

SERVICE ENTRANCES

3.01 POINT OF ENTRANCE

General Service

The customer, or the customer's electrician, should provide OPPD with a site plan, load schedule, and voltage requirements when requesting service. OPPD will make an effort to provide service to the point of entrance requested. **All metering equipment shall be installed outdoors for general service accounts**, except for downtown network service when necessary

- See Section 4.01 for more information about meter specifications (General Service).
- See Chapter 6 for General Service and Residential overhead requirements.
- See Chapter 7 for Residential underground requirements.
- See Chapter 8 for General Service underground requirements.
- See Chapter 12 for network service, in the downtown Omaha area.

Residential

OPPD' S Electrical Service Designer (ESD) shall designate the Point Of Entrance.

The customer or his electrician should call OPPD to request a point of entrance prior to placement of the home's main distribution panel, or wiring the "home runs". The home's main distribution panel shall be 100-amp minimum, or larger, if required by the local inspecting authority. Call the ESD, as listed in section 1.02. Wiring a home prior to receiving a point of entrance from OPPD may result in extra charges to the customer if OPPD is required to do extra work to serve the customer's home where wired out. **All metering equipment shall be installed outdoors for residential service.**

After the customer or his contractor installs the service entrance equipment, he should call Customer Care Services, 536-4155, or OPPD's area office, to request service cable installation for an underground Residential service. (see Chapter 7). At a later time, (up to several weeks later), the homeowner should again call Customer Care Services, 536-4155, or OPPD's area office for application for a service account. See Chapter 6 for overhead Residential service requirements.

3.02 OPPD INSTALLATION

After consulting with the Customer, OPPD will specify the location of the service entrance. Sometimes abbreviated as POA, P-O-A (Point of Attachment), POE, or P-O-E (Point of Entrance).

Accessible Meter Location

For all new electric services and service upgrades, OPPD's metering equipment shall be located in a safe and readily accessible location on the exterior of the structure. Center of meter socket shall be no lower than 30" above grade and no higher than 66" above grade.

Minimum working clearances as required by NEC 110.26 shall be provided and maintained. OPPD requires a minimum of 8 inches of side clearance on all metering equipment. Confined areas, such as within dog runs, areas under decks less than 6 feet 6 inches above grade, or areas with large equipment placed in front of the metering are not considered accessible. Locations reached via crawl spaces or ladders are considered neither safe nor accessible. A deck with outdoor access, reached by permanent stairs is considered accessible. All clearances for maintenance, replacement, or meter reading are to be provided and maintained by the customer.

Definitions

"Building" is defined as a structure which stands alone or which is separated from adjoining structures by firewalls approved by the local inspecting authority.

"Structure," other than a building, is defined as a substation, pole, metal pedestal, vault, padmounted switchgear, or other structure specifically approved by OPPD for accepting OPPD electric service.

One Building, One Service

OPPD provides each building or structure with only one service, (see Chapter 1, Section 1.07), supplied by one overhead service drop or underground service lateral to a service entrance located on a building or structure located on the Customer's premises.

The above "one-building, one-service" rule, with local inspecting authority approval, and OPPD approval by the manager of the Consumer Sales & Services department, may be excepted for one of the following reasons, as mentioned in the NEC:

Exception 1:

For separate services, required by statute, supplying emergency lighting or power systems installed in accordance with the applicable electrical code.

Exception 2:

For buildings of large area, a second service may be provided in accordance with applicable codes and OPPD's line extension rules

Exception 3:

For capacity requirements in excess of 2000 amperes at a supply voltage of 600 volts or less, a second service may be provided at OPPD's option. The second service entrance shall be located adjacent to the first service entrance.

Exception 4:

For townhouse construction, a separate service drop may be provided for each adjacent pair of attached units. A townhouse building is defined as three or more contiguous living units, not more than three stories high, separated with firewalls approved by the local inspecting authority. The POE will use a duplex meter socket at the common wall between each pair of units.

Exception 5:

For a building requiring different voltage or electrical characteristics, a second service may be provided.

All exceptions must be specifically approved by the local inspecting authority and by OPPD's Consumer Sales & Service management. Extension of service to each delivery point must be installed in accordance with OPPD's extension rules. Each delivery point will be individually metered. There may be charges by OPPD for the extra cable and equipment needed to provide service for these exceptions.

Where a building or structure is supplied by more than one service, a permanent plaque or directory shall be installed at each service disconnect location, denoting all other services supplying that building or structure, and the area served by each, as called for in the NEC.

