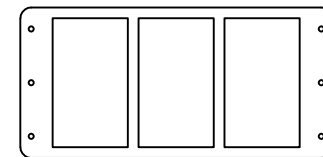
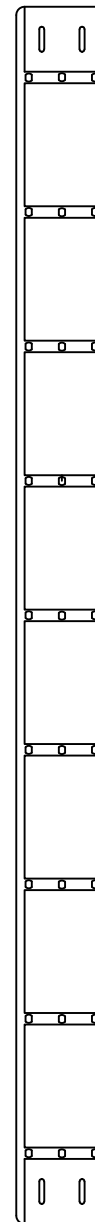


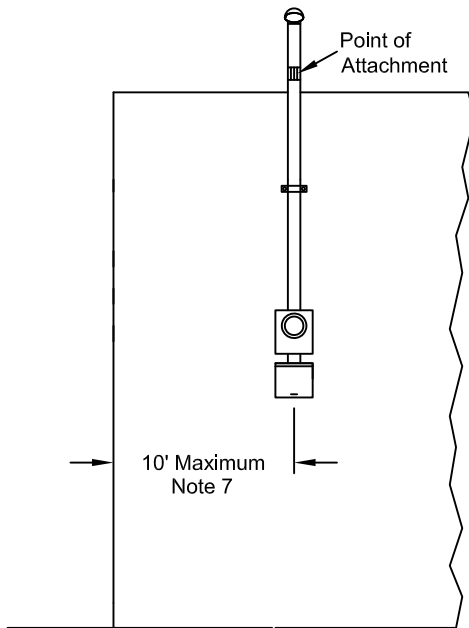
- All cutouts to be identified with fuse size. Identification plate 9999-001986 to be placed on cutout side of crossarm or on cutout side of pole when crossarms are not used.
- All GOLB switches to be identified with a identification plate 9999-000178. Mount number plate beginning with "SW" to identify the device as a switch. Mount numbers using self-stick decals on upper portion of pipe facing street side.
- SCADAmate switch to be identified with a switch number. Mount identification plate 9999-000178 beginning with "SC" to identify the device as a SCADA switch. Install plate on upper portion of pole on street side.
- Padmount switchgears and transformers should be identified with unique identification numbers provided with work order using self-stick decals. Mount switchgear and transformer numbers on outside door facing street side.
- All padmount switchgears should have compartments identified with self-stick decals.
- Risers to be identified with padmount number with self-stick decals. Mount number on upper portion of pipe facing street side.
- Capacitor Banks to be identified with station number and fuse size. Install on upper portion of pole on street side.
- Reclosers to be identified with identification plate use 9999-000178. Numbers beginning with "R" which identify the device as a recloser. Install on upper portion of pole on street side. Numbers beginning with "RC" identify the device as a radio controlled recloser. Install on upper portion of pole on street side.
- Sectionlizers to be identified with identification plate use 9999-000178. Numbers beginning with "S" identify the device as a sectionlizer. Install on upper portion of pole on street side.
- Wood poles should be identified with unique GIS identification numbers provided with work order using self-stick decals. Mount wood pole identification plate use 9999-000178 on face of pole four feet above pole burn brand or information round plate.



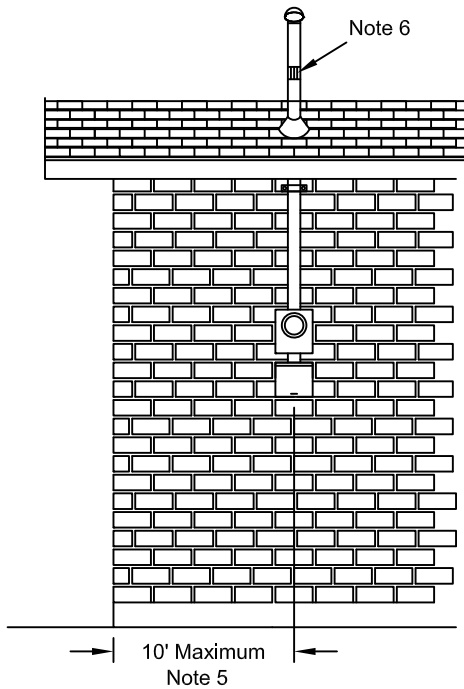
9999-001986
Three-Position
Identification Plate



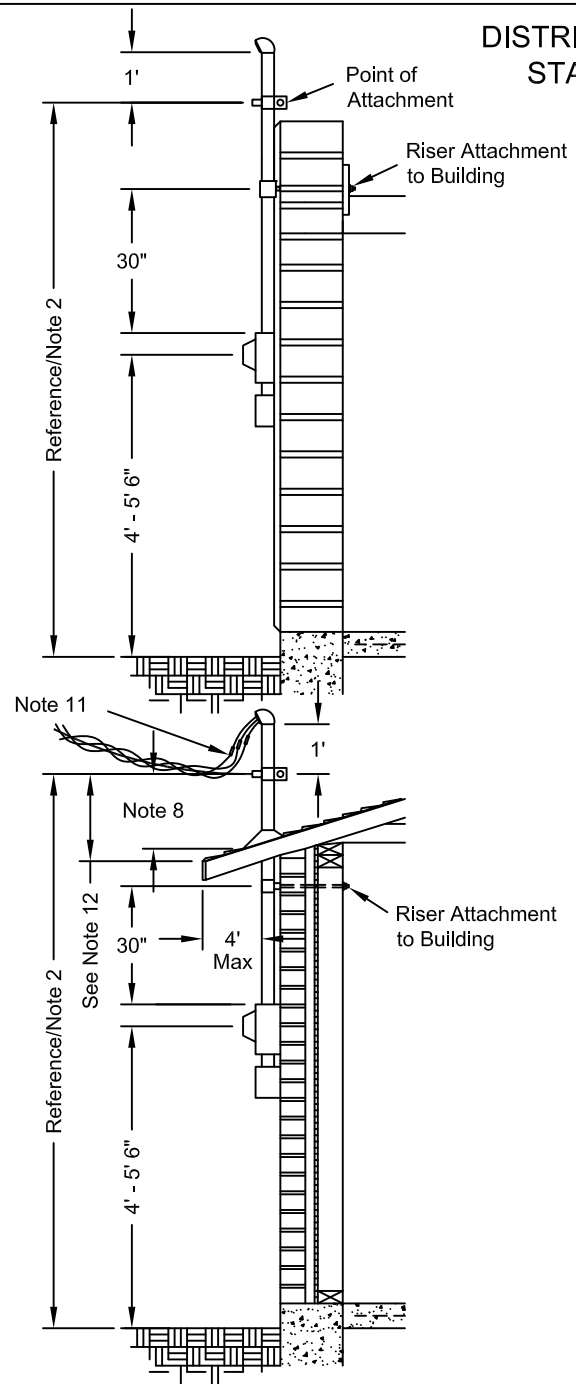
9999-000178
Eight-Position
Identification Plate



Typical Adobe Construction



Typical Frame Construction with Brick Veneer



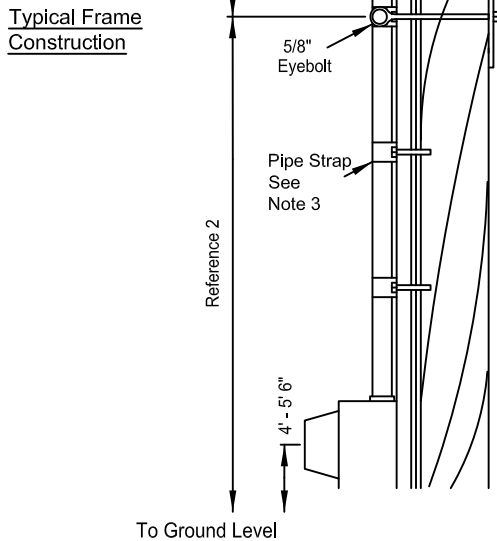
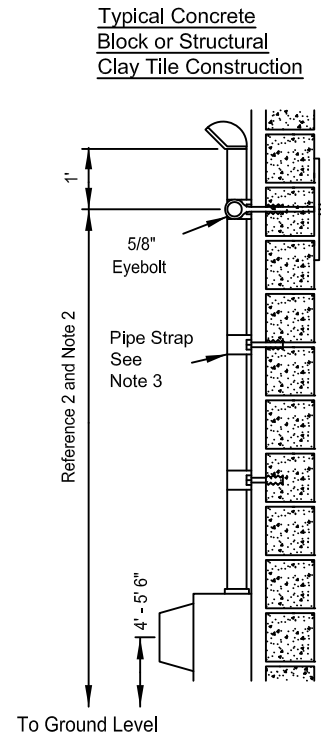
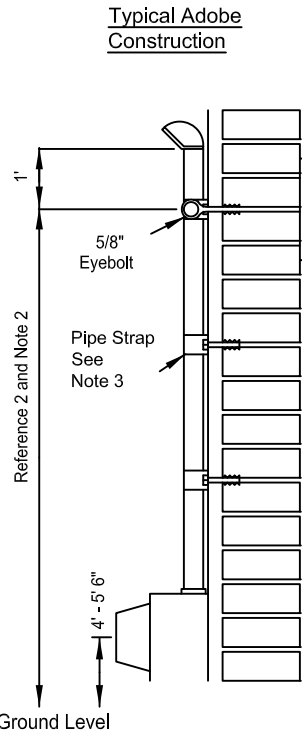
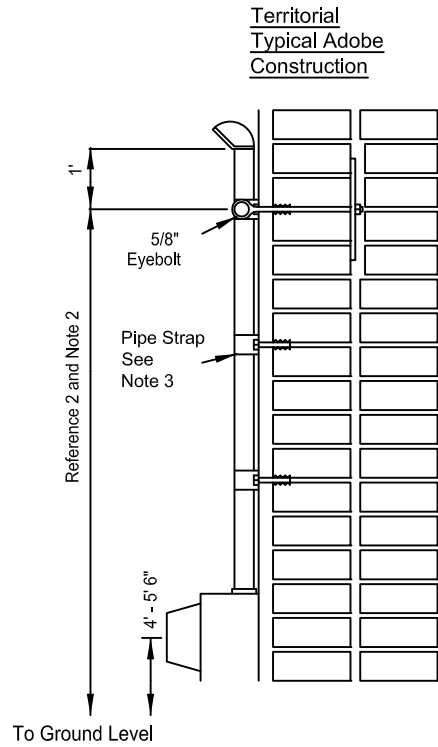
NOTES

- (1) Contact PNM new service representative for height of service attachment point if service crosses driveways, areas subject to vehicle traffic, or over a building or sign.
- (2) In location without bucket truck access, the point of attachment (POA) height shall not exceed 2' above the roof. When the POA is accessible from the roof, the POA height shall not exceed 5' above the roof.
- (3) A minimum of 2" rigid galvanized or IMC conduit is required if the riser mast supports the service drop.
- (4) Points of attachment of service riser to building shall be designed and installed to withstand a minimum of 330 lbs. tension applied at PNM's point of attachment. The forces at the point of attachment on the building will be greater than 330 lbs.
- (5) All points of attachment of service drop risers to the building shall meet the minimum requirements of the NEC and NESC.
- (6) In addition to NEC requirements, PNM requires that all Point of Attachments be 1' below the weather head and any Point of Attachments of 3' or more in height above the roof line shall be guyed.
- (7) To locate meter on the side of a home, it must be within 10' of the street side of the house, but not behind stem walls, sidewalls, or other encumbrances.
- (8) Drip loop to have a minimum 18" clearance within 6' radius from the service mast above roof.

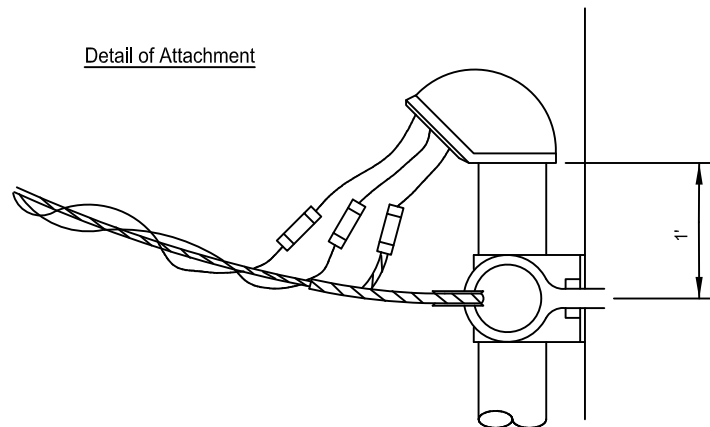
- (9) Conduit may be through eave of roof only if it is rigid galvanized or IMC conduit.
- (10) Contact PNM new service representative for service meter spot.
- (11) Maintain 3' minimum clearance beyond the edge of the roof, see section 230.24 (A) NEC.
- (12) Minimum 24" lead from weatherhead.

REFERENCES

- (1) See DS-4-4.0 Attachment of Service to Building
- (2) See DS-4-4.5 Minimum Point of Attachment Height for Service Drop
- (3) See DS-13-2.0 Clearances from Buildings and Other Structures
- (4) See DS-13-2.5 Vertical Clearance Above Ground, Roadway, Rail or Water Surfaces
- (5) See MS-7-1.0 Underground or Overhead Working Space for Electric Meters



Detail of Attachment



NOTES

- (1) Contact PNM customer service representative for height of service attachment point if service crosses driveways, areas subject to vehicle traffic, or over a building or sign.
- (2) In location without bucket truck access, the point of attachment (POA) height shall not exceed 2' above the roof. When the POA is accessible from the roof, the POA height shall not exceed 5' above the roof.
- (3) Points of attachment of service risers to building shall be designed and installed to withstand a minimum of 330 lbs. tension applied at PNM's point of attachment. The forces at the point of attachment on the building will be greater than 330 lbs.
- (4) All points of attachment of service drop risers to the building shall meet the minimum requirements of the NEC.
- (5) In addition to NEC requirements, PNM requires that all Point of Attachments be 1' below the weather head and any Point of Attachment of 3' or more in height above the roof line shall be guyed.
- (6) Pipe strap shall be firmly attached to wall at intervals of 30" minimum.
- (7) EMT may be used provided the point of attachment is not on the conduit. A rain tight hub is required for use with EMT.

REFERENCES

- (1) See DS-4-3.0 Attachment of Service to Riser
- (2) See DS-4-4.5 Minimum Point of Attachment Height for Service Drop Cable
- (3) See DS-13-2.5 Vertical Clearance Above Ground Roadway, Rail, or Water Surfaces
- (4) See MS-7-1.0 Underground or Overhead Working Space for Electric Meters

**40' Primary Pole
With Messenger Attached 8'-6" Pole Top
Minimum Point of Attachment Height (ft)**

Span Length (ft)		Up to 40'	50'	60'	70'	80'	90'	100'	110'	120'
#2 TSC, Conch										
POA	See Note 1	12'	12'	12'	12'	12'-1"	12'-2"	12'-7"	13'-2"	14'-1"
Height	See Note 2	16'	16'	16'	16'-2"	16'-6"	17'-2"	17'-11"		
Maintenance Only										
#2 TSC, Cockle										
POA	See Note 1	12'	12'	12'	12'	12'	12'-2"	12'-6"	13'-1"	13'-11"
Height	See Note 2	16'	16'	16'-1"	16'-2"	16'-6"	17'	17'-10"		
1/0 TSC, Murex										
POA	See Note 1	12'	12'	12'	12'-1"	12'-3"	12'-9"	13'-8"		
Height	See Note 2	16'	16'	16'-3"	16'-8"	17'-3"				
2/0 TSC, Triton										
POA	See Note 1	12'	12'	12'	12'-1"	12'-3"	12'-10"	13'-9"		
Height	See Note 2	16'	16'	16'-2"	16'-7"	17'-4"				
Maintenance Only										
2/0 TSC, Clio										
POA	See Note 1	12'	12'	12'	12'	12'-3"	12'-8"	13'-6"		
Height	See Note 2	16'	16'	16'-1"	16'-6"	17'-1"	18'-2"			
4/0 TSC, Zuzura										
POA	See Note 1	12'	12'	12'	12'-2"	12'-9"	13'-9"			
Height	See Note 2	16'	16'-1"	16'-5"	17'-1"					
Maintenance Only										
4/0 TSC, Cerapus										
POA	See Note 1	12'	12'	12'	12'-2"	12'-8"	13'-6"			
Height	See Note 2	16'	16'-1"	16'-4"	16'-11"	18'				
#2 QSC, Palamino										
POA	See Note 1	12'	12'	12'	12'	12'-1"	12'-6"	13'	14'	
Height	See Note 2	16'	16'	16'-1"	16'-4"	16'-10"	17'-8"			
1/0 QSC, Criollo										
POA	See Note 1	12'	12'	12'	12'-1"	12'-6"	13'-2"	14'-2"		
Height	See Note 2	16'	16'-1"	16'-4"	16'-10"	17'-8"				
2/0 QSC, Grullo										
POA	See Note 1	12'	12'	12'	12'-2"	12'-8"	13'-7"	15'		
Height	See Note 2	16'	16'-1"	16'-4"	17'	18'-2"				
4/0 QSC, Appaloosa										
POA	See Note 1	12'	12'	12'-1"	12'-7"	13'-8"				
Height	See Note 2	16'	16'-2"	16'-9"	17'-11"					

Service are encouraged to be limited to the lengths adjacent to the bold dividing line.

* Exercise **CAUTION** when Point of Attachment is greater than 13' above ground level for given span lengths

NOTES

- (1) Minimum POA heights for service drops passing over level, even terrain in spaces and ways subject to pedestrians or restricted traffic only where its total height exceeding 8' is not reasonably anticipated. This table is not applicable if any portion of the service crosses a road, alley, commercial driveway, over a roof, or those traversing unlevel ground. Contact design engineering for analysis for any of these conditions.
- (2) Minimum POA heights for service drops passing over roads, streets, alleys, non-residential driveways, parking lots, and other areas subject to truck traffic with level, even terrain and will provide a minimum clearance of 16' along the entire span. Contact design engineering for analysis for those that traverse unlevel ground or pass over a roof.
- (3) Additional height may be required for clearance to telephone and CATV service.
- (4) POA heights based on messenger elevation of 24.5' at take-off pole and includes an additional 6" sag at 194°F.
- (5) Maximum operating temperature - 90° C or 194° F.
- (6) Sags are based on 330 pounds messenger tension (NESC Medium Loading).
- (7) Multiple conductors per PNM Specification C11.
- (8) Contact your PNM Representative to determine the service drop cable size.
- (9) NESC C2. 2023 Reference: Rule 232B1 and Table 232-1

REFERENCES

- (1) See DS-13-2.0 Pages 1-3 Clearances from Buildings and Other Structures
- (2) See DS-13-2.5 Pages 1-3 Vertical Clearances above Ground, Roadway, Rail, or Water Surfaces
- (3) See DM-13-2.7 Pages 1-5 Clearance Check Examples

**Minimum Point of Attachment Height
For Service Drop Cables
From 40' Primary Pole**

DS-4-4.5

**45' Primary Pole
With Messenger Attached 8'-6" Below Pole Top
Minimum Point of Attachment Height (ft)**

Span Length (ft)		Up to 50	60	70	80	90	100	110	120
#2 TSC, Conch									
POA	See Note 1	12'	12'	12'	12'	12'	12'-1"	12'-3"	12'-9"
Height	See Note 2	16'	16'	16'	16'	16'-4"	16'-6"	17'-1"	17'-11"
#2 TSC, Cockle									
Maintenance Only									
POA	See Note 1	12'	12'	12'	12'	12'	12'-1"	12'-2"	12'-7"
Height	See Note 2	16'	16'	16'	16'	16'-2"	16'-5"	16'-11"	17'-8"
1/0 TSC, Murex									
POA	See Note 1	12'	12'	12'	12'	12'-1"	12'-5"	13'-1"	
Height	See Note 2	16'	16'	16'-1"	16'-3"	16'-8"	17'-5"		
2/0 TSC, Triton									
POA	See Note 1	12'	12'	12'	12'	12'-1"	12'-6"	13'-4"	
Height	See Note 2	16'	16'	16'	16'-3"	16'-8"	17'-7"		
2/0 TSC, Clio									
Maintenance Only									
POA	See Note 1	12'	12'	12'	12'	12'-1"	12'-5"	13'	
Height	See Note 2	16'	16'	16'	16'-2"	16'-7"	17'-4"		
4/0 TSC, Zuzara									
POA	See Note 1	12'	12'	12'	12'-1"	12'-6"	13'-6"		
Height	See Note 2	16'	16'	16'-1"	16'-8"	17'-7"			
4/0 TSC, Cerapus									
Maintenance Only									
POA	See Note 1	12'	12'	12'	12'-1"	12'-5"	13'-2"		
Height	See Note 2	16'	16'	16'-2"	16'-6"	17'-4"			
#2 QSC, Palamino									
POA	See Note 1	12'	12'	12'	12'	12'	12'-2"	12'-8"	13'-5"
Height	See Note 2	16'	16'	16'	16'-1"	16'-5"	16'-11"	17'-9"	
1/0 QSC, Criollo									
POA	See Note 1	12'	12'	12'	12'	12'-3"	12'-9"	13'-8"	
Height	See Note 2	16'	16'	16'-1"	16'-5"	17'	18'		
2/0 QSC, Grullo									
POA	See Note 1	12'	12'	12'	12'-1"	12'-5"	13'-3"		
Height	See Note 2	16'	16'	16'-1"	16'-5"	16'-7"			
4/0 QSC, Appaloosa									
POA	See Note 1	12'	12'	12'-1"	12'-6"	13'-1"			
Height	See Note 2	16'	16'-1"	16'-6"	17'-6"				

Services are encouraged to be limited to the lengths adjacent to the bold dividing line.

* Exercise **CAUTION** when Point of Attachment is greater than 13' above ground level for given span lengths

NOTES

- (1) Minimum POA heights for service drops passing over level, even terrain in spaces and ways subject to pedestrians or restricted traffic only where its total height exceeding 8' is not reasonably anticipated. This table is not applicable if any portion of the service crosses a road, alley, commercial driveway, over a roof, or those traversing unlevel ground. Contact design engineering for analysis for any of these conditions.
- (2) Minimum POA heights for service drops passing over roads, streets, alleys, non-residential driveways, parking lots, and other areas subject to truck traffic with level, even terrain and will provide a minimum clearance of 16' along the entire span. Contact design engineering for analysis for those that traverse unlevel ground or pass over a roof.
- (3) Additional height may be required for clearance to telephone and CATV service.
- (4) POA heights based on messenger elevation of 29' at take-off pole and includes an additional 6" sag at 194°F.
- (5) Maximum operating temperature - 90° C or 194° F.
- (6) Sags are based on 330 pounds messenger tension (NESC Medium Loading).
- (7) Multiple conductors per PNM Specification C11.
- (8) Contact your PNM Representative to determine the service drop cable size.
- (9) NESC C2.2023 Reference: Rule 232B1 and Table 232-1.

REFERENCES

- (1) See DS-13-2.0 Pages 1-3 Clearances from Buildings and Other Structures
- (2) See DS-13-2.5 Pages 1-3 Vertical Clearances above Ground, Roadway, Rail, or Water Surfaces
- (3) See DM-13-2.7 Pages 1-5 Clearance Check Examples

**Minimum Point of Attachment Height
For Service Drop Cables
From 45' Primary Pole**

DS-4-4.5.1

12/01/24 E

**35' Primary Pole
With Messenger attached 6" Below Pole Top
Minimum Point of Attachment Height (ft)**

Span Length (ft)		Up to 50	60	70	80	90	100	110	120
#2 TSC, Conch									
POA	See Note 1	12'	12'	12'	12'	12'	12'-2"	12'-6"	13'-1"
Height	See Note 2	16'	16'	16'	16'-1"	16'-4"	16'-10"	17'-5"	
#2 TSC, Cockle									
Maintenance Only									
POA	See Note 1	12'	12'	12'	12'	12'	12'-1"	12'-4"	12'-11"
Height	See Note 2	16'	16'	16'	16'-1"	16'-4"	16'-9"	17'-4"	
1/0 TSC, Murex									
POA	See Note 1	12'	12'	12'	12'	12'-3"	12'-9"	13'-6"	
Height	See Note 2	16'	16'	16'-2"	16'-5"	17'	18'		
2/0 TSC, Triton									
POA	See Note 1	12'	12'	12'	12'	12'-3"	12'-10"	13'-10"	
Height	See Note 2	16'	16'	16'-1"	16'-7"	17'-1"			
2/0 TSC, Clio									
Maintenance Only									
POA	See Note 1	12'	12'	12'	12'	12'-2"	12'-8"	13'-5"	
Height	See Note 2	16'	16'	16'-1"	16'-4"	17'	17'-11"		
4/0 TSC, Zuzara									
POA	See Note 1	12'	12'	12'	12'-3"	12'-10"	14'		
Height	See Note 2	16'	16'-1"	16'-4"	17'	18'-2"			
4/0 TSC, Cerapus									
Maintenance Only									
POA	See Note 1	12'	12'	12'	12'-2"	12'-8"	13'-7"		
Height	See Note 2	16'	16'-1"	16'-3"	16'-11"	17'-11"			
#2 QSC, Palomino									
POA	See Note 1	12'	12'	12'	12'	12'-1"	12'-7"	13'	13'-11"
Height	See Note 2	16'	16'	16'-1"	16'-3"	16'-8"	17'-4"		
1/0 QSC, Criollo									
POA	See Note 1	12'	12'	12'	12'-1"	12'-6"	13'-2"	14'-2"	
Height	See Note 2	16'	16'	16'-3"	16'-8"	17'-6"			
2/0 QSC, Grullo									
POA	See Note 1	12'	12'	12'	12'-2"	12'-9"	13'-9"	15'-3"	
Height	See Note 2	16'	16'	16'-4"	16'-11"	18'			
4/0 QSC, Appaloosa									
POA	See Note 1	12'	12'	12'-2"	12'-9"	14'			
Height	See Note 2	16'	16'-2"	16'-10"	18'-1"				

Services are encouraged to be limited to the lengths adjacent to the bold dividing line.

*** Exercise CAUTION when Point of Attachment is greater than 13' above ground level for given span lengths**

NOTES

- (1) Minimum POA heights for service drops passing over level, even terrain in spaces and ways subject to pedestrians or restricted traffic only where its total height exceeding 8' is not reasonably anticipated. This table is not applicable if any portion of the service crosses a road, alley, commercial driveway, over a roof, or those traversing unlevel ground. Contact design engineering for analysis for any of these conditions.
- (2) Minimum POA heights for service drops passing over roads, streets, alleys, non-residential driveways, parking lots, and other areas subject to truck traffic with level, even terrain and will provide a minimum clearance of 16' along the entire span. Contact design engineering for analysis for those that traverse unlevel ground or pass over a roof.
- (3) Additional height may be required for clearance to telephone and CATV service.
- (4) POA heights based on messenger elevation of 27.5' at take-off pole and includes an additional 6" sag at 194°F.
- (5) Maximum operating temperature - 90° C or 194° F.
- (6) Sags are based on 330 pounds messenger tension (NESC Medium Loading).
- (7) Multiple conductors per PNM Specification C11.
- (8) Contact your PNM Representative to determine the service drop cable size.
- (9) NESC C2.2023 Reference: Rule 232B1 and Table 232-1

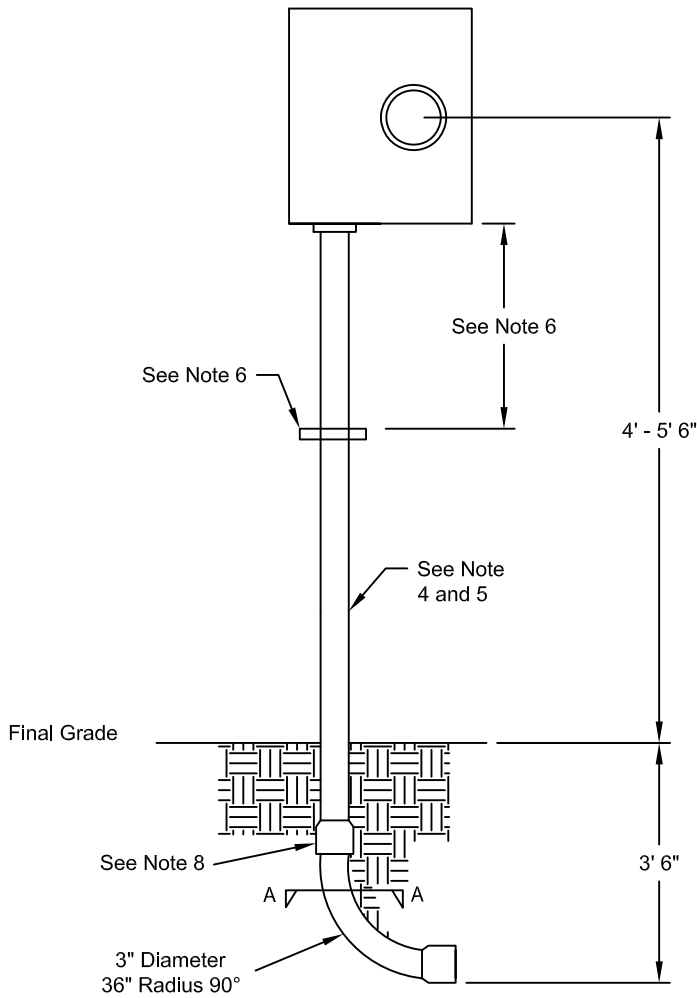
REFERENCES

- (1) See DS-13-2.0 Pages 1-3 Clearances from Buildings and Other Structures
- (2) See DS-13-2.5 Pages 1-3 Vertical Clearances above Ground, Roadway, Rail, or Water Surfaces
- (3) See DM-13-2.7 Pages 1-5 Clearance Check Examples

**Minimum Point of Attachment Height
For Service Drop Cables
From 35' Secondary Lift Pole**

DS-4-4.5.2

12/01/24 E

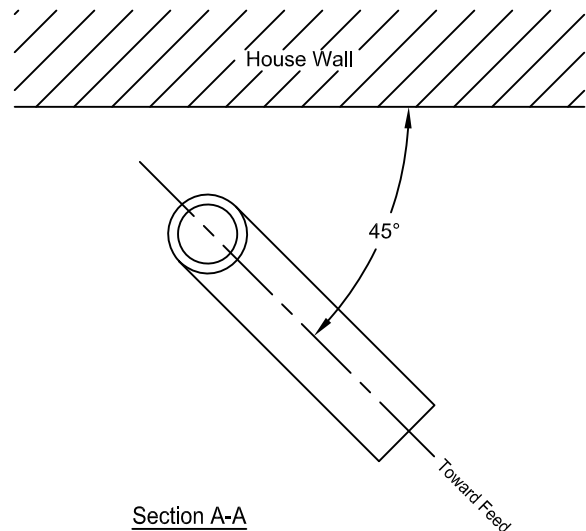


NOTES

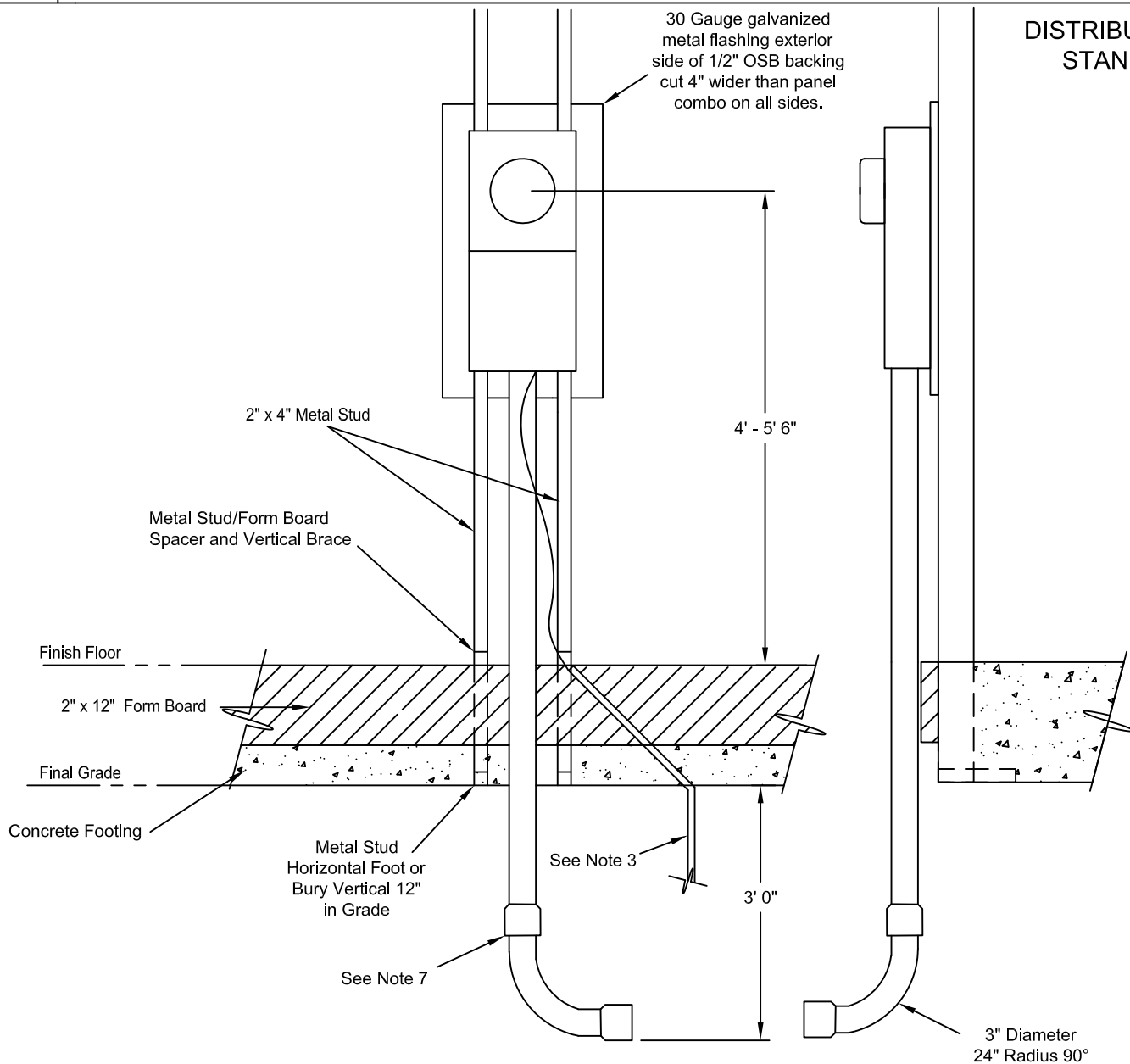
- (1) Meter socket, Schedule 80 PVC duct, elbow and plastic bushing to be supplied and installed by customer, including an adapter if customer is using a rigid losher. The elbow must be 90° and the intake of duct must be parallel to the final finished grade. However, a combination of elbows is permitted if the summation of the total does not exceed 135° and the intake of the duct must remain parallel to the final finished grade.
- (2) Customer to install 600V insulated conductor from meter socket to safety switch or distribution panel.
- (3) Customer shall install bonding system in accordance with NEC.
- (4) Preformed riser assemblies may be used if internal duct diameter is maintained. "Muffler" bends are unacceptable. Use one piece of duct from elbow to meter socket.
- (5) Locate meter on the side of a home, must be within 10' of the street side of the house, but not behind stem walls, sidewalls or other encumbrances.
- (6) Pipe strap shall be firmly attached to wall. Distance from meter box may be increased to a maximum of 5' where structural members do not need permit fastening within 3'.
- (7) 125A Meter socket is only applicable for manufactured and mobile homes.
- (8) No duct coupling allowed on duct riser above grade. Install bell end towards pedestal or transformer.
- (9) Contact your new service representative with the meter location and estimated load for more information.

REFERENCES

- (1) See DM-4-11.0 Maximum Available Fault Current
- (2) See DS-10-8.1 Trench Details
- (3) See MS-2-2.0 120/240V 125/200A Permanent Overhead and Underground Single-Phase Meter Socket
- (4) See MS-3-7.0 Over 320A 240V Single-Phase Meter Options
- (5) See MS-7-1.0 Underground or Overhead Working Space for Electric Meters



Underground Service Entrance System



NOTES

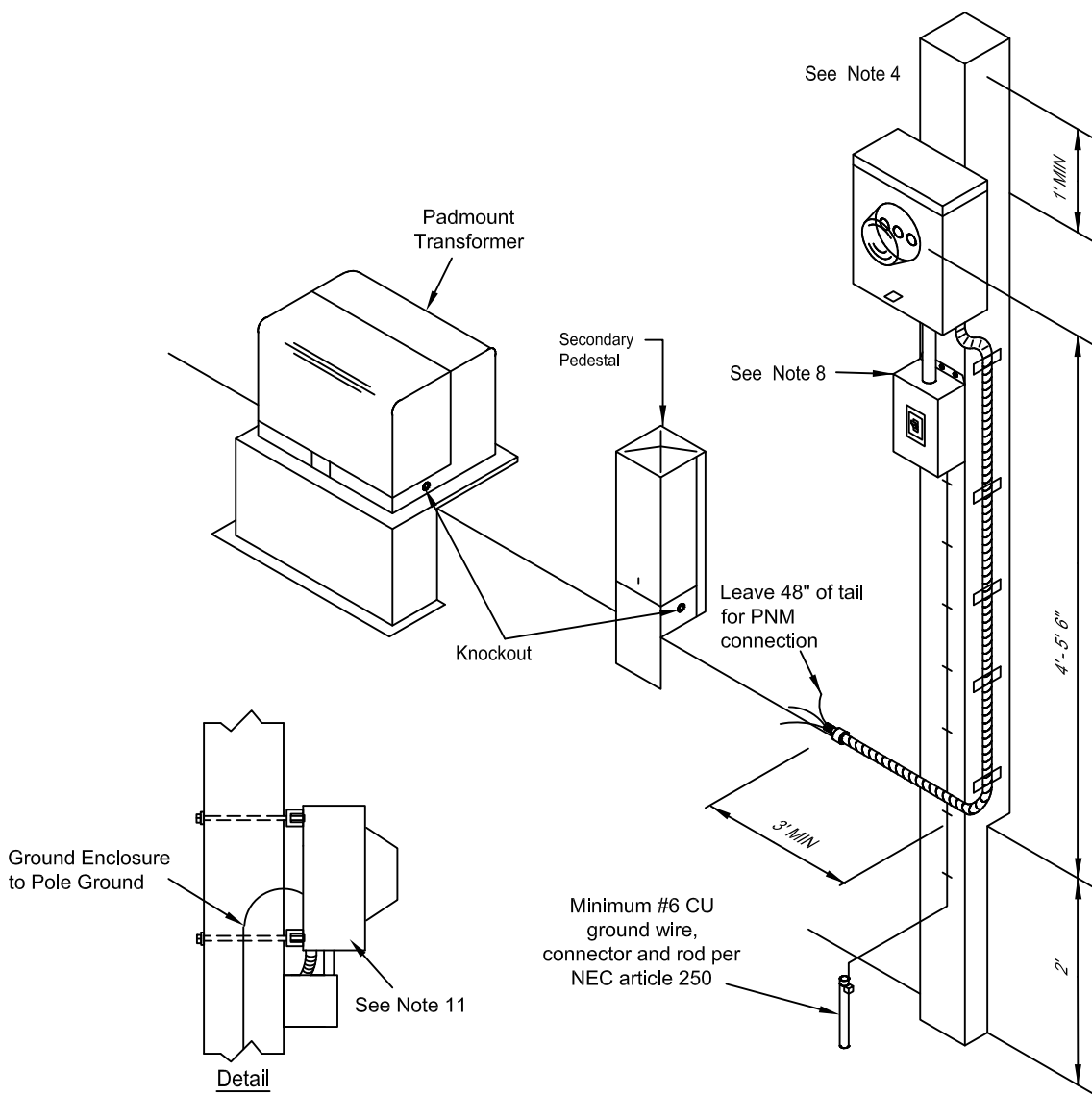
- (1) Meter socket, Schedule 80 PVC duct, elbow and plastic bushing to be supplied and installed by customer.
- (2) Customer to install 600V insulated duct from meter socket to safety switch or distribution panel.
- (3) Customer shall install bonding system in accordance with NEC.
- (4) Prefabricated riser assemblies may be used if internal duct diameter is maintained. "Muffler" bends are unacceptable. Use one piece of duct from elbow to meter socket.
- (5) Contact PNM new service department for service size and meter spot.
- (6) 125A meter socket is only applicable for manufactured and mobile homes.
- (7) No duct coupling allowed on duct riser above grade. Install bell end towards pedestal or transformer.
- (8) Contact your new service representative with the meter location and estimated load for more information.

