Ana, California 92704
t. (714) 556-2656
f. (714) 556-2696

MARK	DATE	BY	REVISIONS
			-
			-
			-
			-

Sht Title: ACCESSIBILITY NOTES & DETAILS 2

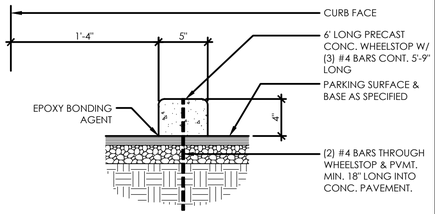
Project: OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

JOB #	1.19.6
DESIGN BY:	SHS
DRAWN BY:	SHS
CHECKED BY:	QV
DATE	02.14.2020
SCALE	AS NOTED
SHEET	A-0.3

550 South Main Street
Orange, CA 92668
714/560/OCTA

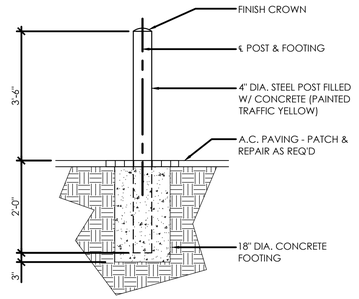
OCTA

100% DRAWING SET



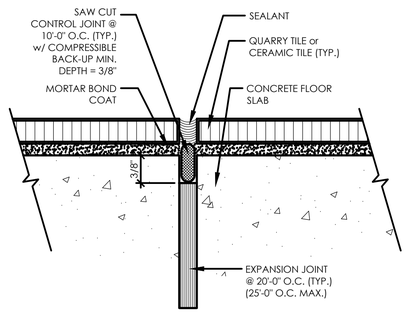
CONC. WHEEL STOP

01-AA-05	9
1-1/2"=1'-0"	



PIPE BOLLARD

01-BB-01	7
1/2"=1'-0"	



CONTROL JOINT

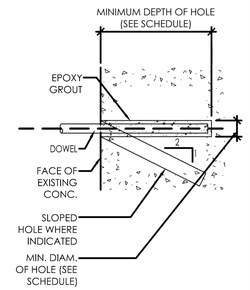
01-AA-01	5
N.T.S.	

FLOOR + GROUND SURFACES

1. FLOOR + GROUND SURFACES SHALL BE STABLE, FIRM + SLIP RESISTANCE.
2. WALKS AND SIDEWALKS SUBJECT TO THESE REGULATIONS SHALL HAVE A CONTINUOUS COMMON SURFACE, NOT INTERRUPTED BY STEPS OR BY ABRUPT CHANGES IN LEVEL EXCEEDING ¼".
3. WALKS AND SIDEWALKS SHALL BE A MINIMUM OF 48" (1219mm) IN WIDTH.
4. CHANGES IN LEVEL UP TO 1/4" MAY BE VERTICAL AND WITHOUT EDGE TREATMENT.
5. CHANGES IN LEVEL BETWEEN 1/4" AND 1/2" SHALL BE BEVELED WITH A SLOPE NO GREATER THAN ONE UNIT VERTICAL IN 2 UNITS HORIZONTAL (50% SLOPE).
6. CHANGES IN LEVEL GREATER THAN 1/2" SHALL BE ACCOMPLISHED BY MEANS OF A CURB RAMP, RAMP OR ELEVATOR THAT COMPLIES WITH SECTION 11B-405, 11B-406 OR 11B-407 RESPECTIVELY.
7. ABRUPT CHANGES IN LEVEL EXCEEDING 4" I VERTICAL DIMENSION BETWEEN WALKS, SIDEWALKS OR OTHER PEDESTRIAN WAYS AND ADJACENT SURFACES OR FEATURES SHALL BE IDENTIFIED BY WARNING CURBS AT LEAST 6" IN HEIGHT ABOVE THE WALK OR SIDEWALK SURFACE OR BY GUARDS OR HANDRAILS WITH A GUIDE RAILS CENTERED 2" MIN. AND 4" MAX. ABOVE THE SURFACE OF THE WALK OR SIDEWALK. THESE REQUIREMENTS DO NO APPLY BETWEEN A WALK OR SIDEWALK AND AN ADJACENT STREET OR DRIVEWAY.
8. WALK AND SIDEWALK SURFACES SHALL BE SLIP-RESISTANT AS FOLLOWS:
   A. SURFACES WITH LESS THAN 6% SLOPE SHALL BE AT LEAST AS SLIP-RESISTANT AS THAT DESCRIBED AS A MEDIUM SALTED FINISH.
   B. SURFACES WITH A 6% OR GREATER SLOPE SHALL BE SLIP-RESISTANT.
7. WHEN THE SLOPE IN THE DIRECTION OF TRAVEL OF ANY WALK EXCEEDS ONE UNIT VERTICAL IN 20 UNITS HORIZONTAL (5% SLOPE) IT SHALL COMPLY WITH THE PROVISIONS OF SECTION 11B-405.
8. WALK AND SIDEWALK SURFACE CROSS SLOPES SHALL NOT EXCEED ONE UNIT VERTICAL IN 48 UNITS HORIZONTAL (2.083% SLOPE).
9. ALL WALKS WITH CONTINUOUS GRADIENTS SHALL HAVE LEVEL AREAS AT LEAST 5 FEET IN LENGTH AT INTERVALS OF 400 FEET MAXIMUM.
10. WALKS, SIDEWALKS AND PEDESTRIAN WAYS SHALL BE FREE OF GRATINGS, WHENEVER POSSIBLE. FOR GRATINGS LOCATED IN THE SURFACE OF ANY OF THESE AREAS, GRID OPENINGS IN GRATINGS SHALL BE LIMITED TO 1/2" IN THE DIRECTION OF TRAFFIC FLOW, IF GRATINGS HAVE ELONGATED OPENINGS, THEY SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.
11. CARPET OR CARPET TILE SHALL BE SECURELY ATTACHED + SHALL HAVE A FIRM CUSHION, PAD, OR BACKING OR NO CUSHION OR PAD. CARPET OR CARPET TILE SHALL HAVE A LEVEL LOOP, TEXTURED LOOP, LEVEL CUT PILE OR LEVEL CUT/UCUT PILE TEXTURE. PILE HEIGHT SHALL BE 1/2" MIN.

PROCEDURE:

1. DRILL HOLE OF PROPER DIAMETER AND DEPTH USING A CARBIDE TIPPED DRILL OR CORING BIT. AVOID ANY EXISTING REINFORCING STEEL BY RELOCATING HOLE SLIGHTLY.
2. CLEAN HOLE THOROUGHLY BY VACUUM OR AIR PRESSURE.
3. MAKE SURE THAT HOLE IS DRY AND CLEAN BEFORE GROUTING.
4. PLACE EPOXY GROUT IN HOLE WITH CAULKING GUN OR SIMILAR EQUIPMENT. STARTING AT BOTTOM. FILL HOLE APPROX. 2/3 FULL.
5. COAT DOWEL WITH SAME EPOXY GROUT AND INSERT INTO HOLE, FORCING MATERIAL AROUND THE SIDES OF THE BAR AND COMPLETELY FILLING ALL VOIDS.
6. PROVIDE SUPPORT FOR DOWEL BY TYING TO REBAR OR OTHER ELEMENT UNTIL GROUT HAS CURED.
7. EPOXY GROUT SHALL BE "CIA GEL" BY COVERT OPERATIONS (LARR #25113) "ET22 EPOXY" BY SIMPSON STRONG TIE (LARR #25185) OR APPROVED EQUAL. "HIT-HY-150" BY HILTI CORP. (LARR #25257)
8. SPECIAL INSPECTION REQUIRED.

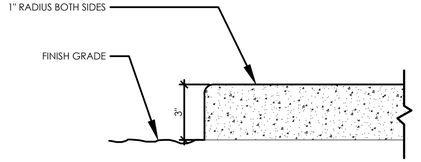


BAR SIZE	MIN. DIAM.	MIN. DEPTH
#3	~8"	5~4"
#4	~0"	6~0"
#5	~w"	7~8"
#6	1"	10"

NOTES:
1. ALL CURBING TO BE 2000 P.S.I. @ 28 DAY

CONCRETE CURB

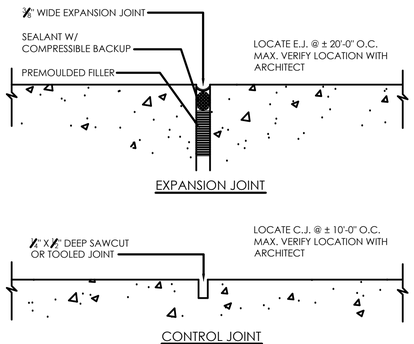
01-AA-04	8
1-1/2"=1'-0"	



NOTES:
1. ALL CURBING TO BE 2000 P.S.I. @ 28 DAY
2. PROVIDE EXPANSION JOINTS @ 20'-0" O.C.

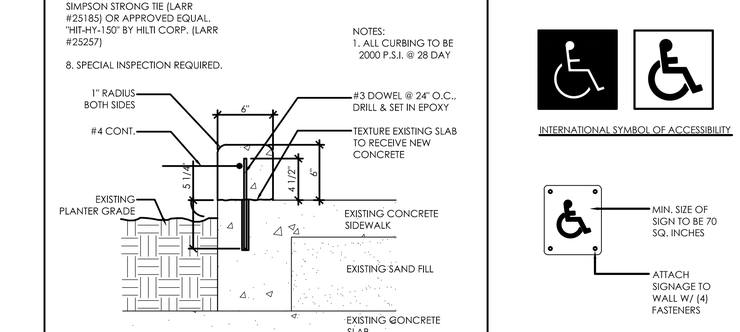
CONCRETE CURB

01-AA-03	6
3"=1'-0"	



CONCRETE JOINTS

01-AA-02	4
6'=1'-0"	



ACCESSIBLE ROUTE OF TRAVEL SIGNAGE

02-AA-22	3
NTS	

THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL CONSIST OF A FIGURE ON A CONTRASTING BACKGROUND. CHARACTERS, SYMBOLS, AND THEIR BACKGROUNDS SHALL HAVE A NON-GLARE FINISH AND SHALL CONTRAST WITH THEIR BACKGROUND, EITHER WHITE CHARACTERS ON A BLUE BACKGROUND OR BLUE CHARACTER ON A WHITE BACKGROUND. THE BLUE SHALL BE EQUAL TO COLOR NO. 15090 IN FEDERAL STANDARD 595B.

ALL BUILDING ENTRANCES THAT ARE ACCESSIBLE TO AND USABLE BY PERSONS WITH DISABILITIES AND AT EVERY MAJOR JUNCTION ALONG OR LEADING TO AN ACCESSIBLE ROUTE OF TRAVEL SHALL BE IDENTIFIED WITH A SIGN DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY AND WITH ADDITIONAL DIRECTIONAL SIGNS, AS REQUIRED, TO BE VISIBLE TO PERSONS ALONG APPROACHING PEDESTRIAN WAYS.

CHARACTERS ON A SIGN SHALL HAVE A WIDTH TO HEIGHT RATION OF BETWEEN 3:5 AND 1:1 AND A STROKE WIDTH TO HEIGHT RATIO BETWEEN 1:5 AND 1:10.

CHARACTERS AND NUMBER ON SIGNS ARE APPROPRIATELY SIZED ACCORDING TO THE VIEWING DISTANCE FROM WHICH THEY ARE READ.

GROUND SURFACE

02-AA-05	2
N.T.S.	

ACCESSIBLE ROUTES

1. AT LEAST ONE ACCESSIBLE ROUTE SHALL BE PROVIDED WITHIN THE SITE FROM ACCESSIBLE PARKING SPACES AND ACCESSIBLE PASSENGER LOADING ZONES; PUBLIC STREETS AND SIDEWALKS; AND PUBLIC TRANSPORTATION STOPS TO THE ACCESSIBLE BUILDING OR FACILITY ENTRANCE THEY SERVE. WHERE MORE THAN ONE ROUTE IS PROVIDED, ALL ROUTES MUST BE ACCESSIBLE. 11B-206.2.1
2. AT LEAST ONE ACCESSIBLE ROUTE SHALL CONNECT ACCESSIBLE BUILDINGS, ACCESSIBLE FACILITIES, ACCESSIBLE ELEMENTS AND ACCESSIBLE SPACES THAT ARE ON THE SAME SITE. 11B-206.2.2
3. AT LEAST ONE ACCESSIBLE ROUTE SHALL CONNECT EACH STORY AND MEZZANINE IN MULTI-STORY BUILDINGS AND FACILITIES. 11B-206.2.3
4. IN NEW CONSTRUCTION OF BUILDINGS WHERE ELEVATORS ARE REQUIRED BY 11B-206.2.3 MULTI-STORY BUILDINGS AND FACILITIES, AND WHICH EXCEED 10,000 SQUARE FEET ON ANY FLOOR, AN ACCESSIBLE MEANS OF VERTICAL ACCESS VIA RAMP, ELEVATOR OR LIFT SHALL BE PROVIDED WITHIN 200 FEET OF TRAVEL OF EACH STAIR AND EACH ESCALATOR.
5. IN EXISTING BUILDINGS THAT 10,000 SQUARE FEET ON ANY FLOOR AND IN WHICH ELEVATORS ARE REQUIRED BY 11B-206.2.3 MULTI-STORY BUILDINGS AND FACILITIES, WHENEVER A NEWLY CONSTRUCTED MEANS OF VERTICAL ACCESS IS PROVIDED VIA STAIRS OR AN ESCALATOR, AN ACCESSIBLE MEANS OF VERTICAL ACCESS VIA RAMP, ELEVATOR OR LIFT SHALL BE PROVIDED WITHIN 200 FEET OF TRAVEL OF EACH NEW STAIR OR ESCALATOR. 11B-206.2.3.2
6. AT LEAST ONE ACCESSIBLE ROUTE SHALL CONNECT ACCESSIBLE BUILDING OR FACILITY ENTRANCES WITH ALL ACCESSIBLE SPACES AND ELEMENTS WITHIN THE BUILDING OR FACILITY, INCLUDING MEZZANINES, WHICH ARE OTHERWISE CONNECTED BY A CIRCULATION PATH. 11B-206.2.4
7. ACCESSIBLE ROUTES SHALL COINCIDE WITH OR BE LOCATED IN THE SAME AREA AS GENERAL CIRCULATION PATHS. WHERE CIRCULATION PATHS ARE INTERIOR, REQUIRED ACCESSIBLE ROUTES SHALL ALSO BE INTERIOR; AN ACCESSIBLE ROUTE SHALL NOT PASS THROUGH KITCHENS, STORAGE ROOMS, RESTROOMS, CLOSETS OR OTHER SPACES USED FOR SIMILAR PURPOSES, EXCEPT AS PERMITTED BY CHAPTER 10. 11B-206.3

ACCESSIBLE ROUTES

02-C-18	1
N.T.S.	

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

STERN ARCHITECTS
2961 W. MacArthur Blvd.
Suite 120
Santa Ana, California 92704
t. (714) 556-2656
f. (714) 556-2696

MARK	DATE	BY	REVISIONS
			-

Sht Title: ACCESSIBILITY NOTES + DETAILS 3

Project: OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

JOB #	1.19.6
DESIGN BY:	SHS
DRAWN BY:	SHS
CHECKED BY:	QV
DATE	02.14.2020
SCALE	AS NOTED
SHEET	A-0.4

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET

SIGNS

1. WHERE PERMANENT IDENTIFICATION IS PROVIDED FOR ROOMS AND SPACES, RAISED LETTERS SHALL ALSO BE PROVIDED AND SHALL BE ACCOMPANIED BY BRAILLE. SECTION 11B-703.

2. THE SIGNAGE REQUIREMENTS OF SECTION 11B-703 ARE TO BE SATISFIED AT DOORWAYS LEADING ALL SANITARY FACILITIES.

3. THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL CONSIST OF A WHITE FIGURE ON A BLUE BACKGROUND. THE BLUE SHALL BE EQUAL TO COLOR NO. 15090 IN FEDERAL STANDARD 595B.

4. ALL BUILDING AND FACILITY ENTRANCES THAT ARE ACCESSIBLE TO AND USABLE BY PERSONS WITH DISABILITIES AND AT EVERY MAJOR JUNCTION ALONG OR LEADING TO AN ACCESSIBLE ROUTE OF TRAVEL SHALL BE IDENTIFIED WITH A SIGN DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY AND WITH ADDITIONAL DIRECTIONAL SIGNS TO BE VISIBLE TO PERSONS ALONG APPROACHING CIRCULATION PATHS.

5. WHERE PERMANENT IDENTIFICATION SIGNS ARE PROVIDED FOR ROOMS AND SPACES, SIGNS SHALL BE INSTALLED ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR. WHERE THERE IS NO WALL SPACE ON THE LATCH SIDE, INCLUDING AT DOUBLE LEAF DOORS, SIGNS SHALL BE PLACED ON THE NEAREST ADJACENT WALL, PREFERABLY ON THE RIGHT. WHERE PERMANENT IDENTIFICATION SIGNAGE IS PROVIDED FOR ROOMS AND SPACES THEY SHALL BE LOCATED ON THE APPROACH SIDE OF THE DOOR AS ONE ENTERS THE ROOM OR SPACE. SIGNS THAT IDENTIFY EXITS SHALL BE LOCATED ON THE APPROACH SIDE OF THE DOOR AS ONE EXITS THE ROOM OR SPACE. SIGNS WITH RAISED CHARACTERS AND BRAILLE SHALL BE LOCATED 48" MIN. ABOVE THE FINISH FLOOR OR GROUND SURFACE, MEASURED FROM THE BASELINE OF THE LOWEST LINE OF BRAILLE AND58" TO 60" MAX. ABOVE THE FINISH FLOOR OR GROUND SURFACE, MEASURED FROM THE BASELINE OF THE HIGHEST LINE OF RAISED CHARACTERS. MOUNTING LOCATION SHALL BE DETERMINED SO THAT A PERSON MAY APPROACH WITHIN 3" OF SIGNAGE WITHOUT ENCOUNTERING PROTRUDING OBJECTS OR STANDING WITHIN THE SWING OF A DOOR.

6. WHEN SIGNS DIRECT TO OR GIVE INFORMATION ABOUT PERMANENT ROOMS AND FUNCTIONAL SPACES OF A BUILDING OR SITE, THEY SHALL COMPLY WITH SECTION 11B-703.

7. WHEN RAISED CHARACTERS OR WHEN PICTOGRAM SYMBOLS ARE USED, THEY SHALL CONFORM TO THE FOLLOWING:
   A. CHARACTERS ON SIGNS SHALL BE RAISED OR RECESSED 1/32" MINIMUM AND SHALL BE SANS-SERIF UPPERCASE CHARACTERS ACCOMPANIED BY CONTRACTED(GRADE 2) BRAILLE COMPLYING WITH SECTION 11B-703.3.
   B. RAISED CHARACTERS OR SYMBOLS SHALL BE MINIMUM OF 5/8" HIGH AND A MAXIMUM OF 2" HIGH.
   C. PICTORAL SYMBOLS SIGNS (PICTOGRAMS) SHALL BE ACCOMPANIED BY THE VERBAL DESCRIPTION PLACED DIRECTLY BELOW THE PICTOGRAM. THE OUTSIDE DIMENSION OF THE PICTOGRAM FIELD SHALL BE A MIN. OF 6" IN HEIGHT.
   D. CHARACTERS AND BRAILLE SHALL BE IN A HORIZONTAL FORMAT. BRAILLE SHOULD BE PLACED A MINIMUM OF 3/8" AND A MAXIMUM OF 1/2" DIRECTLY BELOW THE TACTILE CHARACTERS; FLUSH LEFT OR CENTERED. WHEN TACTILE SIGN IS MULTI-LINED, ALL BRAILLE SHALL BE PLACED TOGETHER BELOW ALL LINES OF TACTILE TEXT.
   E. RAISED CHARACTERS ON SIGNS SHALL BE SELECTED FROM FONTS WHERE THE WIDTH OF THE UPPERCASE LETTER "O" IS 60% MIN. AND 110% MAX. OF THE HEIGHT OF THE UPPERCASE LETTER "I". STROKE THICKNESS OF THE UPPERCASE LETTER "I" SHALL BE 15% MAX. OF THE HEIGHT OF THE CHARACTER.

9. VISUAL CHARACTERS ON A SIGNS SHALL BE SELECTED FROM FONTS WHERE THE WIDTH OF THE UPPERCASE LETTER "O" IS 60% MIN. AND 110% MAX. OF THE HEIGHT OF THE UPPERCASE LETTER "I". STROKE THICKNESS OF THE UPPERCASE LETTER "I" SHALL BE 10% MIN. AND 20% MAX. OF THE HEIGHT OF THE CHARACTER.

10. CHARACTERS, SYMBOLS, AND THEIR BACKGROUNDS SHALL HAVE A NON GLARE FINISH. CHARACTERS AND SYMBOLS SHALL CONTRAST WITH THEIR BACKGROUND, EITHER LIGHT CHARACTERS ON A DARK BACKGROUND OR DARK CHARACTER ON A LIGHT BACKGROUND.

11. CHARACTERS AND NUMBERS ON SIGNS REQUIRED TO BE ACCESSIBLE BY SECTION 11B-703.5 AND SHALL BE SIZED ACCORDING TO THE TABLE 11B-703.5.5.

12. CONTRACTED (GRADE 2) BRAILLE SHALL BE USED WHEREVER BRAILLE IS REQUIRED IN OTHER PORTIONS OF THESE STANDARDS. DOTS SHALL BE 1/10" ON CENTERS IN EACH CELL WITH 2/10" SPACE BETWEEN CELLS. DOTS SHALL BE RAISED A MINIMUM OF 1/40" ABOVE THE BACKGROUND.

13. WHERE BOTH VISUAL AND TACTILE CHARACTERS ARE REQUIRED, EITHER ONE SIGN WITH BOTH VISUAL AND TACTILE CHARACTERS, OR TWO SEPARATE SIGNS, ONE WITH VISUAL, AND ONE WITH TACTILE CHARACTERS, SHALL BE PROVIDED. (11B-703.1). PROVIDE AND REFERENCE EXIT SIGNAGE ACCORDINGLY.

14. SIGNS REQUIRED BY SECTION 1007.10 TO PROVIDE DIRECTIONS TO ACCESSIBLE MEANS OF EGRESS SHALL COMPLY WITH SECTION 11B-703.5. (11B-216.4.34). PROVIDE DETAILS AND SHOW LOCATION OF SIGNS ON FLOOR PLAN.

15. GENERAL, ALL ACCESSIBLE SANITARY FACILITIES SHALL BE IDENTIFIED BY THE 'INTERNATIONAL SYMBOL OF ACCESSIBILITY'. SIGNS NEED NOT BE PROVIDED FOR FACILITIES WITHIN A DWELLING UNIT OR GUESTROOM.

16. IDENTIFICATION SYMBOLS. DOORWAYS LEADING TO SANITARY FACILITIES SHALL BE IDENTIFIED BY A GEOMETRIC SYMBOL OF COMPLIANCE. GEOMETRIC SYMBOL SHALL BE CENTERED HORIZONTALLY ON THE FLOOR AT A HEIGHT OF 58" TO 60" ABOVE THE FINISH FLOOR OR GROUND SURFACE MEASURED TO THE CENTER OF THE SYMBOL. EDGES OF ACCESSIBILITY SIGNAGE SHALL BE ROUNDED, CHAMFERED OR EASED. CORNERS SHALL HAVE A MINIMUM RADIUS OF 1/8". SEE SECTION 11B-703 FOR ADDITIONAL INFORMATION.

17. MEN'S SANITARY FACILITIES SHALL BE IDENTIFIED BY AN EQUILATERAL TRIANGE 1/4"THICK WITH EDGES 12" LONG AND A VERTEX POINTING UPWARD. THE TRIANGLE SYMBOL SHALL CONTRAST WITH THE DOOR, EITHER LIGHT ON A DARK BACKGROUND OR DARK ON A LIGHT BACKGROUND.

18. WOMEN'S SANITARY FACILITIES SHALL BE IDENTIFIED BY A CIRCLE 1/4" THICK AND 12" IN DIAMETER. THE CIRCLE SYMBOL SHALL CONTRACT WITH THE DOOR, EITHER LIGHT ON A DARK BACKGROUND OR DARK ON A LIGHT BACKGROUND.

19. GENDER NEUTRAL SANITARY FACILITIES SHALL BE IDENTIFIED BY A CIRCLE 1/4" THICK AND 12" IN DIAMETER WITH A 1/4" THICK TRIANGLE SUPERIMPOSED ON THE CIRCLE AND WITHIN THE 12" DIAMETER. THE TRIANGLE SYMBOL SHALL CONTRAST WITH THE CIRCLE SYMBOL, EITHER LIGHT ON A DARK BACKGROUND OR DARK ON A LIGHT BACKGROUND. THE CIRCLE SYMBOL SHALL CONTRAST WITH THE DOOR, EITHER LIGHT ON A DARK BACKGROUND OR DARK ON A LIGHT BACKGROUND.

20. THESE ARE MINIMUM STANDARDS FOR THESE SIGNS. SIGNS ARE REQUIRED TO BE MOUNTED BOTH CENTERED ON THE DOOR INTO THE RESTROOM AND ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR.

SIGNAGE

02-C-12 | N.T.S. | 2

SIGNS

1. WHERE PERMANENT IDENTIFICATION IS PROVIDED FOR ROOMS AND SPACES, RAISED LETTERS SHALL ALSO BE PROVIDED AND SHALL BE ACCOMPANIED BY BRAILLE. SECTION 11B-703.

2. THE SIGNAGE REQUIREMENTS OF SECTION 11B-703 ARE TO BE SATISFIED AT DOORWAYS LEADING ALL SANITARY FACILITIES.

3. THE INTERNATIONAL SYMBOL OF ACCESSIBILITY SHALL CONSIST OF A WHITE FIGURE ON A BLUE BACKGROUND. THE BLUE SHALL BE EQUAL TO COLOR NO. 15090 IN FEDERAL STANDARD 595B.

4. ALL BUILDING AND FACILITY ENTRANCES THAT ARE ACCESSIBLE TO AND USABLE BY PERSONS WITH DISABILITIES AND AT EVERY MAJOR JUNCTION ALONG OR LEADING TO AN ACCESSIBLE ROUTE OF TRAVEL SHALL BE IDENTIFIED WITH A SIGN DISPLAYING THE INTERNATIONAL SYMBOL OF ACCESSIBILITY AND WITH ADDITIONAL DIRECTIONAL SIGNS TO BE VISIBLE TO PERSONS ALONG APPROACHING CIRCULATION PATHS.

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6. WHEN SIGNS DIRECT TO OR GIVE INFORMATION ABOUT PERMANENT ROOMS AND FUNCTIONAL SPACES OF A BUILDING OR SITE, THEY SHALL COMPLY WITH SECTION 11B-703.

7. WHEN RAISED CHARACTERS OR WHEN PICTOGRAM SYMBOLS ARE USED, THEY SHALL CONFORM TO THE FOLLOWING:
   A. CHARACTERS ON SIGNS SHALL BE RAISED OR RECESSED 1/32" MINIMUM AND SHALL BE SANS-SERIF UPPERCASE CHARACTERS ACCOMPANIED BY CONTRACTED(GRADE 2) BRAILLE COMPLYING WITH SECTION 11B-703.3.
   B. RAISED CHARACTERS OR SYMBOLS SHALL BE MINIMUM OF 5/8" HIGH AND A MAXIMUM OF 2" HIGH.
   C. PICTORAL SYMBOLS SIGNS (PICTOGRAMS) SHALL BE ACCOMPANIED BY THE VERBAL DESCRIPTION PLACED DIRECTLY BELOW THE PICTOGRAM. THE OUTSIDE DIMENSION OF THE PICTOGRAM FIELD SHALL BE A MIN. OF 6" IN HEIGHT.
   D. CHARACTERS AND BRAILLE SHALL BE IN A HORIZONTAL FORMAT. BRAILLE SHOULD BE PLACED A MINIMUM OF 3/8" AND A MAXIMUM OF 1/2" DIRECTLY BELOW THE TACTILE CHARACTERS; FLUSH LEFT OR CENTERED. WHEN TACTILE SIGN IS MULTI-LINED, ALL BRAILLE SHALL BE PLACED TOGETHER BELOW ALL LINES OF TACTILE TEXT.
   E. RAISED CHARACTERS ON SIGNS SHALL BE SELECTED FROM FONTS WHERE THE WIDTH OF THE UPPERCASE LETTER "O" IS 60% MIN. AND 110% MAX. OF THE HEIGHT OF THE UPPERCASE LETTER "I". STROKE THICKNESS OF THE UPPERCASE LETTER "I" SHALL BE 15% MAX. OF THE HEIGHT OF THE CHARACTER.

9. VISUAL CHARACTERS ON A SIGNS SHALL BE SELECTED FROM FONTS WHERE THE WIDTH OF THE UPPERCASE LETTER "O" IS 60% MIN. AND 110% MAX. OF THE HEIGHT OF THE UPPERCASE LETTER "I". STROKE THICKNESS OF THE UPPERCASE LETTER "I" SHALL BE 10% MIN. AND 20% MAX. OF THE HEIGHT OF THE CHARACTER.

10. CHARACTERS, SYMBOLS, AND THEIR BACKGROUNDS SHALL HAVE A NON GLARE FINISH. CHARACTERS AND SYMBOLS SHALL CONTRAST WITH THEIR BACKGROUND, EITHER LIGHT CHARACTERS ON A DARK BACKGROUND OR DARK CHARACTER ON A LIGHT BACKGROUND.

11. CHARACTERS AND NUMBERS ON SIGNS REQUIRED TO BE ACCESSIBLE BY SECTION 11B-703.5 AND SHALL BE SIZED ACCORDING TO THE TABLE 11B-703.5.5.

12. CONTRACTED (GRADE 2) BRAILLE SHALL BE USED WHEREVER BRAILLE IS REQUIRED IN OTHER PORTIONS OF THESE STANDARDS. DOTS SHALL BE 1/10" ON CENTERS IN EACH CELL WITH 2/10" SPACE BETWEEN CELLS. DOTS SHALL BE RAISED A MINIMUM OF 1/40" ABOVE THE BACKGROUND.

