



Starkville Electric Department

605 Highway 182 East – P.O. Box 927

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Underground Specifications for Customers

General Considerations

1. These specifications cover the general cases of underground installations. Specifics for other installations shall be determined by Starkville Electric Department (SED) Engineering Department.
2. After receipt by SED of four (4) sets of drawings, plans, or other documentation, large installations will require a minimum of two weeks of design and layout planning by SED Engineering Department.
3. All conduit routes shall be marked at a level of 12 to 18 inches below ground level with “electrical red” marking tape. The tape shall be imprinted with information indicating that a buried electric line is below. The standard marking tape is six inches wide. The tape shall be laid in a continuous manner throughout the conduit route.
4. Underground conduit materials are to be schedule 40 PVC, schedule 80 PVC or 13.5 SDR (minimum) polyethylene black pipe with red trisripe.
5. Riser conduits shall be schedule 80 PVC beginning at the below grade elbow.
6. On riser poles, the edge of the conduit nearest the pole shall be placed 8 inches from the riser pole and be aligned parallel with the pole. The riser conduit shall extend at least 30 inches above grade.
7. The bottom of the trench should be undisturbed, tamped, or relatively smooth earth. Where the excavation is in rock, the conduit should be laid on a protective layer of clean tamped backfill.
8. All trench backfill should be free of materials that may damage the conduit system.
9. A minimum of 12 inches of **horizontal** separation is required between electrical and all other underground utilities. If this is impractical and other utility conduits must be placed in the electrical trench, the electrical conduits must be encased in concrete and a minimum of 3 inches of concrete must separate the utilities.
10. The conduit system shall be airtight in order to facilitate conductor installation.

11. Pulling string, Greenlee Poly Line or equivalent, shall be installed in all conduits.
12. All conduit systems shall be inspected by the City of Starkville's Building Department prior to the placement of backfill. Multiple inspections may be required to assure compliance with these specifications. It is the responsibility of the Customer/Contractor to arrange for inspections with the Starkville Building Department.
13. SED will not accept ownership for conduit systems until cable is installed and energized. Problems encountered when installing cable such as obstacles in pipe, joint failures or collapsed pipe are the responsibility of the Customer/Contractor to repair.
14. Any deviations from this specification shall be at the discretion of SED Engineering Department.

Primary (High Voltage) Circuits

1. All primary conduits shall be buried such that the top of the conduit is a minimum of 48 inches below final grade.
2. A spare conduit is required to be installed with non-looped primary circuits.
3. A spare conduit is required with primary circuits installed under roadways.
4. Elbow material for primary circuits shall be non-ferrous. Fiberglass, such as that offered by Champion Fiberglass, Inc., is the preferred elbow material for primary circuits. Aluminum elbows will be allowed for primary circuits in lieu of the preferred fiberglass.
5. Elbow minimum radii for primary conduits
 - a. 2 inch conduit – 24 inch radii.
 - b. 3 inch conduit – 36 inch radii.
 - c. 4 inch conduit – 36 inch radii.

Single-Phase Primary Circuits

1. Single-phase primary conduits will normally be 2 inch conduits.
2. Single-phase circuits will normally consist of two conduits; one of the conduits will serve as the spare.

Three-Phase Primary Circuits

1. Most 200 amp three-phase primary circuits will require four 2 inch conduits. If future upgrade of the circuit is likely, 3 inch conduits will be required in order to accommodate the larger conductor.
2. 600 amp circuit designs will be done on a case by case basis by SED Engineering Department.
3. The contractor/owner is responsible for installing concrete pads for transformers. Specifications are available from SED Engineering Department.
4. Final design shall be approved by SED Engineering Department.

Permanent Secondary (Low Voltage) Circuits

1. All permanent secondary conduits shall be buried such that the top of the conduit is a minimum of 36 inches below final grade.
2. All conduits brought to a pole for riser purposes shall be placed 8 inches from the base of the pole.
3. The riser conduit shall extend at least 30 inches above grade.
4. Customer is responsible for providing 30 feet of Schedule 80 PVC and PVC weather head for the riser pole. SED will install this pipe and weather head.
5. Customer is responsible for supplying all conductors on the load side of the meter base.
6. Customer is responsible for installing all secondary wire. SED will supply the Customer installed secondary conductors to the line or source side of socket or bolted type meter bases.
7. If the DC resistance to ground and to the other conductors of customer installed secondary conductor is less than 10 meg-ohms at 1000 VDC test voltage, the customer is responsible for replacing the damaged conductor.
8. For SED supplied conductor, the Customer must measure the length of conductor required, provide the length and job name to SED Operations Center and pick up the conductor at the SED Operations Center at 605 Highway 182 East.
9. All underground socket type meter bases should be the side-wire type in which the incoming conductor directly accesses the source lugs and is not bent 90 degrees.
10. Elbow material shall be fiberglass, aluminum or rigid steel except the elbow under SED equipment which may be PVC.
11. Elbow minimum radii for secondary conduits
 - a. 1 inch conduit – 12 inch radii.
 - b. 2 inch conduit – 24 inch radii.
 - c. 3 inch conduit – 24 inch radii.
 - d. 4 inch conduit – 36 inch radii.