REFERENCES

- (1) See DM-4-11.0 Maximum Available Fault Current
- (2) See DS-10-8.0 Trench Details
- (3) See MS-2-2.0 120/240V 125/200A Permanent Overhead and Underground Single-Phase Meter Socket
- (4) See MS-3-7.0 Over 200A 240V Single-Phase Meter Options
- (5) See MS-7-1.0 Underground or Overhead Working Space for Electric Meters

Permanent Service Entrance
(Can be used for Temporary Service)

DS-4-5.5



NOTES

- (1) Minimum timber size is 4" x 4".
- (2) For allowable timber treatment see chart.
- (3) The flexible duct must be 1" minimum to 1 1/4" maximum ID. A reducer and washers must be supplied to provide for connection to the 2" knockout in the pedestal or transformer. 3/4" flex duct would be acceptable with a 3/4" to 1" adapter. Adapter must meet NEC and local code authority.
- (4) Customer service shall be contacted to assure proper location of the construction service pole. Service poles installed without customer service location spot run the risk of not being approved by the PNM inspector.
- (5) If a pedestal or transformer is not adjacent to the property to be served, the contractor shall contact customer service for requirements.
- (6) CAUTION: 2' depth should not be exceeded because of power and telephone cables below. No pole may be located closer than 3' to a transformer or a pedestal.
- (7) If allowed by local code authority, a wire wrap ground consisting of a minimum of 12' of #6 AWG or larger bare copper extended to the bottom of the construction service pole may be used.
- (8) Neutral conductor must be insulated.
- (9) Weatherproof circuit breaker in accordance with NEC.
- (10) Street, lot, or space marked on switch box.
- (11) Anchor unistrut with 5/16" minimum through bolts, socket must be installed using manufacturer's mount holes to unistrut. Any open holes must be solidly sealed to maintain UL listing.

REFERENCES

- (1) See DM-4-11.0 Maximum Available Fault Current
- (2) See MS-2-2.5 240V 200A Customer Overhead or Underground Single-Phase Meter Socket
- (3) See MS-7-1.0 Underground and Overhead Working Space for Electric Meters

Treatment Chart

Type	ACQ	Cresote	CCA	Penta
Requirement	FLP	B	FL	FLP
ACQ	Alkaline Copper Quaternary			
B	Butt brush application (lower 6' of pole)			
FLP	Full length pressure treatment			
FL	Full length hot/cold treatment			
CCA	Copper Chromium Arsenate			
PENTA	Pentachlorophenol			
FLP, Full length pressure treatment ACQ treatment will provide a more durable pole for the customer, and is recommended.				

Approved Equipment

Manufacturer	Item	Mfg Part #
Eaton	200A OH/UG Ringless Socket	UTRS212BCH
Eaton	200A OH/UG Ringless Socket	UTRS213BE
Milbank	200A OH/UG Ringless Socket	U7040-XL-TG
Milbank	200A OH/UG Ringless Socket	U4801-XL-5T9
Milbank	200A OH/UG Ringless Socket	U8173-XL-KK-BLG
Square D	200A OH/UG Ringless Socket (5th Jaw to be removed)	UTH5213T
Square D	200A OH/UG Ringless Socket	UTH7213T

For ease of checking service without interruption, PNM will no longer allow ring meter sockets as of 12/01/2013.

120/240V Underground Temporary Service Pole

DS-4-6.0

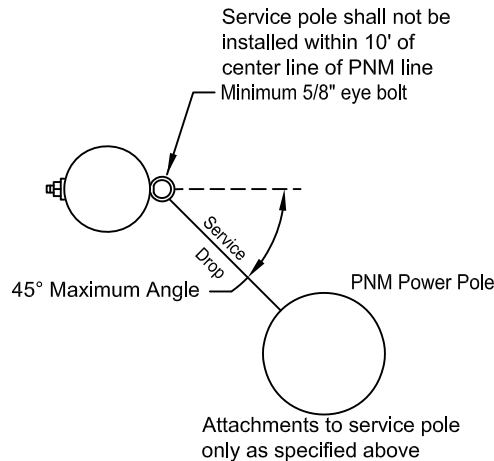
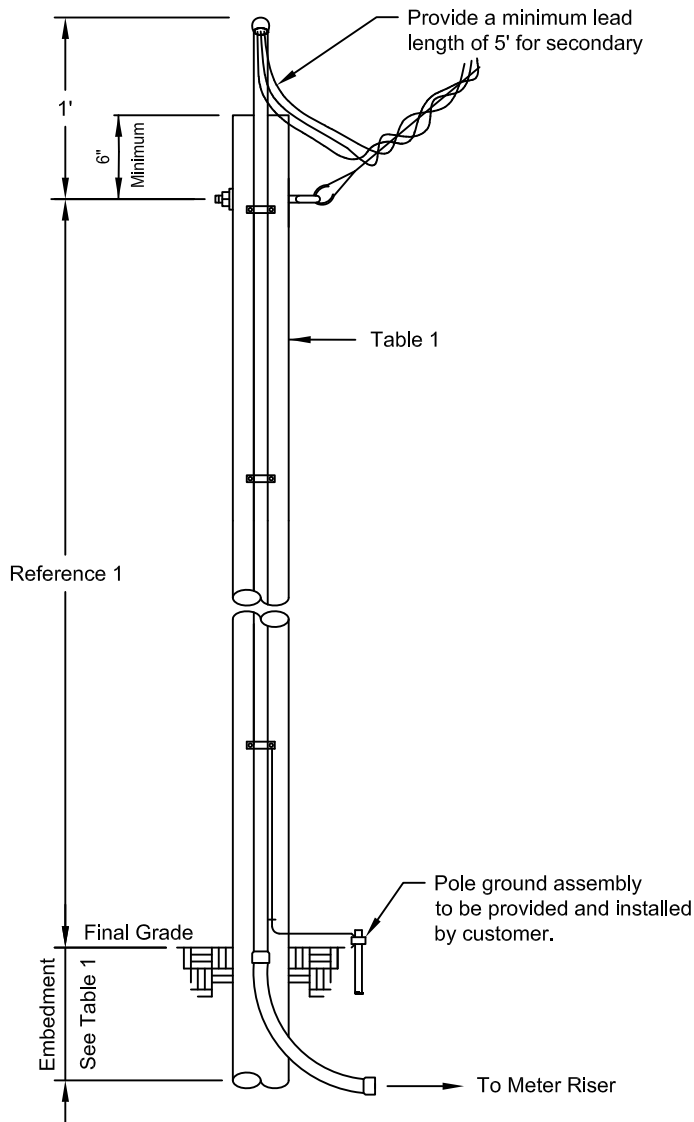


Table 1
See Note 1

Application			
Size	Wood Poles		
	20' See Note 15	25'	30'
Application	Permanent	Permanent	Permanent
Maximum Service Length	100' Reference 1	125' Reference 1	125' Reference 1
Minimum Pole Circumference and Embedment			
Top	18.8"	18.8"	18.8"
6' from Butt	21.5"	24.0"	26.0"
Minimum Embedment	5'	5'	5.5'
Recommended Treatment Methods			
ACQ	FLP	FLP	FLP
CCA	FLP	FLP	FLP
CREOSOTE	FL	FL	FL
PENTA	B	FL	FL

NOTES

- (1) Contact PNM customer service representative for wood pole location, size and height of service attachment for clearance of driveways, areas subject to vehicle traffic, clearance of building and signs.
- (2) Treatment for all poles and timbers must be ACQ, CCA, CREOSOTE or PENTA as shown in Table 1.
- (3) Salvaged poles must be butt and top treated.
- (4) Above grade duct shall be IMC or rigid duct fastened with screw using a minimum of three clamps with a maximum spacing of 10'.
- (5) Point of attachment must face PNM service supply.
- (6) Below grade must be PVC, IMC or rigid duct.
- (7) A permanently attached metal plate marked Customer Owned must be attached to the pole.
- (8) Customer is responsible for acquisition of required permits, right-of-way and maintenance of customer service.
- (9) The service wire will be within a continuous unbroken duct run without pullbox from meter base to service attachment.
- (10) Customer is responsible for all meter socket terminations.
- (11) Service lateral conductors type and size in accordance with the NEC.
- (12) Customer shall install bonding system accordance to NEC.
- (13) Customer's contractor working near any PNM lines are responsible for adhering to all applicable regulations and codes; including but not limited to the NESC, OSHA and the NEC.
- (14) Multiple commercial service will require additional review and approval prior to building.
- (15) Commercial developments/properties shall use poles taller than 20'.

REFERENCES

- (1) See DS-4-4.5 Minimum Point of Attachment Height for Service Drop Cable
- (2) See DS-4-5.0 Underground Service Entrance System
- (3) See DS-4-5.5 Permanent Service Entrance
- (4) See DM-4-11.0 Maximum Available Fault Current
- (5) See DS-13-2.0 Page 1-3 Clearance from Buildings and Other Structures
- (6) See DS-13-2.5 Vertical Clearance Above Ground Roadway, Rail or Water Surfaces

ACQ Alkaline Copper Quaternary
 B Butt brush application (lower 6' of pole)
 CCA Copper Chromium Arsenate
 FL Full length hot/cold treatment
 FLP Full length pressure treatment
 PENTA Pentachlorophenol

Pole sizes and embedment lengths are recommended minimums to resist a 330 lbs service drop lateral load at the point of attachment. Varying soil conditions and pole quality may require more embedment and/or a larger pole.

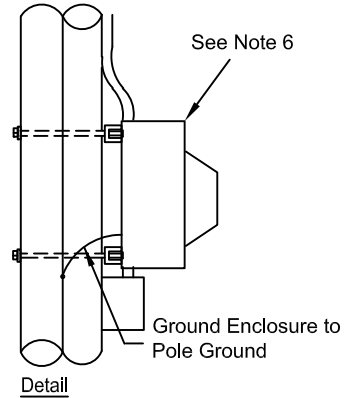
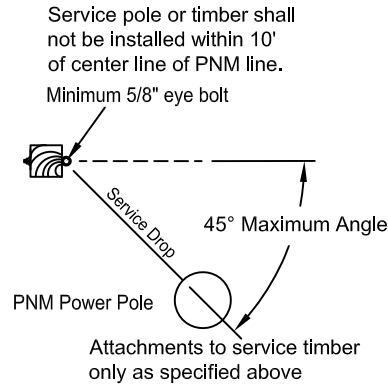
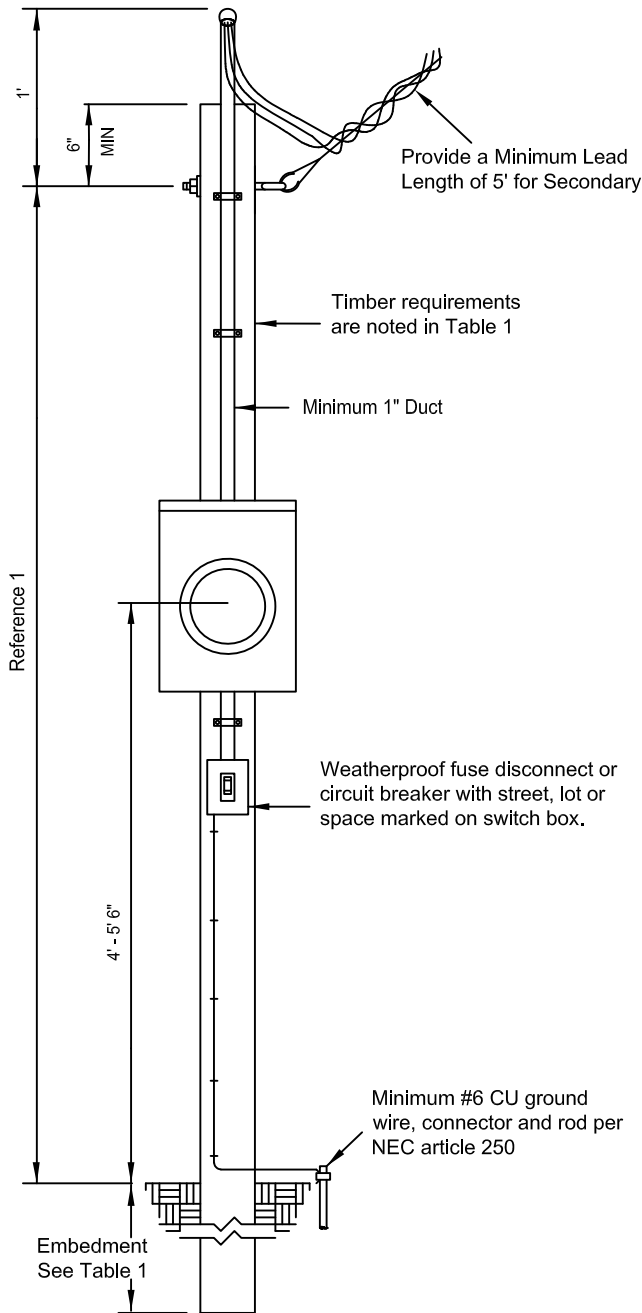


Table 1
See Note 1

Application				
Size	Timber	Poles		
	6"x6"x20'	20'	25'	30'
Application	Temporary Only	Temporary or Permanent	Temporary or Permanent	Temporary or Permanent
Maximum Service Length	75' Reference 1	100' Reference 1	125' Reference 1	125' Reference 1
Minimum Pole Circumference and Embedment				
Top	N/A	18.8"	18.8"	18.8"
6' from Butt	N/A	21.5"	24.0"	26.0"
Minimum Embedment	4'	4'	4.5'	5'
Recommended Treatment Methods				
ACQ	FLP	FLP	FLP	FLP
CCA	FL	FL	FL	FL
CREOSOTE	B	B	FL	FL
PENTA	FLP	FLP	FLP	FLP
ACQ	Alkaline Copper Quaternary			
CCA	Copper Chromium Arsenate			
B	Butt brush application (lower 6' of pole)			
FL	Full length hot/cold treatment			
FLP	Full length pressure treatment			
PENTA	Pentachlorophenol			
Pole sizes and embedment lengths are recommended minimums to resist a 330 lbs service drop lateral load at the point of attachment. Varying soil conditions and pole quality may require more embedment and/or a larger pole.				

NOTES

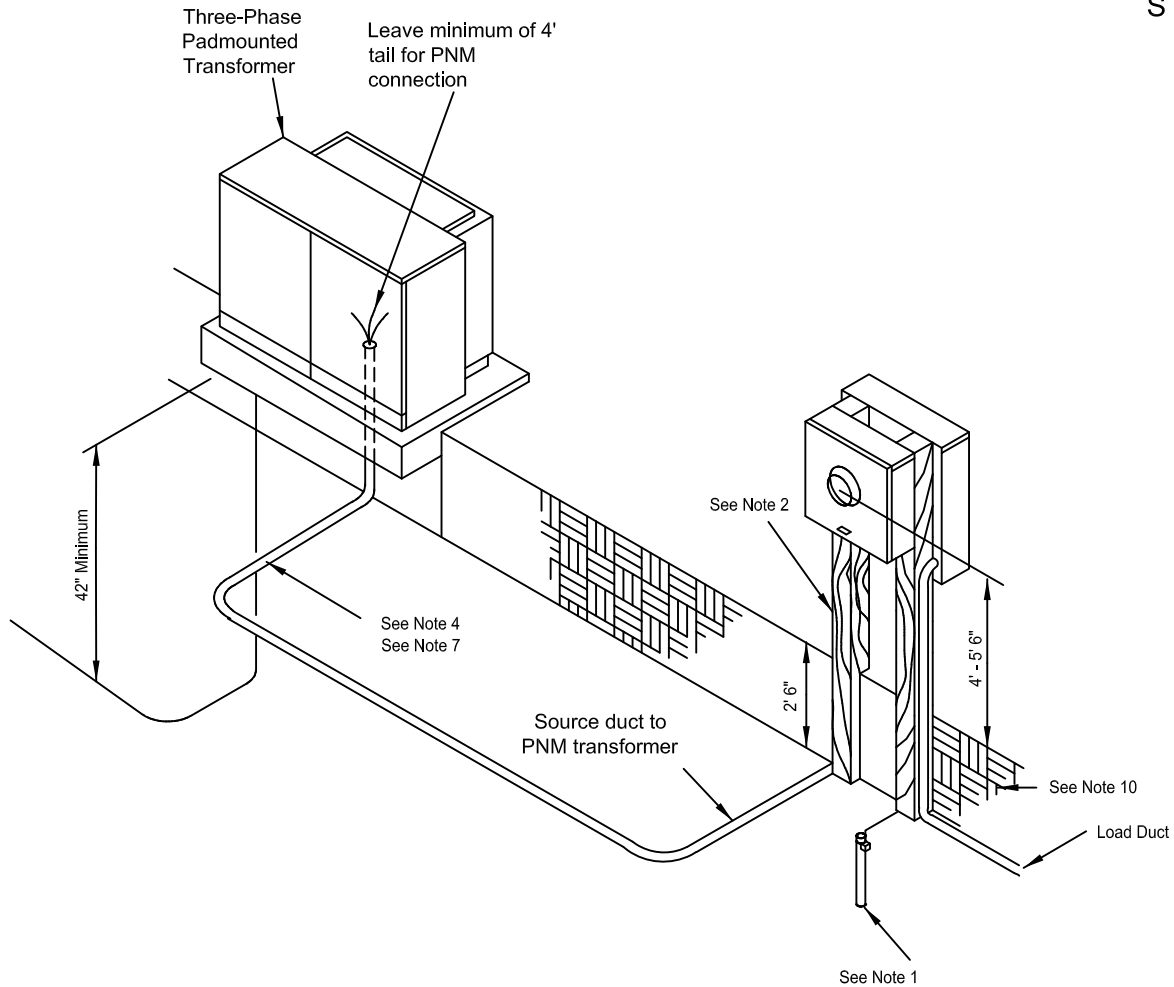
- Contact PNM customer service representative for pole location, size and height of service attachment for clearance of driveways, areas subject to vehicle traffic, clearance of building and signs.
- Treatment for all poles and timbers must be ACQ, CCA, CREOSOTE, or PENTA as shown in Table 1.
- Salvaged poles must be butt and top treated.
- Shall not be used for permanent three-phase installation or multiple meters.
- Customer service shall be notified to assure proper location of the service pole.
- Anchor unistrut with 5/16" minimum through bolts, socket must be installed using manufacturer's mount holes to unistrut. Any open holes must be solidly sealed to maintain UL listing.
- Panel and conduit shall be mounted centered on the pole.

REFERENCES

- See DS-4-4.5 Minimum Point of Attachment Height for Service Drop Cable
- See DM-4-11.0 Maximum Available Fault Current
- See DS-13-2.0 Page 1-6 Clearance from Buildings and Other Structures
- See DS-13-2.5 Vertical Clearance Above Ground Roadway, Rail or Water Surfaces
- See MS-2-6.0 200A Three-Phase Four-Wire Wye or Delta Meter Socket
- See MS-7-1.0 Underground or Overhead Working Space for Electric meters

Overhead Permanent/Temporary Single-Phase
or Temporary Three-Phase Service Pole

DS-4-8.0



NOTES

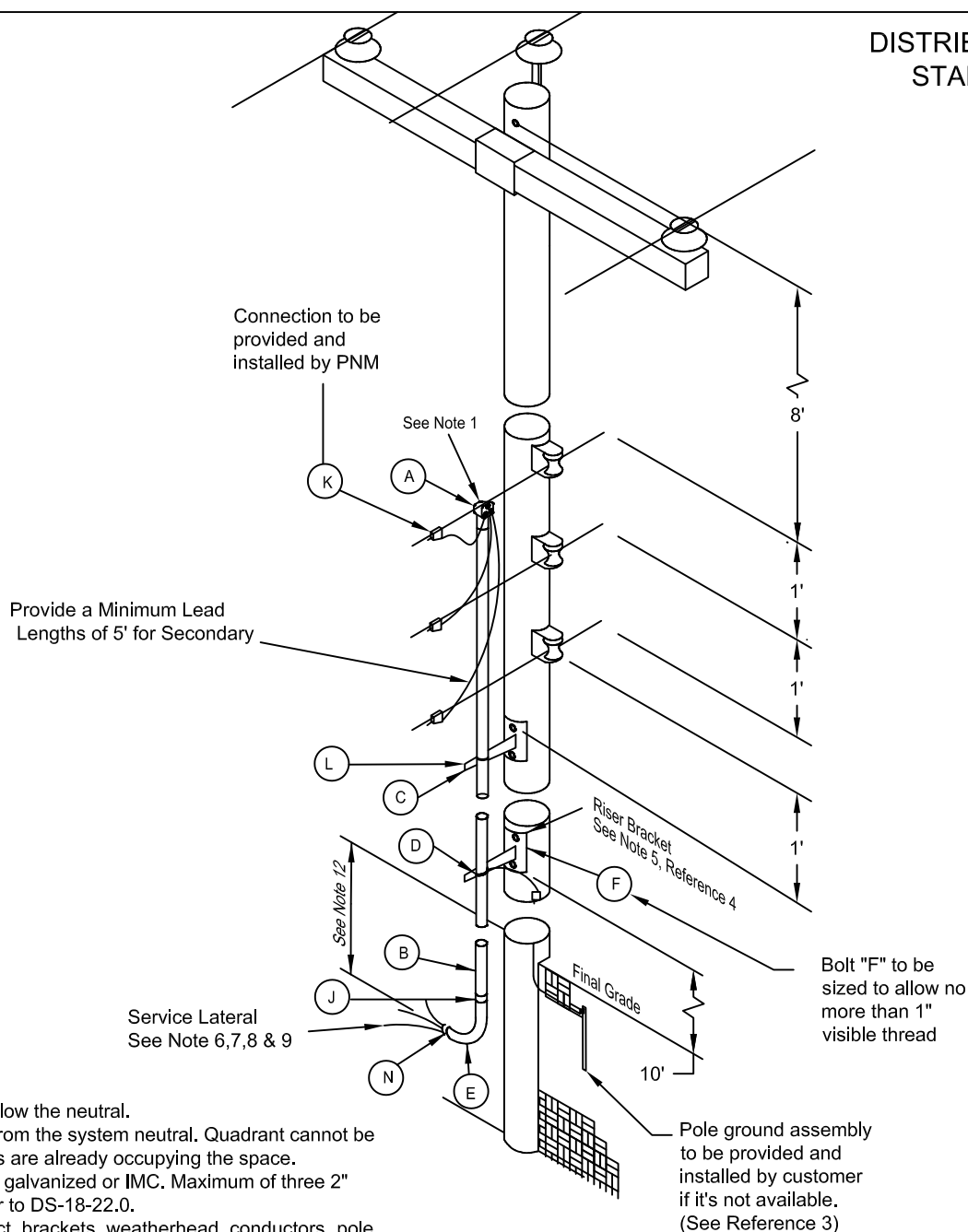
- (1) Minimum #6 CU ground wire. Connector and rod per NEC article 250. If allowed by local code authority, a wire wrap ground consisting of a minimum of 12' of #6 AWG of larger bare copper extending to the construction service pedestal may be used. A separate copper grounding electrode conductor sized in accordance with NEC table 250-94 must be provided for connection to PNM's transformer.
- (2) Minimum timber size is 4" x 4" grade 2 or better. Structural integrity of timber must meet PNM approval.
- (3) For allowable timber see Treatment Chart.
- (4) The duct must be PVC, IMC, or rigid galvanized. All above ground duct shall be rigid galvanized, schedule 80 PVC or IMC.
- (5) Contact PNM new service representative to assure proper location of the construction service pedestal.
- (6) If transformer is to adjacent to the property to be served, the contractor shall contact customer service for requirements.
- (7) Duct must be buried a minimum of 24" and stubbed into transformer secondary compartment. Arrangement with PNM is necessary to open transformer.
- (8) CAUTION: 2' 6" depth should not be exceeded because of power and telephone cables below. No pole may be located closer than 3' to a transformer or pedestal.
- (9) Weatherproof circuit breaker in accordance with NEC. Street, lot, or space marked on switch box.
- (10) Soil around timbers to be compacted to 90% minimum per ASTM D1556 and 1557.
- (11) Rigid nipple between meter socket and main breaker required.
- (12) Equipment shall be securely attached to support member either bolted directly or mounted to metal channel or unistrut cross members.
- (13) The service wire will be within a continuous unbroken duct run without pullbox from meter base to service attachment.

REFERENCES

- (1) See DM-4-11.0 Maximum Available Fault Currents
- (2) See MS-2-6.0 200A Three-Phase Four-Wire Wye or Delta Meter Socket

Treatment Chart

Type	ACQ	Cresote	CCA	Penta
Requirement	FLP	B	FL	FLP
ACQ	Alkaline Copper Quaternary			
B	Butt brush application (lower 6' of pole)			
FLP	Full length pressure treatment			
FL	Full length hot/cold treatment			
CCA	Copper Chromium Arsenate			
PENTA	Pentachlorophenol			
FLP, Full length pressure treatment ACQ treatment will provide a more durable pole for the customer, and is recommended.				



NOTES

- (1) Top of weatherhead shall be 3" below the neutral.
- (2) Preferred riser location to be 45° from the system neutral. Quadrant cannot be used if joint use/communications are already occupying the space.
- (3) All above-grade duct shall be rigid galvanized or IMC. Maximum of three 2" ducts allowed per bracket. Refer to DS-18-22.0.
- (4) Customer provides and installs duct, brackets, weatherhead, conductors, pole ground assembly, meter base(s) and all minor fittings.
- (5) Only the bottom riser bracket be bonded to the ground rod.
- (6) Service lateral conductors type and size in accordance with national electrical code NEC.
- (7) Customer is responsible for acquisition of required permits, right-of-way, and maintenance of customer-owned service.
- (8) PNM recommends use of ruggedized service cable or duct.
- (9) Customer is responsible for all meter base terminations.
- (10) **Customer must permanently mark riser with service address.**
- (11) PNM will inspect the customer installations including pole ground assembly before energizing the service.
- (12) Per National Electric Code (NEC), underground installation requirement.
- (13) If the customer chooses to use conduit, the service wire will be within a continuous unbroken duct run without pullbox from meter base to service attachment.
- (14) Customer's contractor working near any PNM lines are responsible for adhering to all applicable regulations and codes; including but not limited to the NESC, OSHA and the NEC.

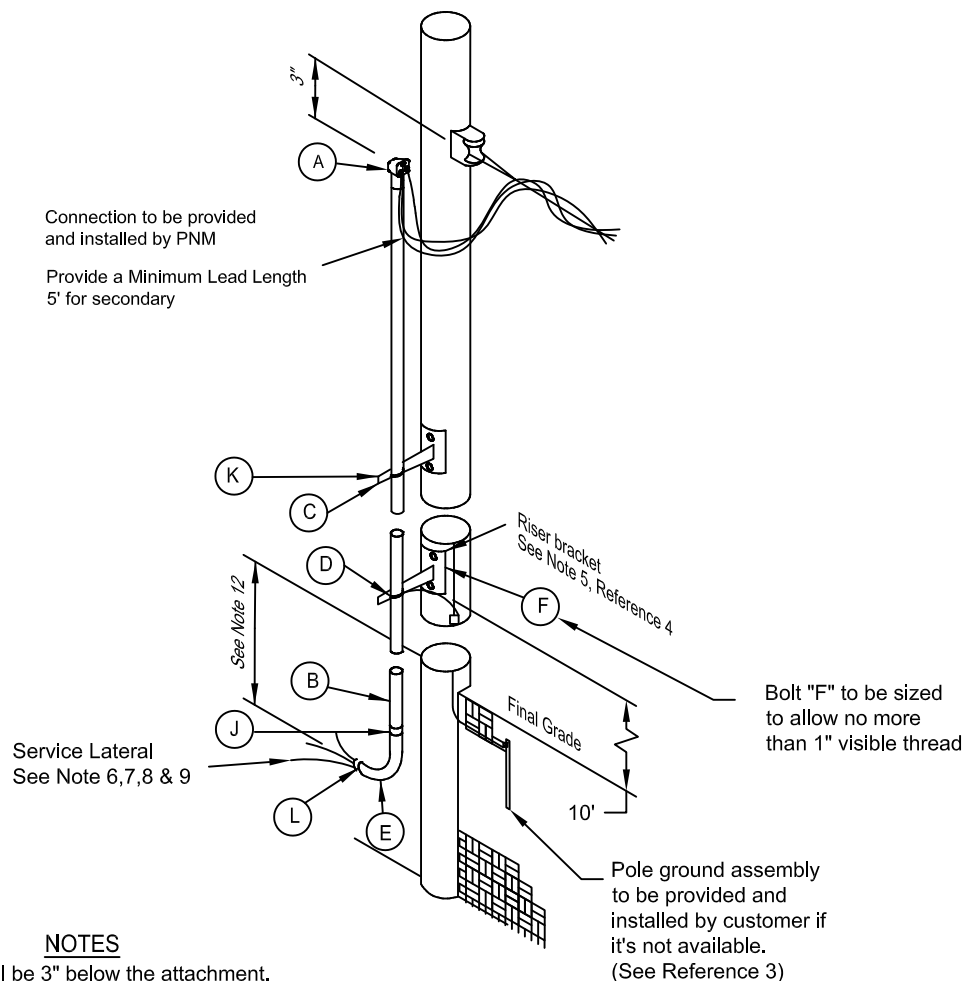
REFERENCES

- (1) See DM-4-11.0 Maximum Available Fault Currents
- (2) See DS-4-5.0 Underground Service Entrance System
- (3) See DS-18-20.0 Ground Assembly
- (4) See DS-18-22.0 Universal Support Bracket
- (5) See MS-2-2.0 120/240V 125/200A Permanent Overhead and Underground Single-Phase Meter Socket

Material List			
Item	Quan.	Description	Stock #
A	1	___ Clamp Type Weatherhead	
B	30'	___ Galvanized Duct	
C	2	___ Universal Support Bracket	DS-18-22.0
D	2	___ Pipe Strap Kit	
E	1	___ Galvanized Elbow	
F	4	5/8" x ___ Machine Bolt	DS-18-25.0
J	1	___ Galvanized Coupling	
K	3	___ Line Tap	DS-18-99.0
L	2	#10 - #2 Ground Lug	5935-236942
M	1	___ Ground Assembly	DS-18-20.0
N	1	___ Plastic Bushing	

Underground Residential Customer-Owned Service

DS-4-9.0



NOTES

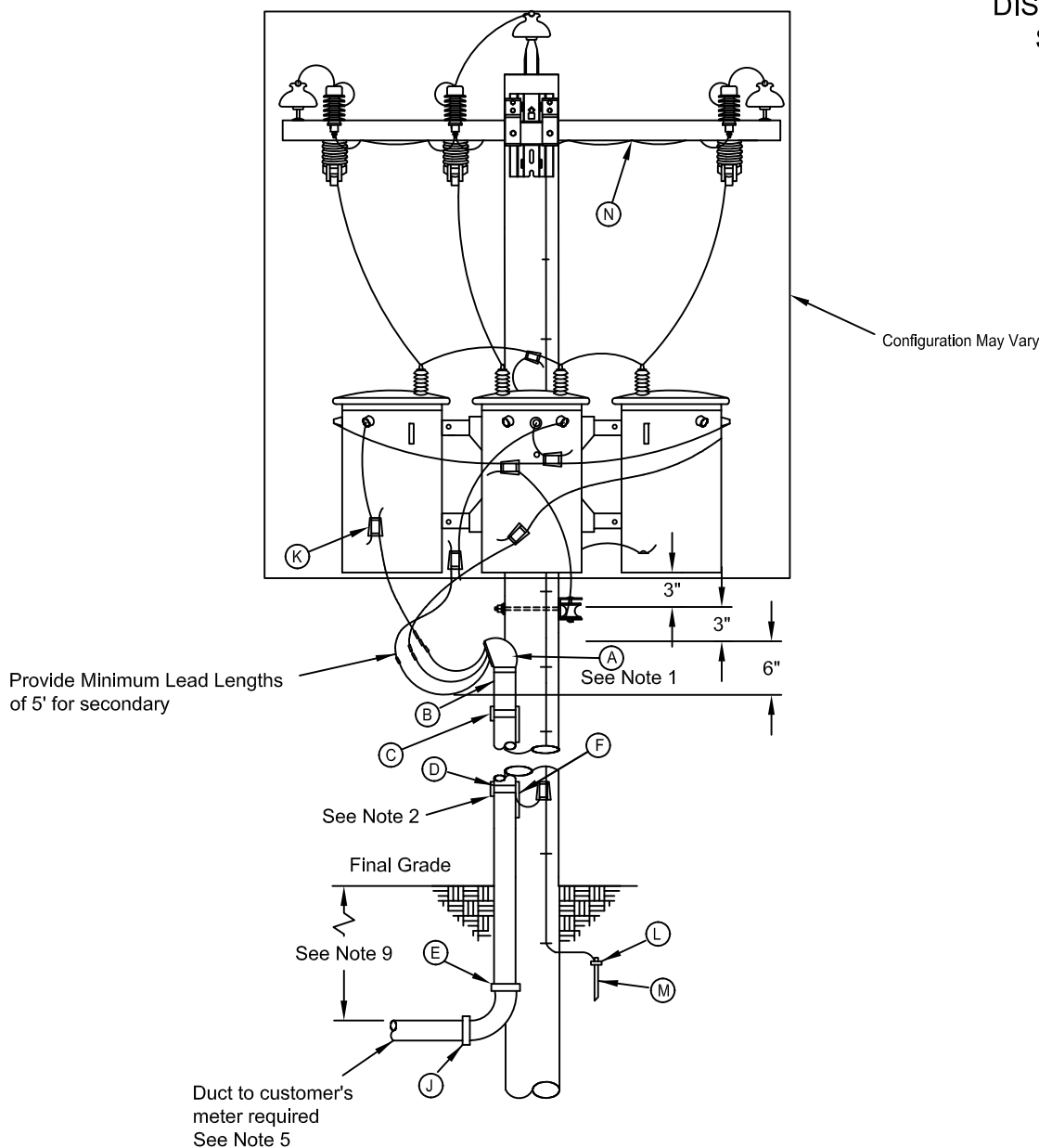
- (1) Top of weatherhead shall be 3" below the attachment.
- (2) Preferred riser location to be 45° from attachment. Quadrant cannot be used if joint use/communications are already occupying the space.
- (3) All above-grade duct shall be rigid galvanized or IMC. Maximum of three 2" ducts allowed per bracket. Refer to DS-18-22.0.
- (4) Customer provides and installs duct, brackets, weatherhead, conductors, pole ground assembly, meter base(s) and all minor fittings.
- (5) Only the bottom riser bracket be bonded to the ground rod.
- (6) Service lateral conductors type and size in accordance with national electrical code NEC.
- (7) Customer is responsible for acquisition of required permits, right-of-way, and maintenance of customer-owned service.
- (8) The service wire will be within a continuous unbroken duct run without pullbox from meter base to service attachment.
- (9) Customer is responsible for all meter base terminations.
- (10) **Customer must permanently mark riser with service address.**
- (11) PNM will inspect the customer installations including pole ground assembly before energizing the service.
- (12) Per National Electric Code (NEC), underground installation requirement.
- (13) Customer's contractor working near any PNM lines are responsible for adhering to all applicable regulations and codes; including but not limited to the NESC, OSHA and the NEC.

REFERENCES

- (1) See DM-4-11.0 Maximum Available Fault Currents
- (2) See DS-4-5.0 Underground Service Entrance System
- (3) See DS-18-20.0 Ground Assembly
- (4) See DS-18-22.0 Universal Support Bracket
- (5) See MS-2-2.0 120/240V 125/200A Permanent Overhead and Underground Single-Phase Meter Socket

Material List

Item	Quan.	Description	Stock #
A	1	___ Clamp Type Weatherhead	
B	30'	___ Galvanized Duct	
C	2	Universal Support Bracket	DS-18-22.0
D	2	___ Pipe Strap Kit	
E	1	___ Galvanized Elbow	
F	4	5/8" x ___ Machine Bolt	DS-18-25.0
J	1	___ Galvanized Coupling	
K	2	#10 - #2 Ground Lug	5935-236942
L	1	___ Plastic Bushing	



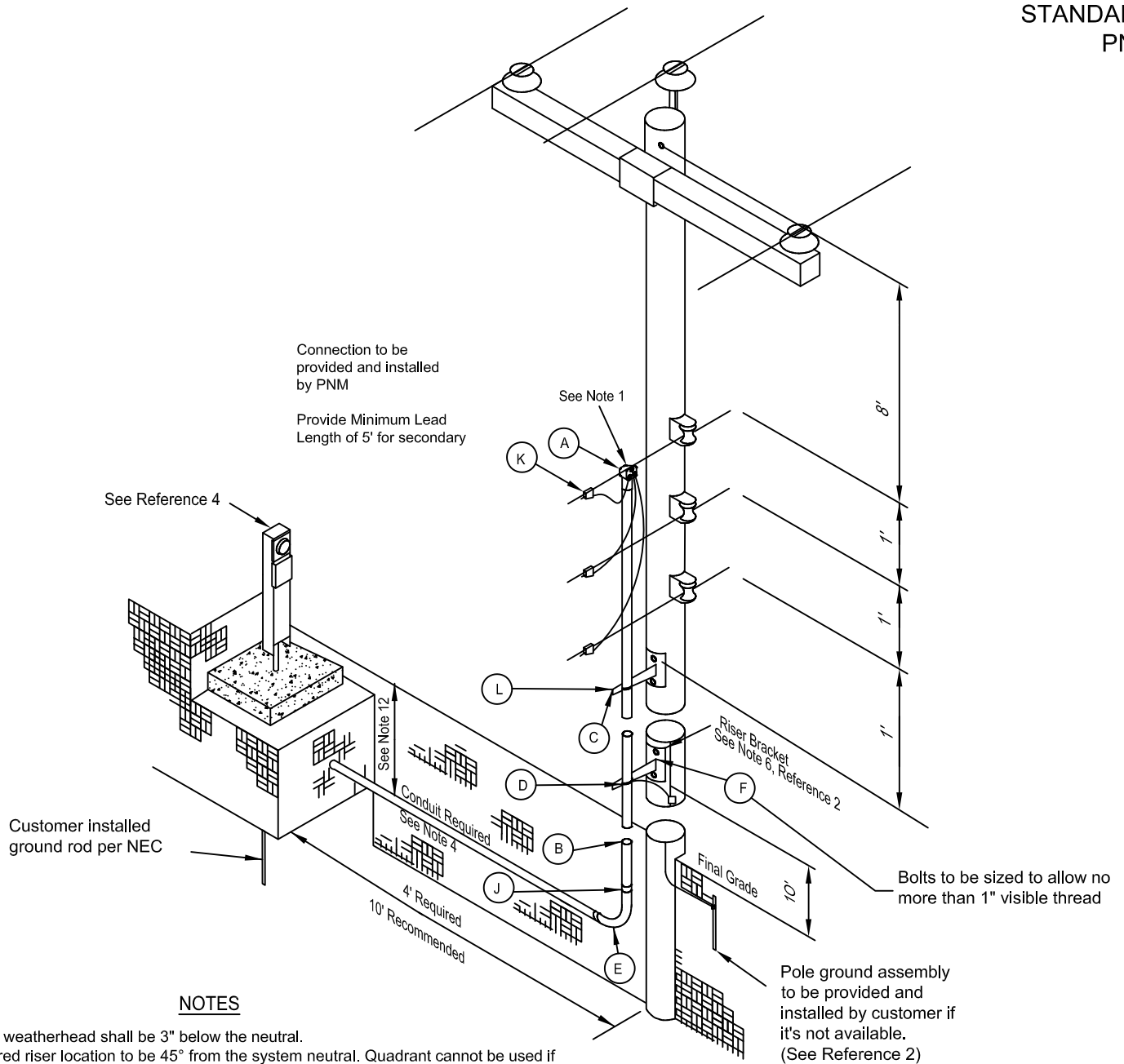
NOTES

- (1) Top of weatherhead shall be 3" below the neutral. Each conductor phase will be identified at the weatherhead using band-wraps of electrical tape: one band for phase one, two bands for phase two, and three bands for phase-three. White tape is suitable for neutral conductors only.
- (2) Only the bottom riser bracket be bonded to the ground rod.
- (3) Preferred riser location to be 45° from the system neutral.
- (4) All above-grade duct shall be rigid galvanized or IMC. Customer duct are limited to 5" diameter. Two ducts maximum.
- (5) All underground duct except type DB PVC, schedule 40 PVC, rigid galvanized or IMC must be concrete encased.
- (6) Customer provides and installs: duct, brackets, weatherhead, conductors, meter base(s) and all minor fittings.
- (7) Customer address must be permanently applied to riser.
- (8) PNM will inspect the customer installations including pole ground assembly before energizing the service.
- (9) Per National Electric Code (NEC), underground installation requirement.
- (10) The service wire will be within a continuous unbroken duct run without pullbox from meter base to service attachment.
- (11) Customer's contractor working near any PNM lines are responsible for adhering to all applicable regulations and codes; including but not limited to the NESC, OSHA and the NEC.

