



Specifications for Electrical Underground Distribution Systems from Padmounted Transformation, Apartments & Condominiums

Specification DDS-3 UG
Revision 11, March 2010

**ONCOR ELECTRIC DELIVERY COMPANY
SPECIFICATIONS FOR ELECTRICAL UNDERGROUND DISTRIBUTION SYSTEMS
FROM PADMOUNTED TRANSFORMATION
APARTMENTS AND CONDOMINIUMS
SPECIFICATION NUMBER DDS-3 UG**

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1. SCOPE

This document represents the minimum requirements and specifications for the installation of an electrical underground distribution system fed from padmounted transformation, serving garden style apartments and condominiums, to be transferred to Oncor Electric Delivery Company ownership.

2. REFERENCES

This specification shall be used in conjunction with the latest edition of the following publications.

2.1 The Electric Service Guidelines, Oncor Electric Delivery Company.

3. DEFINITIONS

3.1 Company: Oncor Electric Delivery Company and its designated representatives.

3.2 Contractor: Individual or firm installing an electrical underground distribution service for garden style apartments and condominiums.

3.3 Authority Having Jurisdiction: Generally an incorporated City or Town, but may be an agency of the County, State or Federal Government.

3.4 Point of Delivery: The point where Company's conductors are connected to premise's conductors, typically at the meter socket or service enclosure.

4. GENERAL

4.1 The latest edition of all applicable building and safety codes shall be followed in the installation of the underground distribution system. Included, but not limited to are the:

4. GENERAL (continued)

- 4.1.1 Local City Building and Fire Codes or any other applicable codes for a particular project location
- 4.1.2 National Electrical Safety Code (NESC)
- 4.1.3 U. S. Occupational Safety and Health Act of 1970 (OSHA)
- 4.1.4 The American Concrete Institute (ACI)
- 4.1.5 The American Society for Testing and Materials (ASTM)
- 4.2 Upon receipt of all necessary information from the Contractor, a project sketch showing the route of the conduit line, the transformer pad location and other pertinent information will be furnished by the Company.
- 4.3 Prior to construction a meeting shall be held to discuss and coordinate construction and inspection.
- 4.4 The Company will require a signed easement at no cost or a filed plat incorporating Company easement requirements prior to the Company installing any electrical facilities.
- 4.5 Joint use ditch will be determined by the Company on an individual basis.
- 4.6 No electrical facilities shall be connected by the Company until after the final inspection is made and approval by the Authority Having Jurisdiction, as required by code, has been received.

5. COMPANY RESPONSIBILITY- The following shall be performed by, and the responsibility of, the Company.

- 5.1 The Company inspector is to check all conduit installations prior to the placing of backfill.
- 5.2 The Company inspector is responsible for all field changes and coordinates changes with the local Engineering office.
- 5.3 The Company inspector is to inspect all transformer pad installations prior to the laying of concrete.

5. COMPANY RESPONSIBILITY (continued)

- 5.4 After approval of the installed transformer pad and conduit system by the Company inspector, and after the Contractor has signed all appropriate contracts, agreements, easements and has paid any CIAC (contribution in aid of construction), the Company shall install transformers, primary cable, and secondary and service lateral cables up to the line side of the point of delivery.
- 5.5 Upon notification of final electrical inspection from the Authority Having Jurisdiction, the Company is to make final electrical connections at the point of delivery.

6. CONTRACTOR RESPONSIBILITY- The following shall be performed by, and the responsibility of, the contractor.

- 6.1 The Contractor is to provide the Company a Site Plan, a Dimension Control Plan, an Elevation Plan, a Grading Plan and load information.
- 6.2 The Contractor is to coordinate with the Company inspector for inspection of work prior to backfilling.
- 6.3 The Contractor is to provide personnel and vehicular access to the facility at all times.
- 6.4 The Contractor is to be held responsible for full direction and supervision of all work to be performed by his employees, agents or contractors. The Contractor shall also be responsible for the area at all times prior to acceptance, particularly in the prevention of damage to the electrical distribution system by the activities of other trades and utilities.
- 6.5 All testing of concrete and backfill which is deemed necessary by the Company is to be performed by an independent testing laboratory at the Contractor's expense.
- 6.6 The Contractor is to replace at his expense any damaged equipment or correct any work not in compliance with the requirements in these specifications, the project sketch, the DDS-3 UG Detail Sheets or as specified by the Company.
- 6.7 The Contractor is to furnish equipment and labor to lay out ditch, set grade, dig ditches, place conduit in ditch, set transformer pads and place electrical connection boxes. The line shall run in as straight alignment as practicable. All conduit and bends shall be Schedule 40 PVC or Schedule 80 PVC steel and shall be electrical grade. All PVC conduit and bends shall be gray in color.

6. CONTRACTOR RESPONSIBILITY (continued)

- 6.8 The Contractor is to complete rough site grading, establish final grade at padmounted equipment locations and clear these locations of all obstructions. Any change in final grade which requires the lowering or raising of electrical conductors or associated equipment is at the expense of the Contractor.
- 6.9 Minimum vertical crossing clearance from other utilities is twelve (12) inches.
- 6.10 A lateral separation of five (5) feet from other utilities is required on private property.
- 6.11 No foreign pipes are permitted under the transformer pad area except gas, telephone and cable T.V that are installed at the same time as the electrical facilities. Gas is allowed only if sleeved in polyethylene or Schedule 40 PVC. Telephone and cable T.V. are allowed only if installed in conduit.
- 6.12 Backfilling of conduit trenches under paved areas, around conduit bends at riser poles and under transformer pad areas is to be compacted to 95% of the density of surrounding undisturbed soil as per ASTM D 698. Stabilization must be uniform to bottom of ditch. Alternative stabilization methods for backfilling around conduit bends under transformer pad consist of two (2) sacks of cement mixed with earth backfill or the pouring of concrete backfill with transformer pad. An alternative method for backfilling around conduit bends consists of concrete backfill with bend. The method and location where used will be at the discretion of the Company.
- 6.13 Transformer pads are to be installed a minimum of three (3) inches above finished grade. No transformer pad is to be installed in a pit below the finished grade of the surrounding area.
- 6.14 Transformer pads are to have a clear area surrounding the pad installation for safety, operation and maintenance purposes. Reference DDS-3 UG Detail Sheets 26, 27, 28 and 29 for layout and dimensions.
- 6.15 Piers are required on all transformer pads unless waived by the Company inspector. The depth of piers shall extend to rock or a change in soil conditions sufficient to bear the load of pad and transformer to prevent settlement due to undercutting for conduit bend installation or washing due to drainage.
- 6.16 The Contractor has the option of installing manufactured transformer pads or poured in place pads. However, where the terrain will not permit the installation of a manufactured transformer pad as determined by the Company, the Contractor is to install a poured in place transformer pad. For details see DDS-3 UG Detail Sheet 13.

6. CONTRACTOR RESPONSIBILITY (continued)

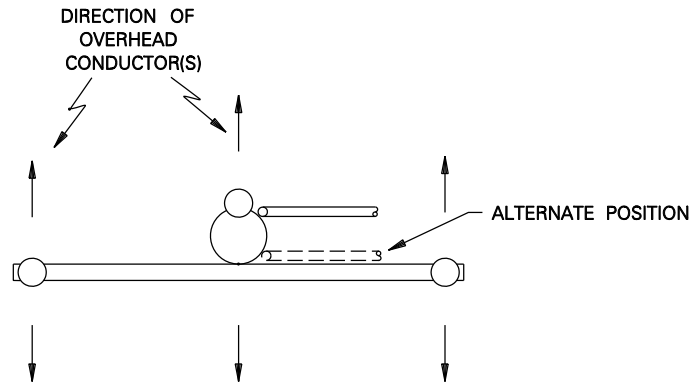
- 6.17 Concrete forms are to be tight and aligned so when forms are removed the finished surface shall require little, if any, corrective measures. Concrete work is to have an acceptable finish free of honeycombs, sharp or irregular surfaces.
- 6.18 Contractor is to pull a mandrel through each conduit to check and clear blockage and leave an approved pull tape in each conduit. Pull tape shall be furnished by the party providing conduit and shall be installed by Contractor. Mandrel shall be furnished by Contractor. Conduit shall be plugged at both ends. Reference DDS-3 UG Detail Sheet 8 for approved pull tapes.
- 6.19 Approved self- contained meter sockets or approved meter packs are to be provided and installed by the Contractor. Service enclosures (when required) are to be provided by the Company and installed by the Contractor. Reference the Electric Service Guidelines for approved self- contained meter sockets. **Contact Company for approval of meter packs prior to letting bids and installing equipment.**
- 6.20 For individually metered multi-family units utilizing ganged meter sockets or approved meter packs, the Contractor is to provide and install the service lateral raceway. Company shall provide, install, connect and maintain the service lateral conductors to the line side of the ganged meter socket or to the line side of the approved meter pack.
- 6.21 For individually metered multi-family units utilizing service enclosures, the Contractor is to provide and install (1) the service lateral raceway to the service enclosure and (2) the conductors and associated raceways from the service enclosure to the line side of the meters. The Company shall provide, install, connect and maintain the service lateral conductors to the line side of the service enclosure.
- 6.22 For Secondary Service Accounts (laundry rooms, office buildings and other commercial services) fed from padmounted transformers, the Contractor is to install all meter sockets on the building(s) with the location approved by the Company and shall provide, install and maintain the conductors and associated raceways to the secondary terminals of the transformer. The Contractor shall provide compression type connectors and the Company shall install these connectors on the Contractor's conductors and connect to the secondary terminals of the transformer. Reference the Electric Service Guidelines for approved compression type connectors.
- 6.23 The Contractor is to secure inspection and approval of premise's facilities by the Authority Having Jurisdiction prior to connection of electrical facilities

6. CONTRACTOR RESPONSIBILITY (continued)

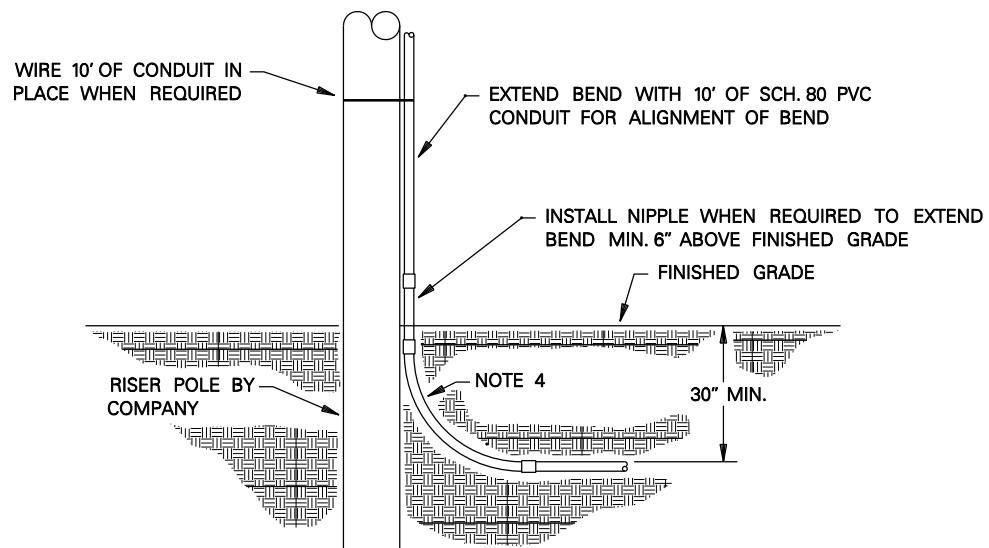
6.24 Meter sockets to multi-metered locations shall be clearly and permanently marked by the Contractor on the exterior and interior of the meter socket to indicate each apartment or location served. Engraved or stamped metal, weather resistant placards shall be used on the exterior of the meter socket and be permanently affixed. Permanent marker or other acceptable method shall be used to mark the apartment or location on the inside of the meter socket (at a location other than the cover) where it can be easily read.

7. ACCEPTANCE

7.1 The Company inspector shall meet with the Contractor to review the project prior to acceptance. Electrical facilities will be installed as approved by the Company inspector only after acceptance of the project.



TOP VIEW



PLAN VIEW

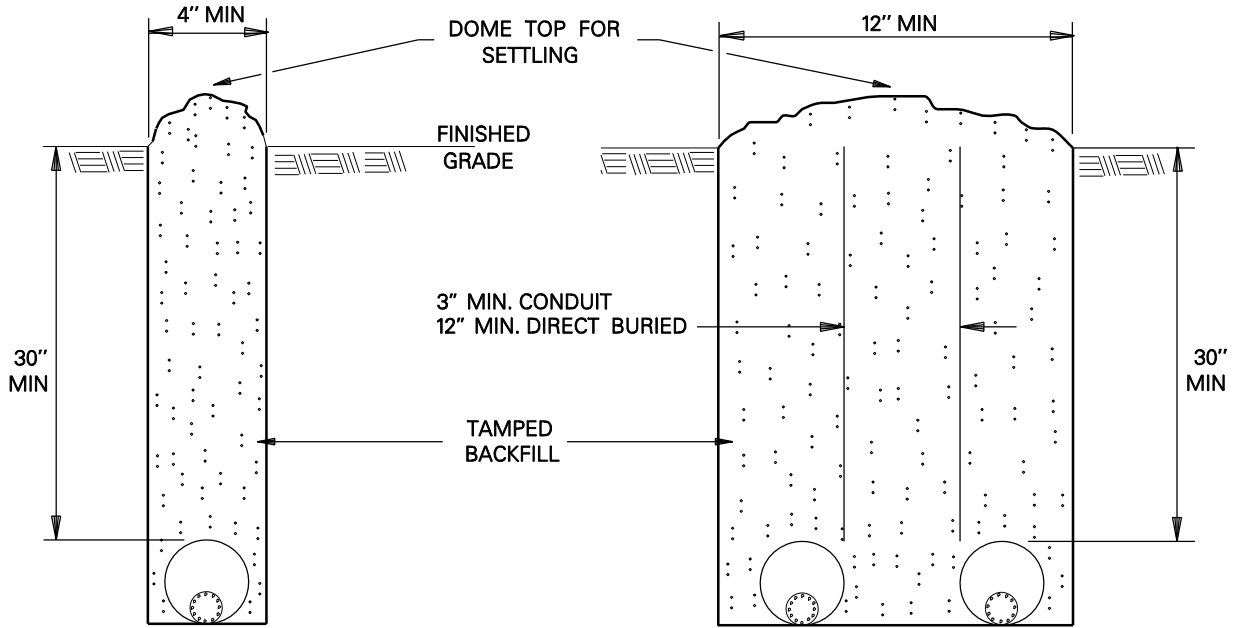
NOTES

1. CONTACT COMPANY REPRESENTATIVE FOR (1) ROUTING OF CONDUIT LINE, (2) SIZE OF CONDUIT, AND (3) INSTALLATIONS REQUIRING MORE THAN ONE RISER ON POLE.
2. LIMIT RACEWAY TO THREE 90° BENDS. IF MORE THAN THREE 90° BENDS ARE REQUIRED, CONTACT COMPANY REPRESENTATIVE.
3. DISTANCE BETWEEN 90° BENDS SHALL BE FIVE FEET MINIMUM.
4. REFERENCE DETAIL SHEET 10 FOR BEND RADIUS FOR ALL HORIZONTAL AND VERTICAL CONDUIT BENDS.



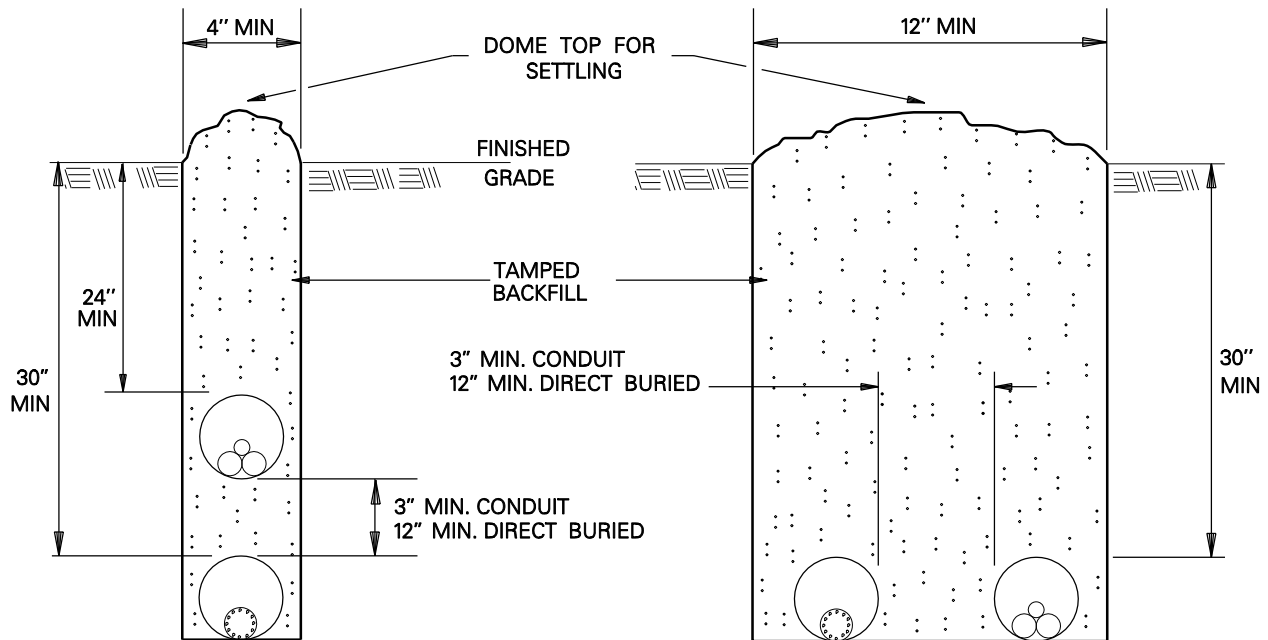
**TERMINATION OF
PRIMARY CONDUIT
AT RISER POLE**

