

PART 7

COMMUNICATIONS, LIGHTING, TRAFFIC CONTROL, POWER

COMMUNICATIONS

LIGHTING

Street Lighting

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TRAFFIC CONTROL

Light Pole Standards

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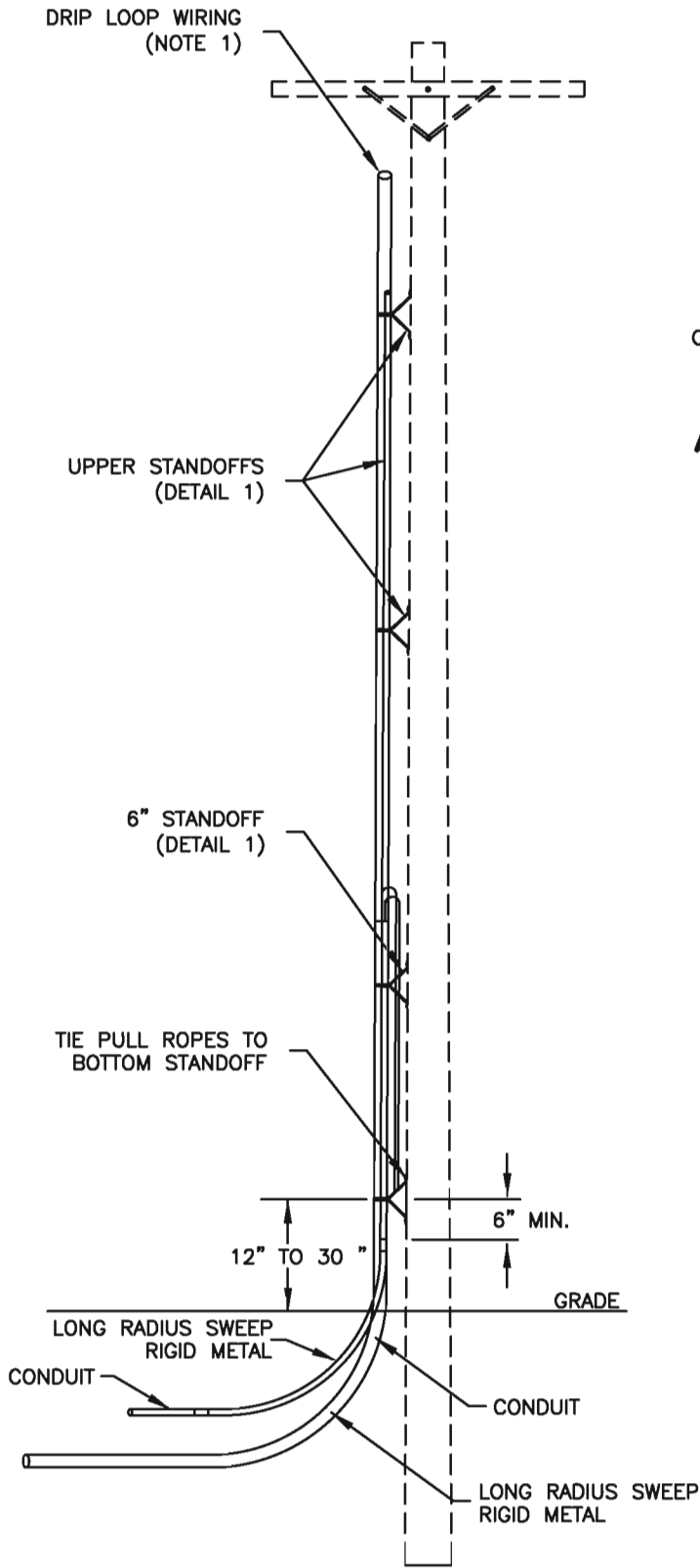
Speed Humps

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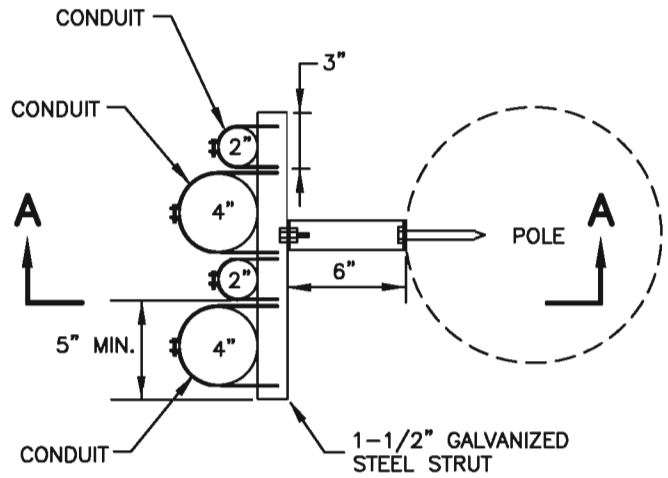
POWER

Riser

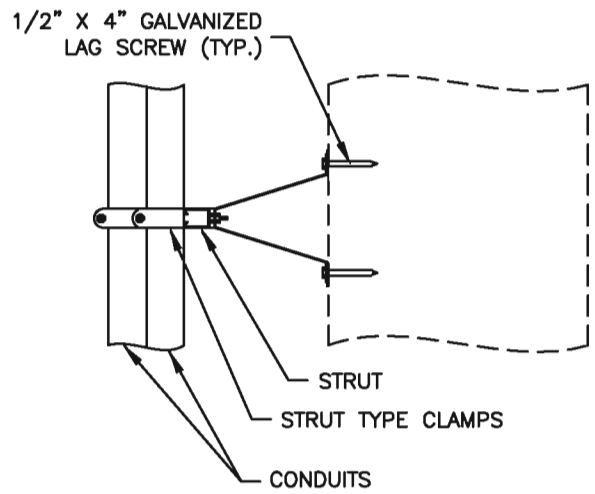
1. CONDUIT: Galvanized.
2. ACCESSORIES: Galvanized steel bolts, nuts, washers, nails, etc., APWA Section 05 05 23
3. DRIP LOOP WIRING: For risers where CONTRACTOR is required to pull low voltage cable, (120/140 volt, 3 or 4 wires) extend enough wire from the conduit so OWNER can attach it to the 2' drip loop.