REFERENCES

- (1) See DM-4-11.0 Maximum Available Fault Currents
- (2) See DS-18-20.0 Ground Assembly
- (3) See DS-18-21.0 Fiberglass Crossarm Grounding
- (4) See DS-18-22.0 Universal Support Bracket

Material List			
Item	Quan.	Description	Stock #
A	1	Weatherhead	5975-
B	30'	Galvanized or IMC Duct	5975-
C	2	Universal Support Bracket	DS-18-22.0
D	2	Pipe Strap Kit	5975-
E	1	Galvanized Elbow	5975-
F	4	5/8" x Machine Bolt	DS-18-25.0
J	1	Galvanized Coupling	5975-
K	3	Line Tap	DS-18-99.0
L	2	#10-#2 Ground Lug	5935-236942
M	1	Ground Assembly	DS-18-20.0
N	1	Fiberglass Crossarm Grounding	DS-18-21.0



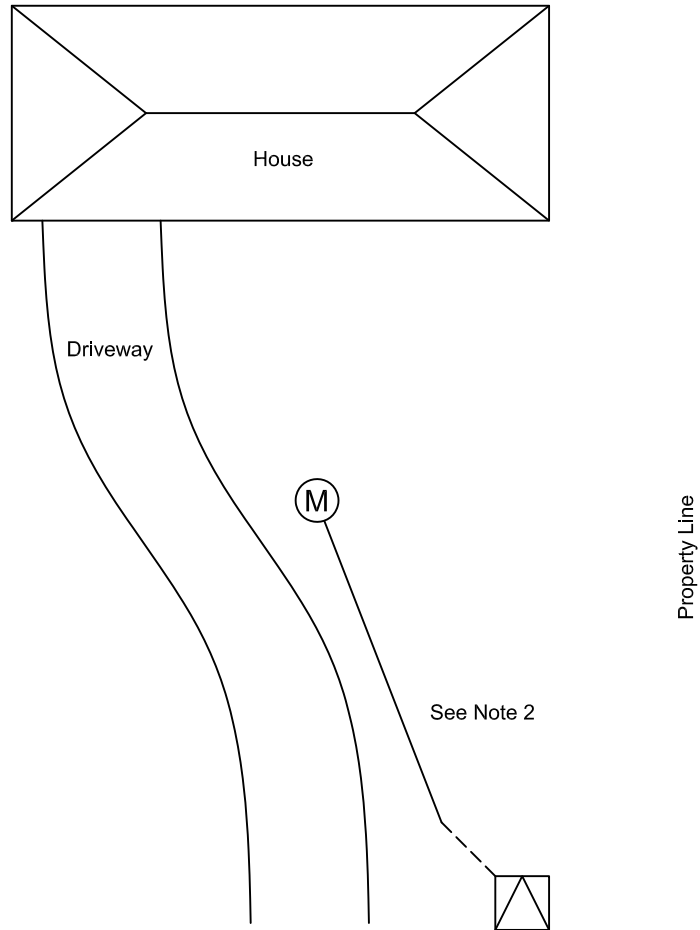
NOTES

- (1) Top of weatherhead shall be 3" below the neutral.
- (2) Preferred riser location to be 45° from the system neutral. Quadrant cannot be used if joint use/communications are already occupying the space.
- (3) All above-grade duct shall be rigid galvanized or IMC. Maximum of three 2" ducts allowed per bracket. Refer to DS-18-22.0.
- (4) All underground duct except type DB PVC, Schedule 40 PVC, rigid galvanized or IMC must be concrete encased.
- (5) Customer provides and installs duct, brackets weatherhead, conductors, pole ground assembly meter base and all minor fittings.
- (6) Only the bottom riser bracket be bonded to the ground rod.
- (7) Service lateral conductors type and size in accordance with NEC. Minimum conductor size #8 AWG copper.
- (8) Customer is responsible for acquisition of required permits. Right-of-way and maintenance of customer-owned service.
- (9) Customer is responsible for all meter base terminations.
- (10) **Customer must permanently mark riser with service address.**
- (11) PNM will inspect the customer installation including pole ground assembly before energizing the service.
- (12) Per National Electric Code (NEC), underground installation requirement.
- (13) The service wire will be within a continuous unbroken duct run without pullbox from meter base to service attachment.
- (14) Customer's contractor working near any PNM lines are responsible for adhering to all applicable regulations and codes; including but not limited to the NESC, OSHA and the NEC.

REFERENCES

- (1) See DM-4-11.0 Maximum Available Fault Currents
- (2) See DS-18-20.0 Ground Assembly
- (3) See DS-18-22.0 Universal Support Brackets
- (4) See MS-5-2.0 120/240V 125-320A Pedestal Meter

Material List			
Item	Quan.	Description	Stock #
A	1	2" Weatherhead	5975-263277
B	30'	2" Galvanized Duct	5975-257857
C	2	Universal Support Bracket	DS-18-22.0
D	2	2" Pipe Strap Kit	5975-258145
E	1	2" Galvanized Elbow	5975-259549
F	4	5/8" x _____ Machine bolt	DS-18-25.0
J	1	2" Galvanized Coupling	5975-272252
K	3	_____ Line Tap	DS-18-99.0
L	2	#10 - #2 Ground Lug	5935-236942
M	1	Ground Assembly	DS-18-20.0

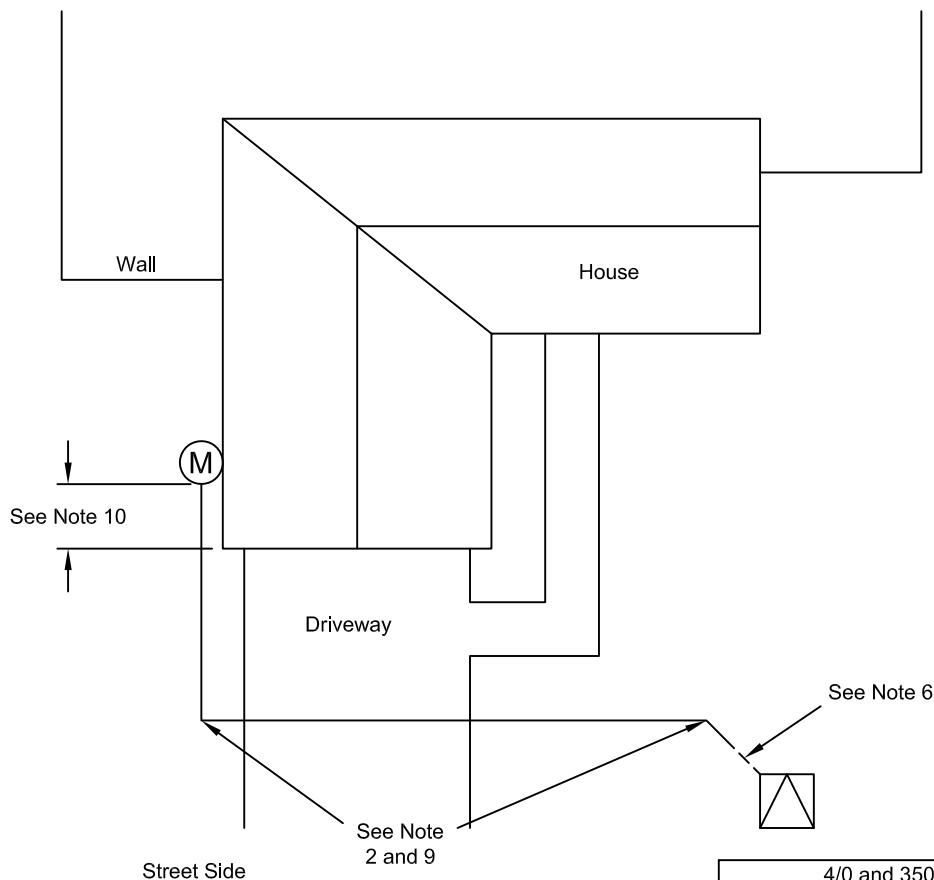


NOTES

- (1) When distance from transformer or pedestal to the proposed meter entrances exceeds 300', the meter pedestal shall be located along the driveway to promote visibility and easy access to the meter reader. The customer is responsible for service lateral from meter to home.
- (2) Services greater than 100' 200 Amps requires 350 MCM and may require customer contribution.
- (3) Maximum service length of 350 MCM in conduit is 300' without bends.
- (4) Service greater than 320 Amps will be designed on a case-by-case basis.
- (5) Take into account, maximum voltage drop per transformer is 4%, therefore the longer the length in service increases the limit of the voltage drop.
- (6) Contact your new service representative for meter location spotting.

Maximum Underground Residential Service Length

DS-4-12.0



NOTES

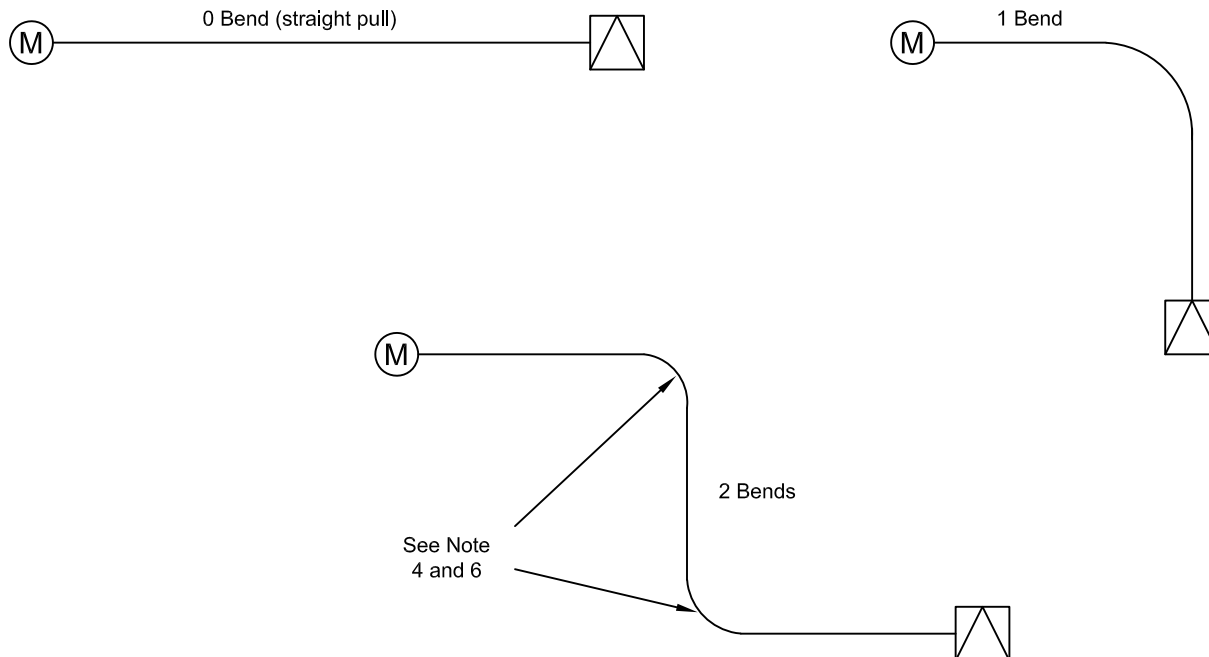
- (1) Installation must conform to commonly approved utility installation procedures with appropriate equipment to measure tensions during installation. See DM-10-3.1.
- (2) Conduit runs shall not exceed the maximum bends, length and summation of degrees combination as described in the table for pulling either 600V - 4/0 or 350 triplex in 3" conduit.
- (3) Bend angles must be either 22.5°, 45° or 90° and shall have a bend radius of 36".
- (4) All bends shall be factory bend.
- (5) Max summation of degrees does not include 90° elbow stubouts at meter riser or transformer.
- (6) One gallon of lubricant must be used to achieve the length as listed, especially for bends in the run.
- (7) Stubouts are pre-installed at 45° in reference to the transformer pad.
- (8) See "Underground Secondary Service Conduit Routing Explanation" for a detail example of the table.
- (9) See "600V secondary in Conduit - Material Specification" for the listed materials.
- (10) In the example picture shown above, meter to transformer has two bend in the conduit run, therefore max length is 125' and max summation degree in the run can be 135° for using either 4/0 or 350 triplex conductor.
- (11) Locate meter on the side of home, must be within 10' of the street side of the house, but not behind stem walls, sidewalls or other encumbrances.
- (12) Customer must supply and install a 3" PVC to Rigid adapter to service lasher prior to PNM installing the 3" PVC service conduit.
- (13) Contact your new service representative for meter location spotting.

4/0 and 350 Triplex		
Bend	Length	Maximum Summation of Degrees
0	300'	0°
1	200'	45°
1	175'	90°
2	125'	135°
2	75'	180°

REFERENCES

- (1) See DM-10-3.1 Underground Secondary Service Conduit Routing Explanation
- (2) See DM-10-3.2 Maximum Underground Residential Service Length
- (3) See DS-4-3.0 Attachment of Service to Riser
- (4) See DS-10-8.1 Trench Details
- (5) See MS-2-2.0 120/240V 125/200A Permanent Overhead and Underground Single-Phase Meter Socket
- (6) See MS-2-10.0 320A Meter Socket with Bypass
- (7) See MS-3-7.0 Over 320A 240V Single-Phase Meter Options
- (8) See MS-7-1.0 Underground or Overhead Working Space for Electric Meters

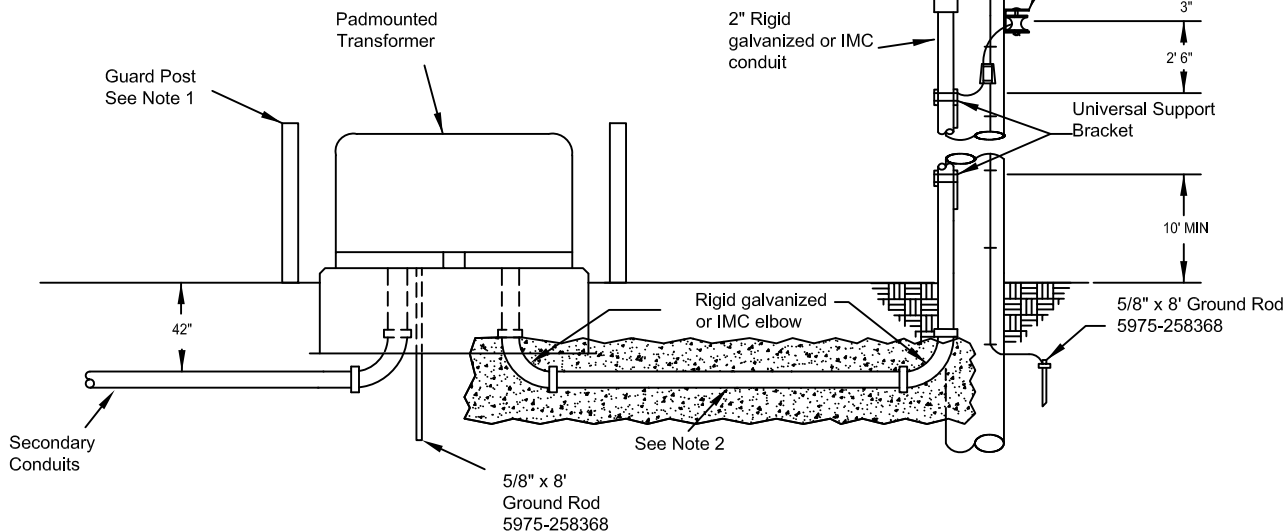
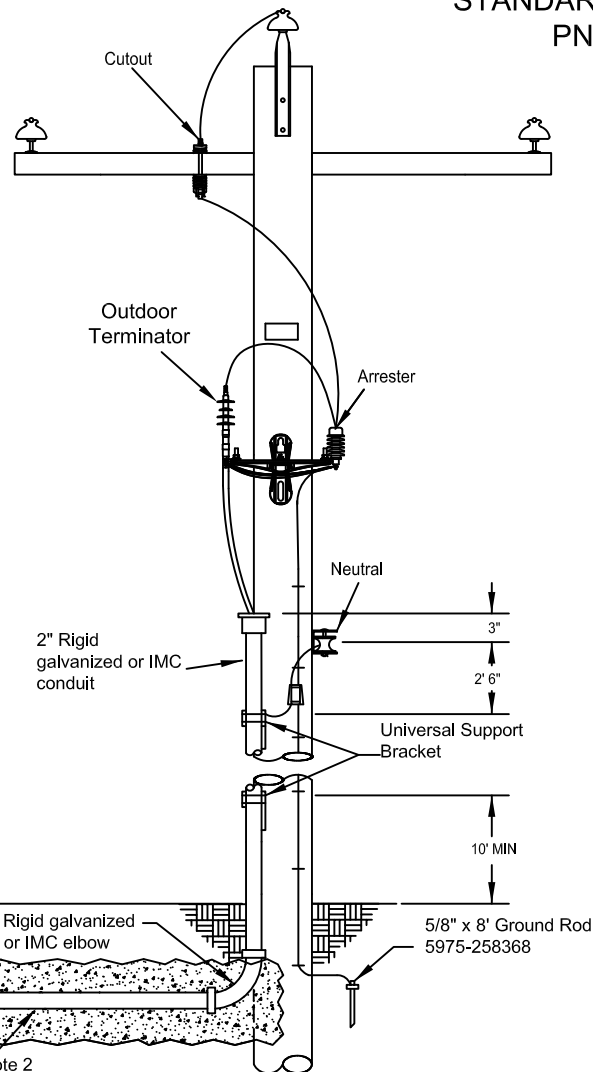
4/0 and 350 Triplex		
Bend	Length	Maximum Summation of Degrees
0	300'	0°
1	200'	45°
1	175'	90°
2	125'	135°
2	75'	180°



NOTES

- (1) installation must conform to commonly approved utility installation procedures with appropriate equipment to measure tensions during installation.
- (2) The conduit system routing is to be design such that maximum pulling tensions, sidewall bearing pressures, maximum pulling grip tensions or the cable pulling equipment's safe pulling tension limits are not surpassed.
- (3) The following parameters were used to develop the table and shall not be surpassed or both 4/0 and 350 service conductors:
 Maximum pulling tension = 1000 lbs.
 Sidewall bearing pressures = 750 lbs.
 Back tension = 50 lbs.
- (4) Each picture shown above describe the different scenarios a conduit system can run. From meter to pedestal/transformer, maximum straight run with no bend can only be 300'. If needed, multiple bends in the run is allowed but for an allowable distance and degrees in the run.
- (5) "Bend" is defined as the maximum number of elbows there can be in a run.
- (6) "Length (ft)" is defined as the maximum cable footage that can be pulled based on the number of bends.
- (7) "Maximum Summation of Degrees" is defined as the summation of elbow degrees in the run. It shall not surpass the value specified in the table.
- (8) Maximum Summation of Degrees does not include the losure from the transformer, pedestal or meter.
- (9) 22.5°, 45° or 90° elbows of 3' bend radius can only be used in the run.
- (10) One gallon of Lubricate must be used to achieve the length as listed, especially for bends in the run.
- (11) If cable-pulling tension is near 1000 lbs, stop and reanalyze conduit run.
- (12) If more bends are needed than specified in the table contact your service representative to further evaluate.
- (13) Example - If pulling either 4/0 or 350 Triplex with 2 bend in a run can have a maximum length of 125' with a summation of 135°. Using a combination of 90° elbow, 45° elbow or 22.5° elbow that sums a maximum of 135° will suffice (as shown above).

Secondary Voltage 240/120					
Maximum Number of Secondary Conductors Per Phase					
Maximum Conductor Size Secondary Connector Kit	Transformer kVA size				
	25	50	75	100	167
500 kCMIL 5935-238351	6	6	6	6	6

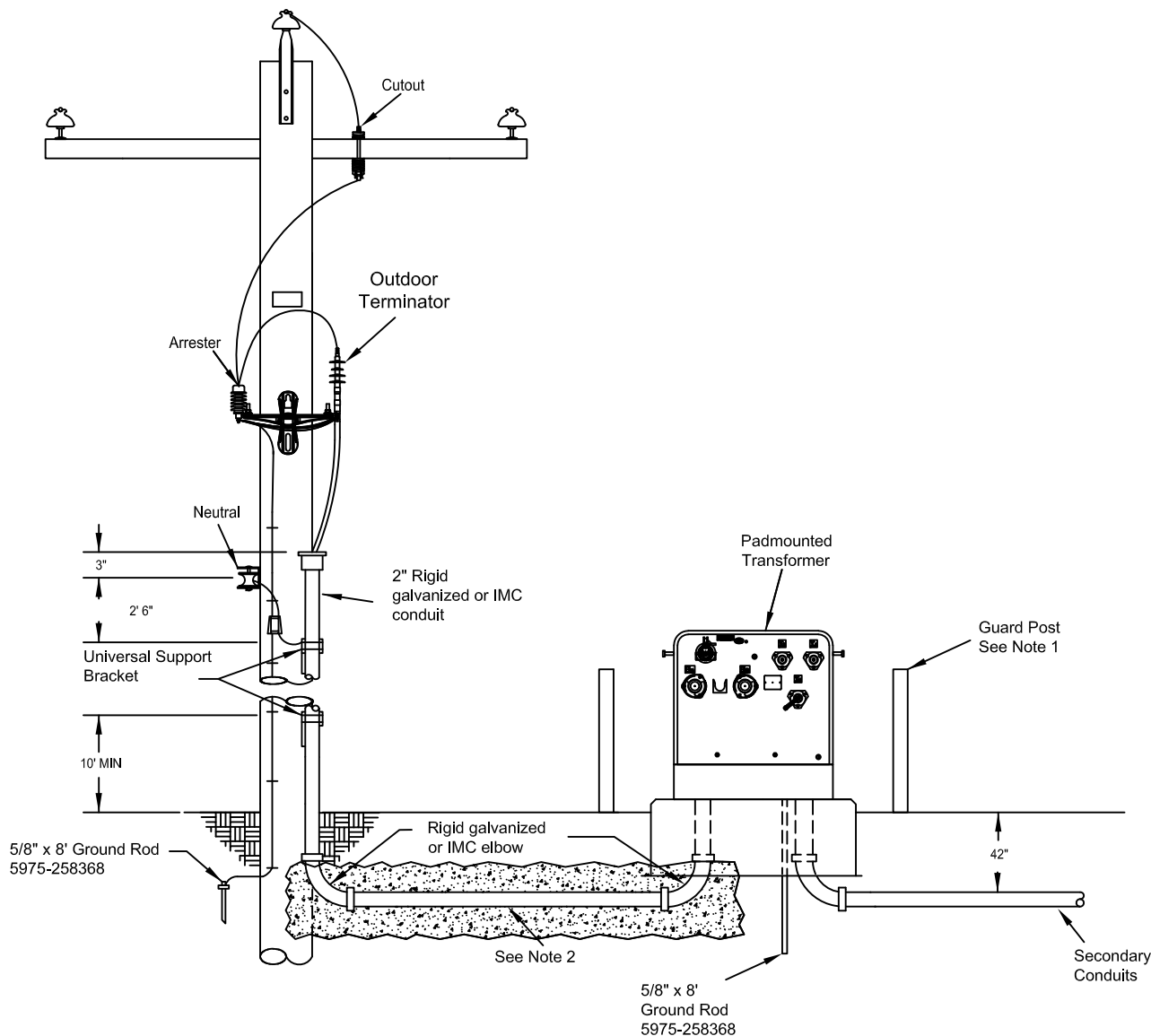


NOTES

- (1) Transformer shall be protected by guard posts if placed in traffic area.
- (2) Primary ducts shall be direct buried rigid galvanized or IMC conduit or concrete encased PVC conduit. Customer may use schedule 40 rigid PVC minimum duct without concrete encasement provided a minimum 10' rigid galvanized or IMC duct is installed for primary at the horizontal when entering or exiting the vertical elbow at the padmounted equipment. The primary and secondary conduit will be furnished and installed by the customer.
- (3) Red warning tape shall be placed 12" above any PVC duct that is not concrete encased.
- (4) Preferred riser location to be within 45° from the system neutral.
- (5) For allowable number of secondary conductors see table above.
- (6) Customer shall include a polyester pullstring with a minimum breaking strength of 210 lbs in completed duct for future use by PNM.

REFERENCES

- (1) See DM-4-11.0 Maximum Available Fault Currents
- (2) See Section 7 for Concrete Pad Detail
- (3) See DS-7-16.10 Guard Post
- (4) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformers
- (5) See DS-10-6.3 200A Single-Phase Deadend Riser
- (6) See DS-10-6.5 200A Single-Phase Riser
- (7) See DS-18-20.0 Ground Assembly
- (8) See DS-18-22.0 Universal Support Brackets

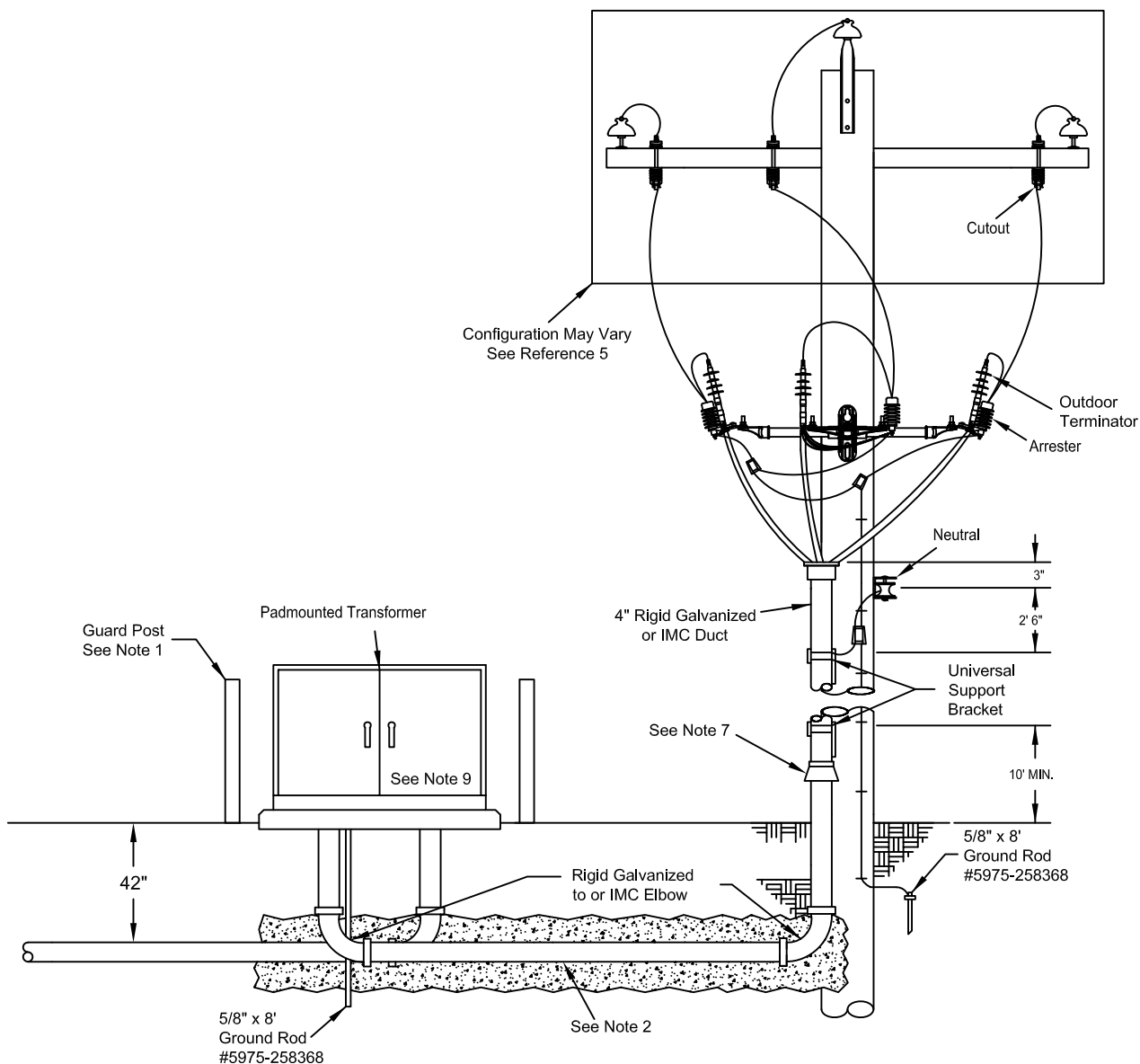


NOTES

- (1) Transformer shall be protected by guard posts if placed in traffic area.
- (2) Primary ducts shall be direct buried rigid galvanized or IMC conduit or concrete encased PVC conduit. Customer may use schedule 40 rigid PVC minimum duct without concrete encasement provided a minimum 10' rigid galvanized or IMC duct is installed for primary at the horizontal when entering or exiting the vertical elbow at the padmounted equipment. The primary and secondary conduit will be furnished and installed by the customer.
- (3) Red warning tape shall be placed 12" above any PVC duct that is not concrete encased.
- (4) Preferred riser location to be within 45 degrees from the system neutral.
- (5) For allowable number of secondary conductors see table above.
- (6) Customer shall include a polyester pullstring with a minimum breaking strength of 210 lbs in completed duct for future use by PNM.
- (7) Transformer is supplied with low voltage connectors that can accommodate 6 secondary cables, #6 to 500 kcmil. Item number for replacement connectors 5935-233261.
- (8) Customer's contractor working near any PNM lines are responsible for adhering to all applicable regulations and codes; including but not limited to the NESC, OSHA and the NEC.

REFERENCES

- (1) See DM-4-11.0 Maximum Available Fault Currents
- (2) See Section 7 for Concrete Pad Detail
- (3) See DS-7-16.10 Guard Post
- (4) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformers
- (5) See DS-10-6.3 200A Single-Phase Deadend Riser
- (6) See DS-10-6.5 200A Single-Phase Riser
- (7) See DS-18-20.0 Ground Assembly
- (8) See DS-18-22.0 Universal Support Brackets



NOTES

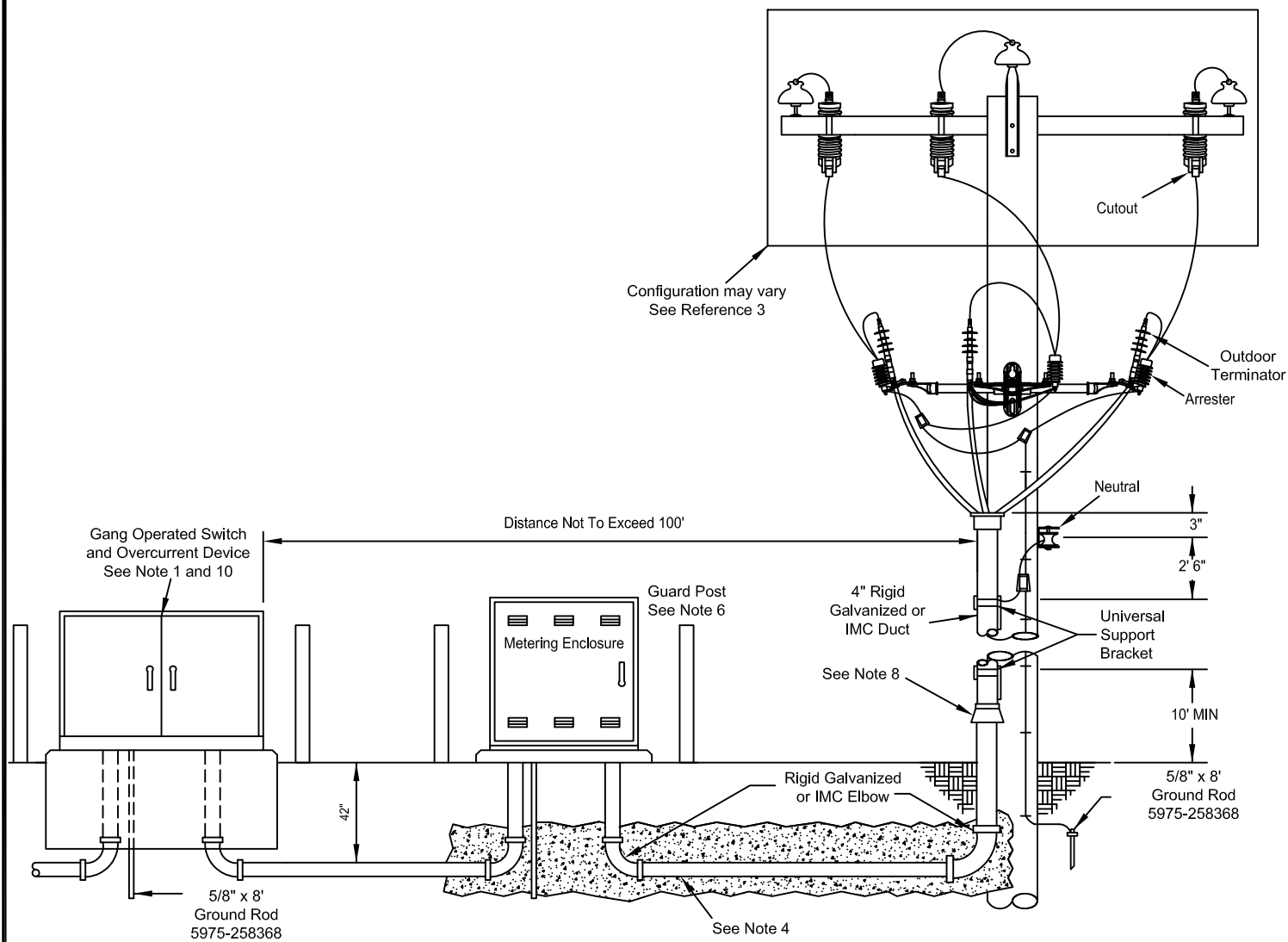
- (1) Transformer shall be protected by guard posts if placed in traffic area.
- (2) Primary ducts shall be direct buried rigid galvanized or IMC duct or concrete encased PVC duct. Customer may use schedule 40 rigid PVC minimum duct without concrete encasement provided a minimum 10' rigid galvanized or IMC duct is installed for primary at the horizontal when entering or exiting the vertical elbow at the padmounted equipment. The primary and secondary duct will be furnished and installed by the customer.
- (3) Red warning tape shall be placed 12" above any PVC that is not concrete encased.
- (4) Preferred riser location to be 45° from the system neutral.
- (5) For allowable number of secondary conductors see table above.
- (6) Customer shall include a polyester pull string with a minimum breaking strength of 210lbs in completed duct for future use by PNM.
- (7) When using 4/0 AL 15kV primary cable. A 4" duct ventilator 5975-258186 with 4" nipple 5975-274787 must be used to place ventilator 1' above grade.
- (8) All secondary cables must be tagged with phase and address for tracing reasons. The secondary cables shall be marked no more than 12" above the duct.
- (9) Minimum of 1'10" x 14" to be maintained for secondary duct area to allow up to 8 - 4" secondary duct.
- (10) Optional: Install protective cover (IN 0100007921) onto transformer door handle to prevent copper theft and tampering.
- (11) Customer's contractor working near any PNM lines are responsible for adhering to all applicable regulations and codes; including but not limited to the NESC, OSHA and the NEC.

REFERENCES

- (1) See DM-4-11.0 Maximum Available Fault Currents
- (2) See Section 7 for Concrete Pad Detail
- (3) See DS-7-16.10 Guard Post
- (4) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformers
- (5) See Section 10 for Configuration Options
- (6) See DS-18-20.0 ground Assembly
- (7) See DS-18-22.0 Universal Support Bracket

Three-Phase Padmounted Transformer Customer Installed

DS-7-15.0

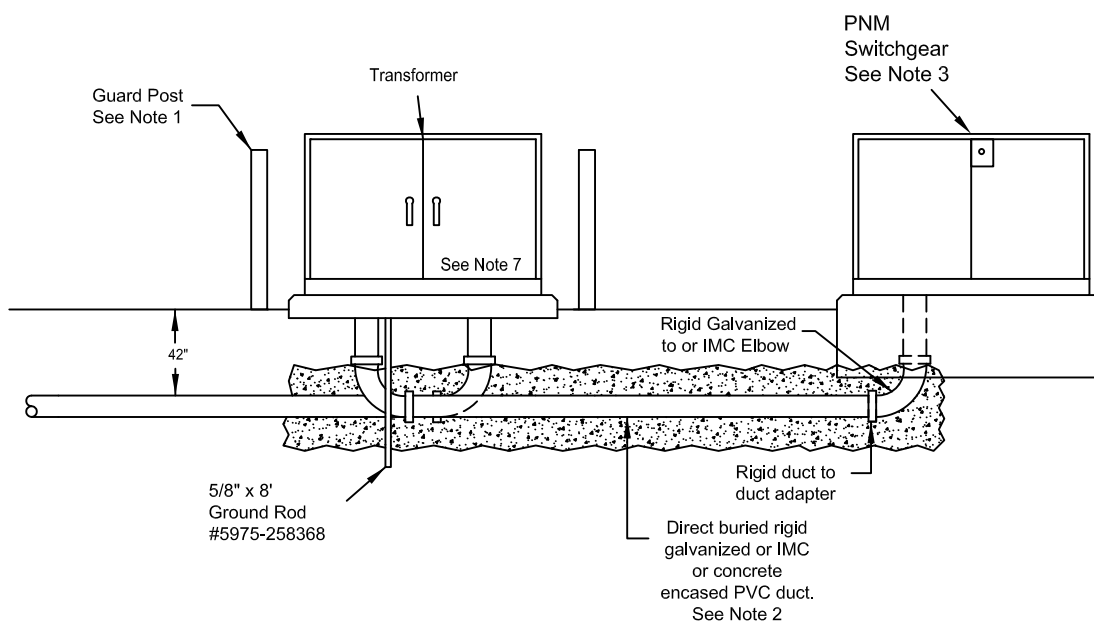


NOTES

- (1) The gang operated switch and overcurrent device must be approved by the PNM designer.
- (2) Customer shall provide all necessary primary cables and terminations from the load side of the primary metering equipment to the primary side of the customer-owned transformers.
- (3) PNM will provide all cables, terminations, outdoor terminators, outdoor terminators brackets and arresters from PNM's overhead or underground distribution system to the line side of the primary metering equipment.
- (4) Primary ducts shall be direct buried rigid galvanized or IMC duct or concrete encased PVC duct. Customer may use schedule 40 PVC duct without concrete encasement provided a minimum 10' rigid galvanized or IMC duct is installed for primary at the horizontal when entering or exiting the vertical elbow at the padmounted equipment. The primary and secondary duct will be furnished and installed by the customer.
- (5) Red warning tape shall be placed 12" above any PVC that isn't concrete encased.
- (6) Enclosure shall be protected by guard posts if placed in traffic area.
- (7) Customer shall include a polyester pull string with a minimum breaking strength of 210lbs in completed duct for future use by PNM.
- (8) When using 4/0 AL 15kV primary cable. A 4" duct ventilator 5875-258186 with 4" nipple 5975-274787 must be used to place ventilator 1' above grade.
- (9) Preferred riser location to be 45° from the system neutral.
- (10) The gang operated switch, overcurrent device(s), and all electrical components on the line side of the overcurrent devices accessible by the customer, their electrician, or their contractor must be interlocking to prevent access to these parts while energized. It is strongly recommended to add the same interlock to other compartments on the load side of the overcurrent devices that could allow access to energized components which should not be accessed while energized.
- (11) Customer's contractor working near any PNM lines are responsible for adhering to all applicable regulations and codes; including but not limited to the NESC, OSHA and the NEC.

