



## TRENCHING AGREEMENT – REQUIREMENTS

The parties to this Agreement are ARIZONA PUBLIC SERVICE COMPANY, an Arizona corporation, hereinafter called "APS" and City of Yuma, hereinafter called "Applicant". In consideration of the services to be performed by APS and Applicant for construction of underground distribution facilities at 1700 E. 8th Street, it is agreed as follows:

1. Applicant shall provide trench, conduit, backfill and 3-phase transformer pads. Applicant 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 Trenching Installation Specifications (Attachment), the T&D Construction Standards, Electric Service Requirements Manual (ESRM), Arizona Bluestake Laws and the attached drawings.
2. **Applicant shall use a properly licensed contractor when excavating in the public right-of-way, within a utility easement, or around APS equipment. Contractor licenses may be confirmed through the State Registrar of Contractors.**
3. APS shall be responsible for inspecting all trench, conduit and equipment installations outlined in item 1 above. Applicant shall provide easements for trench routes, equipment locations, and secure all necessary permits required by local municipalities and/or governing agencies. Applicant shall also ensure that APS has vehicular access to facilities at all reasonable times.
4. Easements, alleys, streets and water retention areas adjacent to proposed trench route must be graded to within 6 inches of finished grade, and grade stakes set, before APS approves trench and begins construction. **Applicant agrees to reimburse APS for any costs incurred in adjusting facilities due to changes in finished grade.**
5. Applicant shall have property corners, grade stakes, control points, or blue tops installed and flagged (as requested) set adjacent to trenches and equipment locations before APS will begin survey and prior to APS final inspections being completed.
6. Applicant shall be responsible for having all existing underground facilities located and identified in the field before excavation begins. **Contact Arizona Bluestake 602-263-1100 or dial 811.** Toll Free 1-800-782-5348. For a complete statement of the law regarding location of underground facilities, refer to Arizona Revised Statutes, Chapter 2, Article 6.3, Sections 40-360.21 through 40-360.32 or contact the Arizona Corporation Commission at (602)-262-5601 for interpretations, enforcement and educational presentations.
7. APS approved and Applicant 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 designated APS Representative.
8. APS will not energize underground cable until the trench depth is verified and backfill is compacted with a minimum of 24 inches cover for secondary/service and 36 inches cover for primary, unless otherwise shown on the attached drawings.
9. Applicant shall restore, at Applicant's expense, any damaged landscaping or property to its original condition, due to Applicant provided trenching, backfilling or equipment installations.
10. APS reserves the right to inspect all or any part of Applicant's work during or after completion of trenching, conduit installation, shading, backfilling, or compaction. If all or any part of the work has not been done according to APS specifications, Applicant shall take corrective action at Applicant's expense. APS, at Applicant's request, may perform the corrective action at the Applicant's expense. Neither inspection of the work by APS nor lack of an inspection shall relieve Applicant of the responsibility to provide and perform the work according to APS specifications. In all cases, the Applicant is responsible for the conduit system location and the condition of the conduit; including, trench settling and compaction, integrity, and usefulness until APS power lines have been installed and energized. Once the lines are energized, APS assumes responsibility for its underground service lines up to the point of delivery and the underground conduit system up to the connection to the customer owned underground conduit riser. The

customer will continue to be responsible for maintenance of any risers, raceways and/or termination cabinets necessary

11. Where Applicant provides the trench and backfill, Applicant shall indemnify or cause its contractors to indemnify and save harmless 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 to the extent of any negligent acts or omissions of Applicant, its agents or employees, or of any defects in the methods, materials, used in the trenching or backfilling.
12. The following documents are attached to and made a part of this agreement:
 


