

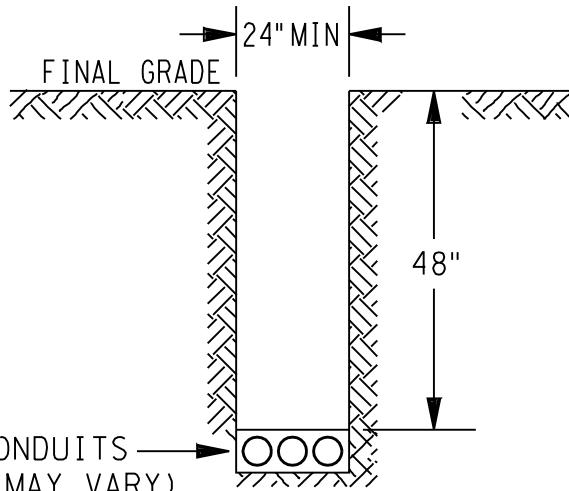
# TRENCHING AND CONDUIT

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<p>Electric Service Specifications</p>  <p><i>PROPRIETARY MATERIAL</i></p>	<p><b>TRENCHING AND CONDUIT INDEX</b></p>	<p style="text-align: right;">ESS Index-6.DOC</p> <p>ISSUE DATE: 11-15-06</p> <p>REV. DATE: 8-25-09</p> <p>APPROVAL: DJP</p> <p style="text-align: center; font-weight: bold;">6-i</p>
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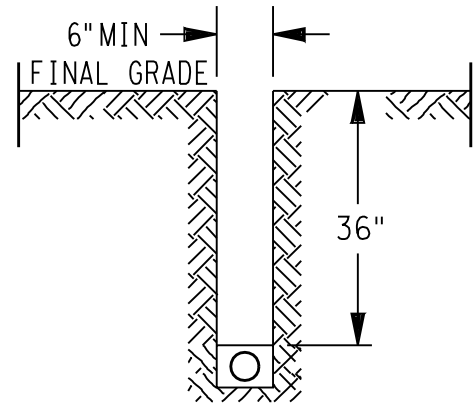
# EXCAVATION

STANDARD  
PRIMARY/FEEDER



TOP CONDUITS  
(NUMBER MAY VARY)


STANDARD SECONDARY/SERVICE  
OR STREET LIGHT WHEN OUTSIDE  
P. U. E. OR R. O. W.



48" MINIMUM COVER WHEN  
USED IN P. U. E. OR R. O. W.

## NOTES

1. The bottom of the trench should be undisturbed, tamped or relatively smooth earth, free of sharp rocks (See page 11-6, item D). Where the excavation is in rock, the bottom of the trench shall have a protective layer of clean, level, tamped backfill or sand.
2. Excavation backfill within utility easements shall be compacted per page 11-17.
3. The minimum cover required for non-concrete encased conduits is 48" in P.U.E. or R.O.W.; secondary/service conduits is 36" (48" in P.U.E.) when outside P.U.E. or R.O.W.
4. Additional depths may be required when other facilities are encountered.
5. Customer to provide and install trench and conduit facilities to adjacent property line, plus two feet (as required by SRP Distribution Design).

<p>ELECTRIC SERVICE SPECIFICATIONS</p>  <p>PROPRIETARY MATERIAL</p>	<p><b>TRENCHING AND CONDUIT EXCAVATION</b></p>	<p>8509E91.DGN</p> <p>ISSUE DATE: 04/15/86</p> <p>REV. DATE: 06/02/08</p> <p>APPROVAL: MLD</p> <p style="text-align: center;">6-1</p>
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UNDERGROUND CONDUIT SIZE REQUIRED FOR SERVICE ENTRANCE SECTIONS SRP-OWNED CONDUCTOR		
Service Entrance Ampacity	1 Ø, 3-Wire	3 Ø, 4-Wire
100/125	1, 2 1/2"	1, 2 1/2"
200/225	1, 2 1/2"	1, 2 1/2"
400	1, 4" **	1, 4"
600	2, 4" ****	2, 4"
800	***	3, 4"
1,000	—	4, 4"
1,200	—	5, 4"
1,600	—	7, 4"
2,000	—	10, 4"
2,500	—	13, 4"
3,000	—	18, 4"
3,600	—	25.4"
4,000 *	—	29, 4"


\* 277/480 volt is an exception. Maximum size is 3,600 amps, 25 – 4" required.