DDS-3 UG DETAIL SHEET 1 OF 32



1 PRIMARY CONDUIT

2 PRIMARY CONDUITS



**1 PRIMARY CONDUIT AND
1 SECONDARY CONDUIT
VERTICALLY ARRANGED**

**1 PRIMARY CONDUIT AND
1 SECONDARY CONDUIT
HORIZONTALLY ARRANGED**

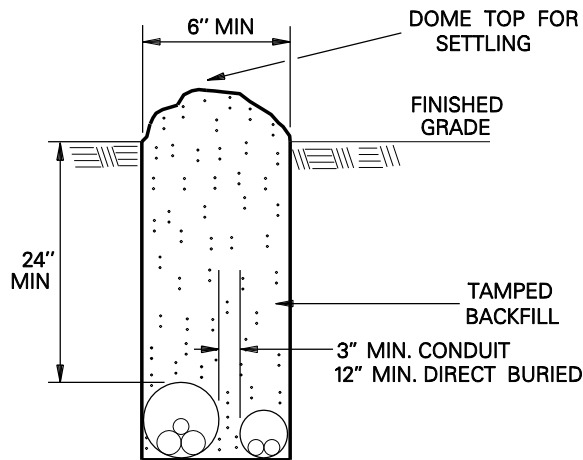
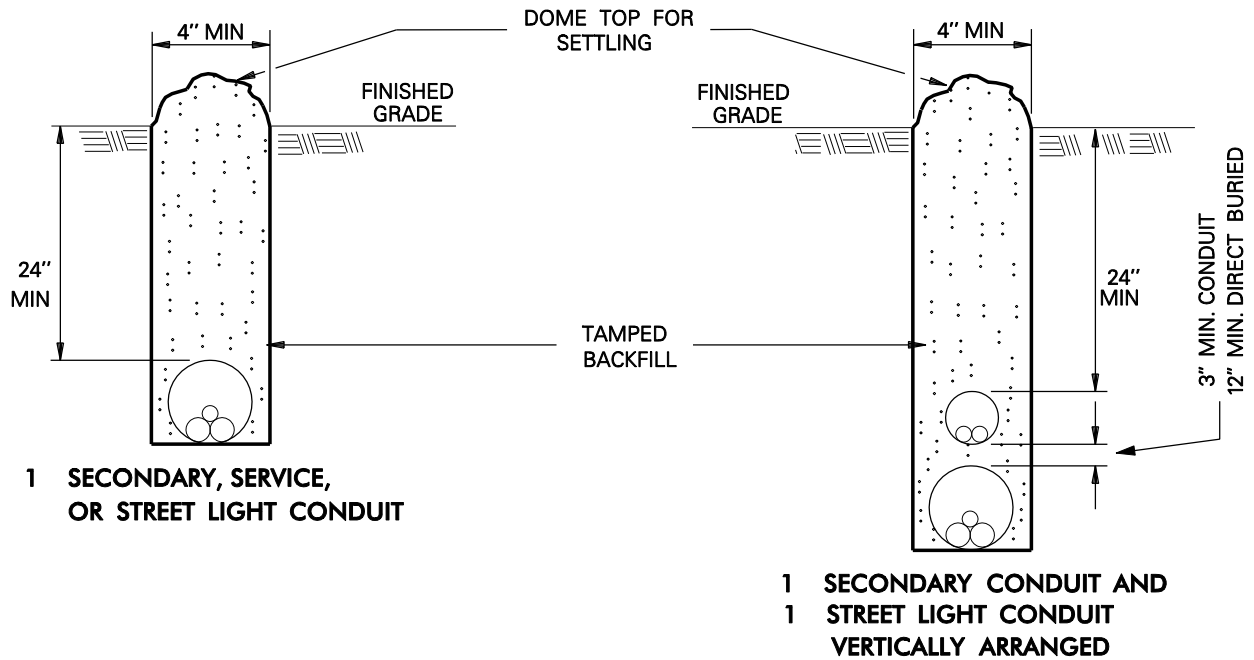
NOTES:

1. CONSULT COMPANY REPRESENTATIVE FOR CONDUIT SIZE.
2. SEE DETAIL SHEETS 8 AND 9 FOR NOTES AND INSTRUCTIONS.
3. SEPARATION DIMENSIONS APPLY TO COMPANY CONDUITS OR CABLES ONLY. MAINTAIN 12" SEPARATION BETWEEN COMPANY CONDUITS OR CABLES AND FOREIGN CONDUITS OR CABLES.






TRENCH REQUIREMENTS

DDS-3 UG DETAIL SHEET 2 OF 32



LEGEND:

-  PRIMARY CABLE
-  SECONDARY/SERVICE CABLE
-  STREET LIGHT CABLE

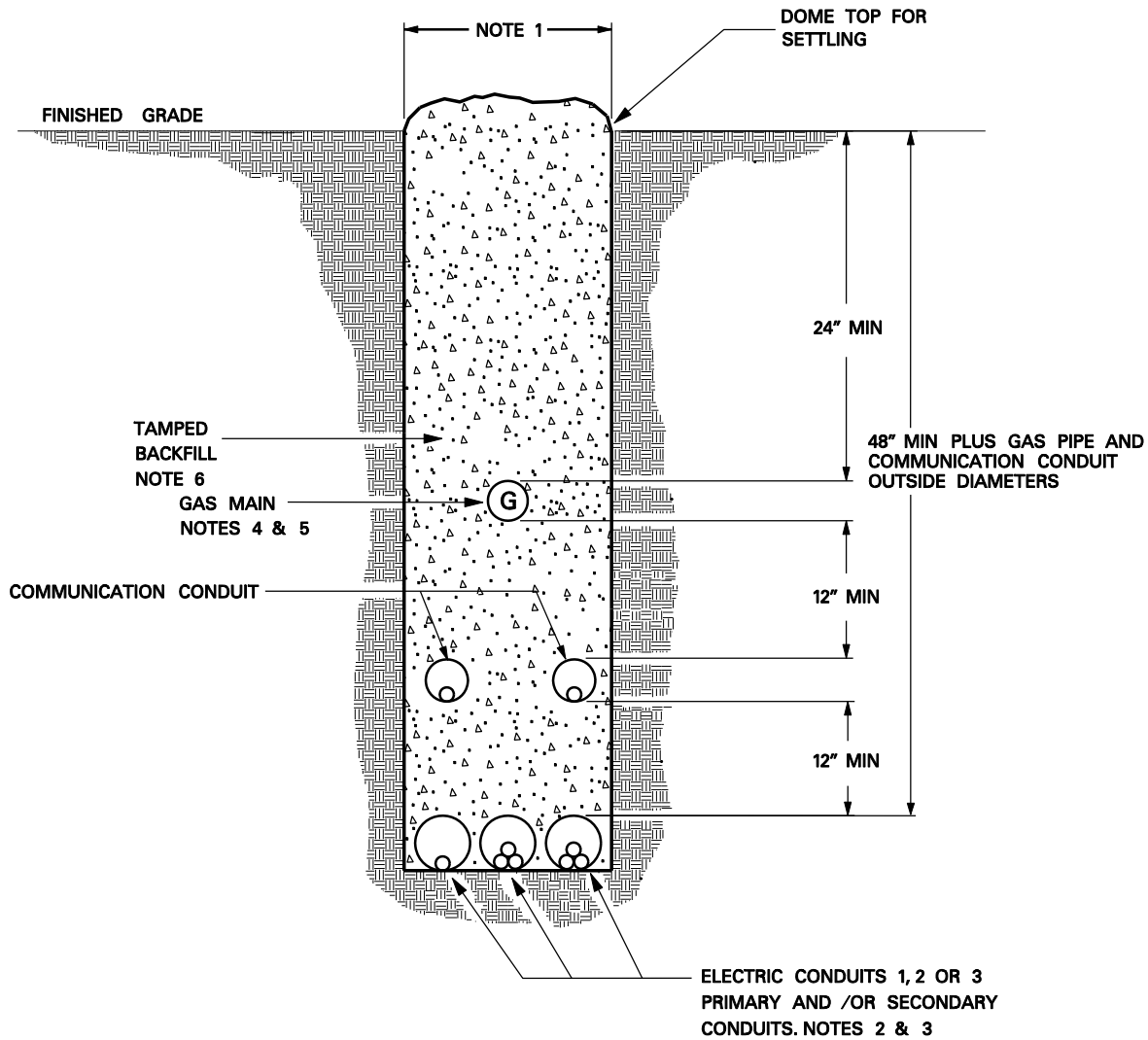
NOTE:

1. CONSULT COMPANY REPRESENTATIVE FOR CONDUIT SIZE.
2. REFERENCE SHEETS 8 AND 9 FOR NOTES AND INSTRUCTIONS.
3. SEPARATION DIMENSIONS APPLY TO COMPANY CONDUITS OR CABLES ONLY. MAINTAIN 12" SEPARATION BETWEEN COMPANY CONDUITS OR CABLE AND FOREIGN CONDUITS OR CABLE.



TRENCH REQUIREMENTS

DDS-3 UG DETAIL SHEET 3 OF 32



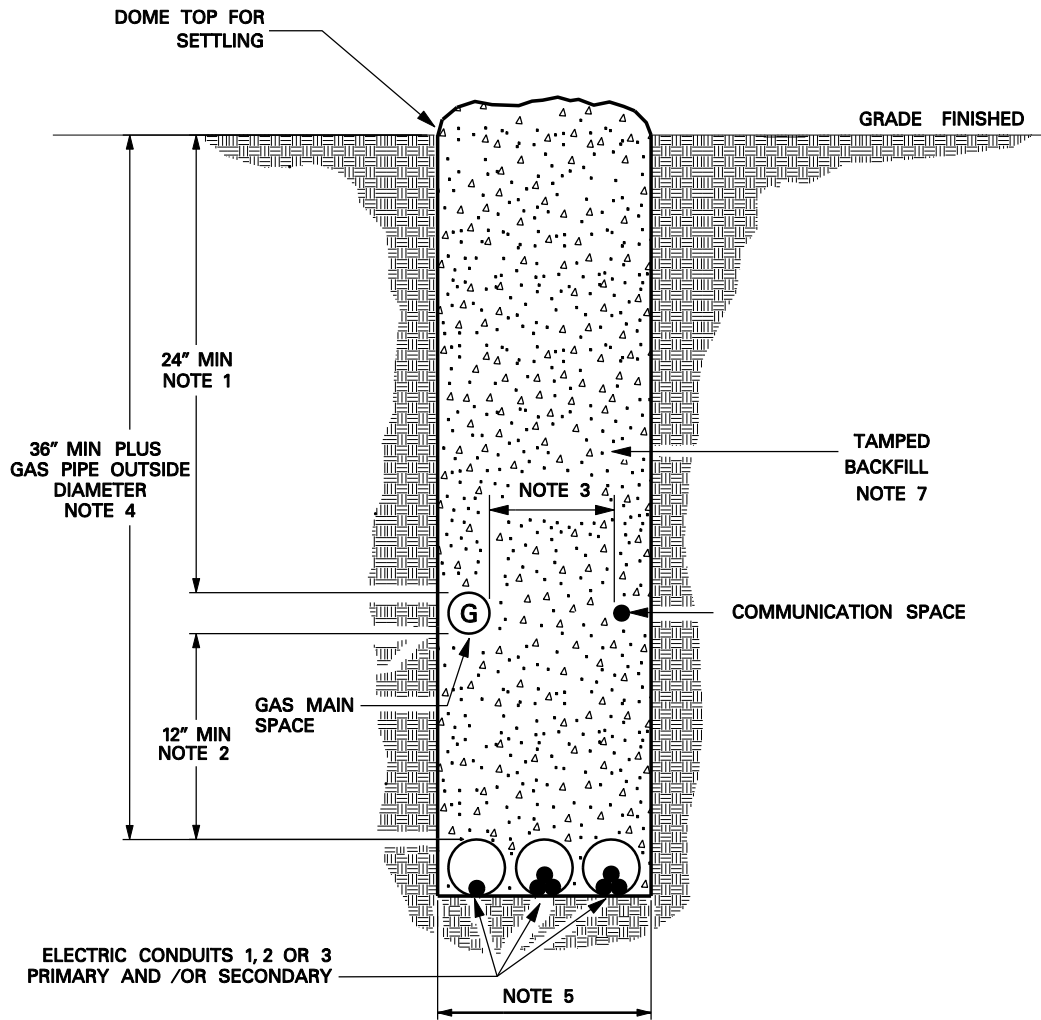
NOTES:

1. 12" MIN. WITH MORE THAN ONE ELECTRICAL SUPPLY CONDUIT.
4" MIN. WITH ONE ELECTRICAL SUPPLY CONDUIT (IN SOLID ROCK PIPE DIAMETER DETERMINES MIN. WIDTH).
2. AMPACITIES ARE REDUCED FOR MULTIPLE CIRCUITS IN A TRENCH.
3. SEE SHEETS 8 AND 9 FOR NOTES AND INSTRUCTIONS.
4. THE GAS LINE IN A JOINT TRENCH SHALL BE POLYETHYLENE.
5. WHEN A GAS LINE CROSSES UNDER AN ENCLOSURE SUCH AS A PEDESTAL, PADMOUNT TRANSFORMER OR SPLICE/PULL BOX, IT WILL BE SLEEVED IN A SECTION OF POLYETHYLENE OR SCHEDULE 40 PVC. THE SLEEVE WILL EXTEND A MINIMUM OF THREE FEET BEYOND THE EDGE OF THE ENCLOSURE ON EACH SIDE. MAINTAIN A 12" SEPARATION BETWEEN GAS LINE AND ELECTRICAL SUPPLY CONDUIT(S).
6. BACKFILL MATERIAL AND COMPACTION SHALL MEET OR EXCEED EACH UTILITY'S SPECIFICATIONS.



**TRENCH REQUIREMENTS
JOINT USE ELECTRIC, GAS
AND COMMUNICATION**

DDS-3 UG DETAIL SHEET 4 OF 32



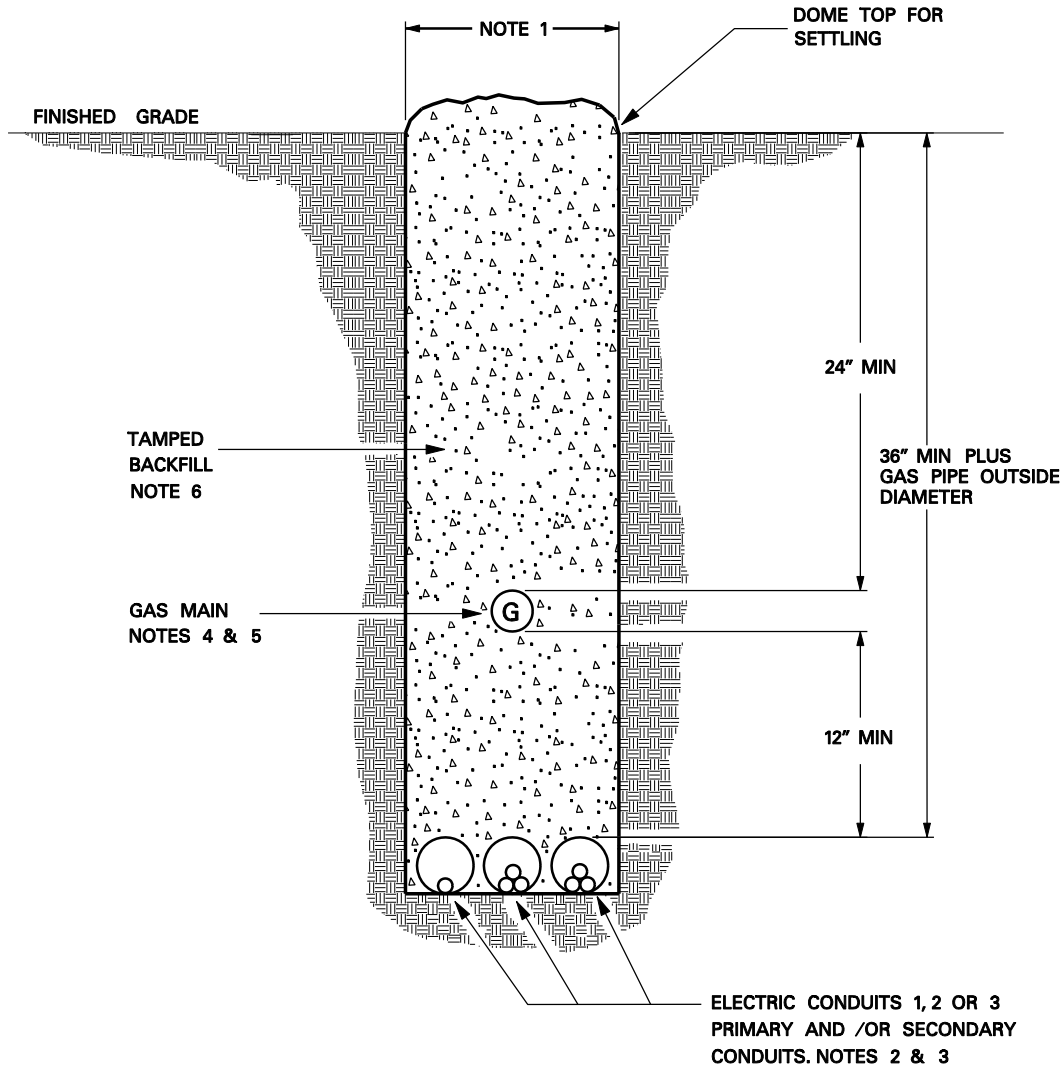
NOTES:

1. MINIMUM 24" DEPTH TO TOP OF BOTH GAS PIPE AND COMMUNICATION FACILITIES. TELCO SHALL NOT BE PLACED ABOVE THE GAS PIPE.
2. MINIMUM 12" VERTICAL SEPARATION BETWEEN SURFACE OF GAS, COMMUNICATION FACILITIES AND ELECTRICAL CONDUITS.
3. MINIMUM 12" HORIZONTAL SEPARATION BETWEEN SURFACE OF COMMUNICATION FACILITIES AND GAS PIPE.
4. MINIMUM 36" DEPTH PLUS PIPE OUTSIDE DIAMETER TO TOP OF ELECTRICAL CONDUITS.
5. TRENCH MUST BE WIDE ENOUGH TO ENSURE 12" SEPARATION AT ALL POINTS BETWEEN THE GAS MAIN AND COMMUNICATION FACILITIES.
6. THE GAS PIPE SHALL ONLY BE PLACED AGAINST UNDISTURBED SOIL THAT IS FREE OF STONES AND WHERE THERE ARE NO HARD PARTICLES LARGER THAN ONE-HALF INCH.
7. BACKFILL MATERIAL AND COMPACTION SHALL MEET OR EXCEED EACH UTILITY'S SPECIFICATIONS.
8. SEE SHEETS 8 AND 9 FOR NOTES AND INSTRUCTIONS.