13. WHERE BOTH VISUAL AND TACTILE CHARACTERS ARE REQUIRED, EITHER ONE SIGN WITH BOTH VISUAL AND TACTILE CHARACTERS, OR TWO SEPARATE SIGNS, ONE WITH VISUAL, AND ONE WITH TACTILE CHARACTERS, SHALL BE PROVIDED. (11B-703.1). PROVIDE AND REFERENCE EXIT SIGNAGE ACCORDINGLY.

14. SIGNS REQUIRED BY SECTION 1007.10 TO PROVIDE DIRECTIONS TO ACCESSIBLE MEANS OF EGRESS SHALL COMPLY WITH SECTION 11B-703.5. (11B-216.4.34). PROVIDE DETAILS AND SHOW LOCATION OF SIGNS ON FLOOR PLAN.

15. GENERAL, ALL ACCESSIBLE SANITARY FACILITIES SHALL BE IDENTIFIED BY THE 'INTERNATIONAL SYMBOL OF ACCESSIBILITY'. SIGNS NEED NOT BE PROVIDED FOR FACILITIES WITHIN A DWELLING UNIT OR GUESTROOM.

16. IDENTIFICATION SYMBOLS. DOORWAYS LEADING TO SANITARY FACILITIES SHALL BE IDENTIFIED BY A GEOMETRIC SYMBOL OF COMPLIANCE. GEOMETRIC SYMBOL SHALL BE CENTERED HORIZONTALLY ON THE FLOOR AT A HEIGHT OF 58" TO 60" ABOVE THE FINISH FLOOR OR GROUND SURFACE MEASURED TO THE CENTER OF THE SYMBOL. EDGES OF ACCESSIBILITY SIGNAGE SHALL BE ROUNDED, CHAMFERED OR EASED. CORNERS SHALL HAVE A MINIMUM RADIUS OF 1/8". SEE SECTION 11B-703 FOR ADDITIONAL INFORMATION.

17. MEN'S SANITARY FACILITIES SHALL BE IDENTIFIED BY AN EQUILATERAL TRIANGE 1/4"THICK WITH EDGES 12" LONG AND A VERTEX POINTING UPWARD. THE TRIANGLE SYMBOL SHALL CONTRAST WITH THE DOOR, EITHER LIGHT ON A DARK BACKGROUND OR DARK ON A LIGHT BACKGROUND.

18. WOMEN'S SANITARY FACILITIES SHALL BE IDENTIFIED BY A CIRCLE 1/4" THICK AND 12" IN DIAMETER. THE CIRCLE SYMBOL SHALL CONTRACT WITH THE DOOR, EITHER LIGHT ON A DARK BACKGROUND OR DARK ON A LIGHT BACKGROUND.

19. GENDER NEUTRAL SANITARY FACILITIES SHALL BE IDENTIFIED BY A CIRCLE 1/4" THICK AND 12" IN DIAMETER WITH A 1/4" THICK TRIANGLE SUPERIMPOSED ON THE CIRCLE AND WITHIN THE 12" DIAMETER. THE TRIANGLE SYMBOL SHALL CONTRAST WITH THE CIRCLE SYMBOL, EITHER LIGHT ON A DARK BACKGROUND OR DARK ON A LIGHT BACKGROUND. THE CIRCLE SYMBOL SHALL CONTRAST WITH THE DOOR, EITHER LIGHT ON A DARK BACKGROUND OR DARK ON A LIGHT BACKGROUND.

20. THESE ARE MINIMUM STANDARDS FOR THESE SIGNS. SIGNS ARE REQUIRED TO BE MOUNTED BOTH CENTERED ON THE DOOR INTO THE RESTROOM AND ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR.

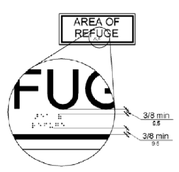
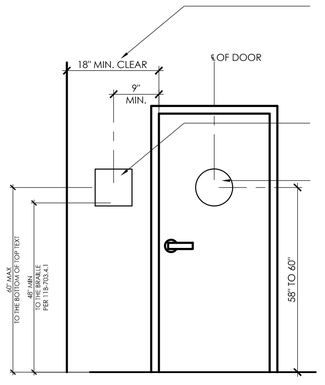
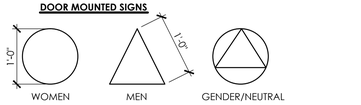


FIGURE 11B-703.3.2
POSITION OF BRAILLE



SIGNAGE LOCATION



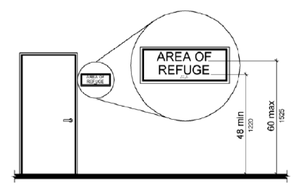


FIGURE 11B-703.4.1
HEIGHT OF TACTILE CHARACTERS ABOVE FINISH FLOOR OR GROUND

SIGNAGE

02-C-23 | N.T.S. | 1

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

STERN ARCHITECTS
2961 W. MacArthur Blvd.
Suite 120
Santa Ana, California 92704
t. (714) 556-2656
f. (714) 556-2696

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Sht Title: ACCESSIBILITY NOTES + DETAILS 4

Project: OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

JOB #	1.19.6
DESIGN BY:	SHS
DRAWN BY:	SHS
CHECKED BY:	QV
DATE	02.14.2020
SCALE	AS NOTED
SHEET	A-0.5

550 South Main Street
Orange, CA 92668
714/560/OCTA

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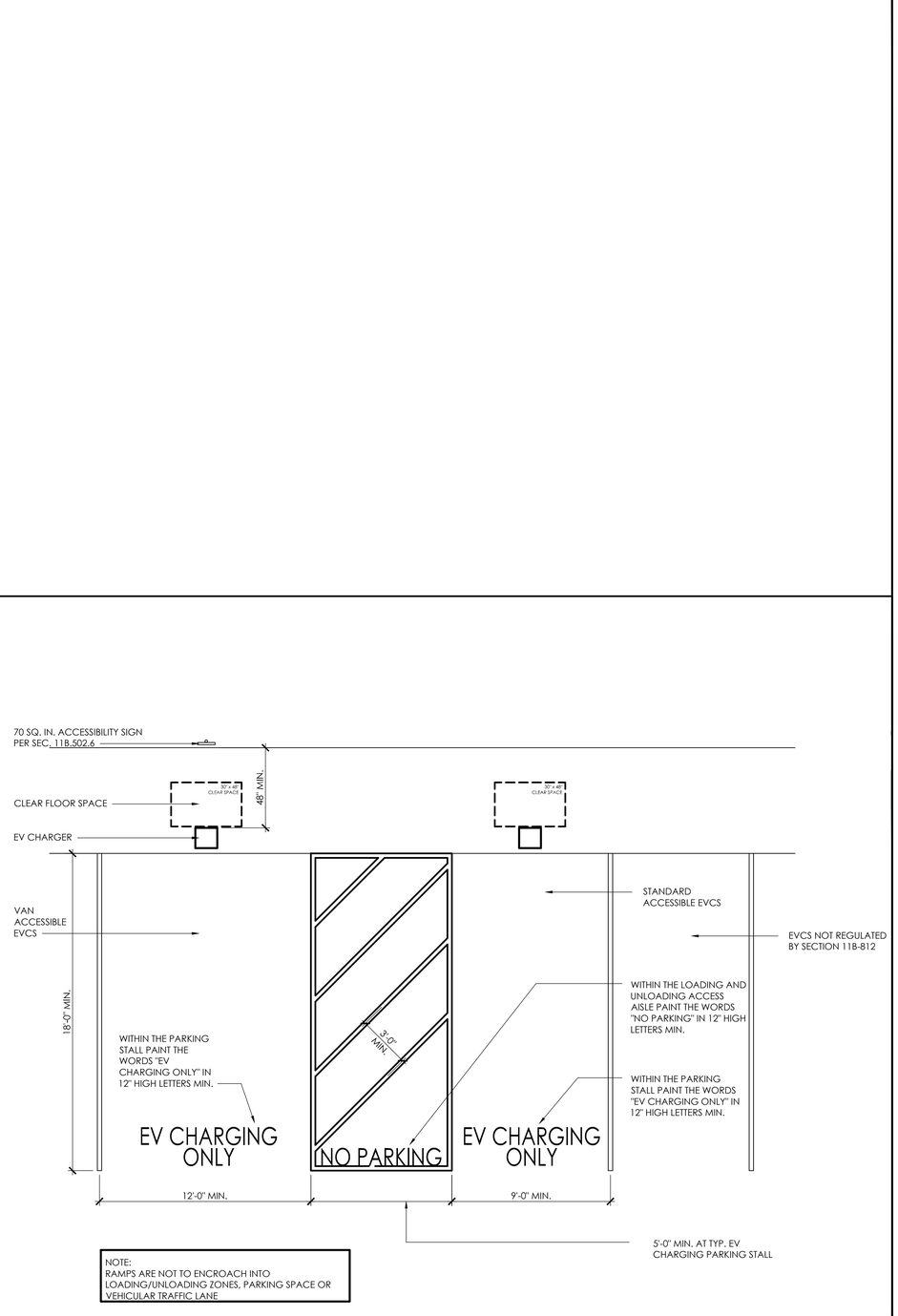
100% DRAWING SET

ELECTRIC VEHICLE CHARGING STATIONS SHALL CONFORM TO SECTION 11B-812

1. 11B-812.1 GENERAL: ELECTRIC VEHICLE CHARGING STATIONS (EVCS) SHALL COMPLY WITH SECTION 11B-812 AS REQUIRED BY SECTION 11B-228.3. WHERE VEHICLE SPACES AND ACCESS AISLES ARE MARKED WITH LINES, MEASUREMENTS SHALL BE MADE FROM THE CENTERLINE OF THE MARKINGS.
   EXCEPTION: WHERE VEHICLE SPACES OR ACCESS AISLES ARE NOT ADJACENT TO ANOTHER VEHICLE SPACE, ACCESS AISLE OR PARKING SPACE MEASUREMENTS SHALL BE PERMITTED TO INCLUDE THE FULL WIDTH OF THE LINE DEFINING THE VEHICLE SPACE OR ACCESS AISLE.
2. 11B-812.3 FLOOR OR GROUND SURFACES: VEHICLE SPACES AND ACCESS AISLES SERVING THEM SHALL COMPLY WITH SECTION 11B-302. ACCESS AISLES SHALL BE AT THE SAME LEVEL AS THE VEHICLE SPACE THEY SERVE. CHANGES IN LEVEL, SLOPES EXCEEDING 1:48, AND DETECTABLE WARNINGS SHALL NOT BE PERMITTED IN VEHICLE SPACES AND ACCESS AISLE.
3. 11B-812.5.1 ACCESSIBLE ROUTE TO BUILDING OR FACILITY: EVCS COMPLYING WITH SECTION 11B-812 THAT SERVE A PARTICULAR BUILDING OR FACILITY SHALL BE LOCATED ON AN ACCESSIBLE ROUTE TO AN ENTRANCE COMPLYING WITH SECTION 11B-206.4. WHERE EVCS DO NOT SERVE A PARTICULAR BUILDING OR FACILITY EVCS COMPLYING WITH SECTION 11B-812 SHALL BE LOCATED ON AN ACCESSIBLE ROUTE TO AN ACCESSIBLE PEDESTRIAN ENTRANCE OF THE EV CHARGING FACILITY.
   EXCEPTION: EVCS COMPLYING WITH SECTION 11B-812 SHALL BE PERMITTED TO BE LOCATED IN DIFFERENT EV CHARGING FACILITIES IF SUBSTANTIALLY EQUIVALENT OR GREATER ACCESSIBILITY IS PROVIDED IN TERMS OF DISTANCE FROM AN ACCESSIBLE ENTRANCE OR ENTRANCES, CHARGING FEE AND USER CONVENIENCE.
4. 11B-812.5.2 ACCESSIBLE ROUTE TO EV CHARGER: AN ACCESSIBLE ROUTE COMPLYING WITH SECTION 11B-402 SHALL BE PROVIDED BETWEEN THE VEHICLE SPACE AND THE EV CHARGER WHICH IT SERVES.
5. 11B-812.5.3 RELATIONSHIP TO ACCESSIBLE ROUTES: VEHICLE SPACES AND ACCESS AISLES SHALL BE DESIGNED SO THAT WHEN THE VEHICLE SPACE IS OCCUPIED THE REQUIRED CLEAR WIDTH OF ADJACENT ACCESSIBLE ROUTES IS NOT OBSTRUCTED. A CURB, WHEEL STOP, BOLLARDS OR OTHER BARRIER SHALL BE PROVIDED IF REQUIRED TO PREVENT ENCROACHMENT OF VEHICLES OVER THE REQUIRED CLEAR WIDTH OF ADJACENT ACCESSIBLE ROUTES.
6. 11B-812.5.4 ARRANGEMENT: VEHICLE SPACES AND ACCESS AISLES SHALL BE DESIGNED SO THAT PERSONS USING THEM ARE NOT REQUIRED TO TRAVEL BEHIND VEHICLE SPACES OR PARKING SPACES OTHER THAN THE VEHICLE SPACE IN WHICH THEIR VEHICLE HAS BEEN LEFT TO CHARGE.
   EXCEPTIONS: AMBULATORY EVCS SHALL NOT BE REQUIRED TO COMPLY WITH SECTION 11B-812.5.4. VEHICLE SPACES INSTALLED IN EXISTING FACILITIES SHALL COMPLY WITH SECTION 11B-812.5.4 TO THE MAXIMUM EXTENT FEASIBLE.
7. 11B-812.6 VEHICLE SPACES: VEHICLE SPACES SERVING VAN ACCESSIBLE, STANDARD ACCESSIBLE, AMBULATORY AND DRIVE-UP EVCS SHALL BE 216 INCHES LONG MINIMUM AND SHALL COMPLY WITH SECTIONS 11B-812.6.1 THROUGH 11B-812.6.4 AS APPLICABLE. ALL VEHICLE SPACES SHALL BE MARKED TO DEFINE THEIR WIDTH.
   EXCEPTIONS: WHERE THE LONG DIMENSION OF VEHICLE SPACES IS PARALLEL TO THE TRAFFIC FLOW IN THE ADJACENT VEHICULAR WAY, THE LENGTH OF VEHICLE SPACES SHALL BE 240 INCHES MINIMUM. VEHICLE SPACES AT DRIVE-UP EVCS SHALL BE 240 INCHES LONG MINIMUM AND SHALL NOT BE REQUIRED TO BE MARKED TO DEFINE THEIR WIDTH.
8. 11B-812.6.1 VAN ACCESSIBLE: VEHICLE SPACES SERVING VAN ACCESSIBLE EVCS SHALL BE 144 INCHES WIDE MINIMUM AND SHALL HAVE AN ADJACENT ACCESS AISLE COMPLYING WITH SECTION 11B-812.7.
9. 11B-812.6.2 STANDARD ACCESSIBLE: VEHICLE SPACES SERVING STANDARD ACCESSIBLE EVCS SHALL BE 108 INCHES WIDE MINIMUM AND SHALL HAVE AN ADJACENT ACCESS AISLE COMPLYING WITH SECTION 11B-812.7.
10. 11B-812.6.3 AMBULATORY: VEHICLE SPACES SERVING AMBULATORY EVCS SHALL BE 120 INCHES WIDE MINIMUM AND SHALL NOT BE REQUIRED TO HAVE AN ADJACENT ACCESS AISLE.
11. 11B-812.6.4 DRIVE-UP: VEHICLE SPACES SERVING DRIVE-UP EVCS SHALL BE 204 INCHES WIDE MINIMUM AND SHALL NOT BE REQUIRED TO HAVE AN ADJACENT ACCESS AISLE.
12. 11B-812.7 ACCESS AISLE: ACCESS AISLES SHALL ADJOIN AN ACCESSIBLE ROUTE. TWO VEHICLE SPACES SHALL BE PERMITTED TO SHARE A COMMON ACCESS AISLE. ACCESS AISLES SHALL BE 60 INCHES WIDE MINIMUM AND SHALL EXTEND THE FULL REQUIRED LENGTH OF HTE VEHICLE SPACES THEY SERVE.
13. 11B-812.7.1 LOCATION: ACCESS AISLES AT VEHICLE SPACES SHALL NOT OVERLAP THE VEHICULAR WAY AND MAY BE PLACED ON EITHER SIDE OF THE VEHICLE SPACE THEY SERVE EXCEPT FOR VAN ACCESSIBLE SPACES WHICH SHALL HAVE ACCESS AISLES LOCATED ON THE PASSENGER SIDE OF THE VEHICLE SPACES.
14. 11B-812.7.2 MARKING: ACCESS AISLES AT VEHICLE SPACES SHALL BE MARKED WITH A PAINTED BORDERLINE AROUND THEIR PERIMETER. THE AREA WITHIN THE BORDERLINES SHALL BE MARKED WITH HATCHED LINES A MAXIMUM OF 36 INCHES ON CENTER. THE COLOR OF THE BORDERLINES, HATCHED LINES AND LETTERS SHALL CONTRAST WITH THAT OF THE SURFACE OF THE ACCESS AISLE. THE BLUE COLOR REQUIRED FOR IDENTIFICATION OF ACCESS AISLES FOR ACCESSIBLE PARKING SHALL NOT BE USED. ACCESS AISLE MARKINGS MAY EXTEND BEYOND THE MINIMUM REQUIRED LENGTH.
15. 11B-812.7.3 LETTERING: THE WORDS "NO PARKING" SHALL BE PAINTED ON THE SURFACE WITHIN EACH ACCESS AISLE IN LETTERS A MINIMUM OF 12 INCHES IN HEIGHT AND LOCATED TO BE VISIBLE FROM THE ADJACENT VEHICULAR WAY.
16. 11B-812.8 IDENTIFICATION SIGNS: EVCS IDENTIFICATION SIGNS SHALL BE PROVIDED IN COMPLIANCE WITH SECTION 11B-812.8.
17. 11B-812.8.1 FOUR OR FEWER: WHERE FOUR OR FEWER TOTAL EVCS ARE PROVIDED, IDENTIFICATION WITH AN INTERNATIONAL SYMBOL OF ACCESSIBILITY (ISA) SHALL NOT BE REQUIRED.
18. 11B-812.8.2 FIVE TO TWENTY-FIVE: WHERE FIVE TO TWENTY-FIVE TOTAL EVCS ARE PROVIDED, ONE VAN ACCESSIBLE EVCS SHALL BE IDENTIFIED BY AN ISA COMPLYING WIHT SECTION 11B-703.7.2.1. THE REQUIRED STANDARD ACCESSIBLE EVCS SHALL NOT BE REQUIRED TO BE IDENTIFIED WITH AN ISA.
19. 11B-812.8.3 TWENTY-SIX OR MORE: WHERE TWENTY-SIX OR MORE TOTAL EVCS ARE PROVIDED, ALL REQUIRED VAN ACCESSIBLE AND ALL STANDARD ACCESSIBLE AVCS SHALL BE IDENTIFIED BY AN ISA COMPLYING WITH SECTION 11B-703.7.2.1.
20. 11B-812.8.4 AMBULATORY: AMBULATORY EVCS SHALL NOT BE REQUIRED TO BE IDENTIFIED BY AN ISA.
21. 11B-812.8.5 DRIVE-UP: DRIVE-UP EVCS SHALL NOT BE REQUIRED TO BE IDENTIFIED BY AN ISA.
22. 11B-812.8.7 FINISH AND SIZE: IDENTIFICATION SIGNS SHALL BE REFLECTORIZED WITH A MINIMUM AREA OF 70 SQUARE INCHES.
23. 11B-812.8.7 LOCATION: REQUIRED IDENTIFICATION SIGNS SHALL BE VISIBLE FROM THEEVCS IT SERVES. SIGNS SHALL BE PERMANENTLY POSTED EITHER IMMEDIATELY ADJACENT TO THE VEHICLE SPACE OR WITHIN THE PROJECTED VEHICLE SPACE WIDTH AT THE HEAD END OF THE VEHICLE SPACE. SIGNS IDENTIFYING VAN ACCESSIBLE VEHICLE SPACES SHALL CONTAIN THE DESIGNATION "VAN ACCESSIBLE". SIGNS SHALL BE 60 INCHES MINIMUM ABOVE THE FINISH FLOOR OR GROUND SURFACE MEASURED TO THE BOTTOM OF THE SIGN. SIGNS LOCATED WITHIN AN ACCESSIBLE ROUTE SHALL BE 80 INCHES MINIMUM ABOVE THE FINISH FLOOR OR GROUND SURFACE MEASURED TO THE BOTTOM OF THE SIGNS. SIGNS MAY ALSO BE PERMANENTLY POSTED ON A WALL AT THE INTERIOR END OF THE VEHICLE SPACE.
24. 11B-812.9 SURFACE MARKING: EVCS VEHICLE SPACES SHALL PROVIDE SURFACE MARKING STATING "EV CHARGING ONLY" IN LETTERS 12 INCHES HIGH MINIMUM. THE CENTERLINE OF THE TEXT SHALL BE A MAXIMUM OF 6 INCHES FROM THE CENTERLINE OF THE VEHICLE SPACE AND ITS LOWER CORNER AT, OR LOWER SIDE ALIGNED WITH THE END OF THE PARKING SPACE LENGTH.
25. 11B-812.10.1 ELECTRIC VEHICLE CHARGER GENERAL: EV CHARGERS SHALL COMPLY WITH SECTION 11B-812.10.
26. 11B-812.10.2 ELECTRIC VEHICLE CHARGER OPERABLE PARTS: OPERABLE PARTS AND CHARGING CORD STORAGE SHALL COMPLY WITH SECTION 11B-309.
27. 11B-812.10.3 ELECTRIC VEHICLE CHARGER POINT-OF-SALE DEVICES: WHERE PROVIDED, POINT-OF-SALE DEVICES SHALL COMPLY WITH SECTION 11B-707.2, 11B-707.3, 11B-707.7.2 AND 11B-707.9.
28. 11B-812.10.4 ELECTRIC VEHICLE CHARGER LOCATION: EV CHARGERS SHALL BE ADJACENT TO AND WITHIN THE PROJECTED WIDTH OF THE VEHICLE SPACE BEING SERVED.
   EXCEPTIONS: EV CHARGERS SERVING MORE THAN ONE EVCS SHALL BE ADJACENT TO AND WITHIN THE COMBINED PROJECTED WIDTH OF THE VEHICLE SPACES BEING SERVED. FOR ALTERATIONS AT EXISTING FACILITIES WHERE AN ACCESSIBLE ROUTE OR GENERAL CIRCULATION PATH IS NOT PROVIDED ADJACENT TO THE HEAD END OF THE VEHICLE OR ACCESS AISLE, THE EV CHARGER MAY BE LOCATED WITHIN THE PROJECTED WIDTH OF THE ACCESS AISLE 36 INCHES MAXIMUM FROM THE HEAD OF THE SPACE. WHERE THE LONG DIMENSION OF A VEHICLE SPACE IS PARALLEL TO THE VEHICULAR WAY, THE EV CHARGER SHALL BE ADJACENT TO AND 48 INCHES MAXIMUM FROM THE HEAD END OR FOOT END OF THE VEHICLE SPACE OR ACCESS AISLE BEING SERVED.



NOTE:
RAMPS ARE NOT TO ENCROACH INTO LOADING/UNLOADING ZONES, PARKING SPACE OR VEHICULAR TRAFFIC LANE

EV CHARGING PARKING

02-AA-25
N.T.S.

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DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qvu@dahltaylor.com

STERN ARCHITECTS
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Suite 120
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t. (714) 556-2656
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Sht Title: ACCESSIBILITY NOTES + DETAIL - EVCS

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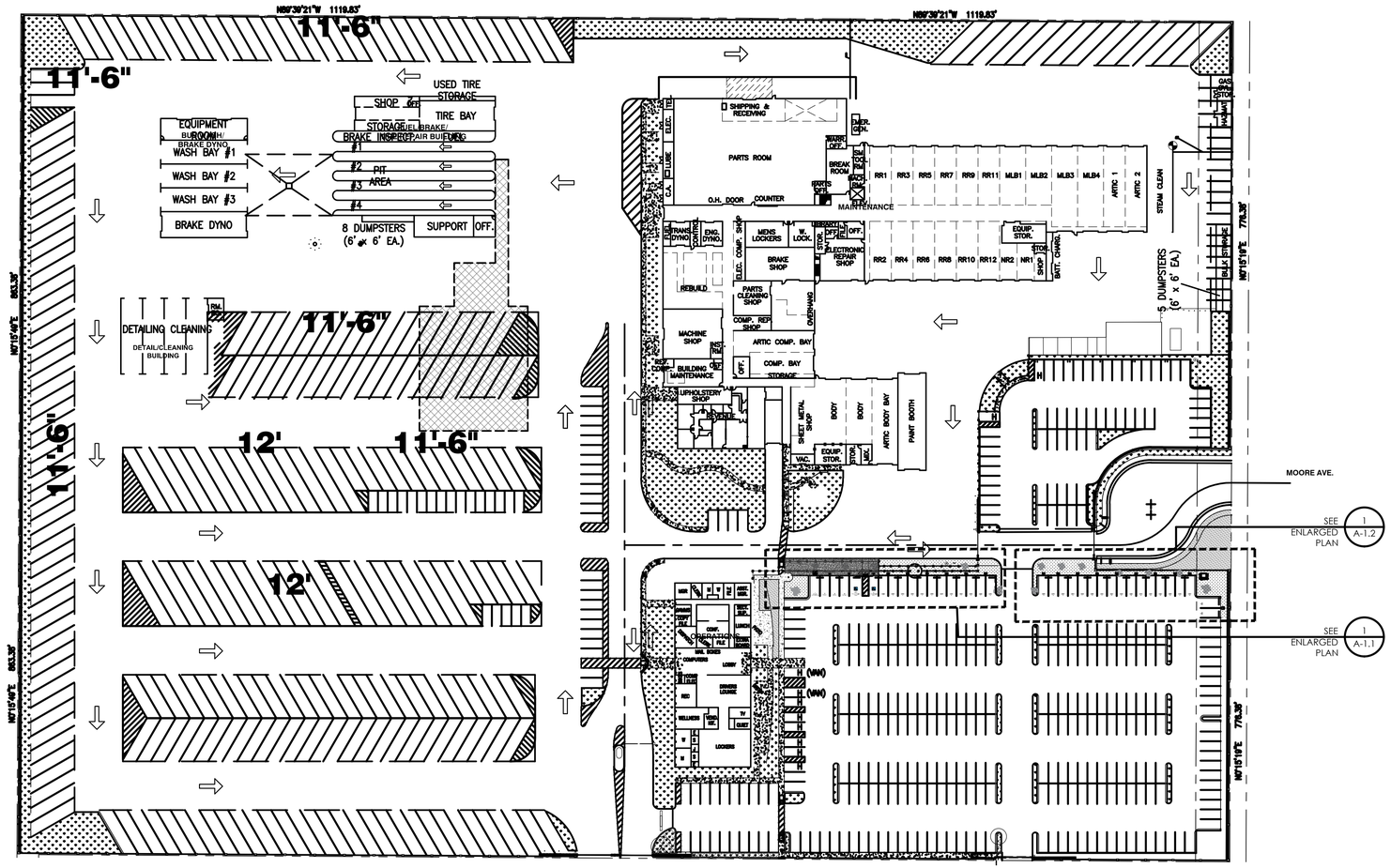

SITE PLAN 1
1/64" = 1'-0"

N

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
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SANTA ANA, CALIFORNIA 92705
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Suite 120
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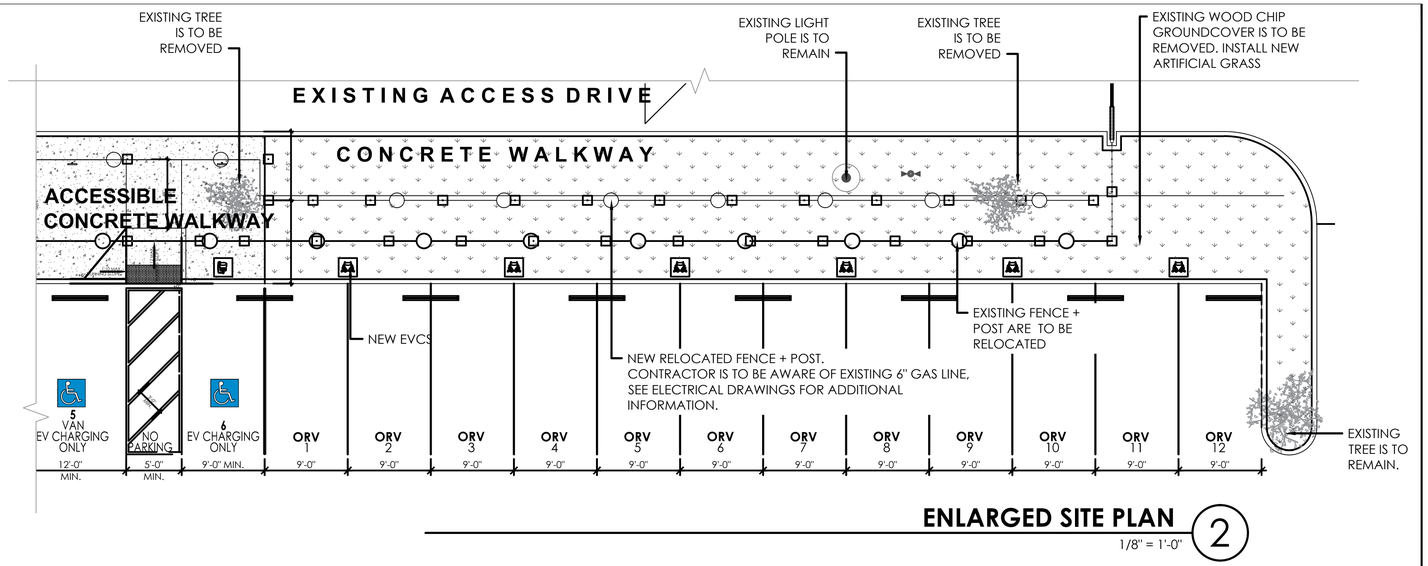
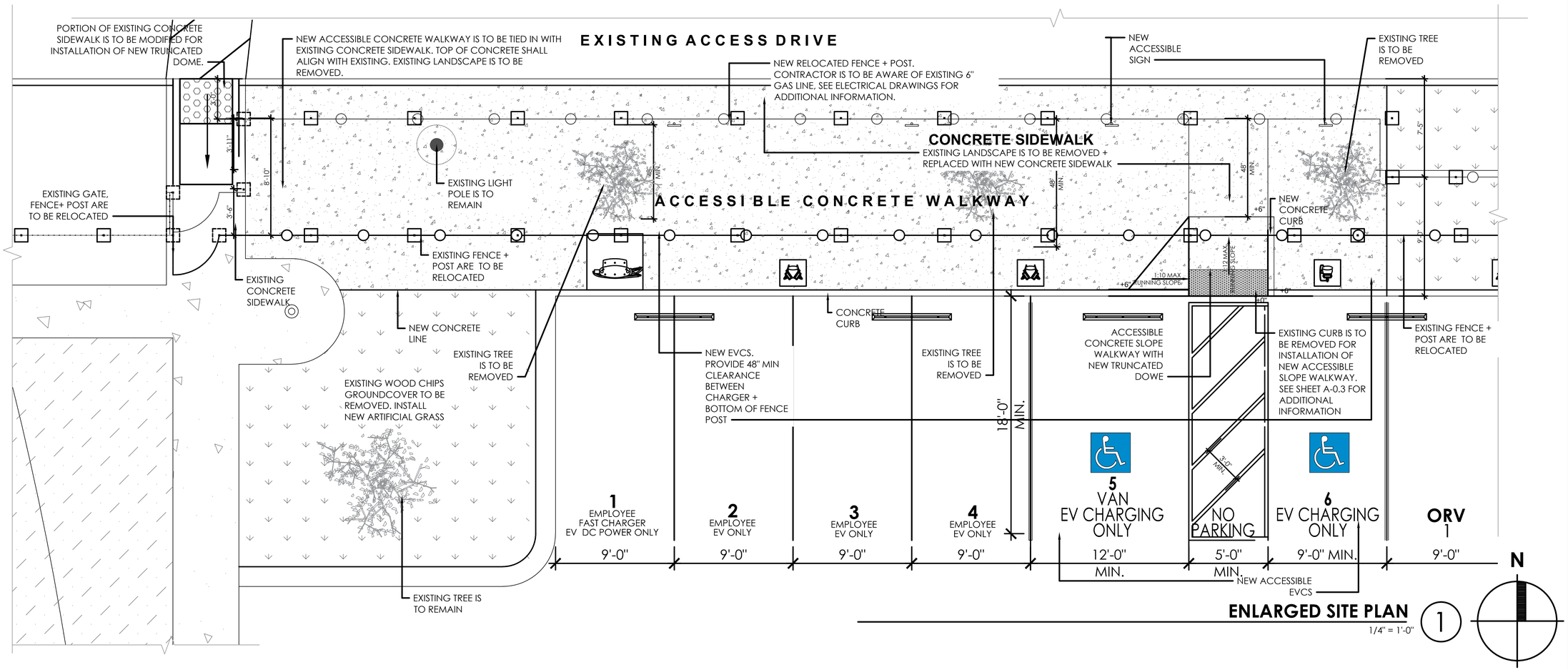