ELEVATION



PLAN



SECTION A-A

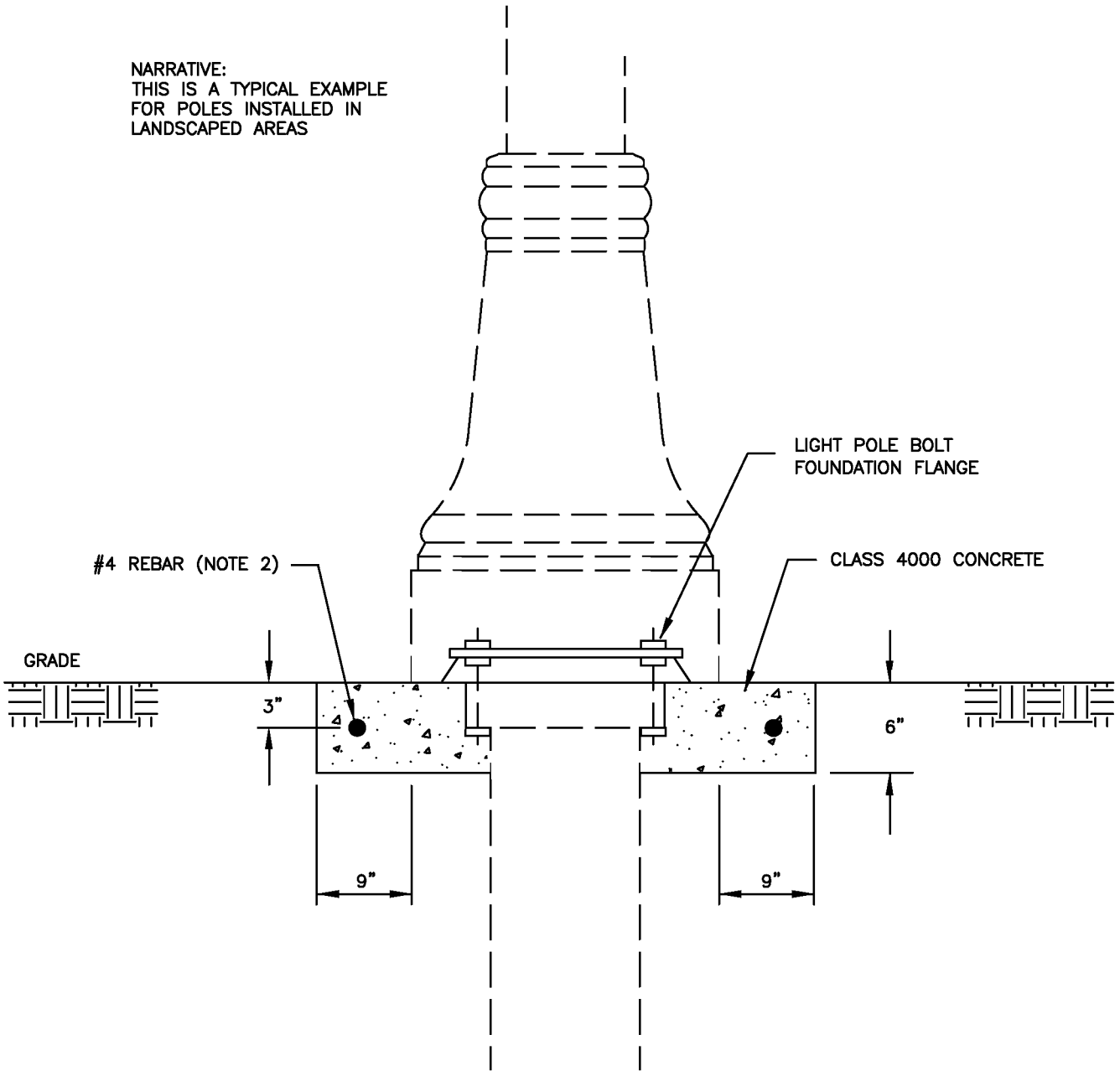
DETAIL 1

NARRATIVE:
THIS IS A TYPICAL EXAMPLE.
INSTALLATION VARIES ACCORDING
TO THE SERVICE PROVIDED

Collar for street light pole

1. BACKFILL: 95 percent or greater density.
2. REINFORCEMENT: ASTM A 615, grade 60, hoop steel.

NARRATIVE:
THIS IS A TYPICAL EXAMPLE
FOR POLES INSTALLED IN
LANDSCAPED AREAS

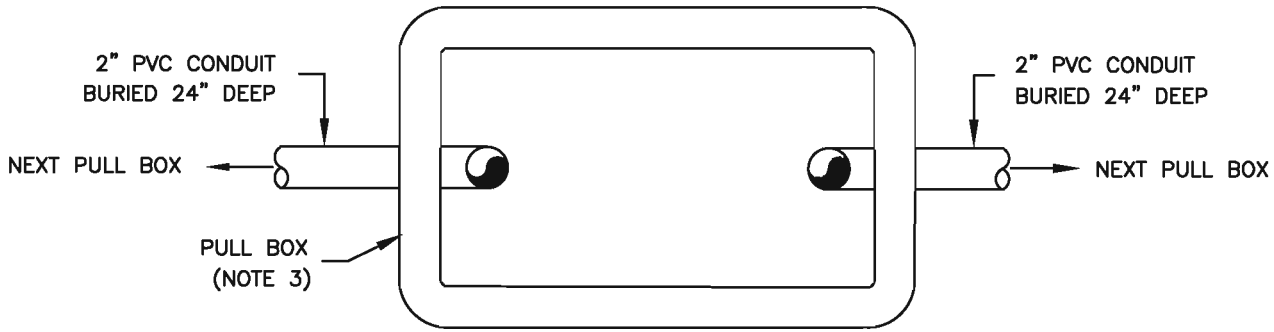


Collar for street light pole

Plan No.
730

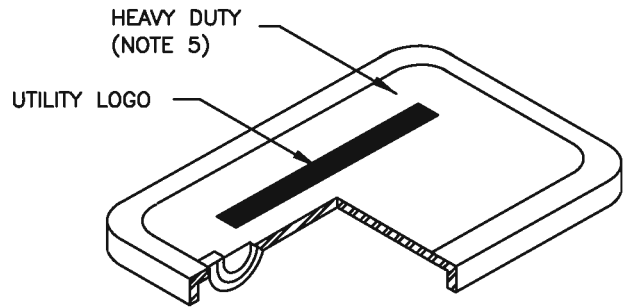
Pull box

1. BACKFILL: 95 percent or greater density.
2. REINFORCEMENT: ASTM A 615, grade 60, steel.
3. CONCRETE: Class 4000 per APWA Section 03 30 04.
4. COATINGS: Coat all metal parts with asphaltum paint.
5. CASTING: ASTM A 48, grey iron, class 20 minimum.
6. ACCESSORIES: Stainless steel bolts, nuts, washers, etc., APWA Section 05 05 23
7. GROUND: Use exothermic weld connections

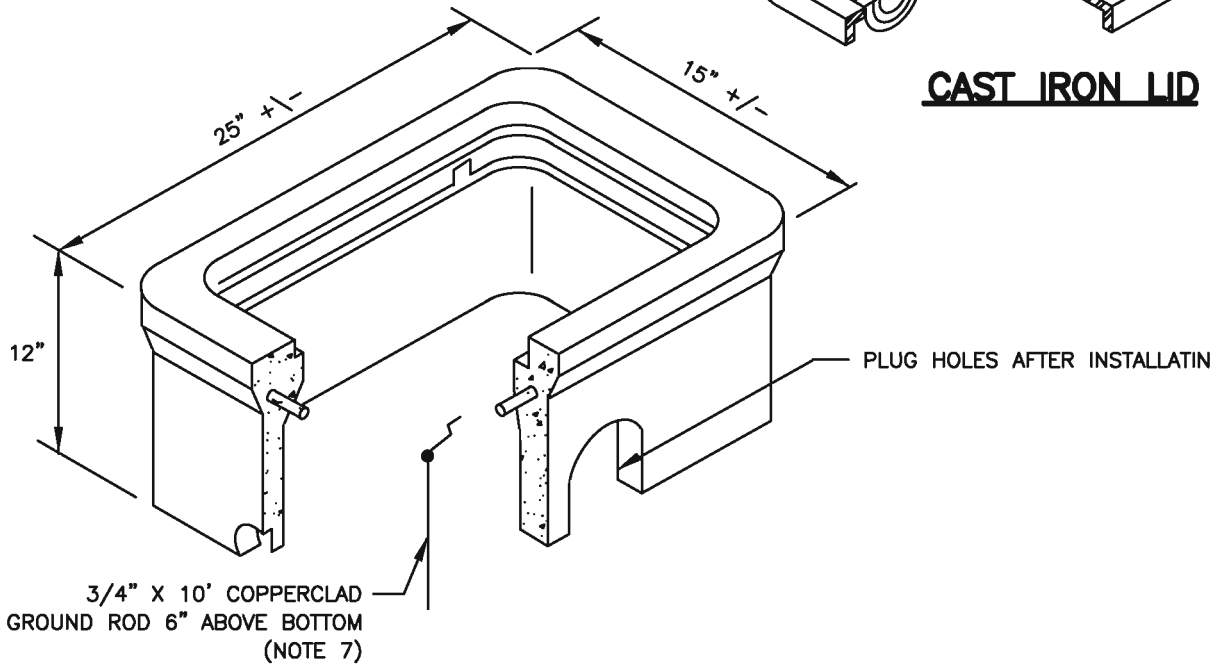


INSTALL 200 # PULL CORD IN EACH
EMPTY CONDUIT AND LABEL

PLAN



CAST IRON LID



OBLIQUE

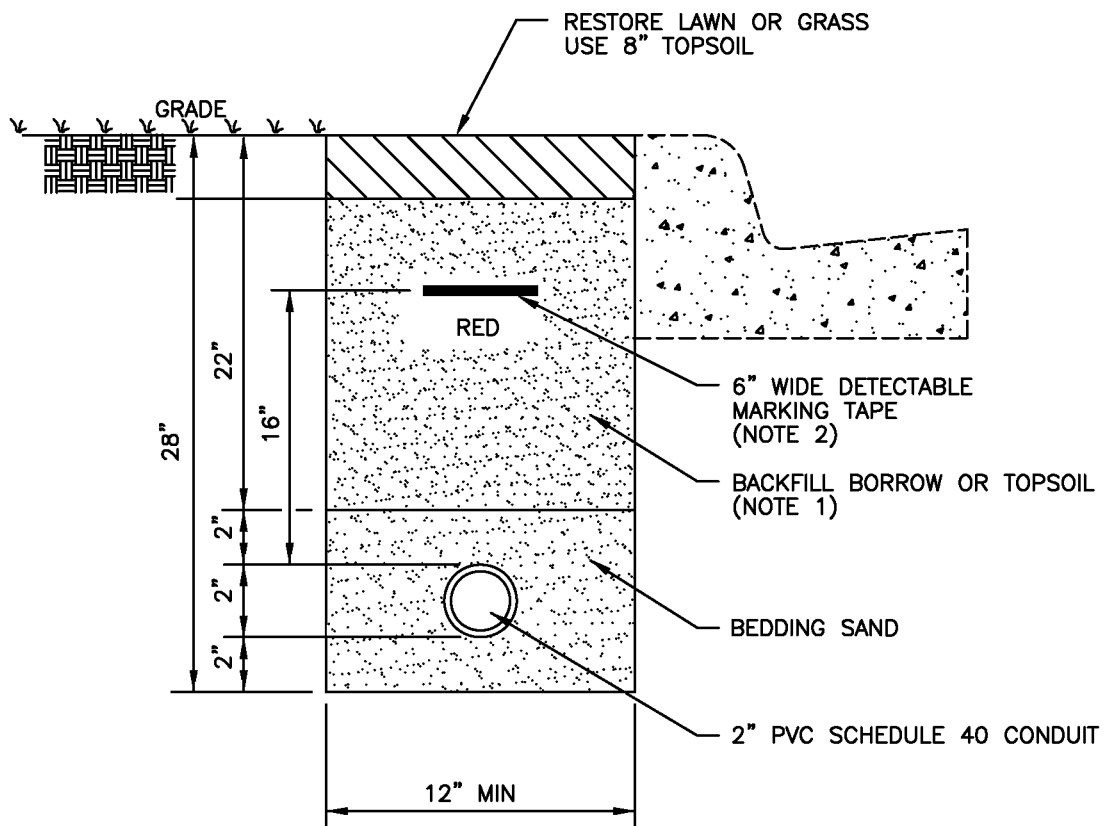
Pull box

Plan No.

