



TRENCHING AGREEMENT - REQUIREMENTS

WO # _____

The parties to this Agreement are ARIZONA PUBLIC SERVICE COMPANY, an Arizona corporation, hereinafter called "APS" and _____, hereinafter called "Customer". In consideration of the services to be performed by APS and Customer for construction of underground distribution facilities at _____, it is agreed as follows:

1. Customer shall provide trench, conduit, backfill and 3-phase transformer pads. Customer shall install conduit, backfill, 3-phase transformer pads and APS provided equipment pads/box pads, pull boxes, j-boxes and manholes. These items shall be provided and installed according to this agreement, the Installation Specifications (Sheet 2), the T&D Construction Standards and the attached drawings.
2. APS shall be responsible for inspecting all trench, conduit and equipment installations outlined in item 1 above. Customer shall provide easements for trench routes, equipment locations, and secure all necessary permits required by local municipalities and/or governing agencies.
3. Customer shall have property corners and other control points as requested, installed and flagged before APS will inspect the job. In addition, easements, alleys, streets and water retention areas adjacent to proposed trench route must be graded to within 6" of finished grade and grade stakes set before APS approves trench and begins construction. **Customer agrees to reimburse APS for any costs incurred in adjusting facilities due to changes in finished grade.**
4. Customer shall be responsible for having all existing underground facilities located and identified in the field before excavation begins.
5. APS approved and customer provided concrete caps shall be installed over conduit in trenches which cross or are located in drainage areas, washes, and other areas subject to erosion as shown on the attached drawings and as required by the APS inspector.
6. APS will not energize underground cables until the trench depth is verified, and backfill is compacted with a minimum of 24" cover for secondary/service and 36" cover for primary, unless otherwise shown on the attached drawings.
7. Customer shall restore, at Customer's expense, any damaged landscaping or property to its original condition, due to Customer provided trenching, backfilling or equipment installations.
8. APS reserves the right to inspect all and every part of Customer's work during or after completion of trenching, conduit installation, shading, backfilling, or compaction. If all of any part of the work has not been done according to APS specifications, Customer shall take corrective action at Customer's expense. APS, at Customer's request, may perform the corrective action at the Customer's expense. **Neither inspection of the work by APS nor lack of same, shall relieve Customer of the responsibility to provide and perform the work according to APS specifications. In all cases, the Customer is responsible for conduit system location, integrity and usefulness until APS conductors are energized.**
9. Where Customer provides the trenching and backfilling, Customer shall indemnify and save harmless APS and any other utility who is a joint trench occupant with APS, from any and all claims, losses, costs and damages incurred by the utilities, on account of injuries or damages to persons or property received or sustained by any persons, firms, or corporations by reason of any acts or omissions of Customer, it's agents or employees, or of any defects in the methods, materials, equipment, or tools used in the trenching or backfilling or any contingencies arising therefrom.
10. Customer shall use a properly licensed contractor when excavating in the public right-of-way or utility easement. Licensing information is available through the State Registrar of Contractors.
11. **The following documents are attached to and made a part of this agreement.**

<input type="checkbox"/> Construction drawings	<input type="checkbox"/> Three phase transformer pad and conduit requirements
<input type="checkbox"/> Customer trenching diagram	<input type="checkbox"/> Section 500 and/or 600 of APS' Electric Service Requirements.
<input type="checkbox"/> Duplex transformer requirements	<input type="checkbox"/> T&D Construction Standards _____
<input type="checkbox"/> Equipment box pad details	<input type="checkbox"/> Other _____
12. **Customer shall review this document, and the Installation Specifications (Sheet 2) with their trenching contractor before work begins. The trenching contractor shall maintain a copy of these documents at the job site for review.**
13. **For inspection call the APS Inspector two (2) working days prior to start of work:**
Name: _____ **Telephone:** _____
14. **Contact APS representative shown below for project scheduling and coordination.**

This agreement has been executed by the duly authorized representatives of the parties.

ARIZONA PUBLIC SERVICE

CUSTOMER

Signature: _____
 Name: _____
 Title: _____
 Date Signed: _____
 Mailing Address: _____
 City/State/Zip: _____
 Telephone: _____

Signature: _____
 Name: _____
 Title: _____
 Date Signed: _____
 Mailing Address: _____
 City/State/Zip: _____
 Telephone: _____



TRENCHING AGREEMENT - INSTALLATION SPECIFICATIONS

1. All primary, secondary, and service conductors shall be installed in PVC conduit unless otherwise specified on the drawings..
2. Rigid conduit is defined as PVC. Sweeps shall have one belled end and one plain end. Both ends shall be internally chamfered.
3. Customer will provide conduit which meets the following specifications:

APPLICATION	ACCEPTABLE PRODUCT MATERIAL (Note 5)	CONDUIT MARKING REQUIREMENTS
Straight Conduit (See Notes 1 & 2)	PVC DB-120 (Modulus 400,000 PSI)	Mfg. Name, nom. size, 90° C, Type (i.e. DB-120), ASTM F-512, PVC 12254B or PVC 12254B AZ2 or PVC 12254B AZR
	PVC SCH 40 or SCH 80	Mfg. Name, nom. size, PVC SCH 40 or SCH 80, NEMA TC-2
Bends, Sweeps and Elbows (See Note 3)	PVC SCH 40 or SCH 80 (See Note 4)	Mfg. Name, nom. size, PVC SCH 40 or SCH 80, NEMA TC-2 radius, degree of curvature
Fittings	PVC SCH 40 or SCH 80	Mfg. Name, nom. size, PVC SCH 40 or SCH 80, NEMA TC-2 (marking may be on packing material)
NOTES: 1. 12254B minimum cell classification per ASTM D-1748. 2. PVC DB-100, modulus 400,000 PSI, ASTM F-512 is suitable for 4" and 5" diameters. 3. 4" diameter & under-SCH 40 NEMA TC-2; 5" diameter & larger-SCH 80 NEMA TC-2, 60" radius. 4. Sweeps at house end shall be SCH 80. 5. All PVC shall be gray.		

4. When installing PVC conduit apply purple primer/cleaner ASTM F656 to all PVC joints prior to applying a coating of gray PVC to PVC cement ASTM D2564.
5. Unless otherwise specified, sweeps/bends shall be 24" minimum radius for secondary/service and 36" minimum radius for primary. Five inch conduit requires a 60" minimum radius sweep.
6. The conduit sweeps at device locations shall extend a minimum of 1-1/2" and a maximum of 2" above the top of the pad. Trench depth shall be adjusted to obtain the correct extension (conduit sweeps shall not be cut). Service conduit stubout locations shall be identified by lot number using a permanent black ink marker.
7. Customer shall provide and install 3 phase transformer pads, as well as install APS provided equipment pads/box pads, pull boxes, j-boxes and manholes per the attached Work Order drawings. Conduit stubs shall be positioned in equipment as specified on the attached drawings or details. APS will provide ground rods or ground wire. The Customer shall install the ground rod to within 6" of finished grade at time of conduit installation at each equipment location. Alternate #6 copper ground wire (where specified on the Work Order drawings) shall be buried a minimum of 18" deep. Working clearance shall be provided for all equipment per APS Standard 1278 and 1279.
8. Minimum 90 percent soil compaction is required at all equipment locations (compacted area to extend 1' out from equipment). A minimum soil compaction of 85 percent is required at all other locations. In the event of an inconsistency or conflict with other agency specifications, the more stringent specification shall apply. All equipment locations shall be backfilled with select (1-1/2" maximum diameter rock) material, compacted with mechanical tamping machine and leveled to finished grade. The use of a mechanical tamping machine is not required where 1-sack slurry (1 sack of cement per cubic yard of sand or ABC) is utilized for backfill. Equipment locations shall maintain the minimum clear working areas specified in APS T&D Constructions Standards.
9. Concrete caps shall consist of 3000 psi concrete at 28 days, 4 inches thick and 2 inches minimum on all sides.
10. Shading over all APS conduit shall be a minimum of 12" regardless of soil conditions. The 6" immediately above the conduit shall contain no rocks larger than 1-1/2" in diameter. The next 6" lift shall contain no rocks larger than 3" in diameter. The remaining backfill may be trench spoils. Shading is not required when 1-sack slurry backfill (1-sack of cement per cubic yard of sand or ABC) is utilized.
11. The APS Inspector shall approve trench depth changes due to obstructions encountered while digging.
12. See T&D Construction Standards and trench details on the construction sketch, for minimum separations to other utilities.
13. Crossings require a minimum of 12" vertical separation between APS facilities and other utilities, including water and sewer taps.
 Exceptions: 1. If crossing is with a gas service line, this separation may be reduced to 6" if the gas service line is sleeved in a rigid pipe. The sleeve shall extend 12" beyond APS conduits, measured perpendicular from the sidewall of the nearest electric conduit/cable. 2. A 2" vertical crossing separation (above or below) is allowed between APS and communications at equipment locations.
14. If APS facilities are joint trench with natural gas facilities, natural gas lines shall be installed with a minimum 12" vertical separation, outside wall to outside wall, above all APS conduits. In addition, natural gas lines shall maintain a minimum 12" horizontal separation from the outside edge of all APS equipment pads to the outside wall of the gas lines.
15. The conduit system shall be proven after backfill is completed. An APS provided pull line shall be installed by the customer (except in service stubs). All empty conduit ends shall be plugged at equipment locations. APS shall provide and the customer shall install expandable plugs in switching cabinets, in other equipment use universal plugs. Future conduit stubouts shall be capped and a locate marker installed. Tape is not an acceptable substitute for caps or plugs
16. Customer shall excavate by hand within two (2) feet of existing energized APS equipment. Contact the APS Inspector prior to digging within ten (10) feet of a pole or five (5) feet of a down guy rod unless the excavation is two (2) feet or less in depth or specified on the Work Order drawings. All trench spoils shall be placed a minimum of two (2) feet from the trench wall.
17. Refer all questions to the APS Inspector.