REFERENCES

- (1) See DM-4-11.0 Maximum Available Fault Currents
- (2) See DS-7-16.10 Guard Post
- (3) See Section 10 for Configuration Options
- (4) See DS-18-20.0 Ground Assembly
- (5) See DS-18-22.0 Universal Support Bracket
- (6) See MS-3-17.0 7200/12470V CT and PT Meter Enclosure
- (7) See MS-3-21.0 7200/12470V CT and PT Enclosure Pad
- (8) See MS-7-2.0 Working Space Required for Meter Enclosure
- (9) NEC 490.21

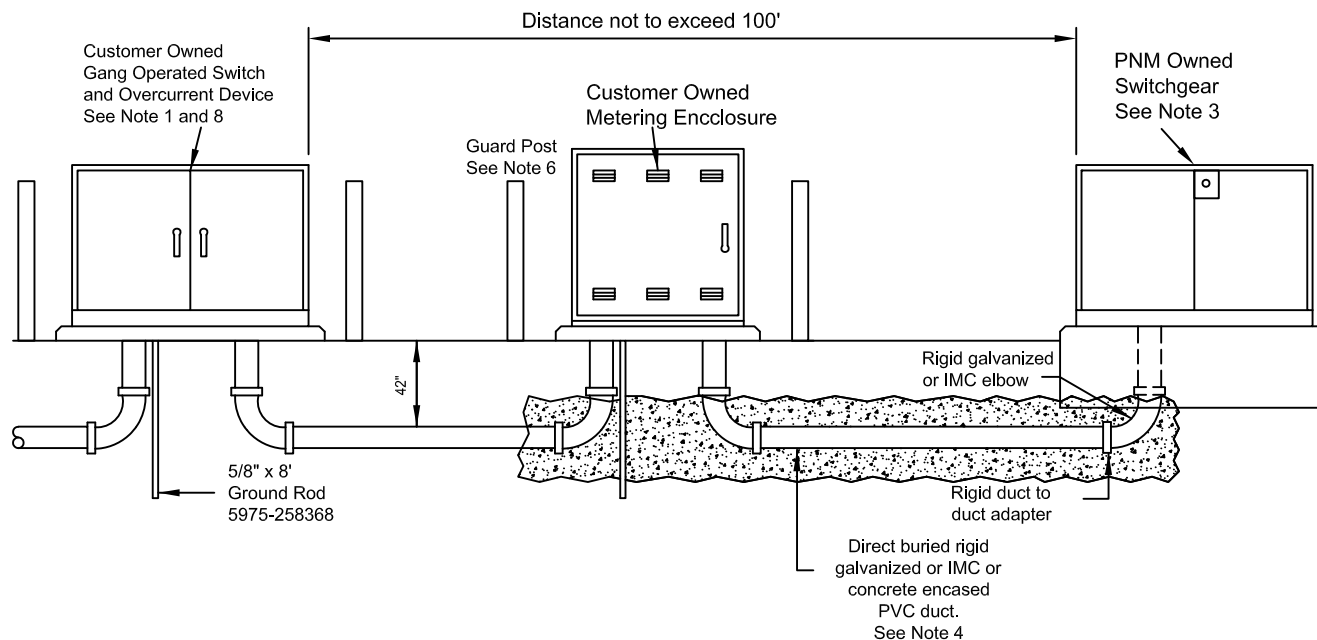


NOTES

- (1) Transformer shall be protected by guard posts if placed in traffic area.
- (2) The primary duct shall be direct buried rigid galvanized or IMC duct or concrete encased PVC duct. The primary and secondary duct will be furnished and installed by the customer. Customer may use schedule 40 rigid PVC minimum duct without concrete encasement provided customer install a 10' length minimum rigid galvanized or IMC duct to the first section of each elbow on the primary side. The primary and secondary duct will be furnished and installed by the customer.
- (3) Red warning tape shall be placed 12" above any PVC that isn't concrete encased.
- (4) PNM to install terminations out of PNM switchgear and transformer.
- (5) Contact PNM representative for switchgear bay location.
- (6) All secondary cables must be tagged with phase and address for tracing reasons. The secondary cables shall be marked no more than 12" above the duct.
- (7) Minimum of 1'10" x 14" to be maintained for secondary duct area to allow up to 8 - 4" secondary duct.
- (8) Optional: Install protective cover (IN 0100007921) onto transformer door handle to prevent copper theft and tampering.

REFERENCES

- (1) See DM-4-11.0 Maximum Available Fault Currents
- (2) See Section 7 for Concrete Pad Detail
- (3) See DS-7-16.10 Guard Post
- (4) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformers
- (5) See DS-9-17.0 Working Space Requirements for Padmounted Switchgear



NOTES

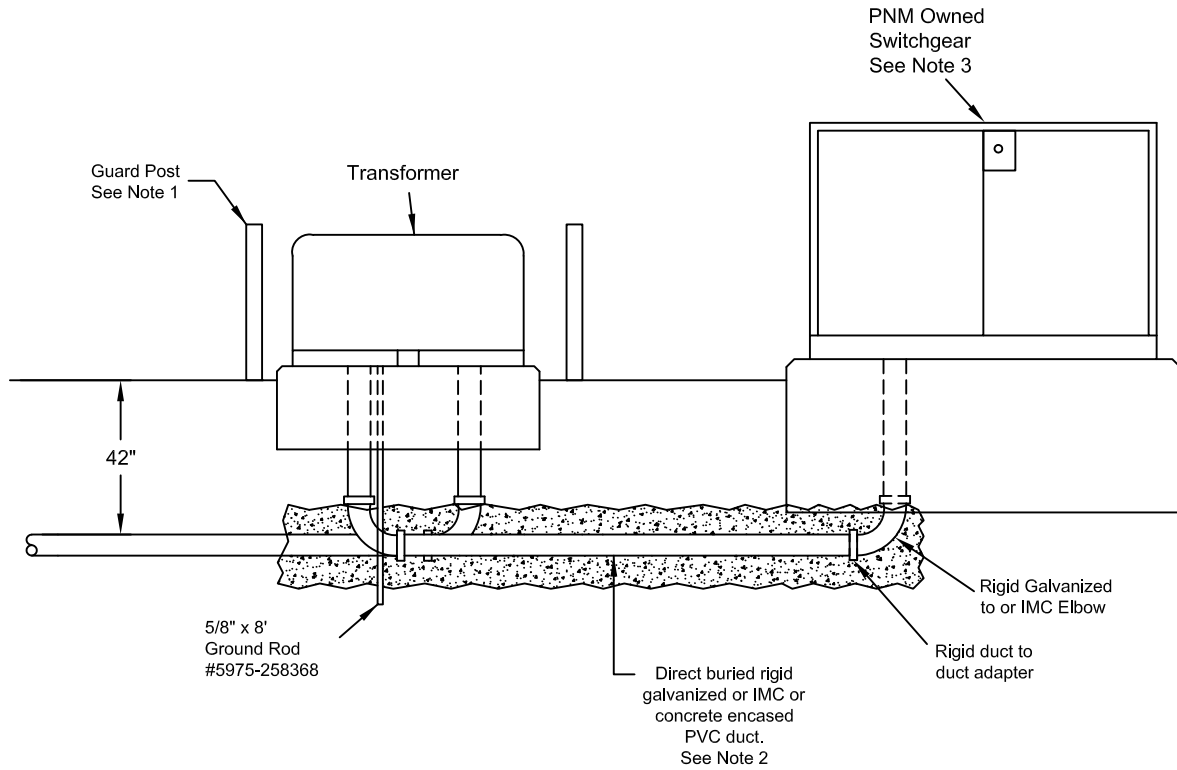
- (1) The gang operated switch and overcurrent device must be approved by the PNM designer.
- (2) Customer shall provide all necessary primary cables and terminations from the load side of the primary metering equipment to the primary side of the customer-owned transformers.
- (3) PNM to install termination's out of PNM switchgear.
- (4) The primary duct shall be direct buried rigid galvanized or IMC duct or concrete encased PVC duct. Customer may use schedule 40 rigid PVC minimum duct with out concrete encasement provided customer install a 10' length minimum rigid galvanized or IMC duct to the first section of each elbow on the primary side. The primary and secondary duct will be furnished and installed by the customer.
- (5) Red warning tape shall be paced 12" above any PVC duct that is not concrete encased.
- (6) Enclosure shall be protected by guard posts if placed in traffic area.
- (7) Contact PNM representative for switchgear bay location.
- (8) The gang operated switch, overcurrent device(s), and all electrical components on the line side of the overcurrent devices accessible by the customer, their electrician, or their contractor must be interlocking to prevent access to these parts while energized. It is strongly recommended to add the same interlock to other compartments on the load side of the overcurrent devices that could allow access to energized components which should not be accessed while energized.

REFERENCES

- (1) See DM-4-11.0 Maximum Available Fault Currents
- (2) See DS-7-16.10 Guard Post
- (3) See MS-3-17.0 7200/12470V CT and PT Meter Enclosure
- (4) See MS-3-21.0 7200/12470V CT and PT Enclosure Pad
- (5) See MS-7-2.0 Working Space Required for Meter Enclosure
- (6) NEC 490.21

Three-Phase Padmounted Primary Meter from Padmounted Switchgear

DS-7-15.3



NOTES

- (1) Transformer shall be protected by guard posts if placed in traffic area.
- (2) The primary duct shall be direct buried rigid galvanized or IMC duct or concrete encased PVC duct. Customer may use schedule 40 rigid PVC minimum duct with out concrete encasement provided customer install a 10' length minimum rigid galvanized or IMC duct to the first section of each elbow on the primary side. The primary an secondary duct will be furnished and installed by the customer.
- (3) Red warning tape shall be placed 12" above any PVC that is not concrete encased.
- (4) PNM to install termination's out of PNM switchgear and transformer.
- (5) For allowable number of secondary conductors see table.
- (6) Contact PNM representative for switchgear bay location.

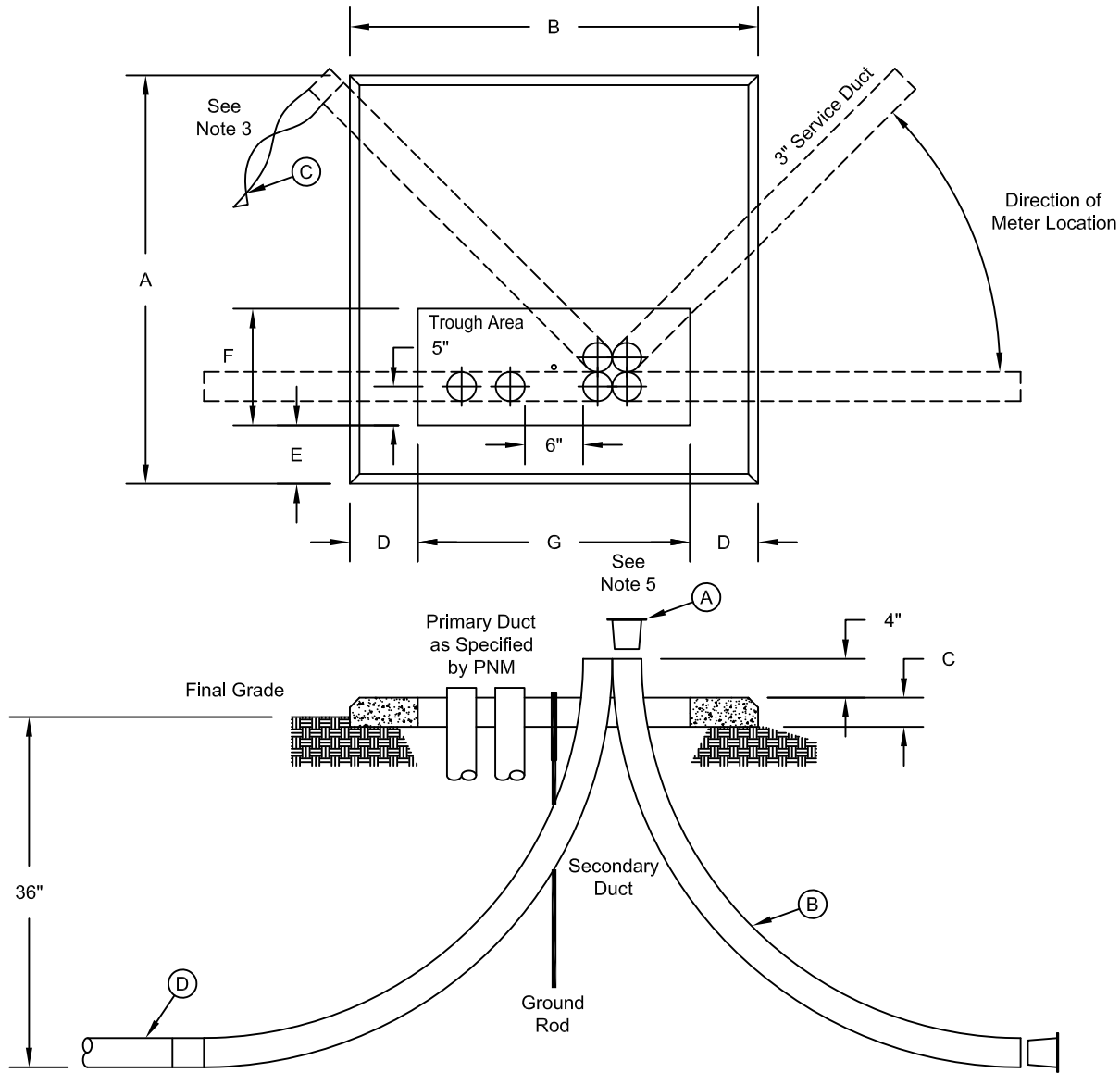
Secondary Voltage 240/120					
Maximum number of secondary conductors per phase					
Max. cond. size Sec. conn. kit	Transformer kVA size				
	25	50	75	100	167
350 KCMIL 5935-233261	6	6	6	6	6
500 KCMIL 5935-238351	6	6	6	6	6

REFERENCES

- (1) See DM-4-11.0 Maximum Available Fault Currents
- (2) See Section 7 for Concrete Pad Detail
- (3) See DS-7-16.10 Guard Post
- (4) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformers
- (5) See DS-9-17.0 Working Space Requirements for Padmounted Switchgear

Single-Phase Padmounted Transformer from Padmounted Switchgear

DS-7-15.4



NOTES

- (1) A Polymer concrete pad shall be used unless conditions warrant a concrete pad. If a concrete pad is needed increase pad "C" to 6".
- (2) Existing grade and backfill under pad shall be compacted to 95% in accordance with ASTM D1557.
- (3) To identify service duct entrance locations a white vertical minimum 1 1/2" tape (0000-005626) shall be tied to the end of the stub and brought above the finish grade.
- (4) To be used with Type I transformers.
- (5) Install a poly duct plug (0100-005699) to both ends to keep out dirt.
- (6) Polymer pad for 50-75 kVA 7000-311002, polymer pad for 100-167 kVA 7000-311005.

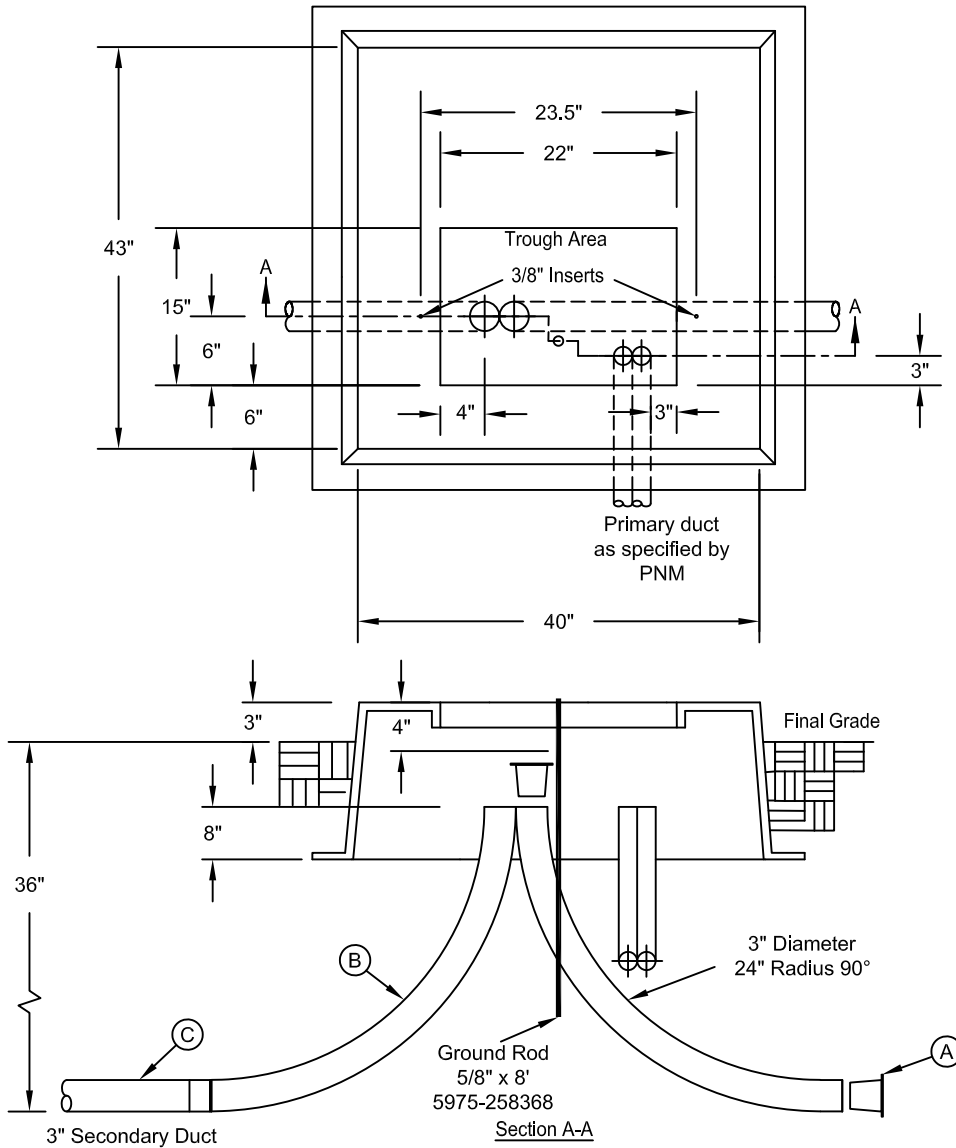
PNM require that all secondary cables be in duct and all transformer and pedestals shall have service conduit elbows and stub outs installed. Contact your new service representative for assistance.

REFERENCES

- (1) See DS-7-16.8 Page 1 and 2 Transformer and Switchgear Pad Foundation Preparation and Inspection
- (2) See DS-7-16.12 Minimum Working Space and Fire Safety Requirement for Transformers
- (3) See DS-10-8.0 Trench Details

KVA	Pad Dimension in Inches							Description
	A	B	C	D	E	F	G	
50-75	42	42	3	7	6	12	27	Polymer Pad 42" x 42"
100-167	56	44	4	9	6	14	27	Polymer Pad 56" x 44"

Material List			
Item	Quan.	Description	Stock #
A		3" Conduit Plug	0100-005699
B		3" Diameter, 36" Radius 90° PVC Elbow	7000-462820
C		1 1/2" White Tape	0000-005626
D		3" x 10' Schedule 40 PVC Duct	7000-460560
E		Arrow Decal	0100-005827



NOTES

- (1) Lids (0000-000306) to cover troughs are available to allow storage of cable in box pad with out placing transformer.
- (2) Existing grade and backfill under box pad shall be compacted to 95% in accordance with ASTM D1557.
- (3) Box pad catalog number 0000-000013; except for the 167kVA transformer whose catalog number is 0100-007016.
- (4) Manufacturers to supply two 3/8" x 1 - 1/2" full threaded bolt and two 13/32" ID x 1 - 1/2" OD x 3/32" thick fender washer.
- (5) Install a poly duct plug (0100-005699) to both ends to keep out dirt.
- (6) Transformer is supplied with low voltage connectors that can accommodate 6 secondary cables, #6 to 500 kcmil. Catalog number for replacement connectors 5935-233261.

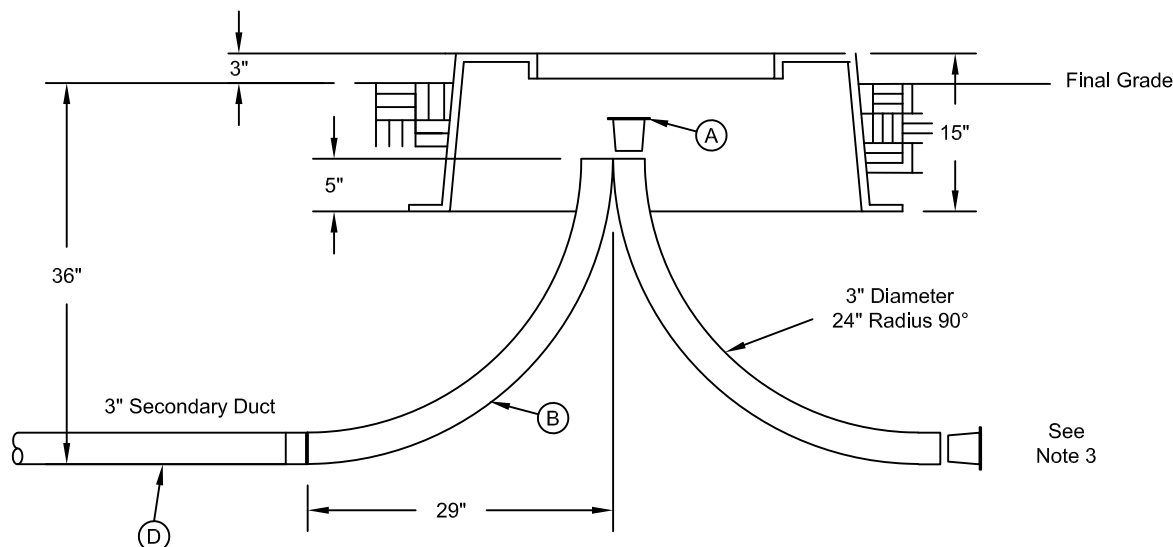
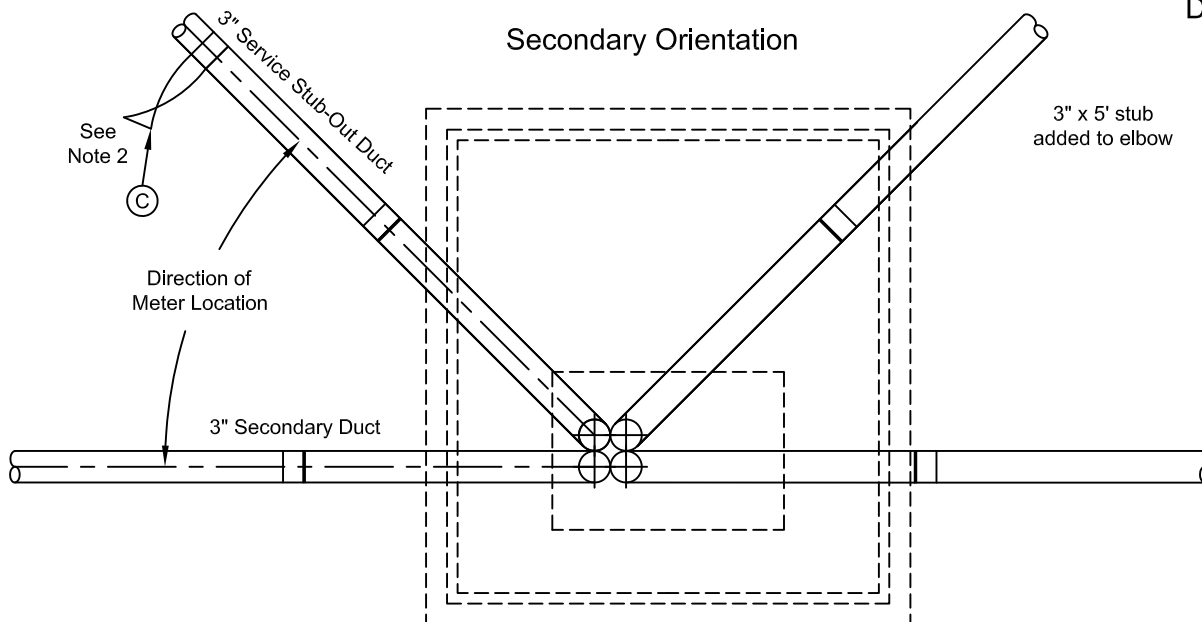
REFERENCES

- (1) See DS-7-16.0 Page 2 25-167 kVA Residential Single-Phase Box Pad
- (2) See DS-7-16.8 Page 1 and 2 Transformer and Switchgear Pad Foundation Preparation and Inspection
- (3) See DS-7-16.12 Minimum Working Space and Fire Safety Requirement for Transformers

PNM requires that all secondary cables be in duct and all transformer and pedestals shall have service conduit elbows and stub outs installed. Contact your new service representative for assistance.

Material List

Item	Quan.	Description	Stock #
A		3" Conduit Plug	0100-005699
B		3" Diameter, 24" Radius 90° PVC Elbow	7000-462815
C		3" x 10' Schedule 40 PVC Duct	7000-460560



NOTES

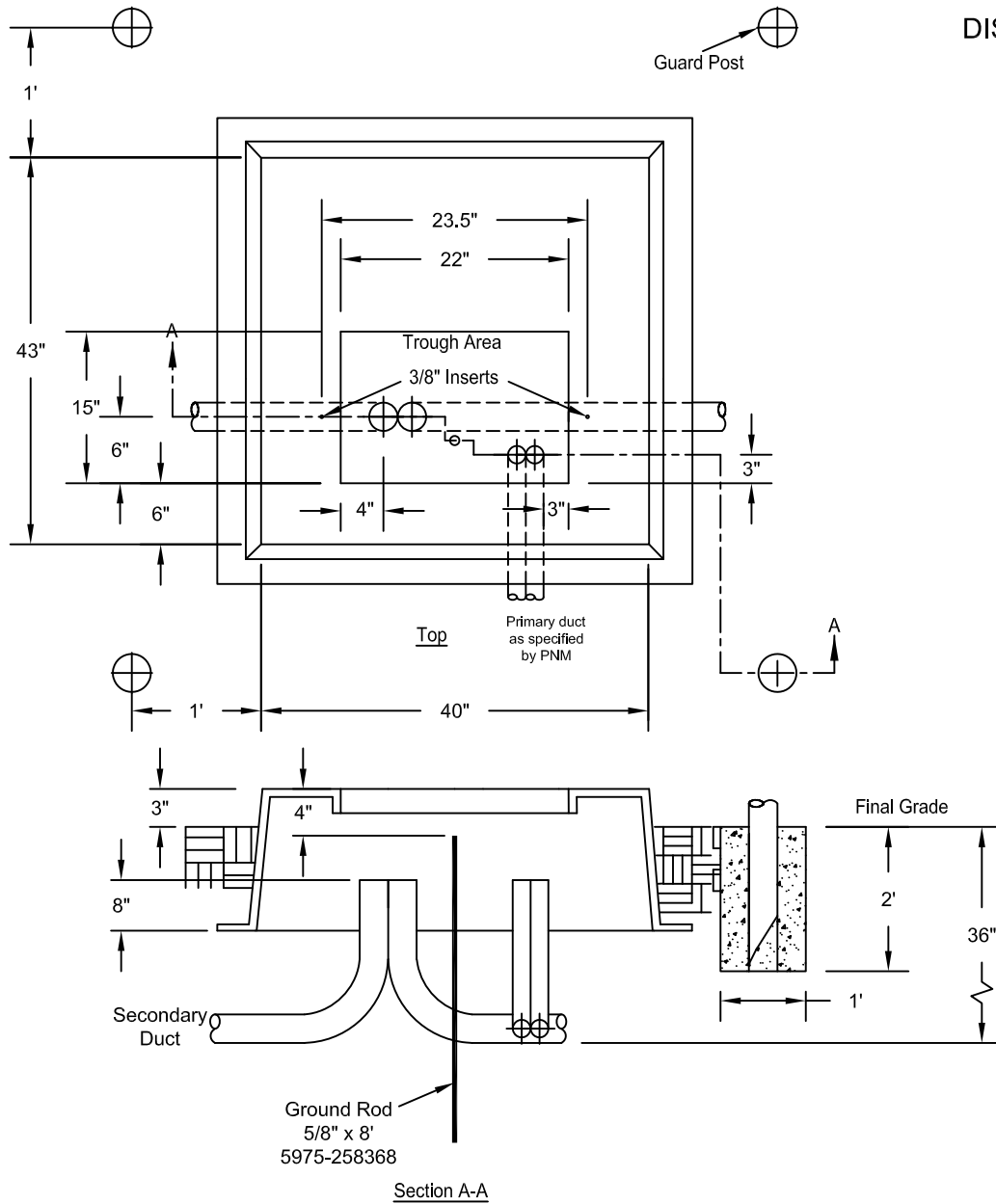
- (1) Existing grade and backfill under box pad shall be compacted to 95% in accordance with ASTM D1557.
- (2) To identify service duct entrance locations a white vertical tape shall be tied to the end of the stub and brought above the finish ground line.
- (3) Install a poly duct plug 0100-005699 to both ends to keep out dirt.

PNM requires that all secondary cables be in duct and all transformer and pedestals shall have service conduit elbows and stub outs installed. Contact your new service representative for assistance.

REFERENCES

- (1) See DS-7-16.0 Page 1 25-167 KVA Residential Single-Phase Box Pad
- (2) See DS-7-16.8 Page 1 and 2 Transformer and Switchgear Pad Foundation Preparation and Inspection
- (3) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformers
- (4) See DS-10-8.0 Trench Details

Material List			
Item	Quan.	Description	Stock #
A		3" Conduit Plug	0100-005699
B		3" Diameter, 24" Radius 90° PVC Elbow	7000-462515
C		1 1/2" White Tape	0000-005626
D		3" x 10' Schedule 40 PVC Duct	7000-460560



NOTES

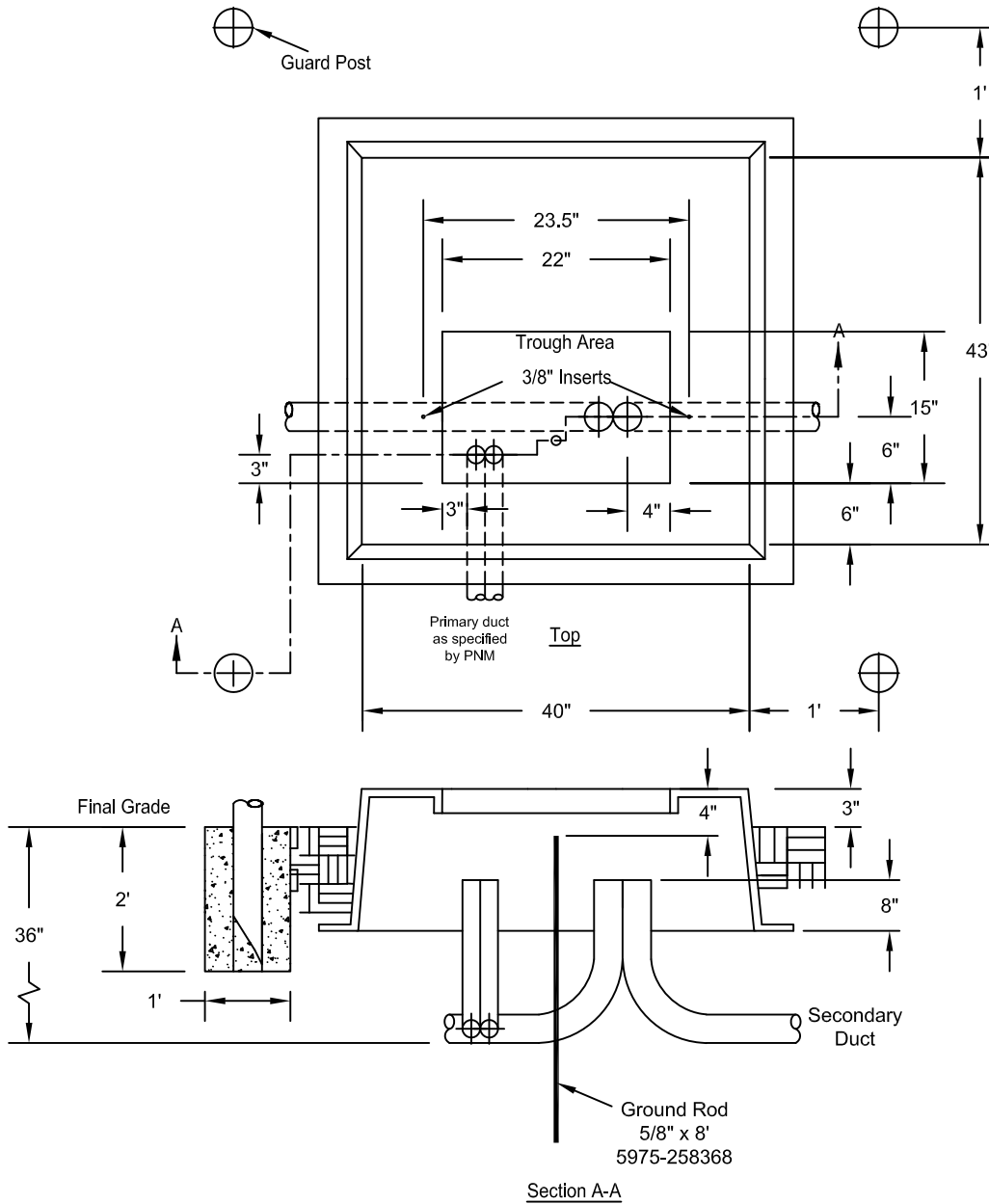
- (1) Lids (0000-000306) to cover troughs are available to allow storage of cable in box pad with out placing transformer.
- (2) Guard posts are required in traffic areas.
- (3) Existing grade and backfill under box pad shall be compacted to 95% in accordance with ASTM D1557.
- (4) Box pad catalog number 0000-000013; except for the 167kVA transformer whose catalog number is 0100-007016.
- (5) Manufacturers to supply two 3/8" x 1 - 1/2" full threaded bolt and two 13/32" ID x 1 - 1/2" OD x 3/32" thick fender washer.
- (6) Transformer is supplied with low voltage connectors that can accommodate 6 secondary cables, #6 to 500 kcmil. Catalog for replacement connectors 5935-233261.

REFERENCES

- (1) See DS-7-16.8 Page 1 and 2 Transformer and Switchgear Pad Foundation Preparation and Inspection
- (2) See DS-7-16.10 Guard Post
- (3) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformers

PNM requires that all secondary cables be in duct. Contact your new service representative for assistance.

Secondary Voltage 240/120					
Maximum number of Secondary Terminal Holes					
Maximum Conductor Size/Secondary Connector Kit	Transformer kVA Size				
	25	50	75	100	167
500 KCMIL 5935-238351	6	6	6	6	6



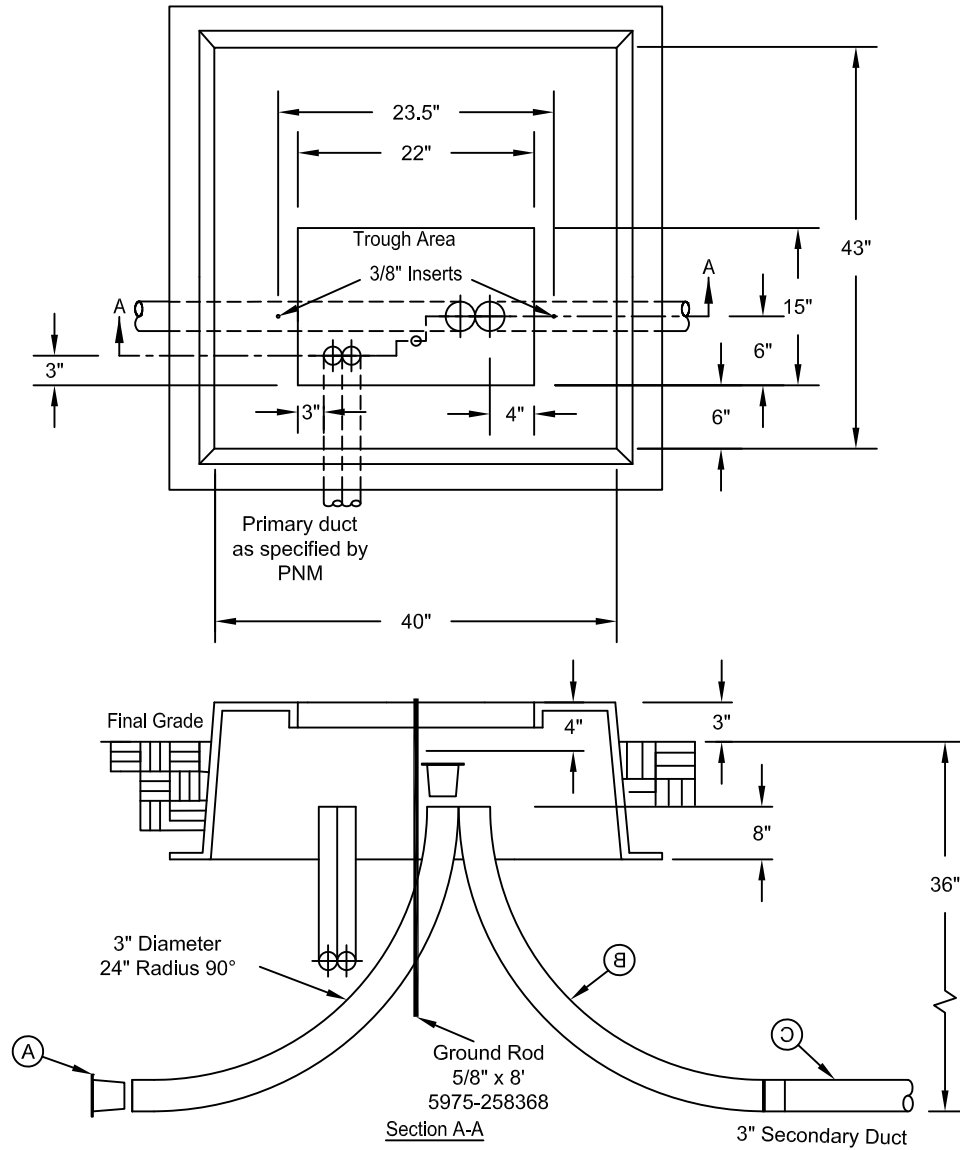
NOTES

- (1) Lids (0000-000306) to cover troughs are available to allow storage of cable in box pad with out placing transformer.
- (2) Guard posts are required in traffic areas.
- (3) Existing grade and backfill under box pad shall be compacted to 95% in accordance with ASTM D1557.
- (4) Box pad catalog number 0000-000013; except for the 167kVA transformer whose catalog number is 0100-007016.
- (5) Manufacturers to supply two 3/8" x 1 - 1/2" full threaded bolt and two 13/32" ID x 1 - 1/2" OD x 3/32" thick fender washer.
- (6) Transformer is supplied with low voltage connectors that can accommodate 6 secondary cables, #6 to 500 kcmil. Catalog for replacement connectors 5935-233261.

REFERENCES

- (1) See DS-7-16.8 Page 1 and 2 Transformer and Switchgear Pad Foundation Preparation and Inspection
- (2) See DS-7-16.10 Guard Post
- (3) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformers
- (4) See DS-18-20.0 Ground Assembly

PNM requires that all secondary cables be in duct. Contact your new service representative for assistance.