\*\* 2 1/2" or 3" conduit may be used for wall mounted residential single meter installations, as specified by SRP. Maximum cable size is 350 MCM.

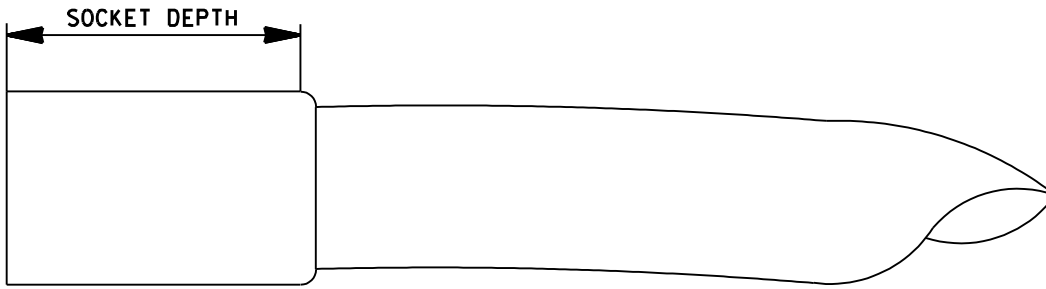
\*\*\* For service to an apartment complex w/500 MCM triplex, use 2 - 4".

\*\*\*\* 2-3" conduit may be utilized on a residential section using 350MCM AATX.

1. The conduit sizes and combinations shown for each service entrance size are the only ones that SRP will accept. Other sizes or combinations are not acceptable.
2. Conduit provided by the Customer must meet the following specifications:
  - A. For straight lengths: PVC, DB-120, 400,000 p.s.i. minimum modulus (500,000 not acceptable), rated for 90° C cable, meeting the requirements of ASTM F512, latest edition.
  - B. For elbows and fittings: EPC-40-PVC (schedule 40), rated for 90° C cable, meeting the requirements of NEMA TC-2, latest edition.
  - C. If the Customer proposes an alternate conduit, it shall be EPC-40-PVC (schedule 40), as defined by NEMA TC-2, latest edition.
  - D. Conduit risers above ground (e.g. meter risers) shall be rigid or intermediate metal, or approved fiberglass, and installed per page 3-16 & 3-17, notes 2, 3 and 4.
  - E. Steel conduit may be used instead of PVC with the requirement that one conductor of each phase and the neutral must be installed in each conduit used. Steel conduit shall be rigid or intermediate metal and installed per page 3-16 & 3-17, notes 2, 3 and 4. Entire run must be steel, not intermixed with PVC. (This does not include risers.)
  - F. The conduit dimensions must be consistent within a run – no reducers. A reducer is allowed at the meter base with prior approval from SRP Design and/or Inspection (see pg. 6-4).
3. The maximum change of direction in any plane between lengths of straight rigid conduit without elbows shall be limited to 5°.
4. Service, streetlight and secondary conduit must contain a continuous length of mule tape, pre-lubed, 2,500 lb. tensile strength from source to load end.
5. If unable to install cable, conduit shall be repaired by installer. Conduits will be accepted following installation of cable.
6. The number of conduits in above table is based on 100% of the SES ampacity, assuming 80% load factor. If load factor is greater, contact Distribution Design.
7. 13 or more service conduits must be racked and encased, 1" clear space surface-to-surface between conduit. See pg. 11-16 and 11-17 for backfilling requirements.
8. Do not use metal material to tie or rack conduits.
9. Customer's conduit stub-up at the service entrance section to have end bell fittings per Sizes & Specifications, Belled Ends and Fittings.
10. For 4160V and 12470V services, install 3 – 3" conduits.

