



ELECTRICIAN'S GUIDE

JUNE, 2020

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TRENCH AND CONDUIT

Conduit Requirements for Underground Residential & Commercial Developments

Scope:

The specifications contained herein detail NOVEC's requirements for underground residential and commercial developments. Underground conduit installations shall be governed by these specifications, any supplemental NOVEC specifications and any applicable codes and regulations. There also may be additional requirements in the final NOVEC construction plans for your specific project.

When Required:

Conduit shall be required for the following applications:

- All bulk feeders, typically 1000 MCM cable
- All commercial and industrial installations
- All non-residential units, apartment buildings, and condominiums
- All residential applications utilizing conduit
- All residential driveway crossings and concrete areas

Inspection Requirements:

NOTICE: Failure to obtain NOVEC approval of the installation before installing any cover or backfill will require all or part of the conduit system to be exposed for inspection and approval. NOVEC scheduler must be contacted two (2) working days prior to needing the inspection. For job sites in eastern Prince William County call: 703-392-1715. For job sites north of route 50 in Loudoun County call: 703-669-6070. For all other areas call: 703-754-6784.

The conduit system shall be inspected at various stages of installation. Materials or workmanship failing to meet NOVEC standards will be rejected. No work shall be covered, backfilled, concealed or embedded in concrete until it has been inspected and approved by NOVEC. No conduit shall be laid which is cracked, damaged, or contains any roughness which would injure the cable jacket.

The inspection shall include, but not be limited to the following:

- All trenches and excavations.
- All materials.
- All bedding, cover, and backfill material during or after installation as applicable.
- All equipment pads, pull boxes, ground rods, and other facilities, after setting in place, but prior to backfilling.

- All conduit installations, including cemented joints, sweeps, bell-ends, pull tape, and conduit plugs, prior to backfilling.
- All conduit terminations at transformer structures, pull boxes, switch locations, riser poles, and other applicable locations.
- All backfilling operations around structures and conduit runs.
- Conduits shall be free of any obstructions and debris. Under no circumstances shall antifreeze or other chemicals be put into conduit.

The successful pulling of the power cable will constitute acceptance of the conduit system. No formal written acceptance will be provided. The electrician/builder/developer shall be responsible for correcting any deficiencies.

Construction Requirements:

These specifications describe excavation and backfill of trenches, and the installation of conduit, sweeps, couplings, adapters, end bells, solvent cement (glue), pull string, pull boxes, manholes, ring risers, manhole frames, and lids, transformer pads, box pads, secondary pedestals, handholes, meter risers, ground rods, ground rod connectors, bare copper ground wire, conduit plugs, warning tape, and stub markers.

1. Conduit Type

- a. The number and size of conduit for each application shall be installed as shown in the construction plan.
- b. All conduits shall be gray, electrical grade, rigid, Polyvinyl Chloride (PVC) Schedule 40, heavy wall, sunlight resistant that conforms to NEMA TC2 Specifications and shall be permanently marked at regular intervals with the manufacturer's name or symbol, size, "SCH 40" and "PVC"

2. Sweeps, Couplings, End Bells and Adapters

- a. All sweeps, couplings, end bells, and adapters shall be PVC, Schedule 40, gray, electrical grade and conform to the same specifications as the conduit.
- b. Sweeps may be factory made or bent as required.
- c. The minimum radius for all sweeps less than three (3) inches in diameter is twenty four (24) inches. The minimum radius for all three (3) inch, four (4) inch, and six (6) inch diameter sweeps is thirty-six (36) inches. The minimum radius for all eight (8) inch diameter sweeps is forty-eight (48) inches.

3. Handling

- a. In transporting long lengths of conduit, provision should be made to support the full length to avoid damage due to excessive overhang.
- b. During the installation of multiple sections of glued conduit into a trench; all sections shall be supported to prevent bowing of conduit or cracking of joint seal.
- c. To minimize accidental mechanical damage, conduit should not be left exposed in an open trench longer than is absolutely necessary.

4. Cutting Conduit

A fine-tooth saw should be used to cut conduit. The conduit must be cut straight and cleaned of burrs.

5. Solvent Cement Welding

All joints shall be made with solvent cement in accordance with these specifications.

- a. Clear or gray regular bodied PVC cement may be used on conduit four (4) inches and smaller in diameter. Clear or gray medium bodied or all weather PVC cement shall be used on conduit six (6) and eight (8) inches in diameter.
- b. The chemicals used in solvent welding of conduit are intended to penetrate the surface of both the conduit and the fitting, which after curing result in a complete fusion at the joint. The over-use or under-use of such chemicals shall be avoided as such use will result in leaky joints or a weakened conduit system.
- c. Inspect solvent cement container for date. Cement over 12 months old shall not be used.
- d. Surfaces to be cemented shall be cleaned by wiping off all dust, dirt and moisture from these surfaces.
- e. With a non-synthetic bristle brush or dauber, apply an even coating of cement to the outside of the conduit and the inside of the socket. Make sure that the cement is applied to the entire depth of the socket. If some evaporation of solvent from the surfaces to be joined is noted, reapply cement, before assembling.
- f. It must be emphasized that most joint failures are caused by dry joints where an insufficient coating of solvent cement is applied, or when solvent has evaporated due to high temperature conditions.
- g. **WORK FAST!!**
- h. In weather below 40°F, use a primer to soften the joining surfaces before applying cement and allow a longer cure time. All weather or quick set cement may be used in lieu of primer when temperatures drop below 40°F.

- i. Slip conduit straight into the fitting with a slight twist until it bottoms. Hold the joint for 15 seconds (one minute in weather below 40°F) so that the conduit does not push out of the fitting. Do not twist or drive pipe after insertion is complete.
- j. 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:

60°F to 100°F	½ hour minimum
40°F to 60°F	1 hour minimum
20°F to 40°F	2 hour minimum
0°F to 20°F	4 hour minimum
- k. 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 can cause weakening of the material and subsequent failure.
- l. Solvent cans shall be kept covered and away from excess heat and flames when not in use. Quart cans are generally the largest practical size to use since the solvent dries rapidly. Use only solvent cement as furnished or recommended by the conduit manufacturer. Solvent cement thinner shall **not** be used for thinning cement which has thickened.
- m. Minimum trench widths may be utilized by assembling conduit above ground (allowing for weld cure period) and lowering the preassembled conduit bank into the trench.

6. Conduit Depth

Depths to the top of conduit to final grade shall be a minimum thirty (30) inches. In the event proper depth of conduit cannot be achieved, or where foreign objects threaten to interfere with the installation of conduit, a Concrete Protective Cover of the conduit may be used. Written approval is required for the use of Concrete Protective Cover. For additional information on this subject, refer to the Concrete Protective Cover section of this document. When conduit is located under roadways or within VDOT rights-of-way, cover shall be a minimum thirty-six (36) inches as required by the Virginia Department of Transportation (VDOT). Depth shall be measured from the top of the conduit to the top of the road surface. Refer to NOVEC Installation Drawing [ID-RC1](#). Unique conditions will be addressed in the NOVEC construction plan.

- a. All conduits shall be carefully aligned and laid to a uniform grade.
- b. Conduit shall enter pull boxes, box pads, and pedestals as shown on NOVEC Installation Drawings [ID-PBL](#), [ID-PBS](#), [ID-PBST](#), [ID-PEB](#), [ID-PEBT](#), [ID-PSB](#), and [ID-PSB1](#).