**JOINT USE TRENCH WITH
GAS, ELECTRIC
AND COMMUNICATION**

DDS-3 UG DETAIL SHEET 5 OF 32



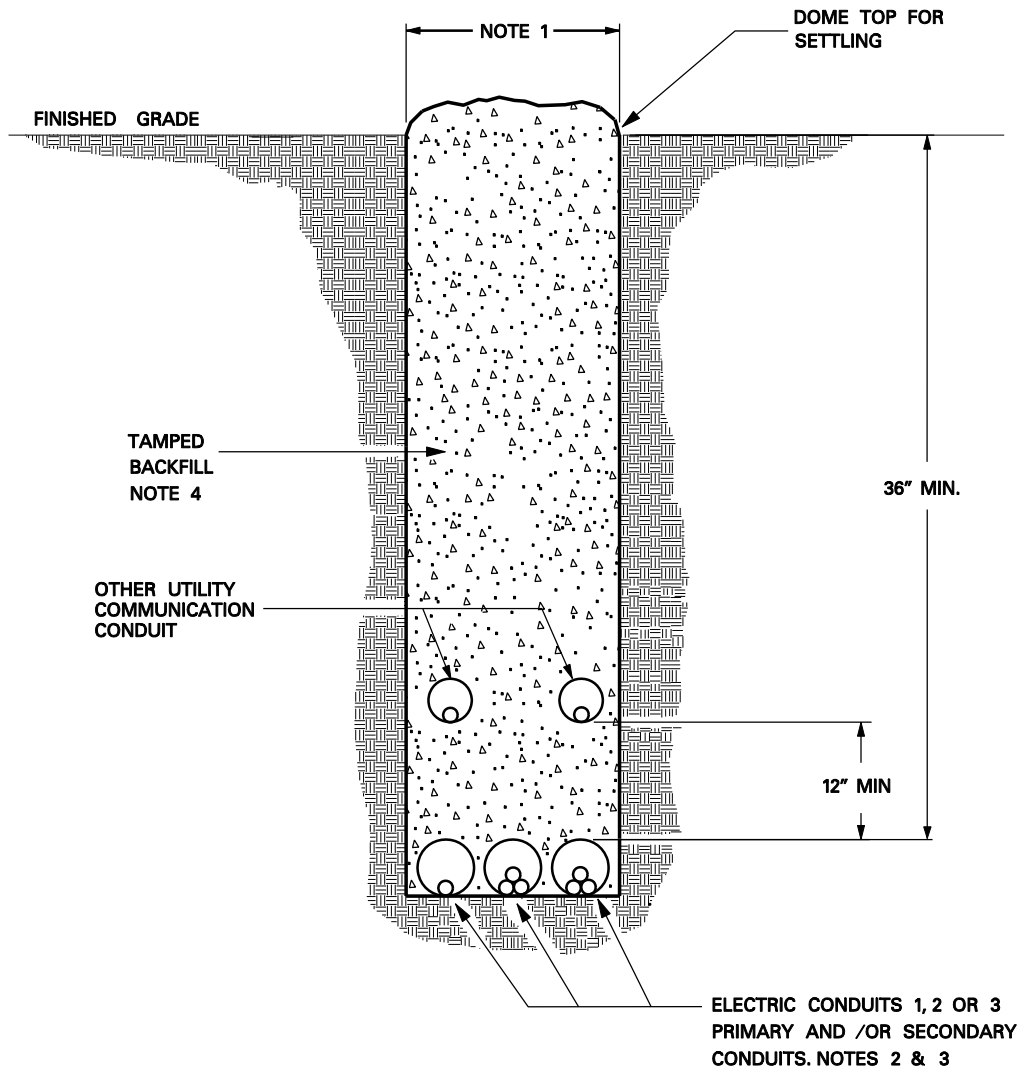
NOTES:

1. 12" MIN. WITH MORE THAN ONE ELECTRICAL SUPPLY CONDUIT.
4" MIN. WITH ONE ELECTRICAL SUPPLY CONDUIT (IN SOLID ROCK PIPE DIAMETER DETERMINES MIN. WIDTH).
2. AMPACITIES ARE REDUCED FOR MULTIPLE CIRCUITS IN A TRENCH.
3. SEE SHEETS 8 AND 9 FOR NOTES AND INSTRUCTIONS.
4. THE GAS LINE IN A JOINT TRENCH SHALL BE POLYETHYLENE.
5. WHEN A GAS LINE CROSSES UNDER AN ENCLOSURE SUCH AS A PEDESTAL, PADMOUNT TRANSFORMER OR SPLICE/PULL BOX, IT WILL BE SLEEVED IN A SECTION OF POLYETHYLENE OR SCHEDULE 40 PVC. THE SLEEVE WILL EXTEND A MINIMUM OF THREE FEET BEYOND THE EDGE OF THE ENCLOSURE ON EACH SIDE. MAINTAIN A 12" SPARATION BETWEEN GAS LINE AND ELECTRICAL SUPPLY CONDUIT(S).
6. BACKFILL MATERIAL AND COMPACTION SHALL MEET OR EXCEED EACH UTILITY'S SPECIFICATIONS.



**TRENCH REQUIREMENTS
JOINT USE ELECTRIC AND GAS**

DDS-3 UG DETAIL SHEET 6 OF 32



NOTES:

1. 12" MIN. WITH MORE THAN ONE ELECTRICAL SUPPLY CONDUIT.
4" MIN. WITH ONE ELECTRICAL SUPPLY CONDUIT (IN SOLID ROCK PIPE DIAMETER DETERMINES MIN. WIDTH).
2. AMPACITIES ARE REDUCED FOR MULTIPLE CIRCUITS IN A TRENCH.
3. SEE SHEETS 8 AND 9 FOR NOTES AND INSTRUCTIONS.
4. BACKFILL MATERIAL AND COMPACTION SHALL MEET OR EXCEED EACH UTILITY'S SPECIFICATIONS.



**TRENCH REQUIREMENTS
JOINT USE
ELECTRIC AND COMMUNICATION**

DDS-3 UG DETAIL SHEET 7 OF 32

1. TRENCH ALIGNMENT SHALL BE AS STRAIGHT AS CONDITIONS PERMIT. ANY DEVIATIONS FROM PLANNED ALIGNMENT SHALL HAVE PRIOR APPROVAL BY THE PROJECT ENGINEER/INSPECTOR. ALL TRENCH CUTS SHALL BE IN ACCORDANCE WITH EXISTING SAFETY REGULATIONS IN EFFECT.
2. TRENCH BOTTOM SHOULD BE UNDISTURBED, TAMPED, OR RELATIVELY SMOOTH EARTH. WHERE EXCAVATION IS IN ROCK, THE CONDUIT SHOULD BE LAID ON A LAYER OF CLEAN BACKFILL.
3. ALL BACKFILL SHOULD BE FREE OF DEBRIS OR OTHER MATERIAL THAT MAY DAMAGE THE CONDUIT SYSTEM OR CAUSE SETTLING. THE MATERIAL SHOULD FILL THE VOIDS AROUND THE CONDUIT TO PREVENT HOT SPOTS & SETTLING.
4. BACKFILL SHOULD BE ADEQUATELY COMPACTED. BACKFILL NOT UNDER PAVEMENT SHOULD BE COMPACTED TO THE DENSITY OF THE SURROUNDING UNDISTURBED SOIL. BACKFILL UNDER PAVEMENT SHOULD BE COMPACTED TO NOT LESS THAN 95% OF THE DENSITY OF UNDISTURBED SOIL AS DETERMINED BY ASTM D-698.
5. SEE SHEET 9 FOR INSTRUCTIONS FOR JOINING PVC CONDUIT.
6. EACH CONDUIT RUN SHALL BE CHECKED BY PULLING A MANDREL THROUGH THE ENTIRE LENGTH AT THE COMPLETION OF THE CIVIL INSTALLATION.
7. A PULL TAPE SHALL BE LEFT IN EACH CONDUIT. CONDUIT SHALL BE PLUGGED AT BOTH ENDS.

APPROVED PULL TAPES

CONDUIT SIZE	MANUFACTURER	CATALOG NO.	TSN
1", 2", 3" & 4"	ARNCO NEPTCO, INC.	BL-WP25 WP2500P	321068
6"	ARNCO NEPTCO, INC.	BL-WP60 RP6000N	397616

8. CONTACT COMPANY REPRESENTATIVE FOR TRENCH DIMENSIONS FOR MORE THAN 2 CONDUITS IN SAME DITCH.



**INSTALLATION OF CONDUITS
NOTES AND INSTRUCTIONS**

DDS-3 UG DETAIL SHEET 8 OF 32

THE CHEMICALS USED IN SOLVENT WELDING OF CONDUIT ARE INTENDED TO PENETRATE THE SURFACE OF BOTH PIPE AND FITTING, WHICH AFTER CURING RESULT IN A COMPLETE FUSION AT THE JOINT. THE OVER-USE, OR THE UNDER-USE OF CHEMICALS RESULTS IN LEAKY JOINTS OR WEAKENED PIPE.

A. CLEAN CONDUIT BY WIPING OFF ALL DUST, DIRT, AND MOISTURE FROM SURFACES TO BE CEMENTED, EITHER BY MECHANICAL OR CHEMICAL CLEANING.

1. MECHANICAL CLEANING – FINE ABRASIVE PAPER OR CLOTH (180 GRIT OR FINER) OR CLEAN OIL-FREE STEEL WOOL.
2. CHEMICAL CLEANING – CLEANER RECOMMENDED BY MANUFACTURER OR EQUIVALENT (METHYL ETHYL KETONE – MEK).

B. WITH A NON-SYNTHETIC BRISTLE BRUSH, APPLY AN EVEN COATING OF CEMENT TO THE OUTSIDE OF THE PIPE AND INSIDE THE SOCKET. MAKE SURE THAT THE AMOUNT OF CEMENT APPLIED TO THE CONDUIT IS EQUAL TO THE DEPTH OF THE SOCKET. BEFORE ASSEMBLY, IF SOME EVAPORATION OF SOLVENT FROM THE SURFACES TO BE JOINED IS NOTED, REAPPLY CEMENT, THEN ASSEMBLE.

IF CEMENT BEING USED HAS AN APPRECIABLE CHANGE IN VISCOSITY OR SHOWS SIGNS OF JELLING, IT SHALL BE DISCARDED. IN NO CASE SHALL THINNER BE USED IN AN ATTEMPT TO RESTORE JELLED PVC CEMENT. THINNER MAY ONLY BE USED TO CHANGE THE VISCOSITY OF A MEDIUM BODIED CEMENT TO THAT OF A REGULAR BODIED CEMENT FOR APPLICATION ON PVC PIPE SMALLER THAN 2 1/2 INCH DIAMETER. A MEDIUM BODIED CEMENT SHALL BE USED ON 2 1/2 TO 6 INCH PVC PIPE.

IN COLD WEATHER, USE A PRIMER TO SOFTEN THE JOINING SURFACES BEFORE APPLYING CEMENT. ALLOW LONGER CURE TIME. (SEE ITEM E).

C. JOIN PIPE WITHIN 20 SECONDS OF APPLYING CEMENT, TURN THE PIPE 1/4 TURN TO ENSURE EVEN DISTRIBUTION OF CEMENT ON SURFACES TO BE BONDED. MAKE SURE THAT PIPE IS INSERTED TO THE FULL DEPTH OF THE SOCKET.

D. CLEAN OFF ANY BEAD OR EXCESS CEMENT THAT APPEARS AT THE OUTER SHOULDER OF THE FITTING. EXCESS CEMENT ALLOWED TO REMAIN IN CONTACT WITH THE MATERIAL IS APT TO CAUSE WEAKENING OF THE MATERIAL AND SUBSEQUENT FAILURE.

E. NEWLY ASSEMBLED JOINTS SHOULD BE HANDLED CAREFULLY UNTIL THE CEMENT HAS CURED THE RECOMMENDED SET PERIOD. SET PERIODS ARE RELATED TO THE AMBIENT TEMPERATURE AS FOLLOWS:

- 30 MIN. MINIMUM AT 60° TO 100°F
- 1 HR. MINIMUM AT 40° TO 60°F
- 2 HR. MINIMUM AT 20° TO 40°F
- 4 HR. MINIMUM AT 0° TO 20°F



INSTRUCTIONS FOR JOINING PVC CONDUIT

DDS-3 UG DETAIL SHEET 9 OF 32

CONDUIT NOMINAL SIZE (IN.)	MINIMUM BEND RADIUS (IN.)	TYPE OF BEND MATERIAL FOR PULLS:
1	18	PVC
2	24	PVC
3	24	PVC
4	24	PVC
6	36	PVC

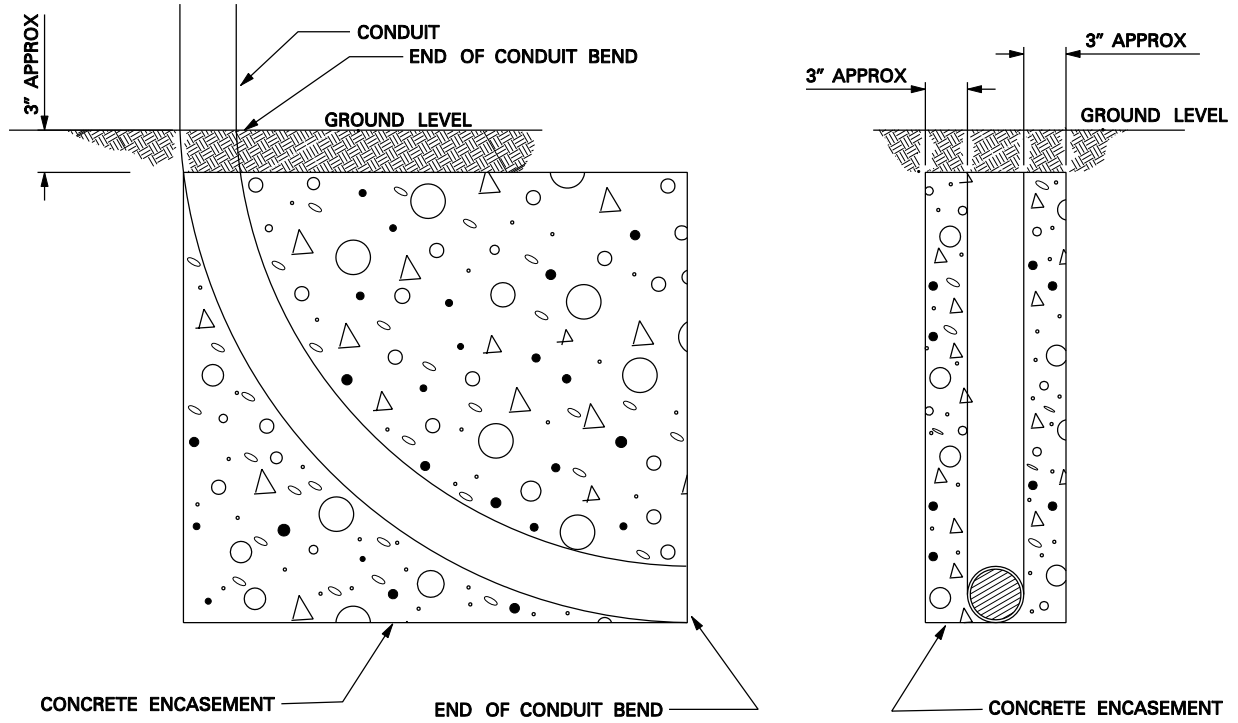
NOTES:

1. SCH. 80 PVC CONDUIT SHALL BE USED FOR ALL ABOVE GROUND INSTALLATIONS (POLE AND METER RISERS). SCH. 40 MAY BE USED FOR ALL BELOW GROUND INSTALLATIONS.



**CONDUIT BEND RADIUS
AND MATERIAL**

DDS-3 UG DETAIL SHEET 10 OF 32



BEND	CONCRETE
1 INCH BEND	1.2 CUBIC FT.
2 INCH BEND	1.5 CUBIC FT.
3 INCH BEND	1.6 CUBIC FT.
4 INCH BEND	3.2 CUBIC FT.
6 INCH BEND	8.9 CUBIC FT.

TABLE 1

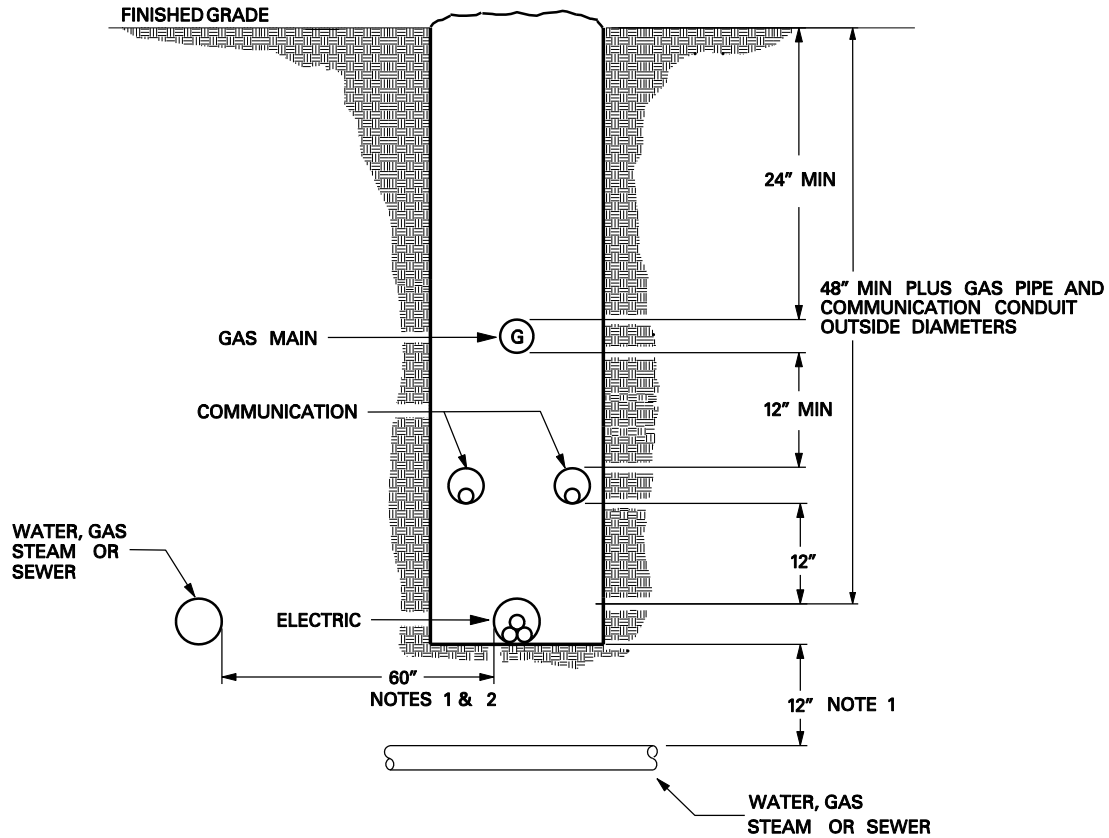
NOTES:

1. CONTACT COMPANY INSPECTOR TO DETERMINE REQUIREMENT FOR BEND ENCASEMENT.
2. DO NOT BOND CONCRETE TO POLE WHEN ENCASING A POLE RISER BEND.



CONCRETE ENCASED BENDS

DDS-3 UG DETAIL SHEET 11 OF 32



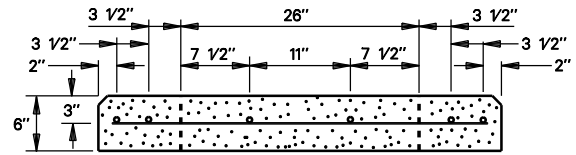
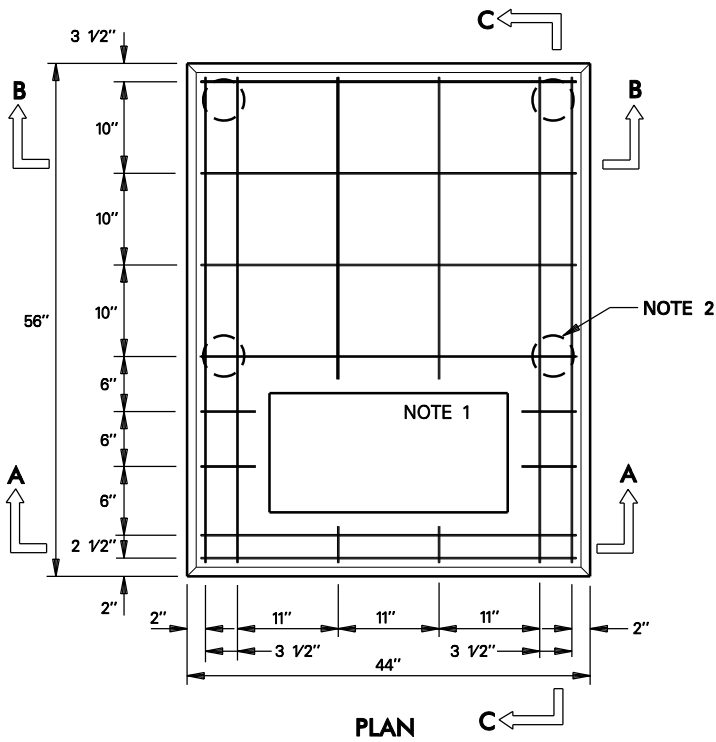
NOTES:

1. VERTICAL CROSSING CLEARANCE FROM OTHER UTILITIES SHALL BE 12 INCHES. A 60 INCH LATERAL SEPARATION OF PARALLELING FOREIGN UTILITIES (EXCLUDING GAS AND COMMUNICATIONS) SHALL BE REQUIRED. AN EXCEPTION WOULD BE TO ALLOW GAS, TELEPHONE AND /OR CATV IN THE SAME DITCH AS COMPANY CONDUIT SYSTEM PROVIDING THE NESC REQUIREMENTS FOR CONDUIT SEPARATION ARE MET OR EXCEEDED AND THE COMMUNICATIONS CIRCUITS ARE INSTALLED IN CONDUIT.
2. IT IS UNDERSTOOD THAT ONLY 12 INCH SEPARATION IS REQUIRED ON PUBLIC RIGHTS-OF-WAY. PERSONNEL INVOLVED IN EXCAVATION ON PUBLIC RIGHTS-OF-WAY ARE FULLY AWARE OF THE HAZARDS INVOLVED. HOWEVER, EXCAVATION ON PRIVATE PROPERTY CAN BE DONE BY INDIVIDUALS WHO ARE NOT LIKELY TO BE FULLY AWARE OF THE HAZARDS. THEREFORE, THE 60 INCH LATERAL SEPARATION IS REQUIRED TO HELP PREVENT INJURY TO PERSONNEL DOING EXCAVATION ON PRIVATE PROPERTY.