<input checked="" type="checkbox"/> Construction drawings	<input checked="" type="checkbox"/> Three-phase transformer pad and conduit requirements
<input checked="" type="checkbox"/> Applicant 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 _____
13. **Applicant shall review this document and the Trenching Installation Specifications (Attachment) with their trenching contractor before work begins. The trenching contractor shall maintain a copy of these documents at the job site for review.**
14. **For inspection call the APS Representative two (2) working days prior to start of work:**  
 Name: JP Mahon Telephone: 928-336-9820
15. **If Applicant provides survey of APS facilities, Applicant is required to provide As-Built drawings to APS, in accordance with APS Land Department Survey As-Built Requirements. A copy of these requirements may be found on the APS Construction Corner website: <http://www.aps.com/library/COMMUNICATIONS/SurveyAsbuiltRequirements.pdf> or by calling APS Land Department at 602-371-6298 if website is unavailable.**
16. **Contact APS representative for project scheduling and coordination.**
17. **Signatory on the agreement must be an officer of the company or a representative who has authority to bind the entity signing the contract.**
18. Applicant shall request a pre-construction meeting with APS Representative and Public Safety Department personnel to discuss trenching safety precautions prior to excavating near overhead lines or through existing utility easements where overhead lines exist.
19. **Refer all questions to the designated APS Representative.**

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

#### APS Representative

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

#### Applicant

Signature:   
 Name: Timothy A. Lawrence  
 Title: Engineering Project Manager  
 Date Signed: 1/25/17  
 Mailing Address: 155 W.14th Street  
 City/State/Zip: Yuma, AZ 85364  
 Telephone: (928) 373-4517



## TRENCHING 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. Applicant will provide conduit which meets the following specifications:

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 AZZ or PVC 12254B AZR
	PVC SCH 40 or SCH 80	Mfg. Name, nom. Size, 90° C, PVC SC 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, 90° C, PVC SC 40 or SCH 80, NEMA TC-2 radius, degree of curvature
Fittings	PVC SCH 40 or SCH 80	Mfg. Name, nom. Size, 90° C, PVC SC 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 inch and 5 inch conduit.		
3. 4" dia. & under-SCH 40 NEMA TC-2; 5" diameter & larger-SCH80 NEMA TC-2, 60" radius		
4. Sweeps at SES shall be SCH80, Reference APS ESRM, Section 500.		
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 inch minimum radius for secondary/service and 36" radius for primary. Five inch diameter conduit requires a 60" minimum radius for sweeps and bends.
6. The conduit sweeps at device location shall extend a minimum of 1-1/2 inches and a maximum of 2 inches above the top of the pad. Trench depth shall be adjusted to obtain the correct extension (conduit sweeps shall not be cut.) Conduits that are stubbed out of any component, manhole or pullbox shall be tagged to indicate where the stubbed end is located. Attach tag to the expandable plug. Refer to APS Standard 1215, Section 7.0 for proper identification method.
7. Applicant shall provide and install 3 phase transformer pads, as well as install APS provided equipment pads/box pads, pull boxes, j-boxes and manholes in accordance with APS Specifications and 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 Applicant shall install the ground rod to within 6 inches of finished grade at time of conduit installation at each equipment location. Ground rods shall not be cut. Alternate #6 copper ground wire (where specified on the Work Order drawings) shall be buried a minimum of 18 inches 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 foot 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 inches 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 1/2-sack slurry (1/2 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 Construction 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 inches regardless of soil conditions. The 6 inches immediately above the conduit shall contain no rocks larger than 1-1/2 inches in diameter. The next 6 inches lift shall contain no rocks larger than 3 inch diameter. The remaining backfill may be trench spoils. Shading is not required when 1/2-sack slurry backfill (1/2-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 horizontal and vertical separations to other utilities at crossings or in Joint Use trench situations.
13. Crossings require a minimum of 12 inches vertical clearance 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 inches if the gas service line is sleeved in a rigid pipe. The sleeve shall extend 12 inches beyond APS conduits, measured perpendicular from the sidewall of the nearest electric conduit/cable. 2) A 2 inch 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 of 12 inches vertical separation, outside wall to outside wall, above all APS conduits. In addition, natural gas lines shall maintain a minimum 12 inches 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 Applicant (except in service stubs.) All empty conduit ends shall be plugged at equipment locations. APS shall provide and the Applicant shall install expandable plugs at all equipment locations. Future conduit stub-outs shall be capped and a locate marker installed. Tape is not an acceptable substitute for caps or plugs.
16. Applicant 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.