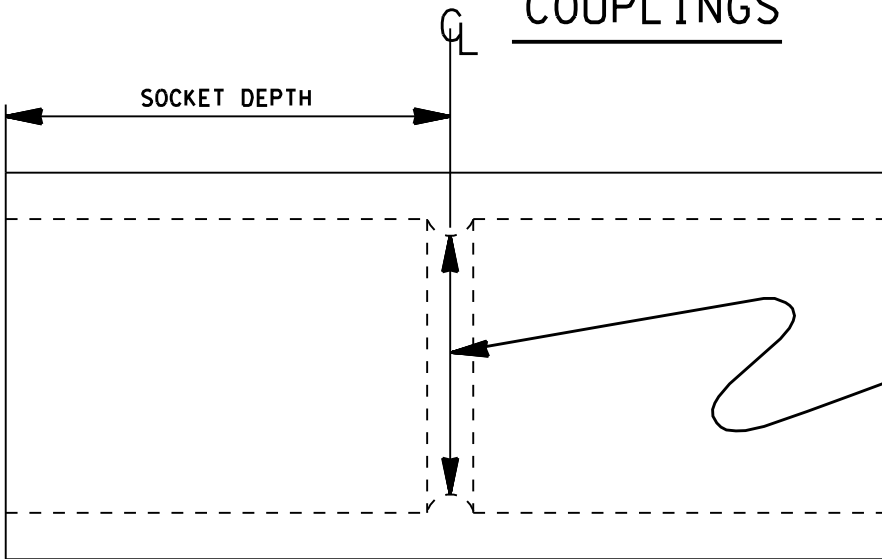
ESS 6-02.DOC	<b>TRENCHING AND CONDUIT CONDUIT SIZES &amp; SPECIFICATIONS UNDERGROUND</b>	<b>Electric Service Specifications</b>  <b>PROPRIETARY MATERIAL</b>
ISSUE DATE: 09-30-90		
REV. DATE: 07-10-08		
APPROVAL: MLD		
<b>6-2</b>		

# PVC STRAIGHT AND ELBOW BELLED END



CONDUIT DIAMETER	MINIMUM SOCKET DEPTH
2 1/2"	2 3/8"
3"	2 7/8"

## COUPLINGS

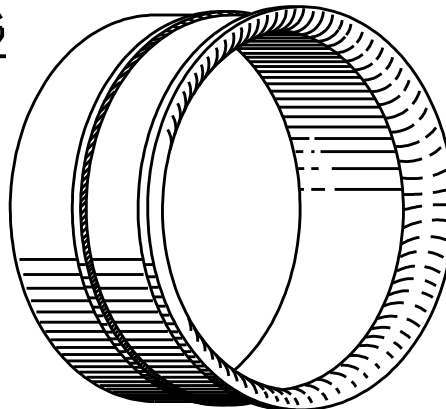


SHALL NOT BE LESS THAN THE INSIDE DIAMETER OF THE DB120 STRAIGHT CONDUIT IT CONNECTS.