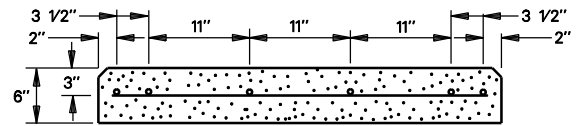


**CLEARANCE REQUIREMENTS
FROM FOREIGN UTILITIES
ON PRIVATE PROPERTY**

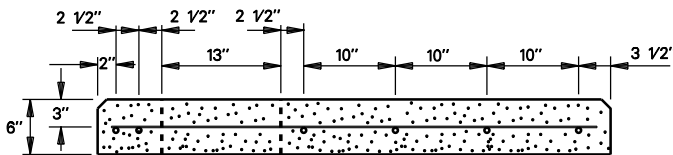
DDS-3 UG DETAIL SHEET 12 OF 32



SECTION "A - A"



SECTION "B - B"



SECTION "C - C"

REINFORCING SCHEDULE		
NUMBER OF #3 BARS	LENGTH	WEIGHT (LBS)
4	53"	7.02
2	33"	2.13
2	4"	.19
6	41"	7.71
4	6"	.75

.28 CU YARDS CONCRETE
TOTAL WEIGHT OF PAD 1,160 LBS

NOTES:

1. SEE DETAIL SHEET 15 AND 16 FOR LOCATIONS OF CONDUITS AND GROUND ROD AND OTHER APPLICABLE NOTES.
2. PIERS ARE REQUIRED ON ALL PADS UNLESS WAIVED BY THE COMPANY INSPECTOR. REFERENCE DETAIL SHEET 23 FOR PIER INSTALLATION.
3. ALL STEEL TO BE A MINIMUM OF 1 1/2" FROM SURFACE OF CONCRETE.
4. ALL CHAMFERS TO BE 1 1/2" x 45 DEGREES. ROUNDING OF EDGES WITH ROUNDING TROWEL IS ACCEPTABLE IN LIEU OF CHAMFERING.
5. CONSULT COMPANY REPRESENTATIVE FOR APPROVED PREFABRICATED PADS.
6. SEE DETAIL SHEET 14 FOR GENERAL NOTES.



**POURED IN PLACE PAD
FOR SINGLE PHASE
TRANSFORMERS**

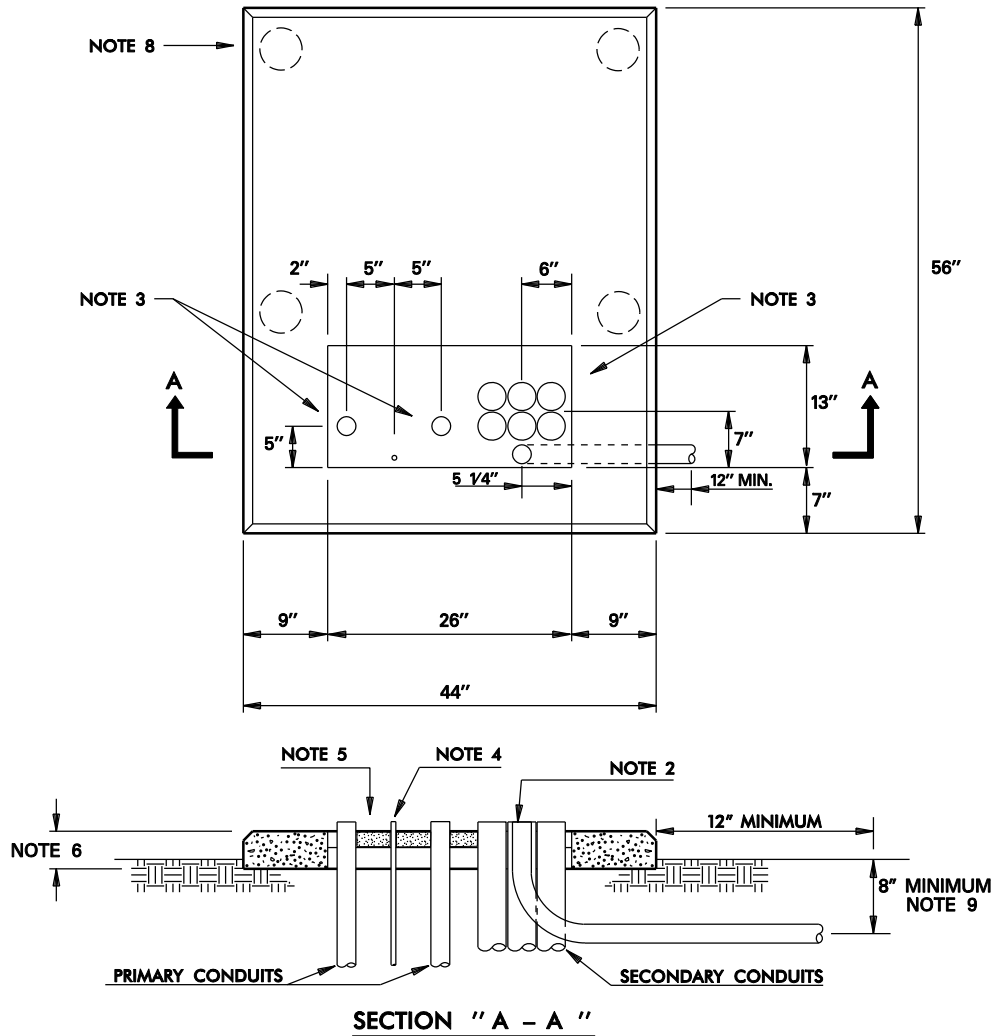
DDS-3 UG DETAIL SHEET 13 OF 32

1. CONTACT COMPANY REPRESENTATIVE FOR:
 - A. PAD SIZE
 - B. NUMBER, SIZE AND LOCATION OF PRIMARY AND SECONDARY CONDUITS
 - C. LOCATION OF COMPANY GROUND ROD(S) AND FOREIGN UTILITY GROUND. GROUND ROD(S) TO BE OBTAINED AND INSTALLED BY CONTRACTOR. REFERENCE DETAIL SHEETS 15, 16 AND 24 FOR SIZE.
2. CONSULT COMPANY REPRESENTATIVE FOR APPROVED PREFABRICATED PADS.
3. REFER TO DETAIL SHEETS 26, 27, 28 & 29 FOR MINIMUM CLEARANCES FROM SURROUNDING OBJECTS.
4. REINFORCING STEEL SHALL CONFORM TO ASTM A 615 AND SHALL BE DEFORMED, INTERMEDIATE GRADE (GRADE 60). ALL REINFORCING STEEL SHALL BE CLEANED OF ALL COATINGS THAT ADVERSELY AFFECT BONDING CAPACITY. ALL REINFORCING STEEL SHALL BE ACCURATELY POSITIONED AND RIGIDLY HELD IN PLACE DURING POURING.
5. ALL REINFORCING STEEL SHALL HAVE A 3 INCH CLEARANCE FROM THE BOTTOM. THERE SHALL BE A 3 INCH CLEARANCE FROM SIDES TO STEEL RUNNING PARALLEL THEREOF. THERE SHALL BE A 1 1/2 INCH CLEARANCE FROM END OF STEEL TO SIDES AND WINDOW.
6. OUTER SURFACE EDGES OF PADS TO BE CHAMFERED 1 1/2" x 45 DEGREES. ROUNDING OF EDGES WITH A ROUNDING TROWEL IS ACCEPTABLE IN LIEU OF CHAMFERING.
7. TAMP ALL DISTURBED SOIL UNDERNEATH PAD TO 95% COMPACTION AS PER ASTM D 698.
8. CONCRETE SHALL CONFORM TO ASTM C 150 FOR TYPE I OR TYPE III HIGH EARLY. CONCRETE SHALL BE PROPORTIONED TO PRODUCE A COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS. CONCRETE SLUMP SHALL BE 3- 4 INCHES.
9. AGGREGATES SHALL CONFORM TO ASTM C 33 AND SHALL BE CLEAN AND FREE FROM DELETERIOUS AMOUNTS OF ACIDS, ALKALIS, ORGANIC MATTER OR OTHER FOREIGN SUBSTANCES. THE MAXIMUM AGGREGATE SIZE SHALL NOT EXCEED 3/4 INCH.
10. MIXING WATER SHALL BE CLEAN AND FREE FROM OILS, ACIDS, ALKALIS, SALTS, ORGANIC MATERIALS OR OTHER SUBSTANCES THAT MAY BE DELETERIOUS TO CONCRETE OR STEEL.
11. NO ADMIXTURES WILL BE PERMITTED WITHOUT THE APPROVAL FROM THE COMPANY.
12. CONCRETE MAY BE MIXED ON THE JOB OR READY MIX CONCRETE MAY BE USED.
13. FOR CONCRETE MIXED ON THE JOB, A MIXER WITH A MINIMUM TWO (2) SACK CAPACITY SHALL BE USED. CEMENT AND AGGREGATES SHALL BE PROPORTIONED ON CALIBRATED SCALES. WATER FOR MIXING SHALL BE ACCURATELY MEASURED. ALL CONCRETE SHALL BE PLACED WITHIN ONE HOUR AFTER MIXING.
14. IF READY MIXED CONCRETE IS USED, THE DRIVER OF EACH TRUCK SHALL FURNISH A TICKET SHOWING THE TIME THE TRUCK WAS LOADED AT THE BATCH PLANT. ANY TRUCK WHICH HAS NOT DISCHARGED ITS COMPLETE LOAD ONE HOUR AND THIRTY MINUTES AFTER LOADING SHALL BE REJECTED UNLESS A RETARDANT, APPROVED BY THE COMPANY, HAS BEEN ADDED TO THE CONCRETE AT THE TIME OF BATCHING. READY MIXED CONCRETE SHALL CONFORM TO ASTM C 94.



**GENERAL NOTES FOR
POURED IN PLACE
CONCRETE PAD**

DDS-3 UG DETAIL SHEET 14 OF 32



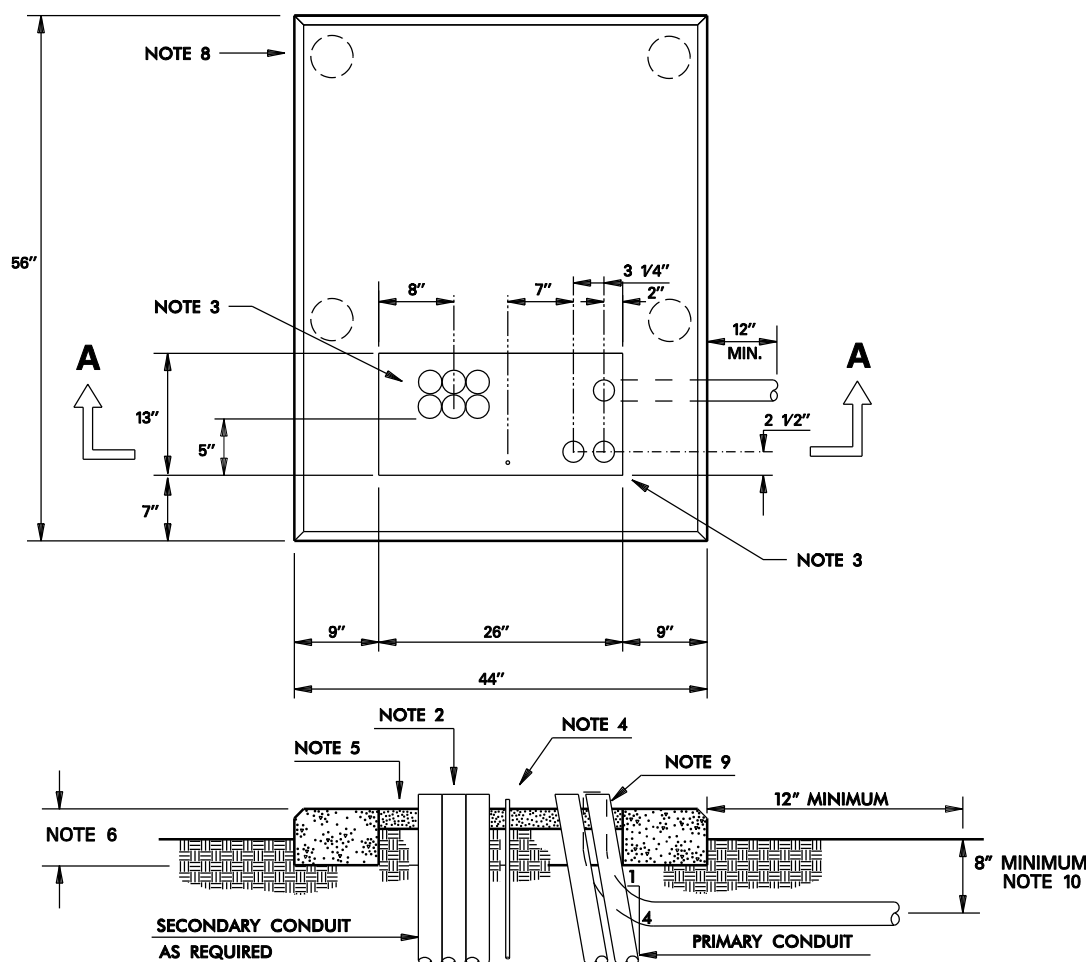
NOTES:

1. CONSULT COMPANY REPRESENTATIVE FOR: NUMBER, SIZE AND LOCATION OF CONDUITS IN PAD WINDOW.
WHETHER DESIGN IS TYPE I OR TYPE II CONDUIT ARRANGEMENT.
2. NO MORE THAN 8- 2 INCH, 6- 3 INCH OR 4- 4 INCH CONDUITS INCLUDING SPARES SHALL BE PLACED IN THE SECONDARY SIDE OF PAD WINDOW.
3. REFERENCE DETAIL SHEET 10 FOR BEND RADIUS FOR ALL HORIZONTAL AND VERTICAL CONDUIT BENDS.
4. CONSULT COMPANY REPRESENTATIVE ON WHERE TO OBTAIN 5/8" X 8' COPPER CLAD GROUND ROD. GROUND ROD TO BE OBTAINED AND INSTALLED BY CONTRACTOR. INSTALLATION DEPTH SHALL BE 7'- 6".
5. REFERENCE DETAIL SHEET 17 FOR GROUT DETAIL.
6. THIS DIMENSION IS 6 INCHES FOR PRECAST CONCRETE PAD AND 4 INCHES FOR POLYMER CONCRETE PADS.
7. REFERENCE DETAIL SHEET 18 FOR FOREIGN UTILITY EQUIPMENT GROUND.
8. PIERS ARE REQUIRED ON ALL PADS UNLESS WAIVED BY COMPANY INSPECTOR. REFERENCE DETAIL SHEET 23 FOR PIER DETAIL.
9. THE 3" FLEX CONDUIT SHALL HAVE A MINIMUM OF 8" OF COVER AS IT EXITS ON THE RIGHT HAND SIDE OF THE TRANSFORMER PAD.