7. Conduit Trenching

Easement boundaries, street, lot, and trench lines shall be staked before any trenching is started. Construction plans specifying trench locations and depths shall be followed at all times. **NOVEC approval shall be required for any changes to construction plans.** Trench excavation shall include the excavation of any and all obstacles encountered, the removal and disposal of all debris including submerged and buried timber and piling, and all pumping that may be necessary for draining the excavation.

- a. Trench location shall be in as direct a line as possible between all distribution facilities and the customer's service entrance.
- b. The bottom of the trench shall have a uniform pitch and the trench bottom shall be solid and relatively smooth, or undisturbed earth, or well tamped, and free of any debris that may be detrimental to the conduit. Excavation shall be of a size and extent to permit proper installation of conduit and structures, as required.
- c. Minimum burial depths specified for all electric conduit shall be maintained during all phases of construction.
- d. Sweeps in the conduit run shall only be installed according to the final NOVEC design. All changes require written NOVEC approval.
- e. Adherence to OSHA, VOSHA and/or any local, state and national codes or ordinances shall be maintained at all times.
- f. All areas disturbed by construction shall be restored to a condition equal to or better than that which existed before construction. Special care shall be taken to prevent damage to existing buried structures and facilities.

8. Joint Conduit Trenches

Whenever practical, NOVEC will allow gas, telephone, cable television, and/or any other wire service facilities in a joint trench with NOVEC facilities sized to accommodate all facilities. **A joint use agreement is required between all utilities for a joint use trench.**

- a. The joint trench shall be excavated and backfilled to NOVEC's and other joint trench occupants' specifications.
- b. Minimum radial separation between electrical conduit and gas facilities shall be twelve (12) inches.
- c. Customer-owned fuel lines, including natural gas, oil, and propane lines are not permitted in the joint trench.
- d. Water, sewer, sanitary, or storm drain, and other wet utility piping are not permitted in the joint trench.
- e. Non-NOVEC facilities shall **not** be installed underneath of any NOVEC equipment pads or pull boxes.

9. Conduit Cover

A minimum of twelve (12) inches of cover, measured to the top of the conduit, is required to cover all conduits. Cover is comprised of suitable fill. Suitable fill is defined as any type of soil that does not contain ashes, cinders, shale, frozen material, loose debris, and rocks larger than two (2) inches in diameter. The material should fill the voids around the conduit. NOVEC red "warning" tape shall be installed in the entire length of the trench directly above the twelve (12) inches of cover. Refer to NOVEC Installation Drawings [ID-CI](#).

10. Conduit Backfill

- a. Spoils from the trench may be used as long as it is free of debris or other material that may damage the conduit system or cause settling.
- b. Backfill shall not contain ashes, cinders, shale, frozen material, loose debris, vegetation, or rocks larger than six (6) inches in any dimension.
- c. Trenches should be immediately backfilled following conduit system inspection and approval by NOVEC.
- d. Backfilling shall be accomplished in a continuous manner from one structure to the next, and shall not be placed over any open-ended (unplugged) conduits.
- e. All backfill shall be mechanically compacted to the density of the surrounding undisturbed soil by means available to prevent settling. Mechanical compaction shall not be within twelve (12) inches of the conduit.
- f. Refer to NOVEC Installation Drawing [ID-CI](#).

11. Pads, Pull Boxes, Box Pads, Pedestals and Handholes

- a. All transformer and enclosure pads, pull boxes, box pads, pedestals, and handholes shall be **level** and installed in accordance with NOVEC Installation Drawings.
- b. Four inches of rock dust or suitable material shall be placed on top of the final grade underneath single phase transformer and enclosure pads. Refer to NOVEC Installation Drawings [ID-PT1](#) and [ID-PE1](#).
- c. Three phase pads shall be installed on level undisturbed or compacted soil and minimum of 4" of compacted 21-A gravel. The pad shall be set so that it will be 6" above the final grade.
- d. A minimum of six (6) inches base course of # fifty-seven (57) gravel shall be placed under all pull boxes and shall be thoroughly compacted. Certain soil conditions may require removal below normal depth and subsequent additional clean fill or gravel added and compacted to insure sound base course. Installation shall be complete prior to commencing any cable pulling. Pull boxes shall be installed such that their covers will be three (3) inches above final grade, with the exception of UP1047T (PARKING LOT RATED PULL BOX), which shall

be installed level with the parking lot grade. In no case shall the final grade; obstruct or hamper access to the pull box covers. Pull boxes shall only be placed within NOVEC easements. Covers shall be closed on pull boxes at all times except when cable is being pulled. **UP1047T is the only Pull Box rated for occasional traffic, all other Pull Boxes are not traffic rated and shall not be driven across.** Refer to NOVEC Installation Drawings [ID-PBL](#), [ID-PBS](#), and [ID-PBST](#).

- e. A minimum of six (6) inches of base course of # fifty-seven (57) gravel shall be placed under all box pads. Refer to Installation Drawings [ID-PEB](#), [ID-PSB](#), and [ID-PSB1](#).
- f. Conduits shall be terminated in pull boxes and with end bells.
- g. Pedestals shall be installed in accordance with details shown in NOVEC Installation Drawing [ID-PD1](#).
- h. Handholes shall be installed in accordance with details shown in NOVEC Installation Drawing [ID-HH1](#). Handholes are **not** traffic rated and shall not be driven across.
- i. A retaining wall shall be installed where slopes exist that would undermine or cover equipment (i.e., transformers) due to sharp drop-off or rise of grade. Retaining wall design will require NOVEC approval and in no case shall the retaining wall hamper door openings or placement of such equipment.
- j. In no instance shall final grades impede proper access or operation of NOVEC distribution equipment.
- k. NOVEC approved protective guards, such as concrete-filled pipe (bollards), shall be required in areas where the facilities are subject to damage. Refer to NOVEC Installation Drawings [ID-B](#) and [ID-BL](#).
- l. All pad openings should be covered during the construction process except when work is being performed.

12. Manholes

NOVEC approved manholes are required in streets or when pull boxes cannot be utilized. Manholes shall be externally 9' x 9' x 7 ½' (small) or 10' x 13' x 8' (large) concrete structures and shall have solid iron lids and frames. Manholes shall have a minimum of twenty five (25) inches of compacted cover. Ring risers shall be installed as necessary, to a maximum of forty eight (48) inches, to achieve final grade. All conduit shall have a minimum of six (6) inches of concrete encasement, extending thirty six (36) inches from the manhole, and shall be terminated in the manhole with PVC end bells flush with the inside surface of the structure wall. All knock-outs shall be grouted around after conduit installation to seal manhole. No cables shall lie on the floor of the manhole. All cables shall be secured on racks. A ground loop shall be attached to the walls inside the manhole. For further information on the installation of manholes, refer to drawings [UPMH.____](#) and [ID-MH1](#).