CONDUIT COUPLING DIAMETER	COUPLING SRP STOCK CODE
2 1/2"	64-5355
3"	64-5360

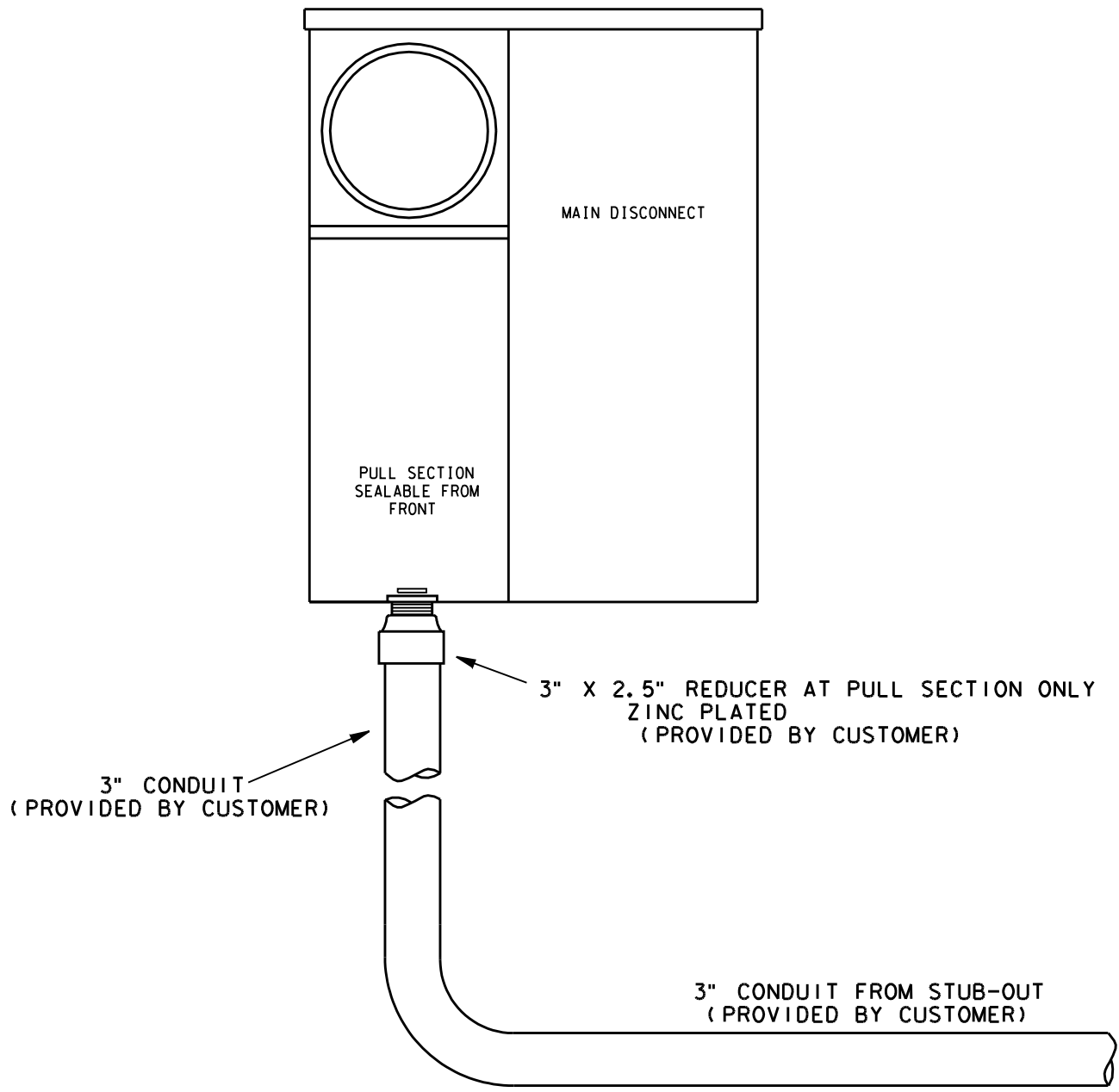
SOCKET DEPTH SHALL BE 2 1/2" MINIMUM FOR ALL SIZES OF CONDUIT PER TRI-UTILITY CONDUIT SPEC 7.8