731

Trench for street light conduit

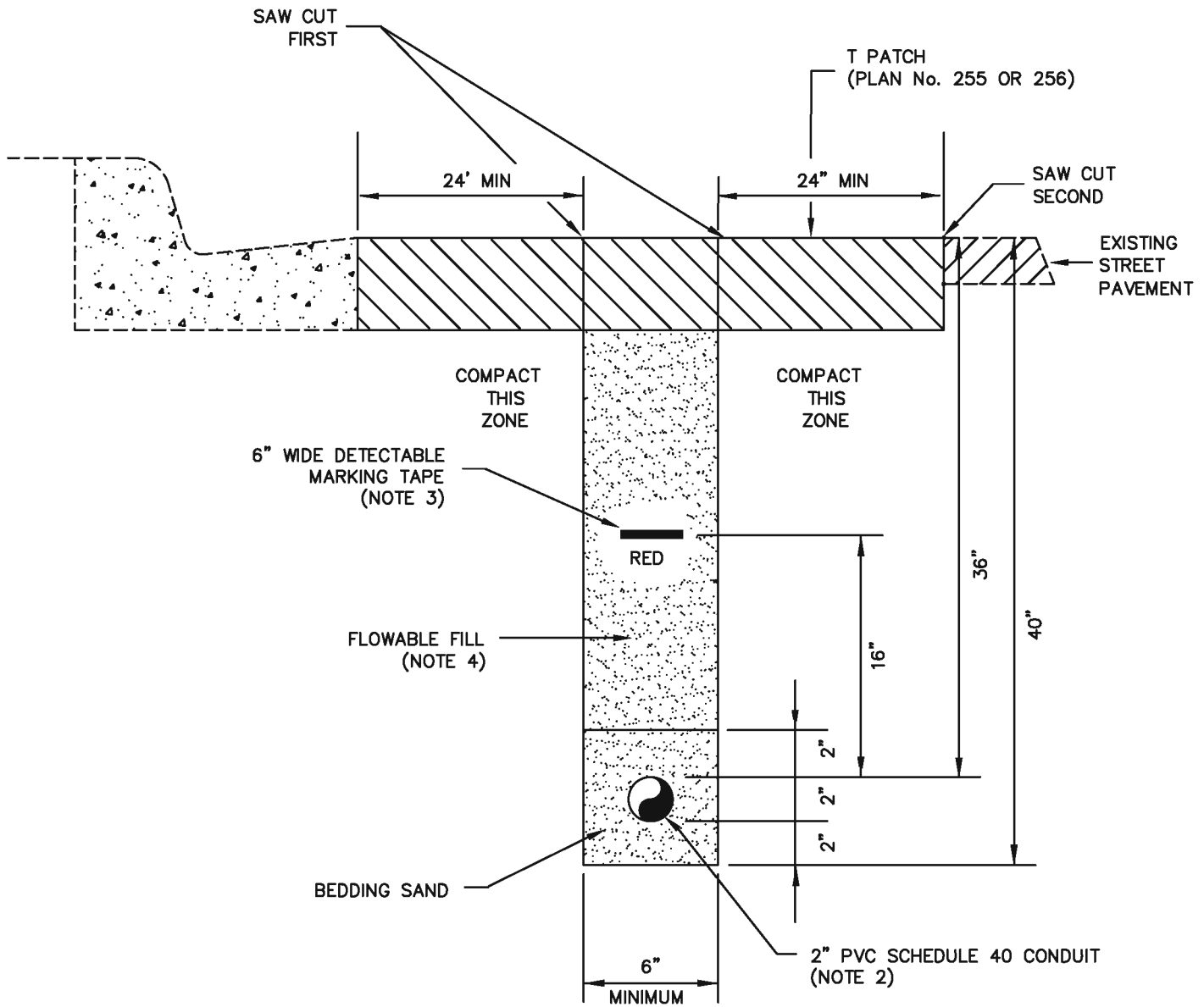
1. BACKFILL BORROW OR TOPSOIL: APWA Section 31 05 13, Density 95 percent or greater.
2. DETECTABLE MARKING TAPE: Permanent, red bright-colored, continuous-printed magnetic intended for direct-burial service not less than 6 inches wide by 4 mils thick. The tape shall read "**CAUTION: BURIED INSTALLATION BELOW**".



Trench for street light conduit

Trench for street light conduit

1. **ADDITIONAL PAVEMENT REMOVAL:** Additional pavement removal to a painted lane stripe, a lip of gutter, a curb, an existing pavement patch, or an edge of the pavement is required if such street feature is within 2 feet of the second saw-cut.
2. **PVC CONDUIT:** APWA Section 33 05 07.
3. **IDENTIFICATION TAPE:** Permanent, red bright-colored, continuous-printed magnetic intended for direct-burial service not less than 6 inches wide by 4 mils thick. The tape shall read “**CAUTION: BURIED INSTALLATION BELOW**”.
4. **FLOWABLE FILL:** Provide 20 day 60 psi controlled low strength material as specified in APWA Section 31 05 15. Use a fill that flows easily and vibration is not required. Use flowable fill in excavations that are too narrow to receive compaction equipment. Before placing aggregate or pavement, cure to initial set.
5. **TACK COAT:** Full coverage on all vertical surfaces and surface of concrete substrate.
6. **ASPHALT PAVEMENT RESTORATION:** Use asphalt concrete specified in APWA Section 33 05 25.
 - A. Match existing thickness plus 1 inch but not less than 4 inches.
 - B. Install in lifts no greater than 3 inches after compaction. Compact each lift to 94 percent of ASTM D 2041 (Rice Method) plus or minus 2 percent.
 - C. If asphalt pavement is substituted for concrete substrate, omit rebar and provide 1.25 inches of pavement for each 1 inch of substrate.
7. **CONCRETE PAVEMENT RESTORATION:** Class 4000 per APWA Section 03 30 04.
 - A. Match existing concrete thickness.
 - D. Cure concrete per APWA Section 03 39 00 with type ID Class A or B (clear with fugitive dye) membrane forming compound unless specified otherwise.
8. **PATCH REPAIR:** Repair patch if any of the following conditions within the patch occur.
 - A. Pavement surface distortion exceeds 1/4 inch deviation in 10 feet. Repair option: Plane off surface distortions. Coat asphalt planed surfaces with a cationic or anionic emulsion. Coat concrete planed surfaces with a water repellent product that complies with APWA Section 07 19 00.
 - B. Cracks at least 1-foot long and 1/4 inch wide occur more often than 1 in 10 square feet. Repair option: Crack seal.
 - C. Asphalt raveling is greater than 1 square foot per 100 square feet. Repair option: Mill and inlay



Trench for street light conduit

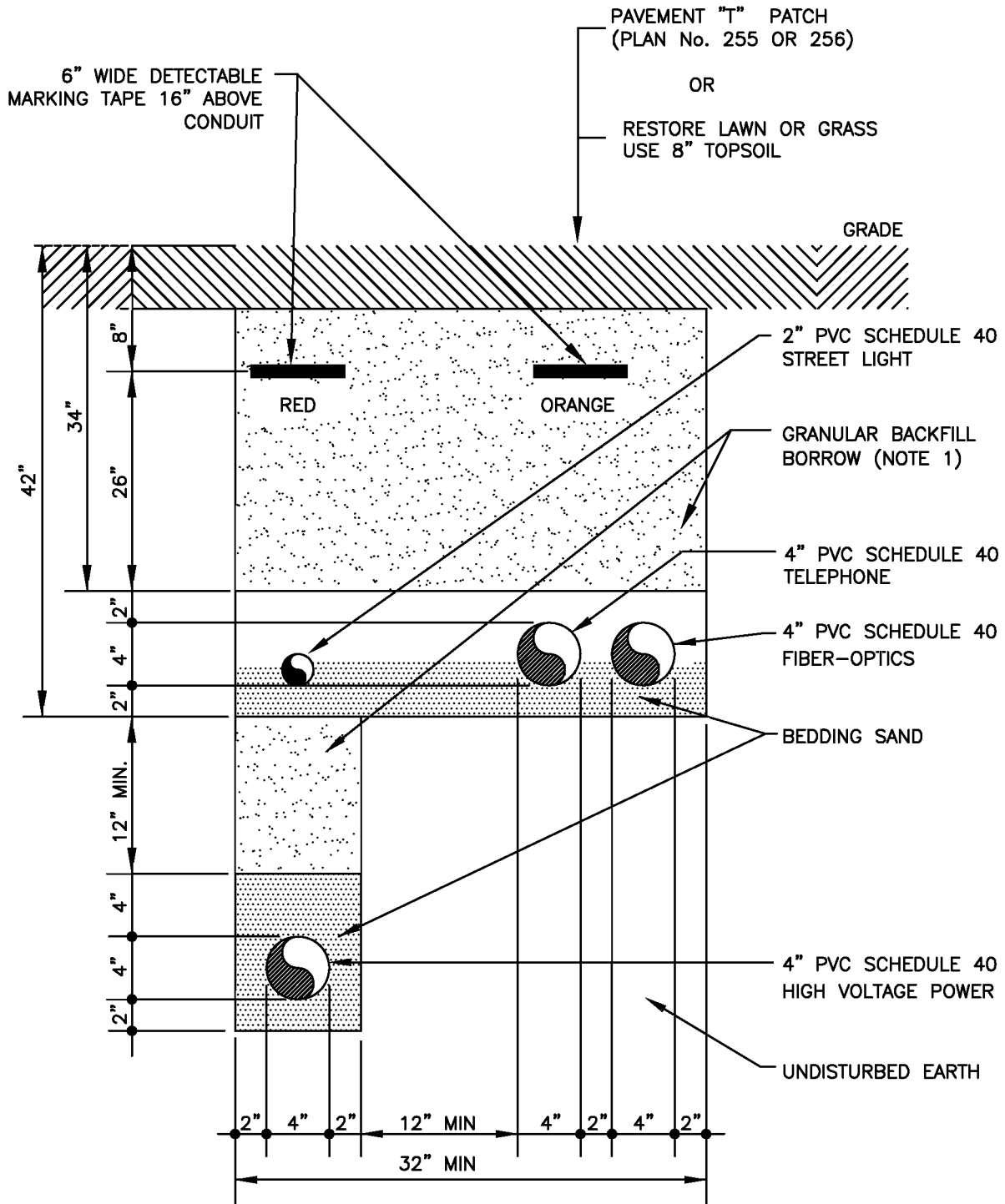
Plan No.

