**PART 1 - GENERAL**

* 1. **SUMMARY**
     1. Furnish all labor, material and equipment necessary for the complete installation of the Service Entrance Electrical System as shown on the Drawings, including final connections as specified herein. Work shall be performed in accordance with the the requirements of the local Utility Company, codes and regulations, and applicable industry standards.
     2. Section Includes: Underground power service conduits from utility company service pole, transformer, vault or other designated service point to OWNER’S service equipment.
     3. Related Requirements:

1. Division 01 - General Requirements.
2. Section 03 30 00 – Cast-In-Place Concrete.
3. Section 26 05 00 – Common Work Results for Electrical.
4. Section 26 05 13 – Basic Electrical Materials and Methods.
5. Section 26 05 33 – Raceways, Boxes Fittings, and Supports.
6. Section 26 05 26 – Grounding and Bonding.
7. Section 26 05 19 – Low-Voltage Wires (<600 Volt AC).
8. Section 26 08 00 – Electrical Systems Commissioning.
9. Section 26 11 00 – Load Center Unit Substations.
10. Section 26 12 00 – Medium Voltage Transformers.
11. Section 26 24 13 – Switchboards.
12. Section 26 26 00 – Power Distribution Units.
13. Section 31 23 13 – Excavation, and Fill.
    1. **REFERENCES**
14. ANSI/NEMA 250 – Enclosures for Electrical Equipment (1000 Volts Maximum).
15. California Electrical Code (CEC).
16. IEEE C57.12.28 – Standard for Pad-Mounted equipment Enclosure Integrity.
17. IEEE 551 - Recommended Practice for Calculating AC Short-Circuit Currents in Industrial and Commercial Power Systems.
18. IEEE 1584 – Performing Arc-Flash Hazard Calculations.
19. Los Angeles Department of Water and Power Electrical Service Requirements.
20. Southern California Edison ESR – Electrical Service Requirements.
21. UL 891-Switchboards.
22. UL/ANSI 891 – Standard for Safety Switchboards.
    1. **SUBMITTALS**
23. Provide in accordance with Division 01.
24. Shop Drawings: Include a front elevation indicating dimensions and locations of equipment on switchboard, make, kind and size, capacity of equipment and bussing, location of each service conduit entering switchboard, barriers, nameplate inscriptions, finish, total weight and size of switchboard and locations and sizes of anchor bolts.
25. Submit Fault Current, Coordination and Arc-Flash reports based on installed conditions and equipment.
26. Provide installation and seismic anchorage details.
    1. **SYSTEM REQUIREMENTS**
       1. Where required and indicated on Drawings, install transformer vault, outdoor transformer enclosure, pad and slab box, manholes or other equipment in accordance with utility company drawings and standards.
       2. Coordinate all work with the utility company electrical service requirements.
       3. Consult utility company to determine exact location of serving point, service poles, quadrants on poles for service risers, transformer location(s), underground work, and work and materials. Service installation shall be complete and ready for cable installation. Service cable shall be provided by utility company and paid for by OWNER.
       4. Reports: Provide short-circuit, coordination and arc-flash reports signed and stamp by a registered electrical engineer. Studies shall be in accordance with applicable IEEE guidelines and applicable codes. Submit two copies of each study for Engineer of Record review.
27. Provide a system coordination report based on approved equipment and installed equipment for all main and branch circuit protective devices including transformers secondary protective devices. Study report shall be in accordance with IEEE 242 and recorded on log paper. The circuit protective devices shall be set based on the coordination study. Submit a written record of protective device settings.
28. Provide a complete arch-flash report in accordance with code and IEEE 1584. The report shall be based on installed equipment, and feeders’ sizes and lengths. The report shall indicate trip times for protective device(s) settings, arcing fault current values, and incident energy and flash boundaries. The arc-flash report shall indicate clothing requirements for each piece of equipment.
29. Provide a short circuit withstand capacity/ Interrupting capacity of main and distribution equipment and circuit breakers in accordance with IEEE 551.
    * 1. Equipment shall be labeled with Short Circuit Current Rating (SCCR), and in compliance with UL 891 requirements.
      2. All work shall be done in compliance with California Electrical Code and authorities having jurisdiction.

**PART 2 - PRODUCTS**

1. **MATERIALS**
2. Transformer Pads: Concrete transformer pads shall be provided as indicated on Drawings and shall meet requirements of serving electric utility company.
3. Service Conduits: As described under Section 26 05 33: Raceways, Boxes Fittings, and Supports. For utility portion of wiring and conduit runs, comply with utility company requirements.

**PART 3 - EXECUTION**

1. **INSTALLATION**
2. Service conduits shall terminate at service poles or other service point, as indicated on Drawings and shall extend underground to main service terminating pull section as indicated on drawings. Bends in conduits shall be long radius type and sweeps shall have a radius of not less than 12 times conduit trade size for conduits up to 5” diameter, and 10 times for conduits with a diameter greater than 5”. Underground conduits shall be encased in concrete three inches thick on all sides with multiple conduits spaced not less than 1-1/2 inches apart, or utility company recommended spacing, whichever is more stringent. Provide support for conduits to prevent floating when encased.
3. Service Cables:
4. Overhead: Shall be connected to metering compartment of switchboards.
5. Underground: Shall be in service terminating pull section as required and directed by utility company.
   1. **CONDUITS CROSSING PUBLIC DEDICATED PROPERTY**
6. Where service or other conduits cross a street, alley, highway, or other public dedicated property, provide necessary arrangements to open and close public property and pay costs in connection with required licenses, permits, fees and deposits. Conduits shall be installed in a manner required by utility company and authorities having jurisdiction.
   1. **STRUCTURAL CONDITIONS**
      1. Where conduits are to pass through or interfere with structural members, or where notching, boring or cutting of structure is necessary, or where special openings are required through walls, floors, footings, or other building elements to accommodate electrical Work, such Work shall be performed as required by the Architect and DSA.
      2. Placement of conduits in concrete slabs and structural members shall comply with requirements of applicable section of CCR, Title 24, Public Works and shall be as required by Architect and DSA.
      3. Where a concrete encasement for underground conduits abuts a foundation wall or underground structure which conduits enter, encasement shall be maintained in position in relation to structure as indicated on Drawings, or rest on a haunch integral with wall or structure, or shall extend down to footing projection, or shall be doweled into structure. Underground structures shall include manholes, pull boxes, vaults, and buildings.
      4. Cutting and patching of rough and finish Work shall be performed as required for installation of Work under this section. Patching shall be of same materials, workmanship and finish and shall accurately match surrounding Work.
   2. **PROTECTION**

# Protect the Work of this section until Substantial Completion.

* 1. **CLEANUP**

1. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

# END OF SECTION