## END BELL FITTING

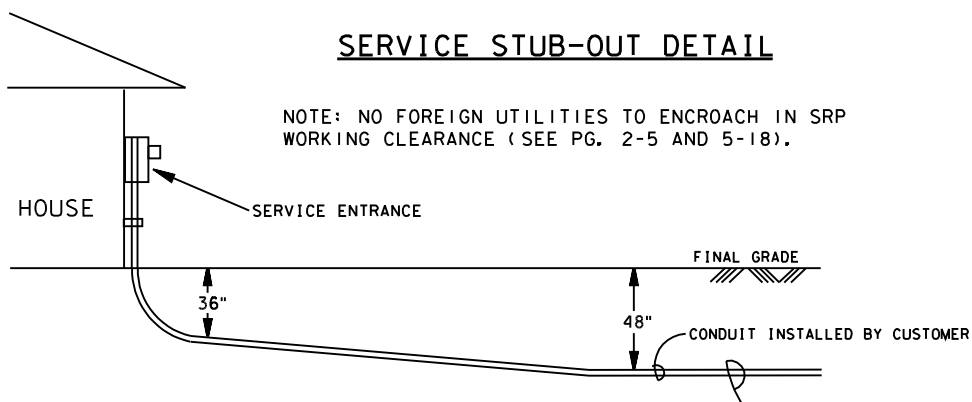


CONDUIT STUB UP MUST BE SPACED MINIMUM 3/4" APART TO INSTALL END BELL FITTING.

<p>ELECTRIC SERVICE SPECIFICATIONS</p>  <p>PROPRIETARY MATERIAL</p>	<p>TRENCHING AND CONDUIT SIZES &amp; SPECIFICATIONS BELLED ENDS AND FITTINGS</p>	8509E127. DGN
		ISSUE DATE: 03/13/01
		REV. DATE: 11/17/06
		APPROVAL:
		6-3




**SERVICE STUB-OUT DETAIL**

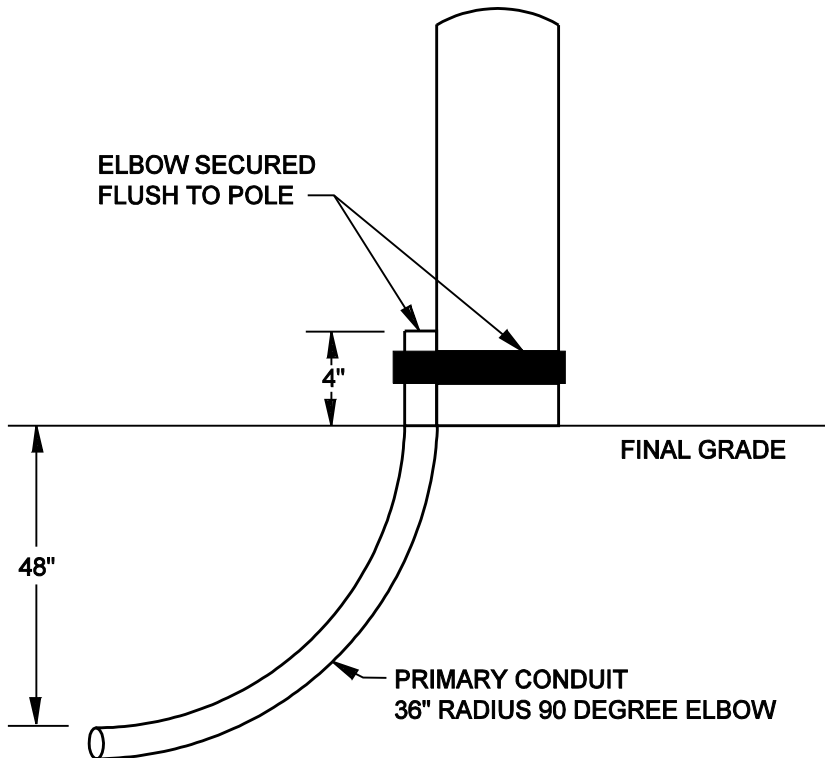
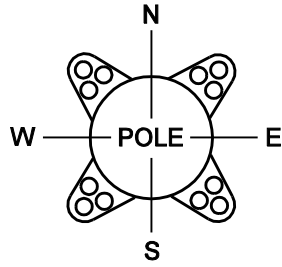


NOTE: NO FOREIGN UTILITIES TO ENCROACH IN SRP WORKING CLEARANCE (SEE PG. 2-5 AND 5-18).