732

Drawing 2 of 2

Joint use trench – street lighting

1. BACKFILL BORROW OR TOPSOIL: APWA Section 31 05 13, Density 95 percent or greater.
2. PVC CONDUIT: APWA Section 33 05 07.
3. IDENTIFICATION TAPE: Permanent, red or orange bright-colored, continuous-printed magnetic intended for direct-burial service not less than 6 inches wide by 4 mils thick. The tape shall read "**CAUTION: BURIED INSTALLATION BELOW**".

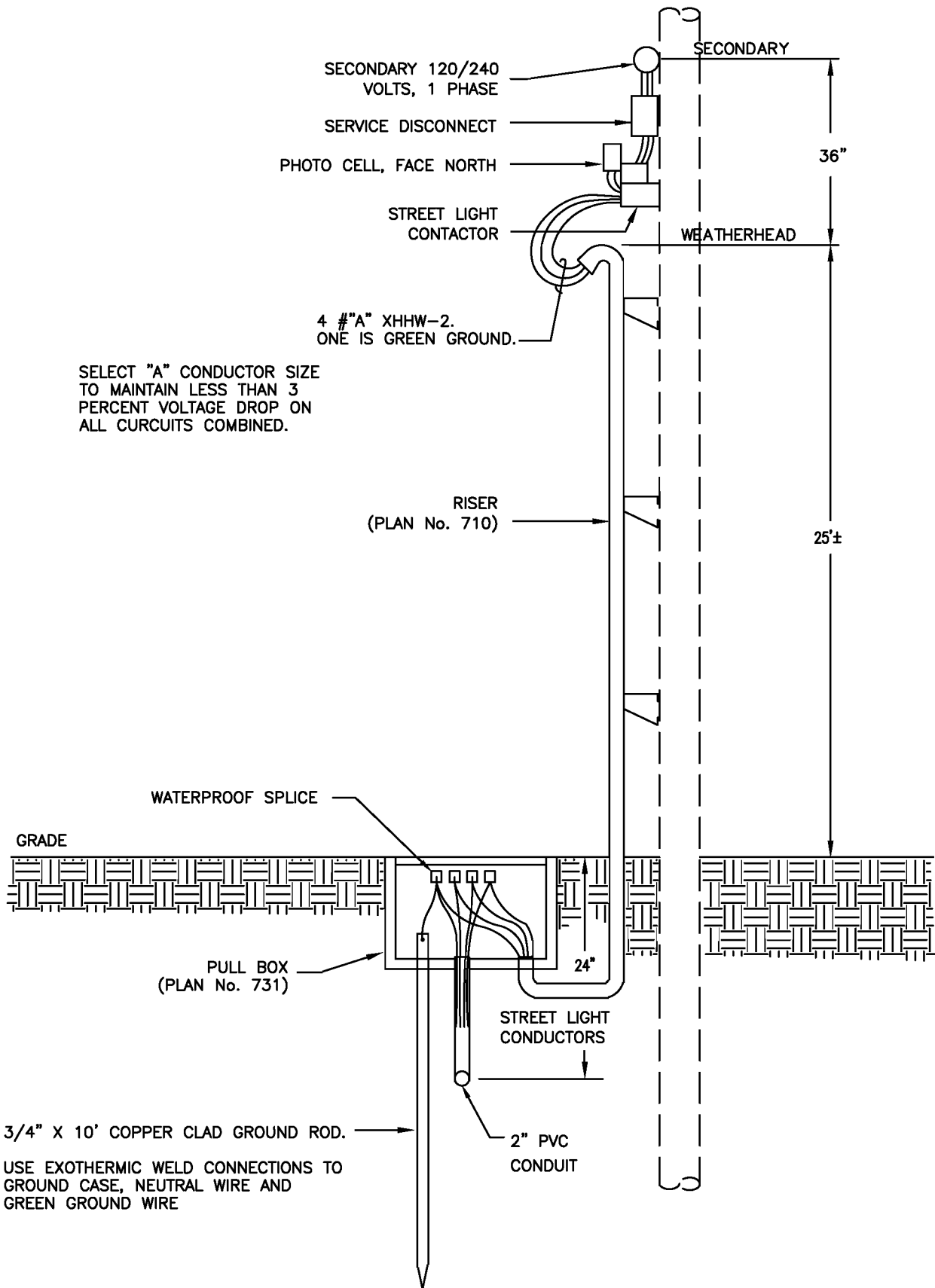


Joint use trench - street lighting

Plan No.
733

Street light pole terminal

1. SERVICE DISCONNECT: APWA Section 26 13 13.
2. ACCESSORIES: Galvanized steel bolts, nuts, washers, etc., APWA Section 05 05 23
3. CONDUIT: Galvanized.

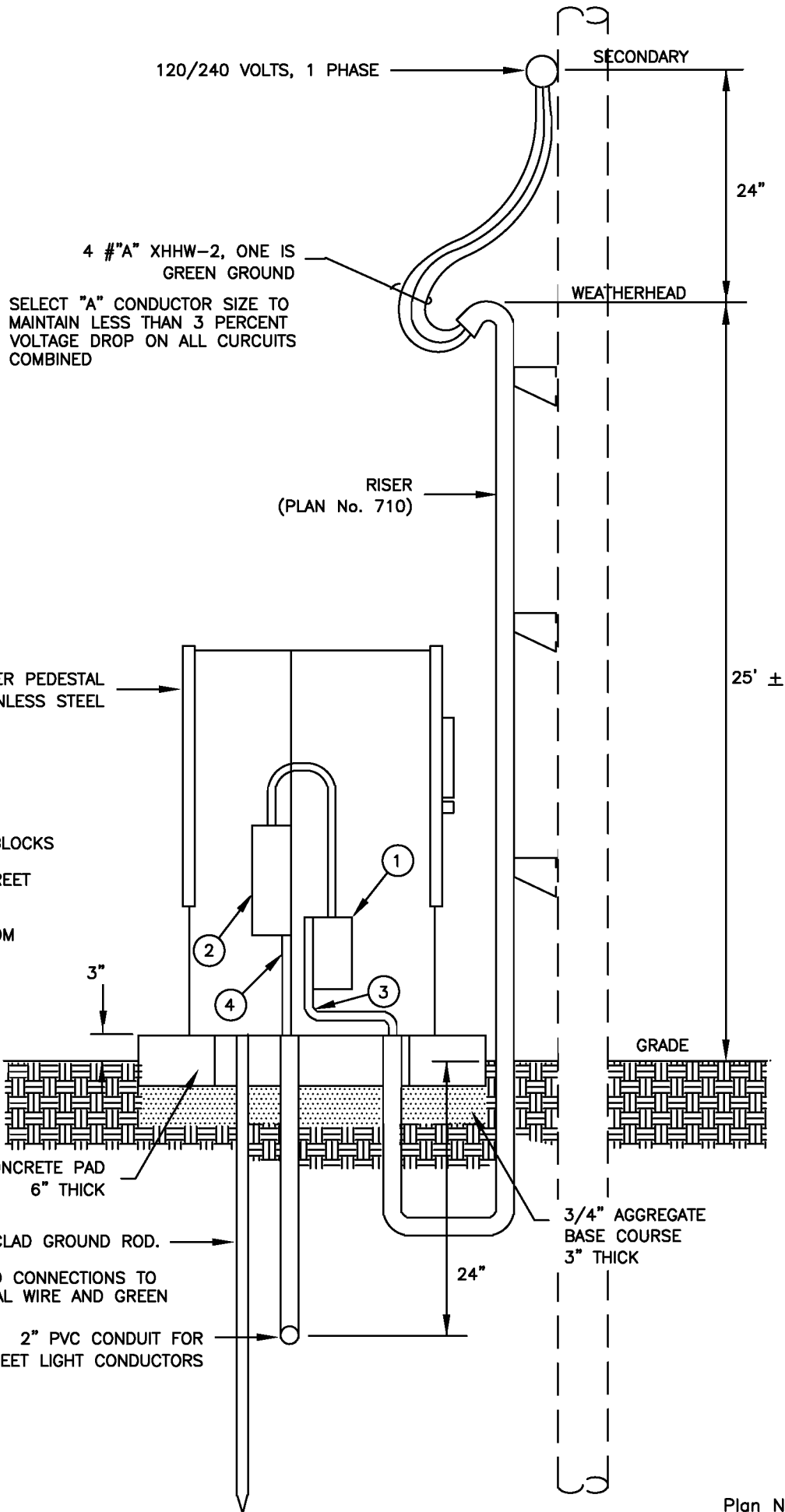


Street light pole terminal

Plan No.
736

Street light meter pedestal

1. BACKFILL BORROW OR TOPSOIL: APWA Section 31 05 13, Density 95 percent or greater.
2. CONCRETE: Class 4000 per APWA Section 03 30 04.
3. ACCESSORIES: Galvanized steel bolts, nuts, washers, etc., APWA Section 05 05 23
4. CONDUIT: Galvanized



NOTES

- ① POWER DISTRIBUTION BLOCKS
- ② LOAD CENTER FOR STREET LIGHTS
- ③ INCOMING SERVICE FROM OVERHEAD SECONDARY
- ④ TO STREET LIGHTS