Single-Phase Secondary Circuits

1. Single-phase non-paralleled secondary circuit conduit size and usage.
 - a. Security Lighting – #6 Duplex Conductor – 1 inch conduit.
 - b. 100 Amp Service – #2 Triplex Conductor – 2 inch conduit.
 - c. 200 Amp Service – 4/0 Triplex Conductor – 3 inch conduit.
 - d. 400 Amp Service – 350 MCM Triplex Conductor – 4 inch conduit.
2. Separate conduits are required for circuits requiring parallel conductors.
 - a. Parallel 3 inch conduits are required for 600 amp single phase circuits terminating at a bolted type meter base.
3. The conduit sizes listed above are for service lengths not to exceed 250 feet. For longer services, consult SED Engineering for appropriate conduit size. This is due to voltage drop limitations.

Three-Phase Secondary Circuits

1. Three-phase non-paralleled secondary circuit conduit size shall be 4 inch.
2. Separate conduits are required for circuits requiring parallel conductors.
 - a. Parallel 4 inch conduits are required for 600 amp three phase circuits terminating at a bolted type meter base.

Temporary Services Supplied By Underground Facilities

Temporary Services Specifically Designed To Be Fed From Underground Power Facilities

1. Customer shall provide and install non-metallic conduit as specified herein from Customer Service Equipment to SED Supply Equipment that will supply power. SED Equipment will normally be a transformer or secondary pedestal.
2. Customer shall install properly secured Schedule 80 PVC from Service Equipment to a minimum depth of 12 inches below grade.
3. Customer shall install rigid non-metallic conduit, Schedule 40 or Schedule 80 PVC, to a distance of within 3 feet of SED Equipment. Conduit shall be a minimum of 12 inches below grade.
4. Customer shall affix a length of Carlon Carflex or equivalent non-metallic flexible conduit, using connectors designed for this purpose, to the end of the rigid non-metallic conduit. This flexible conduit shall be of sufficient length for SED installation into SED Equipment. The open end of the flexible conduit should be sealed to prevent entry of dirt or other foreign objects.
5. SED will install Customer supplied flexible conduit into SED facilities. Customer shall not disturb or gain entry into SED Equipment unless supervised by SED Operations Personnel.
6. SED will install SED supplied conductor (up to a maximum of 50 feet) from SED Equipment to Customer Service Equipment.
7. For 60 Amp and 100 Amp Single Phase Temporary Services, the conduit size shall be a minimum of 1.5 inches.

Temporary Services Designed To Be Fed From Overhead Power Facilities, But Used For Underground Power Facilities

1. Customer shall provide and install non-metallic conduit from a minimum height of 12 feet above grade to SED Supply Equipment that will supply power. SED Equipment will normally be a transformer or secondary pedestal
2. Customer shall install properly secured Schedule 80 PVC on the temporary service pole, adjacent to the weather head, from a minimum height of 12 feet above grade to a minimum depth of 12 inches below grade.
3. Customer shall install rigid non-metallic conduit, Schedule 40 or Schedule 80 PVC, to a distance of within 3 feet of SED Equipment. Conduit shall be a minimum of 12 inches below grade.
4. Customer shall affix a length of Carlon Carflex or equivalent non-metallic flexible conduit, using connectors designed for this purpose, to the end of the rigid non-metallic conduit. This flexible conduit shall be of sufficient length for SED installation into SED Equipment. The open end of the flexible conduit should be sealed to prevent entry of dirt or other foreign objects.
5. SED will install Customer supplied flexible conduit into SED facilities. Customer shall not disturb or gain entry into SED Equipment unless supervised by SED Operations Personnel.
6. SED will install SED supplied conductor (up to a maximum of 50 feet) from SED Equipment to Customer Service Equipment.
7. For 60 Amp and 100 Amp Single Phase Temporary Services, the conduit size shall be a minimum of 1.5 inches.