**TRANSFORMER PAD- PRECAST
SINGLE PHASE DEADFRONT
TYPE I**

DDS-3 UG DETAIL SHEET 15 OF 32



SECTION "A - A"

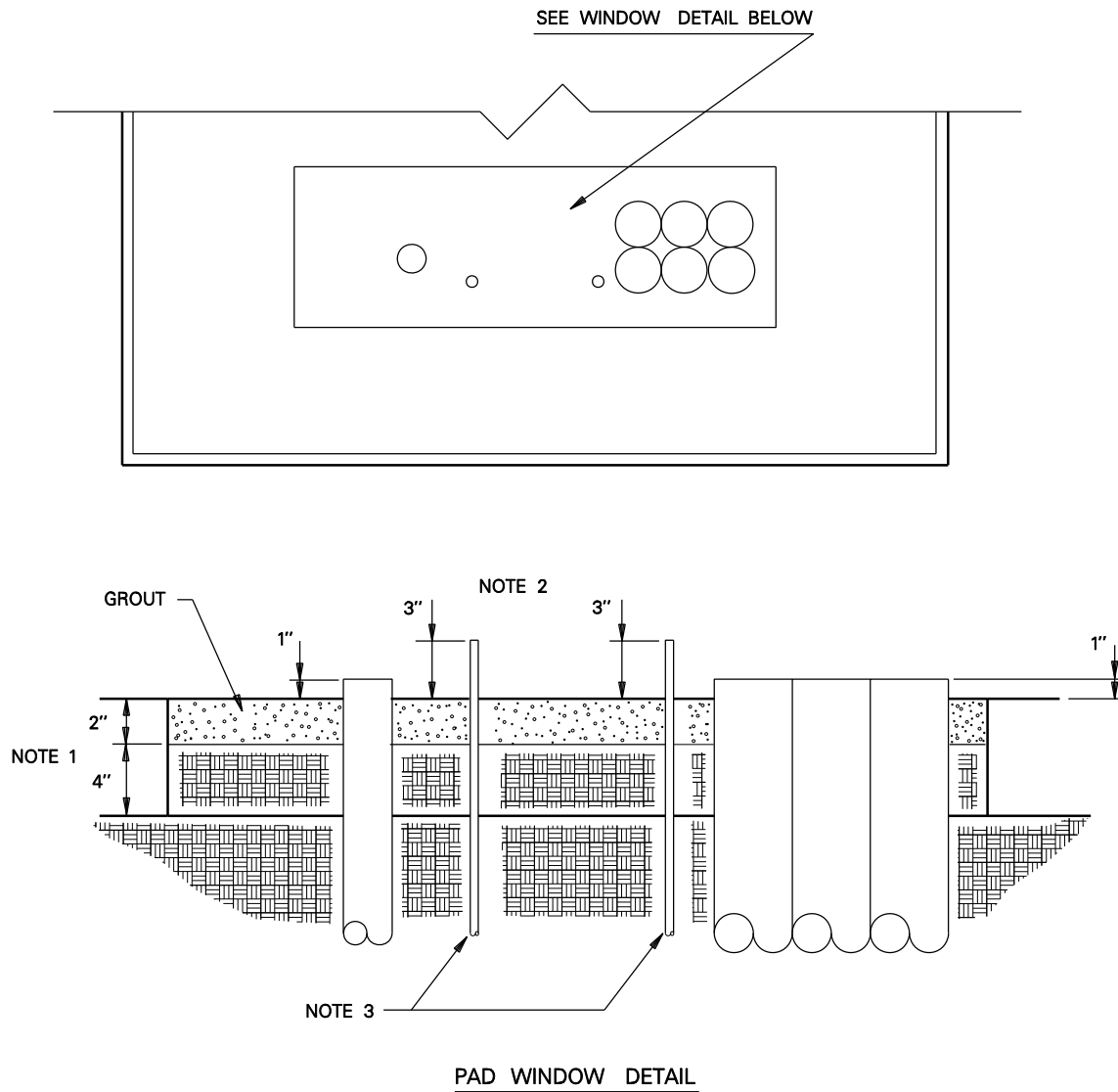
NOTES:

1. CONSULT COMPANY REPRESENTATIVE FOR: NUMBER, SIZE AND LOCATION OF CONDUITS IN PAD WINDOW.
WHETHER TYPE I OR TYPE II CONDUIT ARRANGEMENT.
2. NO MORE THAN 8- 2 INCH, 6- 3 INCH OR 4- 4 INCH CONDUITS INCLUDING SPARES SHALL BE PLACED IN THE SECONDARY SIDE OF PAD WINDOW.
3. REFERENCE DETAIL SHEET 10 FOR BEND RADIUS FOR ALL HORIZONTAL AND VERTICAL CONDUIT BENDS.
4. CONSULT COMPANY REPRESENTATIVE ON WHERE TO OBTAIN 5/8" X 8' COPPER CLAD GROUND ROD. GROUND ROD TO BE OBTAINED AND INSTALLED BY CONTRACTOR. INSTALLATION DEPTH SHALL BE 7'- 6".
5. REFERENCE DETAIL SHEET 17 FOR GROUT DETAIL.
6. THIS DIMENSION IS 6 INCHES FOR PRECAST CONCRETE PAD AND 4 INCHES FOR POLYMER CONCRETE PADS.
7. REFERENCE DETAIL SHEET 18 FOR FOREIGN UTILITY EQUIPMENT GROUND.
8. PIERS ARE REQUIRED ON ALL PADS UNLESS WAIVED BY COMPANY INSPECTOR. REFERENCE DETAIL SHEET 23 FOR PIER DETAIL.
9. THE CONDUITS MUST BE INSTALLED TO ENSURE THAT THE TOTAL MAXIMUM BENDING RADIUS FOR THE PRIMARY CABLE DOES NOT EXCEED 9 INCHES (ANGLE PRIMARY CONDUIT WHENEVER POSSIBLE).
10. THE 3" FLEX CONDUIT SHALL HAVE A MINIMUM OF 8" OF COVER AS IT EXITS ON THE RIGHT HAND SIDE OF THE TRANSFORMER PAD.



TRANSFORMER PAD- PRECAST SINGLE PHASE DEADFRONT TYPE II

DDS-3 UG DETAIL SHEET 16 OF 32



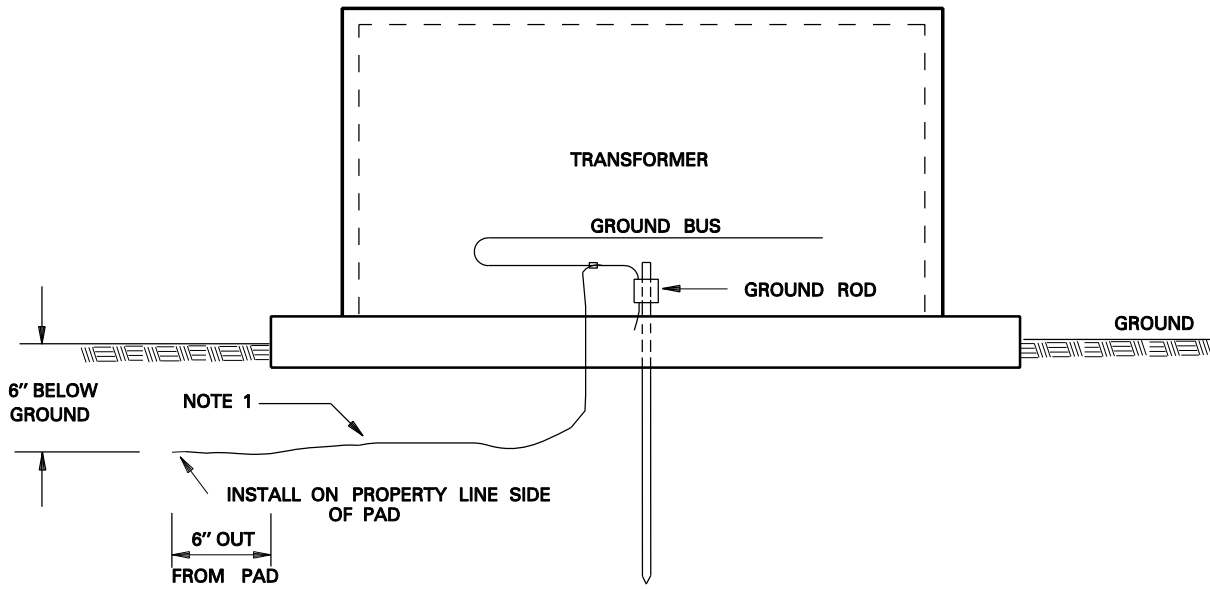
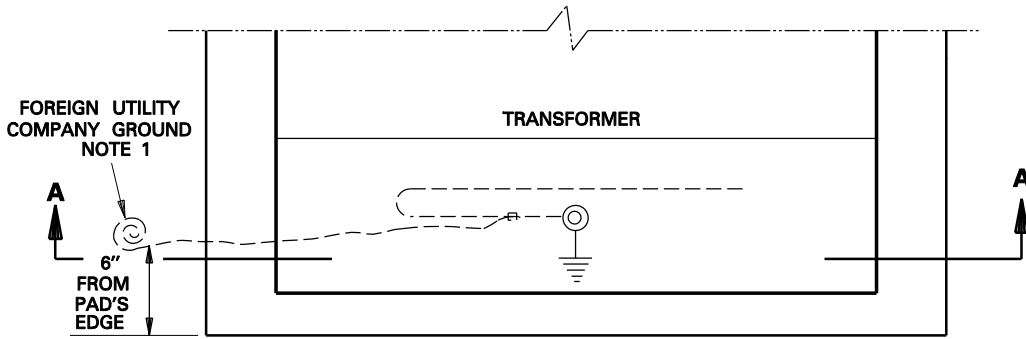
NOTES:

1. THE GROUT SHALL BE PORTLAND BASED AND SANDED. DO NOT USE CONCRETE.
2. FILL IN PAD WINDOW WITH 4 INCHES OF EARTH BACKFILL AND 2" OF GROUT.
3. GROUND RODS SHALL EXTEND A MAXIMUM OF 3 INCHES ABOVE GROUTING TO ASSURE ADEQUATE DRIVEN DEPTH AND ALLOW FOR ADEQUATE CONNECTING SPACE.
4. GROUND RODS SHALL EXTEND A MINIMUM OF 7' - 6" INTO EARTH.
5. GRAVEL FILL IS NOT ACCEPTABLE.



**GROUTING DETAIL
FOR TRANSFORMER
PAD WINDOWS**

DDS-3 UG DETAIL SHEET 17 OF 32



SECTION A-A

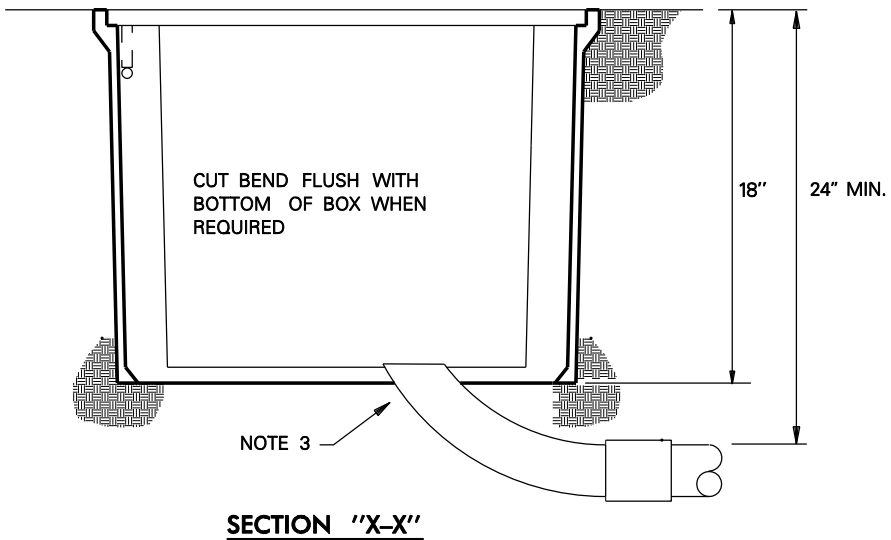
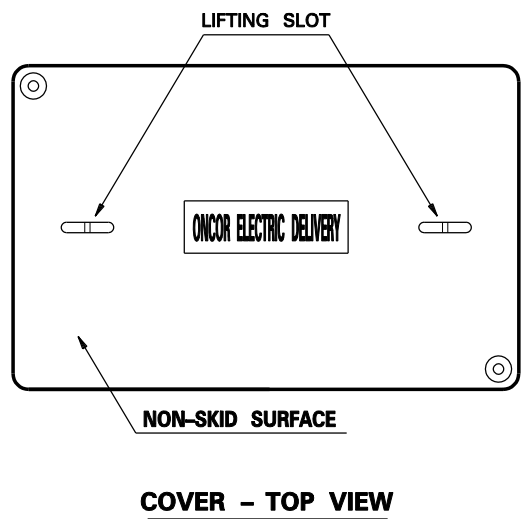
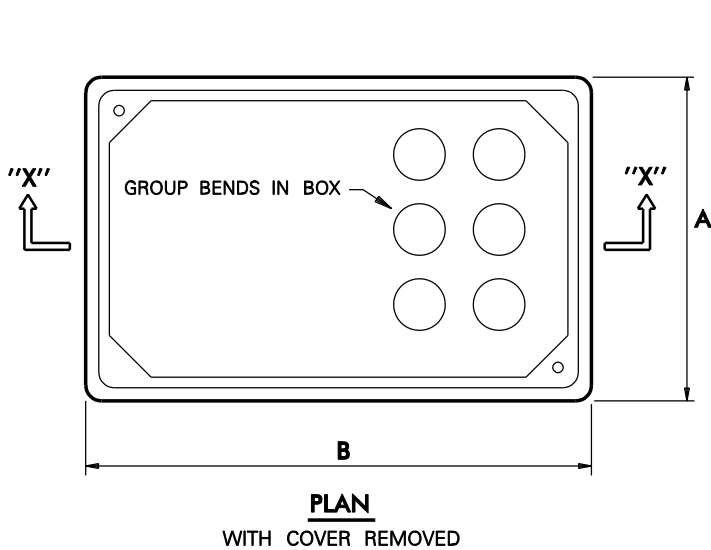
NOTES:

1. ON NEW INSTALLATIONS, INSTALL NO. 6 S.D. BARE COPPER AS SHOWN FOR FOREIGN UTILITY COMPANY BONDING.
2. THE NATIONAL ELECTRICAL SAFETY CODE RULE 384 C RECOMMENDS BONDING OF ALL ABOVE GROUND METALLIC POWER AND COMMUNICATIONS APPARATUS (PEDESTALS, TERMINALS, APPARATUS CASES, TRANSFORMER CASES, ETC.) THAT ARE SEPARATED BY A DISTANCE OF 6 FEET OR LESS.



**METHOD OF PROVIDING
UTILITY COMPANY
EQUIPMENT GROUND**

DDS-3 UG DETAIL SHEET 18 OF 32



BOX SIZE (IN.)	OVERALL DIM. (IN.)		MAX. NO. CIRCUITS
	A	B	
13 X 24	16	25	5
17 X 30	20	33	8

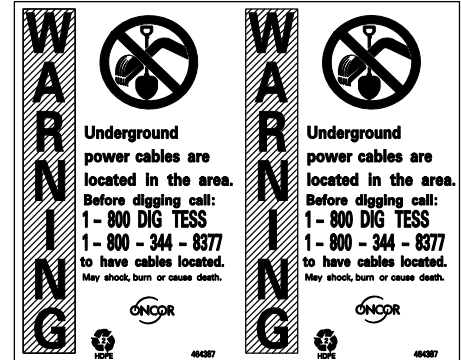
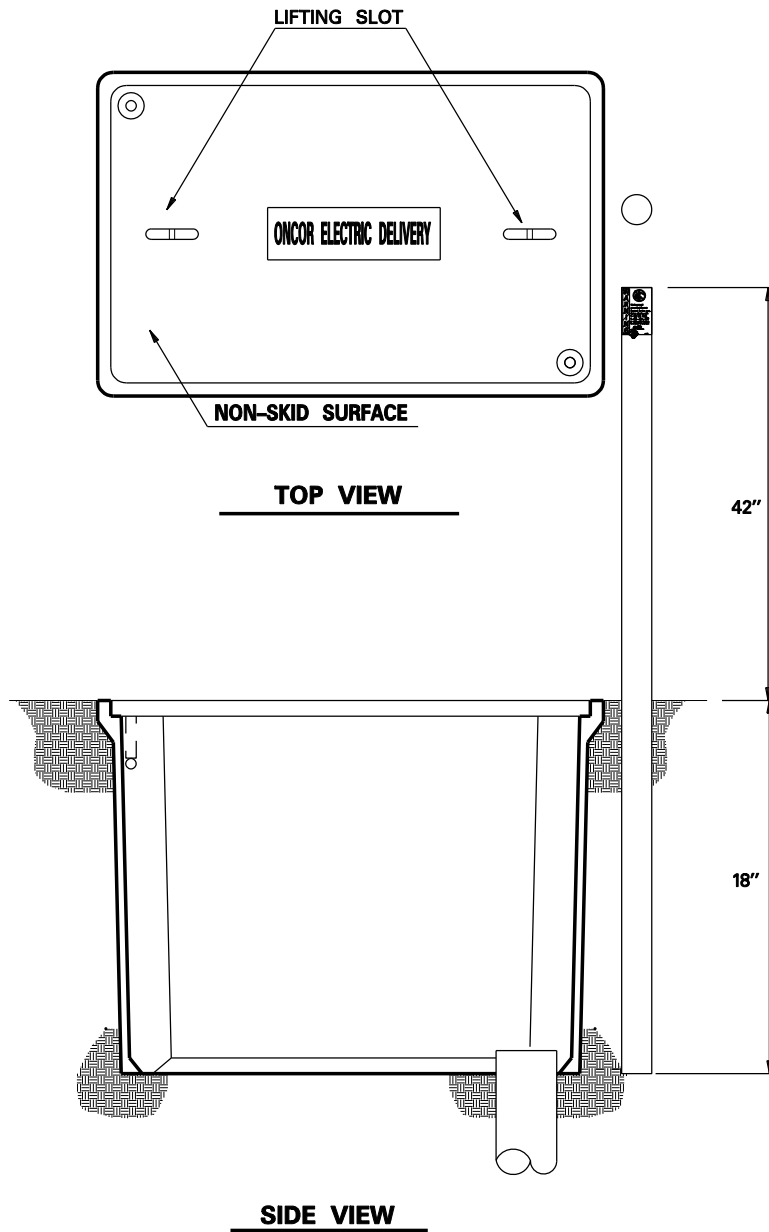
BOX SIZE (IN.)	REPLACEMENT LID TSN
13 X 24	326506
17 X 30	326509S

- NOTES:**
1. CONTACT COMPANY REPRESENTATIVE FOR (1) ROUTING OF CONDUIT LINE, (2) SIZE OF CONDUIT, AND (3) INSTALLATIONS REQUIRING MORE THAN ONE RISER ON POLE.
 2. LIMIT RACEWAY TO THREE 90° BENDS. IF MORE THAN THREE 90° BENDS ARE REQUIRED, CONTACT COMPANY REPRESENTATIVE.
 3. REFERENCE DETAIL SHEET 10 FOR BEND RADIUS FOR ALL HORIZONTAL AND VERTICAL CONDUIT BENDS.
 4. CUT OFF BEND FLUSH WITH BOTTOM OF SECONDARY/SERVICE BOX.



**TYPICAL SERVICE AREA-
SUBSURFACE
SECONDARY/SERVICE BOX**

DDS-3 UG DETAIL SHEET 19 OF 32



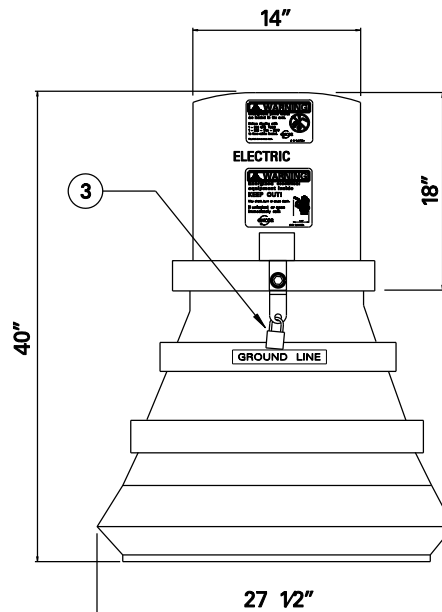
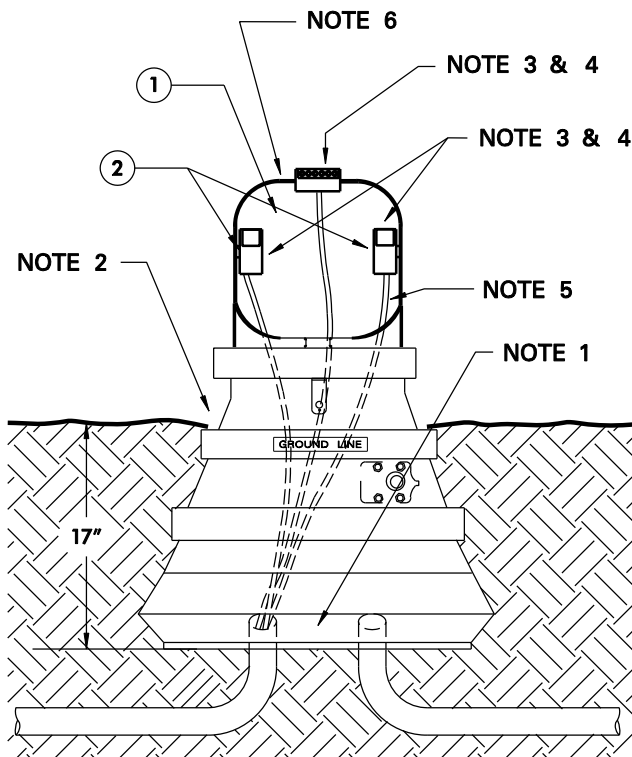
NOTES:

1. CONSULT COMPANY REPRESENTATIVE ON WHERE TO ACQUIRE MARKER POST.
2. INSTALL MARKER POST WITHIN 3 INCHES OF ONE END OF SUBSURFACE BOX WHEN BOX IS BEING INSTALLED.
3. REMOVE MARKER POST WHEN THE LAST PERMANENT METER IS SET.