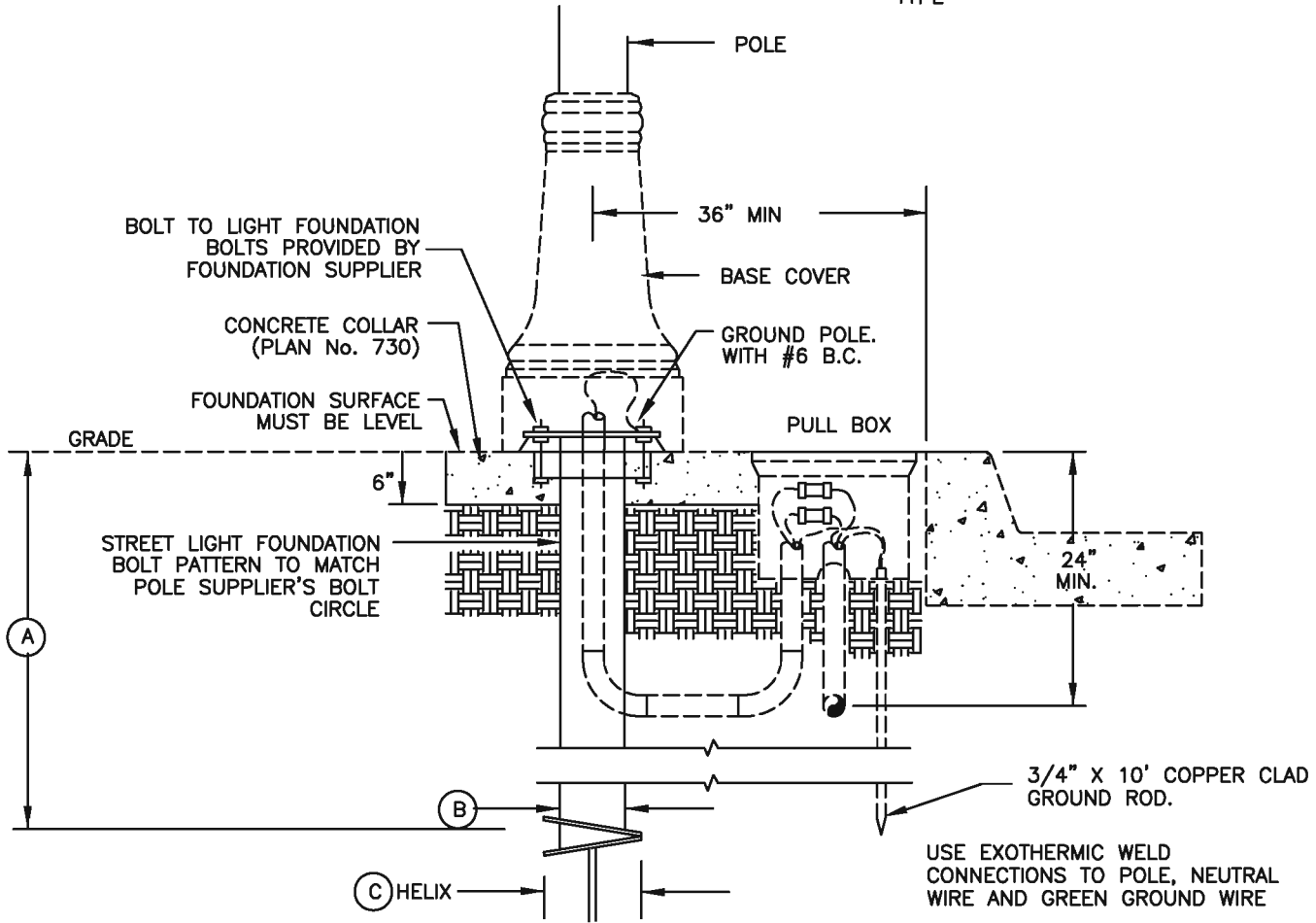
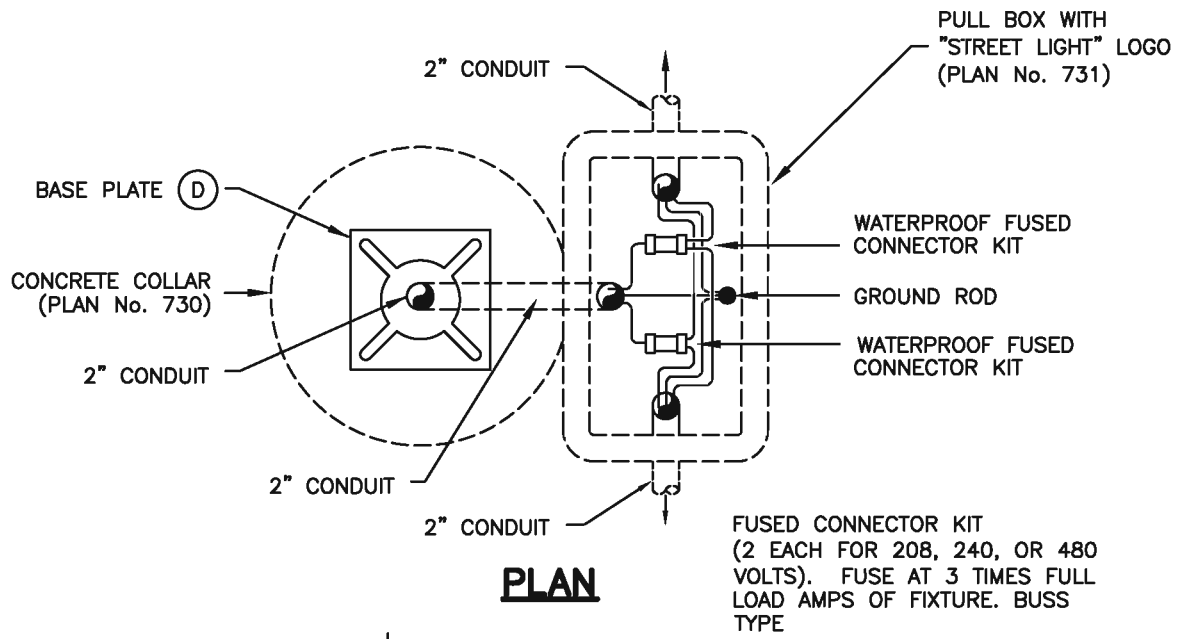
Street light meter pedestal

Plan No.

737

Screw-in base street light pole

1. CONCRETE: Class 4000 per APWA Section 03 30 04.
2. CONDUIT: Galvanized.
3. ACCESSORIES: Galvanized steel bolts, nuts, washers, etc., APWA Section 05 05 23
4. BACKFILL BORROW OR TOPSOIL: APWA Section 31 05 13.
5. GROUND COVER: APWA Section 32 93 13.
6. SCREW-IN BASE: Material and dimensions to meet or exceed manufacturer's recommendations.



POLE SIZE	LENGTH (A)	SHAFT (B)	HELIX (C)	PLATE (D)
8'-15'	60"	6.6"	12"	3/4"x12" SQ
16'-20'	60"	6.6"	12"	1"x15-3/4" SQ
21'-30'	84"	8.6"	14"	1"x15-3/4" SQ

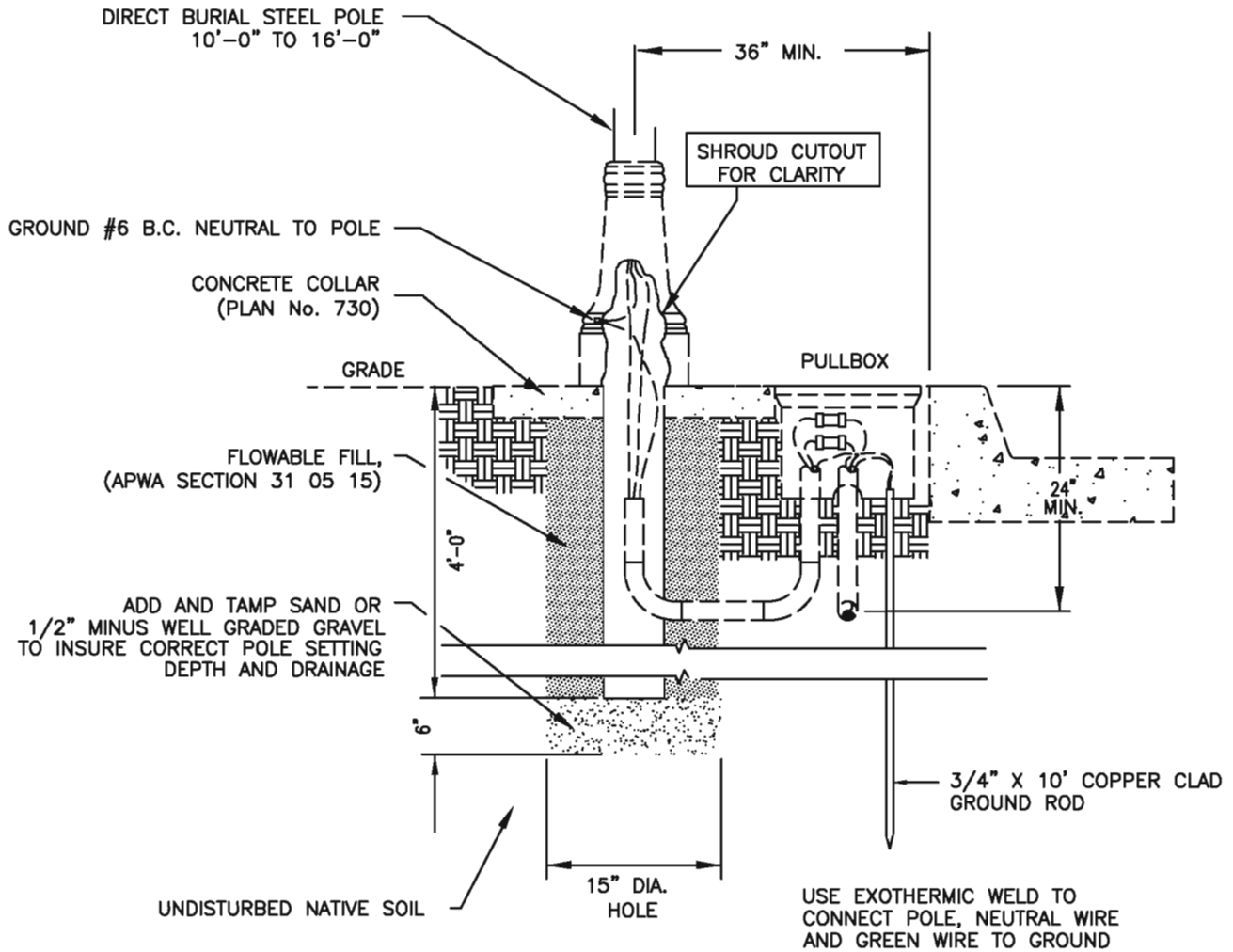
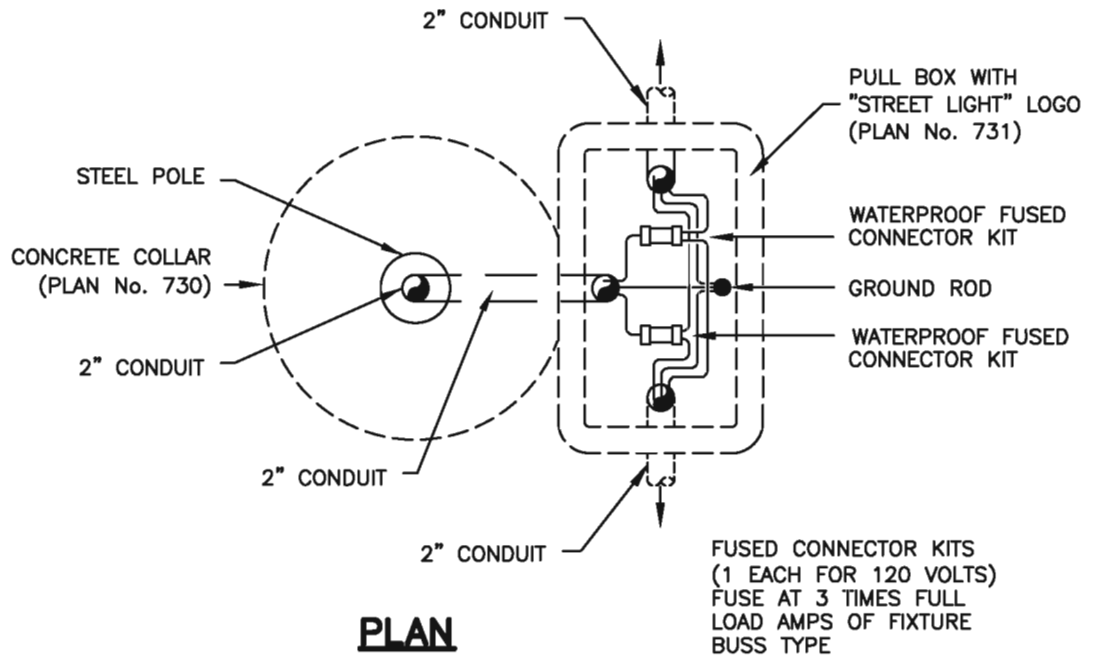
ELEVATION