ENLARGED SITE PLAN

1/8" = 1'-0" (2)



ENLARGED SITE PLAN

1/4" = 1'-0" (1)

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: (949) 254-8016
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STERN ARCHITECTS
2961 W. MacArthur Blvd.
Suite 120
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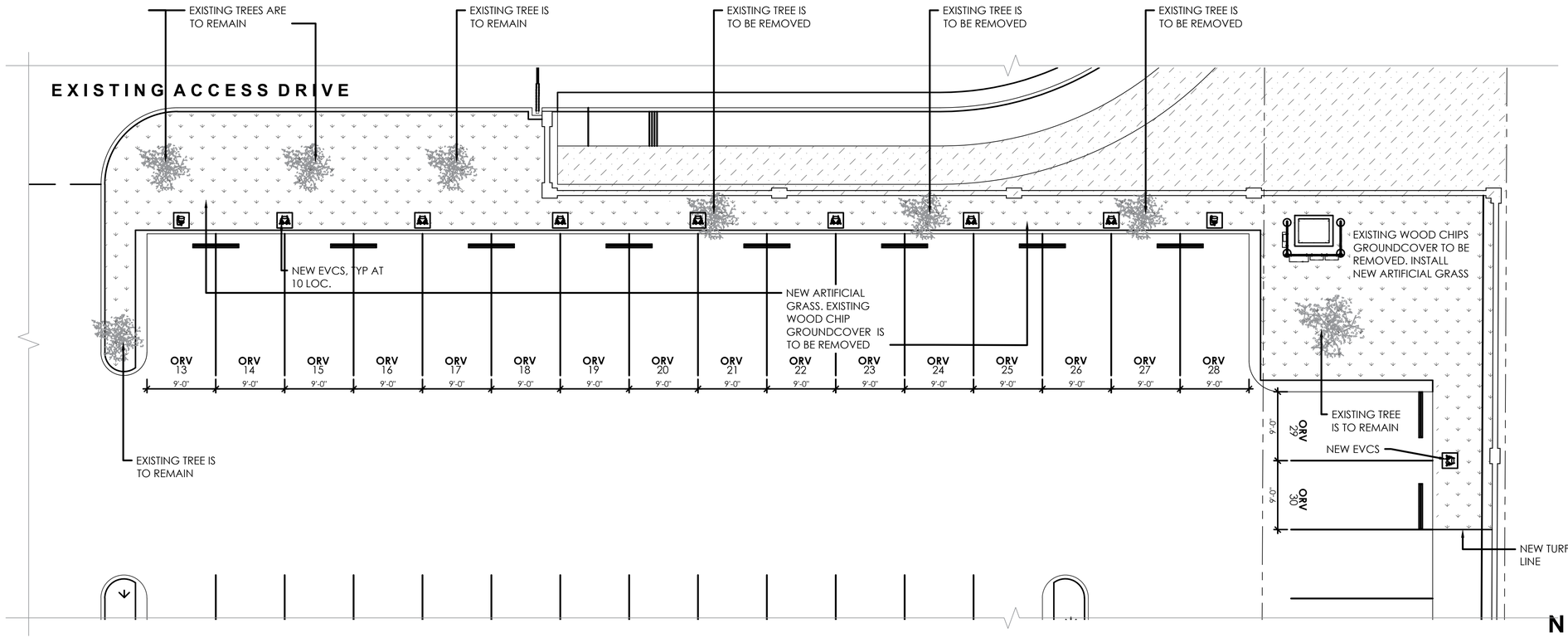

ENLARGED SITE PLAN

1/8" = 1'-0"

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SANTA ANA, CALIFORNIA 92705
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GENERAL NOTES

1. THE ELECTRICAL DRAWINGS, SPECIFICATIONS AND GENERAL NOTES DESCRIBE THE SCOPE OF WORK; CONSTRUCTION DOCUMENTS ARE TO BE USED FOR THE PURPOSE OF BIDDING, BUILDING DEPARTMENT REVIEW, AND TO SECURE THE NECESSARY CONSTRUCTION PERMIT. ALL EQUIPMENT SHOWN IS NEW, CONTRACTOR FURNISHED AND INSTALLED, UNLESS NOTED OTHERWISE (U.N.O.).
2. THE CONTRACTOR SHALL VERIFY THE INPUT VOLTAGE AND AMPERAGE (HORSEPOWER) RATING OF ALL EQUIPMENT PRIOR TO INSTALLATION, AND NOTIFY THE ENGINEER FOR DIRECTION PRIOR TO PROCEEDING.
3. PROVIDE AN ADDITIONAL JUNCTION BOX (SIZE AS REQUIRED) WHERE THE NUMBER OF CONDUCTORS EXCEEDS THE MAXIMUM ALLOWED FOR A GIVEN JUNCTION POINT OR OUTLET.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE CONSTRUCTION AND SHOP DRAWINGS FOR APPROVAL BY THE OWNER BASED ON THESE DRAWINGS, SPECIFICATIONS AND ADDITIONAL DESIGN CRITERIA FURNISHED BY OWNER.
5. CONTRACTOR'S BID SHALL INCLUDE ALL PREMIUM OVERTIME COSTS, UTILITY CHARGES, COST FOR TEMPORARY UTILITY SERVICES, ALTERATION, DEMOLITION AND EXTENSION WORK, PLANCHECK/INSPECTION FEES, MISCELLANEOUS CONTINGENCY COSTS, ETC.
6. IF CONTRACTOR PROPOSES TO SUBSTITUTE FOR EQUIPMENT SPECIFIED, CONTRACTOR SHALL SUBMIT A REQUEST FOR CONSIDERATION TO THE OWNER AND ENGINEER IN WRITING PRIOR TO COMMENCEMENT OF WORK. ALL SUBSTITUTIONS MUST BE SUBMITTED TO THE ENGINEER FOR HIS REVIEW AND APPROVAL. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR FROM COMPLYING WITH THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE AT HIS OWN EXPENSE FOR ANY CHANGES RESULTING FROM HIS PROPOSED SUBSTITUTIONS WHICH AFFECT OTHER PARTS OF HIS OWN WORK OR THE WORK OF OTHER CONTRACTORS.
7. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY. DO NOT SCALE THE ELECTRICAL DRAWINGS TO DETERMINE THE LOCATION OF EQUIPMENT OR OUTLETS. COMPLY WITH ALL THE CLEARANCES AND MOUNTING HEIGHT REQUIREMENTS. ROUTE CONDUITS PER FIELD CONDITIONS, PREVENTING CONFLICTS WITH STRUCTURAL ELEMENTS AND EXISTING EQUIPMENT AND UTILITIES. COMPLY WITH THE NATIONAL ELECTRICAL CODE.
8. ALL FINAL CONNECTIONS TO FURNISHED EQUIPMENT SHALL BE MADE BY THE CONTRACTOR UNLESS OTHERWISE NOTED. VERIFY ELECTRICAL CHARACTERISTICS AND U.L. LISTING PRIOR TO CONNECTION.
9. SEAL ALL PENETRATIONS THROUGH FIRE RATED WALLS, CEILINGS, FLOORS, ETC., TO MAINTAIN THE EXISTING FIRE RATING. FURNISH AND INSTALL FIRE RATED ENCLOSURE FOR ALL EQUIPMENT PENETRATING INTO FIRE RATED ENVELOPES, SPACES, ETC. PER NEC 300-21.
10. ELECTRICAL OUTLETS ON OPPOSITE SIDES OF FIRE RATED WALLS AND PARTITIONS MUST BE SEPARATED BY A DISTANCE OF 24 INCHES HORIZONTAL. OPENINGS IN FIRE RATED WALLS MUST BE FIRE STOPPED.
11. CONDUCTORS SHALL BE COPPER XHHW/XHWW-2 600 VOLT INSULATION, UNLESS NOTED. USE PROPER TEMPERATURE RATING OF CONDUCTORS BASED ON THE AMBIENT AIR TEMPERATURE WHERE CONDUCTORS ARE LOCATED. HIGHER AMPACITY CONDUCTORS AND LARGER RACEWAY SHALL BE PROVIDED AS REQUIRED TO MEET THE AMPACITY CORRECTION FACTORS AS INDICATED IN NEC TABLE 310 AND ELSEWHERE IN CODE.
12. THE SEISMIC BRACING AND ANCHORAGE OF ELECTRICAL CONDUITS, BUS DUCTS, WIREWAYS AND CABLE TRAYS SHALL BE IN ACCORDANCE WITH THE "GUIDELINE FOR SEISMIC RESTRAINS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS" PUBLISHED BY SMACNA LATEST VERSION.
13. WHERE BRACING AND ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS OR IN THE GUIDELINE, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE PROJECT ENGINEER. ALL EQUIPMENT ANCHORAGE SHALL BE DESIGNED PER 2019 CBC & ASCE 7-05 FORMULA 13.3-1, 13.3-2, AND 13.3-3.
14. PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL SURVEY THE ENTIRE PROJECT SITE AND BECOME THOROUGHLY FAMILIAR WITH ACTUAL EXISTING CONDITIONS. THE INTENT OF THE WORK IS SHOWN ON THE DRAWINGS AND DESCRIBED HEREIN. THE CONTRACTOR SHALL BE DEEMED TO HAVE MADE SUCH A STUDY AND EXAMINATION AND TO ACCEPT ALL CONDITIONS PRESENT AT THE SITE. NO REQUEST FOR ADDITIONAL PAYMENT SHALL BE CONSIDERED VALID, DUE TO CONTRACTOR FAILURE TO ALLOW IN COST ESTIMATE FOR CONDITIONS WHICH MAY EXIST.
15. EXISTING CONDITIONS SHOWN ARE FROM AVAILABLE RECORD DRAWINGS AND VISUAL FIELD SURVEYS AND SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY ACTUAL EXISTING CONDITIONS AT SITE PRIOR TO STARTING WORK.
16. ALL ELECTRICAL WORK SHALL BE PERFORMED PER NEC, UTILIZING THE CODE ISSUED IN FORCE AT THE LOCATION OF THE CONSTRUCTION SITE. ELECTRICAL WORK SHALL COMPLY WITH ALL APPLICABLE CURRENT BASE CODES AND REGULATIONS.
17. ALL ELECTRICAL EQUIPMENT UTILIZED AT THIS PROJECT SHALL BE U.L. LABELED OR U.L. LISTED.
18. INSTALL ALL WIRING IN CONDUITS.
19. ALL ELECTRICAL PANEL BOARD BUSES SHALL BE COPPER.
20. ALL ELECTRICAL DEVICES AND EQUIPMENT MOUNTED ON THE EXTERIOR OF THE BUILDING OR EXPOSED TO WEATHER SHALL BE NEMA 3R WEATHERPROOF TYPE.
21. CONSTRUCTION WORK SHALL BE DONE IN A MANNER WHICH WILL NOT CAUSE INCONVENIENCE OR DANGER TO USERS OF THE PREMISES AND ADJACENT AREAS AND NOT INTERFERE WITH THEIR WORK. ANY CONSTRUCTION WORK TO BE PERFORMED MUST BE PLANNED IN ADVANCE. SCHEDULING SHALL BE DONE IN COOPERATION WITH AUTHORIZED ISD'S PROJECT MANAGER, WHO WILL BE AVAILABLE BEFORE AND DURING THE PERFORMANCE OF THE WORK. INCLUDE ALL PREMIUM TIME CHARGES IN BID TO COVER THE AFTER-HOURS AND WEEKEND WORK.
22. DO ALL DRILLING, CUTTING, CHANNELING AND PATCHING REQUIRED TO INSTALL ELECTRICAL WORK AS INDICATED OR HEREIN SPECIFIED. ALL HOLES, CURBS, ETC., IN FLOORS, CEILINGS AND WALLS SHALL BE PATCHED, UNLESS INDICATED OTHERWISE. PAINT ALL NEW EXPOSED ELECTRICAL RACEWAYS, CABINETS, ENCLOSURES AND FITTINGS TO MATCH THE COLOR OF ADJACENT SURFACES IN FINISHED AREAS.

ABBREVIATIONS

A	AMPERE
AC	AIR CONDITIONING
AF	AMPERE FUSE OR AMP FRAME
AFC	AVAILABLE FAULT CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPERES INTERRUPTING CAPACITY (SYMMETRICAL)
ALT	ALTERNATE
ARCH	ARCHITECTURAL
AS	AMPERE SWITCH
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BCC	BARE COPPER CONDUCTOR
BD	BOARD
BFG	BELOW FINISHING GRADE
BKBD.	BACKBOARD
BLDG.	BUILDING
C	CONDUIT
CAT	CATALOG
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CEC	CALIFORNIA ELECTRICAL CODE
CL	CURRENT LIMITING
CLF	CURRENT LIMITING FUSES
CLG	CEILING
CLK	CLOCK
C.O.	CONDUIT ONLY
COMM.	COMMUNICATION
CONT.	CONTINUATION
CT	CURRENT TRANSFORMER
CTC	COMMUNICATION TERMINAL CABINET
CTRL	CONTROL
CU	COPPER
CW	COLD WATER
DB	DECIBEL
DC	DIRECT CURRENT
DE	DUAL ELEMENT
DEF	DUAL ELEMENT SWITCH
DISC. SW.	DISCONNECT SWITCH
DN	DOWN
DP	DEPTH
DPP	DISTRIBUTION POWER PANEL
DWG.	DRAWING
(E)	EXISTING
EA	EACH
E.C.	EMPTY CONDUIT
EF	EXHAUST FAN
ELECT.	ELECTRICAL
ELEV	ELEVATION
EMAC	ENERGY MANAGEMENT AND CONTROL
EMRG.	EMERGENCY
EMS	ENERGY MANAGEMENT AND ENVIRONMENTAL CONTROL SYSTEM
EMT	ELECTRICAL METALLIC TUBING
EN	EXISTING AT NEW LOCATION
EQPT.	EQUIPMENT
EXIST.	EXISTING
EXT	EXTERIOR
F	FUSE
FA	FIRE ALARM, FORCED AIR
FACP	FIRE ALARM CONTROL PANEL
FAU	FURNACE
FBO	FURNISHED BY OTHERS
FD	FIRE DEPARTMENT
FDR	FEEDER
FL	FLOOR
FLA	FULL LOAD AMPERES
FOC	FLOOR MATERIAL CHANGE
FOS	FACE OF STUD
FS	FUSIBLE SWITCH
FT.	FOOT/FEET
G	GROUND
GA	GAUGE
GFI	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GND	GROUND
GSA	GENERAL SERVICES AGENCY
H	HOOD (KITCHEN)
HD	HEAVY DUTY
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
HW	HOT WATER
HZ	HERTZ
IC	INTERCOM
IG	ISOLATED GROUND
IMC	INTERMEDIATE METALLIC CONDUIT
INC	INCANDESCENT
I.E.	INVERT ELEVATION
J-BOX	JUNCTION BOX
KVA	KILOVOLT AMPERES
KW	KILOWATT
LA	LIGHTING ARRESTOR
LCL	LONG CONTINUOUS LOAD
L.O.	LUGS ONLY
LTG.	LIGHTING
MCB	MAIN CIRCUIT BREAKER
MCC	THOUSAND CIRCULAR MIL(S)
MECH	MECHANICAL
MH	MANHOLE OR MOUNTING HEIGHT NEUTRAL, OR METAL HALIDE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
LOD	MOTOR OPERATED DAMPER
MTD	MOUNTED
MTG	MOUNTING
N	NEUTRAL
(N)	NEW
NA	NON-AUTOMATIC
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
N.I.C.	NOT IN CONTRACT
NL	NIGHT LIGHT
N.O.	NORMALLY OPEN
NTS	NOT TO SCALE
O.C.	ON CENTER
OD	OUTSIDE DIAMETER
OL	OVER LOAD
P	POLE
PB	PULLBOX
P/B	PUSH BUTTON
PH	PHASE
PL	PHILIPS FLUORESCENT LAMPS
PIV	POST INDICATING VALVE
PNL	PANEL
POC	POINT OF CONNECTION
PP	POWER PANEL
PR	PAIR
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
PVS	PHOTO VOLTAIC SYSTEM
PWR	POWER
R	EXISTING TO BE RELOCATED
RECEPT.	RECEPTACLE
REQ'D	REQUIRED
REQMT'S	REQUIREMENTS
RF	RETURN FAN
RGS	RIGID GALVANIZED STEEL
RLA	RUNNING LOAD AMPS
RM.	ROOM
RMS	ROOT-MEAN-SQUARE
RR	REMOVE AND RELOCATE
RSC	RIGID STEEL CONDUIT
SEC	SECURITY
SF	SQUARE FEET
SHT.	SHEET
SP	SINGLE POLE
ST	SINGLE THROW
STA	STATION
SURF	SURFACE
SW.	SWITCH
TCL	TOTAL CONNECTED LOAD
TD	TIME DELAY
TEL	TELEPHONE
TEMP	TEMPORARY
TTB	TELEPHONE TERMINAL BOARD
TV	TELEVISION
TYP.	TYPICAL
UE	UNDERGROUND ELECTRICAL
UG	UNDERGROUND
U.L.	UNDERWRITERS LABORATORIES
U.O.N.	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTED POWER SUPPLY
UT	UNDERGROUND TELEPHONE
V	VOLT
VA	VOLTAMP(S)
VAR	VARIABLE
VL	VERIFY LOCATION
VISCO	VALLEY IRON STEEL CO.
W	WATTS OR WIRE
W/	WITH
WH	WATER HEATE
W/O	WITHOUT
WP	WEATHERPROOF
X	EXISTING TO BE REMOVED
XFMR	TRANSFORMER
+12"	HEIGHT FROM FINISHED FLOOR TO CENTER LINE OF DEVICE
1P, 2P	SINGLE OR DOUBLE POLE
ø	PHASE PROVIDE FURNISH & INSTALL

SYMBOLS LEGEND

	PANEL BOARD
	(E) RECESSED MOUNTED BRANCH CIRCUIT PANEL BOARD
	(E) SURFACE MOUNTED BRANCH CIRCUIT PANEL BOARD
	(N) SURFACE MOUNTED BRANCH CIRCUIT PANEL BOARD
	(N) RECESSED MOUNTED BRANCH CIRCUIT PANEL BOARD
WP	WEATHERPROOF
A-4	HOMERUN TO PANEL "A", CIRCUIT 4
	CONDUIT CONCEALED IN WALL OR CEILING
	CONDUIT BELOW FLOOR OR GRADE, OR IN SLAB
	CONDUIT EXPOSED
	WIREMOLD
	CONDUIT EXPOSED
	3/4"C-2#12, 1#12N, 1#12G
	3/4"C-3#12, 1#12N, 1#12G
	CONDUIT STUBBED AND CAPPED
	CONDUIT RUNNING UP
	CONDUIT RUNNING DOWN
	WEATHERTIGHT FLEX CONDUIT TO EQUIPMENT
	CONDUIT, FLEXIBLE WITH WIRING AS INDICATED
	PULLBOX, SIZE AS SHOWN ON PLAN
M	METER
G	GENERATOR
	CONTACTOR
	OVERLOAD RELAY
	GROUND
5	ELECTRICAL MOTOR OR EXHAUST FAN (5 HORSEPOWER)
OR	TRANSFORMER
T	THERMOSTAT
PC	PHOTOCELL
	WALL MOUNTED COMBINATION DATA TELEPHONE OUTLET AT +15" U.O.N
	WALL MOUNTED TELEPHONE OUTLET AT +15" U.O.N
	PROVIDE FLEXIBLE FINAL CONNECTION. LIQUID TIGHT FOR EXTERIOR OR DAMP LOCATIONS.
S	SINGLE POLE SWITCH. +48" AFF. UNLESS OTHERWISE NOTED
S^3	THREE WAY SWITCH. +48" AFF. UNLESS OTHERWISE NOTED
Sab	SUB-LETTERS AT SWITCH IDENTIFIED SWITCH LEG
Sm	MOTOR RATED SWITCH
S^S	NEW WALL SWITCH OCCUPANCY SENSOR. +48" AFF. UNLESS OTHERWISE NOTED. LEVITON OSSMT-MDA OR APPROVE EQUAL.
1	DUPLEX RECEPTACLE. +26"AFF., U.O.N 1 = CIRCUIT NUMBER
1	DOUBLE DUPLEX RECEPTACLE. +26"AFF., U.O.N 1 = CIRCUIT NUMBER
WP GFI 1	DUPLEX RECEPTACLE. WEATHERPROOF, GROUND FAULT CIRCUIT INTERRUPTER. +15" AFF UON. 1 = CIRCUIT NUMBER
1	208/230V RECEPTACLE. +26"AFF., U.O.N 1 = CIRCUIT NUMBER
1	250V RECEPTACLE. +26"AFF., U.O.N 1 = CIRCUIT NUMBER
1	480V RECEPTACLE. +15"AFF., U.O.N 1 = CIRCUIT NUMBER
	SWITCHED DUPLEX RECEPTACLE
	SPECIAL RECEPTACLE. SIZE AS NOTED.
	DUPLEX-RECEPTACLE IN NON-METALLIC BOX WITH STAINLESS STEEL COVER IN CONCRETE (MANUFACTURE: CARLON, ROUND FLOOR BOX MODEL #E971FB, TWO-DOOR COVER MODEL #E97SS2).
1	NOTE REFERENCE CALL OUT
	LIGHT LINE WEIGHT INDICATES EXISTING TO REMAIN
	HEAVY THICK LINE INDICATES NEW WORK
	DASHED LINE INDICATES DEMOLITION
(E)	INDICATES EXISTING
(N)	INDICATES NEW
A 22	LIGHT FIXTURE CALL-OUT. TOP NUMBER: IDENTIFICATION NUMBER. BOTTOM NUMBER: INPUT WATTAGE.
	NON-FUSED DISCONNECT SWITCH
F	FUSED DISCONNECT SWITCH, FUSED PER EQUIPMENT MANUFACTURER'S NAMEPLATE RATING
1	MOTOR STARTER, NEMA SIZE AS INDICATED.
1	MOTOR STARTER WITH O.L. PROTECTION, H.O.A SWITCH A RED PILOT LIGHT, AUXILARY CONTACTS AND L.V. TRANSFORMER, PROVIDE NAMEPLATES. NUMBER ADJACENT INDICATES STARTER SIZE.
	COMBINATION MOTOR STARTER WITH THERMAL/MAGNETIC C/B AND ELECTRONIC OVERLOAD RELAYS
	MOLDED CASE CIRCUIT BREAKER SIZE AS INDICATED ON SINGLE LINE DIAGRAM.
100AS / 90AFU	FUSED SWITCH. "AS" INDICATES AMPERE SWITCH RATING, "AFU" AMPERE FUSE RATING, NUMBER OF POLES AS INDICATED.
	SWITCH
M	UTILITY METER SOCKET, WITH C.T.S, CLIPS, ETC., PER SERVING UTILITY COMPANY.
	NEW CEILING-MOUNT DAYLIGHT SENSOR. WATT STOPPER MODEL # LS-101 OR APPROVED EQUAL.
J	JUNCTION BOX, CEILING MOUNTED OR WALL MOUNTED
S^t	NEW WALL TIMER SWITCH. +48" AFF. UNLESS OTHERWISE NOTED. LEVITON 6124H OR APPROVE EQUAL.
S_M	NEW MOTOR RATED SNAP SWITCH
A-012	NEW LIGHTING FIXTURE A=PANEL NAME 01=CIRCUIT NUMBER 2=TIMER SWITCH CONTROLING FIXTURE
A-0123	NEW LIGHTING FIXTURE A=PANEL NAME 01=CIRCUIT NUMBER 2=TIMER SWITCH CONTROLING FIXTURE 3=DAYLIGHT SENSOR CONTROLING FIXTURE
A-01	NEW FLUORESCENT LIGHTING FIXTURE A=PANEL NAME 01=CIRCUIT NUMBER
P 1	MECHANICAL EQUIPMENT CALL OUT, SEE MECHANICAL DRAWINGS FOR FULL RATING

REGISTERED PROFESSIONAL ENGINEER
QUANG D. VU
NO. E19380
EXP. 12-30-2020
ELECTRICAL
STATE OF CALIFORNIA

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 756-8654
FAX: # (949) 502-0777

MARK	DATE	BY	REVISIONS
	-	-	-

Sheet Title ELECTRICAL ABBREVIATIONS, SYMBOLS AND NOTES

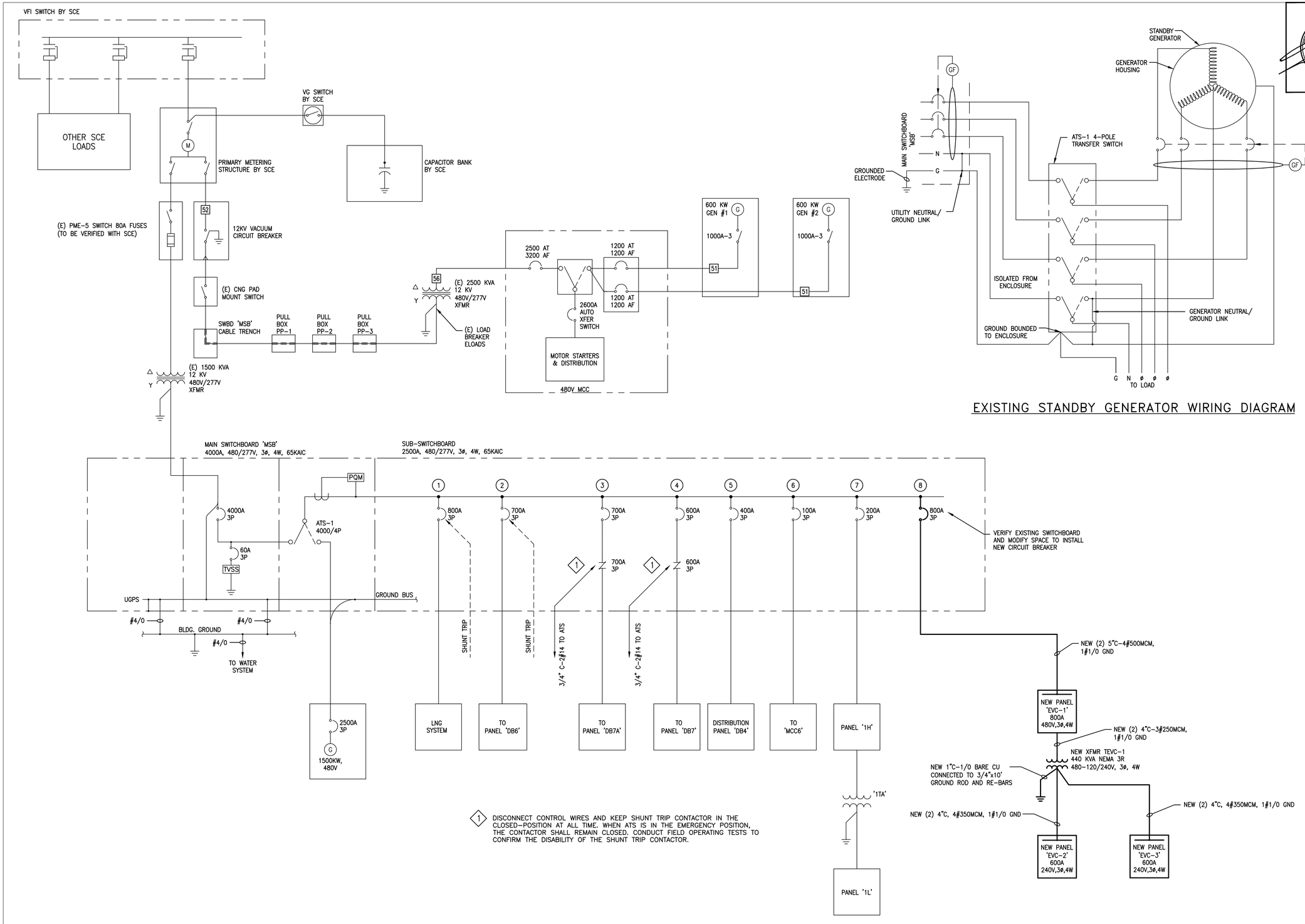
Project OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-14-2020
SCALE	AS NOTED
SHEET	SA-E-1

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET



EXISTING STANDBY GENERATOR WIRING DIAGRAM

1 DISCONNECT CONTROL WIRES AND KEEP SHUNT TRIP CONTACTOR IN THE CLOSED-POSITION AT ALL TIME. WHEN ATS IS IN THE EMERGENCY POSITION, THE CONTACTOR SHALL REMAIN CLOSED. CONDUCT FIELD OPERATING TESTS TO CONFIRM THE DISABILITY OF THE SHUNT TRIP CONTACTOR.