**MARKER POST
FOR
SECONDARY/SERVICE BOX**

DDS-3 UG DETAIL SHEET 20 OF 32



REPLACEMENT PARTS	
PART	TSN.
6 POSITION CONNECTOR #6 - 350 CONDUCTOR	397461
6 POSITION CONNECTOR #6 - 500 CONDUCTOR	397463
CLEAR LEXAN CONNECTOR COVER	397462
COVER TIE	386181

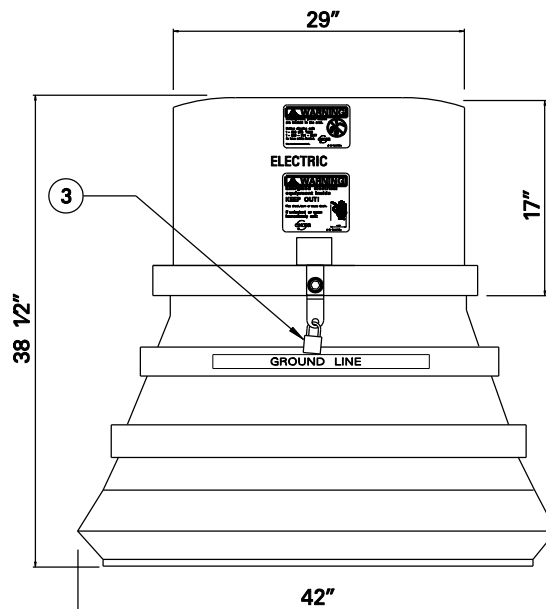
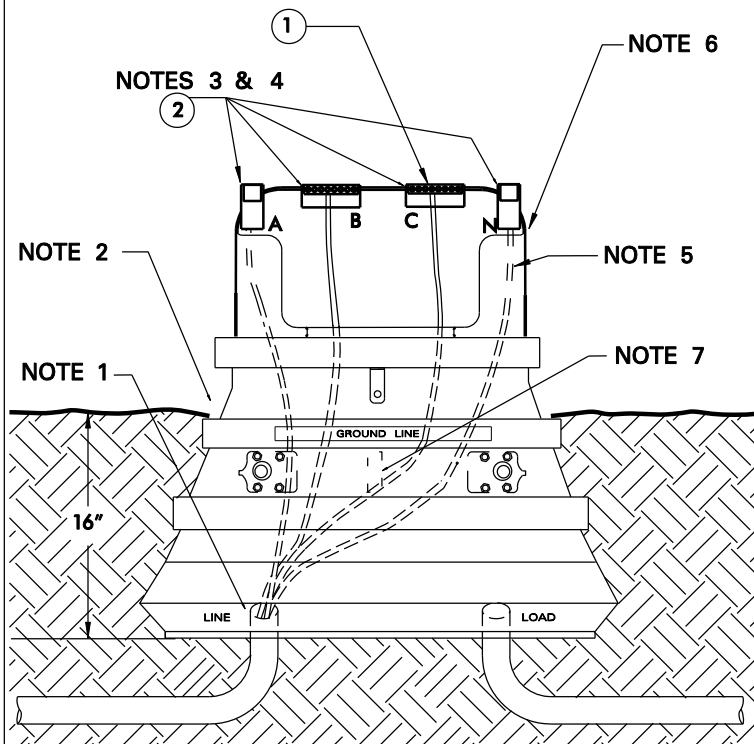
INSTALLATION NOTES:

1. CENTER THE CONDUITS/CABLES IN THE BOTTOM OPENING OF THE PEDESTAL.
2. BURY THE PEDESTAL TO THE GROUND LINE MARKER AND TAMP THE SOIL AROUND THE UNIT TO SECURE IT IN THE UPRIGHT POSITION.
3. THE CONNECTOR COVER IS A REUSEABLE ITEM. IF MISSING OR DAMAGED REPLACE WITH PARTS AS SHOWN. ALL CONNECTOR COVERS MUST BE SECURED WITH TIES. IF THE TIES ARE CUT OR DAMAGED IN ANY WAY, REPLACE WITH STOCK REPLACEMENT PARTS AS SHOWN.
4. USE THE CENTER TOP MOUNTED CONNECTOR FOR THE NEUTRAL CONDUCTOR. USE THE SIDE MOUNTED CONNECTORS FOR THE "HOT" CONDUCTORS.
5. POSITION, CUT AND REMOVE CABLE INSULATION. FOR GOOD SET SCREW COMPRESSION ON THE CONDUCTORS, EXTEND BARE CONDUCTOR 1/4 INCH ABOVE THE CONNECTOR. BRUSH CONDUCTORS TO REMOVE OXIDE BEFORE INSTALLING IN CONNECTOR AND APPLY INHIBITOR.
6. LOCATE PEDESTAL TO MINIMIZE CHANCE OF PEDESTAL BEING STRUCK BY VEHICULAR TRAFFIC.
7. CONSULT COMPANY REPRESENTATIVE FOR (1) APPROVED SECONDARY PEDESTALS, (2) SIZE OF CONDUIT, AND (3) ROUTING PATH OF CONDUIT INTO SECONDARY PEDESTAL.
8. FOR INSTALLATION OF CONDUIT TO IN- SERVICE SECONDARY PEDESTALS, CONSULT COMPANY REPRESENTATIVE FOR DETAILS.
9. REFERENCE DETAIL SHEET 10 FOR BEND RADIUS FOR ALL HORIZONTAL AND VERTICAL CONDUIT BENDS.



TYPICAL SERVICE AREA- SINGLE PHASE SECONDARY PEDESTAL

DDS-3 UG DETAIL SHEET 21 OF 32



REPLACEMENT PARTS	
PART	TSN.
8 POSITION CONNECTOR #6 - 500 CONDUCTOR WITH CLEAR FLEXIBLE CONNECTOR COVER	476321

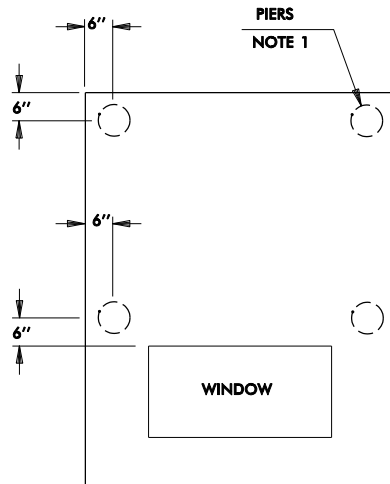
INSTALLATION NOTES:

1. CENTER THE CONDUITS/CABLES IN THE BOTTOM OF THE PEDESTAL, AS SHOWN.
2. BURY THE PEDESTAL TO THE GROUND LINE MARKER AND TAMP THE SOIL AROUND THE UNIT TO SECURE IT IN THE UP-RIGHT POSITION.
3. THE CONNECTOR COVER IS A REUSABLE ITEM. IF MISSING OR DAMAGED REPLACE WITH STOCK REPLACEMENT PARTS AS NECESSARY.
4. USE A CLOCKWISE PHASE ROTATION WITH THE MOUNTED CABLE CONNECTORS. POSITION THE "A" PHASE CONNECTIONS @ THE 9:00 CONNECTOR, "B" PHASE @ 11:00, "C" PHASE @ 1:00 AND THE NEUTRAL @ 3:00, AS SHOWN.
5. POSITION, CUT, AND REMOVE CABLE INSULATION. FOR GOOD SET SCREW COMPRESSION ON THE CONDUCTORS, EXTEND BARE CONDUCTOR 1/4 INCH ABOVE THE CONNECTOR. BRUSH CONDUCTORS TO REMOVE OXIDE BEFORE INSTALLING IN CONNECTOR AND APPLY INHIBITOR.
6. LOCATE PEDESTAL TO MINIMIZE CHANCE OF PEDESTAL BEING STRUCK BY VEHICULAR TRAFFIC.
7. 2" X 4" WOOD BRACE HAS BEEN INSTALLED TO PREVENT THE PEDESTAL FROM COLLAPSE DURING INSTALLATION COMPACTION. AFTER INSTALLATION IS COMPLETE, CUT TO REMOVE IF NECESSARY. IF BRACE IS NOT A SPACE CONFLICT, LEAVE IT IN PLACE.
8. CONSULT COMPANY REPRESENTATIVE FOR (1) APPROVED SECONDARY PEDESTAL, (2) SIZE OF CONDUIT, AND (3) ROUTING PATH OF CONDUIT INTO SECONDARY PEDESTAL.
9. FOR INSTALLATION OF CONDUIT TO IN-SERVICE SECONDARY PEDESTALS, CONSULT COMPANY REPRESENTATIVE FOR DETAILS.
10. REFERENCE DETAIL SHEET 10 FOR END RADIUS FOR ALL HORIZONTAL AND VERTICAL CONDUIT BENDS.

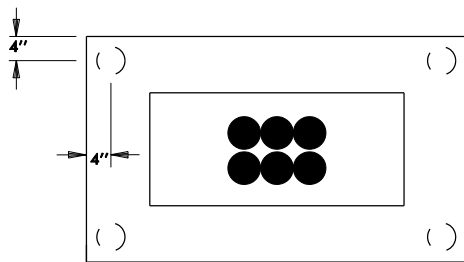


TYPICAL SERVICE AREA- THREE PHASE SECONDARY PEDESTAL

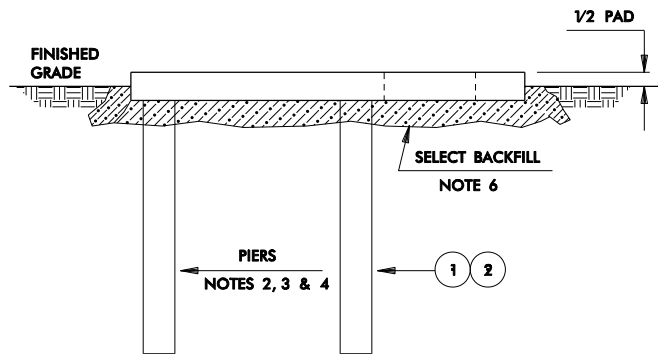
DDS-3 UG DETAIL SHEET 22 OF 32



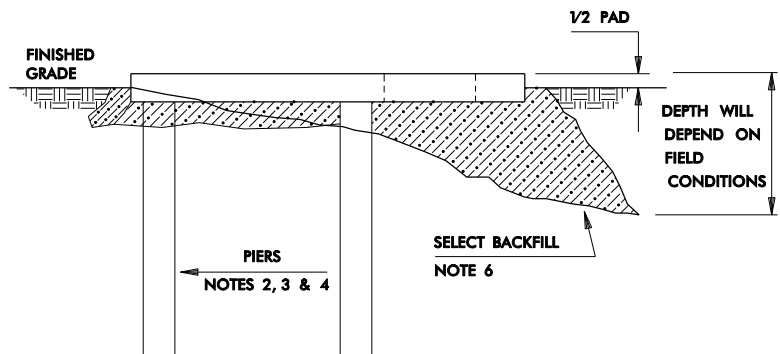
TRANSFORMER PAD



SERVICE ENCLOSURE



SIDE VIEW FOR LEVEL TERRAIN



SIDE VIEW FOR SLOPING TERRAIN

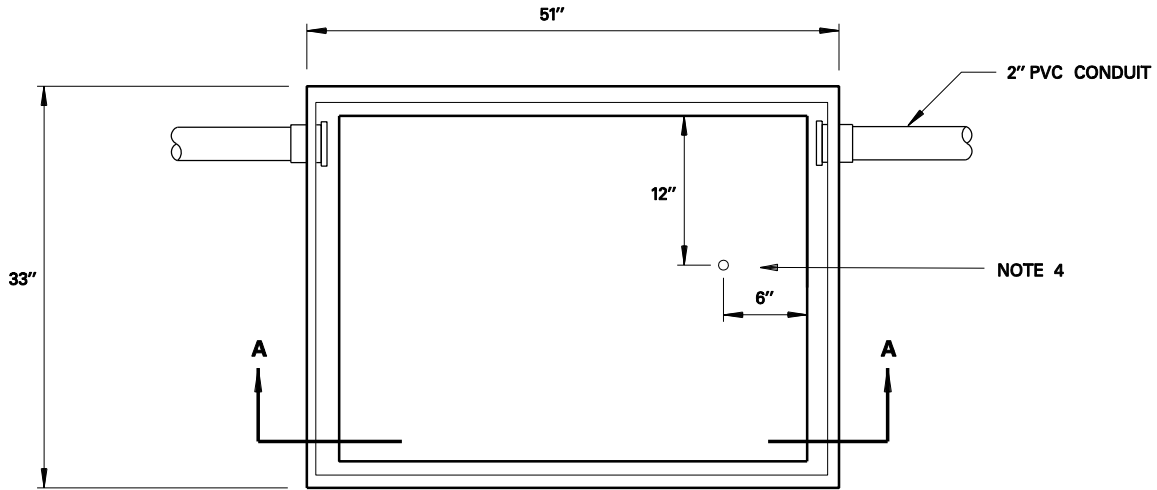
NOTES:

1. PIERS SHALL BE INSTALLED UNDER PAD WHEN DIRT HAS BEEN DISTURBED UNDER THE LOAD BEARING AREA OF PAD. TAMP BACKFILL (95% COMPACTION) TO TOP OF PIER SUPPORTS (USE DITCH SPOIL WHEN POSSIBLE).
2. CUT SUPPORT PIERS FROM SECTION OF 4 IN. PVC CONDUIT.
3. PLACE PIERS AS SHOWN. FILL WITH CONCRETE.
4. TOP OF PIERS SHOULD BE LEVEL AND 3 IN. BELOW FINAL GROUND LEVEL TO A DEPTH OF:
 - (1) MINIMUM OF 36 IN. IN UNDISTURBED EARTH (SOIL).
 - (2) BOTTOM OF DITCH.
 - (3) BEGINNING OF SOLID ROCK.
5. AFTER PLACING PAD, FILL VOIDS UNDER AND AROUND PAD WITH SELECT DITCH SPOIL.
6. ALL BACKFILL UNDER AND AROUND PAD SHALL BE WELL TAMPED.

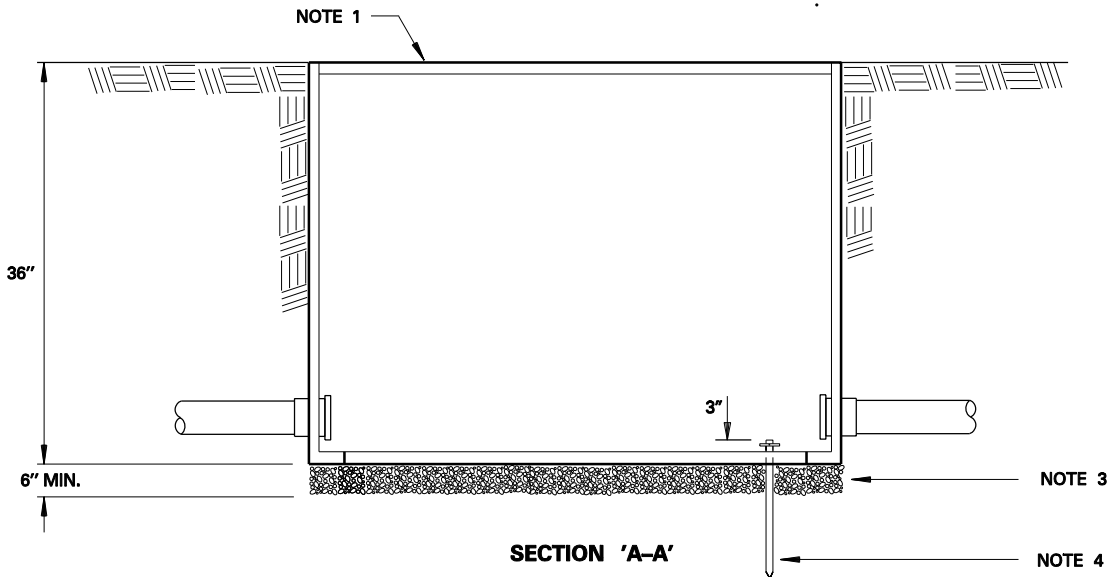


**SINGLE PHASE TRANSFORMER PAD
AND SERVICE ENCLOSURE
PIER INSTALLATION**

DDS-3 UG DETAIL SHEET 23 OF 32



TOP VIEW



SECTION 'A-A'

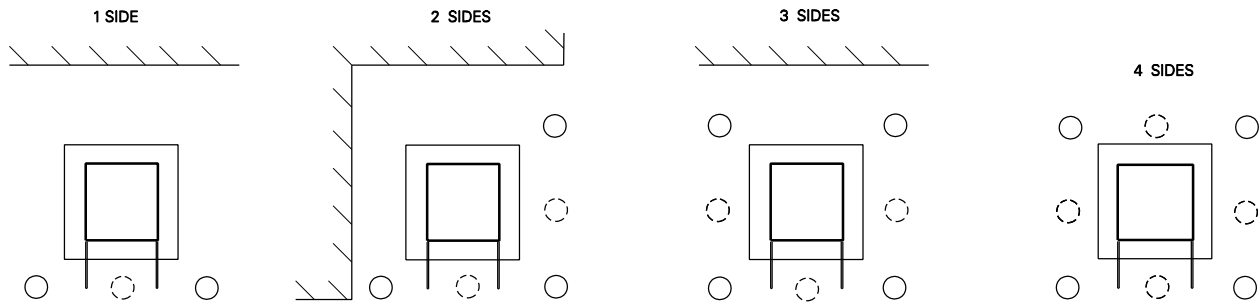
NOTES:

1. 30" X 48" X 36" SPLICE/PULL BOX DESIGNED FOR PARKWAY INSTALLATION WITH H10 LOADING (LIGHT TRAFFIC). CONTACT COMPANY REPRESENTATIVE ON WHERE TO ACQUIRE SUBSURFACE SPLICE/PULL BOX.
2. THIS BOX IS INTENDED FOR USE AS AN INTERMEDIATE SPLICE BOX AS NEEDED DUE TO LONG PULLING DISTANCES AND RESTRICTED TO SINGLE #1/0 CABLE.
3. TAMP ALL DISTURBED SOIL UNDERNEATH PAD TO 95% COMPACTION AS PER ASTM D 698 AND INSTALL A 6 INCH WELL TAMPED LAYER OF MEDIUM GRAVEL FILL.
4. CONTACT COMPANY REPRESENTATIVE ON WHERE TO ACQUIRE 5/8" X 8' COPPER CLAD GROUND ROD. GROUND ROD TO BE OBTAINED AND INSTALLED BY CONTRACTOR.