NOTES

- (1) Lids (0000-000306) to cover troughs are available to allow storage of cable in box pad with out placing transformer.
- (2) Existing grade and backfill under box pad shall be compacted to 95% in accordance with ASTM D1557.
- (3) Box pad catalog number 0000-000013; except for the 167kVA transformer whose catalog number is 0100-007016.
- (4) Manufacturers to supply two 3/8" x 1 - 1/2" full threaded bolt and two 13/32" ID x 1 - 1/2" OD x 3/32" thick fender washer.
- (5) Install a poly duct plug (0100-005699) to both ends to keep out dirt.
- (6) Transformer is supplied with low voltage connectors that can accommodate 6 secondary cables, #6 to 500 kcmil. Catalog number for replacement connectors 5935-233261.

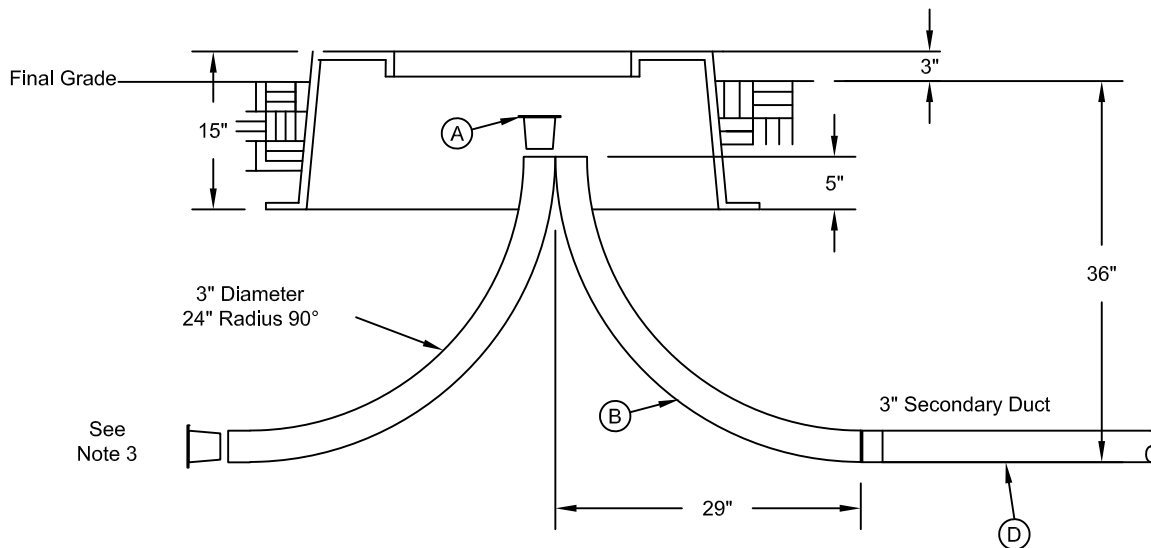
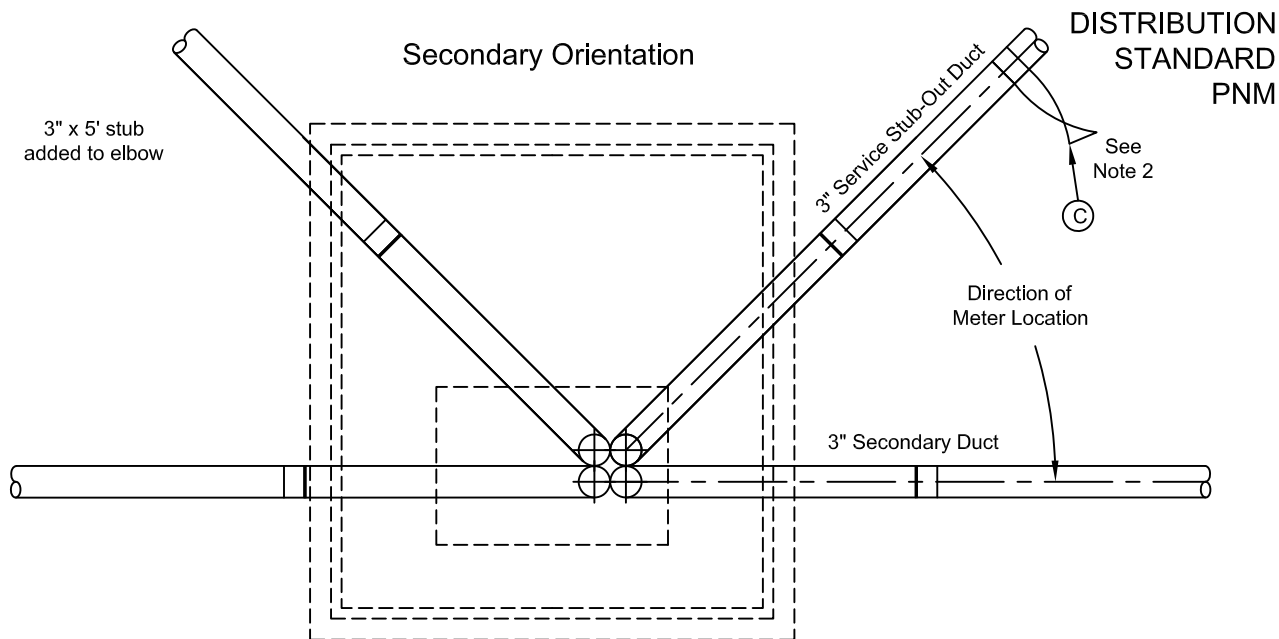
REFERENCES

- (1) See DS-7-16.0 Page 2 25-167 kVA Residential Single-Phase Box Pad
- (2) See DS-7-16.8 Page 1 and 2 Transformer and Switchgear Pad Foundation Preparation and Inspection
- (3) See DS-7-16.12 Minimum Working Space and Fire Safety Requirement for Transformers
- (4) See DS-18-20.0 Ground Assembly

PNM requires that all secondary cables be in duct and all transformer and pedestals shall have service conduit elbows and stub outs installed. Contact your new service representative for assistance.

Material List

Item	Quan.	Description	Stock #
A		3" Conduit Plug	0100-005699
B		3" Diameter, 24" Radius 90° PVC Elbow	7000-462815
C		3" x 10' Schedule 40 PVC Duct	7000-460560



NOTES

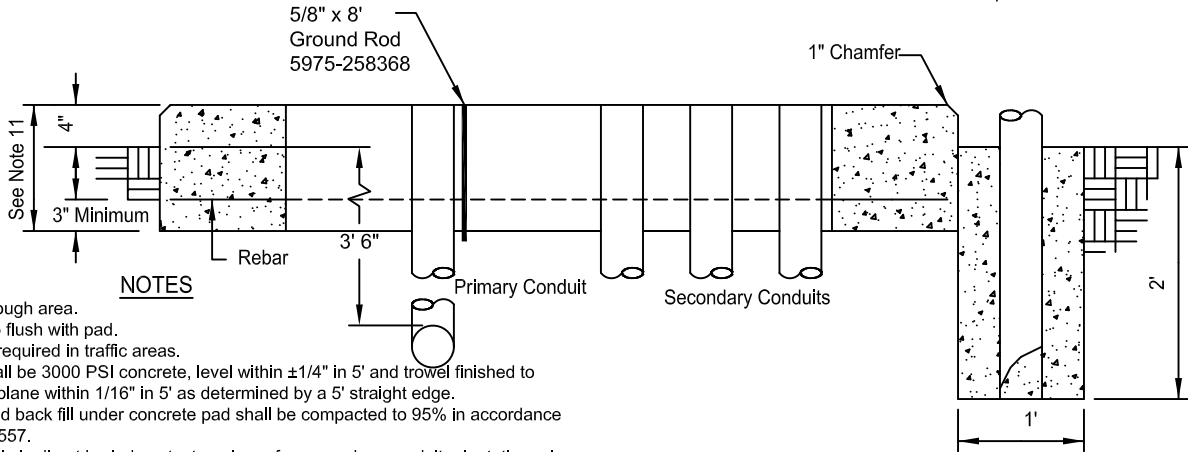
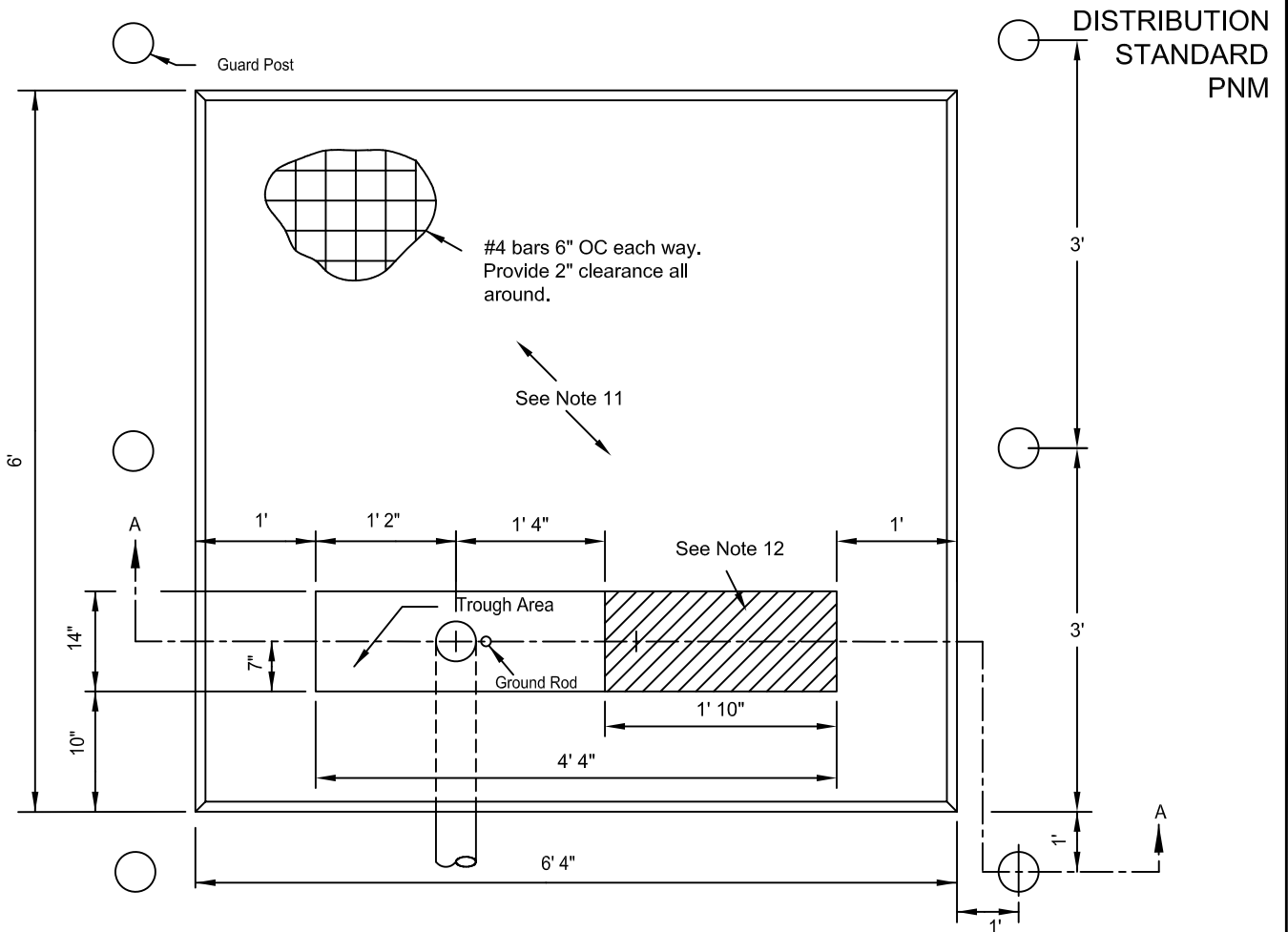
- (1) Existing grade and backfill under box pad shall be compacted to 95% in accordance with ASTM D1557.
- (2) To identify service duct entrance locations a white vertical tape shall be tied to the end of the stub and brought above the finish ground line.
- (3) Install a poly duct plug 0100-005699 to both ends to keep out dirt.

PNM requires that all secondary cables be in duct and all transformer and pedestals shall have service conduit elbows and stub outs installed. Contact your new service representative for assistance.

REFERENCES

- (1) See DS-7-16.0 Page 1 25-167 KVA Residential Single-Phase Box Pad
- (2) See DS-7-16.8 Page 1 and 2 Transformer and Switchgear Pad Foundation Preparation and Inspection
- (3) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformers
- (4) See DS-10-8.0 Trench Details

Material List			
Item	Quan.	Description	Stock #
A		3" Conduit Plug	0100-005699
B		3" Diameter, 24" Radius 90° PVC Elbow	7000-462515
C		1 1/2" White Tape	0000-005626
D		3" x 10' Schedule 40 PVC Duct	7000-460560



NOTES

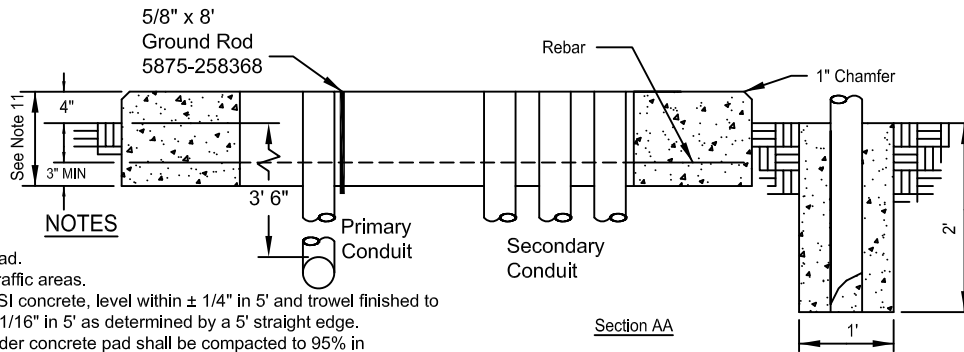
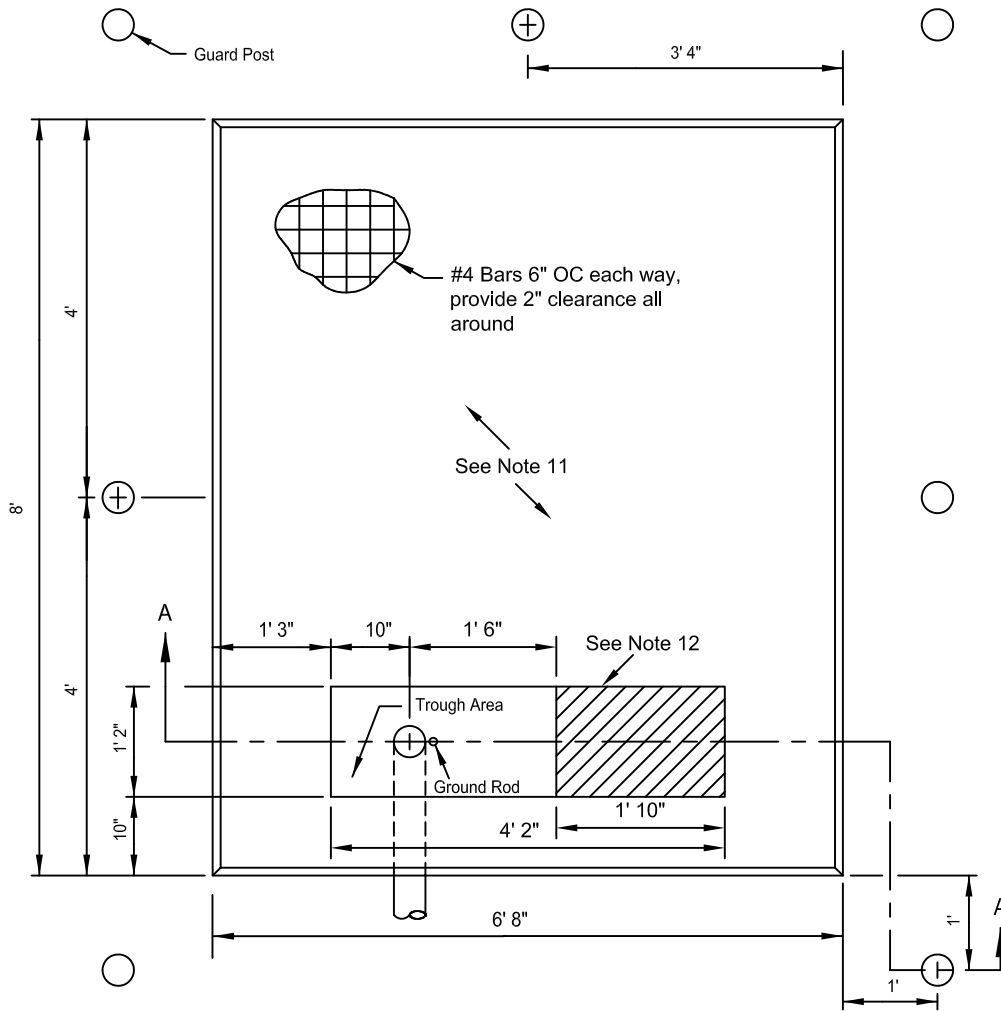
- (1) No concrete in trough area.
- (2) Bring conduits up flush with pad.
- (3) Guard posts are required in traffic areas.
- (4) Concrete pad shall be 3000 PSI concrete, level within $\pm 1/4"$ in 5' and trowel finished to provide a true plane within $1/16"$ in 5' as determined by a 5' straight edge.
- (5) Existing grade and back fill under concrete pad shall be compacted to 95% in accordance with ASTM D1557.
- (6) If the primary cable is direct buried contact engineer for secondary conduit orientation prior to installation.
- (7) Primary duct shall be direct buried rigid galvanized or IMC duct or concrete encased PVC duct. Customer may use schedule 40 rigid PVC minimum duct without concrete encasement provided a minimum 10' rigid galvanized or IMC duct is installed for primary at the horizontal when entering or exiting the vertical elbow at the padmounted equipment. The primary and secondary duct will be furnished and installed by the customer.
- (8) Customer shall include a polyethylene pull string with a minimum breaking strength of 210 lbs. in completed ducts for future use by PNM.
- (9) Pre-cast concrete pads are available through vendors.
- (10) All secondary cables must be tagged with phase and address for tracing reasons. The secondary cables shall be marked no more than 12" above the ducts.
- (11) Pad to be 1' thick if poured in place otherwise use 0100005823 for pre-engineered pad.
- (12) Minimum of 1'10" x 14" to be maintained for secondary duct area to allow up to 8 - 4" secondary duct.

REFERENCES

- (1) See DS-7-16.8 Page 1 and 2 Transformer and Switchgear Pad Foundation Preparation and Inspection
- (2) See DS-7-16.10 Guard Post
- (3) See DS-7-16.12 Minimum Working Space and Fire Safety requirements for Transformers

75-500 kVA Three-Phase Radial Fed Transformer Pad

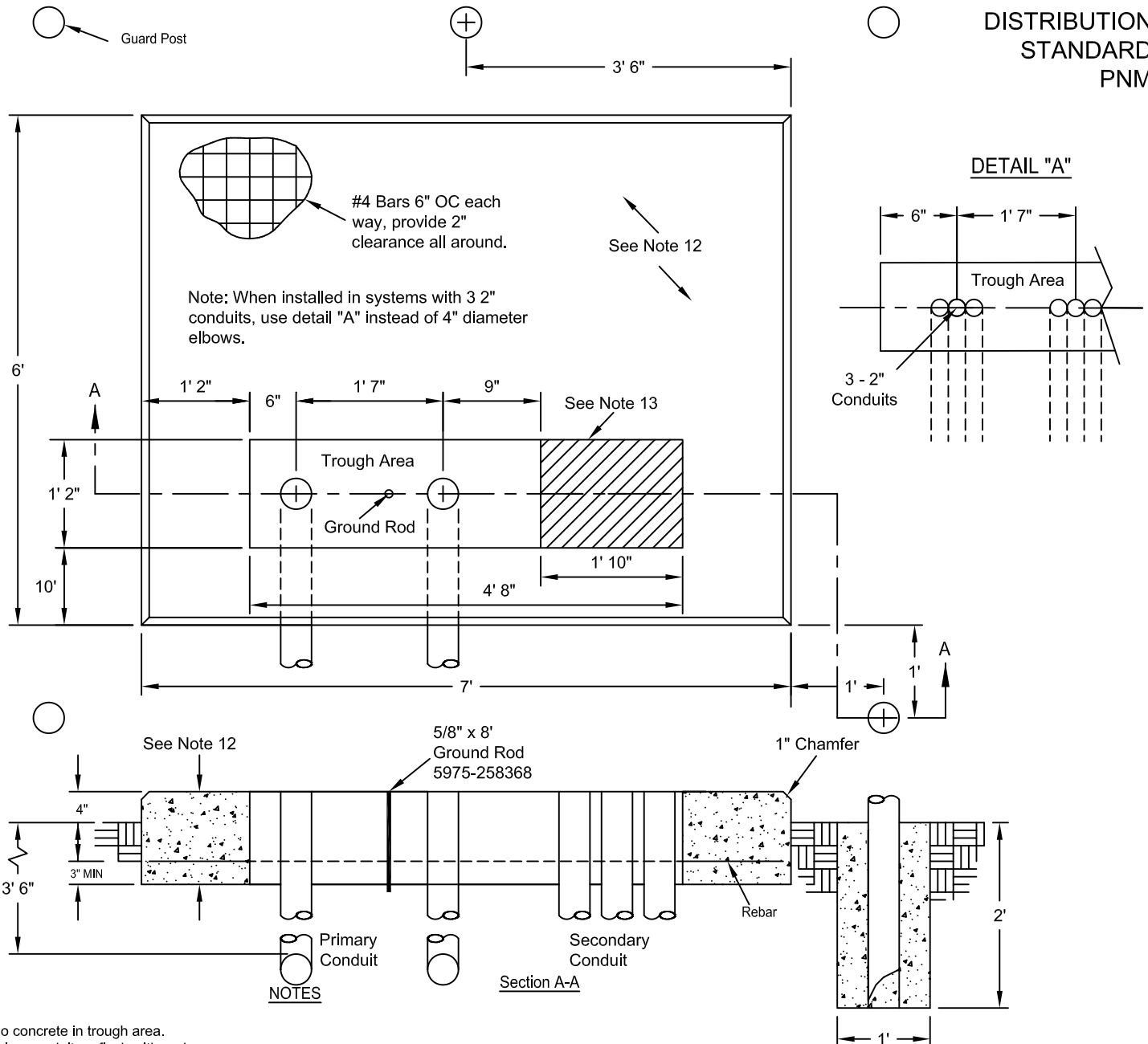
DS-7-16.5



- NOTES**
- (1) No concrete in trough area.
 - (2) Bring conduits up flush with pad.
 - (3) Guard Posts are required in traffic areas.
 - (4) Concrete pad shall be 3000PSI concrete, level within $\pm 1/4"$ in 5' and trowel finished to provide a true plane within $1/16"$ in 5' as determined by a 5' straight edge.
 - (5) Existing grade and backfill under concrete pad shall be compacted to 95% in accordance with ASTM D1557.
 - (6) If the primary cable is direct buried contact engineer for secondary duct orientation prior to installation.
 - (7) Primary duct shall be direct buried rigid galvanized or IMC duct or concrete encased PVC duct. Customer may use schedule 40 rigid PVC minimum duct without concrete encasement provided a minimum 10' rigid galvanized or IMC duct is installed for primary at the horizontal when entering or exiting the vertical elbow at the padmounted equipment. The primary and secondary duct will be furnished and installed by the customer..
 - (8) Customer shall include a polyethylene pull string with a minimum breaking strength of 210 lbs in completed ducts for future use by PNM.
 - (9) Precast concrete pads are available through vendors.
 - (10) All secondary cables must be tagged with phase and address for tracing reasons. The secondary cables shall be marked no more than 12" above the ducts.
 - (11) Pad to be 1' thick if poured in place otherwise use 0100005824 for pre-engineered pad.
 - (12) Minimum of 1'10" x 14" to be maintained for secondary duct area to allow 8-4" secondary ducts.

REFERENCES

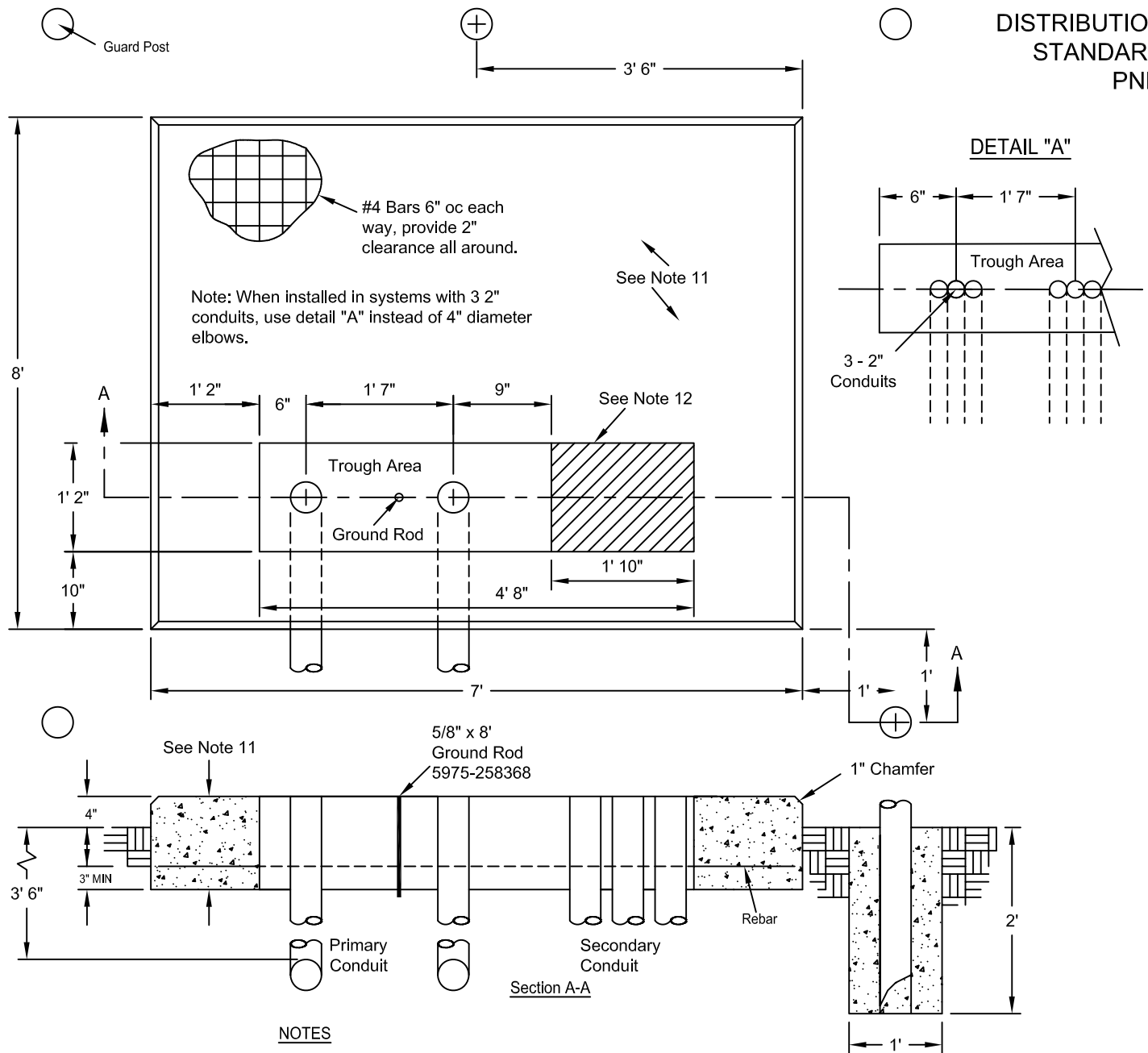
- (1) See DS-7-16.8 Page 1 and 2 Transformer and Switchgear Pad Foundation Preparation and Inspection
- (2) See DS-7-16.10 Guard Post
- (3) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformers



- (1) No concrete in trough area.
- (2) Bring conduit up flush with pad.
- (3) Guard Posts are required in traffic areas.
- (4) Concrete pad shall be 3000 psi concrete, level within $\pm 1/4"$ in 5' straight edge.
- (5) Existing grade and back fill under concrete pad shall be compacted to 95% in accordance with ASTM D1557.
- (6) If the primary cable is direct buried contact engineer for secondary duct orientation prior to installation.
- (7) All stub outs must extend a minimum of 5' from edge of pad.
- (8) For PNM direct buried primary system, customer shall install PVC elbows and PVC stub outs.
- (9) Primary duct shall be direct buried rigid galvanized or IMC duct or concrete encased PVC duct. Customer may use schedule 40 rigid PVC minimum duct without concrete encasement provided a minimum 10' rigid galvanized or IMC duct is installed for primary at the horizontal when entering or exiting the vertical elbow at the padmounted equipment. The primary and secondary duct will be furnished and installed by the customer.
- (10) Customer shall include a polyethylene pull string with a minimum breaking strength of 210 lbs in completed ducts for future use by PNM.
- (11) All secondary cables must be tagged with phase and address for tracing reasons. The secondary cables shall be marked no more than 12" above the ducts.
- (12) Pad to be 1' thick if poured in place otherwise use 0100005825 for pre-engineered pad.
- (13) Minimum of 1'10" x 14" to be maintained for secondary duct area to allow up to 8-4" secondary ducts.

REFERENCES

- (1) See DS-7-16.8 Page 1 and 2 Transformer and Switchgear Pad Foundation Preparation and Inspection
- (2) See DS-7-16.10 Guard Post
- (3) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformers

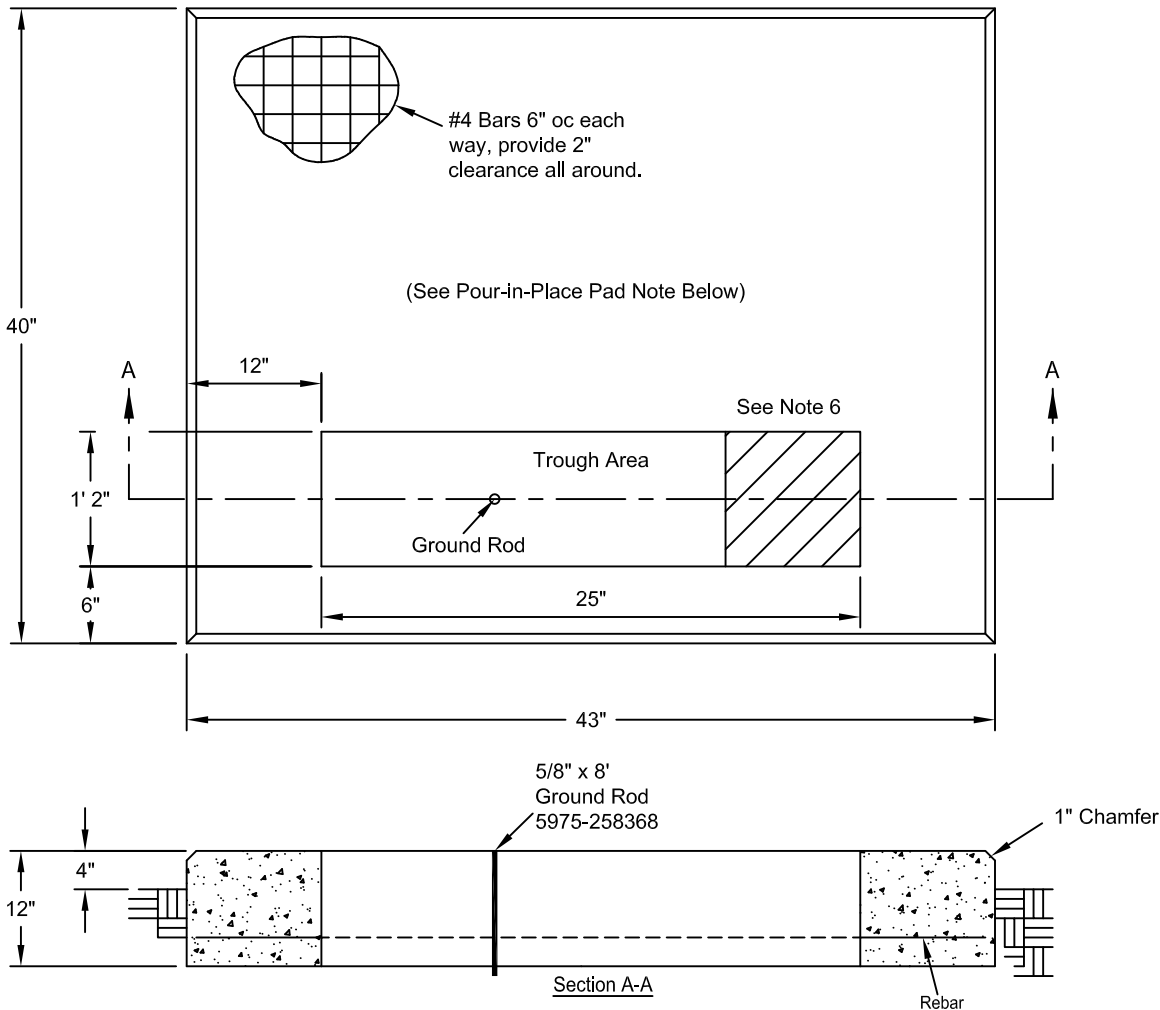


NOTES

- (1) No concrete in trough area.
- (2) Bring conduit up flush with pad.
- (3) Guard Posts are required in traffic areas.
- (4) Concrete pad shall be 3000 psi concrete, level within $\pm 1/4"$ in 5' straight edge.
- (5) Existing grade and back fill under concrete pad shall be compacted to 95% in accordance with ASTM D1557.
- (6) If the primary cable is direct buried contact engineer for secondary duct orientation prior to installation.
- (7) All stub outs must extend a minimum of 5' from edge of pad.
- (8) For PNM direct buried primary system, customer shall install PVC elbows and PVC stub outs.
- (9) Primary duct shall be direct buried rigid galvanized or IMC duct or concrete encased PVC duct. Customer may use schedule 40 rigid PVC minimum duct without concrete encasement provided a minimum 10' rigid galvanized or IMC duct is installed for primary at the horizontal when entering or exiting the vertical elbow at the padmounted equipment. The primary and secondary duct will be furnished and installed by the customer.
- (10) Customer shall include a polyethylene pull string with a minimum breaking strength of 210 lbs in completed ducts for future use by PNM.
- (11) Pad to be 1' thick if poured in place otherwise use 0100005826 for pre-engineered pad.
- (12) Minimum of 1'10" x 14 to be maintained for secondary duct area to allow up to 8-4" secondary duct.

REFERENCES

- (1) See DS-7-16.8 Page 1 and 2 Transformer and Switchgear Pad Foundation Preparation and Inspection
- (2) See DS-7-16.10 Guard Post
- (3) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformers



Pour-In-Place Transformer Pad
(Prior Approval is Required)

NOTES

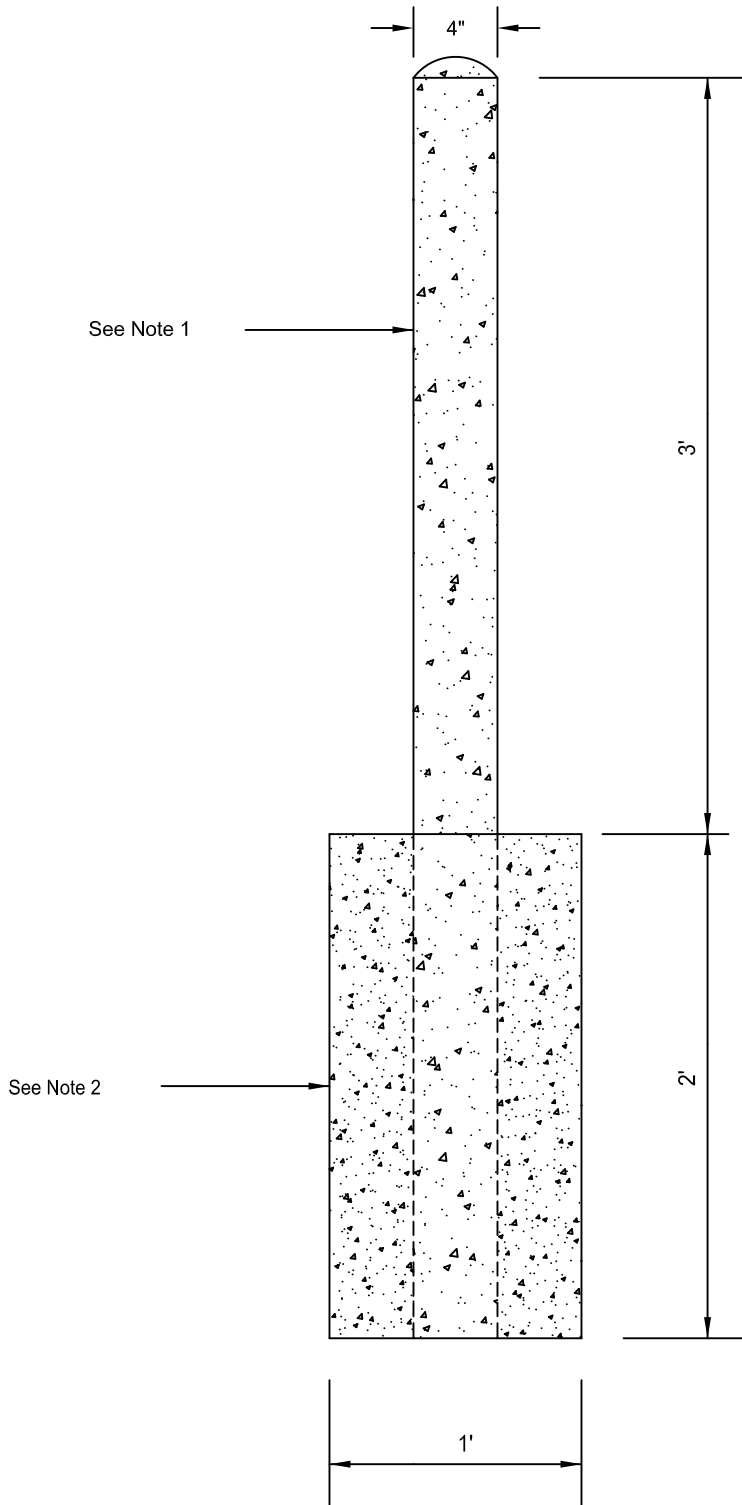
- (1) No concrete in trough area.
- (2) Bring conduit up flush with pad.
- (3) Guard Posts are required in traffic areas.
- (4) Concrete pad shall be 3000 psi concrete, level within $\pm 1/4$ " in 5' straight edge.
- (5) Existing grade and back fill under concrete pad shall be compacted to 95% in accordance with ASTM D1557.
- (6) Minimum of 14" x 14" to be maintained for secondary duct area.

Pad Preferences: Order of Hierarchy for T4 Padmount Transformers Installation

- Fiberglass box pad, 000000013 for 25-100kVA transformers and 0100005826 for 167kVA transformers. **Preferred and recommended.**
- Pre-engineered structural pads, 0100005825 for 25-100kVA transformers and 0100005826 for 167kVA transformers.
- Flat pad 7000311005.
- Prior PNM approval required for the pour-in-place pad option. For the 25-100kVA transformers the required dimensions are 43" x 40" x 12" and for the 167kVA transformer the required dimensions are 43" x 48" x 12". Both pads should have #4 rebar, 6" of center each way, see detail above.