MODIFIED SINGLE LINE DIAGRAM

SCALE NONE 1

dt & Associates
DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: ∮ (949) 756-8654
FAX: ∮ (949) 502-0777

MARK	DATE	BY	REVISIONS
1	-	-	-

Sheet Title: MODIFIED SINGLE LINE DIAGRAM

Project: OCTA SANTA ANA BUS BASE BATTERY ELECTRIC CAR CHARGING SYSTEMS 4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-14-2020
SCALE	AS NOTED
SHEET	SA-E-2

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

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PANELBOARD NAME: PANEL 'EVC-1'	MOUNTING: SURFACE	OVERSIZED NEUTRAL BUS: NO.	SPECIAL ENCLOSURE: NEMA 3R ENCLOSURE
BUS: 800 A COPPER	VOLTAGE: 277/480 VOLTS, 3-Ph, 4-W	MAIN (Amps): 800 / 3 P	KAIC 35 | TOP OR BOTTOM FEED: BOTTOM
LOCATION		FED FORM:	

DESCRIPTION	LOAD VA A	LOAD VA B	LOAD VA C	CONT.	QTY	BRKR TRIP	BRKR P	CKT REF		BRKR P	BRKR TRIP	QTY	CONT.	LOAD VA A	LOAD VA B	LOAD VA C	DESCRIPTION
EVC-1	10420			–	–	100	3	1	2	3	500	–	–	138500			TRANSFORMER TEVC-1
EVC-1		10420		–	–	100	"	3	4	"	500	–	–		138500		TRANSFORMER TEVC-1
EVC-1			10420	–	–	100	"	5	6	"	500	–	–			138500	TRANSFORMER TEVC-1
–	–			–	–	–	–	7	8	–	–	–	–	–			–
–		–		–	–	–	–	9	10	–	–	–	–		–		–
–			–	–	–	–	–	11	12	–	–	–	–			–	–
–	–			–	–	–	–	13	14	–	–	–	–	–			–
–		–		–	–	–	–	15	16	–	–	–	–		–		–
–			–	–	–	–	–	17	18	–	–	–	–			–	–
PARTITAL TOTAL	10420	10420	10420											138500	138500	138500	PARTIAL TOTALS
TOTAL CONNECTED/PHASE	148920	148920	148920														
TOTAL CONNECTED VA = TOTAL VA + 0.25 x CONT. VA =	446,760	+	111,690	=	558,450 VA									AVERAGE AMPS/PH		=	672 A

PANELBOARD NAME: PANEL 'EVC-2'	MOUNTING: SURFACE	OVERSIZED NEUTRAL BUS: NO.	SPECIAL ENCLOSURE: NEMA 3R ENCLOSURE
BUS: 600 A COPPER	VOLTAGE: 120/240 VOLTS, 3-Ph, 4-W	MAIN (Amps): 600 / 3 P	KAIC 65 | TOP OR BOTTOM FEED: BOTTOM
LOCATION		FED FORM:	

DESCRIPTION	LOAD VA A	LOAD VA B	LOAD VA C	CONT.	QTY	BRKR TRIP	BRKR P	CKT REF		BRKR P	BRKR TRIP	QTY	CONT.	LOAD VA A	LOAD VA B	LOAD VA C	DESCRIPTION
EVC-3A-1	3850				–	40	–	1	2	–	40	–	–	3850			EVC-2-1
EVC-3A-1		3850			–	40	–	3	4	–	40	–	–		3850		EVC-2-1
EVC-3B-1			3850		–	40	–	5	6	–	40	–	–			3850	EVC-3A-2
EVC-3B-1	3850				–	40	–	7	8	–	40	–	–	3850			EVC-3A-2
EVC-3A-3		3850			–	40	–	9	10	–	40	–			3850		EVC-3B-2
EVC-3A-3			3850		–	40	–	11	12	–	40	–				3850	EVC-3B-2
EVC-3B-3	3850				–	40	–	13	14	–	40	–		3850			EVC-3A-4
EVC-3B-3		3850			–	40	–	15	16	–	40	–			3850		EVC-3A-4
EVC-3A-5			3850		–	40	–	17	18	–	40	–				3850	EVC-3B-4
EVC-3A-5	3850				–	40	–	19	20	–	40	–		3850			EVC-3B-4
EVC-3B-5		3850			–	40	–	21	22	–	40	–			3850		EVC-3A-6
EVC-3B-5			3850		–	40	–	23	24	–	40	–				3850	EVC-3A-6
EVC-3A-7	3850				–	40	–	25	26	–	40	–		3850			EVC-3B-6
EVC-3A-7		3850			–	40	–	27	28	–	40	–			3850		EVC-3B-6
EVC-3B-7			3850		–	40	–	29	30	–	40	–				3850	EVC-3A-8
EVC-3B-7	3850				–	40	–	31	32	–	40	–		3850			EVC-3A-8
EVC-3A-9		3850			–	40	–	33	34	–	40	–			3850		EVC-3B-8
EVC-3A-9			3850		–	40	–	35	36	–	40	–				3850	EVC-3B-8
EVC-3B-9	3850				–	40	–	37	38	–	40	–		3850			EVC-2-2
EVC-3B-9		3850			–	40	–	39	40	–	40	–			3850		EVC-2-2
–			–		–	40	–	41	42	–	40	–				–	–
PARTITAL TOTAL	26950	26950	23100											26950	26950	23100	PARTIAL TOTALS
TOTAL CONNECTED/PHASE	53900	53900	46200														
TOTAL CONNECTED VA = TOTAL VA + 0.25 x CONT. VA =	154,000	+	38,500	=	192,500 VA									AVERAGE AMPS/PH		=	561.46 A

PANELBOARD NAME: PANEL 'EVC-3'	MOUNTING: SURFACE	OVERSIZED NEUTRAL BUS: NO.	SPECIAL ENCLOSURE: NEMA 3R ENCLOSURE
BUS: 600 A COPPER	VOLTAGE: 120/240 VOLTS, 3-Ph, 4-W	MAIN (Amps): 600 / 3 P	KAIC 65 | TOP OR BOTTOM FEED: BOTTOM
LOCATION		FED FORM:	

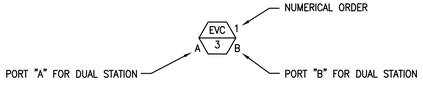
DESCRIPTION	LOAD VA A	LOAD VA B	LOAD VA C	CONT.	QTY	BRKR TRIP	BRKR P	CKT REF		BRKR P	BRKR TRIP	QTY	CONT.	LOAD VA A	LOAD VA B	LOAD VA C	DESCRIPTION
EVC-3A-10	3850				–	40	–	1	2	–	40	–	X	3850			EVC-3A-11
EVC-3A-10		3850			–	40	–	3	4	–	40	–	X		3850		EVC-3A-11
EVC-3B-10			3850		–	40	–	5	6	–	40	–	X			3850	EVC-3B-11
EVC-3B-10	3850				–	40	–	7	8	–	40	–	X	3850			EVC-3B-11
EVC-3A-12		3850			–	40	–	9	10	–	40	–			3850		EVC-3A-13
EVC-3A-12			3850		–	40	–	11	12	–	40	–				3850	EVC-3A-13
EVC-3B-12	3850				–	40	–	13	14	–	40	–		3850			EVC-3B-13
EVC-3B-12		3850			–	40	–	15	16	–	40	–			3850		EVC-3B-13
EVC-3A-14			3850		–	40	–	17	18	–	40	–				3850	EVC-3A-15
EVC-3A-14	3850				–	40	–	19	20	–	40	–		3850			EVC-3A-15
EVC-3B-14		3850			–	40	–	21	22	–	40	–			3850		EVC-3B-15
EVC-3B-14			3850		–	40	–	23	24	–	40	–				3850	EVC-3B-15
EVC-3A-16	3850				–	40	–	25	26	–	40	–		3850			EVC-2-3
EVC-3A-16		3850			–	40	–	27	28	–	40	–			3850		EVC-2-3
EVC-3B-16			3850		–	40	–	29	30	–	40	–				360	RECEPT.-CHARGEPOINT GATEWAY WP PNL
EVC-3B-16	3850				–	40	–	31	32	–	–	–		360			RECEPT.-CHARGEPOINT GATEWAY WP PNL
–		–			–	–	–	33	34	–	–	–			360		RECEPT.-CHARGEPOINT GATEWAY WP PNL
–			–		–	–	–	35	36	–	–	–					–
–	–				–	–	–	37	38	–	–	–		–			–
–		–			–	–	–	39	40	–	–	–			–		–
–			–		–	–	–	41	42	–	–	–				–	–
PARTITAL TOTAL	23100	19250	19250											19610	19610	15760	PARTIAL TOTALS
TOTAL CONNECTED/PHASE	42710	38860	35010														
TOTAL CONNECTED VA = TOTAL VA + 0.25 x CONT. VA =	116,580	+	29,145	=	145725 VA									AVERAGE AMPS/PH		=	404.9 A

PANELBOARD SCHEDULES

SCALE NONE — 1

OWNER-FURNISHED-EQUIPMENT ELECTRIC VEHICLE CHARGER SCHEDULE

SYMBOL	QUANTITY	MAKE	MODEL	PORT	INPUT CAPACITY KW	ELECTRICAL VOLT/P/AMP	OUTPUT VOLTAGE	REQUIRED CIRCUIT BREAKER AMPS	CONNECTOR	CABLE LENGTH	LCD DISPLAY	CARD READER	REMARKS
EVC 1	1	CHARGEPOINT	CPE250C-625-CCS1-CHD	SINGLE	31.25	480/3/37.6	200-1000V DC	100	CHAdeMO, CCS1 (SAE J1772 COMBO), CCS2 (IEC 61851-2)	14.5'	-DRIVER INTERACTION DISPLAY: FULL-COLOR 10" LCD DISPLAY -TOP DISPLAY: FULL-COLOR 20" LED DISPLAY FOR NOTIFICATION	RFID: NFC ISO 15693 ISO 14443	FURNISHED COMPLETE WITH CHARGEPOINT CLOUD PLAN, INSTALLATION & VALIDATION (CPE250-INSTALLVALID), ASSURE (EXPRESS-ASSURE-n1), AND STATION ACTIVATION & CONFIGURATION (CPSUPPORT-ACTIVE) DYNAMIC POWER AND REMOTE ENERGY MANAGEMENT
EVC 1 2	3	CHARGEPOINT	CPF25-L23-CMK8-PD	SINGLE	7.7	240/1/32	240V AC	40	SAE J1772	23'	N/A	ISO 15693 ISO 14443	LED INDICATORS - WiFi, FAULT per UL, AND STATUS FURNISHED COMPLETE WITH CHARGEPOINT GATEWAY (CPGW1) AND ASSURE (CPF25-ASSURE-n2), FLEET PLAN (CPCLD-FLEET-n1), STATION INITIAL ACTIVATION (CPSUPPORT-ACTIVE)
EVC 1 A 3 B	16	CHARGEPOINT	CPF25-L23-CMK8-PD-DUAL	DUAL	2x 7.7	2x 240/1/32	240V AC	2x 40	2x SAE J1772	2x 23'	N/A	ISO 15693 ISO 14443	LED INDICATORS - WiFi, FAULT per UL, AND STATUS FURNISHED COMPLETE WITH CHARGEPOINT GATEWAY (CPGW1) AND ASSURE (CPF25-ASSURE-n2), FLEET PLAN (CPCLD-FLEET-n1), STATION INITIAL ACTIVATION (CPSUPPORT-ACTIVE)



= EVC-3A-1 AND EVC-3B-1 ARE CALLED OUT ON THE PANEL SCHEDULE

OWNER-FURNISHED-EQUIPMENT ELECTRIC VEHICLE CHARGER SCHEDULE

SCALE NONE — 2

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2980 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: (949) 756-8654
FAX: (949) 502-0777

MARK	DATE	BY	REVISIONS
			-
			-
			-
			-

Sheet Title: ELECTRIC VEHICLE CHARGER AND PANELBOARD SCHEDULES

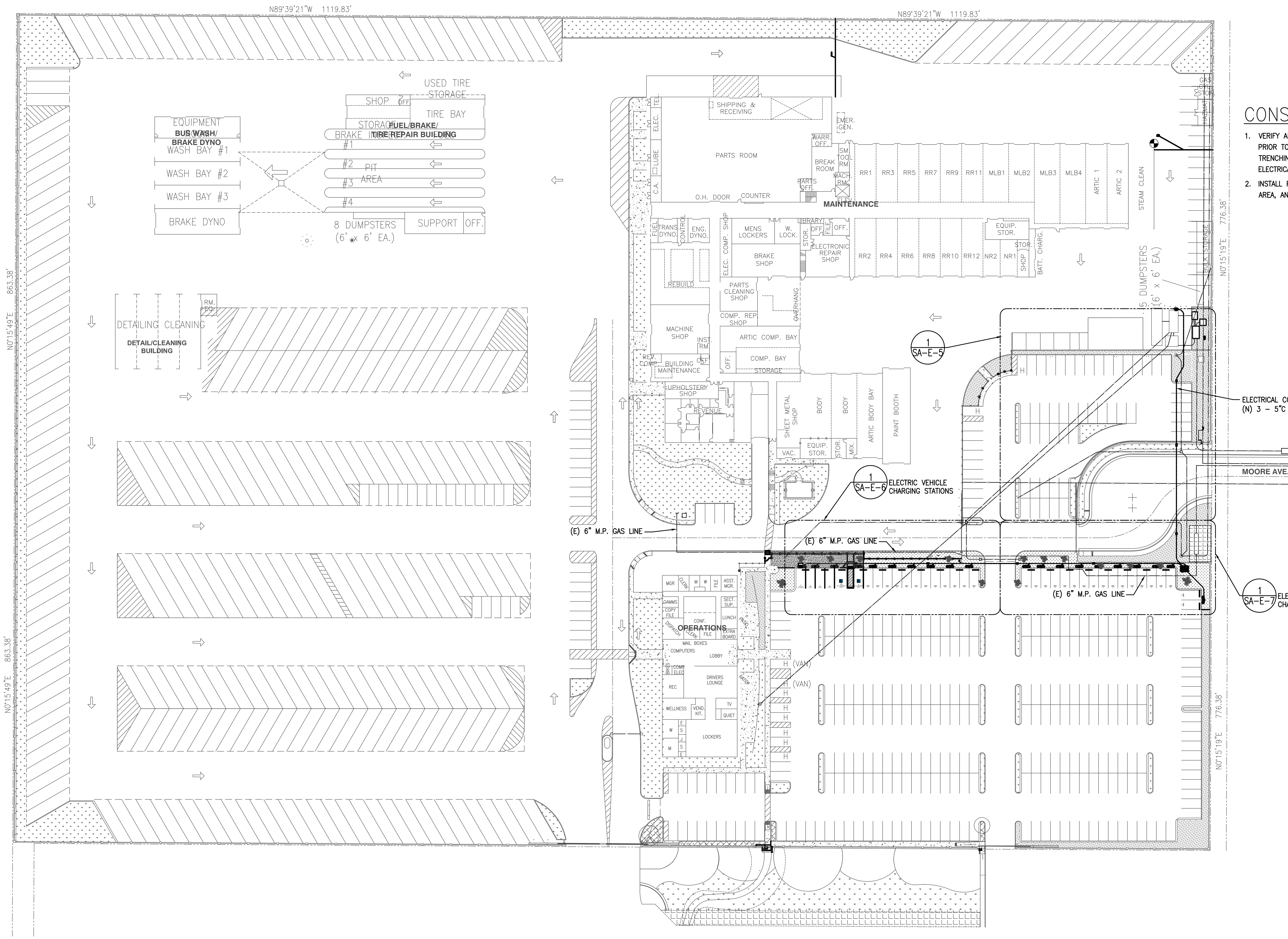
Project: OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-14-2020
SCALE	AS NOTED
SHEET	SA-E-3

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET



CONSTRUCTION NOTES:

1. VERIFY AND CONFIRM ALL EXISTING UNDERGROUND UTILITIES PRIOR TO SAW-CUTTING AND EXCAVATING PAVEMENT, AND TRENCHING FOR INSTALLATION OF NEW UNDERGROUND ELECTRICAL CONDUITS.
2. INSTALL PULL BOXES IN ACCESSIBLE LOCATION, OUT OF TRAFFIC AREA, AND AS REQUIRED FOR PROPER INSTALLATION OF CABLES.

UTILITY SITE PLAN

SCALE 1"=50'-0" (1)

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 756-8654
FAX: # (949) 502-0777

MARK	DATE	BY	REVISIONS

Sheet Title UTILITY SITE PLAN

Project OCTA SANTA ANA BUS BASE BATTERY ELECTRIC CAR CHARGING SYSTEMS 4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
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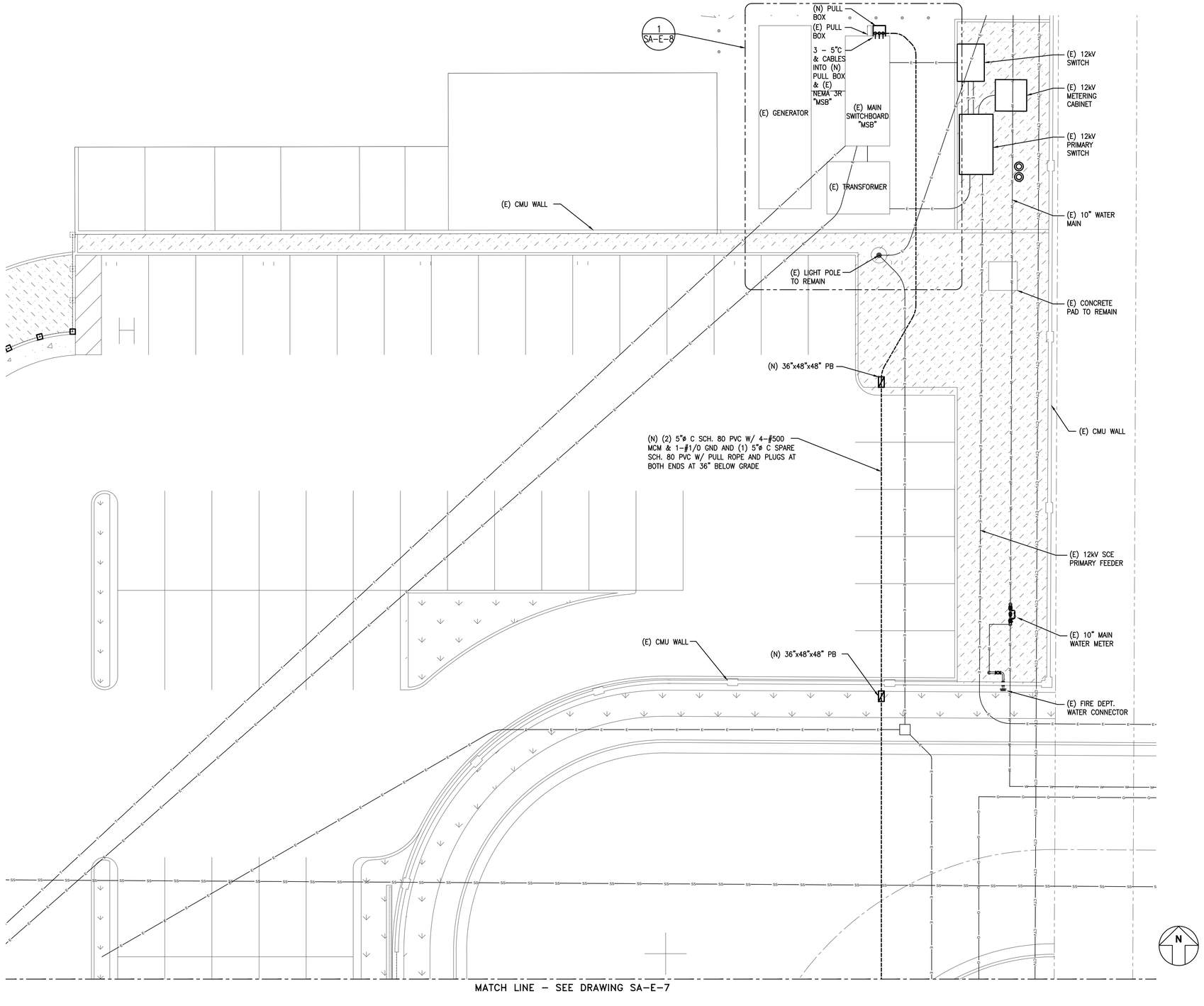
DATE	02-14-2020
SCALE	AS NOTED
SHEET	SA-E-4

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET



MATCH LINE – SEE DRAWING SA-E-7

ENLARGED PARTIAL SITE PLAN – ELECTRIC VEHICLE CHARGING STATIONS

SCALE 1"=10'-0" 1

100% DRAWING SET

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: (949) 756-8654
FAX: (949) 502-0777

MARK	DATE	BY	REVISIONS
1			

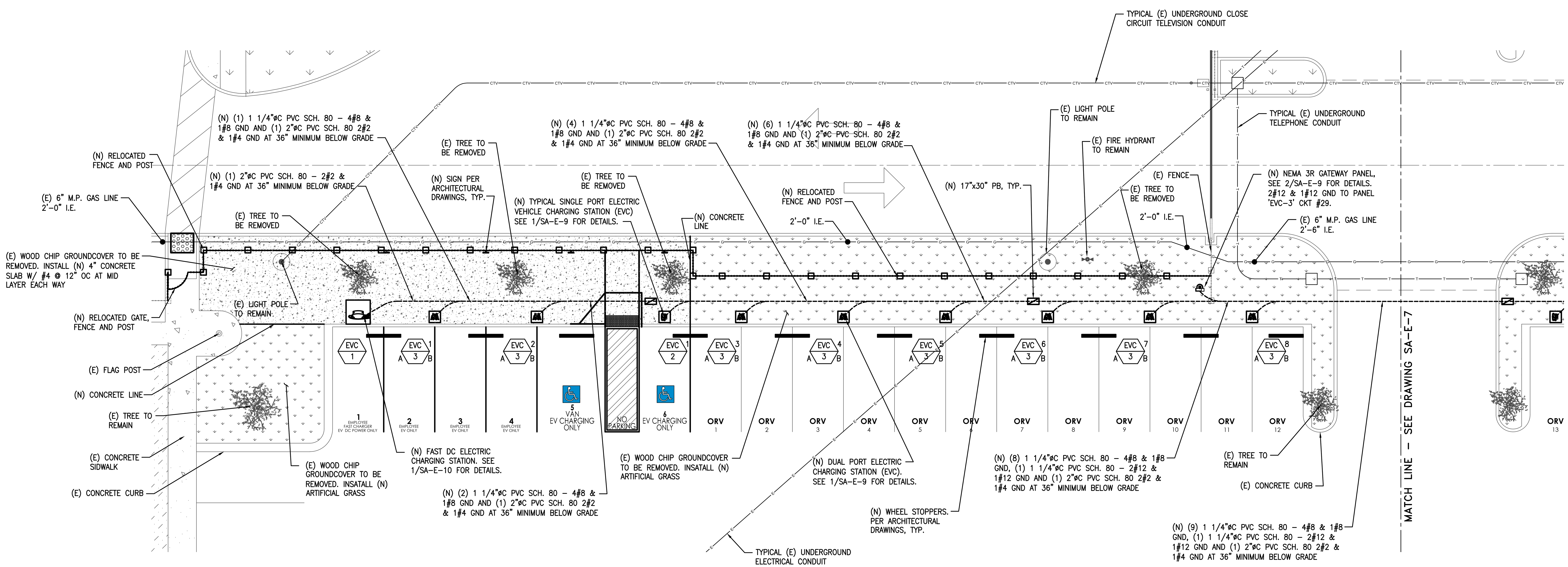
Sheet Title ENLARGED ELECTRICAL EQUIPMENT PLAN
ELECTRIC VEHICLE CHARGING STATIONS

Project OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-14-2020
SCALE	AS NOTED
SHEET	SA-E-5

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA



CONSTRUCTION NOTES:

1. PAINT AND RESTORE WROUGHT IRON FENCE, GATES, HARDWARE, AND POSTS TO THE OPERABLE CONDITION.
2. REPAIR, REPLACE, PAINT, SEAL, AND RESTORE AC PAVEMENT, CONCRETE PAVEMENT, AND CONCRETE CURBS TO THE EXISTING CONDITION PRIOR TO CONSTRUCTION.
3. SPREAD AND RESTORE WOOD CHIP GROUNDCOVER TO THE PRESENTABLE CONDITION.
4. PROVIDE DRIP IRRIGATION FOR TREES TO REMAIN IN THE ISOLATED / ISLAND AREAS. COORDINATE WITH OCTA FACILITIES ON INSTALLATION.

ENLARGED PARTIAL SITE PLAN – ELECTRIC VEHICLE CHARGING STATIONS

SCALE 1"=10'-0" 1

DAHL, TAYLOR & ASSOCIATES
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2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
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REVISIONS | MARK | DATE | BY

Sheet Title
ENLARGED ELECTRICAL EQUIPMENT PLAN
ELECTRIC VEHICLE CHARGING STATIONS

Project
OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

JOB #	1.19.6
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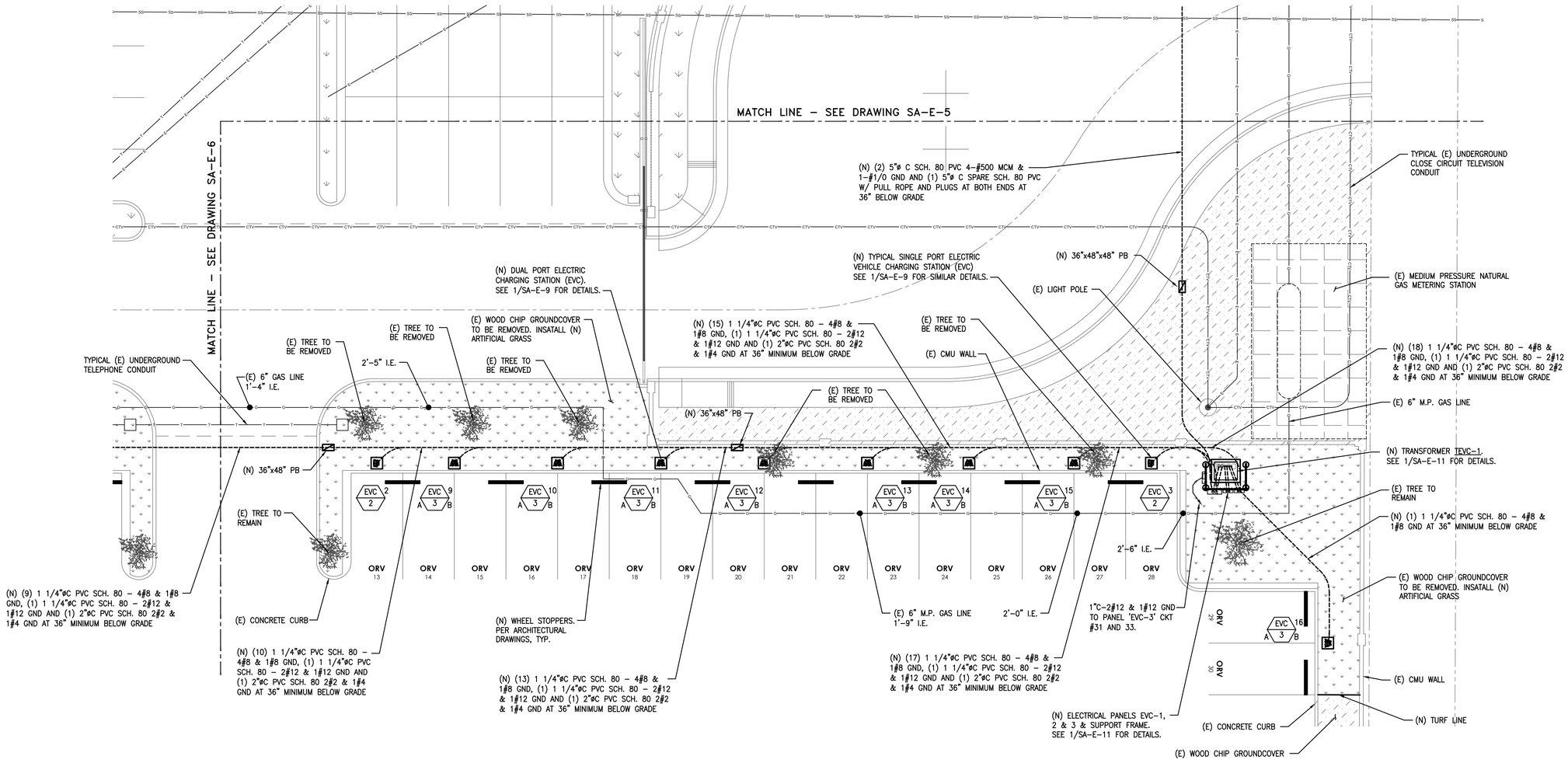
SCALE	AS NOTED
SHEET	SA-E-6

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET



CONSTRUCTION NOTES:

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3. SPREAD AND RESTORE WOOD CHIP GROUNDCOVER TO THE PRESENTABLE CONDITION.
4. PROVIDE DRIP IRRIGATION FOR TREES TO REMAIN IN THE ISOLATED / ISLAND AREAS. COORDINATE WITH OCTA FACILITIES ON INSTALLATION.