TIE CONDUIT TO STUB-OUT. ABSOLUTELY NO TYPE OF REDUCER IS ALLOWED EXCEPT AT PULL SECTION OF METER PANEL.

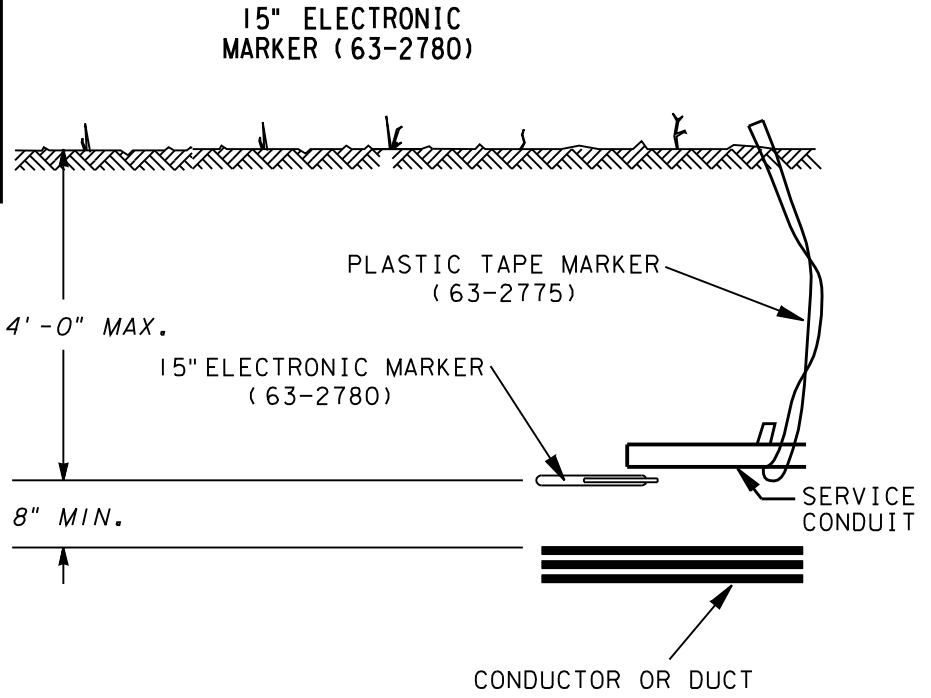
8509E130, DGN	REFORMAT	ELECTRIC SERVICE SPECIFICATIONS
ISSUE DATE: 03/13/01	TRENCHING AND CONDUIT SIZES & SPECIFICATIONS	
REV. DATE: 11/17/06	REDUCER AT PULL SECTION	 <b>SRP</b> <sup>®</sup>
APPROVAL: MLD		
6-4		PROPRIETARY MATERIAL

PLAN VIEW POLE RISER



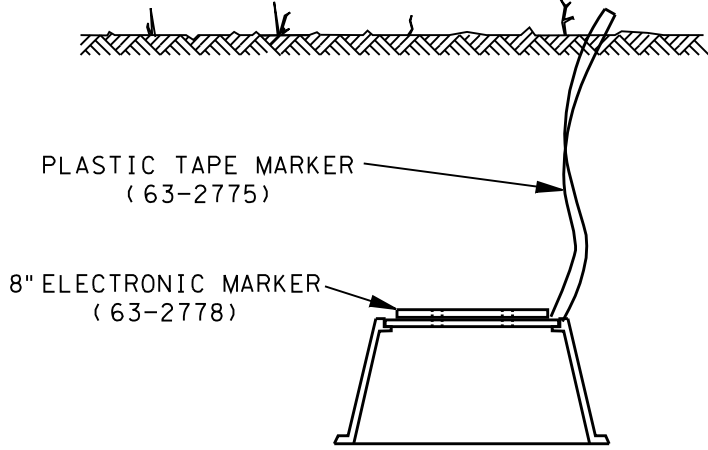
	REV. REFORMAT	ISSUE DATE: 09/01/09
	TRENCHING AND CONDUIT POLE RISER ELBOW AND LOCATION	REV. DATE: 0 APPROVAL: W.LARAMIE
	6-5	8509E310 .DGN