REFERENCES

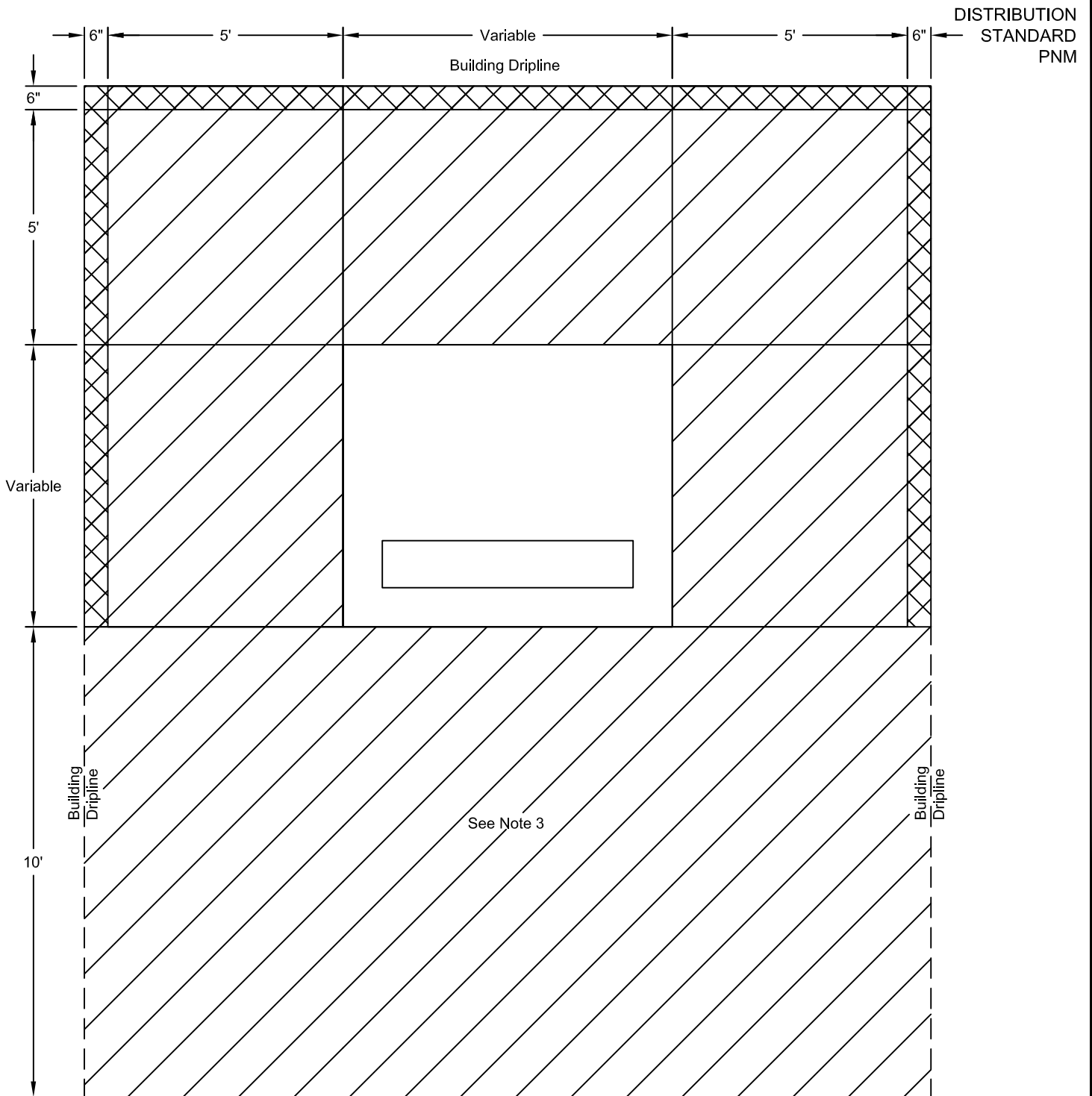
- (1) See DS-7-16.8 Page 1 and 2 Transformer and Switchgear Pad Foundation Preparation and Inspection
- (2) See DS-7-16.10 Guard Post
- (3) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformers



NOTES

- (1) Guard post (5340-188118) minimum 4" x 5' galvanized rigid steel conduit concrete filled.
- (2) 3000 PSI concrete base.

Guard Post



NOTES

- (1) Transformers can be a fire hazard since they contain flammable oil.
- (2) The above dimensions allow bayonet operation.
- (3) Permanent obstruction in the single hatched working space shall not block access to the transformer.
- (4) Guard posts are required in traffic area.

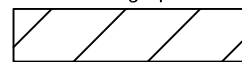
REFERENCES

- (1) See Section 7 for Appropriate Concrete Pad
- (2) See DS-7-16.10 Guard Post
- (3) See DS-7-17.0 Working Space and Fire Safety Requirements Supplement

Fire Wall

Single-phase transformer or three-phase transformer or combination three-phase transformer and metering enclosure for commercial installation

Working Space



Three Hour Masonry Firewall



Minimum Working Space and Fire Safety Requirements for Transformers

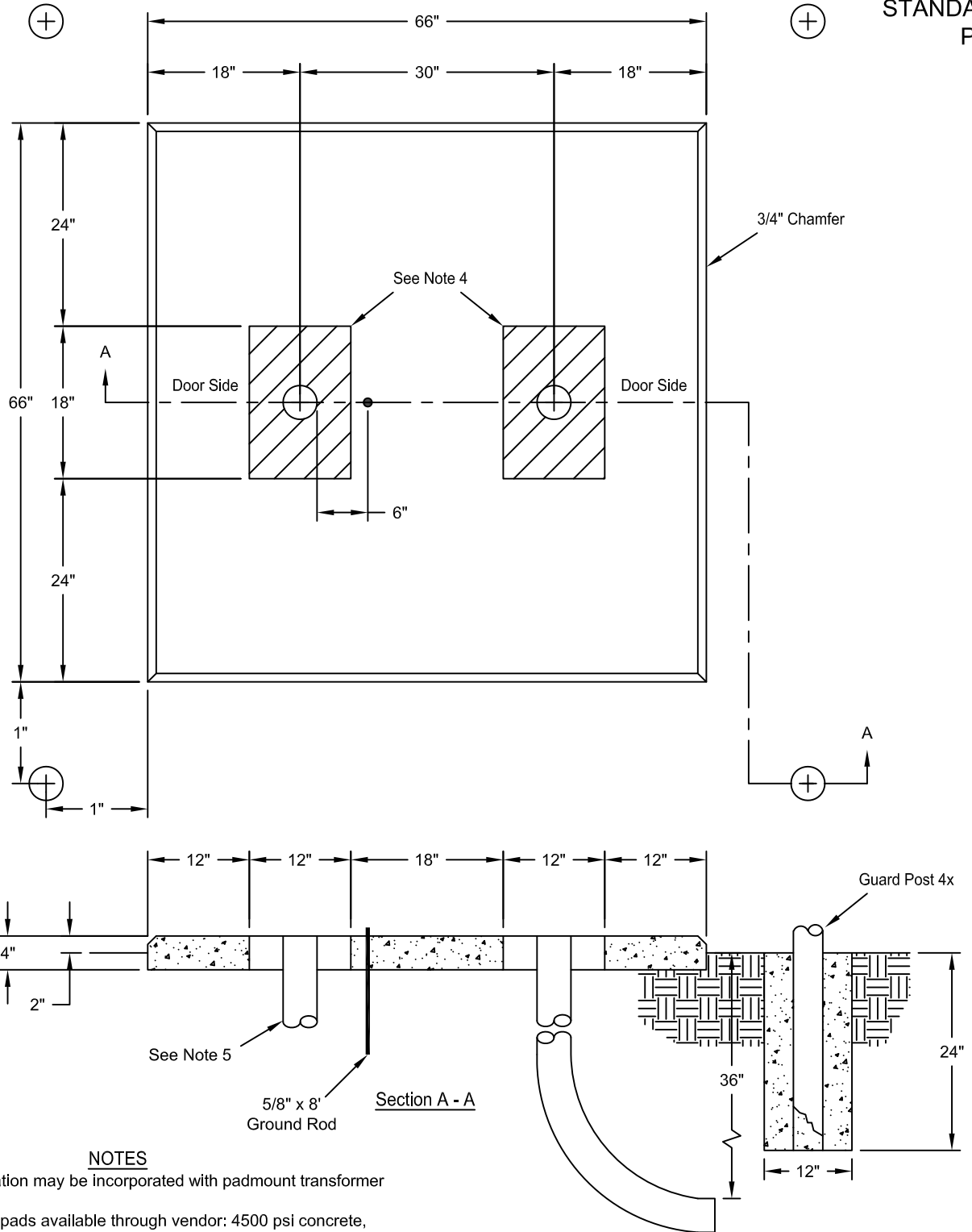
DS-7-16.12

**Distribution Transformers Working Space and Fire Safety Requirements
General Notes**

All dimensions are measured from the exterior of the transformer pad. These dimensions will allow proper clearances for transformers with or without cooling fins.

Three and Single phase Transformers Installation Detail

- A. The single hatched area shows the working space area that must be free of all permanent obstructions, except guard posts.
- B. Transformers must be installed 5' from any wall or building to provide PNM access for maintenance and replacement. Transformers are oil filled, and thus insurance companies may require greater separations from walls and buildings. The customer is responsible for coordinating with their insurance company to meet their particular requirements. If a customer requests a line or a transformer to be relocated after it's initial installation due to insurance requirements or otherwise, the customer will be billed for any new materials and labor in accordance with PNM's Rules and Regulations on file with the New Mexico Public Regulation Commission. Additionally, the customer will be required to provide necessary easements for the new location.
- C. "Variable" indicates the transformer to be installed. There are several configurations.
- D. The 10' dimension in front of the single and three-phase transformers allow the use of large hot sticks. It also affords safe installation and removal of the transformer or other related electrical equipment.
- E. Customer Service or Engineering should assure that the developer or agent is made aware of these work area requirements when the installation is in its planning stages.
- F. The work space for transformer s must be provided or service will be impaired.
- G. All new transformers will be installed in accessible areas only. They must be accessible for installation, removal, and maintenance, using normal PNM procedures and equipment.



NOTES

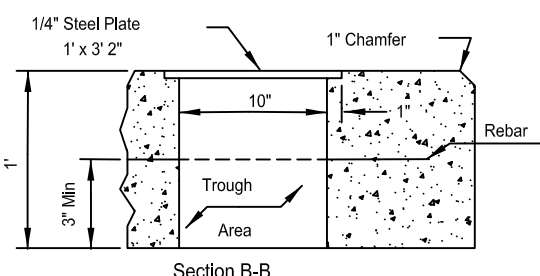
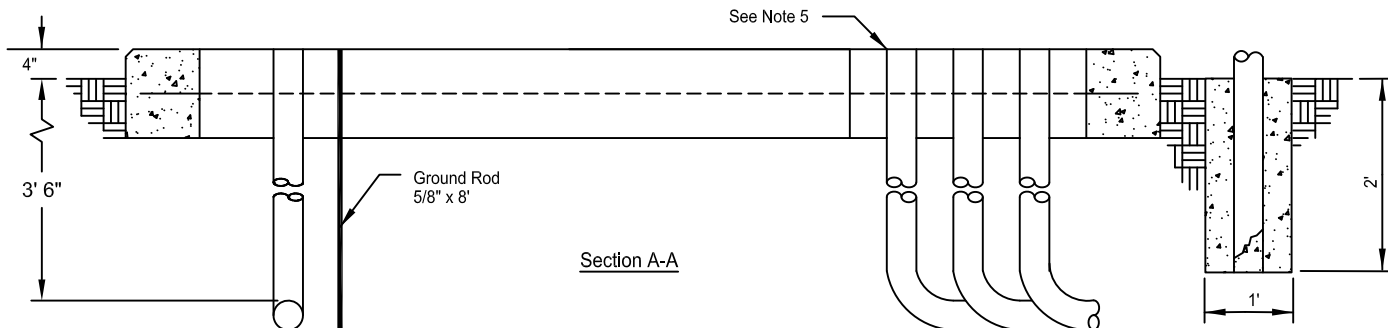
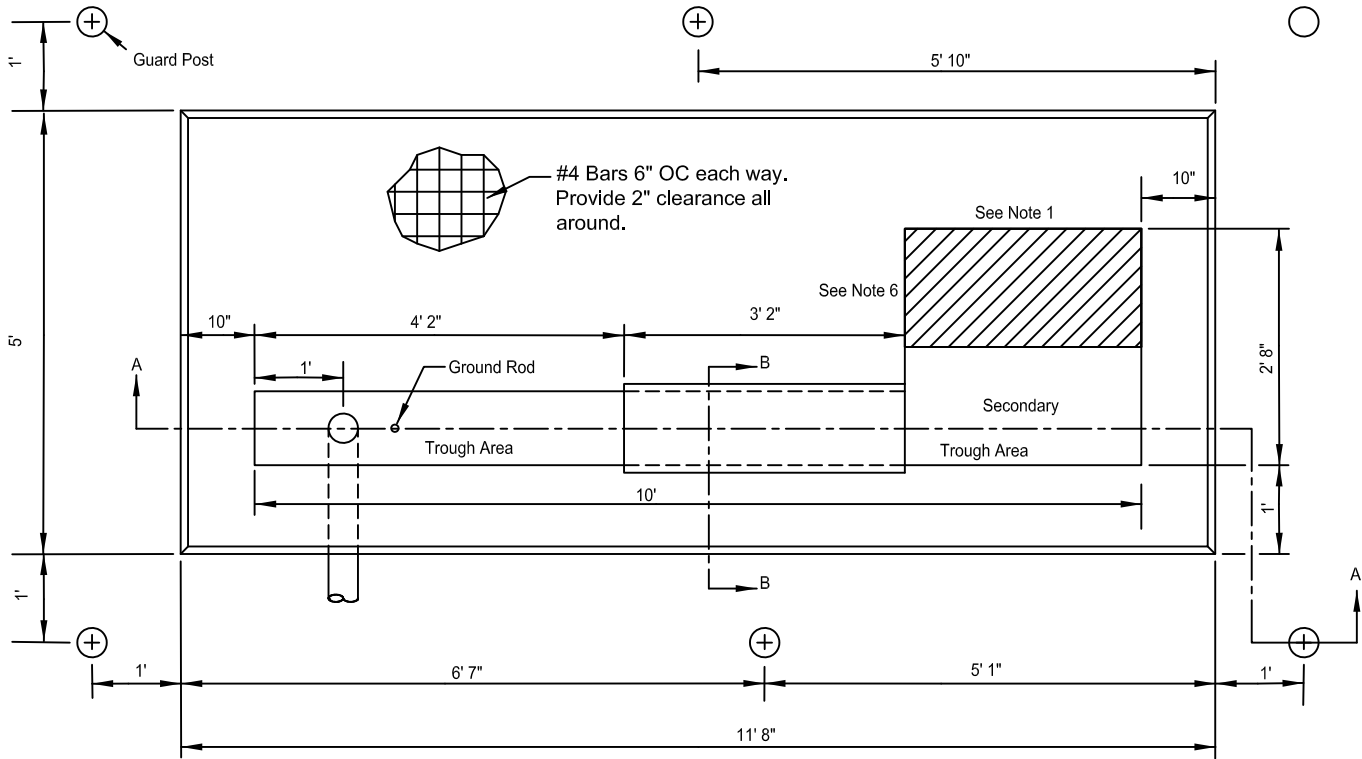
- (1) Enclosure foundation may be incorporated with padmount transformer foundation.
- (2) Precast concrete pads available through vendor: 4500 psi concrete, weighing 1497 lbs. Catalog ID 0100-006043.
- (3) Existing grade and back fill under concrete pad shall be compacted to 95% in accordance with ASTM D1557.
- (4) Cast out 12" x 18" sections. After conduits are in place, fill in remaining area with Quikrete to rodent proof the equipment. Minimum rodent proof thickness is 2".
- (5) 4" Rigid galvanized, PVC or IMC duct with bushing.

REFERENCES

- (1) See DS-7-16.10 Guard Post
- (2) See MS-3-17.0 7200/12470V CT and PT Meter Enclosure
- (3) See MS-7-2.0 Working Space Required for Meter Enclosure
- (4) See MS-3-21.0 7200/12470V CT and PT Enclosure Pad

7200/12470V CT and PT Meter Enclosure Precast Pad

DS-7-17.2

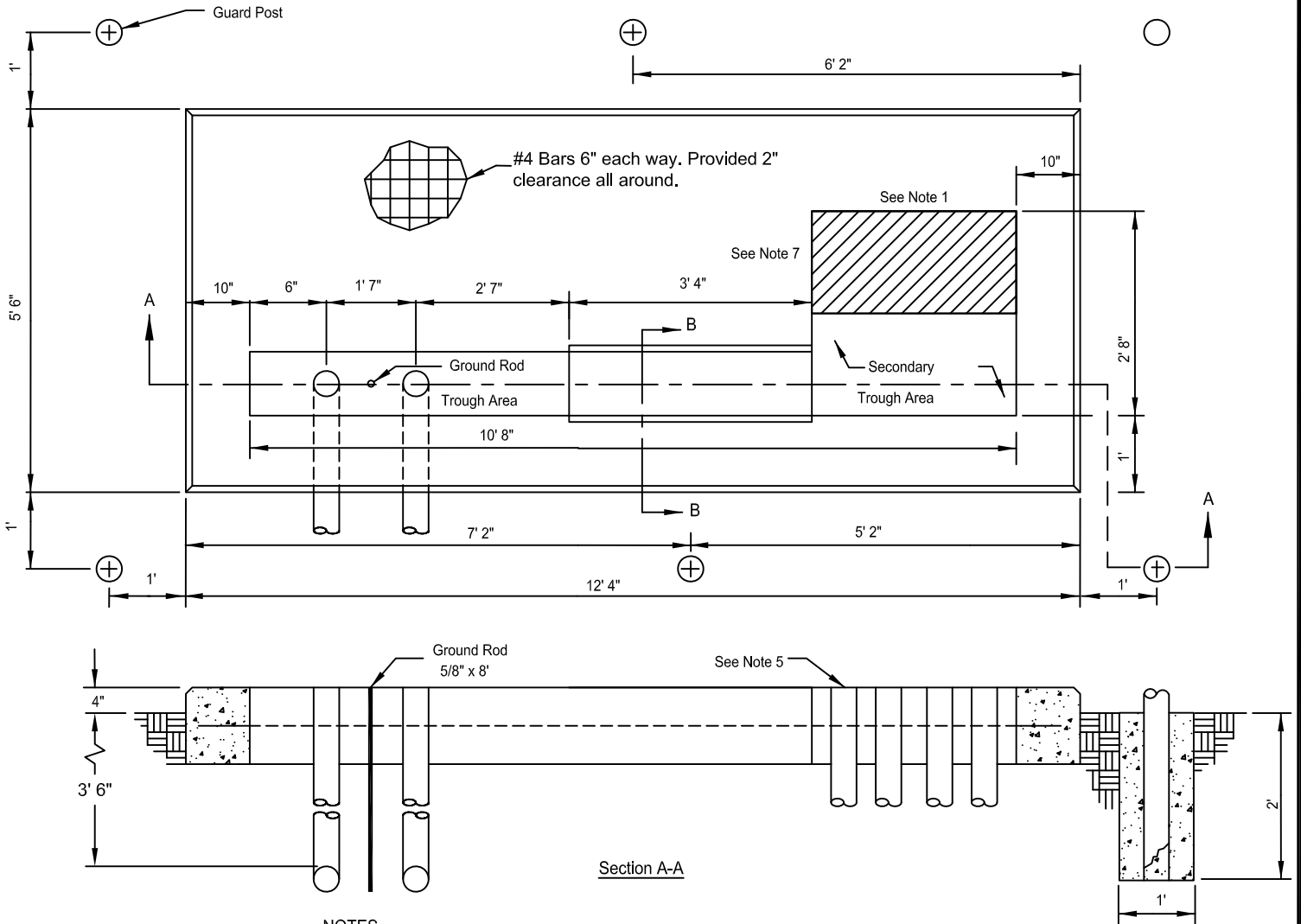


NOTES

- (1) No concrete in trough area or secondary conduit area. Locate secondary conduits in secondary conduit area as shown.
- (2) Guard posts are required in traffic area.
- (3) Concrete pad shall be 3000PSI concrete, level within +/- 1/4" in 5' and trowel finished to provide a true plane within 1/16" in 5' as determined by a 5' straight edge.
- (4) Secondary cables are random lay in trough. See Table 1.
- (5) Bring conduits up flush with pad.
- (6) Minimum of 1'10" x 14" to be maintained for secondary duct area to allow up to 8 - 4" secondary duct.
- (7) Existing grade and backfill under concrete pad shall be compacted to 95% in accordance with ASTM D1557.
- (8) All secondary cables must be tagged with phase and address for tracing reasons. The secondary cables shall be marked no more than 12" above the conduits.

REFERENCES

- (1) See DS-7-16.8 Page 1 and 2 Transformer and Switchgear Pad Foundation Preparation and Inspection
- (2) See DS-7-16.10 Guard Post
- (3) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformer

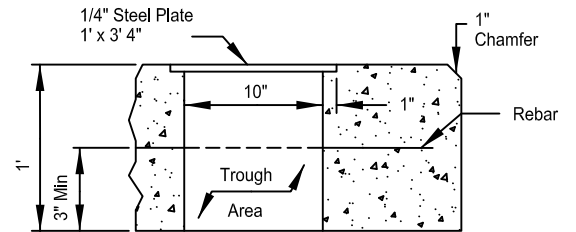


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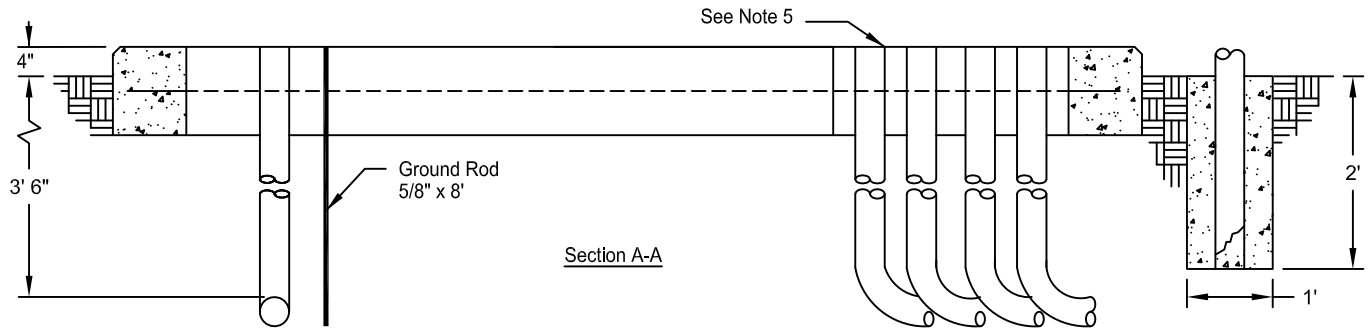
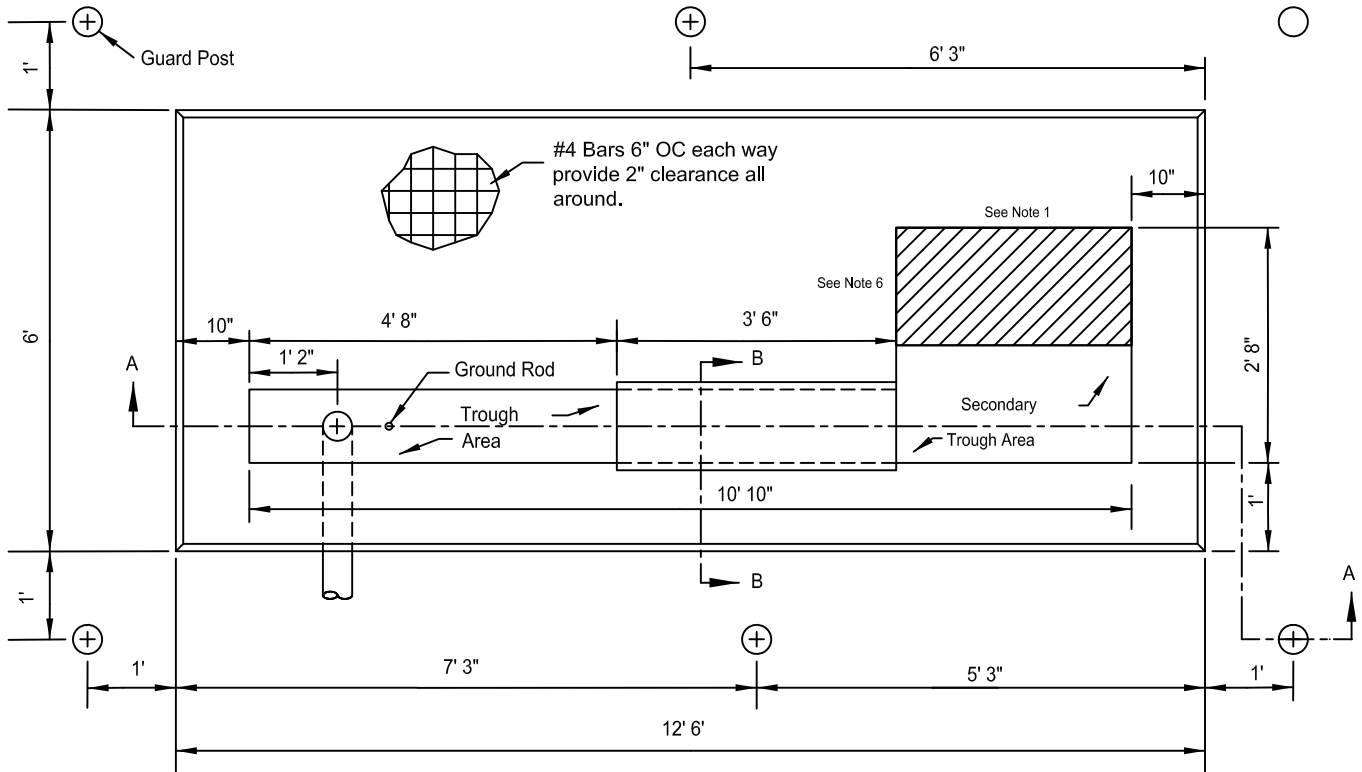
- (1) No concrete in trough area or secondary conduit area. Locate secondary conduits in secondary conduit area as shown.
- (2) Guard posts are required in traffic area.
- (3) Concrete pad shall be 3000PSI concrete, level within +/- 1/4" in 5' and trowel finished to provide a true plane within 1/16" in 5' as determined by a 5' straight edge.
- (5) Bring conduits up flush with pad.
- (6) Contact engineer for conduit orientation and configuration:
 - (a) For PNM direct buried primary system, customer shall install PVC elbows and PVC stubouts.
 - (b) For PNM Primary conduit system, customer shall install rigid elbows with concrete encased PVC stubouts or concrete encased elbows with concrete encased PVC stubouts.
- (7) Minimum of 1'10" x 14" to be maintained for secondary duct area to allow up to 8 - 4" secondary duct.
- (8) Existing grade and backfill under concrete pad shall be compacted to 95% in accordance with ASTM D1557.
- (9) All secondary cables must be tagged with phase and address for tracing reasons. The secondary cables shall be marked no more than 12" above the conduits.

REFERENCES

- (1) See DS-7-16.1 Guard Post
- (2) See DS-7-16.8 Page 1 and 2 Transformer and Switchgear Pad Foundation Preparation and Inspection
- (3) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformers



Section B-B

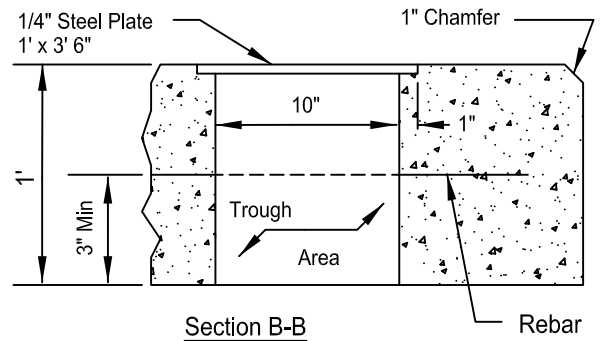


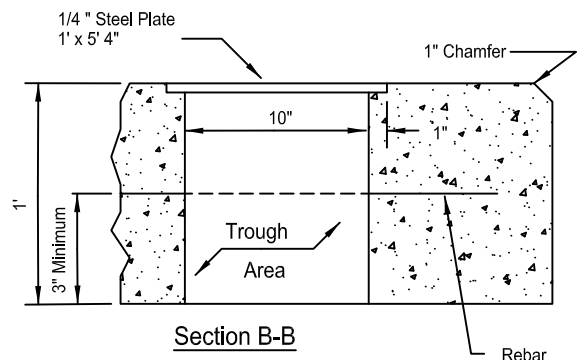
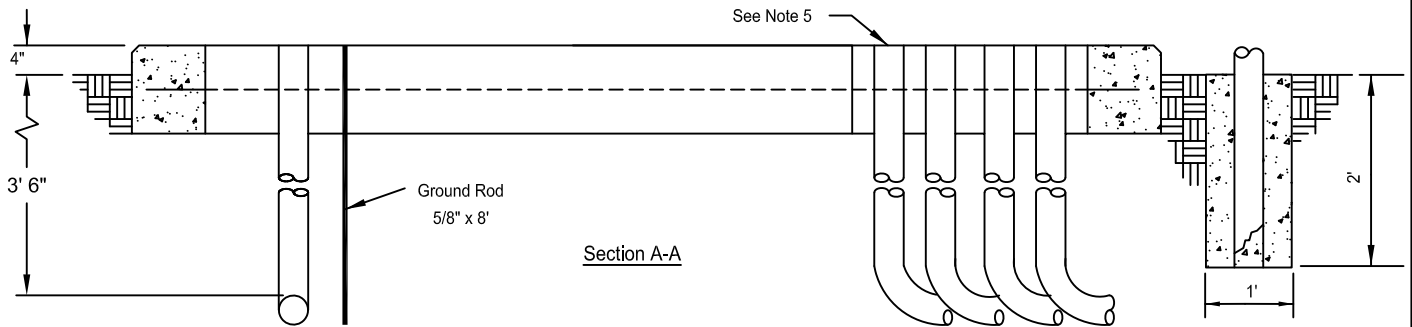
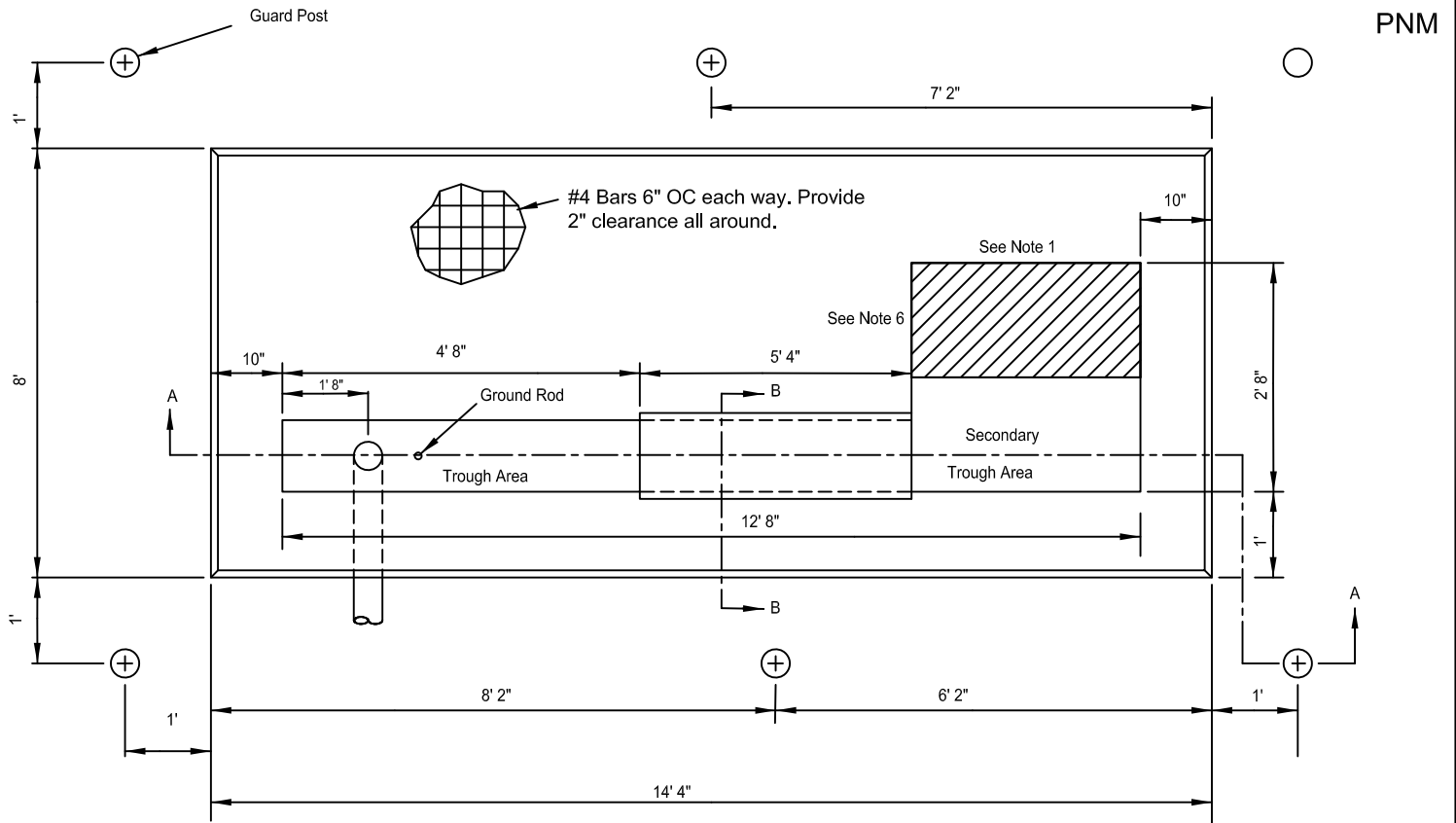
NOTES

- (1) No concrete in trough area or secondary conduit area. Locate secondary conduits in secondary conduit area as shown.
- (2) Guard posts are required in traffic area.
- (3) Concrete pad shall be 3000 PSI concrete, level within $\pm 1/4"$ in 5' and trowel finished to provide a true plane within $1/16"$ in 5' as determined by a 5' straight edge.
- (4) Secondary cables are randomly in trough.
- (5) Bring conduits up flush with pad.
- (6) Minimum of 1'10" x 14" to be maintained for secondary duct area to allow up to 8 - 4" secondary duct.
- (7) Existing grade and back fill under concrete pad shall be compacted to 95% in accordance with ASTM D1557.
- (8) All secondary cables must be tagged with phase and address for tracing reasons. The secondary cables shall be marked no more than 12" above the conduits.

REFERENCES

- (1) See DS-7-16.1 Guard Post
- (2) See DS-7-16.8 Page 1 and 2 Transformer and Switchgear Pad Foundation Preparation and Inspection
- (3) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformer



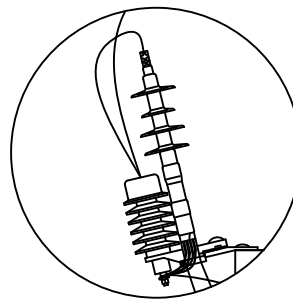
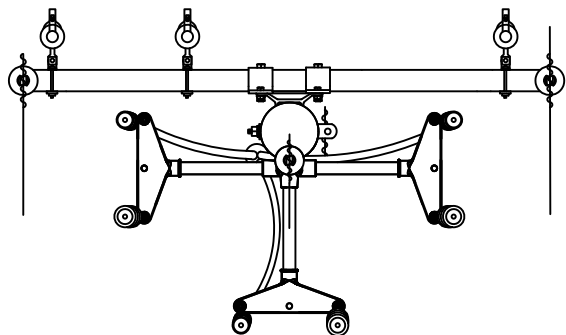


NOTES

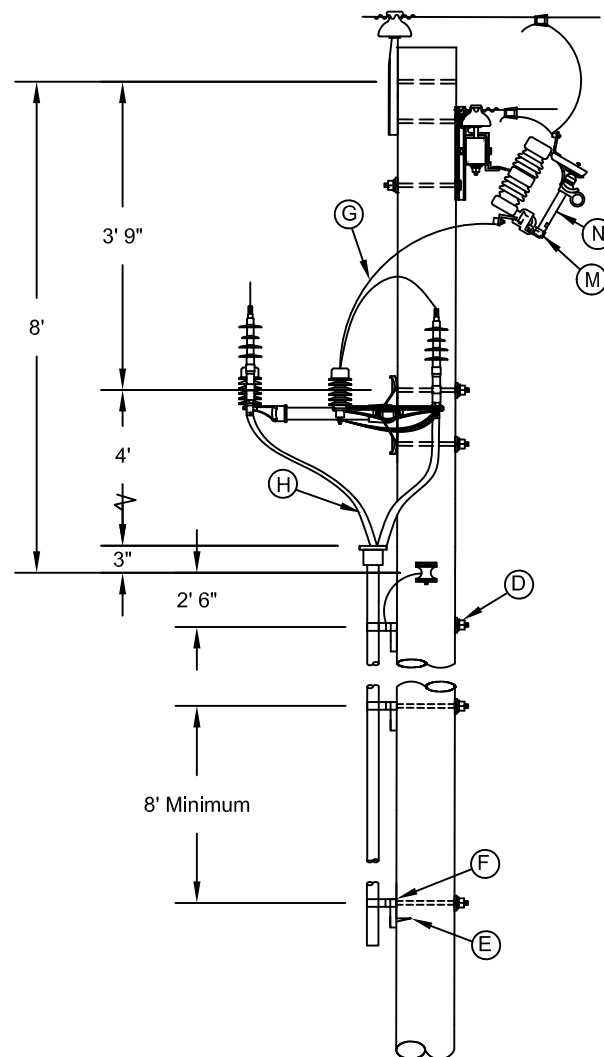
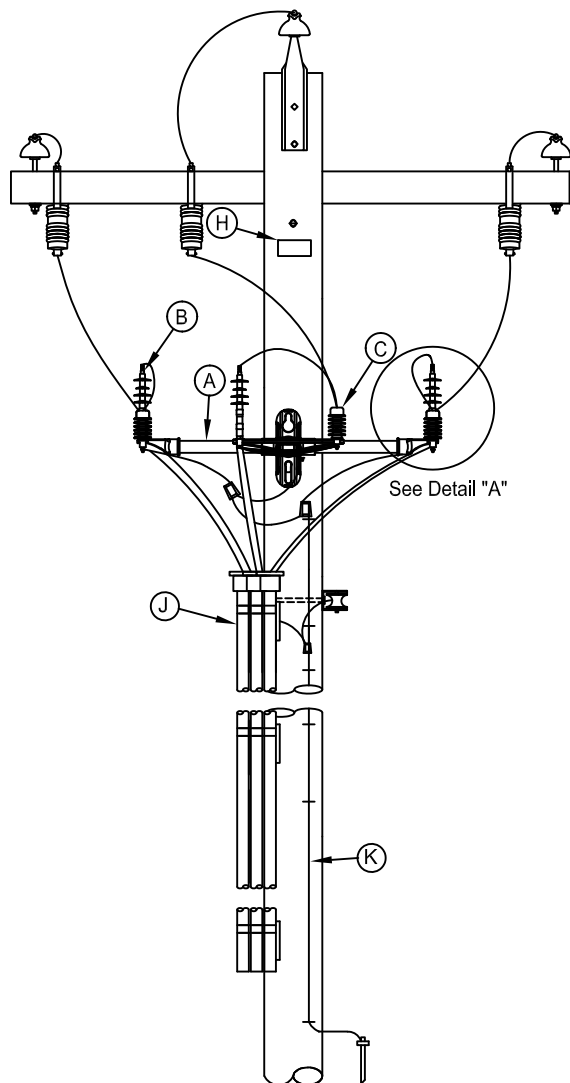
- (1) No concrete in trough area or secondary conduit area. Locate secondary conduits in secondary conduit area as shown.
- (2) Guard posts are required in traffic area.
- (3) Concrete pad shall be 3000 PSI concrete, level within $\pm 1/4"$ in 5' and trowel finished to provide a true plane within $1/16"$ in 5' as determined by a 5' straight edge.
- (4) Secondary cables are random lay in trough.
- (5) Bring conduits up flush with pad.
- (6) Minimum of 1'10" x 14" to be maintained for secondary duct area to allow up to 8 - 4" secondary duct.
- (7) Existing grade and backfill under concrete pad shall be compacted to 95% in accordance with ASTM D1557.
- (8) All secondary cables must be tagged with phase and address for tracing reasons. The secondary cables shall be marked no more than 12" above the conduits.