Screw-in base street light pole

Plan No.
741

Direct burial street light pole

1. CONCRETE: Class 4000 per APWA Section 03 30 04.
2. REINFORCEMENT: ASTM A 615, grade 60, steel.
3. CONDUIT: Galvanized.
4. ACCESSORIES: Galvanized steel bolts, nuts, washers, etc., APWA Section 05 05 23
5. BACKFILL BORROW OR TOPSOIL: APWA Section 31 05 13.
6. GROUND COVER: APWA Section 32 93 13.

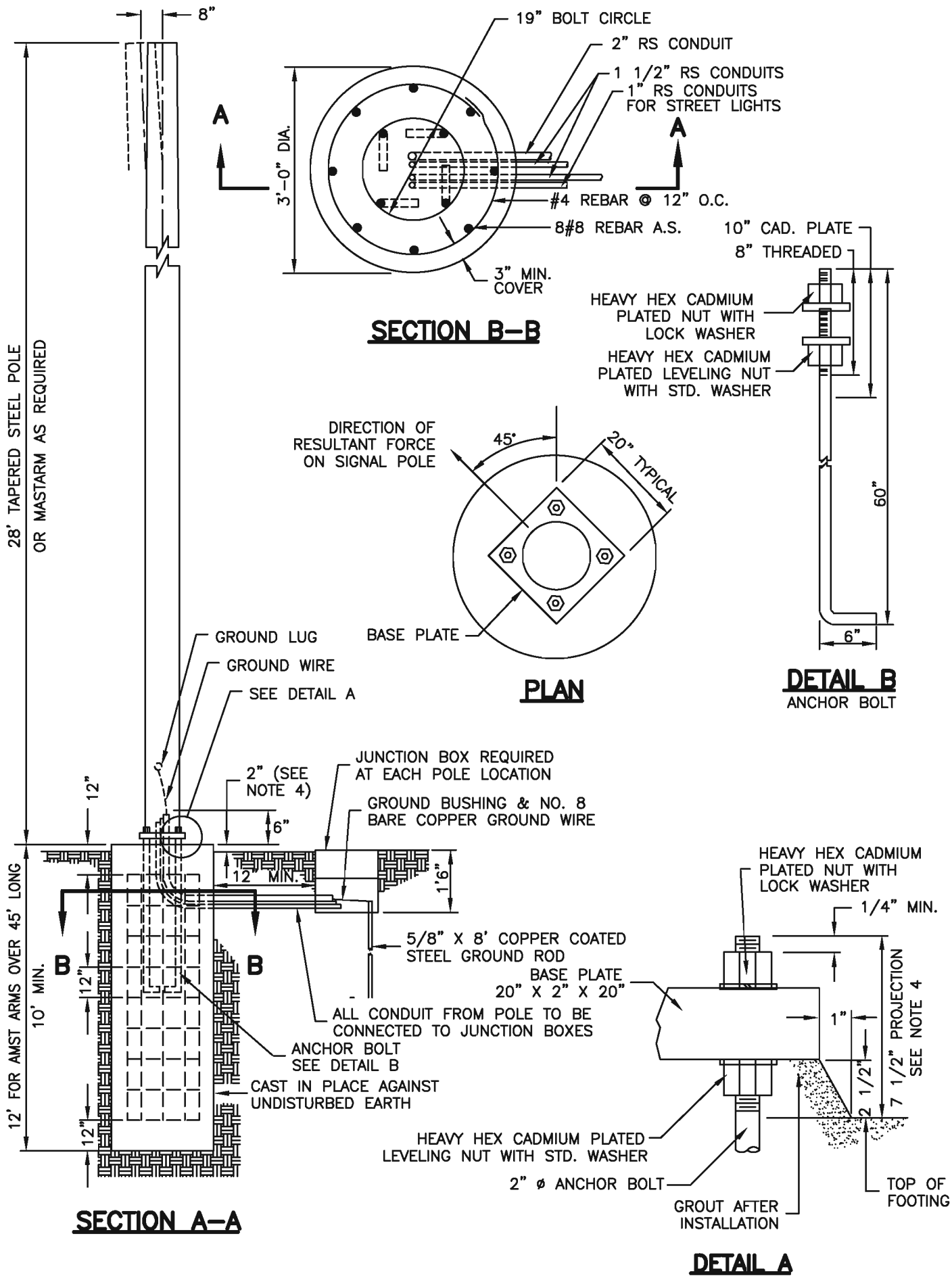


Direct burial street light pole

Plan No.
742

Signal pole foundation

1. **BACKFILL:** Provide and place per APWA Section 31 23 23. Compact per APWA Section 31 23 26 to a modified proctor density of 95 percent or greater. Maximum lift thickness is 8 inches before compaction.
2. **REINFORCEMENT:** ASTM A 615, grade 60, deformed steel. See APWA Section 03 20 00 requirements.
3. **CONCRETE:** Class 4000 per APWA Section 03 30 04. Place concrete per APWA Section 03 30 10. Cure per APWA Section 03 39 00.
4. **ANCHOR BOLTS:** When footing is located in an area to be paved, the top of the footing is to be placed 4 inches below grade with bolts extending 11 1/2 inches above top of footing to accommodate paving surface.



Signal pole foundation

Plan No.