13. Ground Rods

- a. An approved $\frac{3}{4}$ " X 8' copperclad driven ground rod and ground rod connector shall be installed in the opening of each single phase transformer and single phase enclosure pad. The ground rod shall be level with the top of the pad. Refer to NOVEC Installation Drawings [ID-PT1](#) and [ID-PE1](#).
- b. Three phase transformers shall have an approved $\frac{3}{4}$ " X 8' copperclad driven ground rod and ground rod connector installed on the primary side of the opening, six (6) inches above ground level, with three (3) inches of radial clearance. Refer to NOVEC Drawings UP1003 and UP1004.
- c. An approved $\frac{3}{4}$ " X 8' copperclad driven ground rod, ground rod connector and #4 bare soft drawn solid copper ground wire shall be installed in each box pad. Four (4) inches of the ground rod shall extend above the soil inside of the box pad. Six (6) feet of wire shall be securely connected to the ground rod and coiled inside of the box pad. Refer to NOVEC Installation Drawings [ID-PSB](#), [ID-PSB1](#), and [ID-PEB](#).
- d. The large 4' x 8' pull boxes shall have an approved $\frac{3}{4}$ " X 8' copperclad driven ground rod and ground rod connector installed. Four (4) inches of ground rod shall extend through drain slot into pull box. Refer to NOVEC Installation Drawing [ID-PBL](#).
- e. Two (2) approved $\frac{3}{4}$ " X 8' copperclad driven ground rods and ground rod connectors shall be installed outside of each manhole. Both ends of the manhole shall have a separate driven ground rod. Both ground rods shall be attached to the manhole ground loop. Refer to NOVEC Drawings [UPMH.____](#) and [ID-MH1](#).
- f. Ground rods are not required in small pull boxes, pedestals or handholes.

14. Concrete Protective Cover

The concrete for conduit protective cover shall be 3,000 PSI with a maximum of $\frac{3}{4}$ " aggregate. Surfaces upon which concrete is to be placed shall be free of standing water, mud and debris. Absorptive surfaces against which concrete are to be placed shall be moistened. Concrete shall be placed to cover at least six (6) inches on the top and both sides of the conduit. The fall of concrete should be broken before it drops on the conduit. Where concrete protection of conduit is used, six (6) inches of well dampened earth shall be placed over concrete protection in the trench 2 hours after the concrete is poured. Backfilling of the trench excavation may then be completed. Backfill should be placed uniformly in layers and each layer thoroughly compacted. Backfill should be compacted to the density of the surrounding undisturbed soil. All conduit stubs shall be free of concrete three (3) feet from the stub end.

15. Detectable Pull Tape

A detectable pull tape with a minimum tensile strength of 2500 lbs. shall be installed in each conduit. Five (5) feet of slack shall be secured to the conduit plugs at each end of the conduit.

16. Pole Riser

Conduit riser locations (quadrant) on the pole shall be designated and shown on the NOVEC construction plan. All risers shall be plugged above ground at the base of the pole until cable is pulled. Refer to NOVEC Installation Drawing [ID-RP1](#).

17. Meter Riser

All meter risers shall be slip fit to limit damage from settlement. Ditch must be tamped at meter base before backfilling. Sweep at bottom of meter riser shall be resting on compacted soil. Metal locknut and plastic bushing must be installed. Refer to NOVEC Installation Drawing [ID-RM1](#).

18. Streetlights

Streetlights shall be installed and located where indicated on construction plans. Streetlight poles will be installed twenty-four (24) inches from handhole per NOVEC Installation Drawing [ID-HH1](#).

19. Conduit Stubs

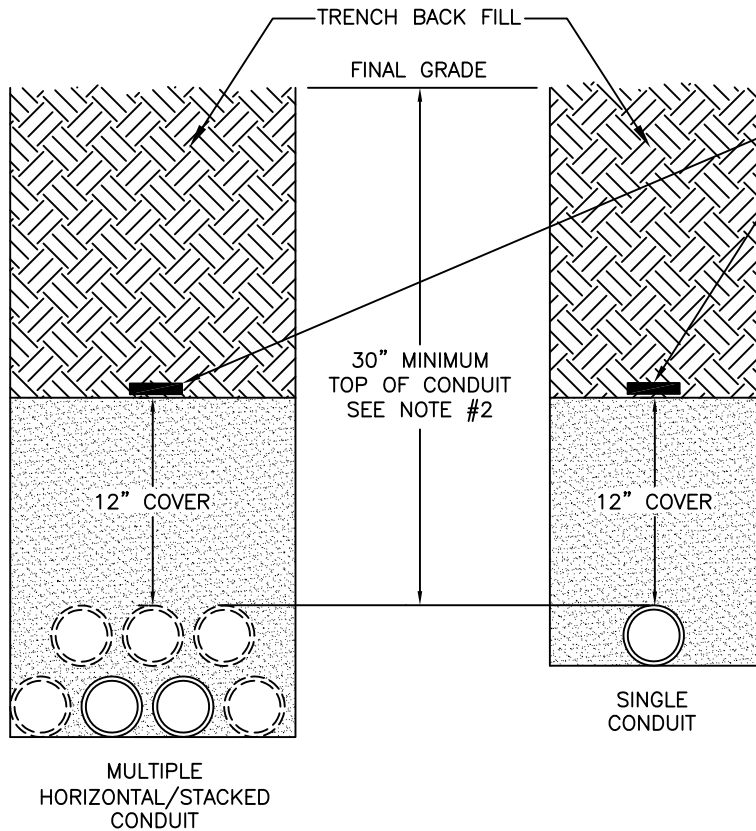
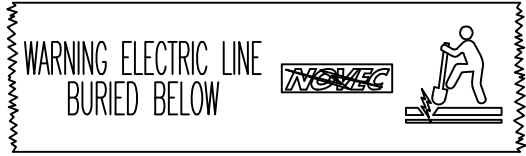
All conduits that are extended to a location where they are not terminated (even temporarily) shall be plugged and marked with a conduit stub marker. Refer to NOVEC Installation Drawing [ID-CS1-UC](#). Conduit stubs for service laterals shall extend a minimum of five (5) feet into the lot away from the mainline trench, as shown on construction plan. This will allow for connection of the service conduit at a later date.

20. Other Utilities

Conduit, terminal enclosures or other structures belonging to other utilities shall be located so they do not interfere with electrical installations nor impede the operation or maintenance of electrical facilities.

21. As-builts

An "as-built" of the facilities documenting the separation distance between NOVEC facilities and all gas and wet utility crossings is required.



RED "NOVEC" WARNING TAPE (UM13) IS TO BE INSTALLED ENTIRE LENGTH OF TRENCH, TWELVE (12) INCHES ABOVE CONDUIT.