REFERENCES

- (1) See DS-7-16.1 Guard Post
- (2) See DS-7-16.8 Page 1 and 2 Transformer and Switchgear Pad Foundation Preparation and Inspection
- (3) See DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformers



Detail "A"



NOTES

- (1) Design is for 1/0 cable only.
- (2) Terminator bracket must be grounded.
- (3) A minimum distance of 8' is required from the lowest standoff bracket to the next upper standoff bracket.
- (4) #4 CU solid 600V covered wire shall be treated as an energized bare wire.
- (5) Preferred riser location to be within 90° of the system neutral.
- (6) Apply 3 wraps minimum of self-fusing silicone tape (70 tape, 5970-252572) to exposed terminator fittings.
- (7) Design is not Raptor Safe.

REFERENCES

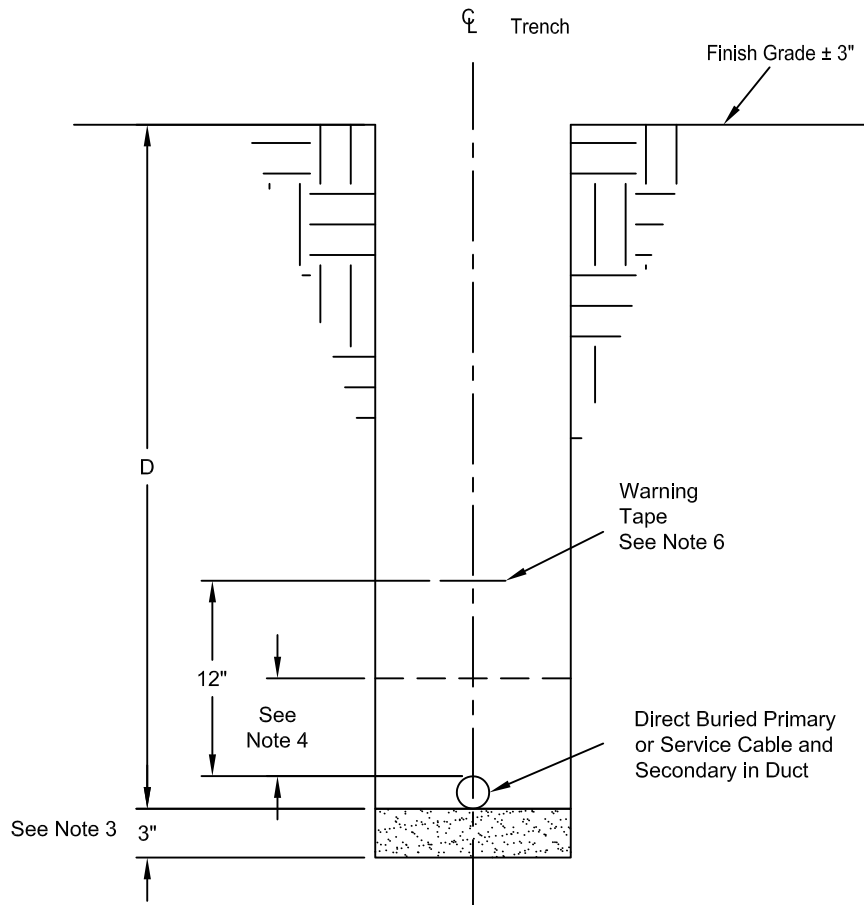
- (1) See DS-18-20.0 Ground Assembly
- (2) See DS-18-22.0 Universal Support Brackets
- (3) See DS-18-24.0 Connector Lug Terminations
- (4) See DS-18-99.0 Ampact Wire Chart

Material List

Item	Quan.	Description	Stock #
A	1	Small Terminator Bracket	0100-009100
B	3	___ kV Outdoor Terminator	5975-5920-
C	3	___ kV Riser Pole Arrester	DS-18-21.0
D	4	Bolt Hardware Assembly	7000-133625
E	3	1/2" x 4" Lag Screw	7000-470380
F	3	24" T-Slot Standoff Bracket	0000-001150
G	24	#4 Covered Copper Wire	5975-264200
H	3	2" Cable Support	7000-470380
J	90	2" Schedule 80 PVC	7000-460620
K	1	Ground Assembly	DS-18-20.0
L	1	Fuse Plate	9999-001986
M	3	___ kV Cutout	0000-001150
N	3	___ Fuse Link	5925-230921
P	1	Three-Phase Tangent and Small Angles	

200 Amp Tangent Riser
Three-Phase 1/0, Three 2" Conduits

DS-10-6.4.5



NOTES

- (1) Where applicable, compaction in city or state right-of-way shall meet or exceed minimum requirements.
- (2) Shading and bedding material to be Type IV, Class 2 for cable in conduit. Type III material is suitable for either type of installation. Refer to DS-10-12.4 for fill material requirements.
- (3) If trench-run material meets backfill material type requirements, 3" bedding may be omitted provided the trench bottom is smooth, flat, and without surface irregularities.
- (4) A minimum of 6" of shading over the primary cable is required.
- (5) Latest OSHA trench safety requirements must be strictly observed.
- (6) Warning tape shall be placed a minimum of 12" above all secondary and primary direct buried cable.
- (7) Direct buried cable shall not be used in any cable run in combination with cable in duct installation.

Depth Schedule-For Direct Bury	
Cable Type	"D"
Service and Secondary	36" Minimum
Primary	48" Minimum

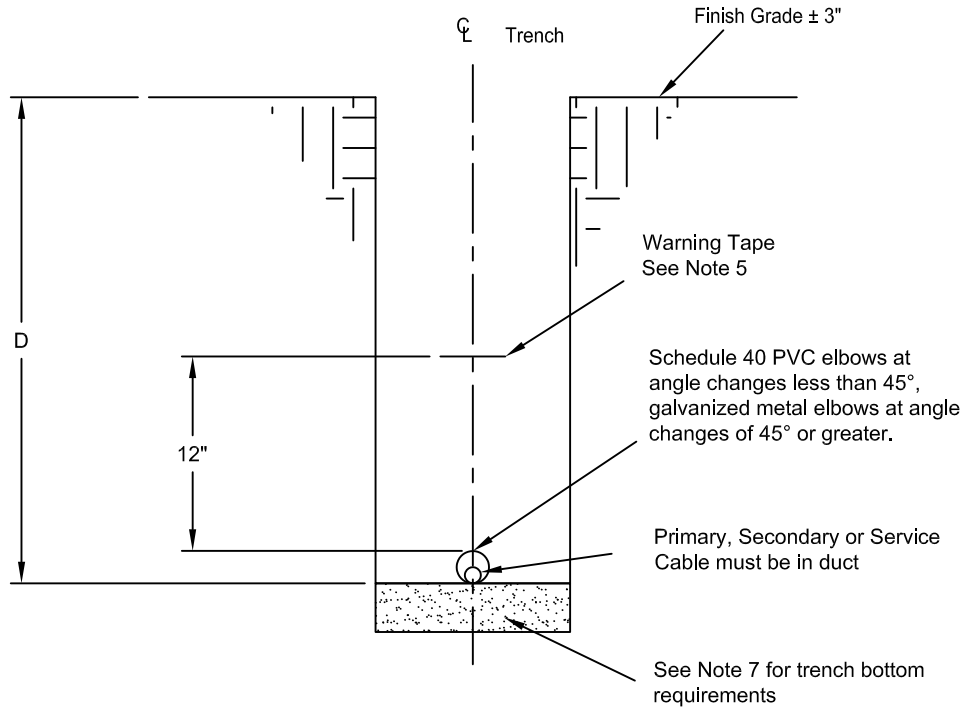
Backhoe or Trencher Installation

This burial method must be used for the entire trench length, from equipment to equipment.

REFERENCES

- (1) NESC rule 352, 353, 354

Direct Buried Cable - Trench Details



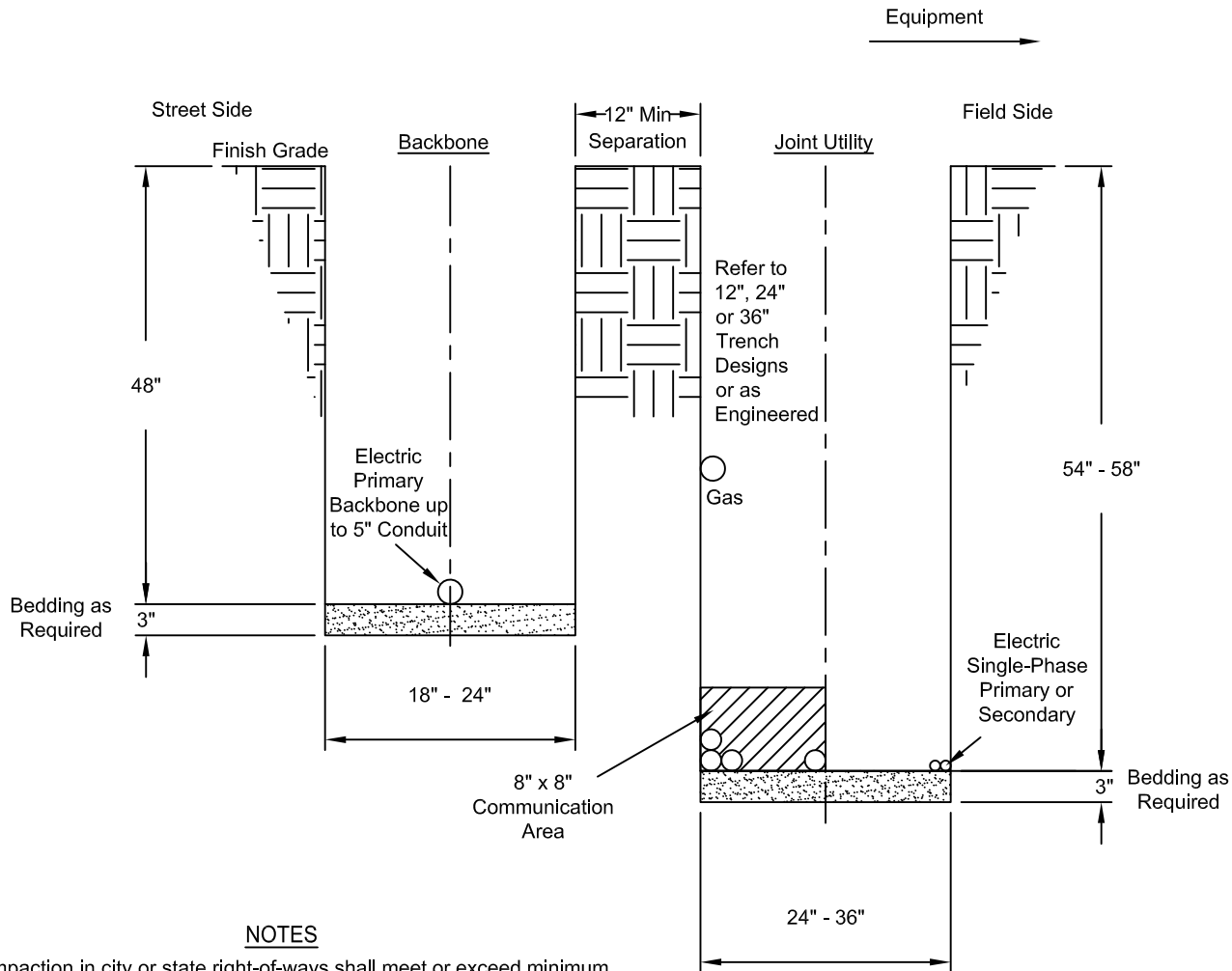
NOTES

- (1) Cable in duct shall remain intact, not to be used in combination with direct buried cable.
- (2) Where applicable, compaction in city or state right-of-way shall meet or exceed minimum requirements.
- (3) Shading and bedding material to be Type IV, Class 2 for cable in conduit. Type III material is suitable for either type of installation. Refer to DS-10-12.4 for fill material requirements.
- (4) Latest OSHA trench safety requirements must be strictly observed.
- (5) Warning tape shall be placed a minimum of 12" above the top of duct.
- (6) Trench bottom shall be smooth, flat and without surface irregularities, and shall be free and clear of debris or any organic material. If trench bottom cannot, with reasonable effort, be made without surface irregularities, then a sufficient amount of bedding material as required by Note 2 shall be installed to provide the required surface. In no event shall the top of duct be less than 24" below finish grade.
- (7) Maximum change in the trench bottom elevation shall not exceed 2" over a 10' length. Bedding materials required by Note 3 may be used to meet this requirement.

Depth Schedule - For Cable in Duct	
Cable Type	"D"
Service and Secondary	36" Minimum
Primary	48" Minimum

REFERENCES

- (1) NESC rule 352, 353, 354



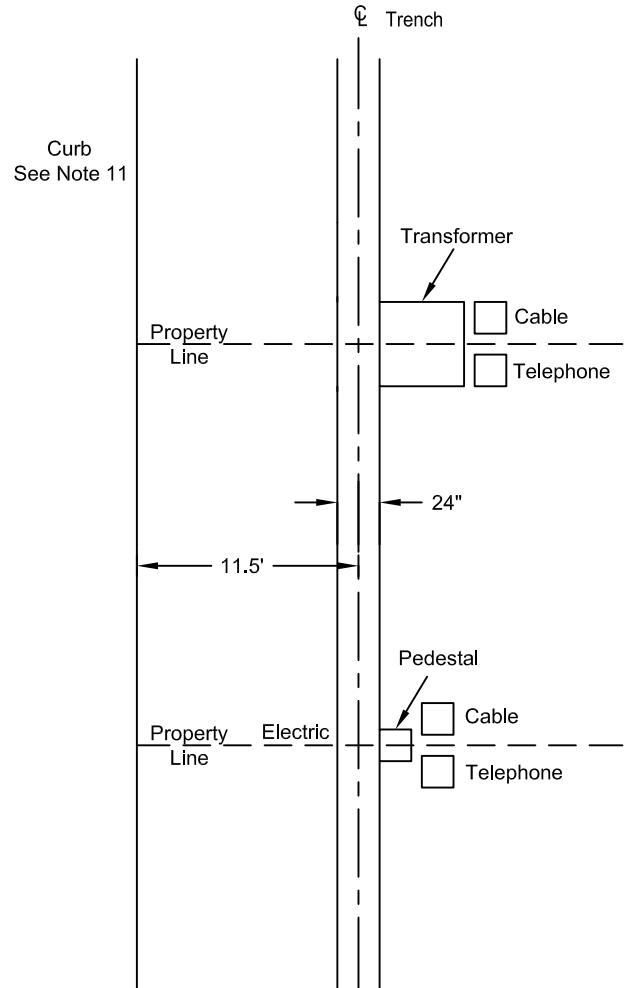
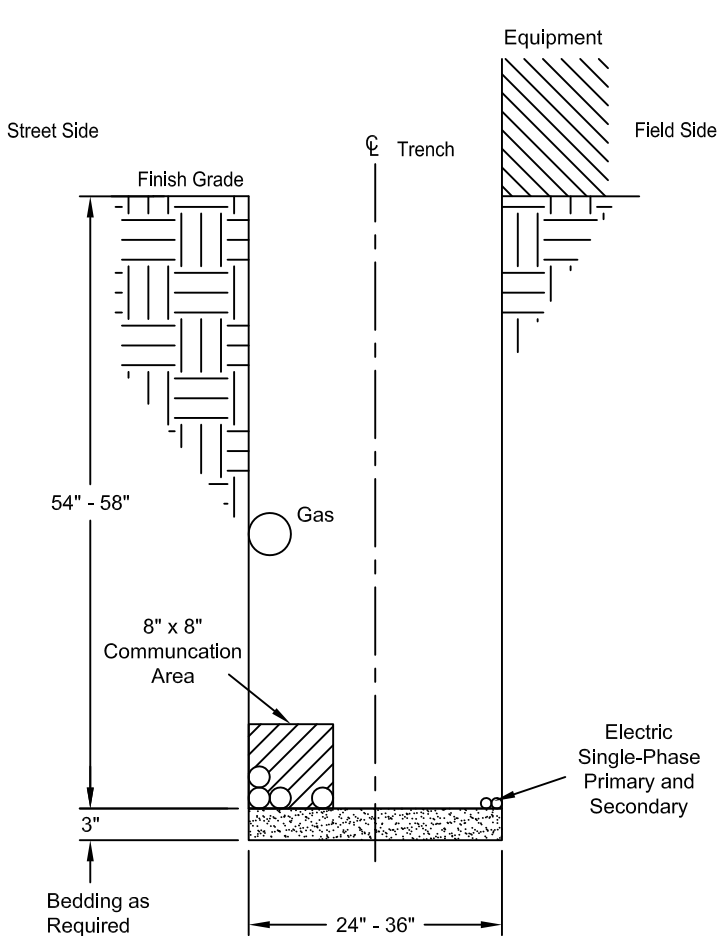
NOTES

- (1) Compaction in city or state right-of-ways shall meet or exceed minimum specified requirements.
- (2) Shading and bedding material to be Type IV, Class 2 for cable in conduit. Type III material is suitable for either type of installation. Refer to DS-10-12.4 for fill material requirements.
- (3) If trench-run material meets back fill material type requirements, 3" bedding may be omitted provided the trench bottom is smooth, flat and without surface irregularities.
- (4) Separation between jacketed primary and communication cables shall be at least 12".
- (5) Spoil pile shall be placed on the field side a minimum of 2' from the trench edge.
- (6) Latest OSHA trench safety requirements shall be strictly observed.
- (7) Warning tape shall be placed a minimum of 12" above the upper level of utilities at the center of the trench.
- (8) Electric secondary will include streetlight cable if applicable. Must be PNM owned or maintained.
- (9) Private streetlight circuits or private area lighting circuits must maintain 12" separation from all other joint trench occupants.
- (10) Single circuit per trench back bone, separate trench.
- (11) If in rocky areas, consult with PNM Engineering prior to performing the work. Rocky areas is where earth requires the user of rock saw, rock trencher, jackhammers or explosives to reach the proper depth.
- (12) If in rocky areas, consult with PNM Engineering prior to performing the work. Rocky areas is where earth requires the user of rock saw, rock trencher, jackhammers or explosives to reach the proper depth.
- (13) Joint Utility Trench details only show and account for dry utilities; wet utilities such as water and/or sewer are not permitted in the joint utility trench.

REFERENCES

- (1) NESC rule 352, 353, 354

Backbone and Joint Utility - Trench Detail



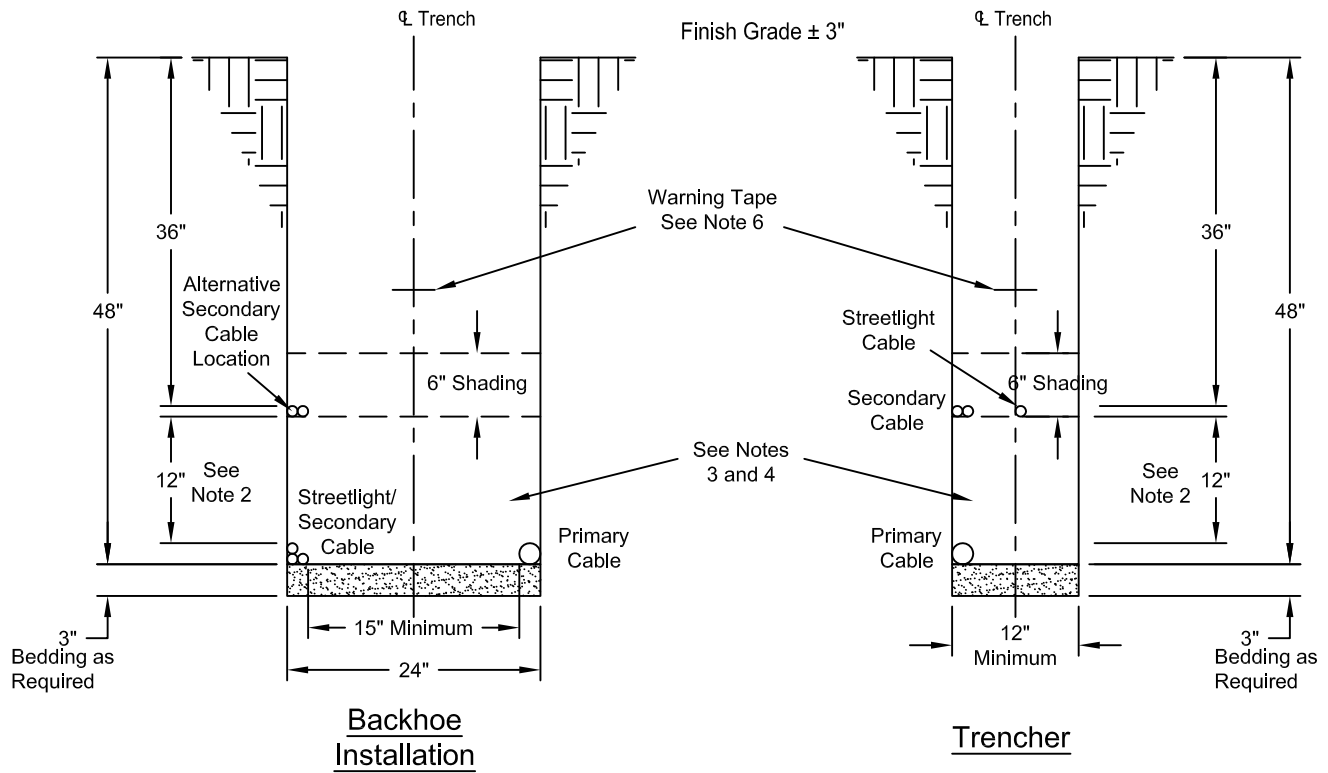
NOTES

- (1) Compaction in city or state right-of-ways shall meet or exceed minimum specified requirements.
- (2) Shading and bedding material to be Type IV, Class 2 for cable in conduit. Type III material is suitable for either type of installation. Refer to DS-10-12.4 for fill material requirements.
- (3) If trench-run material meets back fill material type requirements, 3" bedding may be omitted provided the trench bottom is smooth, flat and without surface irregularities.
- (4) Maximum change in the trench bottom elevation shall not exceed 2" over a 10' length.
- (5) Spoil pile shall be placed on the field side a minimum of 2' from the trench edge.
- (6) Latest OSHA trench safety requirements shall be strictly observed.
- (7) When bringing cables to pedestals, 12" separation must be maintained from the gas line.
- (8) PNM owned or maintained streetlight circuits may be installed in trench next to electric cables.
- (9) Private area lighting or private streetlight circuits must maintain 12" separation from all other joint occupants.
- (10) Check with local gas utility for minimum separation but, in no case it should be less than 12".
- (11) Typical subdivision where property line is 9' from back of curb and 10' Public Utility Easement (PUE).
- (12) Warning tape shall be placed a minimum of 12" above the upper level of utilities at the center of the trench.
- (13) Additional cutback from main trench required at transformer and pedestal locations.

REFERENCES

- (1) NESC rule 352, 353, 354
- (2) DS-7-16.12 Minimum Working Space and Fire Safety Requirements for Transformers
- (3) DS-7-17.0 Working Space and Fire Safety Requirements Supplement

Typical Residential - Trench Details

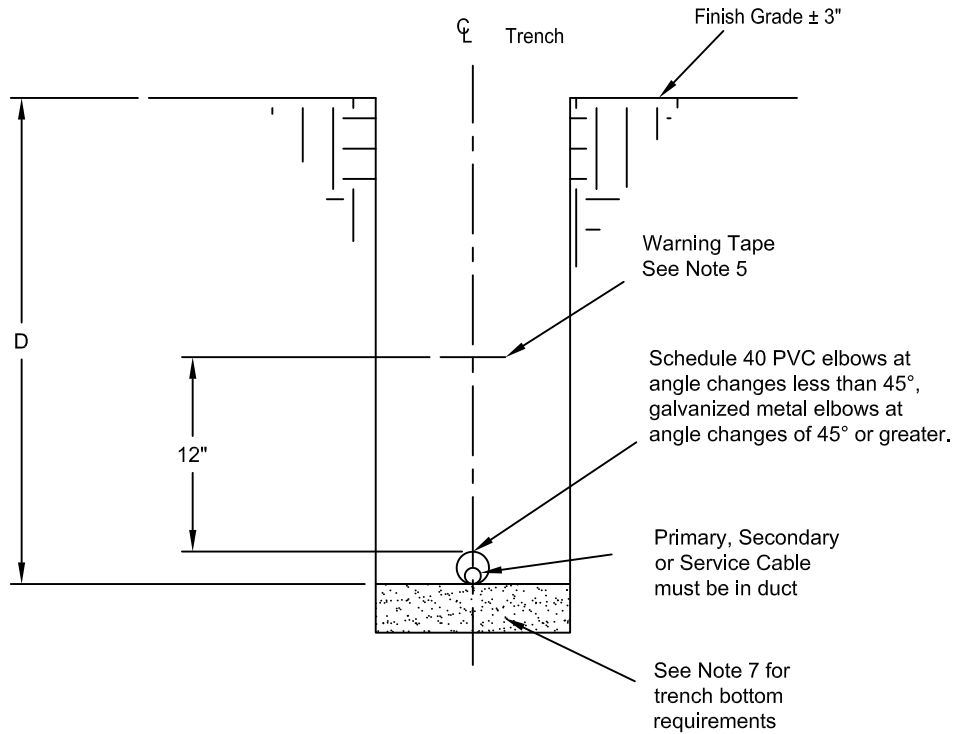


NOTES

- (1) Where applicable, compaction in city or state right-of-way shall meet or exceed minimum requirements.
- (2) Shading and bedding material to be Type IV, Class 2 for cable in conduit. Type III material is suitable for either type of installation. Refer to DS-10-12.4 for fill material requirements.
- (3) If trench-run material meets backfill material type requirements, 3" bedding may be omitted provided the trench bottom is smooth, flat, and without surface irregularities.
- (4) For installation without the upper layer of cable, a minimum of 6" of shading over the primary cable is required.
- (5) Latest OSHA trench safety requirements must be strictly observed.
- (6) Warning tape shall be placed a minimum of 12" above the upper level of electrical cable at the center of the trench.
- (7) PNM owned or maintained streetlight circuits may be installed in trench next to electric cables.
- (8) Private area lighting or private streetlight circuits must maintain 12" separation from all other joint occupants.

REFERENCES

- (1) NESC rule 352, 353, 354



NOTES

- (1) Trench detail for PNM owned cable in duct installation. This drawing shows the minimum recommended requirements for cable in duct installations.
- (2) Where applicable, compaction in city or state right-of-way shall meet or exceed minimum requirements.
- (3) Shading and bedding material to be Type IV, Class 2 for cable in conduit. Type III material is suitable for either type of installation. Refer to DS-10-12.4 for fill material requirements.
- (4) Latest OSHA trench safety requirements must be strictly observed.
- (5) Warning tape shall be placed a minimum of 12" above the top of duct.
- (6) Trench bottom shall be smooth, flat and without surface irregularities, and shall be free and clear of debris or any organic material. If trench bottom cannot, with reasonable effort, be made without surface irregularities, then a sufficient amount of bedding material as required by Note 2 shall be installed to provide the required surface. In no event shall the top of duct be less than 24" below finish grade.
- (7) Maximum change in the trench bottom elevation shall not exceed 2" over a 10' length. Bedding materials required by Note 3 may be used to meet this requirement.
- (8) Cable in duct shall remain intact, not to be used in combination with direct buried cable.
- (9) Rocky area is where earth requires the use of rock saw, rock trencher, jackhammers or explosives to reach proper depth.
- (10) Special use Rocky areas detail see DS-10-8.1 Page 7.
- (11) This detail is only to be used upon approval of PNM Distribution Engineering.

Depth Schedule for Cable in Duct in Rocky Areas	
Cable Type	"D"
Service and Secondary	24" Minimum
Primary	30" Minimum

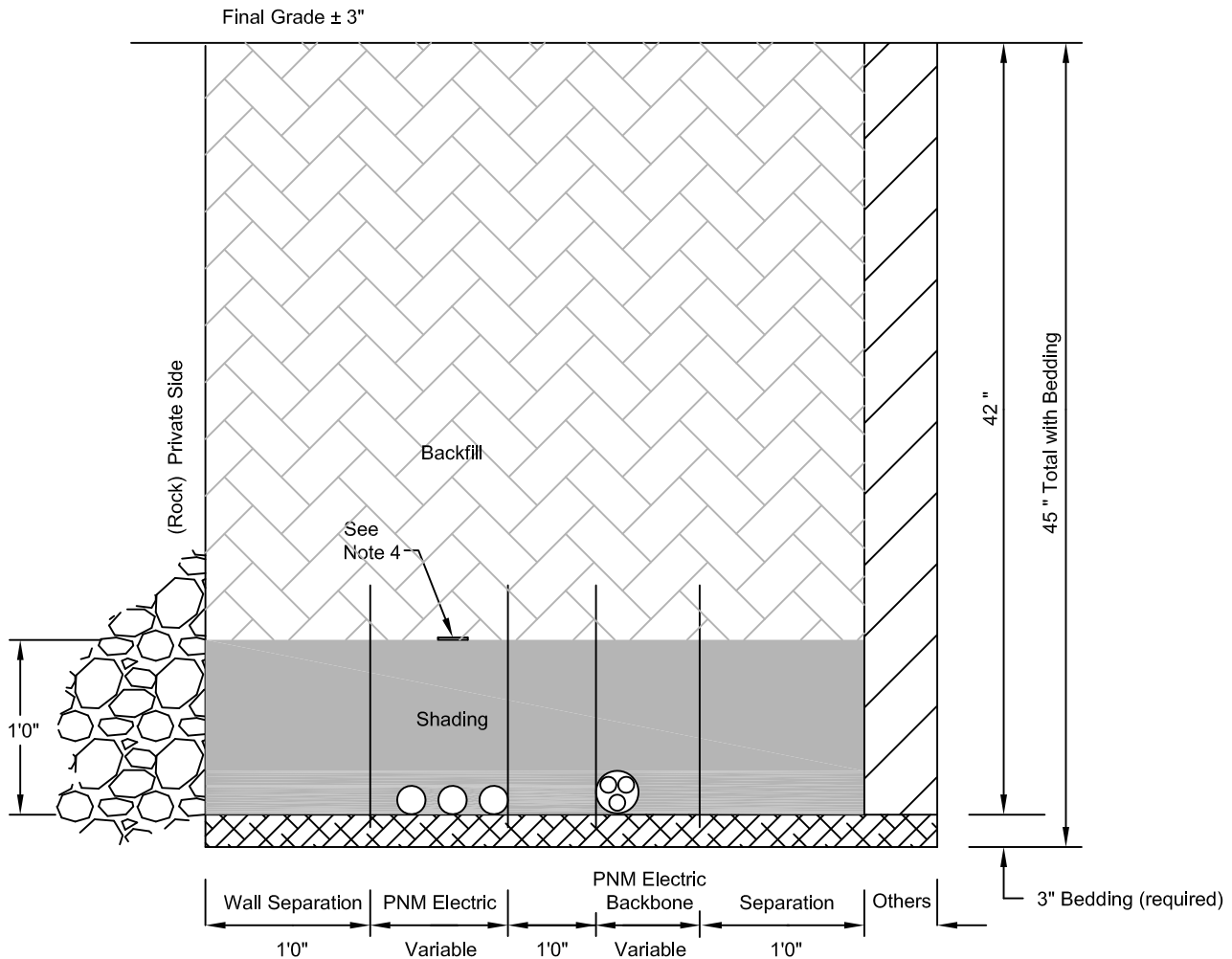
Rocky Areas
Where earth requires the use of rock saw, rock trencher, jackhammers or explosives to reach the proper depth.

REFERENCES

- (1) NESC rule 352, 353, 354

For Rocky Areas Only

Commercial or Residential Trench Detail



Minimum Standard Requirement for PNM Electric with backbone

NOTES

- (1) Where applicable, compaction in city or state right-of-way shall meet or exceed minimum requirements. If additional compaction is required, a non-refundable contract must be executed.
- (2) Shading and bedding material to be Type IV, class 2 for cable in duct. Backfill material shall be free of debris and have no gravel larger than 3". Refer to DS-10-12.4 for fill material requirements.
- (3) Latest OSHA trench safety requirements must be strictly observed.
- (4) Warning tape shall be placed in a minimum of 12" above the top of duct.
- (5) Trench bottom shall be smooth, flat and without surface irregularities, and shall be free and clear of debris or any organic material. If trench bottom cannot, with reasonable effort, be made without surface irregularities, then additional bedding material as required by Note 2 shall be installed to provide the required surface.
- (6) Maximum change in the trench bottom elevation shall not exceed 2" over a 10' length. Bedding materials required by Note 2 may be used to meet this requirement.
- (7) Cable in duct shall not be used in any cable run in combination with direct buried cable.
- (8) This detail (For Rocky Areas Only) is only to be used upon approval of PNM Distribution Engineering.

Rocky Areas

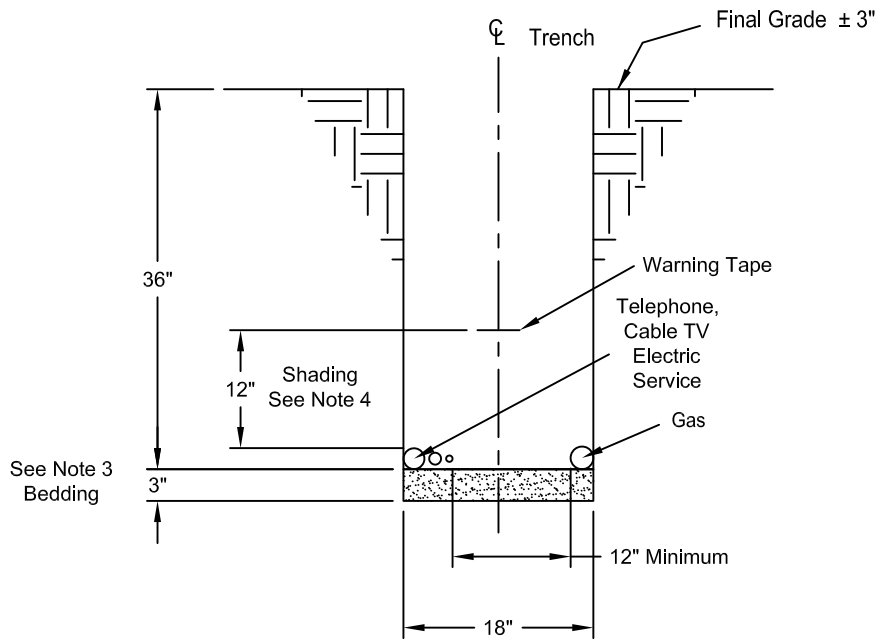
Where earth requires the use of rock saw, rock trencher, jackhammers, or explosives to reach the proper depth.

REFERENCES

- (1) NESC rule 352, 353, and 354.

Rocky Areas-Trench Detail (Prior Approval Required)

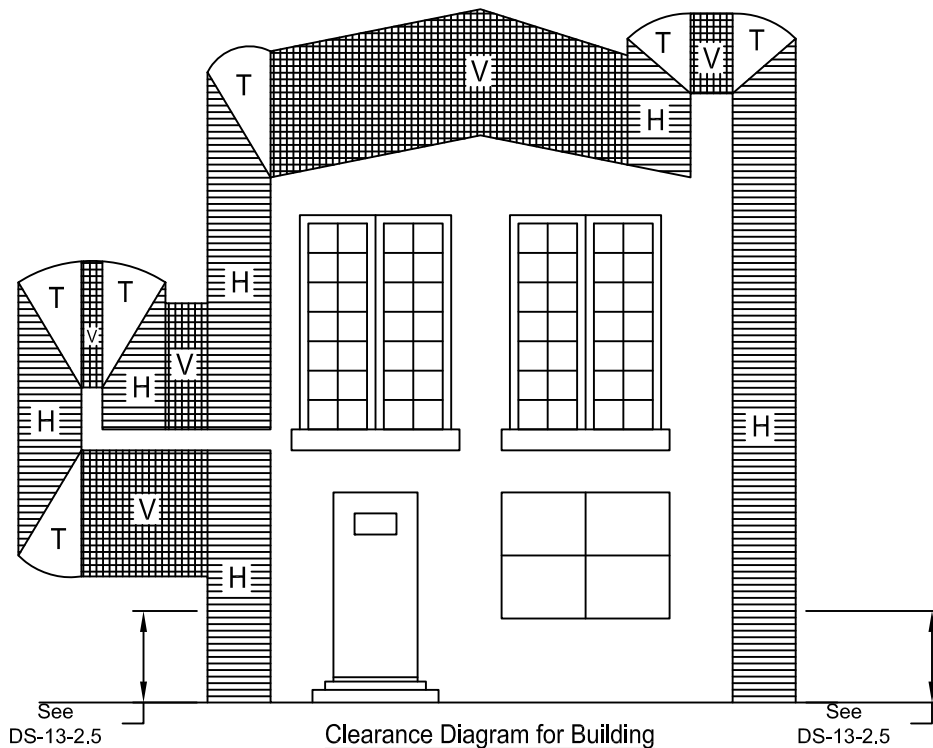
Residential Underground
Joint Service Trench Detail



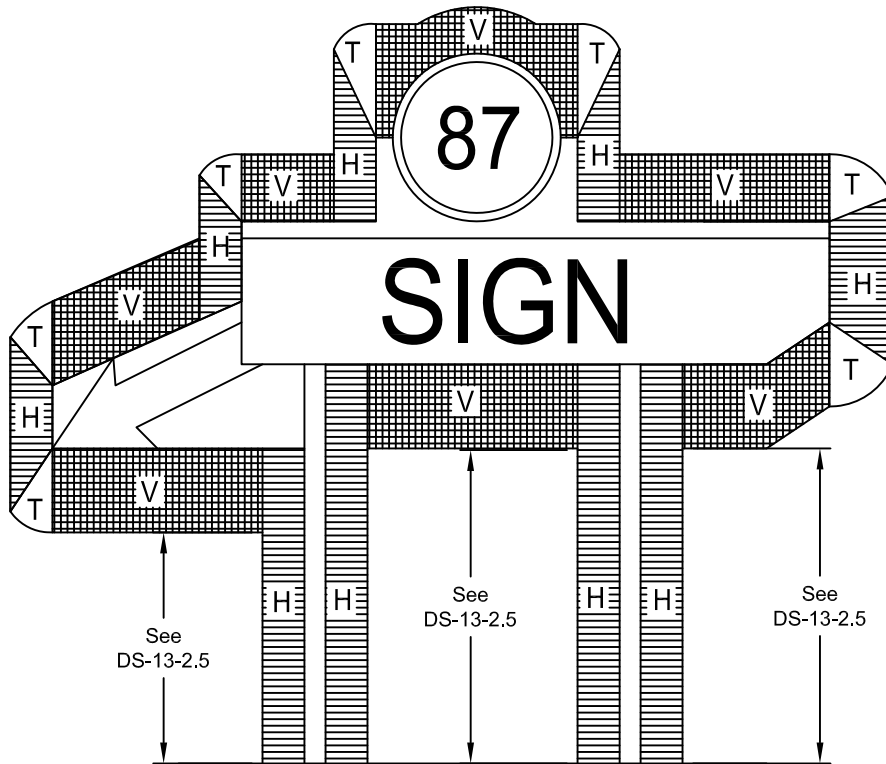
NOTES

- (1) Where applicable, compaction in city or state right-of-way shall meet or exceed minimum requirements.
- (2) Shading and bedding material to be Type III: sand-free of silt, clay and loam or Type IV: class 2, soil-reused or imported, free of debris and gravel larger than 2".
- (3) If trench-run material meets back fill material type requirements, 3" bedding may be omitted provided the trench bottom is smooth, flat, and without surface irregularities.
- (4) A minimum of 12" of approved back fill shading over the utilities is required.
- (5) For rocky areas installation burial depth for service cable can be reduced to a minimum of 24".
- (6) Latest OSHA trench safety requirements must be strictly observed.
- (7) Where utilities cross a minimum 12" separation is required.
- (8) Check with local gas utility for minimum separation from electric duct but in no case shall it be less than 12".
- (9) Check with cable and phone companies for minimum separation from electric duct, if any.