THIS BURIED ELECTRONIC MARKER IS TO BE USED FOR MARKING THE LOCATION OF CONNECTION POINTS, T-TAPS, MOLE ASSEMBLIES, CONDUIT STUB-OUTS OR OTHER LOCATIONS WHICH MAY NEED TO BE LOCATED AT SOME TIME IN THE FUTURE.

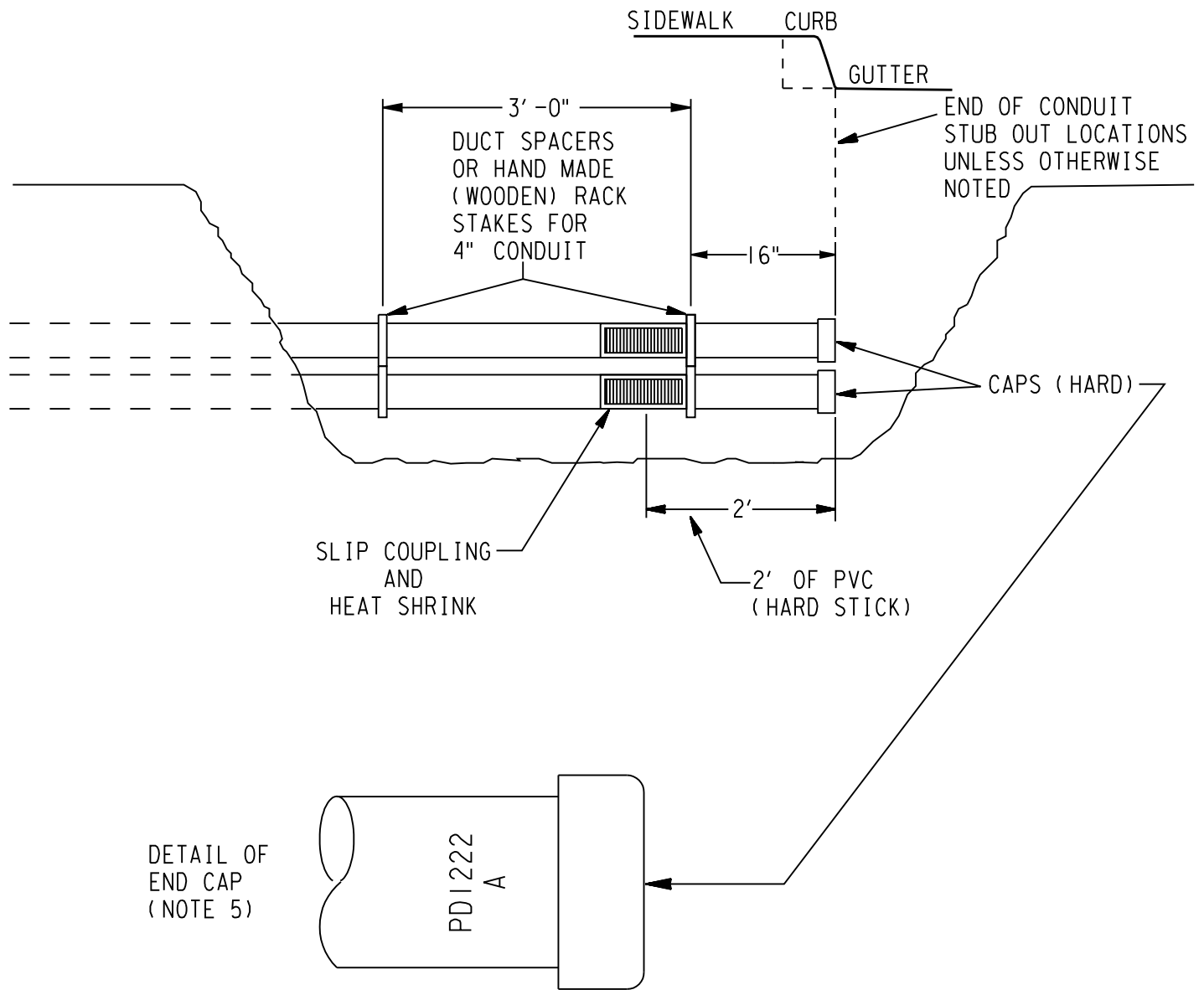


**NOTES**

1. BURY AT LEAST 8" ABOVE ENERGIZED CONDUCTOR. CLOSER DISTANCE WILL CAUSE THE MARKER TO BE INEFFECTIVE AT 4 FOOT OR GREATER DEPTH.
2. THE MARKER IS TO BE BURIED FLAT AND LEVEL, BALL TYPES ARE SELF-LEVELING.
3. COVER WITH AT LEAST 4" OF SELECT BACK FILL TO PREVENT ACCIDENTAL MOVEMENT OR DAMAGE DURING BACK FILL. (FOR SERVICE CONDUIT, IT MAY BE IN BOTTOM OF TRENCH).
4. CARE SHOULD BE TAKEN TO INSURE THAT CABLE, TIN FOIL, OR OTHER EXTRANEIOUS METAL DOES NOT GET DISCARDED INTO THE TRENCH PRIOR TO BACK FILL. METAL IN CLOSE PROXIMITY WILL RENDER THE MARKER INEFFECTIVE.
5. FOR PERMANENT INSTALLATION WITH A BURIED JUNCTION BOX: DRILL 2 HOLES IN LID AND SECURE MARKER TO LID WITH NYLON CABLE TIE.




<p>Electric Service Specifications</p>  <p>PROPRIETARY MATERIAL</p>	REV. REFORMAT	ISSUE DATE: 09/01/09