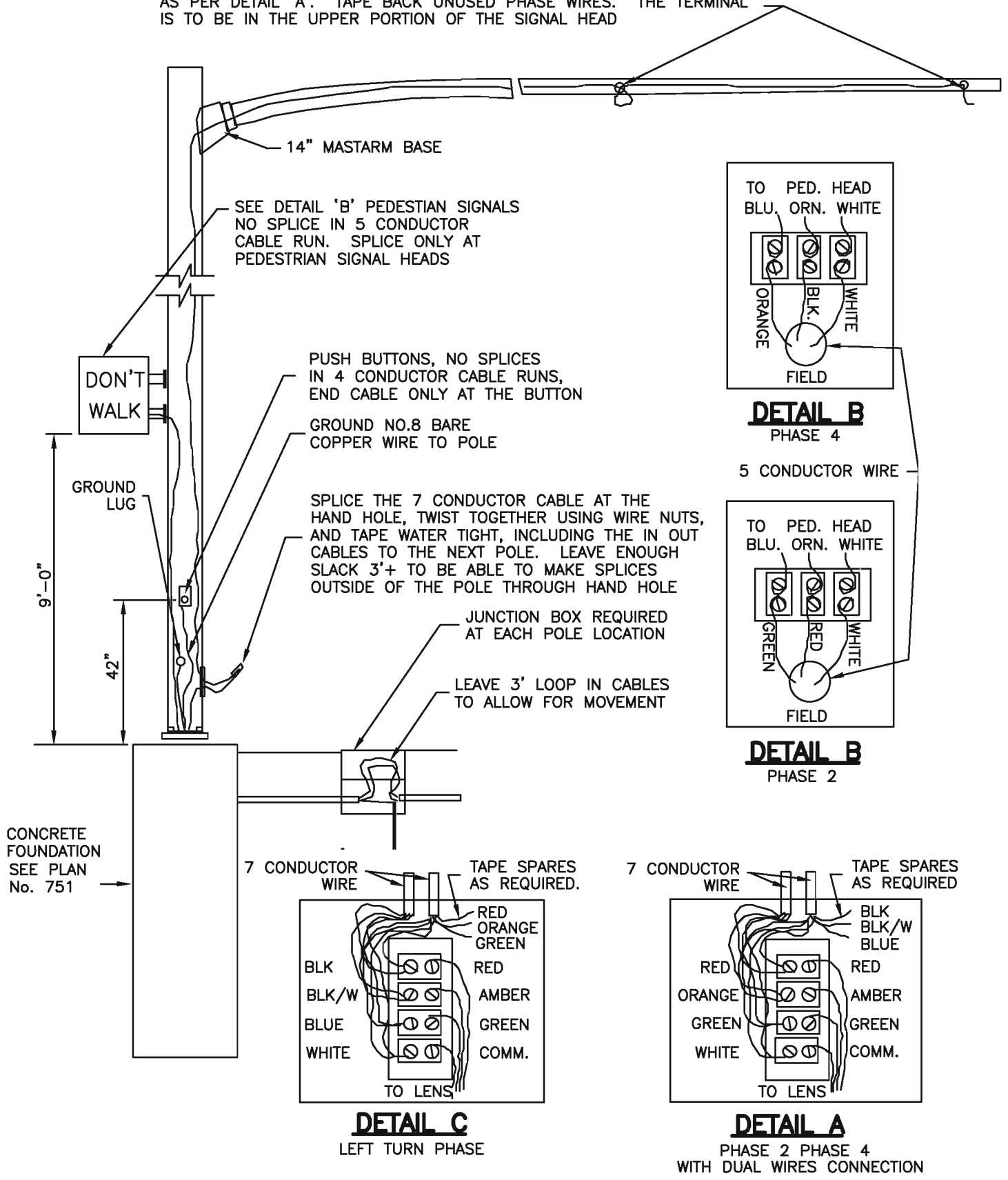
751

Signal pole wiring

1. MAST ARMS: Connect mast arms as shown on the drawings.
2. SPLICES: Make splices in pole base hand holes, not in pull boxes.
3. PEDESTRIAN SIGNAL CABLE: Run pedestrian signal cable from pedestrian head to pedestrian head or cabinet. Make no splices except in the signal mounting or head.
4. CONNECTIONS: Use terminal lugs to make all cabinet connections and all signal (vehicle and pedestrian) connections.
5. CONTROL CABLES: Provide cables meeting IMSA 19-1*.
6. DETECTOR CABLES: Provide 2 conductor shielded 14 AWG stranded lead in cable. Loop to be wired with type 14 AWG THHN stranded, PVC/ nylon jacket cable. Lead in cable to be IMSA 50-2, 2 conductor, twisted pair with shield and drain, black polyethylene.
7. COMMUNICATION CABLE: Provide type BJFA, 12 pair per specification RE-PE-39, 19 AWG, solid gel filled, shielded. IMSA 19-1 with PVC jacket.
8. WIRING CODE: As follows.
 - 7 Conductor #14 - vehicular signal
 - red ϕ through phase red
 - orange ϕ through phase amber
 - green ϕ through phase green
 - black ϕ left turn red or spare
 - black/white ϕ through phase amber
 - green ϕ through phase green
 - black ϕ left turn red or spare
 - 5 Conductor #14 - pedestrian signal
 - black ϕ side street DON'T
 - orange ϕ side street WALK
 - red ϕ artery DON'T
 - green ϕ artery WALK
 - white common
 - 4 Conductor #18 - pedestrian detection
 - black ϕ phase 4 and/or 8
 - white logic
 - red ϕ phase 2 and/or 6
 - green logic
 - 2 Conductor #18 - loop runs
 - white designated ϕ loop runs
 - black logic

* IMSA = International Municipal Signal Association

PULL LENGTH AT EACH SIGNAL HEAD IS TO BE 3 FEET MINIMUM AND HAVE A 1 FOOT DRIP LOOP. SPLICE 7 CONDUCTOR IN SIGNAL HEAD AS PER DETAIL 'A'. TAPE BACK UNUSED PHASE WIRES. THE TERMINAL IS TO BE IN THE UPPER PORTION OF THE SIGNAL HEAD



Signal pole wiring

Plan No.
752

Speed bump

1. UNTREATED BASE COURSE: Provide material specified in APWA Section 32 11 23.
 - A. Do not use gravel as a substitute for untreated base course without ENGINEER's permission.
 - B. Place material per APWA Section 31 23 23.
 - C. Compact per APWA Section 31 23 26 to a modified proctor density of 95 percent or greater. Maximum lift thickness before compaction is 8 inches when using riding compaction equipment or 6 inches when using hand held compaction equipment.

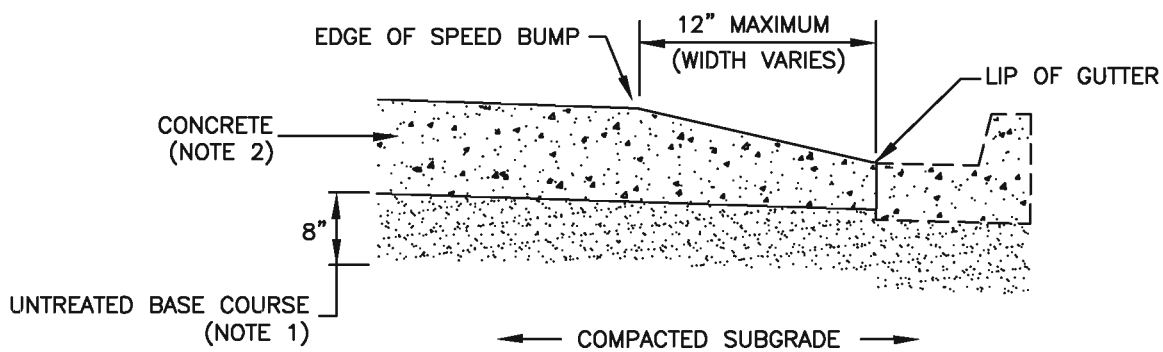
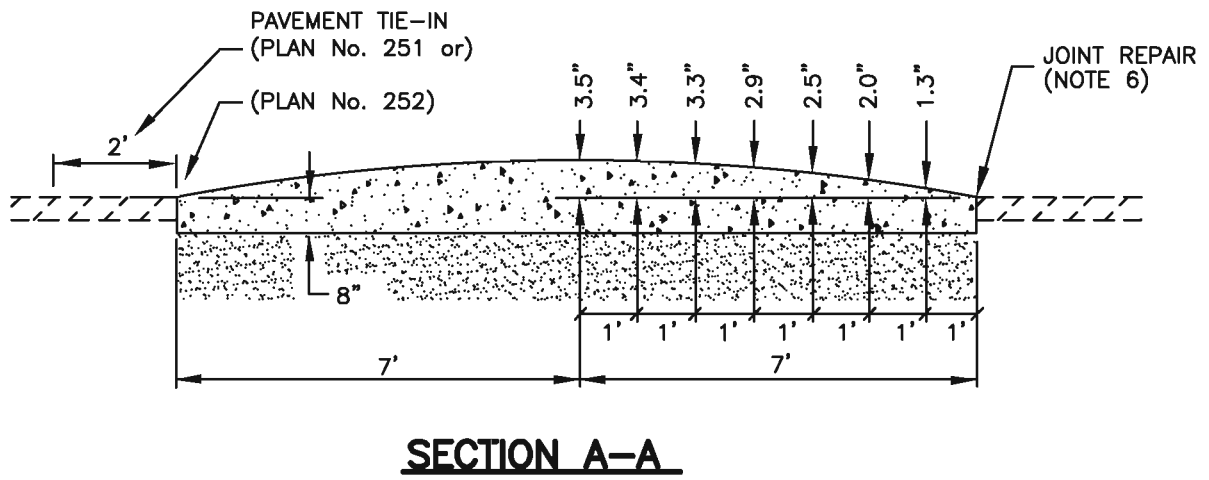
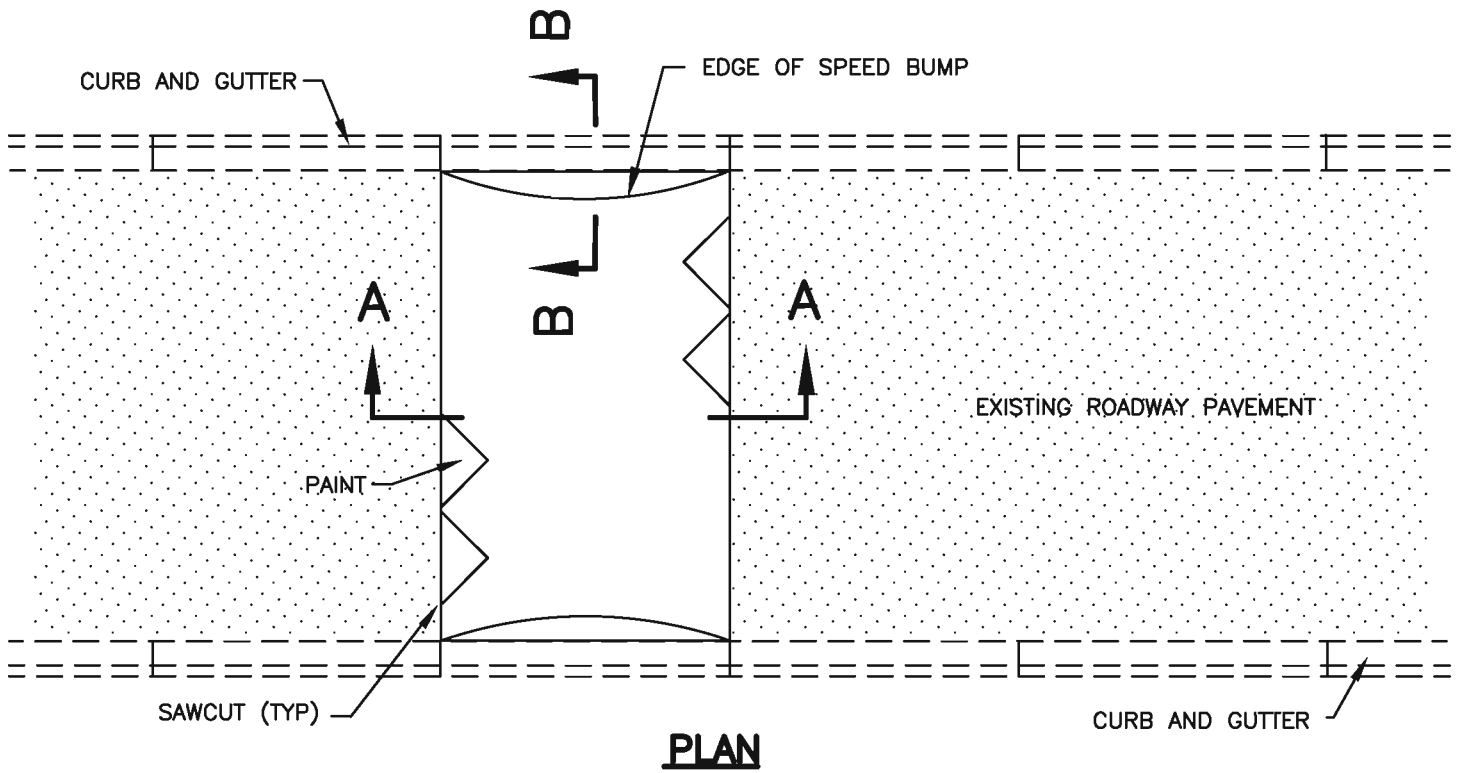
2. CONCRETE: Class 4000 per APWA Section 03 30 04.
 - A. If necessary, provide concrete that achieves design strength in less than 7 days. Use caution; however, as concrete crazing (spider cracks) may develop if air temperature exceeds 90 degrees F.
 - B. Place concrete per APWA Section 03 30 10.
 - C. Provide 1/2 inch radius on concrete edges exposed to public view.
 - D. Cure concrete per APWA Section 03 39 00 with type ID Class A or B (clear with fugitive dye) membrane forming compound unless specified otherwise.