ENLARGED PARTIAL SITE PLAN – ELECTRIC VEHICLE CHARGING STATIONS

SCALE 1"=10'–0" (1)

100% DRAWING SET

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CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 756–8654
FAX: # (949) 502–0777

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1	-	-	-

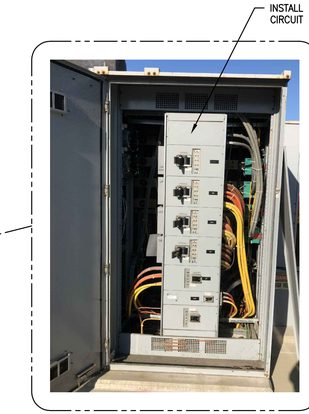
Sheet Title: ENLARGED ELECTRICAL EQUIPMENT PLAN
ELECTRIC VEHICLE CHARGING STATIONS

Project: OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02–14–2020
SCALE	AS NOTED
SHEET	SA-E-7

550 South Main Street
Orange, CA 92668
714/560/OCTA

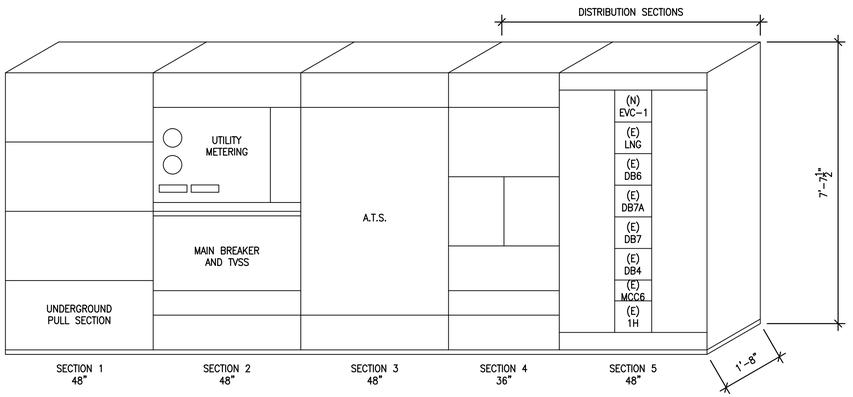
OCTA



EXISTING MAIN SWITCHBOARD "MSB"

SCALE NONE

2



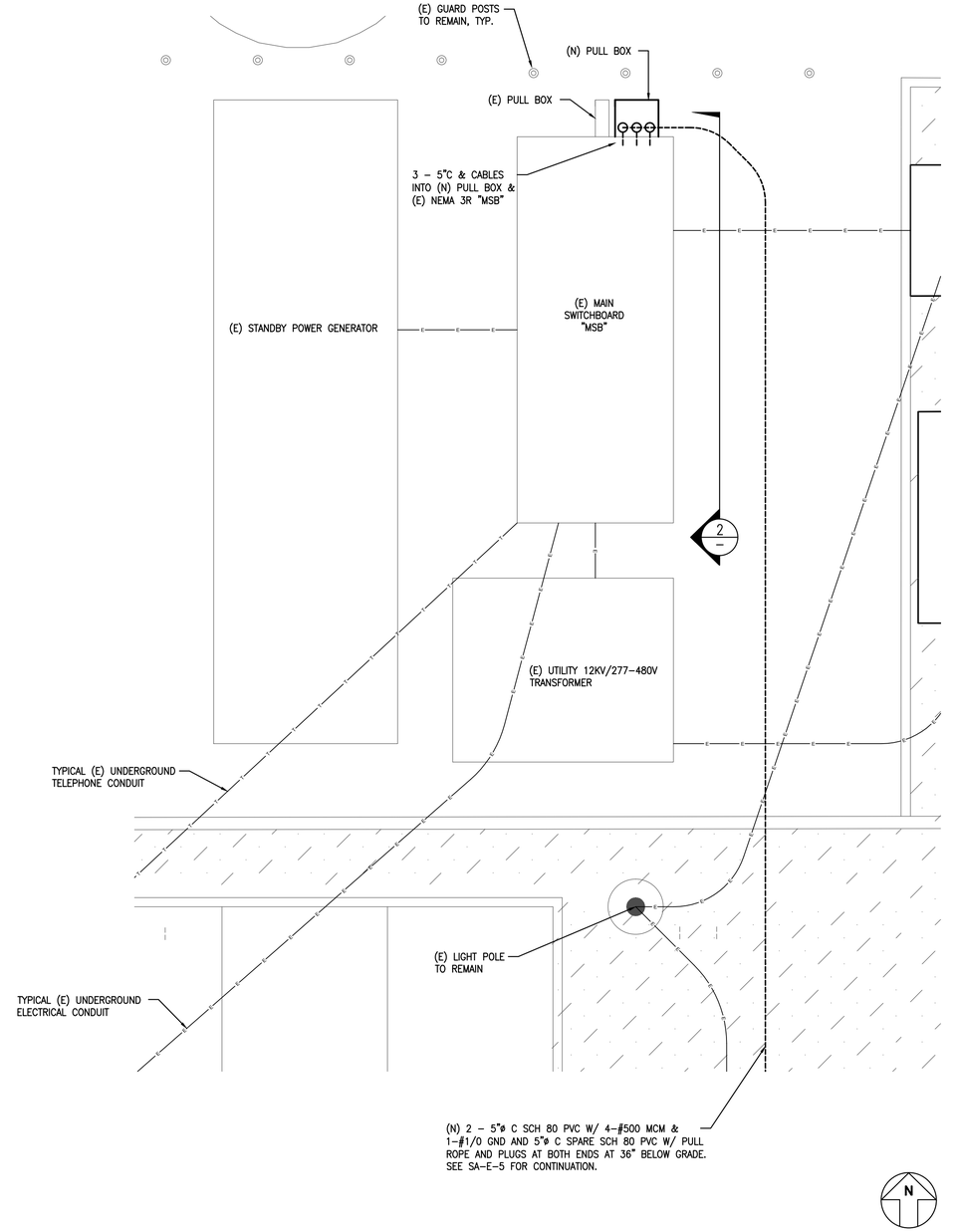
NOTES:

1. (E) NEMA 3R NON-WALK-IN ENCLOSURE, NOT SHOWN FOR CLARITY.
2. VERIFY CONDITION AND CONSTRUCTION OF THE EXISTING MAIN SWITCHBOARD "MSB" FOR INSTALLATION OF NEW 800A CIRCUIT BREAKER AND 3 – 5" CONDUIT PENETRATIONS.
3. DISCONNECT EXISTING CONTROL WIRING ON THE EXISTING "SHUNT" CONTACTORS TO DISABLE THEIR OPERATIONS. TEST TO ENSURE THEIR NON-OPERABLE CONDITION.

EXISTING MAIN SWITCHBOARD "MSB" ELEVATION

SCALE 1/2"=1'-0"

3



ENLARGED PARTIAL SITE PLAN – (E) MAIN SWITCHBOARD "MSB" AREA

SCALE 1/4"=1'-0"

1

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: ∮ (949) 756-8654
FAX: ∮ (949) 502-0777

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1	-	-	-

Sheet Title ENLARGED ELECTRICAL SERVICE EQUIPMENT PLAN AND ELEVATIONS

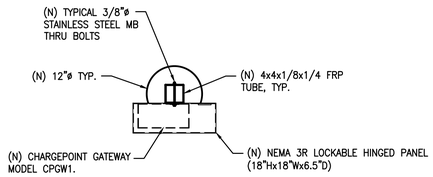
Project OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

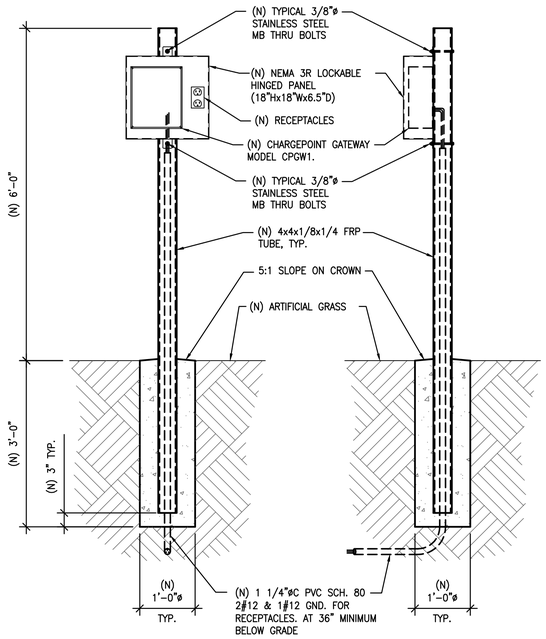
JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-14-2020
SCALE	AS NOTED
SHEET	SA-E-8

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

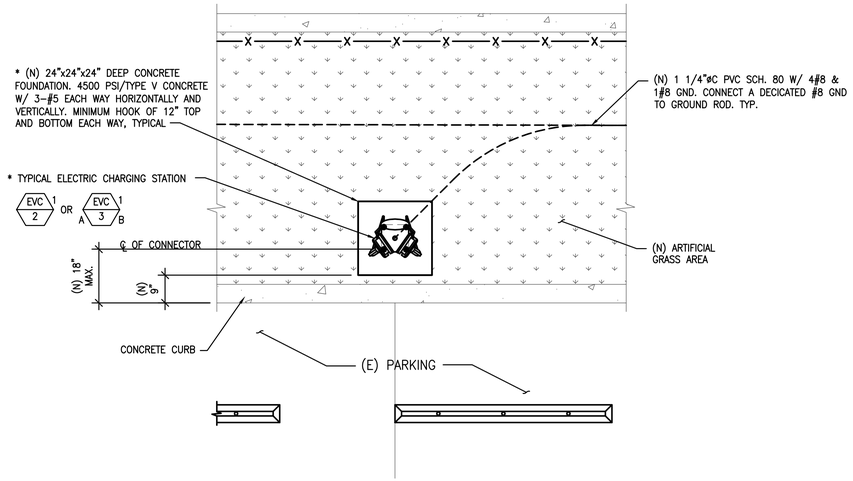
100% DRAWING SET





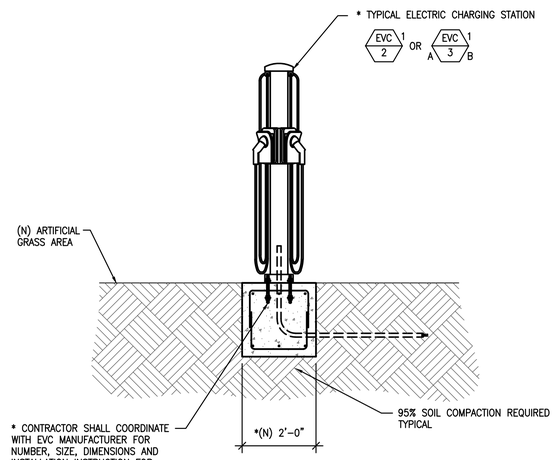
CHARGEPOINT GATEWAY MOUNTING DETAIL

SCALE 3/4"=1'-0" (2)

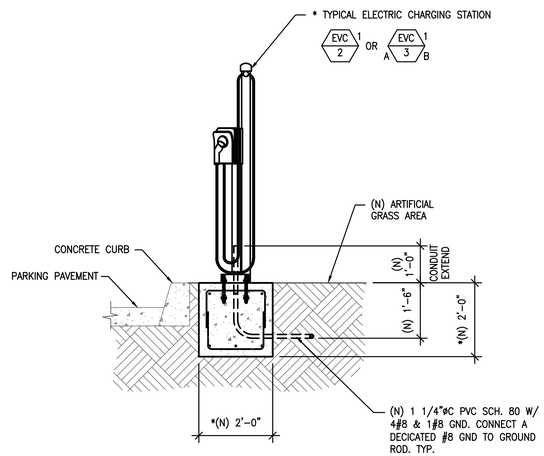


TOP VIEW

* CONTRACTOR SHALL COORDINATE WITH EVC MANUFACTURER'S INSTALLATION GUIDE FOR INSTRUCTIONS.



FRONT VIEW



SIDE VIEW

ELECTRIC VEHICLE CHARGERS (EVCs)

SCALE 1/2"=1'-0" (1)

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2980 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 756-8654
FAX: # (949) 502-0777

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1	-	-	-

Sheet Title ELECTRIC VEHICLE CHARGING STATIONS DETAILS AND SECTIONS

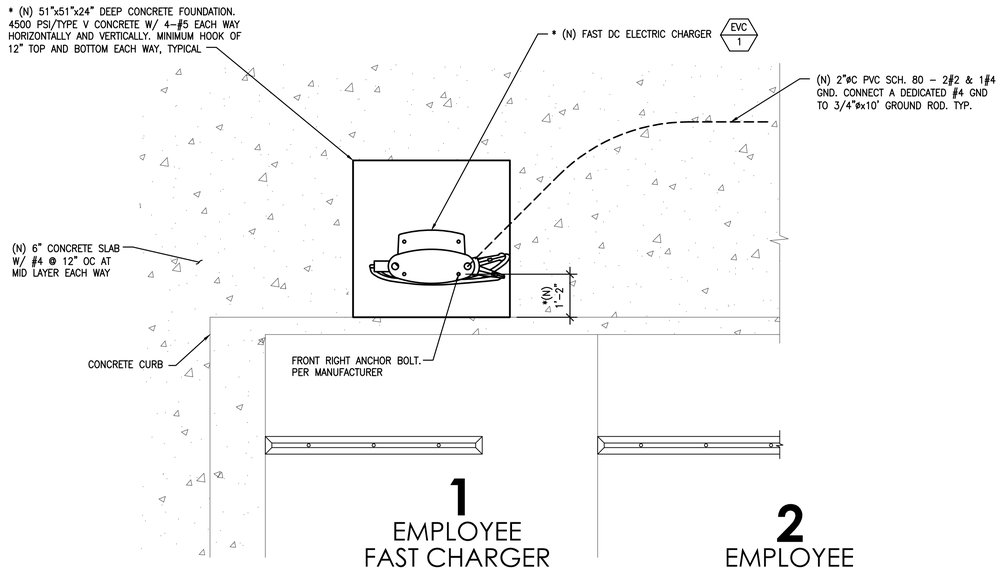
Project OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

JOB #	1.19.6
DESIGN BY:	TMP
DRAWN BY:	EA
CHECKED BY:	QV
DATE	02-14-2020
SCALE	AS NOTED
SHEET	SA-E-9

550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

100% DRAWING SET

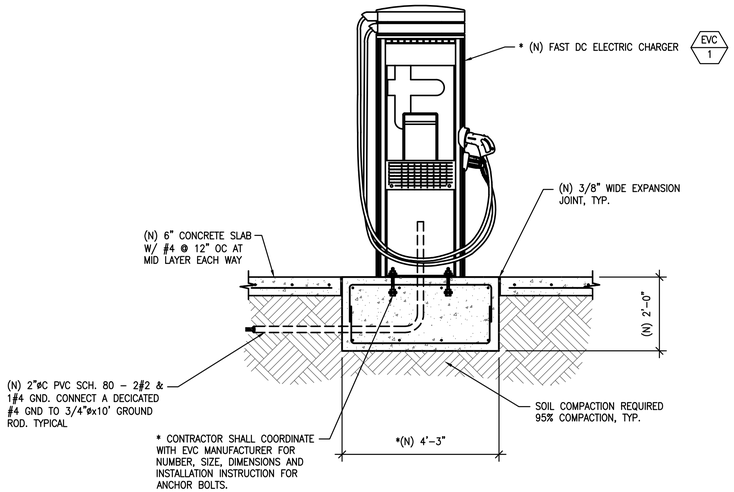


1
EMPLOYEE
FAST CHARGER
EV DC POWER ONLY

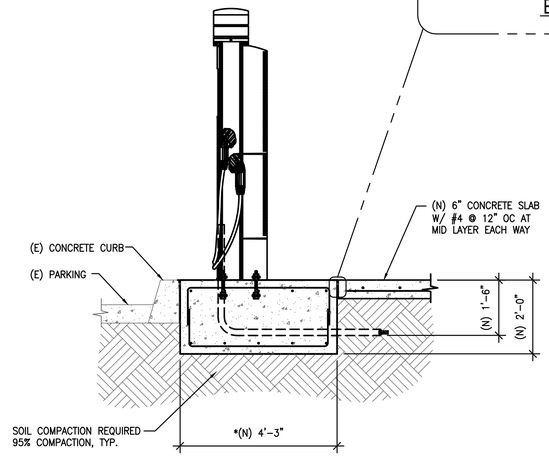
2
EMPLOYEE
EV ONLY

TOP VIEW

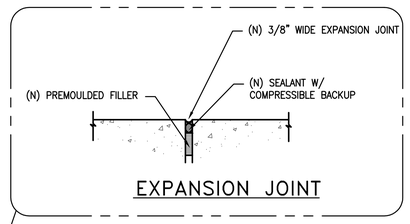
* CONTRACTOR SHALL COORDINATE WITH EVC MANUFACTURER'S INSTALLATION GUIDE FOR INSTRUCTIONS.



FRONT VIEW



SIDE VIEW



EXPANSION JOINT

ELECTRIC VEHICLE CHARGERS (EVCs) FAST DC ELECTRIC CHARGING STATION

SCALE 1"=1'-0" 1

100% DRAWING SET

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 756-8654
FAX: # (949) 502-0777

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	-	-	-

Sheet Title ELECTRIC VEHICLE CHARGING STATIONS DETAILS AND SECTIONS

Project OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

JOB #	1.19.6
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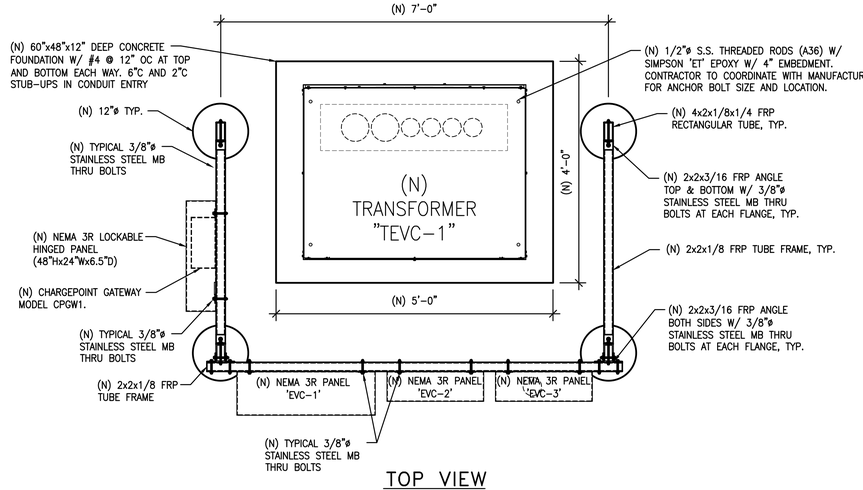
SHEET	SA-E-10

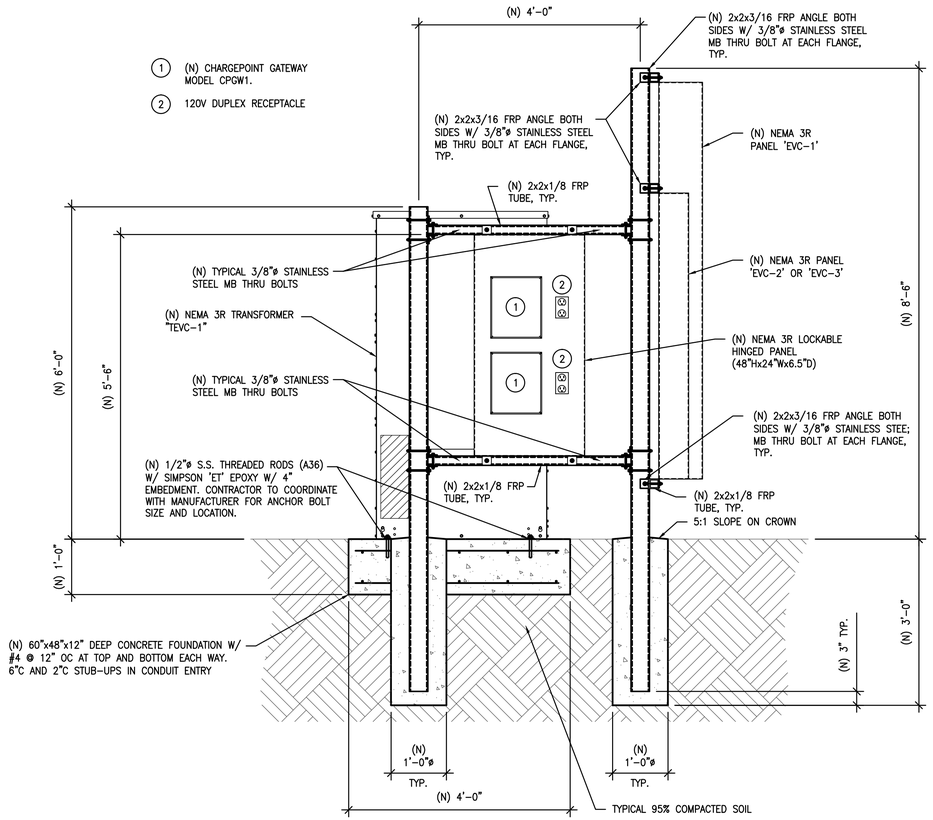
550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA

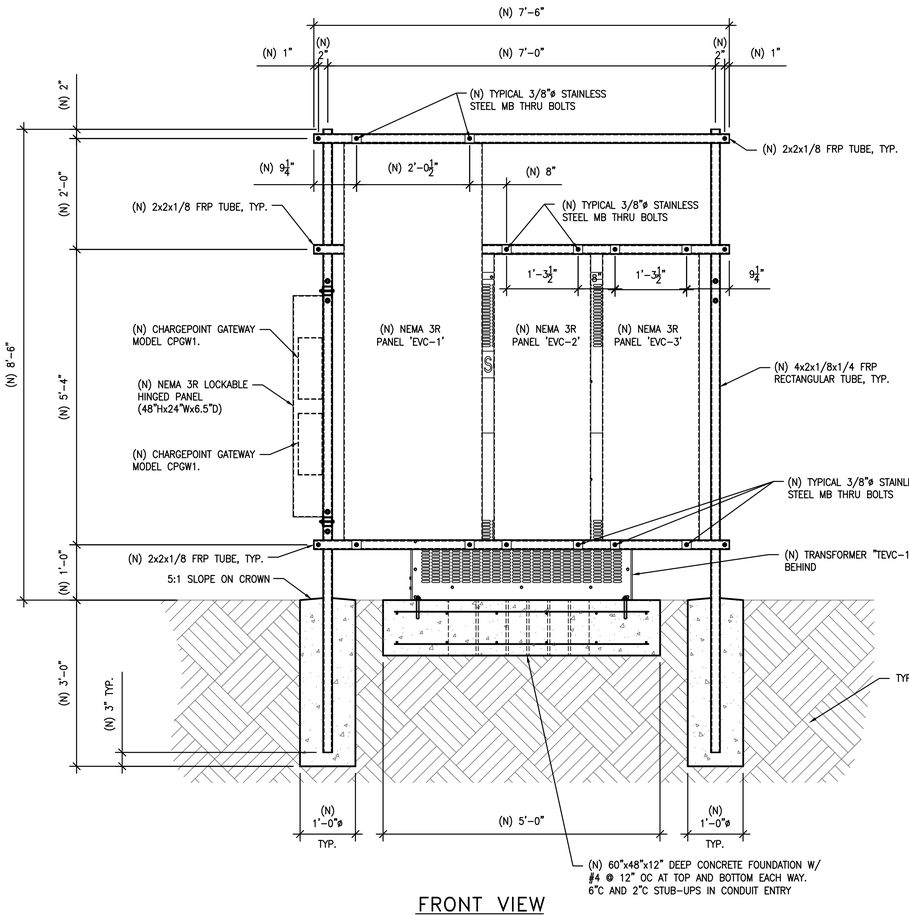


TOP VIEW

1. (N) CHARGEPOINT GATEWAY MODEL CPGW1.
2. 120V DUPLEX RECEPTACLE



SIDE VIEW



FRONT VIEW

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

100% DRAWING SET

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2940 DAMLER STREET
SANTA ANA, CALIFORNIA 92705
TEL: ∮ (949) 756-8654
FAX: ∮ (949) 502-0777

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			-

Sheet Title ELECTRIC VEHICLE CHARGING STATIONS DETAILS AND SECTIONS

Project OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

JOB #	1.19.6
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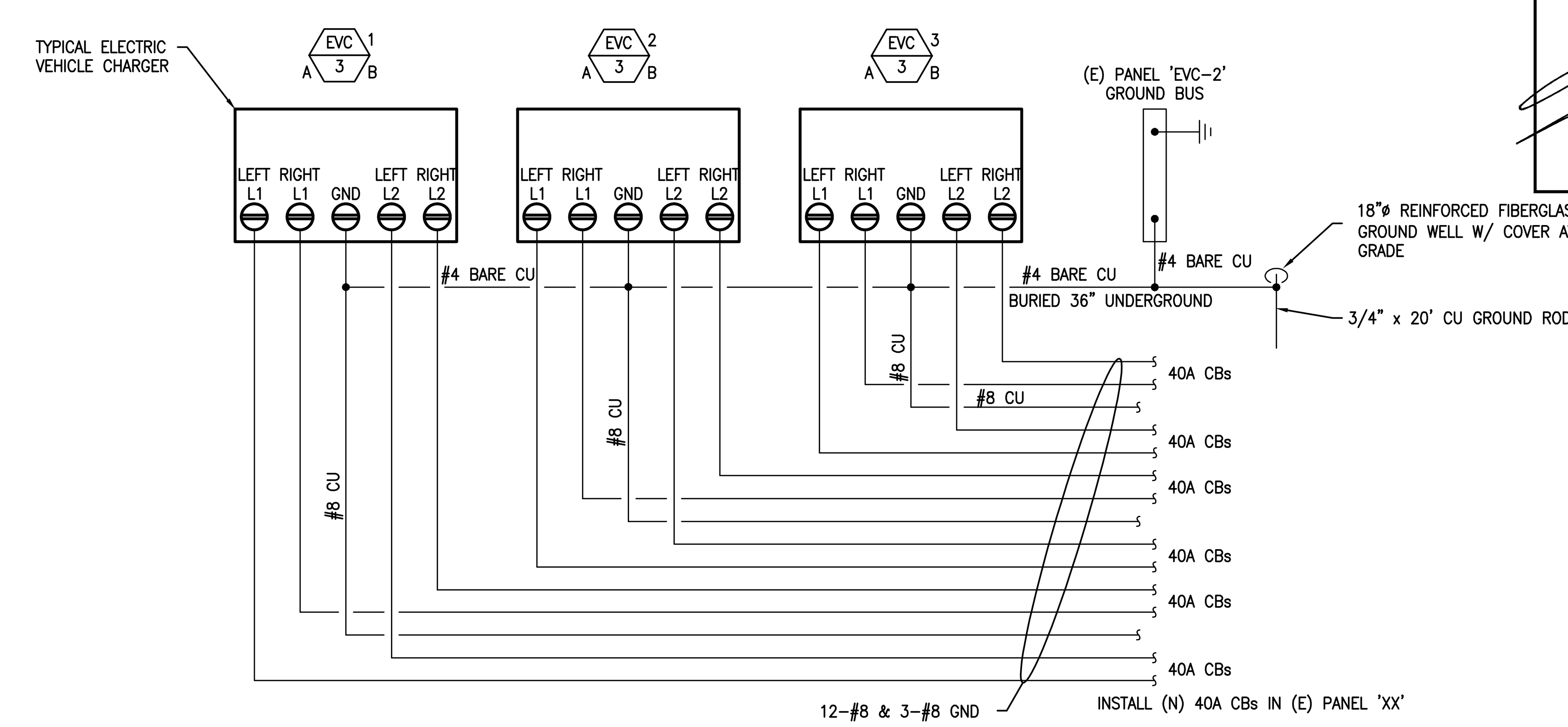
SCALE	AS NOTED
SHEET	SA-E-11

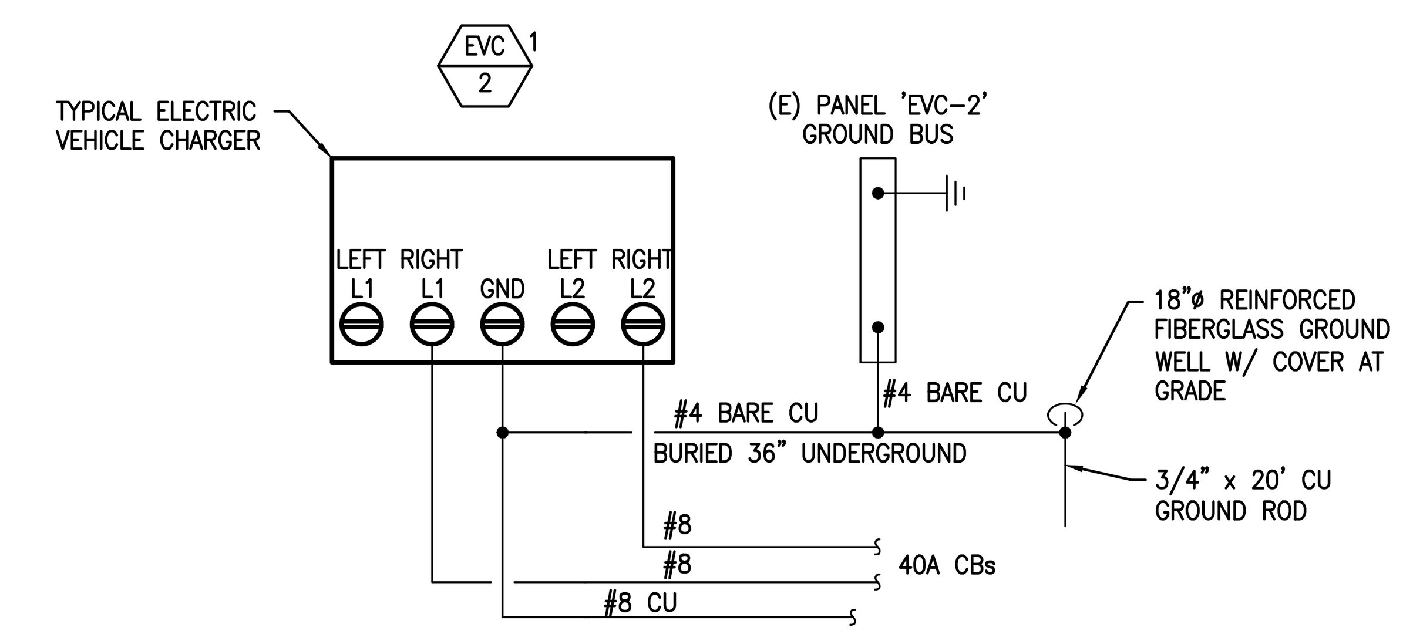
550 South Main Street
Orange, CA 92668
714/560/OCTA