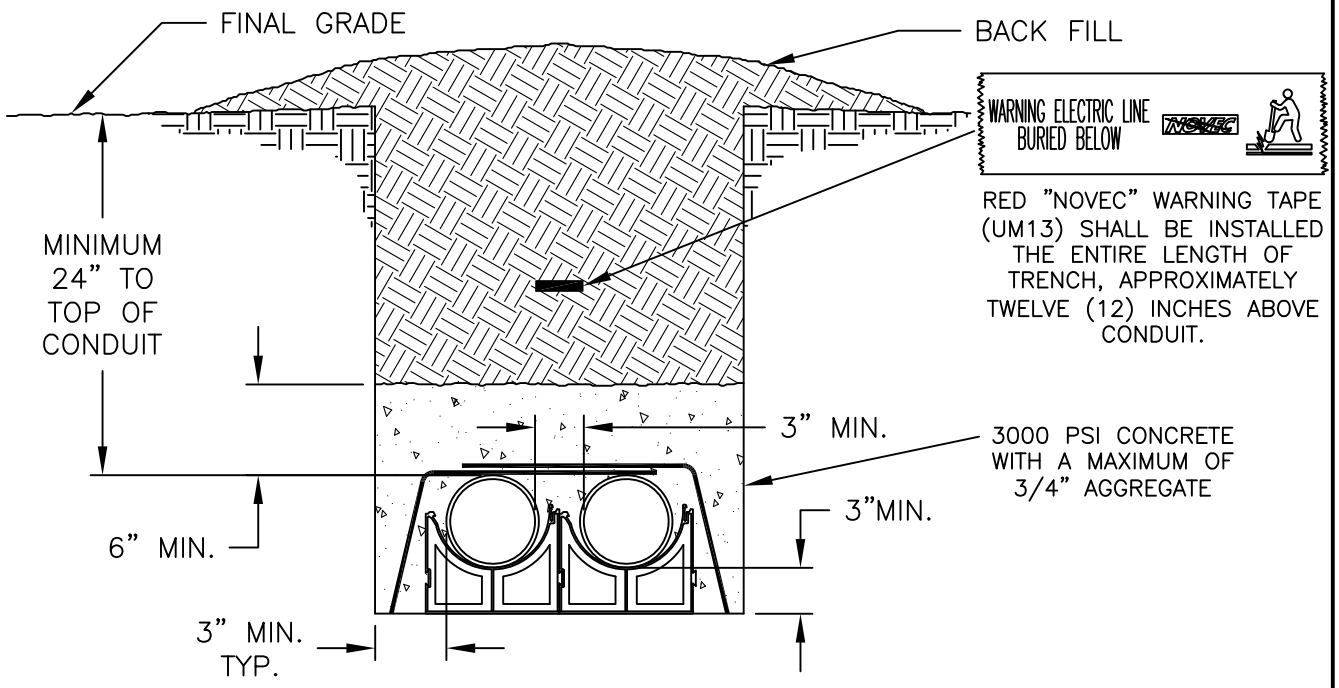
NOTES:

1. A MINIMUM RADIAL SEPARATION OF 12" IS REQUIRED BETWEEN NOVEC CONDUIT AND GAS FACILITIES. 12" SEPARATION IS ALSO RECOMMENDED BETWEEN ALL OTHER UTILITIES.
2. UNDER ROAD SURFACES AND INSIDE ALL ROAD RIGHT OF WAYS THE COVER TO TOP OF CONDUIT SHALL BE A MINIMUM OF 36" TO FINISHED GRADE AND MUST ADHERE TO LOCAL, COUNTY AND/OR STATE ROAD CROSSING SPECIFICATIONS. (SEE ID-RC1)
3. NO SEPARATION IS REQUIRED BETWEEN NOVEC OWNED FACILITIES.
4. ALL CONDUIT SHALL BE INSTALLED WITHIN NOVEC EASEMENTS.
5. NUMBER, SIZE, AND SPACING OF CONDUIT SHALL BE DETERMINED BY NOVEC.
6. ALL CONDUIT SHALL BE INSPECTED BY NOVEC: NOVEC SCHEDULER MUST BE CONTACTED 2 WORKING DAYS PRIOR TO NEEDING INSPECTION. FOR JOB SITES IN EASTERN PRINCE WILLIAM COUNTY CALL: 703-392-1715. FOR JOB SITES NORTH OF ROUTE 50 IN LOUDOUN COUNTY CALL: 703-669-6070. FOR ALL OTHER AREAS CALL: 703-754-6784.



INSTALLATION DRAWING FOR
CONDUIT INSTALLATION

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	01/26/04
Revision	KJB	HPZ	SPEC. COMMITTEE	04/20/06
Revision	J	HPZ	SPEC. COMMITTEE	03/01/07
Revision	KJB	KMW	SPEC. COMMITTEE	02/14/19



WARNING ELECTRIC LINE BURIED BELOW 

RED "NOVEC" WARNING TAPE (UM13) SHALL BE INSTALLED THE ENTIRE LENGTH OF TRENCH, APPROXIMATELY TWELVE (12) INCHES ABOVE CONDUIT.

3000 PSI CONCRETE WITH A MAXIMUM OF 3/4" AGGREGATE

CONDUIT SUPPORTS AND REBAR SHALL BE INSTALLED AT EACH JOINT AND AT FIVE FEET INTERVALS

SCHEDULE 40 PVC OR ZINC COATED, GALVANIZED RIGID STEEL CONDUIT

ADJACENT RODS SHALL BE TIED TOGETHER WITH WIRE

PLUG ENDS OF CONDUIT DURING CONSTRUCTION TO PREVENT ENTRANCE OF MOISTURE AND DEBRIS INTO CONDUIT (NOT GLUED)

#3 REBAR SHALL BE DRIVEN INTO BOTH SIDES OF THE TRENCH FLOOR AND BENT OVER THE CONDUIT TO PREVENT FLOTATION DURING INSTALLATION OF CONCRETE

NOTES:

1. NO CONCRETE ENCASED CONDUIT SHALL BE ALLOWED WITHOUT PRIOR APPROVAL FROM NOVEC.
2. ALL CONDUITS MUST BE INSTALLED WITH A MINIMUM OF 12" OF VERTICAL AND HORIZONTAL SEPARATION FROM ANY OTHER UTILITIES.
3. SURFACES UPON WHICH CONCRETE IS TO BE PLACED SHALL BE FREE OF STANDING WATER, MUD AND DEBRIS. ABSORPTIVE SURFACES AGAINST WHICH CONCRETE ARE TO BE PLACED SHALL BE MOISTENED.
4. THE FALL OF THE CONCRETE SHALL BE BROKEN BEFORE IT DROPS ON THE CONDUIT. CARE MUST BE EXERCISED IN THE PUDDLING OF THE CONCRETE, TO ELIMINATE VOIDS BETWEEN THE CONDUITS.
5. STUBS SHALL NOT BE ENCASED 3' FROM THE STUB END.
5. THE TRENCH AND CONDUIT SHALL BE INSPECTED BY NOVEC PRIOR TO AND DURING THE POURING OF THE CONCRETE: NOVEC SCHEDULER MUST BE CONTACTED 2 WORKING DAYS PRIOR TO NEEDING INSPECTION. FOR JOB SITES IN EASTERN PRINCE WILLIAM COUNTY CALL: 703-392-1715. FOR JOB SITES NORTH OF ROUTE 50 IN LOUDOUN COUNTY CALL: 703-669-6070. FOR ALL OTHER AREAS CALL: 703-754-6784.

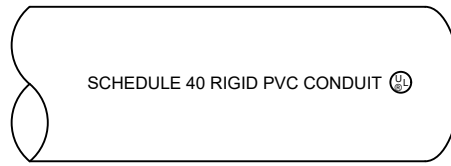
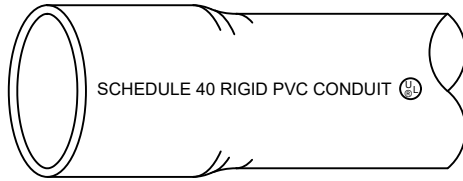


INSTALLATION DRAWING FOR CONCRETE ENCASEMENT OF CONDUIT

	By	Checked	Approved	Date
Original	DWB	MLH	SPEC. COMMITTEE	06/14/93
Revision	KJB	MLH	SPEC. COMMITTEE	12/02/99
Revision	KJB	HPZ	SPEC. COMMITTEE	04/24/06
Revision	J	HPZ	SPEC. COMMITTEE	03/20/08