3. EXPANSION JOINTS:
 - A. Make expansion joints vertical, full depth.
 - B. Provide F1 joint filler material 1/2 inch wide, APWA Section 32 13 73.
 - C. Set top of filler flush with surface of concrete.

4. CONTRACTION JOINT: Make contraction joints vertical 1/8 inch wide and 1/3 slab thickness.

5. FINISH: Broomed.

6. JOINT REPAIR: If a crack occurs at the connection to existing pavement, seal the crack per APWA Section 32 01 17.



Speed bump

Plan No.
761

Speed table

1. UNTREATED BASE COURSE: Provide material specified in APWA Section 32 11 23.
 - A. Do not use gravel as a substitute for untreated base course without ENGINEER's permission.
 - B. Place material per APWA Section 31 23 23.
 - C. Compact per APWA Section 31 23 26 to a modified proctor density of 95 percent or greater. Maximum lift thickness before compaction is 8 inches when using riding compaction equipment or 6 inches when using hand held compaction equipment.

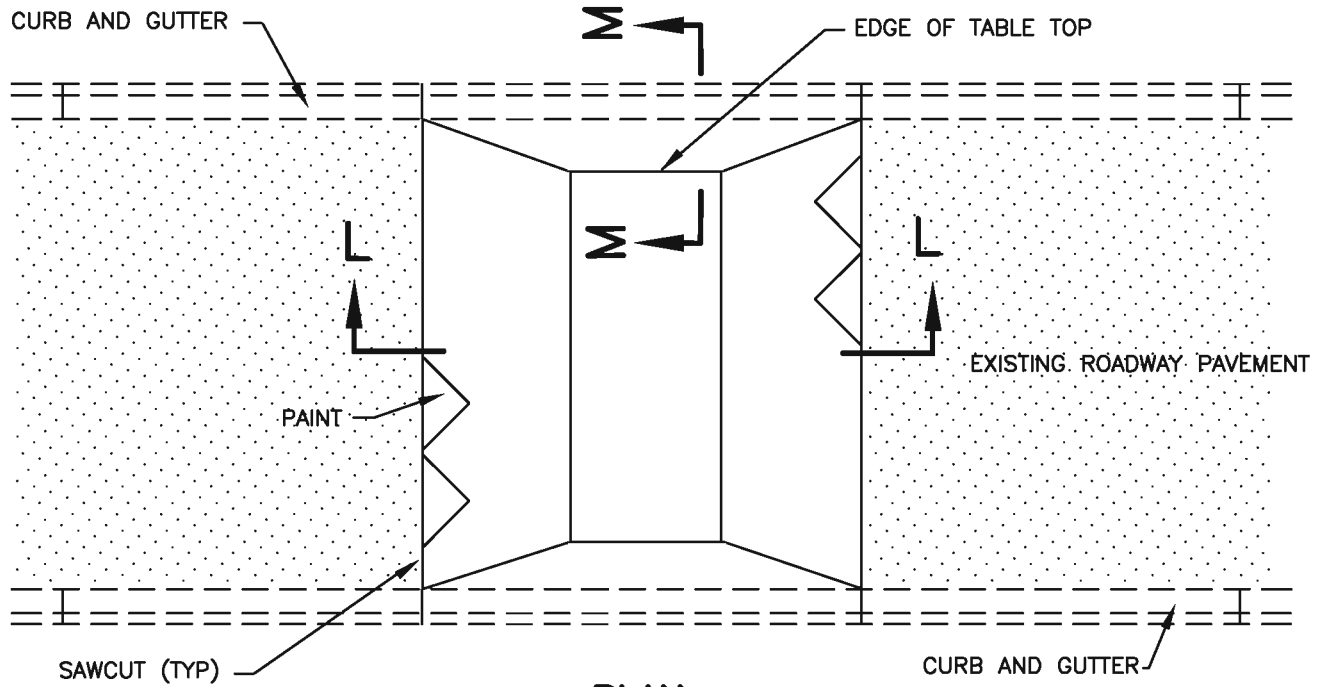
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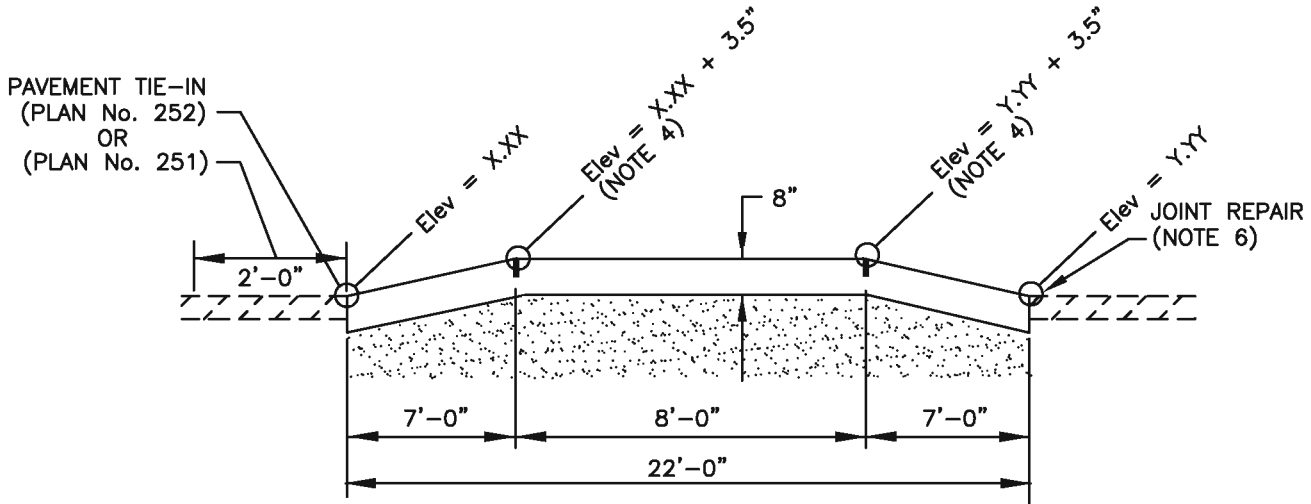
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5. FINISH: Broomed.

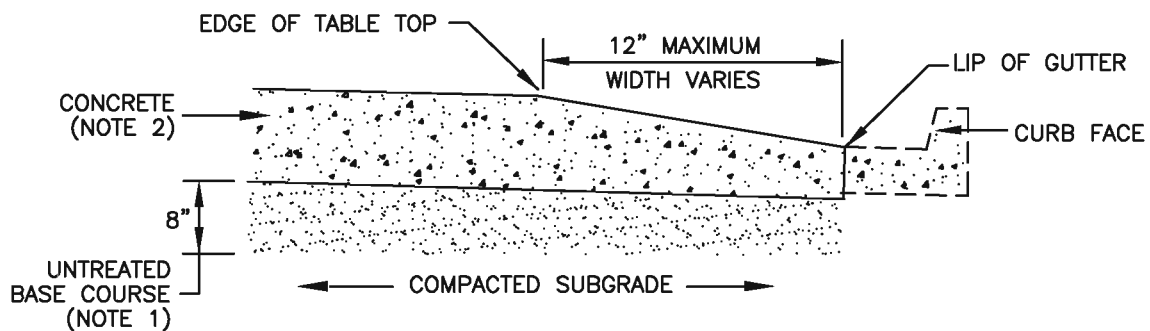
6. JOINT REPAIR: If a crack occurs at the connection to existing pavement, seal the crack per APWA Section 32 01 17.



PLAN



SECTION L-L



SECTION M-M

Speed table

Plan No.
762