3.03 CUSTOMER INSTALLATION

Overhead - Residential or General Service

The Customer installs, owns, and maintains the overhead service-entrance riser-pipe and conductors. He also provides a suitable location and secure attachment point for OPPD to attach the overhead service drop wires on the building or structure. See Chapter 6 for discussion.

Underground – Residential

See Chapter 7 for discussion.

Underground - General Service

See Chapter 8 for discussion.

Disconnect Sequence

All service entrances, either overhead or underground, shall include a service disconnecting means and over-current protection located at the point where energy is supplied to the building or structure, as required by the current National Electrical Code. The service equipment shall consist of from one to six switch-fuses (or circuit breakers). (See Chapter 4, Section 4.06 concerning the six main rule.) The sequence shall be meter-switch-fuse.

3.04 CAPACITY

Service entrances shall have ample capacity for any electrical load that may be reasonably expected. The customer-owned main disconnect shall have an ampacity rating equal to or greater than the ampacity rating of the service entrance conductors.

3.05 IDENTIFICATION OF CONDUCTORS

If the neutral or grounded conductor of a service entrance (480 volts and under) is insulated, it shall be identified by white insulation, gray insulation, white tape or gray tape.

If an insulated conductor is being used as a neutral for overhead service conductor, the insulation must be stripped from the last 18" of the neutral extended from the service head. A minimum of 4" of insulation must be left on the conductor extended from the service head.

Any equipment-grounding conductor, when required, shall be bare, or if insulated, it shall be identified with green tape, spiral wrapped a minimum of 3", or by tagging, or another permanent marking method per NEC requirements.

Four wire, 120/240-volt delta installations shall have the "wild phase" identified with an orange outer covering, tape, by tagging or another permanent marking method per NEC requirements at a point where OPPD will connect the service entrance.

When the customer provides the service conductors, they are to use tape; spiral wrapped a minimum of 3", to identify the phase.

For example:

- 120/208V, 3Ph, 4W: Black, Red, and Blue; or Red, Yellow, and Blue
- 277/480V, 3Ph, 4W: Brown, Purple, and Yellow.

An alternate acceptable marking method would be:

- 1 band of colored tape at each end for A phase.
- 2 bands of colored tape at each end for B phase.
- 3 bands of colored tape at each end for C phase.

The use of paint to identify insulated conductors is not acceptable identification, due to the impermanence of this method.

When multiple conductors per phase are needed for a service, the phase wires shall be identified by a permanent marking method, so the proper grouping can be determined.

3.06 FAULT CURRENT DUTY REQUIREMENT

The Customer's service equipment and other devices shall be adequate to withstand and interrupt the maximum available fault current. The minimum interrupting capability requirements for various types of customers are as follows:

A. One and Two Family Dwellings

All new 120/240-volt service equipment (0 to 200 amp) shall have a minimum interrupting rating of 10,000 amperes symmetrical current. All new 120/240-volt service equipment (320 amp) shall have an interrupting rating of 20,000 amperes symmetrical current. This is per NEC requirements.

B. Multi-Phase and Residential, Other Than One-, Two- or Three-Family Dwellings

Consult OPPD for maximum available fault current.

3.07 PHASE BALANCE REQUIREMENTS

Where a 4-wire grounded wye service is supplied, the Contractor must arrange to balance the entire load over all incoming phases, and must ensure that all electrical equipment will operate satisfactorily on the service voltage. Each phase conductor shall carry a minimum of 25% of the total kVA at maximum load conditions.

When existing services are changed to wye service, in addition to the above, the Contractor must also see that all fuses are removed from the neutral circuits and solid neutral connections are made at the main switch. This also should be done for every branch circuit.

3.08 LIGHTS ON POWER SERVICE

When a customer takes lighting service from a three-phase, 3-wire, ungrounded power service, they shall provide and install a double-wound transformer having separate primary and secondary windings or a dry-type transformer, and all other equipment necessary to supply such lighting service. The customer's transformers and equipment must be of types approved by OPPD Engineering. For this application, OPPD will not accept autotransformers.

3.09 SERVICE IMPAIRMENT

See Chapter 10 for customer's equipment and conditions that can impair the quality of service to other customers.

3.10 GROUNDING OF METER ENCLOSURE

Single Socket Metering

The customer is to provide and install a ground rod (supplemental electrode) at the metering location per current NEC requirements. A continuous copper ground wire of at least number 6 AWG is to be run from the metering enclosure to the ground rod.

Multiple Socket, Meter Centers, and Instrument Metering

The customer is to provide grounding in accordance with NEC requirements. The instrument transformer cabinet, and meter centers are to be solidly bonded to the neutral, and sockets to the equipment-grounding conductor.