ID-CEC1

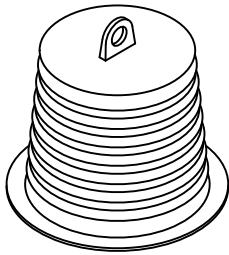
PVC CONDUIT 10' LENGTH



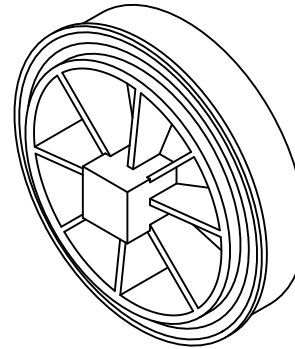
UD2010 - 1"
 UD2020 - 2"
 UD2025 - 2 1/2"
 UD2030 - 3"

UD2040 - 4"
 UD2060 - 6"
 UD2080 - 8"

END CAPS



UDC2 - 2"
 UDC25 - 2 1/2"
 UDC3 - 3"
 UDC4 - 4"
 UDC6 - 6"



UDC8 - 8"

PVC CONDUIT 20' LENGTH (FOR BORING ONLY)



UD2360 - 6"
 UD2380 - 8"

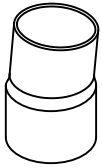


PVC CONDUIT ASSEMBLIES

	By	Checked	Approved	Date
Original	GBH	MLH	SPEC. COMMITTEE	2/4/02
Revision	KJB	MLH	SPEC. COMMITTEE	12/14/11
Revision	KJB	HPZ	SPEC. COMMITTEE	03/28/13
Revision	KJB	HPZ	SPEC. COMMITTEE	07/31/14

UD20__
 UD23__
 UDC__

5°



UDS2080.05 – 8" 5° COUPLING

22°



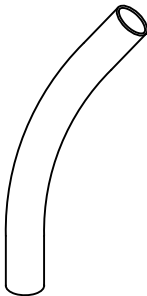
UDS2020.22 – 2" 22° 36R
 UDS2025.22 – 2 1/2" 22° 36R
 UDS2030.22 – 3" 22° 36R
 UDS2040.22 – 4" 22° 36R
 UDS2060.22 – 6" 22° 36R
 UDS2080.22 – 8" 22° 48R

30°



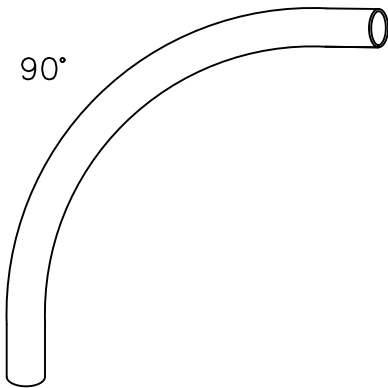
UDS2020.30 – 2" 30° 36R
 UDS2025.30 – 2 1/2" 30° 36R
 UDS2030.30 – 3" 30° 36R
 UDS2040.30 – 4" 30° 36R
 UDS2060.30 – 6" 30° 36R

45°



UDS2020.45 – 2" 45° 36R
 UDS2025.45 – 2 1/2" 45° 36R
 UDS2030.45 – 3" 45° 36R
 UDS2040.45 – 4" 45° 36R
 UDS2060.45 – 6" 45° 36R
 UDS2080.45 – 8" 45° 48R

90°



UDS2020.90 – 2" 90° 24R
 UDS2025.90 – 2 1/2" 90° 24R
 UDS2030.90 – 3" 90° 36R
 UDS2040.90 – 4" 90° 36R
 UDS2060.90 – 6" 90° 36R
 UDS2080.90 – 8" 90° 48R

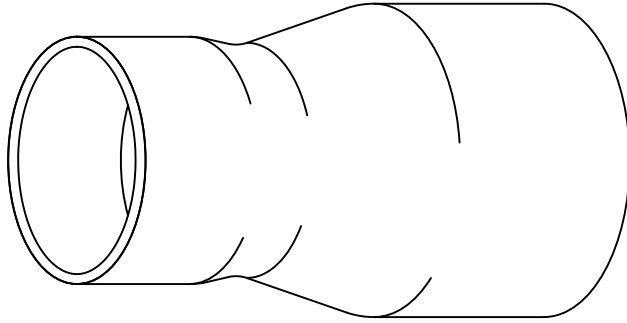


GRAY SCHEDULE 40 UL RATED
PVC CONDUIT
SWEEPS

	By	Checked	Approved	Date
Original	GBH	MLH	SPEC. COMMITTEE	2/4/02
Revision	KJB	MLH	SPEC. COMMITTEE	11/12/04
Revision	KJB	HPZ	SPEC. COMMITTEE	12/14/11
Revision	KJB	HPZ	SPEC. COMMITTEE	03/28/13

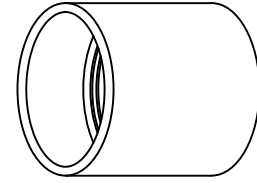
UDS _ _ _ _ . _ _

ADAPTER COUPLINGS



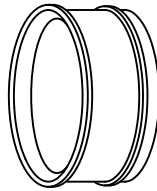
UDA325 - 2 1/2" TO 3"
 UDA46 - 4" TO 6"
 UDA68 - 6" TO 8"

COUPLINGS

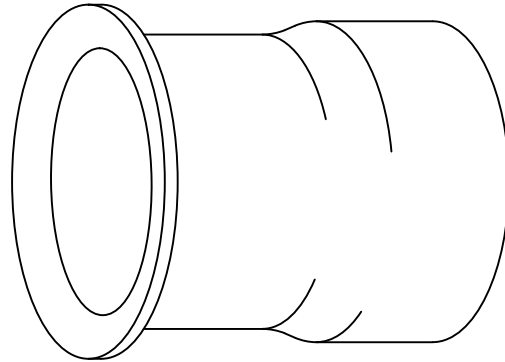


UDCC2 - 2"
 UDCC25 - 2 1/2"
 UDCC3 - 3"
 UDCC4 - 4"
 UDCC6 - 6"
 UDCC8 - 8"

END BELL FLARES



UF2.5 - 2 1/2"
 UF3 - 3"
 UF4 - 4"
 UF6 - 6"



UF8 - 8"



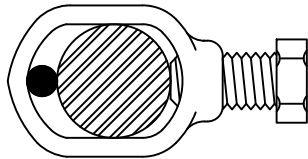
UL RATED, GRAY, PVC CONDUIT
 COUPLINGS AND ADAPTERS

	By	Checked	Approved	Date
Original	GBH	MLH	SPEC. COMMITTEE	2/4/02
Revision	KJB	HPZ	SPEC. COMMITTEE	12/14/11
Revision	KJB	HPZ	SPEC. COMMITTEE	03/28/13
Revision	KJB	HPZ	SPEC. COMMITTEE	10/11/13

UDA__
 UDCC__
 UF__

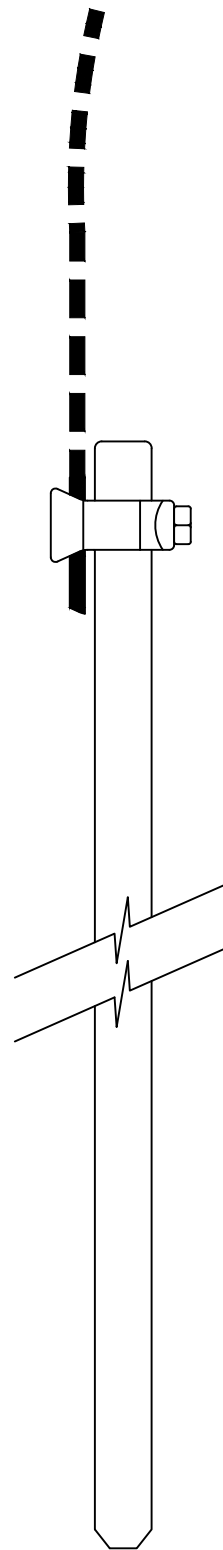
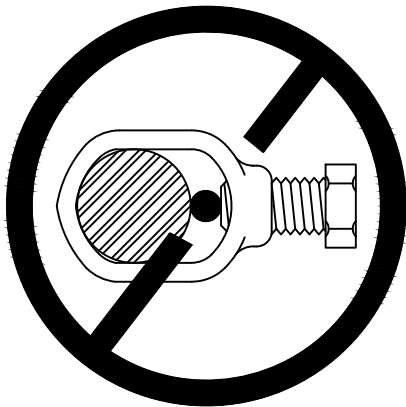
CORRECT