OCTA



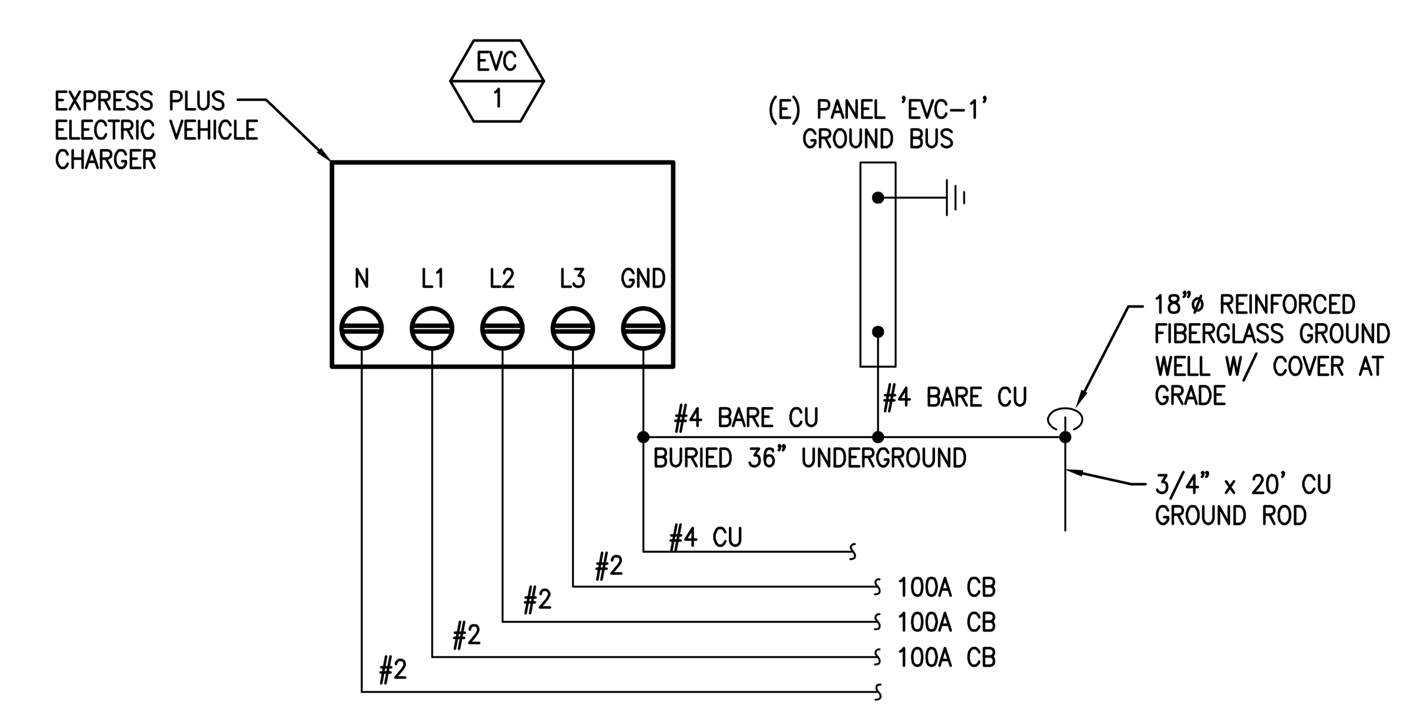
TYPICAL POWER WIRING DIAGRAM FOR DUAL PORT STATIONS

SCALE NONE 1



TYPICAL POWER WIRING DIAGRAM FOR SINGLE PORT STATIONS

SCALE NONE 2



FAST DC ELECTRIC CHARGING POWER WIRING DIAGRAM FOR SINGLE PORT STATION

SCALE NONE 3

DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DAIMLER STREET
SANTA ANA, CALIFORNIA 92705
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FAX: # (949) 502-0777

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Sheet Title
ELECTRIC VEHICLE CHARGING STATIONS
WIRING DIAGRAMS

Project
OCTA SANTA ANA BUS BASE
BATTERY ELECTRIC CAR CHARGING SYSTEMS
4301 WEST MACARTHUR BOULEVARD, SANTA ANA, CA

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SHEET	SA-E-12

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714/560/OCTA

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SECTION X: LEVEL III SAFETY SPECIFICATIONS

SECTION X

LEVEL 3 HEALTH, SAFETY AND ENVIRONMENTAL (HSE) SPECIFICATIONS

REQUIRED HSE SUBMITTAL SUMMARY

The contractor shall submit copies of the items listed below for contract scope work on OCTA projects and property. Copies shall be provided prior to contractor's mobilization onto OCTA projects and property. Contractor shall provide compliant written Health, Safety & Environmental (HSE) submittals within 30 days of the contract notice to proceed.

HSE submittals shall comply with the 1988 Drug Free Workplace Act, or the Department of Transportation (DOT), or the Federal Transportation Administration (FTA) requirements (according to OCTA procurement funding guidelines) and comply with the California Code of Regulations (CCR) Title 8 regulatory standards.

Contractor's established written programs/plans shall comply with CCR Title 8 regulatory standards. All HSE related programs/plans submitted to OCTA for acceptance shall be prepared and submitted by a qualified HSE professional who is recognized by an organization of industry standard (i.e., CSP, CIH, CHST, CHMM, etc.) and is experienced in developing compliant written HSE programs. The site safety HSE representative shall participate in the HSE submittal process.

1. Contractor shall provide a copy of Company's Injury Illness Prevention Program in accordance with CCR Title 8, Section 3203.

2. Contractor shall provide a copy of their Company HSE Policy/Procedure Manual, in compliance with CCR Title 8 Standards for awarded scope.

3. Contractor shall provide a copy of their Policy or Substance Abuse Prevention Program.

4. Contractor shall provide a copy of their Hazard Communication Program and SDS Management Program in compliance with CCR Title 8, Section 5194, Hazard Communication Standard.

5. On-Site HSE Representative:
   On Facility Modification Projects, The Contractor shall submit a resume of the designated on-site qualified HSE Representative. The HSE Representative shall possess a current certification from the Board of Certified Safety Professionals (BCSP), plus five (5) years construction or scope agreement HSE experience enforcing HSE compliance on heavy or industrial construction project sites, the last two years of which have been administering HSE in the construction or scope discipline for which the Contractor is contracting with the Authority. The designated HSE Representative shall participate in all HSE related submittals through completion of scope.

   On Capital Programs, The Contractor's on-site qualified HSE Representative shall be a Certified Safety Professional (CSP) with current standing from the Board of Certified Safety Professionals (BCSP) or a Construction Health and Safety Technician (CHST) with current standing from the (BCSP) or a Certified Industrial

Hygienist (CIH) with current standing from the American Board of Industrial Hygiene (ABIH), or an equal professional HSE Certificate of standing from The **National Examination Board in Occupational Safety and Health (NEBOSH)**, that is acceptable to the Authority. The Contractor's on-site HSE Representative(s) shall provide a resume and have a minimum of seven (7) years heavy construction experience in administering HSE programs on heavy construction project sites, the last two years of which have been administering HSE in the construction/scope discipline for which Contractor is contracting with the Authority.

6. A Detailed Site Specific HSE Work Implementation Plan:
   This plan shall be prepared and submitted by a recognized HSE professional experienced in developing compliant written HSE programs. Indicate the methods and procedures, and include the sequence of tasks as listed on the project schedule, include the hazards, tools and equipment, and the safe work practices to mitigate the hazards in a format acceptable OCTA. Specify safety measures in accordance with applicable Cal/OSHA standards, South Coast Air Quality Management District (SCAQMD) rules, National Fire Protection Association (NFPA), National Electric Code (NEC), American National Standards Institute (ANSI) codes and regulations, job hazard analysis, policies, procedures, HSE training requirements and known and potential hazards of Contractor's scope. Plans shall be prepared as specified above, and may require if necessary a professional engineer licensed to practice in the state of California, when so required by the provisions of the California Board for Professional Engineer and Surveyors.

PART I – GENERAL

1.0 GENERAL HEALTH, SAFETY AND ENVIRONMENTAL REQUIREMENTS

A. The Contractor, its subcontractors, suppliers, and employees have the obligation to comply with all Authority health, safety and environmental compliance department (HSEC) requirements of this safety specification, project site requirements, and bus yard safety rules, as well as all federal, state, and local regulations pertaining to scope of work or agreements with the Authority including California Department of Transportation safety requirements and special provisions. Additionally, manufacturer requirements are considered incorporated by reference, as applicable, to this scope of work.

B. Observance of unsafe acts or conditions, serious violation of health and safety standards, non-conformance of Authority HSEC requirements, or disregard for the intent of these safety specifications to protect people and property, by Contractor may be reason for termination of scope or agreements with the Authority, at the sole discretion of the Authority.

C. The Authority HSEC requirements, and references contained within this scope of work shall not be considered all-inclusive as to the hazards that might be encountered. Safe work practices shall be pre-planned and performed, and safe conditions shall be maintained during the course of this work scope.

D. The Contractor shall specifically acknowledge that it has primary responsibility to prevent and correct all health, safety and environmental hazards for which it and its employees, or its subcontractors (and their employees) are responsible. The Contractor shall further acknowledge their expertise in recognition and prevention of hazards in the operations for which they are responsible, that the Authority may not have such expertise, and is relying upon the Contractor for such expertise. The Authority retains the right to notify the Contractor of potential hazards and request the Contractor to evaluate and, as necessary, to eliminate those hazards.

E. The Contractor shall provide all necessary tools, equipment, and related safety protective devices to execute the scope of work in compliance with the Authority's HSEC requirements, CCR Title 8 Standards, and recognized safe work practices.

F. The Contractor shall instruct all its employees, and all associated sub-contractors under contract with the Contractor who works on Authority projects in the following; recognition, identification, and avoidance of unsafe acts and/or conditions applicable to its work.

PART II – SPECIFIC REQUIREMENTS

2.0 While these safety specifications are intended to promote safe work practices, Contractors are reminded of their obligation to comply with all federal (Code of Federal Regulations (CFR) Sections 1926 & 1910 Standards), state (CCR Title 8 Standards), local and municipal safety regulations, and Authority health, safety and environmental requirements applicable to their project scope. Failure to comply with these standards may be cause for termination of scope or agreements with the Authority, at the sole discretion of the Authority.

2.1 REQUIRED DOCUMENTATION / REPORTING REQUIREMENTS

The Contractor at a minimum shall provide the following documents to the Authority's Project Manager. Items A through E below shall be submitted and accepted by the Authority's Project Manager prior to Contractor mobilization. Item F upon each occurrence, and for items G through K, contractor shall verify the following documentation is in place, prior to and during contract scope and make the same available to the Authority upon request within 72 hours.

Contractor's established written programs/plans shall comply with CCR Title 8 regulatory standards. All new programs/plans shall be prepared and submitted by a qualified HSE professional who is recognized by an organization of industry standard (i.e., CSP, CIH, CHST, STS, CHMM, etc.) and is experienced in developing compliant written HSE programs. The site safety HSE representative shall participate in the scope submittal process.

A. A Comprehensive Project Specific Health, Safety, and Environmental (HSE) Work Plan.

a. The Contractor shall develop a site project plan that may include, but is not limited to: Permits, Evacuation, Emergency Plan, Roles and Responsibilities, Scope and Construction Activity Details, Constructability Review, Contractor Coordination Process, Safe Work Methods, Hazard Identification & Risk Control, First Aid and Injury Management, Emergency Procedures, Public Protection, Authority and Contractor Site Rules, Incident Reporting and Investigation, Specialized Work or Licensing, Training and Orientation Requirements, Chemical Management, and Subcontractor Management.

b. A Detailed Site Specific HSE Implementation Plan: This plan shall be prepared and submitted by a recognized HSE professional (current BCSP Certification in good standing, i.e., CSP, CHST, OHST) experienced in developing compliant written HSE programs, acceptable to OCTA. Indicate the methods and procedures, and include the sequence of tasks as listed on the project schedule, include the hazards, tools and equipment, and the safe work practices to mitigate the hazards in a format acceptable OCTA. Specify safety measures in accordance with applicable Cal/OSHA standards, SCAQMD rules, NFPA, NEC, ANSI codes and regulations, job hazard analysis, policies, procedures, HSE training requirements and known and potential hazards of Contractor's scope. Plans shall be prepared as specified above, and may require if necessary a professional engineer licensed to practice in the state of California, when so required by the provisions of the California Board for Professional Engineer and Surveyors.

B. Contractor shall provide a copy of their Company HSE Policy/Procedure Manual, in compliance with CCR Title 8 Standards for awarded scope.

C. Contractor shall provide a copy of Company's Injury Illness Prevention Program in accordance with CCR Title 8, Section 3203.

D. Contractor shall provide a copy of their Policy or Substance Abuse Prevention Program that complies with the 1988 Drug Free Workplace Act.

E. Contractor shall provide the resume and qualifications/certifications of assigned project designated Onsite HSE Representative for this scope as identified in section 2.3 of this specification.

F. Accident/Incident investigation report within 24 hours of event (immediate verbal notification to Authority Project Manager, followed by Written Report).

The following required documentation shall be provided to the Authority's Project Manager, upon Authority request, within 72 hours.

G. A copy of Contractor weekly site safety inspection report with status of corrections, upon request, within 72 hours.

H. Contractor shall provide a copy of the Contractors and subcontractors competent person list (submit to Authority Project Manager, upon Authority request, within 72 hours).

I. Contractors and subcontractors training records for qualified equipment operators, electrical worker certification (NFPA 70E), confined space training, HAZWOPER training, and similar personnel safety training certificates as applicable to the agreement scope and as requested by the OCTA Project Manager and/or HSEC department, upon Authority request, within 72 hours and prior to starting or during the scope activity (submit to Project Manager).

J. A monthly report that includes number of workers on project, a list of subcontractors, work hours (month, year to date, & project cumulative) of each contractor, labor designation, OSHA Recordable injuries and illnesses segregated by medical treatment cases, restricted workday cases, number of restricted days, lost workday cases, and number of lost work days, and recordable incident rate. Contractor shall provide to the Authority, upon request, within 72 hours.

K. TRAINING DOCUMENTATION

To ensure that each employee is qualified to perform their assigned work, when applicable to scope work, Contractor shall verify training documentation is in place, prior to and during contract scope, and make available to the Authority, upon request, within 72 hours. Training may be required by the Authority or CCR Title 8 Standards and required for activity on Authority's property and/or Authority projects. Contractor shall provide to Authority, upon request, within 72 hours.

2.2 HAZARD COMMUNICATION (CCR Title 8, Section 5194)

A. Contractor shall comply with CCR Title 8, Section 5194 Hazard Communication Standard. Prior to chemical use on Authority property and/or project work areas the Contractor shall provide to the Authority Project Manager copies of Safety Data Sheet (SDS) for all applicable products used, if any.

B. All chemicals including paint, solvents, detergents and similar substances shall comply with SCAQMD Rules 103, 1113, and 1171.

2.3 DESIGNATED HEALTH, SAFETY, ENVIRONMENTAL (HSE) REPRESENTATIVE

A. Before beginning on-site activities, the Contractor shall designate an On-site HSE Representative. This person shall be a Competent or Qualified Individual as defined by the Occupational, Safety, and Health Administration (OSHA), familiar with applicable CCR Title 8 Standards, and has the authority to affect changes in work procedures that may have associated cost, schedule and budget impacts.

B. The Contractor's on-site qualified HSE Representative for all Authority projects is subject to acceptance by the Authority Project Manager and the HSEC

Department Manager. All contact information of the On-site HSE Representative (name, phone, and fax and pager/cell phone number) shall be provided to the Authority Project Manager.

QUALIFICATIONS – On Capital Programs, the Contractor shall submit a resume of the full time, on-site qualified HSE Representative(s) who reports directly to the Contractor's Project Manager or Superintendent, and who is responsible for HSE oversight for field operations on the project no later than ten (10) days after receipt of Notice to Proceed, and prior to mobilization. The Contractor's On-site HSE Representative(s) shall have a minimum of seven (7) years heavy construction experience in administering HSE programs on heavy construction project sites, the last two years of which have been administering HSE in the construction discipline for which Contractor is contracting with the Authority. The Contractor's On-site HSE Representative shall be a Certified Safety Professional (CSP) with current standing from the Board of Certified Safety Professionals (BCSP), or a Construction Health and Safety Technician (CHST) with current standing from the BCSP or a Certified Industrial Hygienist (CIH) with current standing from the **American Board of Industrial Hygiene** (ABIH), or an equal professional HSE Certificate of standing from The **National Examination Board in Occupational Safety and Health (NEBOSH)**, that is acceptable to the Authority. The Contractor's On-site HSE Representatives(s) shall be on site during all operational hours. The On-site HSE Representative(s) shall set up, carry forward and aggressively and effectively maintain the project specific safety program and IIPP covering all phases of the work. If at any time the Contractor wishes to replace their On-site HSE Representative(s), the Contractor must provide written notice thirty (30) days prior to change of personnel to the Authority. The Contractor shall take all precautions and follow all procedures for the safety of, and shall provide all protection to prevent injury to, all persons involved in any way in the scope work and all other persons, including, without limitation, the employees, agents, guests, visitors, invitees and licensees of the Authority who may be involved. This requirement applies continuously and is not limited to normal working hours. The designated HSE Representative shall participate in all HSE related submittals. The Authority reserves the right to allow for an exception to modify these minimum qualification requirements for unforeseen circumstances, at the sole discretion of the Authority Project Manager and HSEC Department Manager.

On Facility Modification Projects, the Contractor shall submit a resume of the full time qualified on-site HSE Representative who reports directly to the Contractor's Project Manager or Superintendent, and who is responsible for safety oversight for field operations on the project no later than ten (10) days after receipt of Notice to Proceed, and prior to mobilization. The Contractor's On-Site HSE Representative shall hold a current certification from the BCSP, plus five (5) years construction or scope HSE experience enforcing HSE compliance on heavy construction or industrial construction project sites, the last two years of which have been administering HSE in the construction or scope discipline for which Contractor is contracting with the Authority. The Contractor's On-site HSE Representative(s) shall be on site during all operational hours. The designated HSE Representative shall participate in all HSE related submittals. The Authority reserves the right to allow for an exception and to modify these minimum qualification requirements for

unforeseen circumstances, at the sole discretion of the Authority Project Manager and HSEC Department Manager.

1. Capital Programs may include, but are not limited to, projects involving demolition and construction of; heavy construction, rail projects, highway projects, parking lots and structures, fuel stations, building construction, facility modifications, bus base construction, EPA/DTSC remediation, AQMD air or soil monitoring, fuel tank removal or modification, major bus base modifications, handling potential hazardous waste projects, and similar projects as deemed a Capital Program at the sole discretion by the Authority.

2. Facility Modification Projects may include, but are not limited to, projects involving minor demolition and construction or improvement projects for transportation centers, bus base sites and/or building modifications, equipment and/or building upgrades, and similar projects as deemed a Facility Modification Project at the sole discretion by the Authority.

3. Competent Individual means an individual who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees and/or property, and who has authorization to take prompt corrective measures to eliminate them.

4. Qualified Individual means an individual who by possession of a recognized degree, certificate, certification or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems relating to the subject matter, the work, or the project.

C. The Contractor shall designate a Competent Individual for each task, as required by Cal-OSHA standards or laws. The task Competent Individual shall be responsible for the prevention of accidents. If the Authority or any public agency with jurisdiction notifies the Contractor of any claimed dangerous condition at the site that is within the Contractor’s care, custody or control, the Contractor shall take immediate action to rectify the condition at no additional cost to the Authority. The Contractor shall be responsible for the payment of all fines levied against the Authority for deficiencies relating to the Contractor’s supervision or conduct and/or control of the scope agreement.

D. On Facility Modification Projects, the Authority Project Manager reserves the right to require the Contractor to provide one additional full-time safety representative with qualifications as identified in section 2.3 (C), above whenever the number of individuals from the Contractor, its subcontractors, suppliers, and vendors meets or exceeds 15 workers, there are multiple scope work sites, or as warranted by the scope of work at the sole discretion by the Authority.

E. On Capital Programs, the Authority's Project Manager reserves the right to require the Contractor to provide one additional full-time safety representative with qualifications as identified in item 2.3 (C) above whenever the number of

individuals from the Contractor, its subcontractors, suppliers, and vendors meets or exceeds 50 workers, or is warranted by the scope of work.

2.4 SITE HSE ORIENTATION

The Contractor shall conduct and document a project site safety orientation for all Contractor personnel, subcontractors, suppliers, vendors, and new employees assigned to the project prior to performing any work on Authority projects, a copy of the HSE orientation attendance list shall be provided to the Authority Project Manager. The safety orientation, at a minimum, shall include, as applicable, Personal Protection Equipment (PPE) requirements, eye protection, ANSI class 2 reflective vests, designated smoking, eating, and parking areas, traffic speed limit and routing, cell phone policy, and barricade requirements. When required by scope, additional orientation shall include fall protection, energy isolation lock-out/tag-out (LOTO), confined space, hot work permit, security requirements, and similar project safety requirements.

2.5 INCIDENT NOTIFICATION AND INVESTIGATION

A. The Authority shall be promptly notified of any of the following types of incidents:

1. Damage to Authority property (or incidents involving third party property damage);

2. Reportable and/or recordable injuries (as defined by the U. S. Occupational Safety and Health Administration);

3. Incidents impacting the environment, i.e. spills or releases on Authority property.

B. Notifications shall be made to Authority representatives, employees and/or agents. This includes incidents occurring to contractors, vendors, visitors, or members of the general public that arise from the performance of Authority contract work. An initial immediate verbal notification, followed by a written incident investigation report shall be submitted to Authority's Project Manager within 24 hours of the incident.

A final written incident investigative report shall be submitted within seven (7) calendar days, and include the following information. The current status of anyone injured, photos of the incident area, detailed description of what happened, the contributing factors that led to the incident occurrence, a copy of the company policy or procedure associated with the incident and evaluation of effectiveness, copy of the task planning documentation, and the corrective action initiated to prevent recurrence. This information shall be considered the minimum elements required for a comprehensive incident report acceptable to OCTA.

C. A Serious Injury, Serious Incident, OSHA Recordable Injury / Illness, or Significant Near Miss shall require a formal incident review at the discretion of the Authority's Project Manager. The incident review shall be conducted within

seven (7) calendar days of the incident. This review shall require a senior executive from the Contractors' organization to participate in the presentation. The serious incident presentation shall include action taken for the welfare of the injured, a status report of the injured, causation factors leading to the incident, a root cause analysis, and a detailed recovery plan that identifies corrective actions to prevent a similar incident, and actions to enhance safety awareness.

1. Serious Injury: includes an injury or illness to one or more employees, occurring in a place of employment or in connection with any employment, which requires inpatient hospitalization for a period in excess of twenty-four hours for other than medical observation, or in which an employee suffers the loss of any member of the body, or suffers any serious degree of physical disfigurement.

2. Serious Incident: includes property damage of $500.00 or more, an incident requiring emergency services (local fire, paramedics and ambulance response), news media or OCTA media relations response, and/or incidents involving other agencies (Cal/OSHA, EPA, AQMD, DTSC, etc.) notification or representation.

3. OSHA Recordable Injury / Illness: includes and injury / illness resulting in medical treatment beyond First Aid, an injury / illness which requires restricted duty, or an injury / illness resulting in days away from work.

4. Significant Near Miss Incident; includes incidents where no property was damaged and no personal injury sustained, but where, given a slight shift in time or position, damage and/or injury easily could have occurred.

2.6 REGULAR INSPECTIONS & THIRD PARTY INSPECTIONS

A. Frequent and regular inspections of the project jobsite shall be made by the Contractor's On-site HSE Representative, or another Competent Individual designated by the Contractor. Unsafe acts and/or conditions noted during inspections shall be corrected immediately.

B. The Contractor is advised that representatives of regulatory agencies (i.e., CAL-OSHA, EPA, SCAQMD, etc.), upon proper identification, are entitled to access onto Authority property and projects. The Authority Project Manager shall be notified of their arrival as soon as possible.

2.7 ENVIROMENTAL REQUIREMENTS

A. The Contractor shall comply with Federal, State, county, municipal, and other local laws and regulations pertaining to the environment, including noise, aesthetics, air quality, water quality, contaminated soils, hazardous waste, storm water, and resources of archaeological significance. Expense of compliance with these laws and regulations is considered included in the agreement. Contractor shall provide water used for dust control, or for pre-wetting areas to be paved, as required; no payment will be made by OCTA for this water.

B. The Contractor shall prevent pollution of storm drains, rivers, streams, irrigation ditches, and reservoirs with sediment or other harmful materials. Fuels, oils, bitumen, calcium chloride, cement, or other contaminants that would contribute to water pollution shall not be dumped into or placed where they will leach into storm drains, rivers, streams, irrigation ditches, or reservoirs. If operating equipment in streambeds or in and around open waters, protect the quality of ground water, wetlands, and surface waters.

C. The Contractor shall protect adjacent properties and water resources from erosion and sediment damage throughout the duration of the contract. Contractor shall comply with applicable NPDES permits and Storm Water Pollution Prevention Plan (SWPPP) requirements.

D. Contractor shall comply with all applicable EPA, Cal EPA, Cal Recycle, DTSC, SCAQMD, local, state, county and city standards, rules and regulations for hazardous and special waste handling, recycling and/ disposal. At a minimum, Contractor shall ensure compliance where applicable with SCAQMD Rule 1166, CCR Title 8, Section 5192, 29 CFR Subpart 1910.120, 49 CFR Part 172, Subpart H, 40 CFR Subpart 265.16 and CCR Title 22 Section 6625.16. Contractor shall provide OCTA a schedule of all hazardous waste and special or industrial waste disposal dates in advance of transport date. Only authorized OCTA personnel shall sign manifests for OCTA generated wastes. Contractor shall ensure that only current registered transporters are used for disposal of hazardous waste and industrial wastes. The Contractor shall obtain approval from OCTA for the disposal site locations in advance of scheduled transport date.

E. If the Contractor encounters on the site material reasonably believed to be asbestos, polychlorinated biphenyl (PCB) or other Hazardous Substance (as defined in California Health and Safety Code, and all regulations pursuant thereto) which has not been rendered harmless, the Contractor shall immediately stop work in that area affected and report the condition to the Authority in writing. The work in the affected area shall not thereafter be resumed except by written agreement of the Authority and Contractor if in fact the material is asbestos or polychlorinated biphenyl (PCB) or other hazardous substance and has not been rendered harmless. The work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB) or other hazardous substance, or when it has been rendered harmless, by written agreement of the Authority and the Contractor, or in accordance with a final determination by an Environmental Consultant employed by the Authority.

F. The Contractor shall not permit any hazardous substances to be brought onto or stored at the Project Site or used in the construction of the work, except for specified materials and commonly used construction materials for which there are no reasonable substitutes. All such materials shall be handled in accordance with all manufacturers' guidelines, warnings and recommendations and in full compliance with all applicable laws. All notices required to be given with respect to such materials shall be given by the Contractor. The Contractor shall not intentionally release or dispose of hazardous substances at the Project Site or into the soil, drains, surface or ground water, or air, nor shall the

Contractor allow any Sub-Contractor, subcontractor or supplier or any other person for whose acts the Contractor or any subcontractor, vendor or supplier may be liable, to do so. For purposes of Contract Documents, “hazardous substance” means any substance or material which has been determined or during the time of performance of the work is determined to be capable of posing a risk of injury to health, safety, property or the environment by any federal, state or local governmental authority.

2.8 VEHICLE AND ROADWAY SAFETY REQUIREMENTS

A. The Contractor shall ensure that all Contractor vehicles, including those of its subcontractors, suppliers, vendors and employees are parked in designated parking areas, are identified by company name and/or logo, and comply with traffic routes, and posted traffic signs in areas other than the employee parking lots.

B. Personal vehicles belonging to Contractor employees shall not be parked on the traveled way or shoulders including any section closed to public traffic, or areas of the community that may cause interference or complaints

C. The Contractor shall comply with California Department of Transportation safety requirements and special provisions when working on highway projects.

D. The Contractor shall conform to American Traffic Safety Services Association (Quality Standard for Work Zone Control Devices 1992).

2.9 LANGUAGE REQUIREMENTS

For safety reasons, the Contractor shall ensure employees that do not read, or understand English, shall be within visual and hearing range of a bilingual supervisor or responsible designee at all times when on the Authority property or projects.

2.10 PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING

Contractors, and all associated subcontractors, vendors and suppliers are required to provide their own personal protective equipment (PPE), including eye, head, foot, and hand protection, respirators, reflective safety vests, and all other PPE required to perform their work safely on Authority projects.

A. RESPIRATORS (CCR Title 8, Section 5144) - The required documentation for training and respirator use shall be provided to the Authority’s Project Manager upon request within 72 hours. All compliance documentation as required by CCR Title 8, Section 5144, Respiratory Protective Equipment.

B. EYE PROTECTION – The Authority requires eye protection on construction projects and work areas that meet ANSI Z-87.1 Standards.

C. BUS BASE – Minimum PPE required includes but is not limited to; Eye protection, class 2 reflective vest, steel toe or construction type footwear that meets ANSI Z41 1991 are recommended.

D. CONSTRUCTION PROJECTS - Minimum PPE required includes but is not limited to; hard hat, eye protection, hand protection, class 2 reflective vest, safety toe footwear that meets ANSI Z41 1991 are recommended.

E. HARD HATS: Approved hard hat that meet ANSI Z89. 1 (latest revision). Hard hats should be affixed with the company/agency logo and/or name. The bill shall be worn forward. Metal hard hats and cowboy style are forbidden on Authority projects.

F. FOOTWEAR: Enclosed leather that covers the ankles, such as a construction type boot. Employees shall not wear casual dress shoes, open toe, sneakers, sandals, canvas-type shoes, or other shoes that have thin soles or heels that are higher than normal in construction work areas. Safety toe footwear that meets ANSI Z41 1991 are recommended on construction sites and in operating facilities.

G. CLOTHING/SHIRTS: minimum or waist length shirts with sleeves (4" minimum).

H. CLOTHING/TROUSERS: Cover the entire leg. If flare-legged trousers are worn, the trouser bottoms must be tied to prevent catching. No sweat pants, or trousers with holes.