	<p>TRENCHING AND CONDUIT</p> <p>PLACEMENT STANDARD FOR BURIED ELECTRONIC MARKER</p>	
	6-6	<p>REV. DATE: 0</p> <p>APPROVAL: W. LARAMIE</p> <p>8509E308 .DGN</p>



## NOTES

1. SPOOL DUCT STUB-OUTS SHALL BE INSTALLED STRAIGHT AND AT REQUIRED SPECIFIED DEPTH.
2. TWO OR MORE SPOOL DUCTS SHALL HAVE DUCT SPACERS INSTALLED. WHERE THREE FEET OR MORE OF SPOOLED DUCT IS EXPOSED IN BORE PIT, TWO SETS OF DUCT SPACERS SHALL BE INSTALLED AS SHOWN AND ARRANGED WITH SPECIFIED CONDUIT RACKING.
3. SPOOL DUCT STUB-OUTS SHALL BE CAPPED WITH PVC CONDUIT CAPS, BUT NOT GLUED.
4. STUB-OUT PIT MAY BE BACK FILLED IF REQUIRED, BUT MUST HAVE ELECTRONIC MARKER AND A RED FLAG OVER END OF CONDUIT.
5. WITH BLACK FELT TIP PEN, WRITE THE DEVICE CONDUIT IS FROM AND PHASE.

<p>Electric Service Specifications</p>  <p>PROPRIETARY MATERIAL</p>	REV. REFORMAT	ISSUE DATE: 09/01/09	
	<p><b>TRENCHING AND CONDUIT SPOOLED DUCT AND CONDUIT STUB-OUTS</b></p>		REV. DATE: 0
	6-7		APPROVAL: W.LARAMIE
		8509E307.DGN	