Joint Service Trench



Clearance Diagram for Building

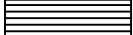


Clearance Diagram for Other Structures

Legend

Regions where conductors are prohibited

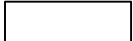
Controlling Clearance

H 

Horizontal

V 

Vertical

T 

Transition = Vertical (ARC)

Transition between horizontal and vertical clearances

The horizontal clearances governs above the level of the roof or top of an installation to the point where the diagonal equals the vertical clearance requirement. Similarly, the horizontal clearance governs above or below projections from buildings, signs, or other installations to the point where the diagonal equals the vertical clearance requirement. From this point the transitional clearance shall equal the vertical clearance as shown above.

Clearances from Buildings and Other Structures

**DISTRIBUTION
STANDARD
PNM**

**Table I
Clearance of Wires, Conductors, Cables, and Unguarded
Rigid Live Parts Adjacent to Buildings and Other
Installations Except Bridges¹²**

<u>Clearance of</u>	Messengers, Grounded Guys, and Neutral Conductors <u>(ft)</u>	Multiplexed Cable <u>(ft)</u>	Unguarded Rigid Live Parts (0 to 750 V) <u>(ft)</u>	Open Wire Secondary <u>(ft)</u>	Unguarded Rigid Live Parts (750 to 22 kV) <u>(ft)</u>	Open Supply Conductors, (750 - 22KV) <u>(ft)</u>
1. Buildings						
a) Horizontal						
(1) To walls, projections and guarded windows	4.5 ^{1,2,7}	5.0 ^{1,2}	5.0 ^{1,2}	5.5 ^{1,2,9}	7.0 ^{1,2}	7.5 ^{1,2,10,11}
(2) To unguarded windows ⁸	4.5	5.0	5.0	5.5 ⁹	7.0	7.5 ^{10,11}
(3) To balconies and areas readily accessible to pedestrians ³	4.5	5.0	5.0	5.5 ⁹	7.0	7.5 ^{10,11}
b) Vertical ¹⁴						
1) (1) Over or under roofs or projections not accessible to pedestrians ³	3.0	3.5	10.0	10.5	12.0	12.5
2) (2) Over or under balconies and roofs accessible to pedestrians ³	10.5	11.0	11.0	11.5	13.0	13.5
(3) Over roofs accessible to vehicles but not subject to truck traffic ⁶	10.5	11.0	11.0	11.5	13.0	13.5
(4) Over roofs accessible to truck traffic ⁶	15.5	16.0	16.0	16.5	18.0	18.5
2. Signs, chimneys, billboards, radio and television antennas, tanks, and other installations not classified as buildings or bridges.						
a) Horizontal ⁴						
(1) To portions that are readily accessible to pedestrians ³	4.5	5.0	5.0 ^{1,2}	5.5 ⁹	7.0 ^{1,2}	7.5 ^{10,11}
(2) To portions that are not readily accessible to pedestrians ³	3.0	3.5	5.0 ^{1,2}	5.5 ^{1,2,9}	7.0 ^{1,2}	7.5 ^{1,2,10,11}
b) Vertical						
(1) Over or under catwalks and other surfaces upon which personnel walk	10.5	11.0	11.0	11.5	13.0	13.5
(2) Over or under other portions or such installations ⁴	3.0	3.5	5.5	6.0 ¹	7.5	8.0

NOTE: See DM-13-2.6 for application of clearance requirements.

Table I
Clearance of Wires, Conductors, Cables, and
Unguarded Rigid Live Parts Adjacent to Buildings and
Other Installations Except Bridges (continued)

1. Where building, sign, chimney, antenna, tank, or other installation does not require maintenance such as painting, washing, changing of sign letters, or other operations which would require persons to work or pass between wires, conductors, cables or unguarded rigid live parts and structure, the clearance may be reduced by 2'.
2. Where available space will not permit this value, the clearance may be reduced by 2't. provided the wires, conductors, or cables, including splices and taps, and unguarded rigid live parts have a covering that provides sufficient dielectric strength to limit the likelihood of a short circuit in case of momentary contact with a structure or building.
3. A roof, balcony, or area is considered readily accessible to pedestrians if it can be casually accessed through a doorway, ramp, window, stairway, or permanently mounted ladder by a person on foot who neither exerts extraordinary physical effort nor employs special tools or devices to gain entry. A permanently mounted ladder is not considered a means of access if its bottom rung is 8 ft. or more from the ground or other permanently installed accessible surface.
4. The required clearances shall be to the closest approach of motorized signs or moving portions of installations covered by NESC Rule 234C.
5. Ungrounded guys and ungrounded portion of guys between guy insulators, shall have clearances based on the highest voltage to which they may be exposed to a slack conductor or guy.
6. For the purpose of this rule, trucks are defined as any vehicle exceeding 8'. in height.
7. This clearance may be reduced to 3". for the grounded portions of guys.
8. Windows not designed to open may have the clearances permitted for walls and projections.
9. The clearance at rest shall be not less than the value shown in this table. Also, when the conductor or cable is displaced by wind, the clearance shall be not less than 3.5'.; see NESC Rule 234C1b.
10. The clearance at rest shall be not less than the value shown in this table. Also, when the conductor or cable is displaced by wind, the clearance shall be not less than 4.5'.; see NESC Rule 234 C1b .
11. Where available space will not permit this value, the clearance may be reduced to 7.0'. for conductors limited to 8.7 kV to ground.
12. The clearance values shown in this table are computed by adding the applicable Mechanical and Electrical (M&E) value of Table A-1 to the applicable Reference Component of Table A-2b of Appendix A in the NESC.
13. The anchor end of guys insulated in accordance with Rule 279 may have the same clearance as grounded guys.
14. For clearances above railings, walls, or parapets around balconies or roofs, use the clearances required for row 1b(1). For such clearances where an outside stairway exists, use the clearances required for row 2b(2).

NOTES

- (1) See DM-13-2.6 for Application of Vertical and Horizontal Clearance Requirements and Horizontal Clearance Requirements with Wind Displacement.
- (2) These drawings are intended as aids for interpretation of the National Electrical Safety Code (NESC). For final authority, refer to NESC Rule 234.

**Basic Clearance of Wires, Conductors, and Cables
From Lighting Supports, Traffic Signal Supports,
and Supporting Structures of a Second Line
(Not Attached)***

<u>Clearance of</u>	<u>(ft)</u>	<u>(ft)</u>
480V Delta Quadruplex, Open Wire Secondary to 480V, Phase Wires on PNM 4.16 kV, 12.47kV, and 13.8 kV Grounded Wye Distribution Systems		
Guys, Neutrals, and Multiplex Cable Except 480V Delta		
I. Lighting Supports and Supporting Structures of a Second Line		
PNM Owned		
a. Horizontal	3	5
b. Vertical	2	2.5
Customer Owned		
a. Horizontal	3	5
b. Vertical	2	4.5
II. Traffic Signal Supports		
a. Horizontal	3	5
b. Vertical	2	4.5

NOTES

*(1) See DM-13-2.6 for Application of Vertical and Horizontal Clearance Requirements and Horizontal Clearance Requirements with Wind Displacement.

REFERENCES

(1) NESC Rule 234B.

Table IV
Vertical Clearance of Wires, Conductors,
and Cables Above Ground, Roadway, Rail, or
Water Surfaces²⁵

	Grounded Guys and Neutral Conductors	Multiplexed Cable	Open Wire Secondary	Phase Conductors on PNM Grounded Wye Distribution Systems
<u>Clearance of</u>	<u>(ft)</u>	<u>(ft)</u>	<u>(ft)</u>	<u>(ft)</u>
Where Wires, Conductors, or Cables Cross Over or Overhang				
1. Track rails of railroads (except electrified railroads using overhead trolley conductors) ^{2, 16, 22}	23.5	24.0	24.5	26.5
2. Roads, streets and other areas subject to truck traffic ²³	15.5	16.0	16.5	18.5
3. Driveways, parking lots, and alleys ²³	15.5 ^{7, 13}	16 ^{7, 13}	16.5 ⁷	18.5
4. Other land traversed by vehicles, such as cultivated, grazing, forest, orchard, etc. ²⁶	15.5	16.0	16.5	18.5
5. Spaces and ways subject to pedestrians or restricted traffic only ⁹	9.5	12.0 ⁸	12.5 ⁸	14.5
6. Water areas not suitable for sailboating or where sailboating is prohibited ²¹	14.0	14.5	15.0	17.0
7. Water areas suitable for sailboating including lakes, ponds, reservoirs, tidal waters, rivers, streams, and canals with unobstructed surface are of: ^{17, 18, 19, 20, 21}				
(a) Less than 20 acres	17.5	18.0	18.5	20.5
(b) 20 to 200 acres	25.5	26.0	26.5	28.5
(c) 200 to 2,000 acres	31.5	32.0	32.5	34.5
(d) Over 2,000 acres	37.5	38.0	38.5	40.5
8. Established boat ramps and associated rigging areas; areas posted with sign(s) for rigging or launching sail boats		Clearance above ground shall be 5' greater than in 7 above, for the type of water areas served by the launching site		

**Table IV
Basic Vertical Clearance of Wires, Conductors,
and Cables Above Ground, Roadway, Rail, or
Water Surfaces
(Continued)**

	Messengers, Grounded Guys and Neutral Conductors	Multiplexed Cable	Open Wire Secondary	Phase Conductors on PNM Grounded Wye Distribution Systems
<u>Clearance of</u>	<u>(ft)</u>	<u>(ft)</u>	<u>(ft)</u>	<u>(ft)</u>

**Where Wires, Conductors, or Cables Run Along and Within the limits of
Highways or other Road Rights-Of-Way but do not Overhand the Roadway**

9. Roads, streets, or alleys	15.5 ²⁴	16.0	16.5	18.5
10. Roads in rural districts where it is unlikely that vehicles will be crossing under the line	13.5 ^{10, 12}	14 ¹⁰	14.5 ¹⁰	16.5

1. Where subways, tunnels, or bridges required it, less clearances above ground or rails than required by Table IV may be used locally. The trolley and electrified railroad contact conductor should be graded very gradually from the regular construction down to the reduced elevation.
2. For wire, conductors, or cables crossing over mine, logging, and similar railways that handle only cars lower than standard freight cars, the clearance may be reduced by an amount equal to the difference in height between the highest loaded car handled and 20', but the clearances shall not be reduced below that required for street crossings.
3. This footnote not used in this table.
4. In communities where 21' has been established, this clearance may be continued if carefully maintained. The elevation of the contact conductor should be the same in the crossing and next adjacent spans. (See NESC Rule 225D2 for conditions which must be met where uniform height above rail is impractical).
5. In communities where 16' has been established for trolley and electrified railroad contact conductors 0 to 750 V to ground, or 18' from trolley and electrified railroad contact conductors exceeding 750 V, or where local conditions make it impractical to obtain the clearance given in the table, these reduced clearances may be used if carefully maintained.
6. This footnote not used in this table.
7. Where the height of attachment to a building or other installation does not permit service drops to meet these values, the clearances over residential driveways only may be reduced to the following:

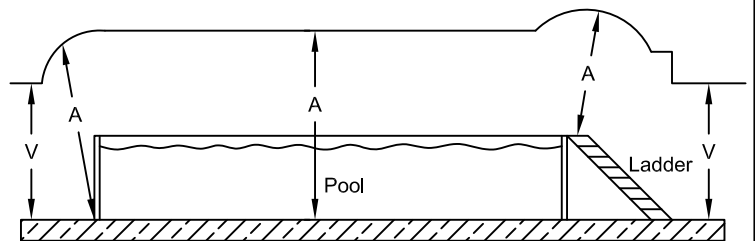
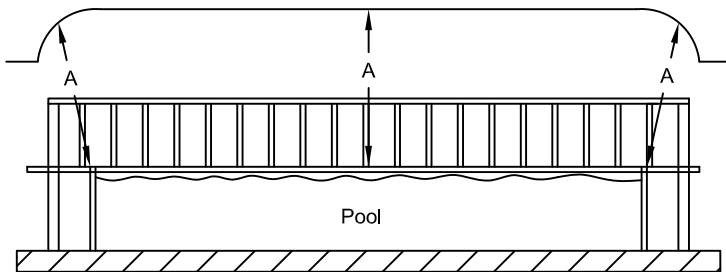
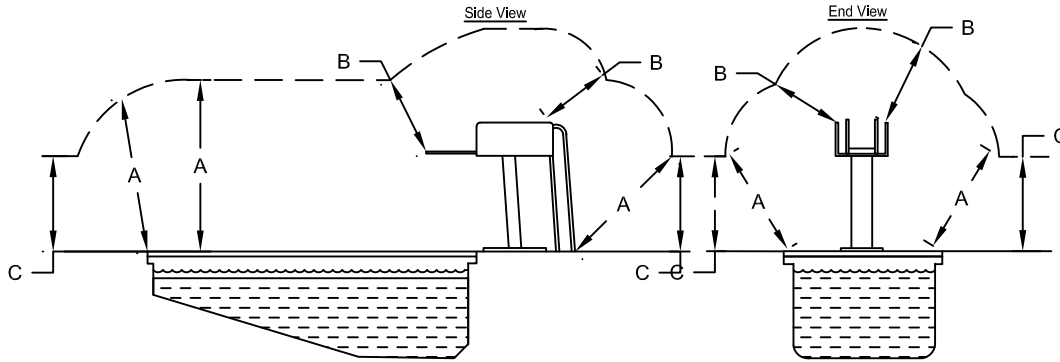
	(feet)
a. Quadruplex except 480 V Delta	12.5
b. Quadruplex drip loops except 480 V Delta	10.5
c. Duplex and triplex service drops	12.0
d. Drip loops only of duplex and triplex	10.0

8. Where the height of attachment to a building or other installation does not permit service drops to meet these values, the clearance may be reduced to the following:

Table IV
Basic Vertical Clearance of Wires, Conductors,
and Cables Above Ground, Roadway, Rail, or
Water Surfaces
(Continued)

	(feet)
a. Quadruplex except 480 V Delta	10.5
b. Quadruplex drip loops except 480 V Delta	10.5
c. Duplex and triplex service drops	10.0
d. Drip loops only of duplex and triplex	10.0
9. Spaces and ways subject to pedestrians or restricted traffic only are those areas where riders on horses or other large animals, vehicles, or other mobile units, exceeding a total height of 8' are prohibited by regulation or permanent terrain configurations or are otherwise not normally encountered or not reasonably anticipated.	
10. Where a supply or communication line along a road is located relative to fences, ditches, embankments, etc., so that the ground under the line would not be expected to be traveled by pedestrians, this clearance may be reduced to the following:	(feet)
a. Insulated communication conductor and communication cables	9.5
b. Conductors or other communication circuits	9.5
c. Duplex and triplex service drops	9.5
d. Quadruplex drip loops except 480 V Delta	12.5
e. Guys	9.5
11. No clearance from ground is required for anchor guys not crossing tracks, rails, streets, driveways, roads, or pathways.	
12. This clearance may be reduced to 13' for communication conductors and guys.	
13. Where this construction crosses over or runs along alleys, driveways, or parking lots not subject to truck traffic this clearance may be reduced to 15'.	
14. Ungrounded guys and ungrounded portions of span guys between guy insulators shall have clearances based on the highest voltage to which they may be exposed due to a slack conductor or guy.	
15. Anchor guys insulated in accordance with Rule 279 may have the same clearance as grounded guys.	
16. Adjacent to tunnels and overhead bridges which restrict the height of loaded rail cars to less than 20, these clearances may be reduced by the difference between the highest loaded rail car handled and 20' if mutually agreed by the parties at interest.	
17. For controlled impoundments, the surface area and corresponding clearances shall be based upon the design high water level.	
18. For uncontrolled water flow areas, the surface area shall be that enclosed by its annual high-water mark. Clearances shall be based on the normal flood level; if available, the 10-year flood level may be assumed as the normal flood level.	
19. The clearances over rivers, streams, and canals shall be based upon the largest surface area of any 1-mile long segment that includes the crossing. The clearance over a canal, river, or stream normally used to provide access for sailboats to a larger body of water shall be the same as that required for the larger body of water.	
20. Where an over water obstruction restricts vessel height to less than the applicable reference height given in Table 232-3, the required clearance may be reduced by the difference between the reference height and the over water obstruction height, except that the reduced clearance shall be not less than that required for the surface area on the line-crossing side of the obstruction.	
21. Where the US Army Corps of Engineers, or the state, or surrogate thereof has issued a crossing permit, clearances of that permit shall govern.	
22. See Rule 234I for the required horizontal and diagonal clearances to rail cars.	
23. For the purpose of this Rule, trucks are defined as any vehicle exceeding 8' in height. Areas not subject to truck traffic are areas where truck traffic is not normally encountered nor reasonably anticipated.	
24. Communication cables and conductors may have a clearance of 15 ft. where poles are back of curbs or other deterrents to vehicular traffic.	
25. The clearance values shown in this table are computed by adding Mechanical and Electrical (M&E) value of NESC Table A-1 to the applicable Reference Component of NESC Table A-2a of Appendix A.	
26. When designing a line to accommodate oversized vehicles, these clearance values shall be increased by the difference between the known height of the oversized vehicle and 14'.	

Caution: Division Engineer and Division Manager must approve any line passing over a pool.



Aboveground swimming pool with deck. Clearance is maintained from the highest point of the installation upon which people can stand.

Aboveground swimming pool without a deck. Required clearance is maintained above ground.

Figure 234 3 (b) - Aboveground swimming pool with deck

Figure 234 3 (c) - Aboveground swimming pool without deck

Basic Clearances of Wires, Conductors and Cables Passing Over or Near Swimming Areas				
	Messengers, Grounded Guys and Neutral Conductors (ft)	Unguarded Rigid Live Parts (0-750V) and Multiplexed Service Cable (ft)	Open Wire Secondary (ft)	Phase Conductors on PNM 4.16 kV, 12.47 kV or 13.8 kV Grounded Wye Distribution System (ft)
A Clearance in any direction from the water level, edge of pool, base of diving platform or anchored raft.	22.0 See Note 1	22.5 See Note 1	23.0	25.0
B Clearance in any direction to the diving platform or tower.	14.0 See Note 1	14.5 See Note 1	15.0	17.0
C Vertical clearance over adjacent land.	See DS-13-2.5 Pages 1 - 3			

NOTES

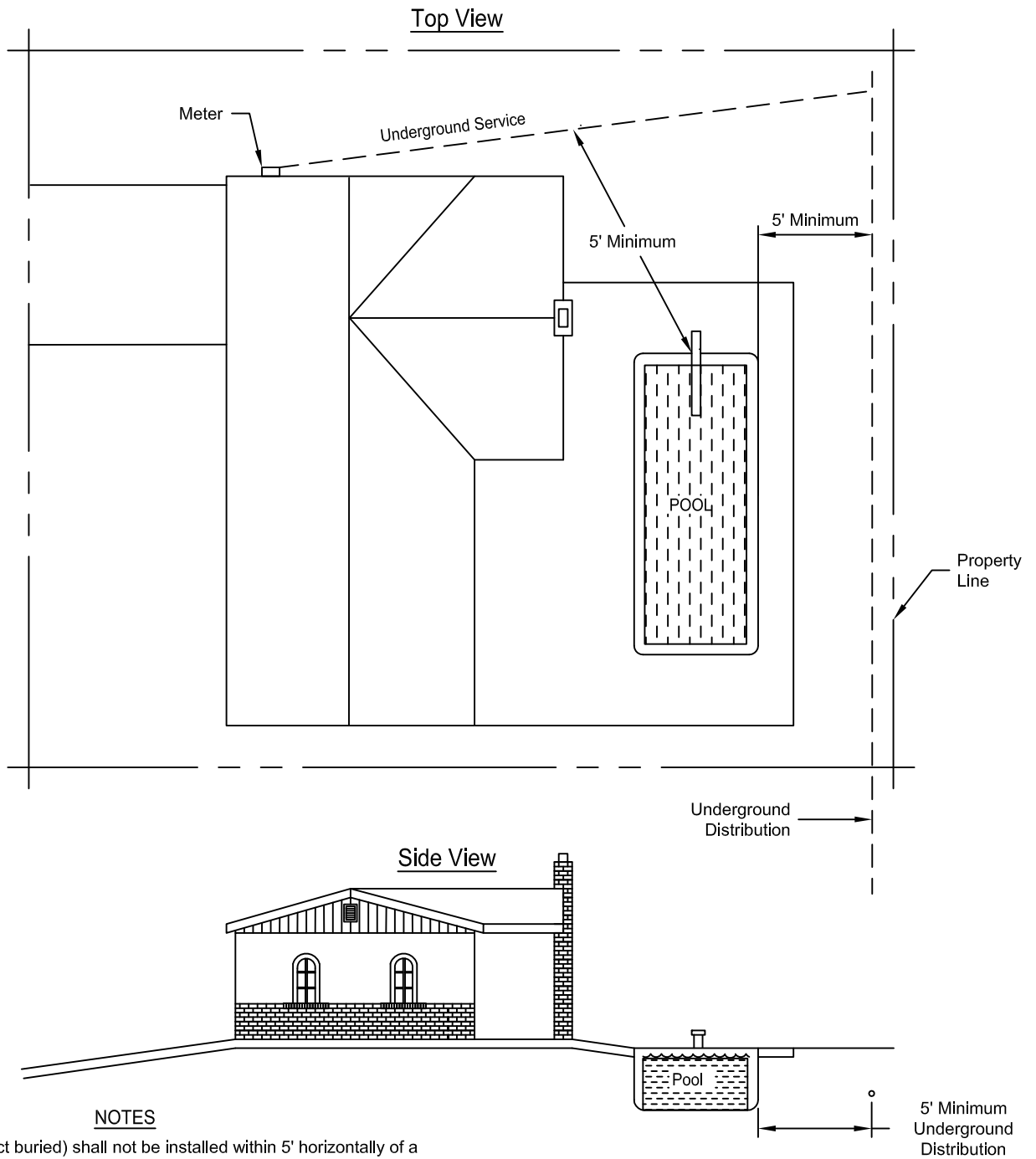
- (1) This clearance requirement applies only when the messenger guy, neutral, live part or multiplex service cable is less than 10' horizontally from the edge of the pool, diving platform or diving tower.
- (2) NESC Rule 234.
- (3) For NESC clearance purposes, spas (including whirlpools, hot-tubs, jacuzzis, or other similar installations not suitable for swimming) are not considered as swimming pools.
- (4) Permanently installed aboveground pools are ones that are not intended to be moved or routinely disassembled.

REFERENCES

- (1) See DS-13-2.0 Page 1-3 Clearances from Buildings and Other Structures
- (2) See DM-13-2.6 Page 1-2 Application of Clearance Requirements
- (3) See DS-13-2.5 Page 1-3 Vertical Clearance Above Ground, Roadway, Rail, or Water Surfaces
- (4) See DS-13-7.0 Swimming Pool Clearances Underground

Swimming Pool Clearance - Overhead

DS-13-6.0



NOTES

- (1) Supply cable (direct buried) shall not be installed within 5' horizontally of a swimming pool or its auxiliary equipment.
- (2) NESC Rule 234 and 351 C1
- (3) For NESC clearance purpose, spas (including whirlpools, hot-tubs, jacuzzis, or other similar installations not suitable for swimming) are not considered as swimming pools
- (4) NEC Article 680-10

REFERENCES

- (1) See DS-13-6.0 Swimming Pool Clearances-Overhead

Types of Hazardous Areas

1. Locations in which ignitable concentration of flammable gases or vapors exist. These locations may include but are not limited to portions of the following:

- Tank Farms
- Oil Refineries
- Paint Factories
- Gas Producing Plants
- Fertilizer Plants

2. Locations in which combustible dust is in the air in quantities sufficient to produce explosive or ignitable mixtures. These locations may include, but are not limited to portions of the following:

- Grain Processing or Storing Areas
- Hay Processing Areas
- Plant Producing Magnesium or Aluminum Dust
- Coal Handling Facilities

3. Locations in which easily ignitable fibers or materials producing combustible flying is handled, manufactured, or used. These locations may include, but are not limited to portions of the following:

- Rayon, Cotton, or Other Textile Mills
- Cotton Gin or Cotton - Seed Mills
- Sawmills
- Lumberyards

NOTE: If any doubt exists about a particular location, contact the Division Engineer.

Reference: NESC, Article 500
NESC, Rule 127

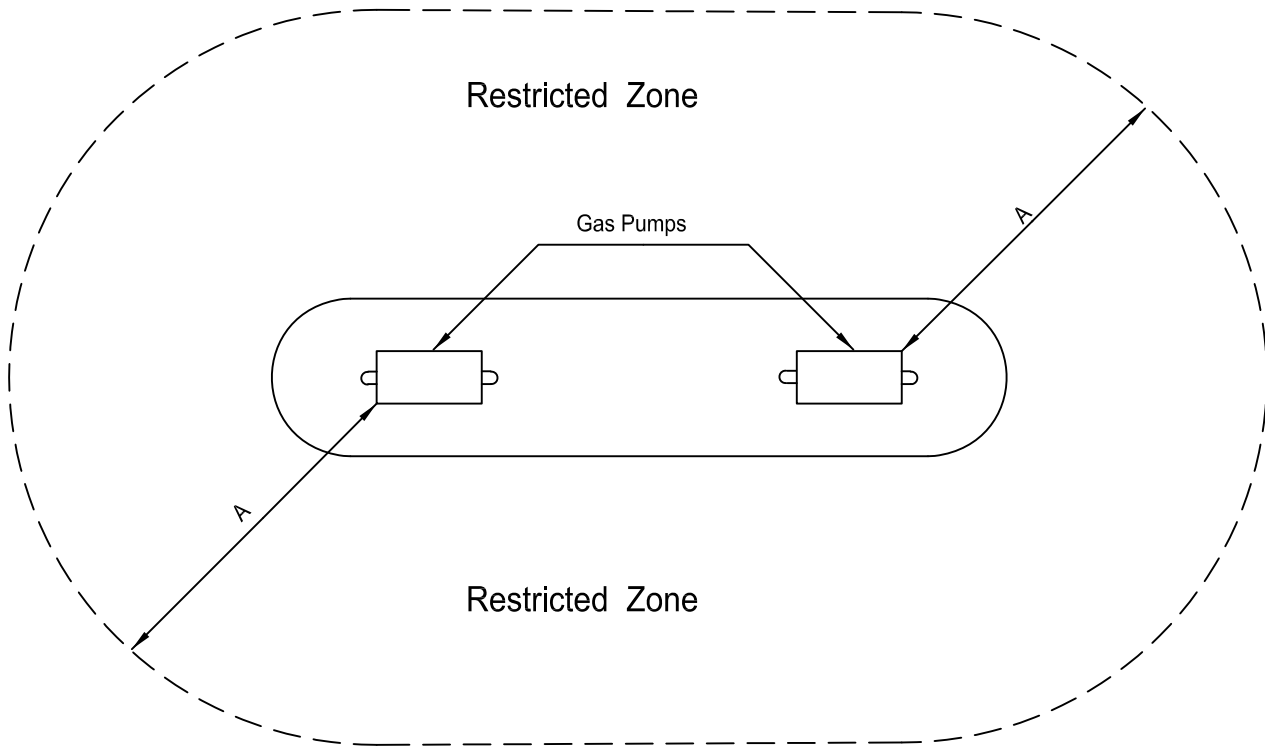
PNM Policy for Hazardous Areas

Engineering shall design the service. Area lighting shall not be provided by PNM.

The following guidelines apply to gasoline and LPG filling stations services to all other hazardous areas shall be designed by the Division Engineer.

PNM equipment shall not be closer than distance "A" (measured horizontally) from pumps, filler pipes, tanks, vent pipes, compressors and dispensing equipment.

Example: Gasoline pumps (dispensing equipment)



	Minimum Horizontal Distance "A" (Feet)
Service drops, area lighting, metering equipment	20
Primary & Secondary Overhead Conductors	10

REFERENCES

- (1) See DS-13-8.0 Service for Hazardous Areas

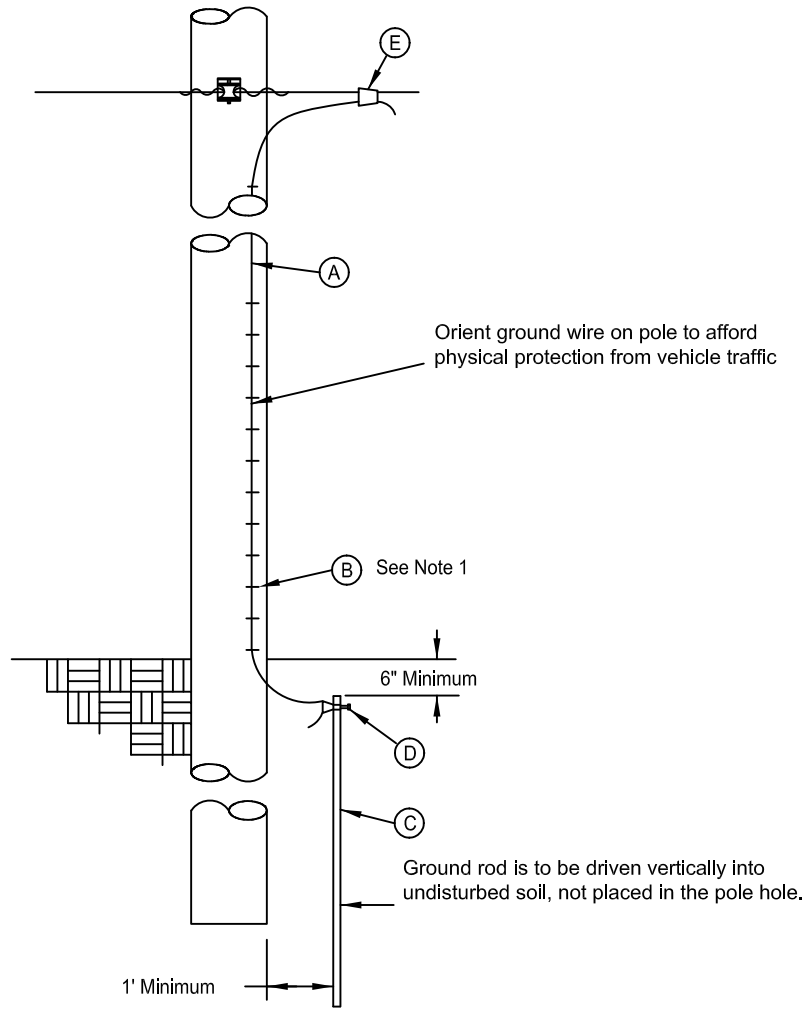


Table 1

Wire Application		
Wire Type	Stock #	Application
#4 Bare Copper-Clad Steel	0100-004386	General Pole Ground
2/0 Bare Copper-Clad Steel	0100-004392	Pole Ground for GOLB Switches, SCADA-Mate Switch, 750 kcmil Risers and Regulator Banks
#2 Insulated Copper	6145-001290	Pole Ground for Reclosers Including Intellirrupter

Table 2

Wire and Staple Requirements		
Pole Height	Ground Wire	Staples
35'	25'	50
40'	30'	54
45'	35'	56
50'	40'	58

NOTES

- (1) Staple ground wire to pole on 3" centers under 10' and 18" centers above 10'.
- (2) NESC Rules: 93 D1, 94 B3a, 96 A3, and 239C.
- (3) This assembly is required at:
 - a. All equipment poles such as transformers, capacitors primary risers and switches.
 - b. All guyed poles
 - c. Additional poles so that the line has at least four grounds per mile.
- (4) Caution; If rod cannot be installed as shown due to rock near the surface, see Page 2.

REFERENCES

- (1) See DS-18-99.0 Ampact Wire Chart

Material List			
Item	Quan.	Description	Stock #
A		Conductors - See Tables 1 and 2	
B		___Staples	5315-
C	1	5/8" x 8' Ground Rod	5975-258368
D	1	5/8" Ground Rod Clamp	5935-232
E	1	___Line Tap	DS-18-99.0

Ground Assembly

Ground assembly installation procedure when ground rod cannot be driven vertically to proper depth

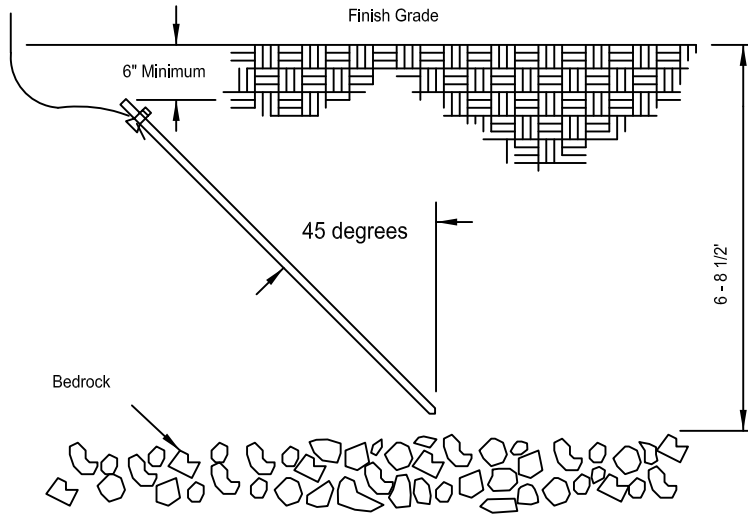


Figure 1

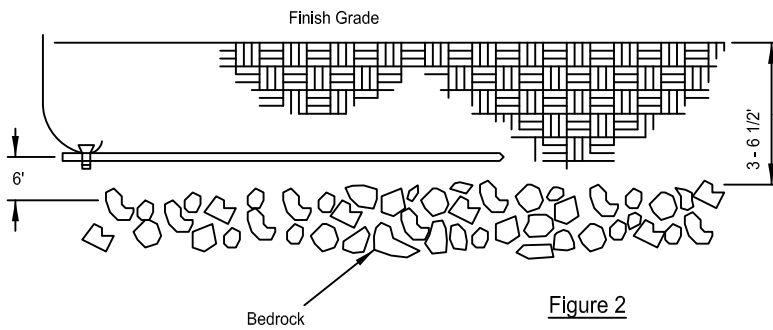


Figure 2

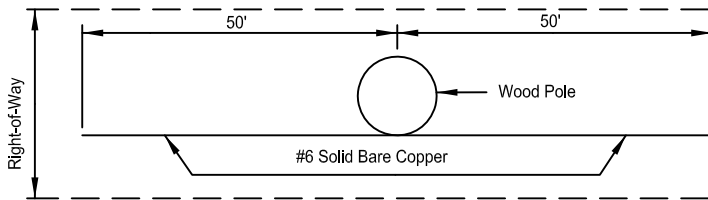
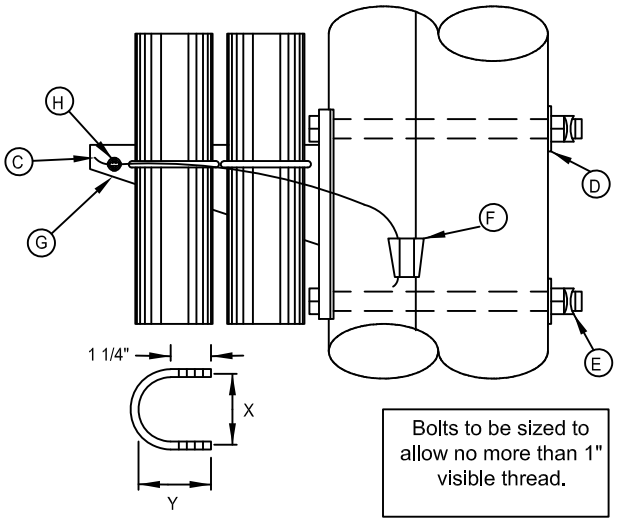
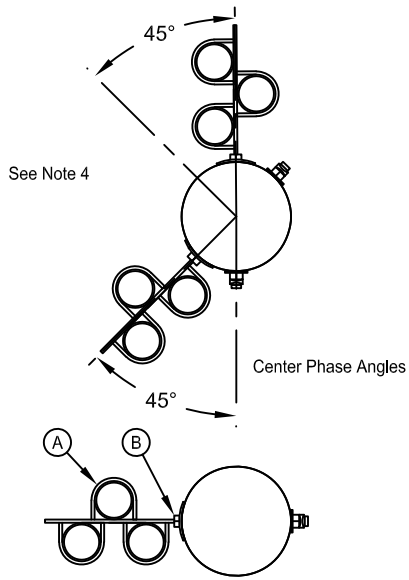


Figure 3

Depth of Soil (ft)	Procedure
6 - 8 1/2	Drive rod at 45 degrees angle, top must be a minimum of 6" below finished grade.
3 - 6	Bury rod horizontal in a trench 6" above bedrock. Backfill must be well compacted in 6" lifts.
1 1/2 - 3	Connect two 50' lengths of #6 solid bare copper to the pole ground. Bury each length in a straight line on opposite sides of pole as deep as possible (minimum of one foot). Wire must be within PNM's right-of-way. Caution: Do not bury line taps.
0 - 1 1/2	Notify division engineer if a ground must be installed in an area with less than 1 1/2' of earth.



Bolts to be sized to allow no more than 1" visible thread.

Size Conduit	X	Y
2"	2 - 7/8"	3 - 5/8"
3"	5"	5 - 3/4"

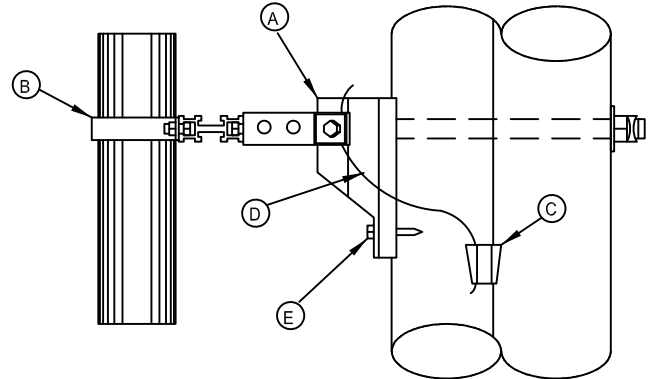
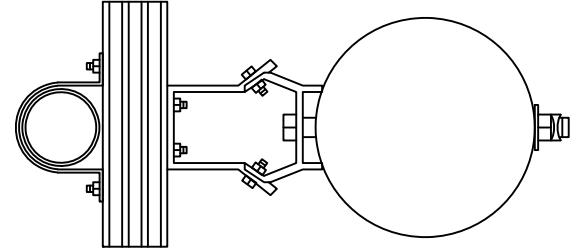
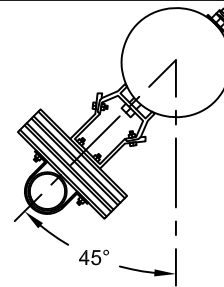
NOTES

- (1) Bracket to be fastened to pole with 5/8" galvanized machine bolts.
- (2) Bracket suitable for three 2", or one 4" duct.
- (3) Two hole straps attached at 30" intervals with 2" lag screw may be used instead of the support bracket when the duct is 1" or less. A maximum of two ducts may be strapped directly to the pole. Multiple ducts must be on same pole quadrant.
- (4) Quadrant cannot be used if joint use/communications are already occupying the space.

Material List

Item	Quan.	Description	Stock #
A	1	___ U Bolt	N I S
B	2	5/8" x ___ Machine Bolts	DS-18-25.0
C		#4 Solid CU Wire	8135-000092
D	2	2 1/4" Square Washer	5310-153571
E	2	5/8" MF Locknut	5310-153506
F	1	Line Tap	5935-235092
G	1	Support Bracket	N I S
H	1	Grounding Lug	5935-236942

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Bolts to be sized to allow no more than 1" visible thread.

NOTES

- (1) The four-way T-slot captures 1/2" bolt heads.
- (2) Two-hole straps attached at 30" intervals with 2" lag screws may be used instead of the support bracket when the duct is 1" or less. A maximum of two ducts may be strapped directly to the pole. Multiple ducts must be on same pole quadrant.
- (3) Steel Pole Risers: standoff assembly may be through bolted with a 5/8" bolt. Through holes provided in steel poles. A banding strap #5975-272161 may be used in place of the lag screw. Ground wire not required on steel polemounted standoff.

Material List

Item	Quan.	Description	Stock #
A	1	Standoff Assembly	5975-260471
B	1	2" Pipe Strap	5975-258145
		4" Pipe Strap	5975-259903
		5" Pipe Strap	5975-259408
C	1	Line Tap	5935-235092
D		#4 Solid CU Wire	8135-000092
E	1	1/2" x 4" Lag Screw	5305-147794