GROUND WIRE OPPOSITE SIDE OF SCREW



INCORRECT

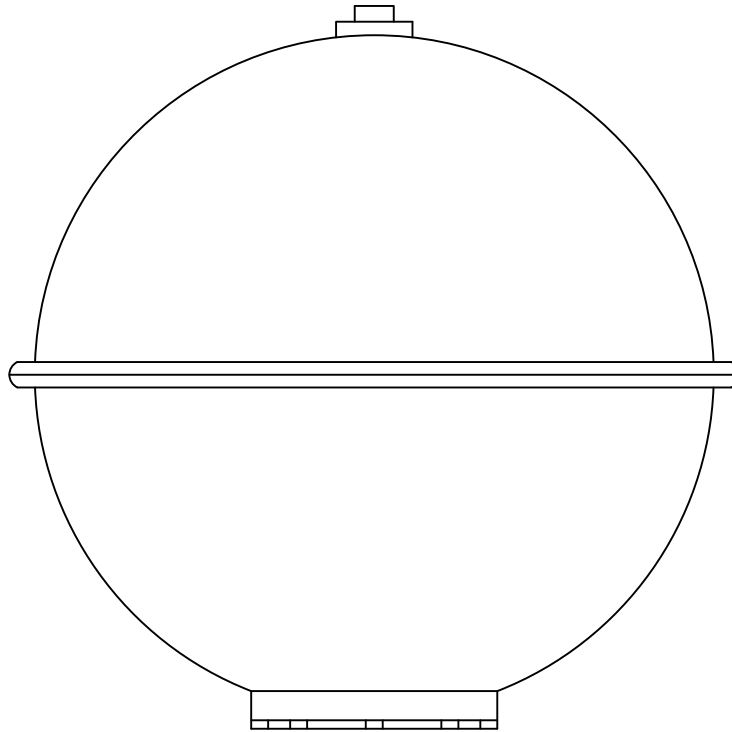
GROUND WIRE SAME SIDE AS SCREW



GROUND ROD FOR
PAD MOUNT EQUIPMENT

	By	Checked	Approved	Date
Original	DWB	MLH	SPEC. COMMITTEE	02/10/94
Revision	KJB	MLH	SPEC. COMMITTEE	04/20/04
Revision	KJB	MLH	SPEC. COMMITTEE	11/07/05
Revision				

UG1001
UG1002



4" ELECTRONIC BALL MARKER



ELECTRONIC MARKER

	By	Checked	Approved	Date
Original	LTD	MLH	SPEC. COMMITTEE	10/05/93
Revision	DWB	MLH	SPEC. COMMITTEE	12/19/96
Revision	KJB	MLH	SPEC. COMMITTEE	11/07/05
Revision	KJB	HPZ	SPEC. COMMITTEE	12/08/11

UK6021

WARNING ELECTRIC LINE
BURIED BELOW



TO BE INSTALLED CONTINUOUSLY OVER
AND APPROXIMATELY 12" ABOVE ALL
BURIED CABLE AND CONDUIT.

FOR CUSTOMER INSTALLED CONDUIT,
NOVEC SHALL SUPPLY WARNING TAPE
AT TIME OF INSPECTION PRIOR TO
BACKFILLING.



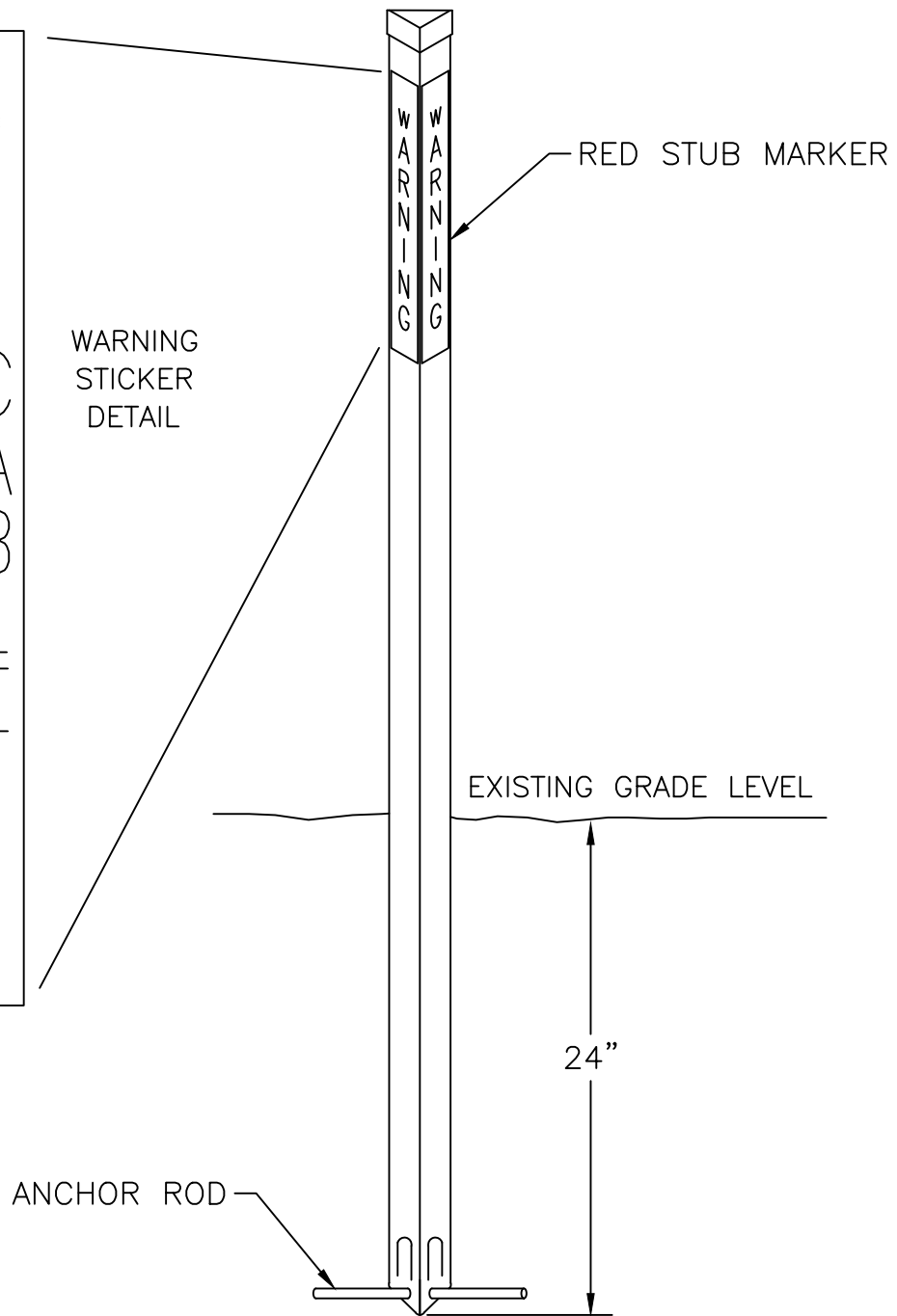
UNDERGROUND
WARNING TAPE

	By	Checked	Approved	Date
Original	DWB	MLH	SPEC. COMMITTEE	04/08/99
Revision	LTD	MLH	SPEC. COMMITTEE	11/12/99
Revision	KJB	MLH	SPEC. COMMITTEE	03/27/06
Revision	KJB	HPZ	SPEC. COMMITTEE	04/24/06