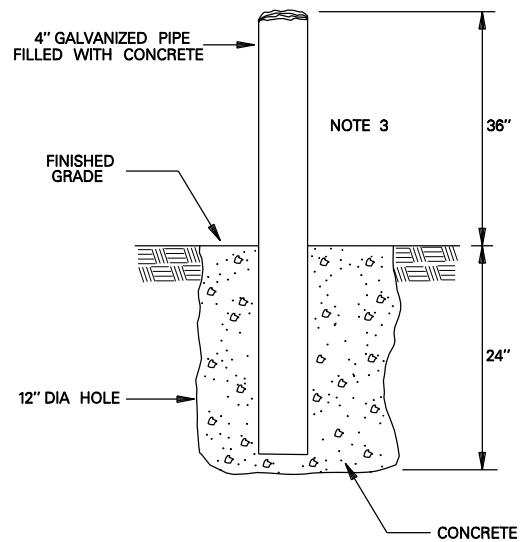
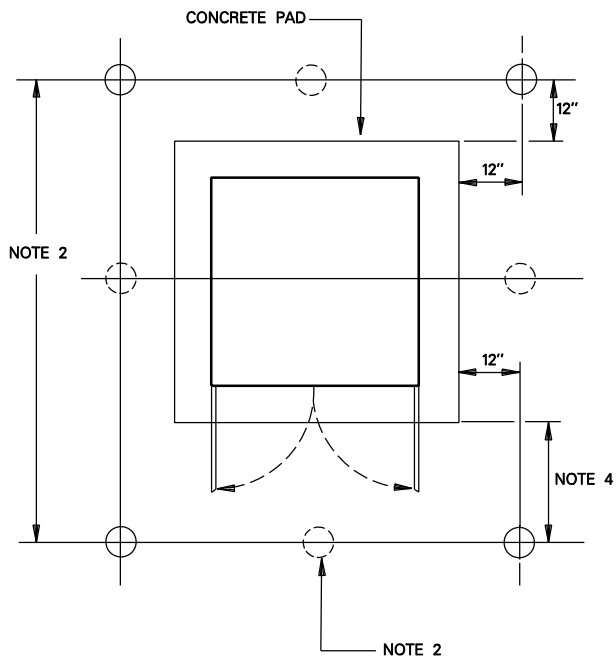


**SINGLE PHASE PRIMARY
SUBSURFACE SPLICE / PULL BOX
INSTALLATION**

DDS-3 UG DETAIL SHEET 24 OF 32



TYPICAL LAYOUT FOR TRAFFIC AND PARKING



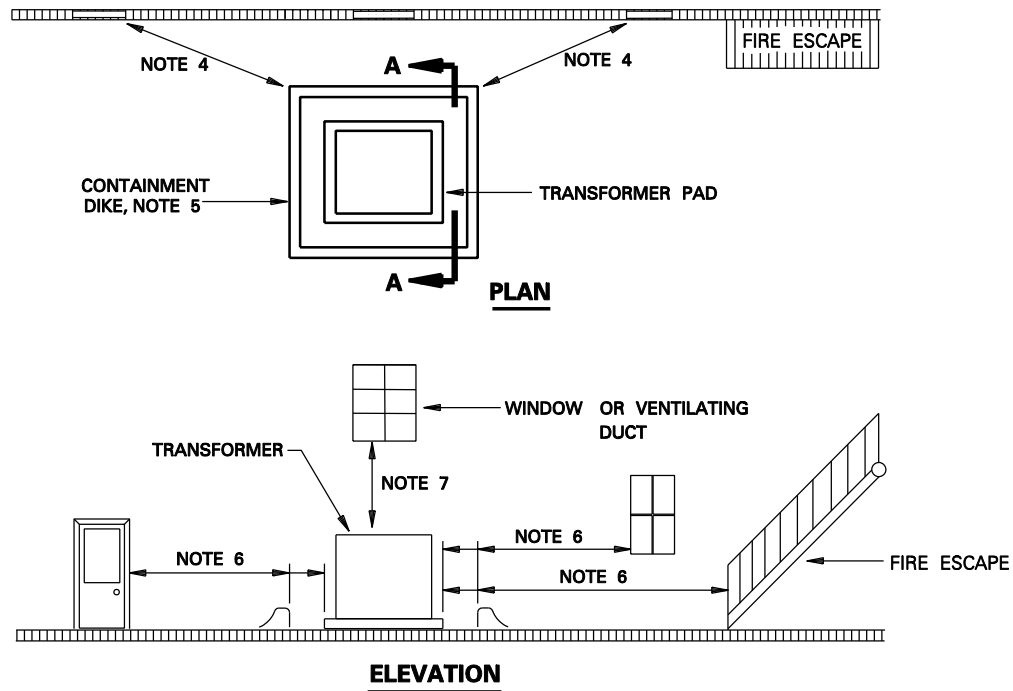
NOTES:

1. INSTALL GUARD POST WHERE PROTECTION FROM DAMAGE DUE TO VEHICULAR TRAFFIC IS NEEDED.
2. DISTANCE BETWEEN POSTS SHOULD NOT EXCEED 4 FEET. ADD ADDITIONAL POSTS WHERE NECESSARY TO MEET THIS CONDITION. VERIFY LOCATION OF POST IN FRONT OF TRANSFORMER TO ALLOW FOR DOOR OPENING.
3. INCREASE HEIGHT TO 48" AND DEPTH TO 36" IN TRUCK LOADING AREAS, AND INCREASE SIZE TO 6" GALVANIZED PIPE.
4. THIS DISTANCE TO BE LARGE ENOUGH TO ALLOW FULL OPENING OF ALL EQUIPMENT DOOR(S). CONTACT COMPANY REPRESENTATIVE TO VERIFY DIMENSION.



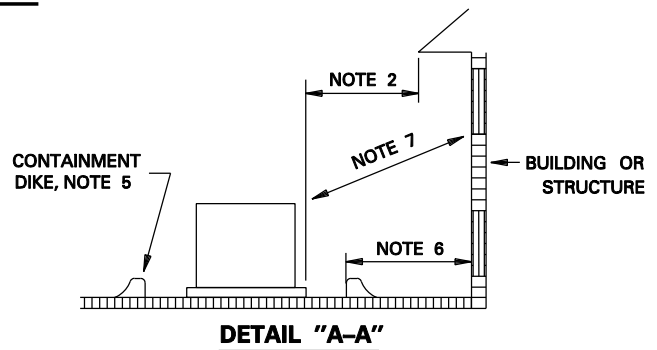
GUARD POST INSTALLATION

DDS-3 UG DETAIL SHEET 25 OF 32



TRANSF. TYPE	BUILDING CONSTRUCTION		WINDOWS, DOORS, & VENTS	FIRE ESCAPES
	FIRE RESISTIVE NOTE 3	NON- FIRE RESISTIVE		
1 PHASE	5'-0"	10'-0"	10'-0"	20'-0"
3 PHASE	5'-0"	15'-0"	15'-0"	20'-0"

CLEARANCE TABLE



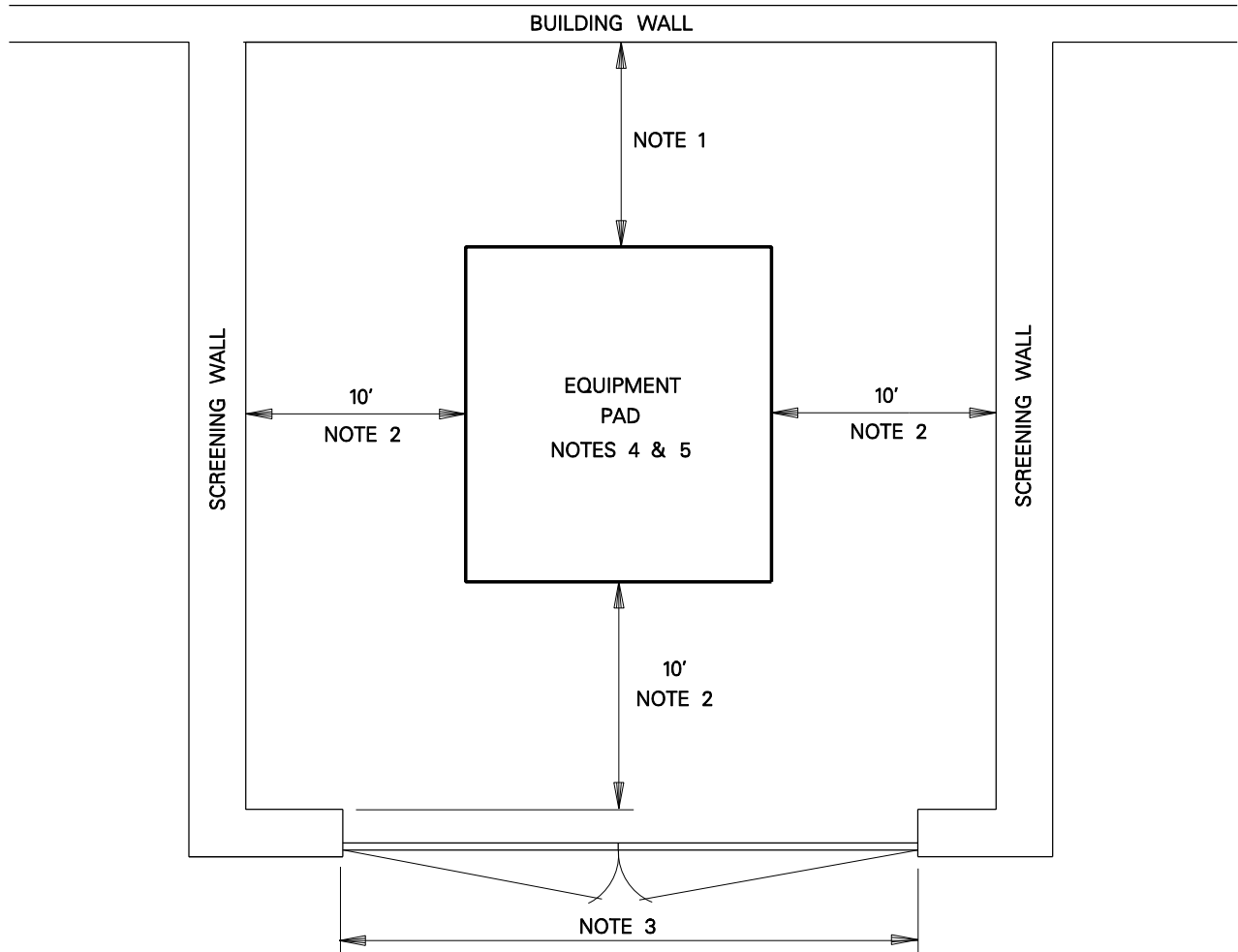
NOTES:

- CLEARANCE FROM BUILDING WALLS SHALL COMPLY WITH THE CLEARANCE TABLE. ALL DIMENSIONS SHOWN ARE MINIMUM DIMENSIONS.
- WHERE THERE ARE BUILDING EAVES OR OVERHANGS WITHIN 25'- 0" ABOVE GROUND, CLEARANCE SHALL BE MEASURED HORIZONTALLY BEGINNING FROM THE EDGE OF THE EAVE OR OVERHANG.
- FIRE RESISTIVE BUILDING WALLS INCLUDE BRICK AND MASONRY STRUCTURES THAT HAVE A 2 HOUR FIRE RATING.
- CLEARANCE TO BUILDING DOORS, WINDOWS, VENTS AND FIRE ESCAPES TO BE MEASURED RADially.
- LIQUID FLOW OF AREA SURROUNDING TRANSFORMER SHOULD BE AWAY FROM BUILDING. WHERE GROUND IS FLAT OR SLOPES TOWARD BUILDING, A DIKE SUFFICIENT TO CONTAIN ALL TRANSFORMER OIL FOR TRANSFORMERS 500 KVA AND LARGER SHALL BE PROVIDED.
- CLEARANCES ARE MEASURED FROM PAD EDGE TO BUILDING WALL, OPENING, OVERHANG OR FIRE ESCAPE UNLESS A CONTAINMENT DIKE IS UTILIZED. IF A CONTAINMENT DIKE IS UTILIZED, CLEARANCE IS MEASURED FROM DIKE.
- CLEARANCES FOR WINDOWS AND VENTS ABOVE TRANSFORMER ARE MEASURED RADially FROM CLOSEST POINT ON TRANSFORMER.
- PADMOUNTED TRANSFORMERS SHALL BE POSITIONED SUCH THAT HOTSTICK USE IS NOT REQUIRED ON THE SIDE FACING THE BUILDING. IF HOTSTICK USE IS REQUIRED ON THE BUILDING SIDE, CLEARANCES SHOWN IN DETAIL SHEET 27 SHALL BE MAINTAINED.
- THERE SHOULD NOT BE ANY ABOVE GROUND OBSTRUCTIONS, SUCH AS SHRUBS, COOLING TOWERS, GAS METERS, FENCING, ETC. WITHIN 5'- 0" OF PAD OR OVERHANGS ABOVE PAD FACILITIES. REFERENCE DETAIL SHEET 27 FOR SCREENING CLEARANCES AROUND PADMOUNTED EQUIPMENT.
- THERE SHOULD NOT BE ANY PIPING OR CONDUIT UNDER THE PAD (EXCEPTION: MUTUALLY AGREED UPON COMMUNICATION CONDUITS) OTHER THAN THOSE ENTERING THE TRANSFORMER.
- TRANSFORMERS SHALL NOT OBSTRUCT FIRE LANE.
- IT IS THE OWNER'S RESPONSIBILITY TO COMPLY WITH ANY INSURANCE REGULATIONS AFFECTING THE PREMISES.



**CLEARANCES OF
PADMOUNTED TRANSFORMERS
FROM BUILDINGS**

DDS-3 UG DETAIL SHEET 26 OF 32



NOTES:

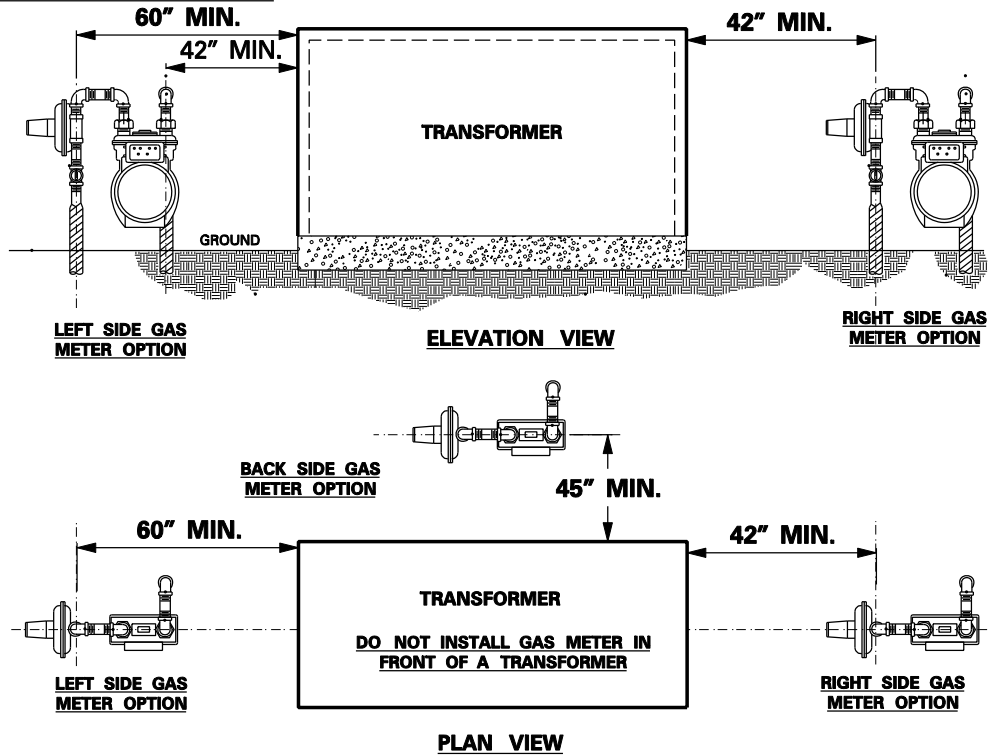
1. CLEARANCES TO BUILDING WALLS SHALL BE THE GREATER OF:
CLEARANCES LISTED IN DETAIL SHEET 26 FOR OIL FILLED EQUIPMENT,
10 FEET IF HOT STICK USE IS REQUIRED ON THIS SIDE OF EQUIPMENT, OR
5 FEET IF HOT STICK USE IS NOT REQUIRED ON THIS SIDE OF EQUIPMENT.
2. A MINIMUM OF 5 FEET CLEARANCE IS ALLOWED IF "HOT STICK" USE IS NOT REQUIRED
3. GATE SHALL OPEN OUTWARD AND THE WIDTH SHALL BE NO LESS THAN 10 FEET.
4. WHERE GROUND IS FLAT OR SLOPES TOWARD BUILDING, A DIKE SUFFICIENT TO CONTAIN ALL OIL FOR TRANSFORMERS 500 KVA AND LARGER SHALL BE PROVIDED. REFERENCE DETAIL SHEET 26.
5. WHEN TRANSFORMERS ARE INSTALLED, SCREENING WALLS SHALL PROVIDE ADEQUATE VENTILATION.