2.11 AERIAL DEVICES (CCR Title 8, Section 3648)

Aerial devices are defined in CCR Title 8 as any vehicle-mounted or self-propelled device, telescoping extensible or articulating, or both, which is primarily designed to position personnel. If aerial devices are to be used, the required documentation in CCR Title 8, Section 3648 shall be provided to the Authority's Project Manager, upon request, within 72 hours.

2.12 CONFINED SPACE ENTRY (CCR Title 8, Section 5157)

Before any employee will be allowed to enter a confined space, the required documentation as required by CCR Title 8, Section 5157 shall be provided to the Authority's Project Manager, upon request, within 72 hours.

A. RECOMMENDED: a copy of the most recent calibration record for each air monitoring unit, 3-gas monitor or "sniffer" to be used by the Entry Supervisor prior to entering permit-required confined spaces.

2.13 CRANES

A. Crane activity shall comply with 29 CFR 1926.550, CCR Title 8 Standards, manufacture's recommendations and requirements, applicable American Society of Mechanical Engineers (ASME), and ANSI Standards. In addition, Contractor shall comply with the following requirements: Prior to using mobile cranes, the Contractor shall provide to the Authority Project Manager, items I,

2 & 3 of the following documentation a minimum of seven (7) days prior to activity, and item 4 on each day of crane activity.

1. Cranes require a submittal of the annual certification, and copy of the cranes most recent quarterly inspection.

2. A copy of each crane operator's qualification (NCCCO or equivalent) of company-authorized crane operators that have been properly trained in the equipment's use and limitations. Operator certification as required by CCR Title 8, Section 5006.1.

3. A rigging plan is required for all lifts. Critical lifts require an engineered plan designed by a registered professional engineer licensed in the State of California.

4. Contractor shall provide the name and qualifications of each "Qualified Rigger" as defined by OSHA.

5. Rigging scope activity shall comply with 29 CFR Subparts1926.250, 1929.753 and CCR Title 8 Standards.

6. All rigging equipment shall be free from defects, in good operating condition and maintained in a safe condition.

7. Rigging equipment shall be inspected by a designated, competent employee prior to initial use on the project, prior to each use, and documented inspections performed regularly. Records shall be kept on jobsite of each of these inspections by contractor and be made available to the Authority upon request within 72 hours.

8. Only one (1) sling eye should be in a hook, for multiple slings a shackle shall be used to prevent separation of slings, and prevent stress on weak points of the hook.

9. Contractor shall prepare a documented daily crane inspection report.

B. Pick and carry with rubber tired cranes is forbidden on Authority projects.

C. Engineered Critical Lifts

A critical lifts is established where any one of the following conditions are created:

1. Where in the crane's current configuration at any point during the lift, a gross load weight exceeds 75% of the capacity of the crane.

2. A gross weight equal to, or greater than 10 tons.

3. Lifts over buildings, equipment, public roadways, structures, or power lines.

4. A single lift where two or more cranes are used, including tandem lifts and tailing cranes.

5. Lifts made in close proximity of power lines, as defined by CCR Title 8 voltage clearance specifications.

6. Lifts involving helicopters, and specialized or unique and complex rigging equipment.

7. Hoisting of suspended work platforms.

8. Static tower crane erection and dismantlement.

9. Making lifts below the ground level where the crane is positioned.
   Note: Where the below the ground lift is minimal (evaluated by California registered professional engineer), a critical lift plan may not be required.

D. Critical Lift Plan

Where a critical lift will be performed, a written critical lift plan shall be submitted to the Authority Project Manager prior to commencing with the lift. The written plan shall include the following:

1. Crane manufacturer, capacity, and all specifications for the configuration to be used for the lift.

2. Load chart data for the crane to be used to make the lift. Total calculated weight of the load to be lifted including all rigging and other deductions consistent with the manufacturer's load chart.

3. Engineering data shall be provided on the hook assembly (manufacture's certification or independent laboratory testing and load testing within the past 60 days), below-the hook rigging, and all specialized below-the-hook lifting devices.

4. Diagrams of the lift that provides geometrical conditions of the load, rigging, and all crane positions during the lift. The drawing shall provide the following:

   A. Locations of all components to be lifted prior, during and after the lift is completed.

   B. Radius points.

   C. Swing patterns.

D. In the event that the lift must be aborted, positions where the load may be safely landed.

E. Areas where any personnel, public, and vehicles must be evacuated during the lift.

5. Potential ground loading for each point of contact by the crane in selected locations in which the crane will perform the critical lift.

6. Soil and subsurface data and information pertaining to the location on which the crane used for the critical lift will be positioned. This information shall be procured from an authoritative source such as a geotechnical engineer or a professional civil engineer registered in the state of California.

   Note: *This information may be available from the Authority for selected locations on some projects.*

7. An engineer shall use the data provided in #5 and #6 above to verify and confirm the following:

   A. That the soil and subsurface conditions are capable of supporting all loads imposed during the critical lift.

   B. That the designs of cribbing and other supports used under the crane load points are appropriate to safely transfer such loads.

8. Signature and stamp on the plan by a California registered professional engineer, evidencing review of the plan as meeting the requirements that all loads and load information and calculations contained in the plan are approved, acceptable and safe to perform.

9. Operator qualifications.

10. Method by which communication will be provided to the crane operator. (Designated signal person, two-way radio, hard wire phone system, etc.).

11. A critical lift hazard analysis which identifies the particular hazards (including weather, wind, obstructions, etc.) associated with the lift and the means and methods to reduce, mitigate, or eliminate the hazards.

12. Emergency action plan.

13. Documentation of lift and pre-job meeting shall be conducted by Contractor's Project Manager.

The written plan shall be submitted 7 days prior to any critical lift for review by the Authority Project Manager and the Authority HSEC department. No critical lifts shall be conducted prior to such review.

E. OVERHEAD CRANES

Before using the Authority overhead cranes, each Contractor shall designate a limited number of employees to attend a training session on the use and limitations of overhead cranes with designated Authority personnel.

2.14 DEMOLITION OPERATIONS (CCR Title 8, Section 1734)

Before starting demolition activities the required documentation shall be provided to the Authority's Project Manager, upon request, within 72 hours. Contractor shall provide all compliance documentation as required by CCR Title 8 Article 31.

A. The Contractor shall be responsible for visiting and examining the project site to assess and personally determine the extent of demolition, associated work, debris removal, disposal and general work to be done under this section.

B. The Contractor shall take possession of all demolished materials, except as noted otherwise in the Contract Documents, and be responsible for disposing of them in accordance with applicable laws and regulations. On-site burning or burial of demolition materials will not be permitted.

C. Provide continuous noise and dust abatement as required, preventing disturbances and nuisances to the public, workers, and the occupants of adjacent premises and the surrounding areas. Dampen areas affected by demolition operation as necessary to prevent dust nuisance.

D. Site demolition plan: Indicate methods, procedures, equipment, and structures to be employed. Specify safety measures in accordance with applicable codes including signs, barriers, and temporary walkways. Plans shall be prepared by a qualified person (CSP, CIH, CHST, CHMM, etc.), or as necessary by a professional engineer licensed to practice in the State of California, when so required by the provisions of the California Board for Professional Engineer and Surveyors.

E. Equipment, haul routes, and disposal sites to be used in the demolition and disposal work. Copy of manifests showing delivery of disposed materials in accordance with the plan and permit conditions. Certification that all demolished materials removed from the site have been disposed of in accordance with applicable laws and regulations.

2.15 EXCAVATION OPERATIONS (CCR Title 8, Section 1541)

Before starting excavation activities more than 5 feet deep into which people shall enter, the required documentation shall be provided to the Authority's Project Manager, upon request, within 72 hours. All compliance documentation shall comply with the following CCR Title 8, Section 1541 requirements:

A. A copy of the Contractor's Excavation Permit.

B. Attention is directed to the applicable sections of the Labor Code concerning trench excavation safety plans, "Trench Safety." Excavation for any trench 5 feet or more in depth shall not begin until the Contractor has received approval from the Engineer of the Contractor's detailed plan for worker protection from the hazards of caving ground during the excavation of that trench and any design calculations used in the preparation of the detailed plan. Excavations 20 feet or greater shall be engineered and plan stamped by a California registered professional engineer.

C. The detailed plan shall show the details of the design of shoring, bracing, sloping or other provisions to be made for worker protection during the excavation. No plan shall allow the use of shoring, sloping or a protective system less effective than that required by the Construction Safety Orders of the Division of Occupational Safety and Health. If the plan complies with the shoring system standards established by the Construction Safety Orders, the plan shall be submitted at least five (5) days before the Contractor intends to begin excavation for the trench.

D. Excavations and trenches shall be inspected by a "Competent Person" daily and after every rainfall to determine if they are safe. Daily inspections shall be recorded. Documentation is to be kept on site and available for review upon request.

E. Excavations are considered class 'C' soil unless documented testing in accordance with 29 CFR Subpart P, Section 1926.650 and CCR Title 8 Standards supports a class 'B' soil classification and is confirmed and stamped by a California registered professional engineer. In no case will excavations be classified as class 'A' soil.

2.16 FALL PROTECTION (CCR Title 8, Sections 1669-1671)

The following standards are required when performing work on Authority property. The required documentation shall be provided to the Authority's Project Manager, upon request, within 72 hours.

A. Fall protection is required for workers exposed to falls in excess of six (6) feet.

B. When conventional fall protections methods are impractical or create a greater hazard, a written plan in conformance with CCR Title 8, Article 24, shall be submitted to the Authority a minimum of seven (7) days in advance of the scheduled activity.

2.17 FORKLIFTS, BACKHOES AND OTHER INDUSTRIAL TRACTORS (CCR Title 8, Section 3664)

CCR Title 8 defines backhoes as "industrial tractors". All compliance documentation shall be provided as required by CCR Title 8, Section 3664. The following required documentation shall be provided to the Authority's Project Manager, upon request, within 72 hours:

A. A copy of each operator's certificate or a list of company-authorized industrial tractor operators that have been properly trained in the equipment's use and limitations. Please state which equipment, and model each operator has been authorized to operate (i.e. forklifts, backhoe, bulldozer, front-end loader, etc.).

2.18 ELECTRICAL OPERATIONS

HIGH VOLTAGE (CCR Title 8, Sections 2700-2974)

Any work on electrical equipment defined by OSHA as high-voltage, at or above 600 volts, requires specialized training certifications and personal protective equipment. Before any high-voltage work commences, the Authority Project Manger must be notified and must provide approval. The following required NFPA 70E certification and a certificate of training from a recognized organization of a two day high voltage safety training course shall be provided to the Authority's Project Manager, upon request, within 72 hours:

A. A list of the name(s) of the company-designated high voltage Qualified Electrical Worker(s)

LOW VOLTAGE (CCR Title 8, Sections 2299-2599)

Only qualified persons shall work on electrical equipment or systems.

A. Electrical Certification of Training; Contractor employees working on or around electrical panels, wiring, motors, electrical energy sources or similar electrical devices shall have attended a NFPA 70E, Electrical Safety Course and provide to the OCTA Project Manager a copy of employees' NFPA 70E qualification certificate of training for each employee assigned to electrical tasks on OCTA property or projects.

2.19 POWDER-ACTUATED TOOLS (CCR Title 8, Section 1685)

Before using tools such as "Hilti guns" or other powder-actuated tools, the following required documentation shall be provided to the Authority's Project Manager, upon request, within 72 hours.

A. A copy of each qualified person's valid operator card.

2.20 SCAFFOLDS (CCR Title 8, Sections 1635.1-1677)

Scaffold erection shall be in compliance with CCR Title 8 Standards. All compliance documentation shall be provided as required by CCR Title 8, Sections 1635.1-1677. In addition, the Contractor shall comply with the following additional requirements.

A. All scaffolds on Authority project shall be inspected by a competent person qualified for scaffolds in accordance with CCR Title 8 Standards.

B. Contractor shall arrange for a third party inspection, at least quarterly, by a credentialed professional (insurance carrier, scaffold manufacturer representative, or similar) in addition to the contractors daily self inspections.

C. A proper scaffold inspection and tagging system shall be maintained identifying compliance status (Example: Green/safe, Yellow/modified-fall protection required, Red/unsafe-do not use).

D. Contractor shall have a fall protection plan that meets CCR Title 8 Standards for scaffold erectors, an erection/dismantling plan shall be submitted to Authority Project Manager for review prior to start of activity.

E. Scaffold erection/dismantling shall install handrails beginning on the first level above ground erected, and erectors shall plan erection and dismantling in a manner to maximize handrail protection and minimize employees at unprotected areas.

2.21 WARNING SIGNS AND DEVICES

Signs, signals, and/or barricades shall be visible at all times when and where a hazard exists. Overhead tasks, roofing tasks, excavations, roadwork activity, demolition work, and other recognized hazards shall have guardrail protection, warning barricades, or similar protective measures acceptable to the Authority's Project Manager. Signs, signals, and/or barricades shall be removed when the hazard no longer exists.

2.22 STEEL ERECTION

Steel Erection scope activity shall comply with 29 CFR Subpart R, Section 1926.750, and CCR Title 8 Standards. In addition to OSHA Standards, Contractor shall comply with the following requirements.

A. Erection planning should incorporate installation methods using aerial devices (man-lifts) and elevated work platforms (scissor lift) to minimize fall hazards of climbing steel where possible. A detailed written job safety analysis (JSA) shall identify installation methods, equipment, and control methods to minimize potential fall hazards.

B. The Contractor shall not allow any employee to walk the steel unprotected from falls. Contractor employees must be tied-off and "coon" the beam until safety cables are provided to which employees shall use 100% tie-off protection. Two lanyards are required to ensure 100% tie-off protection.

C. A safe means of access to the level being worked shall be planned. Climbing and sliding down columns are not considered safe access and are forbidden on Authority projects.

D. A qualified rigger shall inspect the rigging prior to each shift and each lift.

E. Multiple lift rigging (Christmas Treeing) lifts are forbidden on Authority property and controlled projects.

2.23 AUDITS

A. The Authority may make periodic patrols of the project site as a part of its normal security and safety program. The Contractor shall not be relieved of its aforesaid responsibilities and the Authority shall not assume same, nor shall it be deemed to have assumed, any responsibility otherwise imposed upon the Contractor, as a result of safety patrols by the Authority.

B. The Authority may audit the Contractor's safety program for HSE compliance at various intervals of the project, at the sole discretion of the Authority. Elements may include, but are not limited to: OSHA injury & illness records and logs, Job Safety Analysis and safety plans, equipment operator licenses and training records, incident reports, meeting minutes, engineered plans, safety meeting records, crane and rigging plans, equipment inspection records, qualifications of and interviews with key Contractor management personnel, and other similar information. The Contractor shall support and cooperate with these audits at no additional compensation or schedule impacts with this contract.

2.24 RAILWAY SAFETY PRECAUTIONS

A. Work on operating railways shall be in compliance with 49 CFR, Part 214, CCR Title 8 Standards, and the Southern California Regional Rail Authority (SCRRA).

B. New construction rail projects require that all employers and contractors are responsible to assure employees are trained and understand on-track safety procedures, and follow roadway worker rules identified in 49 CFR, Part 214, CCR Title 8, SCRRA, the California Department of Transportation (CalTrans), and OCTA HSE Construction Management Requirements (i.e., item E references).

C. Minimum PPE for workers include hard hat, safety glasses, orange (i.e., rail company approved color) class 2 reflective vest, safety toe footwear that meets ANSI Z41 1991 (lace-up type over the ankle) and hearing protection (on person and worn as necessary).

2.25 FINES

The Contractor shall be responsible for the payment of all fines levied against the Authority for HSE violations arising from or related to activities over which Contractor has responsibility per the contract..

2.26 COMPLIANCE COSTS

Compliance with Health, Safety and Environmental Compliance identified in these aforementioned Authority Safety Specifications shall be at the expense of the Contractor, and included in Bid Documents to the Authority for the Contractor's scope. The Authority shall incur no additional cost or schedule impacts by Contractor, for compliance with California Construction Safety Orders, CCR Title 8 Standards, Federal OSHA Standards, and the Authority Safety Specifications for the protection of persons and property.

2.27 REFERENCES

A. CCR Title 8 Standards (Cal/OSHA)
B. CFR Including 1910 and 1926 Standards
C. NFPA, NEC, ANSI, NIOSH Standards
D. USACE **Construction Quality Management Manuel (EM-385-1-1)**
E. Construction Industry Institute (CII)
F. OCTA Construction Management Procedures Manual
G. OCTA Yard Safety Rules

END OF DOCUMENT

BID BOOKLET INVITATION FOR BID (IFB) 0-2071
BOOK 2 OF 2

ELECTRIC VEHICLE CHARGING STATIONS AT GARDEN GROVE AND SANTA ANA BUS BASES

ORANGE COUNTY TRANSPORTATION AUTHORITY
550 South Main Street
P.O. Box 14184
Orange, CA 92863-1584
(714) 560-6282

Key IFB Dates

Issue Date:	**February 24, 2020**
Pre-Bid Conference/Site Visit:	**March 2, 2020**
Questions/Approved Equal Submittal:	**March 4, 2020**
Bids Submittal Date:	**March 23, 2020**

FEDERAL TRANSIT ADMINISTRATION FUNDED PROJECT

OCTA

BID FORM

The undersigned hereby proposes to perform all work for which a contract may be awarded and to furnish any and all plant, labor, services, material, tools, equipment, supplies, transportation, utilities, and all other items and facilities necessary therefore as required in the **IFB 0-2071**, **"ELECTRIC VEHICLE CHARGING STATIONS AT GARDEN GROVE AND SANTA ANA BUS BASES"**, and to do everything required therein; and further proposes that, if this bid is accepted, will contract in the form and manner stipulated to perform all the work in strict conformity therewith within the time limits set forth therein, and will accept as full payment therefore, the following price:

Description	**Total Lump Sum Bid Amount**
_____	$ _____

A cashier's check/certified check/bid bond (circle applicable term) properly made payable to Orange County Transportation Authority, hereinafter designated as the Owner, for the sum of _____ Dollars ($ _____) which amount is not less than ten percent (10%) of the total amount of this bid, is attached hereto and is given as a guarantee that the undersigned will execute the Agreement and furnish the required bonds, "Guaranty" and "Certificate of Insurance", if awarded the contract, and in case of failure to do so within the time provided, (a) the proceeds of said check shall be forfeited to the Authority; or (b) surety's liability to the Authority for forfeiture of the face amount of the bond shall be considered as established [circle (a) or (b)].

The undersigned hereby represents that:

BID FORM, PAGE 2

1. Bidder has thoroughly examined and become familiar with the work required and documents included under this IFB. The bidder understands that the award of the contract, if it is awarded, will be based on the lowest total bid submitted by a responsive and responsible bidder, and further, that the amounts and the total on the Bid Form will be subject to verification by the Authority.

2. By investigation at the site of the work and otherwise, it is satisfied as to the nature and location of the work and is fully informed as to all conditions and matters, which can in any way affect the work or the cost thereof.

3. Bidder fully understands the scope of the work/specifications and has checked carefully all words and figures inserted in said Invitation For Bids (IFB) and further understands that the Authority will in no way be responsible for any errors or omissions in the preparation of this bid. Bidder further asserts that it is capable of performing quality work to meet Authority's requirements.

4. Bidder will execute the Agreement and furnish the required Performance and Payment Bonds, Guaranty and proof of insurance coverage within ten (10) calendar days after notice of acceptance of bid by the Authority; and further, that this bid may not be withdrawn for a period of 120 calendar days after the date set for the opening thereof, unless otherwise required by law. If any bidder shall withdraw its bid within said period, the bidder shall be liable under the provisions of the Bid Security, or the bidder and the surety shall be liable under the Bid Bond, as the case may be.

5. Bidder hereby certifies that this bid is genuine and not a sham or collusive or made in the interest or on behalf of any person not herein named, and the undersigned has not directly or indirectly induced or solicited any other bidder to put in a sham bid, or any other person, firm, or corporation to refrain from bidding; the undersigned has not in any manner sought by collusion to secure for himself an advantage over any other bidder.

6. In conformance with current statutory requirements of Section 1860, et. seq., of the Labor Code of the State of California, the bidder shall execute the document included in this IFB entitled "Bidder's Certificate of Compliance Regarding Workers' Compensation Insurance."

7. Bidder hereby further certifies that each, and every representations made in this bid are true and correct and made under penalty of perjury.

BID FORM, PAGE 3

8. Bidder shall permit the authorized representative of the Authority to inspect and audit all data and records of bidder relating to this bid, and if awarded a contract resulting from this bid, shall permit such inspection and audit of all data and records of bidder related to bidder's performance of such contract.

9. Bidder does not employ anyone who is now, or for one (1) year immediately prior to the date of this offer was, a director, officer, member, or employee of the Orange County Transportation Authority. The undersigned has not agreed to pay a fee contingent upon the award of a contract resulting from this bid to anyone who is now, or for one (1) year immediately prior to the date of this bid was, a director, officer, member, or employee of the Orange County Transportation Authority. No member of or delegate to the Congress of the United States shall be admitted to any share of the contract or to any benefit arising therefrom.

10. If awarded a contract resulting from this bid, bidder shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age or national origin. The bidder shall take affirmative action to ensure that applicants are employed, and that employees are treated during their employment, without regard to their race, religion, color, sex, age or national origin. Such actions shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

11. If awarded a contract resulting from this bid, bidder will cooperate with the Authority in meeting commitments and goals with regard to the maximum utilization of DBE firms and will use its best efforts to ensure that DBE firms shall have the maximum practicable opportunity to compete for subcontract work under such contract.

12. Bid will be in effect for 120 calendar days after the bid closing date.

BID FORM, PAGE 4

Now: In compliance with the **Invitation For Bids (IFB) 0-2071**, **"ELECTRIC VEHICLE CHARGING STATIONS AT GARDEN GROVE AND SANTA ANA BUS BASES"**, the undersigned, with full cognizance thereof, hereby proposes to perform the entire work in strict compliance with all of the said requirements and provisions for the prices set forth herein upon which award of contract is made. The undersigned affirms that the information provided herein is true and accurate and that any misrepresentations are made under penalty of perjury.

Dated _____ , 2020 Bidder _____

The above bid includes Signature _____

Addenda Nos. _____ Name _____

Title _____

Bidder's Authorized Representative _____

Title _____

Telephone # _____

Fax # _____

Email Address _____

Bidders post office address _____

_____

_____

Corporation organized under the laws of the State of _____

Contractor's License No. _____

Expiration Date of License _____

Surety or sureties _____

_____

(CORPORATE SEAL)

BID SECURITY FORM
BID BOND

KNOW ALL MEN BY THESE PRESENTS:

That, _____ as principal and Bidder and _____ as Surety, are held and firmly bound unto the Orange County Transportation Authority, of State of California, hereinafter referred to as "Authority," in the sum of _____ Dollars ($_____), to be paid to the Authority, its successors, and assigns; for which payment, well and truly to be made, bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents, this amount being ten percent (10%) of the total amount of the Bid.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the certain bid of the above named bounden principal _____ _____ for_____ at the Orange County Transportation Authority's _____ as specifically set forth in documents entitled **IFB 0-2071, "ELECTRIC VEHICLE CHARGING STATIONS AT GARDEN GROVE AND SANTA ANA BUS BASES",** shall not be withdrawn within a period of 120 calendar days after the date set for the opening of bids, (unless otherwise required by law, and notwithstanding the award of the contract to another Bidder), and that if said bid is accepted by the Authority through action of its legally constituted contracting authorities and if the above bounden_____ its heirs, executors, administrators, successors and assigns, shall execute a contract for such construction and deliver the required Performance and Payment Bonds, "Guaranty," and proof of insurance coverage within ten (10) calendar days after notification of contract award from the Authority, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

IN WITNESS WHEREOF, we hereunto set our hands and seals this _____ day of _____, 2020.

_____
_____

NOTE: The standard printed bond form of any bonding company acceptable to the Authority may be used in lieu of the foregoing approved sample bond form provided the security stipulations protecting the Authority are not in any way reduced by use of the security company's printed standard form.

BID SECURITY FORM
CHECK TO ACCOMPANY BID

(NOTE: The following form shall be used in case check accompanies bid)

Accompanying this bid is a Certified or Cashiers check (circle the appropriate one) payable to the order of Orange County Transportation Authority, hereinafter referred to as "Authority" for _____ dollars ($_____), this amount being ten percent (10%) of the total amount of the Bid submitted in response to **IFB 0-2071, "ELECTRIC VEHICLE CHARGING STATIONS AT GARDEN GROVE AND SANTA ANA BUS BASES"**. The proceeds of this check shall become the property of Authority provided this bid shall be accepted by Authority through action of its legally constituted contracting authorities and the undersigned shall fail to execute a contract and furnish the required Guaranty Form, Performance and Payment Bonds and proof of insurance coverage within ten (10) calendar days after date of notification of contract award from the Authority. The proceeds of this check shall also become the property of the Authority if the undersigned bidder withdraws the bid within the period of 120 days after the date set for the opening thereof, unless otherwise required by law, and notwithstanding the award of the contract to another bidder. Otherwise, the check shall be returned to the undersigned.

Bidder:_____

Signature:_____

Date:_____

NOTE: If the bidder desires to use a bond instead of check, the Bid Bond form shall be executed and the sum of this bond shall be ten percent [10%] of the total amount of the bid.

INFORMATION REQUIRED OF BIDDER

The bidder is required to supply the following information. Additional sheets may be attached if necessary.

1. Name of Bidder: _____
2. Business Address: _____
3. Telephone ( )_____ Fax ( )_____E-Mail: _____
4. Type of Firm - Individual, Partnership or Corporation: _____
5. Corporation organized under the laws of state of: _____
6. Contractor's License No.: _____ Class: _____ Years of Experience:___
7. Expiration Date of License: _____
8. Is your firm a certified small business in California? Yes____ No____
9. List the names and addresses of all owners of the firm or names and titles of all officers of the corporation:

   _____

   _____

INFORMATION REQUIRED OF BIDDER, PAGE 2

10. Please list the following: a) All prior and current license numbers that the current owner(s) or officers possess or have possessed in the last five years and the current status of those license; b) any prior company names that the owner(s) had in operation during the previous five years.

Current Officers or Owners Name	Prior Company Names (During the last 5 years)	Prior and Current License Numbers	Status of License

Note: If additional space is required to detail the information requested, please attach another page. All information requested must be included. Failure to identify all of the information may result in your bid being found non-responsive and your bid being rejected.

11. List all construction projects (public and private) for which Bidder has provided general contractor services for the past three years:

Contract Type (Public or Private)	Project Description	Dates of Service	Total Cost	Name and Address of Owner	Contact Name and Phone Number

Note: If additional space is required to detail the information requested, please attach another page. All information requested must be included. Failure to identify all of the information, may result in your bid being found non-responsive and your bid being rejected.

12. List the name, address and phone number of Superintendent for this project:

_____

13. List all construction projects (public and private) for which Superintendent has provided services as a Superintendent for the past three years.

Contract Type (Public or Private)	Project Description	Dates of Service	Total Cost	Name and Address of Owner	Contact Name and Phone Number

Bidder hereby certifies that it:

_____ is a certified Disadvantaged Business Enterprise as defined herein.

_____ is not a Disadvantaged Business Enterprise as defined herein.

NOTE: If requested by the Authority, bidder shall furnish a certified financial statement, financial data, or other information and references sufficiently comprehensive to permit an appraisal of its current financial condition.

I hereby certify the above is true and correct to the best of my belief.

_____
Signature

_____
Name

_____
Title

_____
Company Name

_____
Telephone Number

_____
Fax Number

_____
Email Address

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Bidders' attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

   Timetable Goals for Minority Participation for Each Trade (11.9)

   Goals for Female Participation in Each Trade (6.9)

   These goals are applicable to all the Contractor's construction work (whether or not it is federal or federally assisted) performed in the covered area.

   The Contractor's compliance with the Executive Order and the regulations in 41 C.F.R. Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 C.F.R. 60-4.3 (a), and its efforts to meet the goals established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the Contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 C.F.R. Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within ten (10) working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" includes the County of Orange, California.

BIDDER'S CERTIFICATE OF COMPLIANCE REGARDING WORKERS' COMPENSATION INSURANCE

In conformance with current statutory requirements of Section 1860, et. seq., of the Labor Code of the State of California, the undersigned confirms the following certification:

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

Bidder/Contractor: _____

Signature: _____

Name and Title: _____

Date: _____

BIDDER'S CERTIFICATE OF COMPLIANCE
REGARDING
STATE OF CALIFORNIA
BUSINESS AND PROFESSIONS CODE SECTION 7028.15

Contractor License Number: _____

Expiration Date of Contractor's License: _____

Each, every and all of the representations made by Bidder in the attached bid are true and correct.

Name of Bidder/Contractor: _____

Signed: _____

Title: _____

Subscribed to and sworn before me, a Notary Public in and for the State of California, on _____, 2020.

_____
Notary Public

My commission expires on:

_____, 2020
(NOTARY SEAL)

LIST OF SUBCONTRACTORS (EXHIBIT D)

List only the subcontractors, which will perform work or labor or render services to the bidder in excess of one-half of one percent (1/2 of 1%) of the bidder's total bid amount. Do not list alternative subcontractors for the same work. (Use additional sheets if necessary.)

Name & Address Under Which Subcontractor is Licensed	License Number	DIR Registration No.	Specific Description of Work to be Rendered	Small Business Y/N	Type*	Dollar Amount
						$
						$
						$
						$
						$
						$
TOTAL VALUE OF SUBCONTRACTED WORK						$

Bidder's Name _____

STATUS OF PAST AND PRESENT CONTRACTS FORM

On the form provided below, Offeror/Bidder shall list the status of past and present contracts where the firm has either provided services as a prime vendor or a subcontractor during the past five (5) years in which the contract has been the subject of or may be involved in litigation with the contracting authority. This includes, but is not limited to, claims, settlement agreements, arbitrations, administrative proceedings, and investigations arising out of the contract.

A separate form must be completed for each contract. Offeror/Bidder shall provide an accurate contact name and telephone number for each contract and indicate the term of the contract and the original contract value. Offeror/Bidder shall also provide a brief summary and the current status of the litigation, claims, settlement agreements, arbitrations, administrative proceedings, or investigations. If the contract was terminated, list the reason for termination.

Offeror/Bidder shall have an ongoing obligation to update the Authority with any changes to the identified contracts and any new litigation, claims, settlement agreements, arbitrations, administrative proceedings, or investigations that arise subsequent to the submission of the bid. Each form must be signed by an officer of the Offeror/Bidder confirming that the information provided is true and accurate.