UM13



WARNING STICKER
DETAIL



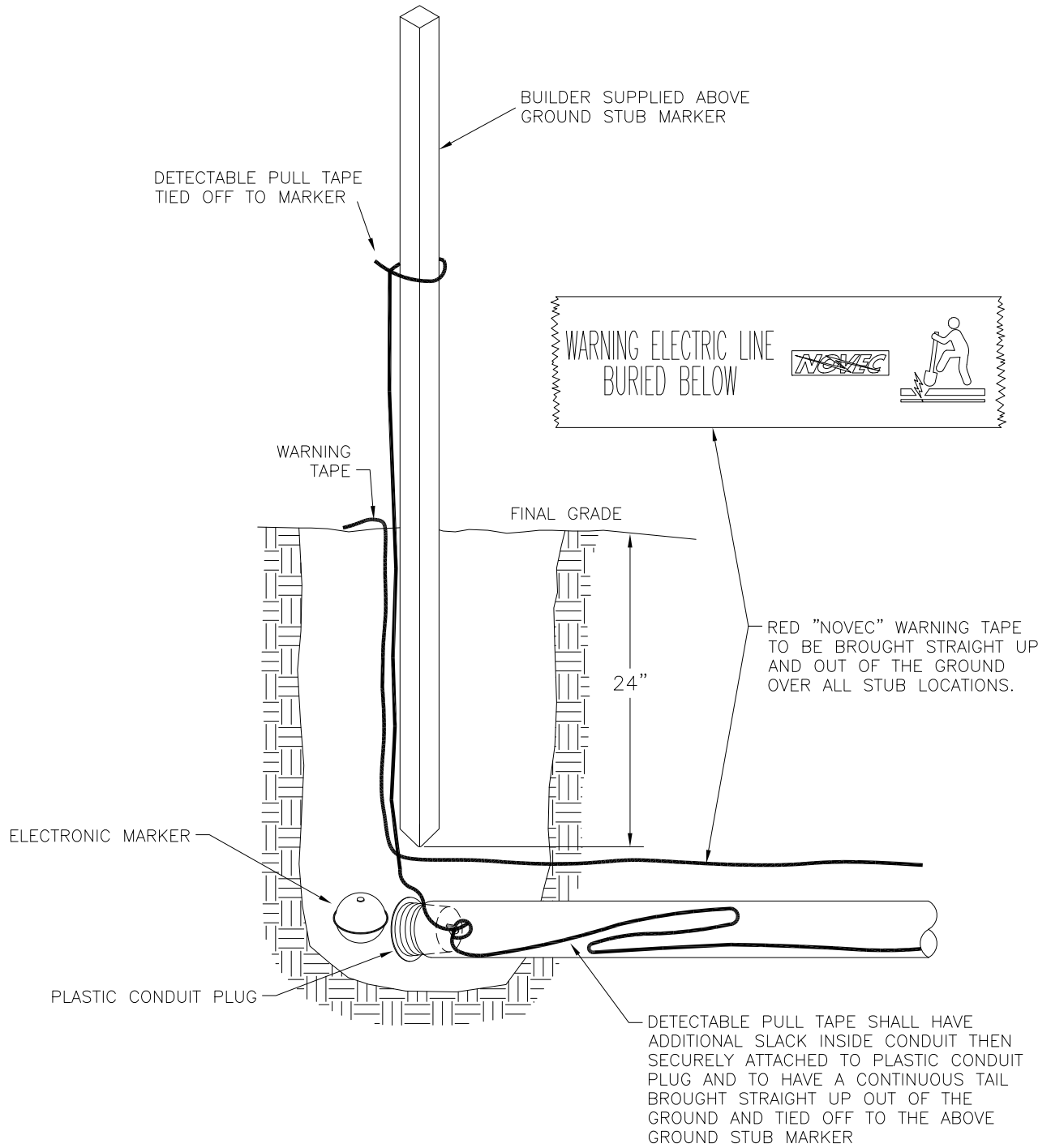
ANCHOR ROD

SEE INSTALLATION DRAWING ID-CS1-DB & ID-CS1-UC FOR
ADDITIONAL INFORMATION



UNDERGROUND CABLE AND CONDUIT
STUB MARKER

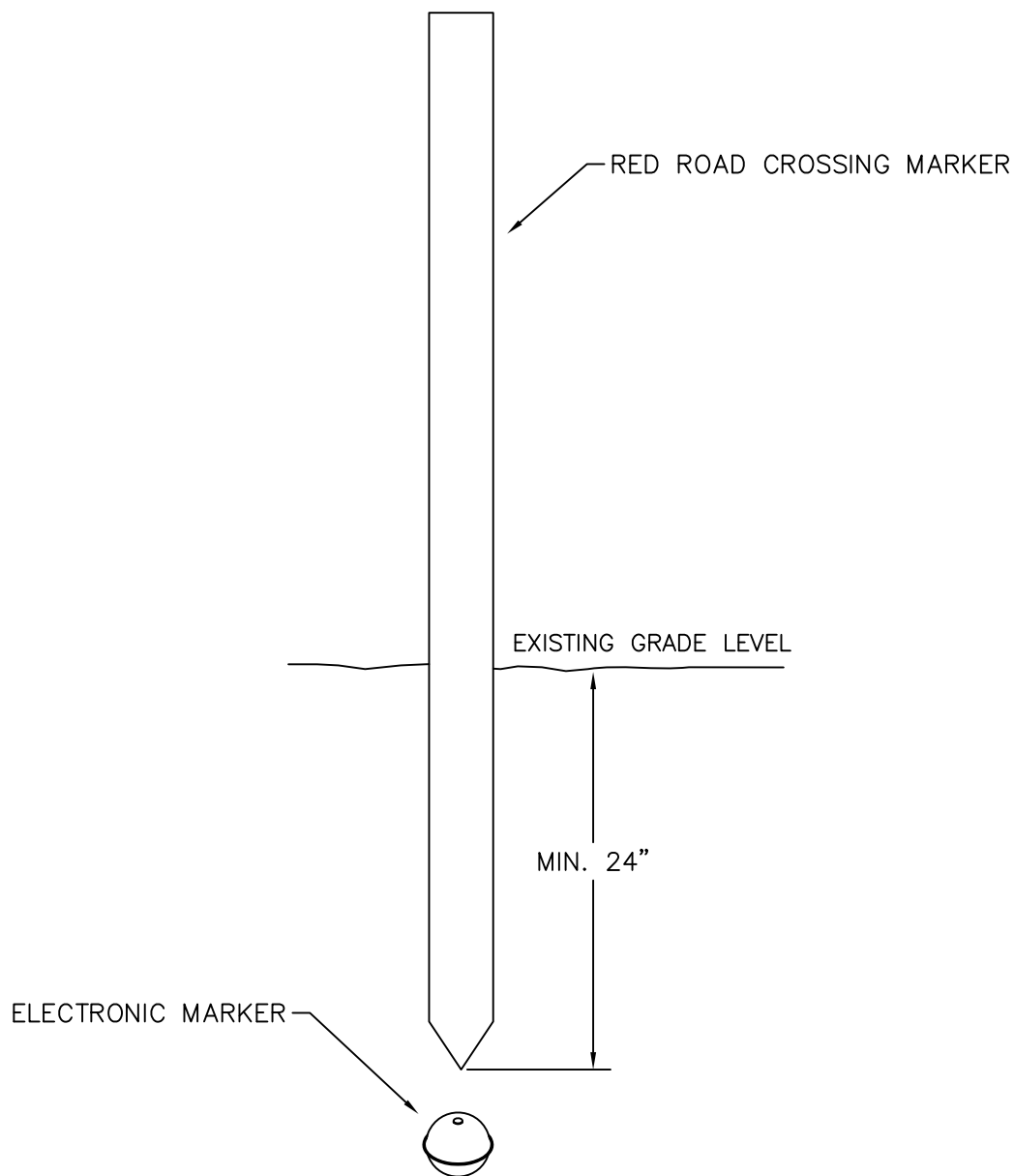
	By	Checked	Approved	Date
Original	LTD	MLH	SPEC. COMMITTEE	09/29/00
Revision	KJB	MLH	SPEC. COMMITTEE	01/12/04
Revision	KJB	MLH	SPEC. COMMITTEE	11/07/05
Revision	KJB	HPZ	SPEC. COMMITTEE	5/17/12