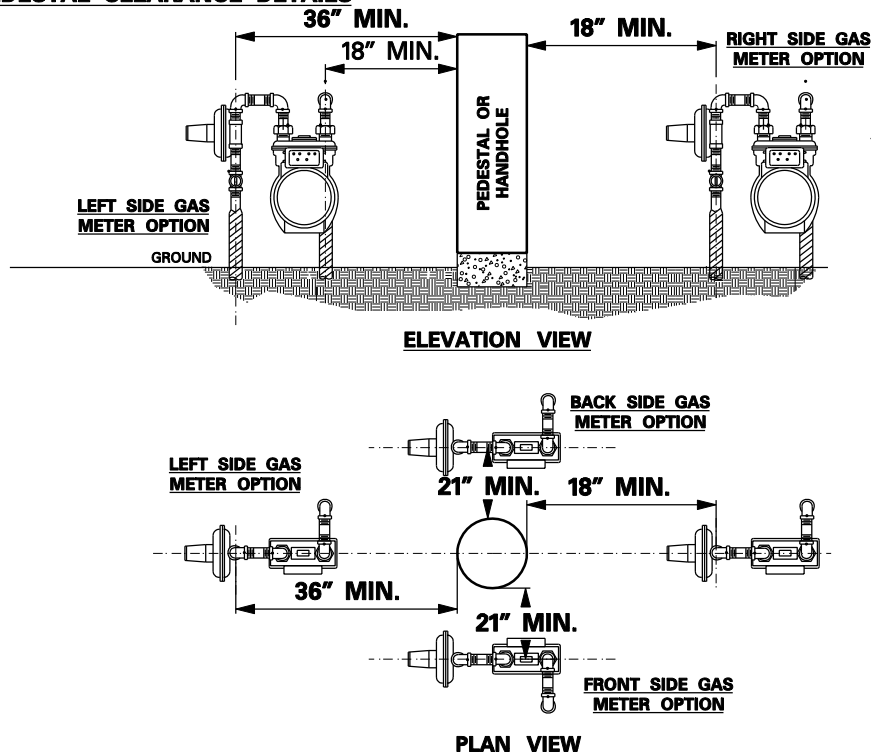
**CLEARANCES AROUND
PADMOUNTED EQUIPMENT**

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TRANSFORMER CLEARANCE DETAILS



PEDESTAL CLEARANCE DETAILS



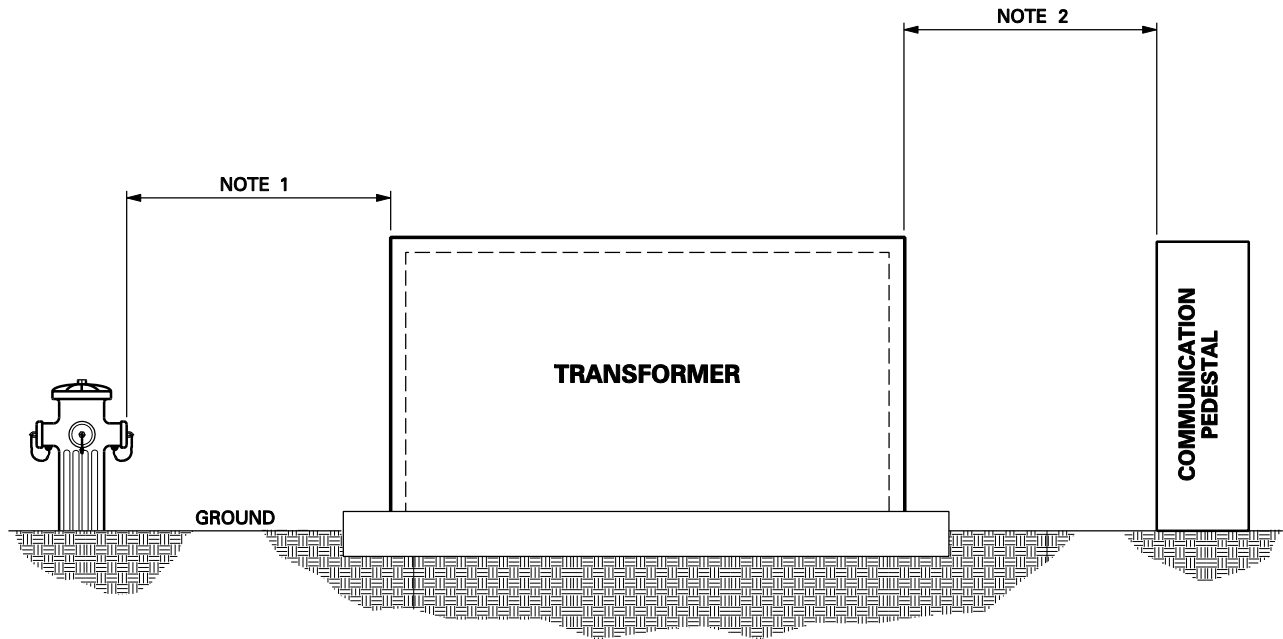
NOTES:

1. MEASUREMENTS ARE REFERENCED FROM THE INLET GAS RISER.
2. THE MEASUREMENTS WILL ENSURE:
 - A. THAT A MINIMUM CLEARANCE OF 36" IN. IS ATTAINED BETWEEN THE ENTIRE GAS METER INSTALLATION AND THE TRANSFORMER AND
 - B. THAT A MINIMUM CLEARANCE OF 12 IN. IS ATTAINED BETWEEN THE ENTIRE GAS METER INSTALLATION AND ALL OTHER ABOVEGROUND FACILITIES INCLUDING ELECTRIC AND OTHER UTILITY PEDESTALS AND HANDHOLES.
3. THIS STANDARD APPLIES TO 630 GAS METER INSTALLATIONS AND SMALLER. FOR LARGER METER INSTALLATIONS, CONTACT COMPANY REPRESENTATIVE FOR ASSISTANCE.
4. THIS DRAWING IS TYPICALLY USED WHEN THE GAS MAIN IS LOCATED IN AN ALLEY OR DEDICATED UTILITY EASEMENT.



ABOVEGROUND CLEARANCES FROM GAS METER INSTALLATIONS

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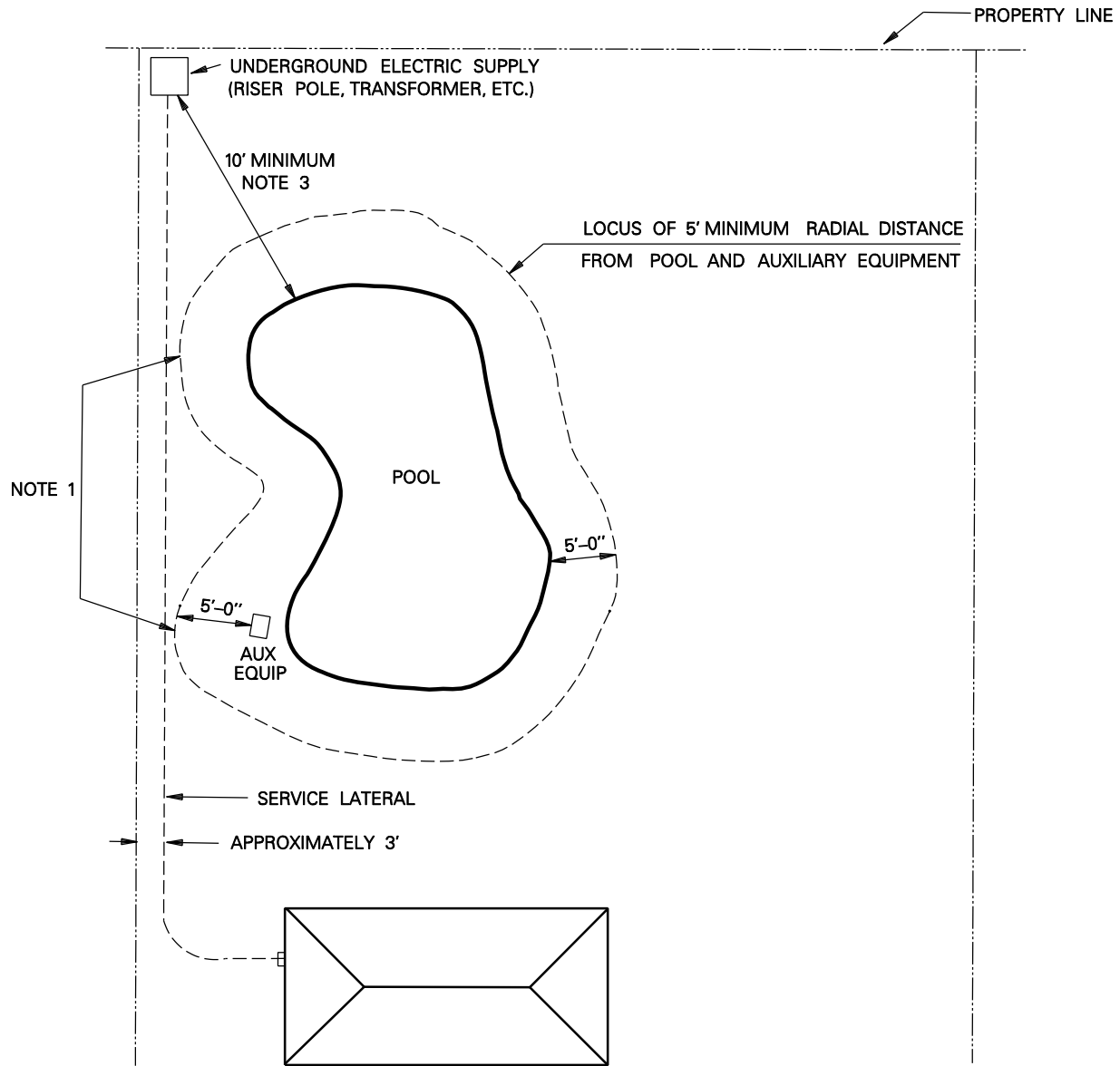


1. PADMOUNTED EQUIPMENT, PEDESTALS AND OTHER ABOVE GROUND ENCLOSURES SHOULD BE LOCATED NOT LESS THAN 4 FEET FROM FIRE HYDRANTS. WHERE CONDITIONS DO NOT PERMIT A CLEARANCE OF 4 FEET, A CLEARANCE OF NOT LESS THAN 3 FEET IS ALLOWED.
2. ALL ABOVE GROUND METALLIC POWER AND COMMUNICATION EQUIPMENT (PEDESTALS, TRANSFORMER CASES, APPARATUS CASES, ETC.) THAT ARE SEPARATED BY A DISTANCE OF 6 FEET OR LESS SHALL BE BONDED. REFERENCE DETAIL SHEET 16 FOR METHOD FOR PROVIDING FOREIGN UTILITY COMPANY EQUIPMENT GROUND.



CLEARANCES OF ABOVEGROUND EQUIPMENT – FOREIGN UTILITIES ENCLOSURES AND EQUIPMENT

DDS-3 UG DETAIL SHEET 29 OF 32



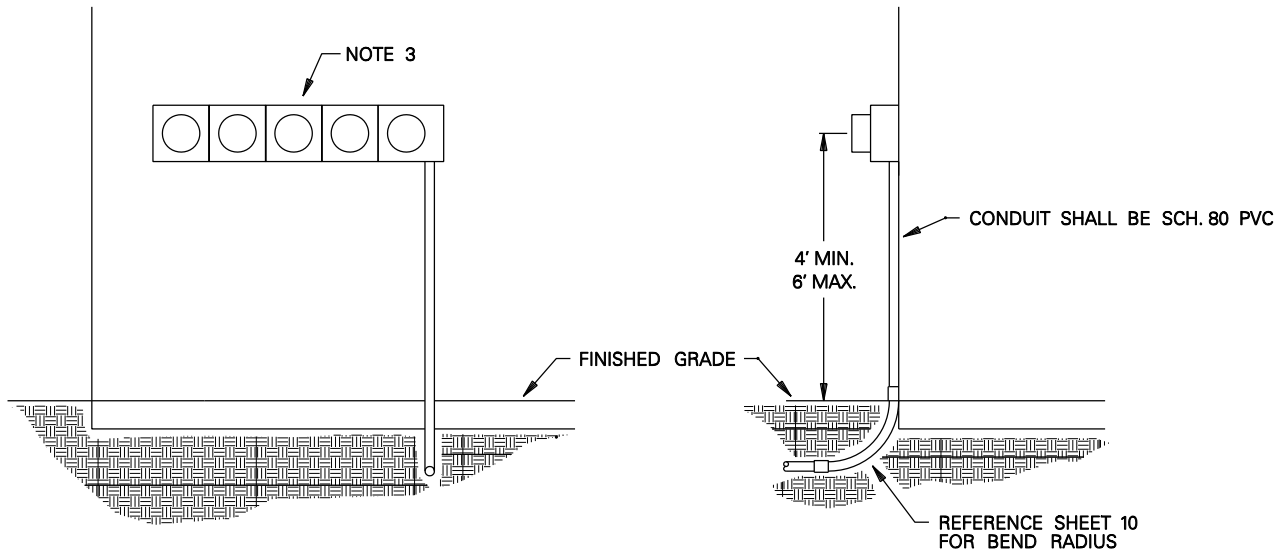
NOTES:

1. A SWIMMING POOL OR ITS AUXILIARY EQUIPMENT OR WATER PIPES SHALL NOT BE INSTALLED WITHIN 5 FEET OF AN EXISTING DIRECT BURIED UNDERGROUND SERVICE LATERAL.
2. WHERE A SWIMMING POOL MUST BE INSTALLED WITHIN 5 FEET OF EXISTING ITEMS MENTIONED IN NOTE 1, THE CLIENT SHALL PROVIDE AND INSTALL A CONDUIT INCLUDING PULL WIRE FROM THE SERVICE CONNECTION POINT TO THE METER.
3. PADMOUNTED EQUIPMENT MUST BE LOCATED 10 FEET OR MORE FROM THE WATER'S EDGE.

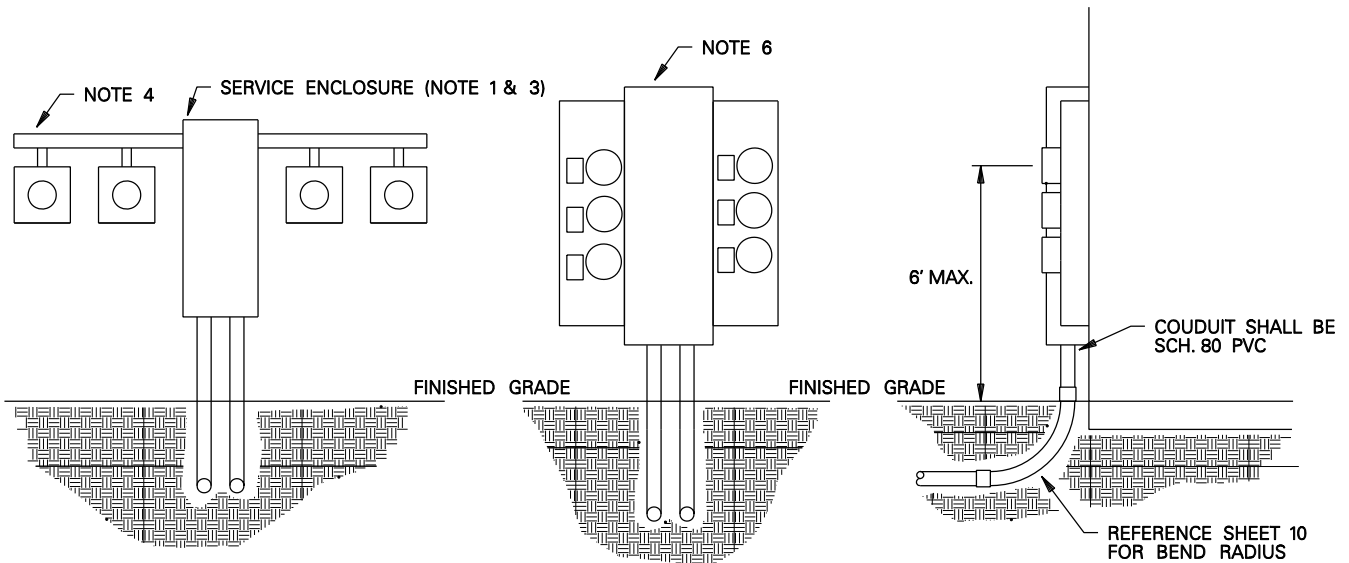


**LOCATION OF SERVICE LATERAL
NEAR A SWIMMING POOL**

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TYPICAL GANG METER INSTALLATION
WITHOUT SERVICE ENCLOSURE



TYPICAL GANG METER
WITH SERVICE ENCLOSURE

TYPICAL METER PACK

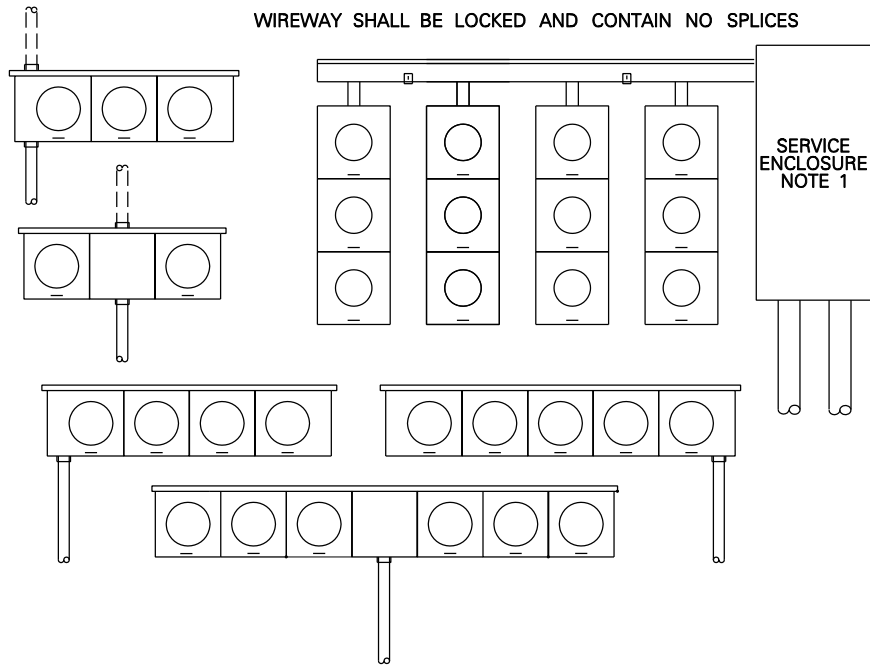
NOTES:

1. SERVICE ENTRANCE ENCLOSURE (FOR MULTIPLE METER INSTALLATIONS) PROVIDED BY COMPANY AND INSTALLED BY CONTRACTOR. CONTACT COMPANY REPRESENTATIVE FOR INFORMATION.
2. METER SOCKETS PROVIDED AND INSTALLED BY CONTRACTOR.
3. REFERENCE ONCOR'S "ELECTRIC SERVICE GUIDELINES" FOR METER AND SERVICE ENCLOSURE INFORMATION.
4. CONDUCTORS, RACEWAY AND GUTTER PROVIDED AND INSTALLED BY CONTRACTOR.
5. SERVICE ENTRANCE CONDUCTORS TO BE CONTINUOUS FROM METER SOCKET INTO SERVICE ENCLOSURE.
6. CONTACT COMPANY FOR APPROVAL OF METER PACKS PRIOR TO LETTING BIDS AND INSTALLING EQUIPMENT.

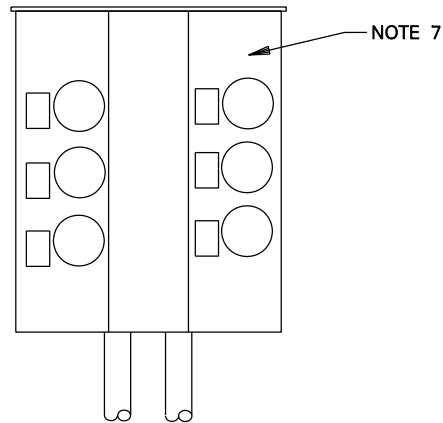


TYPICAL APARTMENT METER
INSTALLATIONS

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TYPICAL GANG METER INSTALLATIONS NOTE6



TYPICAL METER PACK INSTALLATION

NOTES:

1. SERVICE ENTRANCE ENCLOSURE (WHEN REQUIRED FOR MULTIPLE METER INSTALLATIONS) PROVIDED BY COMPANY AND INSTALLED BY CONTRACTOR. CONTACT COMPANY REPRESENTATIVE FOR INFORMATION.
2. METER SOCKETS PROVIDED AND INSTALLED BY CONTRACTOR.
3. REFERENCE ONCOR'S "ELECTRIC SERVICE GUIDELINES" FOR METER AND SERVICE ENCLOSURE INFORMATION.
4. CONDUCTORS, RACEWAY AND GUTTER PROVIDED AND INSTALLED BY CONTRACTOR.
5. SERVICE ENTRANCE CONDUCTORS TO BE CONTINUOUS FROM METER SOCKET INTO SERVICE ENCLOSURE.
6. EACH SOCKET MUST BE CLEARLY AND PERMANENTLY MARKED ON THE INTERIOR AND EXTERIOR OF THE METER SOCKET TO INDICATE EACH APARTMENT OR LOCATION SERVED.
7. CONTACT COMPANY FOR APPROVAL OF METER PACKS PRIOR TO LETTING BIDS AND INSTALLING EQUIPMENT.
8. CONTACT COMPANY FOR APPROVAL OF LAYOUTS OTHER THAN THOSE SHOWN ABOVE PRIOR TO LETTING BIDS AND INSTALLING EQUIPMENT.



**METER SOCKETS
TYPICAL LAYOUTS**

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