Project city/agency/other:
Contact Name: **Phone:**
Project Award Date: **Original Contract Value:**
Term of Contract:
(1) Litigation, claims, settlements, arbitrations, or investigations associated with contract:
(2) Summary and Status of contract:
(3) Summary and Status of action identified in (1):
(4) Reason for termination, if applicable:

By signing this Form entitled "Status of Past and Present Contracts," I am affirming that all of the information provided is true and accurate.

Name _____ Signature _____

Title _____ Date _____

Revised. 03/16/2018

Non-Collusion Declaration to be Executed by Bidder and Submitted with Bid

To the Orange County Transportation Authority
The undersigned declares:

I am the _____ of _____, the party making the foregoing bid. In accordance with Title 23 United States Code Section 112 and Public Contract Code Section, 7106 the bidder declares that the bid is not made in the interest of, or on the behalf of, any undisclosed person, partnership, company, association, organization or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, or that anyone shall refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract. All statements contained in the bid are true. The bidder has not, directly, or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

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

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____ (date), at _____ (city), _____ (state).

Name of Bidder:_____

Signature:_____

Date:_____

DBE PARTICIPATION COMMITMENT FORM

THIS FORM MUST BE COMPLETED AND SUBMITTED WITH THE BID AS A CONDITION OF DBE RESPONSIVENESS

NOTE: Refer to instructions on the reverse side of this form.

Bidder to Complete this Section

1. IFB No.: _____

2. Project Name/Description: _____

3. Prime Bidder Name: _____

4. Contract DBE Goal %: _____

5. Bidder's Total Bid Price _____

Required DBE Commitment Information

6. DBE Firm (Name and Address)	**7.** DBE Certification Number	**8.** Description of Scope of Services/Work	**9.** Bid Item (#)	**10.** Dollar Value ($) of Participation	**11.** Dollar Value ($) of Eligible DBE Participation/ Commitment

Note: As a condition of responsiveness, the bidder is required to <u>submit with the Bid</u> a written confirmation signed and dated from each DBE listed in Column 6 acknowledging that the DBE is participating in the contract for the specified dollar value ($) and scope of work.

A quote or bid from the DBE firm can serve in lieu of the written confirmation; however, the dollar amount in the written confirmation, quote/bid and the amount shown on this form MUST match identically.

12. Total Dollar Value ($) of Eligible DBE Participation

$ _____

13. Eligible DBE Participation Represented as a Percentage (%) of Bidder's Total Bid Price

_____%

Bidder Assurance: The bidder certifies that information on this form is complete and accurate, that it has verified the listed DBE(s) certification status and is only crediting eligible DBE participation towards meeting the contract DBE goal.

14. Preparer's Name (Print)	15. Preparer's Signature	16. Preparer's Title
17. Date	18. Telephone No. _(___)_____	19. Email Address

INSTRUCTIONS - DBE Participation Commitment Form

Bidder is required to ensure all information is complete and accurate:

20. **IFB No.** - Enter the IFB Number.
21. **Project Name/Description** - Enter the name and/or description of the project.
22. **Prime Bidder Name** - Enter the bidder's firm name.
23. **Contract DBE Goal %** - Enter the contract DBE goal percentage.
24. **Bidder's Total Bid Price –** Enter the bidder's total bid price.
25. **DBE Firm** – Enter name and address of the proposed DBE firm. Identify all DBE firms being claimed for credit, regardless of tier.
26. **DBE Certification Number -** Enter the DBE's certification identification number. All DBEs must have a valid DBE certification at time of bid opening.
27. **Description of Scope of Services/Work –** Enter the scope of services/work for each DBE firm listed to participate on this contract.
28. **Bid Item (#) -** Enter bid item number.
29. **Dollar Value ($) of Participation -** Enter the total dollar value of participation for each listed DBE firm.
30. **Dollar Value ($) of Eligible DBE Participation/Commitment** - Enter the dollar value of participation eligible to count towards meeting the contract DBE goal. This value should exclude work performed by lower tier subcontractors and account for the DBE's capacity based on their certification type in conformance with the DBE crediting provisions set forth in Title 49 CFR Part 26.55.
31. **Total Dollar Value ($) of Eligible DBE Participation -** Enter the sum of all eligible participation listed in column 11.
32. **Eligible DBE Participation Represented as a Percentage (%) of Bidder's Total Bid Price -** Enter the corresponding percentage of the total eligible DBE participation that the bidder is counting towards the bidder's DBE goal commitment (Formula: Item (12) Total Value of Eligible DBE Participation / Item (5) Bidder's Total Bid Price = Bidder's DBE Goal Commitment Percent (%)).
33. **Preparer's Name (Print)** - Clearly enter the name of the authorized person preparing the form on behalf of the bidder.
34. **Preparer's Signature** - Authorized person's signature.
35. **Preparer's Title** - Enter the position/title of the authorized person signing the form on behalf of the bidder.
36. **Date** - Enter the date the form is signed.
37. **Telephone No.** - Enter the area code and telephone number of the authorized person signing the form on behalf of the bidder.
38. **Email Address -** Enter the email address of the authorized person signing the form on behalf of the bidder.

NOTE: A firm is only eligible to count towards DBE participation in the NAICS codes contained within its California Unified Certification Program (CUCP) DBE Profile. Bidders are to verify that listed DBE's certification contains the NAICS codes relevant to the scope they are being listed to perform.

DBE INFORMATION - GOOD FAITH EFFORTS

IFB No: _____ Bid Opening Date _____

The Orange County Transportation Authority (Authority) established a Disadvantaged Business Enterprise (DBE) goal of _____% for this contract. The information provided herein shows that a good faith effort was made by _____(Bidder).

Bidder shall submit the following information to document adequate good faith efforts to the Authority no later than 4:00 p.m. on the 2nd business day after the Authority's bid due date, or as otherwise specified in the solicitation. Bidder should submit the following information even if the "DBE Participation Commitment Form" indicates that the bidder has met the DBE goal. This will protect the bidder's eligibility for award of the contract if Authority determines that the bidder failed to meet the goal for various reasons, e.g., a DBE firm was not certified at bid opening, or the bidder made a mathematical error.

Submittal of only the form may not provide sufficient documentation to demonstrate that adequate good faith efforts were made.

The following good faith efforts items (A through H) shall be minimally performed prior to bid submission. Bidder to complete the following items in sufficient detail to effectively demonstrate that good faith efforts were undertaken to meet the established DBE goal:

I. Items of Work the Bidder Made Available to DBE Firms; a description of work items and approximate dollar amounts made available to DBE firms by the bidder, value of work items as a percentage of total contract work, breakdown of bid items or larger scopes of contract work (including those items normally performed by the bidder with its own forces) into economically feasible units to facilitate DBE participation sufficient to meet the DBE contract goal. It is the bidder's responsibility to demonstrate that sufficient work was made available to facilitate DBE participation as follows (Provide documents that sufficiently evidence the efforts detailed below):

Description of Work Item	Bidder Normally Performs (Y/N)	Unbundled from Larger Scope (Y/N) If Yes, List Scope and/or Bid Item (#)	Amount ($)	Percentage of Contract

J. Solicitation Effort Documentation; the names and dates of written notices sent to certified DBEs soliciting bids for this project and the dates and methods used to following up initial solicitations to determine with certainty whether the DBEs were interested (attach all copies of solicitation, telephone records, fax confirmations, email communications, etc.), amount of DBEs to repond, documentation to demonstrate the DBE firms were provided information about the contract (location of project, contract number, bid date, items of work made available and contact information) in the Invitation to Bid from the bidder, the bidder solicited through all reasonable means (e.g. attendance at pre-bid meetings, advertising and written notices) the interest of all certified DBEs who have the capability to perform the work of the contract, bidder to provide proof of aforementioned items, and DBEs in the market area for the work identified in 'Item A' as follows:

DBE Firm	Contact Name/Title	Method of Solicitation	Date of Initial Solicitation	Date of Follow-Up Solicitation	Response/ Interested in Bidding

(Note: Solicitations should occur at a minimum no later than 14 calendar days prior to the Authority's bid due date and follow up to the solicitation should allow DBE firms reasonable time to respond). DBE firms solicited must be advised if the original bid date has been extended.

K. Rejected DBE Bid Documentation; the names, addresses, phone numbers, and amount of rejected DBE firms, the reasons for the bidder's rejection of the DBE firms, the firms selected and accepted for that work (attach all copies of quotes from the firms involved inclusive of a detailed cost breakdown if opted to self-perform work) and the price difference for each DBE if the selected firms is not a DBE, include an explanation of quote(s) rejected.

L. Publication Efforts Made to Advertise the Projects to Solicit DBE Participation; names and dates of each publication in which a request for DBE participation for this project was placed by the bidder (attach copies of advertisements or proof of publications). Publications should be placed at a minimum 14 calendar days before the Authority's bid due date. If bid due date is extended, bidder is to re-advertise new bid due date.

Publications	Type of Publication (Trade/General/ Minority/Focus)	Dates of Advertisement	Duration of Advertisement	Readvertisement (Bid-Due Date Extension)

M. Agencies, Organizations, or Groups Contacted to Provide Assistance in Contracting, Recruiting, and Using DBEs; the names of agencies, organizations or groups contacted to provide assistance in contacting, recruiting and using DBE firms (Attach copies of requests to agencies, responses received and efforts made by the bidder in response).

N. Efforts to Provide Information About the Plans, Specifications, and Contract Requirements; efforts made to assist interested DBEs in obtaining necessary materials, or related assistance or services, bidder to provide evidence of effort.

O. Assistance with Lines of Credit, Insurance, and/or other Services; efforts made to assist interested DBEs in obtainting bonding, lines of credit or insurance, and any technical assistance or information related to the plans, specifications and requirements for the work which was provided to DBEs, bidder to provide a list of any assistance provided to prospective and bided DBEs:

P. Additional Data to Support a Demonstration of Good Faith Efforts; in determining whether a bidder made adequate good faith efforts, the Authority will take into account the performance of other bidders in meeting the DBE contract goal. Attach any additional information to support demonstration of good faith in this section:

NOTE: USE ADDITIONAL SHEETS AS NECESSARY TO DEMONSTRATE RESPONSIVENESS.

Bidders List

The Department of Transportation requires the Authority to create and maintain a "Bidders List" containing information about all firms (DBE and Non-DBE) that bid, propose or quote on the Authority's DOT-assisted contracts, in accordance with 49 CFR Part 26.11. The "Bidders List" is intended to be a count of all firms that are participating, or attempting to participate, on DOT-assisted contracts, whether successful or unsuccessful in their attempt to obtain a contract.
The bidder is to complete all requested information for every firm who submitted a bid, proposal or quote, including the primary bidder, and submit this information to the Authority no later than 4:00 p.m. on the 2nd business day after the Authority's bid due date, or as otherwise specified in the solicitation. The Authority will utilize this information to assist in the Authority's DBE goal-setting process.

Prime Name and Location	**Type of Work/Services/Materials Provided:** **NAICS/WCC**	**Subcontract Amount**	**Percentage of Bid Item Sub-contracted**	**Contractor License No.** **DIR Reg Number**	**DBE (Y/N)** **DBE Certification ID**	**Phone:** **E-mail:**	**Annual Gross Receipts**
Prime Bidder: Contact Name: Address:							☐ Less than $1 million ☐ Less than $5 million ☐ Less than $10 million ☐ Less than $15 million ☐ More than $15 million Age of Firm: _____yrs.

Subcontractor Name and Location	**Type of Work/Services/Materials Provided:** **NAICS/WCC**	**Subcontract Amount**	**Percentage of Bid Item Sub-contracted**	**Contractor License No.** **DIR Reg Number**	**DBE (Y/N)** **DBE Certification ID**	**Phone:** **E-mail:**	**Annual Gross Receipts**
Firm Name: Contact Name: Address:							☐ Less than $1 million ☐ Less than $5 million ☐ Less than $10 million ☐ Less than $15 million ☐ More than $15 million Age of Firm: _____yrs.

Subcontractor Name and Location	Type of Work/Services/Materials Provided: NAICS/WCC	Subcontract Amount	Percentage of Bid Item Sub-contracted	Contractor License No. DIR Reg Number	DBE (Y/N) DBE Certification ID	Phone: E-mail:	Annual Gross Receipts
Firm Name: Contact Name: Address:							☐ Less than $1 million ☐ Less than $5 million ☐ Less than $10 million ☐ Less than $15 million ☐ More than $15 million Age of Firm: _____yrs.
Firm Name: Contact Name: Address:							☐ Less than $1 million ☐ Less than $5 million ☐ Less than $10 million ☐ Less than $15 million ☐ More than $15 million Age of Firm: _____yrs.
Name: Contact Name: Address:							☐ Less than $1 million ☐ Less than $5 million ☐ Less than $10 million ☐ Less than $15 million ☐ More than $15 million Age of Firm: _____yrs.

NOTE: USE ADDITIONAL SHEETS AS NECESSARY TO DEMONSTRATE RESPONSIVENESS TO THE BIDDERS LIST REQUIREMENTS.

IRAN CONTRACTING ACT CERTIFICATION

(California Public Contract Code Sections 2200, *et seq.*)

The Iran Contracting Act of 2010 (PCC Sections 2200-2208), prohibits bidders who are engaged in investment activities in the energy sector of Iran from bidding on, submitting proposals for, or entering into or renewing contracts with public entities for goods or services of one million dollars ($1,000,000) or more. At the time of submitting a bid, each bidder must certify that the bidder is not identified on the Department of General Services list of ineligible persons pursuant to PCC Section 2203(b). Each bidder is also required to certify that the bidder is not engaged in investment activities in violation of the Iran Contracting Act of 2010.

A bidder who is engaged in investment activities in the energy sector of Iran is defined as:

3. A person providing goods or services of twenty million dollars ($20,000,000) or more in the energy sector of Iran, including a person that provides oil or liquefied natural gas tankers, or products used to construct or maintain pipelines used to transport oil or liquefied natural gas, for the energy sector of Iran; or
4. A person that is a financial institution that extends twenty million dollars ($20,000,000) or more in credit to another person, for 45 days or more, if that person will use the credit to provide goods or services in the energy sector in Iran and is identified on a list created pursuant to PCC Section 2203(b).

A bidder is not required to certify that it is engaged in investment activities in the energy sector of Iran if the bidder is exempt from the certification under PCC Section 2203(c) or (d). If the bidder is exempt from the certification requirement, the bidder will be required to provide documentation demonstrating the exemption.

To comply with the Iran Contracting Act of 2010, the bidder shall complete **one** of the options below. Please note: under PCC Section 2205, false certification of this form may result in civil penalties of $250,000 or twice the amount of the contract for which false certification was made, termination of the contract, and/or ineligibility to bid on contracts for a period of three years.

Option #1: Certification

I, the official named below, certify I am duly authorized to execute this certification on behalf of the vendor/financial institution identified below, and the vendor/financial institution identified below, and any subcontractor who will perform work or labor or render services to the vendor identified below, is not on the current Department of General Services list identifying persons engaged in investment activities in the energy sector of Iran, and is not a financial institution extending twenty million dollars ($20,000,000) or more in credit to another person/vendor, for 45 days or more, if that other person/vendor will use the credit to provide goods or services in the energy sector in Iran and is identified on the current Department of General Services list identifying persons engaged in investment activities in the energy sector of Iran.

Vendor/Financial Institution: _____

Signature: _____

Name and Title: _____

Date: _____

Option #2: Exemption

Pursuant to PCC Section 2203(c) and (d), a public entity may permit a bidder or financial institution engaged in investment activities in Iran, on a case-by-case basis, to be eligible for, or to bid on, submit proposals for, or enter into or renew a contract with a public entity for goods or services of one million dollars ($1,000,000) or more. If the bidder, financial institution, or any subcontractor who will perform work or labor or render services to the bidder has obtained an exemption from the certification requirement, please complete and sign below and attach the documentation demonstrating the exemption approval.

Vendor/Financial Institution: _____

Signature: _____

Name and Title: _____

Date: _____

Option #3: Non-Applicability

Pursuant to PCC Section 2203(b), a bidder or financial institution engaged in investment activities in Iran may not be eligible for, or to bid on, submit proposals for, or enter into or renew a contract with a public entity for goods or services of one million dollars ($1,000,000) or more. If the contract is not for goods or services of one million dollars ($1,000,000) or more, please sign below indicating that the contract is not for goods or services of one million dollars ($1,000,000) or more and thus bidder is not required to certify and does not meet the exemption.

Vendor/Financial Institution: _____

Signature: _____

Name and Title: _____

Date: _____

BIDDER'S CERTIFICATE
REGARDING
"BUY AMERICA" REQUIREMENTS
FOR
STEEL, IRON, OR MANUFACTURED PRODUCTS

In order to demonstrate compliance with the Buy America Requirements, if the bid is for a contract greater than one hundred and fifty thousand dollars ($150,000), Bidder shall complete only one of the two statements below:

The _____
Firm name/principal

hereby certifies that it **will comply** with the requirements of 49 U.S.C. Section 5323(j), and the applicable regulations in 49 CFR Part 661.

_____
Signature

_____
Name

_____
Title

_____
Date

Or:

The _____
Firm name/principal

hereby certifies that it **cannot comply** with the requirements of 49 U.S.C. Section 5323(j), but may qualify for an exception to the requirement pursuant to 49 U.S.C. Section 5323(j)(2), as amended, and the applicable regulations in 49 CFR Part 661.7.

_____
Signature

_____
Name

_____
Title

_____
Date

Revised: 05/23/2018

CERTIFICATION
LIMITATION ON PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS

A. DEFINITIONS

1. Authority, as used in this clause, means the Orange County Transportation Authority.

2. Covered Federal action, as used in this clause, means any of the following Federal actions:

   a. The awarding of any Federal contract.

   b. The making of any Federal grant.

   c. The making of any Federal loan.

   d. The entering into of any cooperative agreement.

   e. The extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

   f. Indian tribe and tribal organization, as used in this clause, have the meaning provided in Section 450b of the Indian self-determination and Education Assistance Act (25 U.S.C. 450) and include Alaskan Natives.

3. Influencing or attempting to influence, as used in this clause, means making, with the intent to influence, any communication to or appearance before an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any covered Federal action.

4. Local government, as used in this clause, means a unit of government in a State and, if chartered, established, or other were recognized by a State for the performance of a governmental duty, including a local public authority, a special district, an intrastate district, a council of governments, a sponsor group representative organization, and any other instrumentality of a local government.

5. Officer or employee of an agency, as used in this clause, includes the following individuals who are employed by an agency:

   a. An individual who is appointed to a position in the Government under title 5, United States code, including a position under a temporary appointment.

b. A member of the uniformed services, as defined in the subsection 101(3), Title 37, United States Code.

c. A special Government employee, as defined in Section 202, Title 18, United States Code.

d. An individual who is a member of a Federal advisory committee, as defined by the Federal Advisory Committee Act, Title 5, United States Code, Appendix section 3.

6. Person, as used in this clause, means an individual, corporation, company, association, authority, firm, partnership, society, State, and local government, regardless of whether such entity is operated for profit, or not for profit. This term excludes an Indian tribe, tribal organization or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

7. Reasonable compensation, as used in this clause, means with respect to a regularly employed officer of employee of any person, compensation that is consistent with the normal compensation for such officer or employee for work that is not furnished to, not funded by, or not furnished in cooperation with the Federal Government.

8. Reasonable payment, as used in this clause means, with respect to professional and other technical services, a payment in an amount that is consistent with the amount normally paid for such services in the private sector.

9. Recipient, as used in this clause, includes the Contractor and all subcontractors. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

10. Regularly employed, as used in this clause, means, with respect to an officer or employee of a person requesting or receiving by such person for at least 130 working days within one year immediately preceding the date of the submission that initiates agency consideration of such person for receipt of such contract. An officer or employee who is employed by such person for less than 130 working days within one year immediately preceding the date of the submission that initiates agency consideration of such person shall be considered to be regularly employed as soon as he or she is employed by such person for 130 working days.

11. State, as used in this clause, means a State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, a territory or possession of the United States, an agency or instrumentality of a State, and a multi-State regional or interstate entity having governmental duties and powers.

B. PROHIBITIONS

1. Section 1352 of Title 31, United States Code, among other things, prohibits a recipient of a Federal contract, grant, loan or cooperative agreement from using appropriated funds to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract; the making of any Federal grant; the making of any Federal loan; the entering into of any cooperative agreement; or, the modification of any Federal contract, grant, loan, or cooperative agreement.

2. The Act also requires Contractor to furnish a disclosure if any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a Federal contract, grant, loan or cooperative agreement.

3. The prohibitions of the Act do not apply under the following conditions:

   a. Agency and legislative liaison by own employees.

      (1) The prohibition on the use of appropriated funds, in subparagraph C.1. of this clause, does not apply in the case of payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action if the payment is for agency and legislative liaison activities not directly related to a covered Federal action.

      (2) For purposes of paragraph C.3.a.(1) of this clause, providing any information specifically requested by an agency or Congress is permitted at any time.

      (3) The following agency and legislative liaison activities are permitted any time where they are not related to a specific solicitation for any covered Federal action:

         i. Discussing with an agency (including individual demonstrations) the qualities and characteristics of the person's products or services, conditions or terms of sale, and service capabilities.

         ii. Technical discussions and other activities regarding the application of adaptation of the person's products or services for an agency's use.

      (4) The following agency and legislative liaison activities are

permitted where they are prior to formal solicitation of any covered Federal action:

i. Providing any information not specifically requested but necessary for an agency to make an informed decision about initiation of a covered Federal action;

b. Technical discussions regarding the preparation of an unsolicited proposal prior to its official submission; and,

(1) Capability presentations by persons seeking awards from an agency pursuant to the provisions of the Small Business Act, as amended by Public Law 95-507, and subsequent amendments.

(2) Only those services expressly authorized by paragraph C.3.a.(1) of this clause are permitted under this clause.

c. Professional and technical services

(1) The prohibition on the use of appropriated funds, in subparagraph C.1. of this clause, does not apply in the case of:

i. A payment of reasonable compensation made to an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of covered Federal action, if payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal action or for meeting requirements imposed by or pursuant to law as condition for receiving that Federal action.

ii. Any reasonable payment to a person, other than an officer or employee of a person requesting or receiving a covered Federal action or an extension, continuation, renewal, amendment, or modification of a covered Federal action if the payment is for professional or technical services rendered directly in the preparation, submission or negotiation of any bid, proposal, or application or that Federal action or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal action. Persons other than officers or employees of a person requesting or receiving a covered Federal action include contractors and trade associations.

iii. For purposes of paragraph C.3.a.(1) of this clause, professional and technical services shall be limited to advise and analysis directly applying any professional or

technical discipline. For example, drafting of a legal document accompanying a bid or proposal is allowable. Similarly, technical advice provided by an engineer on the performance or operational capability of a piece of equipment rendered directly in the negotiation of a contract is allowable. However, communications with the intent to influence made by a professional (such as a licensed lawyer) or a technical person (such as a licensed accountant) are not allowable under this section unless they provide advice and analysis directly applying their professional or technical expertise and unless the advice or analysis is rendered directly and solely in the preparation, submission, or negotiation of a covered Federal action. Thus, for example, communications with the intent to influence made by a lawyer that do not provide legal advice or analysis directly and solely related to the legal aspects of his or her client's proposal, but generally advocate one proposal over another are not allowable under this section because the lawyer is not providing professional legal services. Similarly, communications with the intent to influence made by an engineer providing an engineering analysis prior to the preparation or submission of a bid or proposal are not allowable under this section since the engineer is providing technical services but not directly in the preparation, submission, or negotiation of a covered Federal action.

iv. Requirements imposed by or pursuant to law as a condition for receiving a covered Federal award include those required by law or regulation and any other requirements in the actual award documents.

v. Only those services expressly authorized by paragraph C.3.a.(1) and (2) of this clause are permitted under this clause.

vi. The reporting requirements of FAR 3.803(a) shall not apply with respect to payments of reasonable compensation made to regularly employed officers or employees of a person.

d. Disclosure

(1) The Contractor who requests or receives from an agency a Federal contract shall file with that agency a disclosure form OMB standard form LLL, Disclosure of Lobbying Activities, (Attachment to the bid package) if such person has made or had agreed to made any payment using non appropriated funds (to include

profits from any covered Federal action), which would be prohibited under subparagraph B.1. of this clause, if paid for with appropriated funds.

(2) The Contractor shall file a disclosure form at the end of each calendar quarter in which there occurs any event that materially affects the accuracy of the information contained in any disclosure form previously filed by such person under subparagraph II.A. of this clause. An event that materially affects the accuracy of the information reported includes:

i. A cumulative increase of $25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or

ii. A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or

iii. A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

(3) The Contractor shall require the submittal of a certification, and if required, a disclosure form by any person who requests or receives any subcontract exceeding $100,000 under the Federal contract.

(4) All subcontractor disclosure forms (but not certifications) shall be forwarded from tier to tier until received by the Contractor. The Contractor shall submit all disclosures to the District at the end of the calendar quarter in which the disclosure form is submitted by the subcontractor. Each subcontractor certification shall be retained in the subcontract file of the contractor.

e. Agreement

(1) The Contractor agrees not to make any payment prohibited by this clause.

f. Penalties

(1) Any person who makes an expenditure prohibited under paragraph a) of this clause or who fails to file or amend the disclosure form to be filed or amended by paragraph d) of this clause shall be subject to civil penalties as provided for by 31 U.S.C. 1352. An imposition of a civil penalty does not prevent the Government from seeking any other remedy that may be applicable.

(2) Contractor may relay without liability on the representation made by its subcontractors in the certification and disclosure forms.

g. Cost Allowability:

(1) Nothing in this clause is to be interpreted to make allowable or reasonable any costs, which will otherwise be unallowable or unreasonable. Conversely, costs made specifically unallowable by the requirements in this clause will not be made allowable under any other provisions.

CERTIFICATION OF RESTRICTIONS ON LOBBYING

I, _____ , hereby certify on behalf (name of offeror) of

_____ that:
(Firm name)

A. No federal appropriated funds have been paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer of employee of any agency, a member of congress, an officer or employee of congress, or an employee of a member of congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement.

1. If any funds, other than Federal appropriated funds, have been paid or will be paid to any person for making lobbying contracts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit the attached Standard Form-LLL, "Disclosure of Lobbying Activities", in accordance with its instructions.

2. The undersigned shall require that the language of this certification be included in all subcontracts, and that all subcontractors shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance is placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The Bidder, _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Bidder understands and agrees that the provisions of 31 U.S.C. 3801, et seq. apply to this certification and disclosure, if any.

Executed this _____day of _____,2020

By _____
(Signature of authorized official)

_____
(Title of authorized official)

DISCLOSURE OF LOBBYING ACTIVITIES

Approved by OMB 003480045

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure.)

1. Type of Federal Action:
☐ a. contract
b. grant
c. cooperative agreement
d. loan
e. loan guarantee
f. loan insurance

2. Status of Federal Action:
☐ a. bid/offer application
b. initial award
c. post-award

3. Report Type:
☐ a. initial filing
b. material changes

For Material Change Only:
year _____ quarter _____
date of last report _____

4. Name and Address of Reporting Entity:
☐ Prime ☐ Subawardee
Tier _____, *if known*:

Congressional District, *if known*:

5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:

Congressional District, *if known*:

6. Federal Department/Agency:

7. Federal Program Name/Description:

CFDA number, *if applicable*: _____

8. Federal Action Number, *if known*:

9. Award Amount, *if known*:

$

10. a. Name and Address of Lobbying Entity (if individual, last name, first name, MI)

b. Individuals Performing Services (including address if different from No 10a) (last name, first name, MI):

(attach Continuation Sheet(s) SF - LLL - A if necessary)

11. Amount of Payment (check all that apply):

$_____ ☐ actual ☐ planned

12. Forum of Payment (check all that apply):
☐ a. cash
☐ b. in-kind; specify nature: _____
value: _____

13. Type of Payment (check all that apply):
☐ a. retainer
☐ b. one-time fee
☐ c. commission
☐ d. contingent fee
☐ e. deferred
☐ f. other specify: _____

14. Brief Description of Services Performed or to be Performed and Date(s) of Service, including officer(s), employee(s) or Member(s) contracted for Payment indicated in Item, 11:

(attach Continuation Sheet(s) SF-LLL-A if necessary)

15. Continuation Sheet(s) SF-LLL-A attached: ☐ Yes ☐ No

16. Information requested through this form is authorized by Code 31 U.S.C. Section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000.00 and not more than $100,000.00 for each such failure.

Signature: _____

Print name: _____

Title: _____

Telephone No: _____ Date: _____

Federal Use Only

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Standard Form - LLL

Approved by OMB 003480045

INSTRUCTIONS FOR COMPLETION OF SF-LLL DISCLOSURE OF LOBBYING ACTIVITIES

This DISCLOSURE FORMS SHALL BE COMPLETED BY the reporting entity, whether Subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Use the SF-LLL-A Continuation Sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.

2. Identify the status of the covered Federal action.

3. Identify the appropriate classification of this report. If this is a follow-up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.

4. Enter the full name, address, city, state and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be a prime or subaward recipient. Identify the tier of the subawardee e.g., the first subawardee of the prime is the first tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.

5. If the organization filing the report in item 4 checks "Subawardee" then enter the full name, address city, state, and zip code of the prime Federal recipient. Include Congressional District.

6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency, name if known. For example, Department of Transportation, United State Coast Guard.

7. Enter the Federal program name for description of the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.

8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g. Request for Proposal (RFP) number, Invitation for Bid (IFB) number, grant announcement number, the contract, grant, or loan award number, the application/ proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP DE-90-001."

9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.

10. (a) Enter the full name, address, city, state, and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.

11. (b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a.). Enter Last Name, First Name, and Middle Initial (MI).

12. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or planned to be made.

13. Check the appropriate box (es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.

14. Check the appropriate box (es). Check all boxes that apply. If other, specify nature.

15. Provide a specific and detailed description of the services that the lobbyist has performed, or will be expected to perform, and the date(s) of any services rendered. Include all preparatory and related activity, not just time spent in actual contact with Federal officials. Identify the Federal official(s) or employee(s) contacted or the officer(s), employee(s), or Member(s) of Congress that were contacted.

16. Check whether or not a SF-LLL-A Continuation Sheet(s) is attached.

17. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

Approved by
OMB
003480045

DISCLOSURE OF LOBBYING ACTIVITIES CONTINUATION SHEET

Reporting Entity:_____ **Page** _____ **of** _____

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