

University of Houston Master Specification

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<Insert U of H Proj #>

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<Insert Issue Date>

SECTION 26 2701 - ELECTRICAL SERVICE ENTRANCE

Maintain Section format, including the UH master spec designation and version date in bold in the center columns of the header and footer. Complete the header and footer with Project information.

Edit and finalize this Section, where prompted by Editor's notes, to suit Project specific requirements. Make selections for the Project at text identified in bold.

This Section uses the term "Engineer." Change this term to match that used to identify the design professional as defined in the General and Supplementary Conditions.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

Delete hidden text after this Section has been edited for the Project.

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.
- B. The Contractor's attention is specifically directed, but not limited, to the following documents for additional requirements:
 - 1. The current version of the *Uniform General Conditions for Construction Contracts*, State of Texas, available on the web site of the Texas Facilities Commission.
 - 2. The University of Houston's *Supplemental General Conditions and Special Conditions for Construction*.

1.2 DESCRIPTION OF WORK

- A. General: The electrical service shall be at 480/277 volts, 3-phase, 4-wire, 60 Hz, and shall be obtained from CenterPoint Energy (CPN) hereafter called "The Power Company".
- B. Power Company Data: Obtain from The Power Company all required information and installation standards to furnish a complete electrical service installation and make all arrangements required to obtain electrical service.
- C. Responsibilities: Division 26 shall be responsible for determining which equipment and labor is by The Power Company, which is by Division 26, and shall be responsible for any charges by The Power Company for service installation. Make all arrangements necessary to obtain electrical service from The Power Company. Obtain all necessary standards and detail drawings from The Power Company before construction of service equipment is commenced. The Power Company service data as shown is accurate as determined on the date of Specification issue and shall be verified as specified hereinabove. All materials, construction, and methods of installation of service equipment shall comply with The Power Company requirements, including, but not limited to: Primary conduits and ductbanks, transformer pads/provisions, concrete equipment pads, metering conduit, grounding system, and

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instrument transformer cabinets. Service equipment shall be grounded per the National Electrical Code (NEC) and as indicated on the Drawings and in the Specifications.

- D. Utility Service Equipment: Service for the building will be available from a pad mounted transformer by The Power Company.

1.3 SUBMITTALS

- A. Shop Drawings submittals shall include, but not be limited to, the following:
 - 1. Dimensioned drawing showing exact provisions for service.
 - 2. Additional information as required in Section 26 0001 "Electrical General Provisions".

PART 2 - PRODUCTS

2.1 GENERAL

- A. Service Data: The Power Company service data is accurate as determined on the date of Specification issue and shall be verified as described in Paragraph 1.02, hereinabove.

2.2 PRIMARY SERVICE

- A. General: Provide primary service ductbank and manholes as shown and as specified in Section 26 0533 "Electrical Raceways" and Section 26 0534 "Electrical Boxes."
- B. Power Company: The Power Company shall provide primary cables, splices, terminations, and primary overhead service lines.
- C. Approval: The Power Company shall approve the underground primary conduit installation prior to concrete encasement.

2.3 TRANSFORMERS AND SWITCHGEAR

- A. General: Division 26 shall provide all necessary provisions for service as required by The Power Company, including, but not limited to, grounding rods, grounding conductors, and sleeves.
- B. Power Company: The Power Company shall provide pad mounted transformers, primary switchgear, protective relaying and connections to the customer service cables.

2.4 SECONDARY SERVICE CABLE

- A. General: Division 26 shall provide secondary service cables as shown for connection to the service transformer.

2.5 METERING EQUIPMENT AND PROVISIONS

- A. General: Division 26 shall provide metering conduits and metering provisions as shown and as directed by The Power Company.
- B. Service Metering: At connections to the City electrical grid, the Power Company shall provide metering equipment, metering cans and interconnecting wiring. At connections to the UH Cougar Substation, **[Project Name]** shall provide metering equipment, metering cans and interconnecting wiring.
- C. A sub-meter is required for this project.
 - 1. Electronic Metering Device: Provide electronic metering devices to meter the main bus as scheduled or shown on the Drawings. Device shall be a Shark 250V4 meter or

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equivalent approved by the Owner. The unit shall be Underwriters' Laboratory listed per UL508.

- a. The electronic metering device shall have a six-digit LED readout which will allow local display of the following electrical parameters:
 - (1) Voltmeter, phase to phase and phase to neutral.
 - (2) Current, per phase RMS and 3-phase average.
 - (3) Demand current, per phase.
 - (4) Power factor, per phase and 3-phase total.
 - (5) Real power, 3-phase total.
 - (6) Reactive power, 3-phase total.
 - (7) Apparent power, 3-phase total.
 - (8) Energy (MWH).
 - (9) Reactive Energy (MVARH).
 - (10) Frequency.
 - (11) Average demand real power.
- b. The electronic metering device shall have the following additional features and characteristics.
 - (1) Built-in communications capability which will allow multipoint communication to a remote PC via an RS-485 communications port and TCP/IP ethernet communication capability.
 - (2) Adjustable demand interval (5-60 minutes).
 - (3) Nonvolatile memory for storing all historical data.
 - (4) A "waveform capture" function to store voltage and current waveforms in memory for analysis via the communications port.
- c. Setup of the electronic metering device shall be accomplished from the front of the device. It shall not be necessary to open the front of the enclosure to reach rear-mounted dip-switches. Setup parameters shall include CT ratio, PT ratio, system type (3-wire or 4-wire) and demand interval.
- d. All setup and reset functions shall be keyswitch or password protected to prevent unauthorized or accidental change of value.
 - (1) The accuracy of the electronic metering device in percent of full scale for various readouts shall be as follows:
 - (2) Current and voltage measurements +/- 0.1 percent.
 - (3) Power and energy +/- 0.15 percent.
 - (4) Frequency +/- 0.007 percent.
 - (5) Power factor +/- 0.2 percent.
 - (6) Data update time 1 S.

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2.6 PROTECTIVE RELAY DEVICE INFORMATION

- A. The power company shall provide all protective relay device information to the Engineer and Owner. If requested, all University of Houston relay settings and protective device information shall be provided to the power company.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Standards: The complete installation of the service entrance provisions shall comply with the standards and requirements of The Power Company and with requirements of other Sections of this Division.
- B. Correction: Any failure to meet these standards and requirements shall be corrected to the satisfaction of The Power Company without any additional cost to the Owner.

END OF SECTION 26 2701

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