INSTALLATION DRAWING FOR
CONDUIT STUB

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	01/26/04
Revision	KJB	MLH	SPEC. COMMITTEE	12/12/05
Revision	KJB	HPZ	SPEC. COMMITTEE	5/17/12
Revision	KJB			8/1/19

ID-CS1-UC



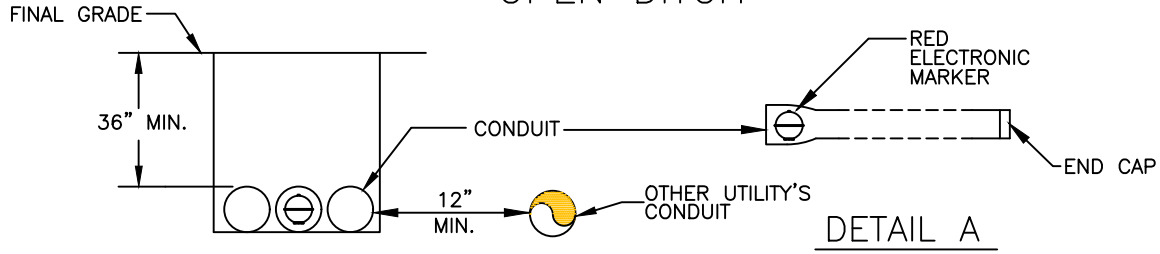
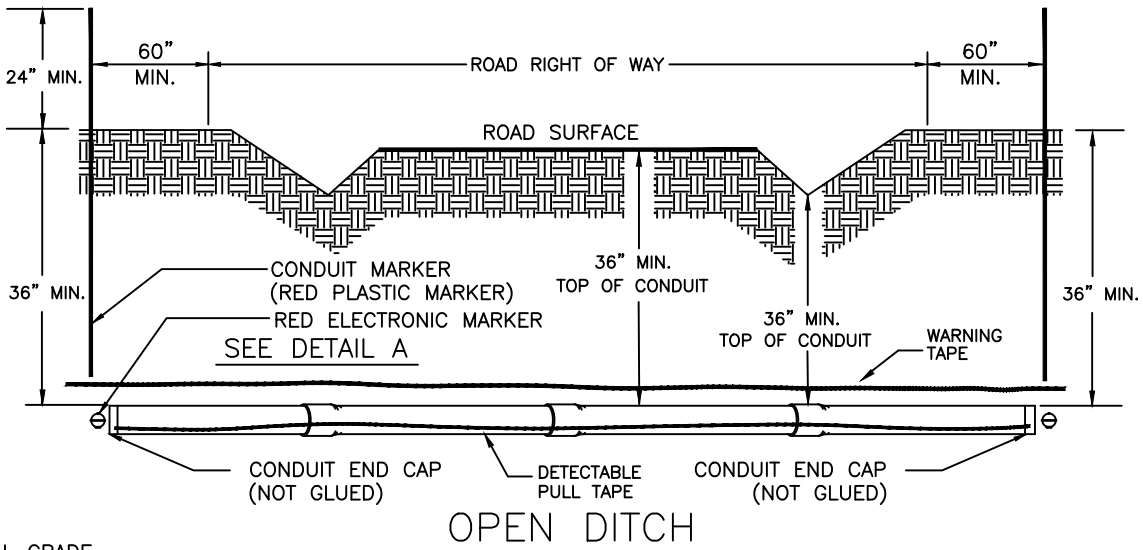
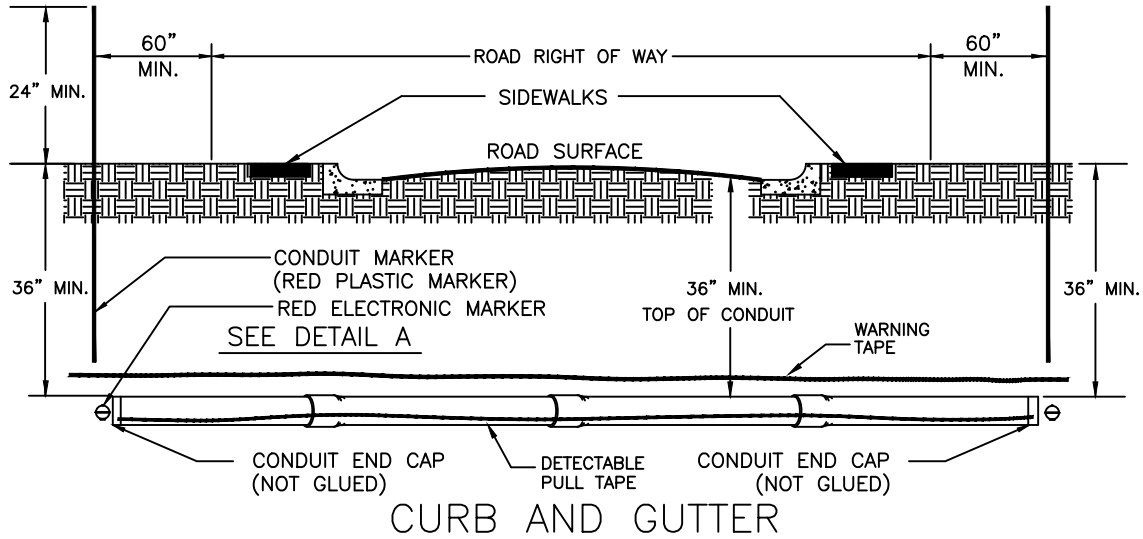
SEE INSTALLATION DRAWING ID-RC1 FOR ADDITIONAL INFORMATION



ROAD CROSSING & ELECTRONIC MARKER

	By	Checked	Approved	Date
Original	KJB	HPZ	SPEC. COMMITTEE	6/29/12
Revision				
Revision				
Revision				

UM12.EM



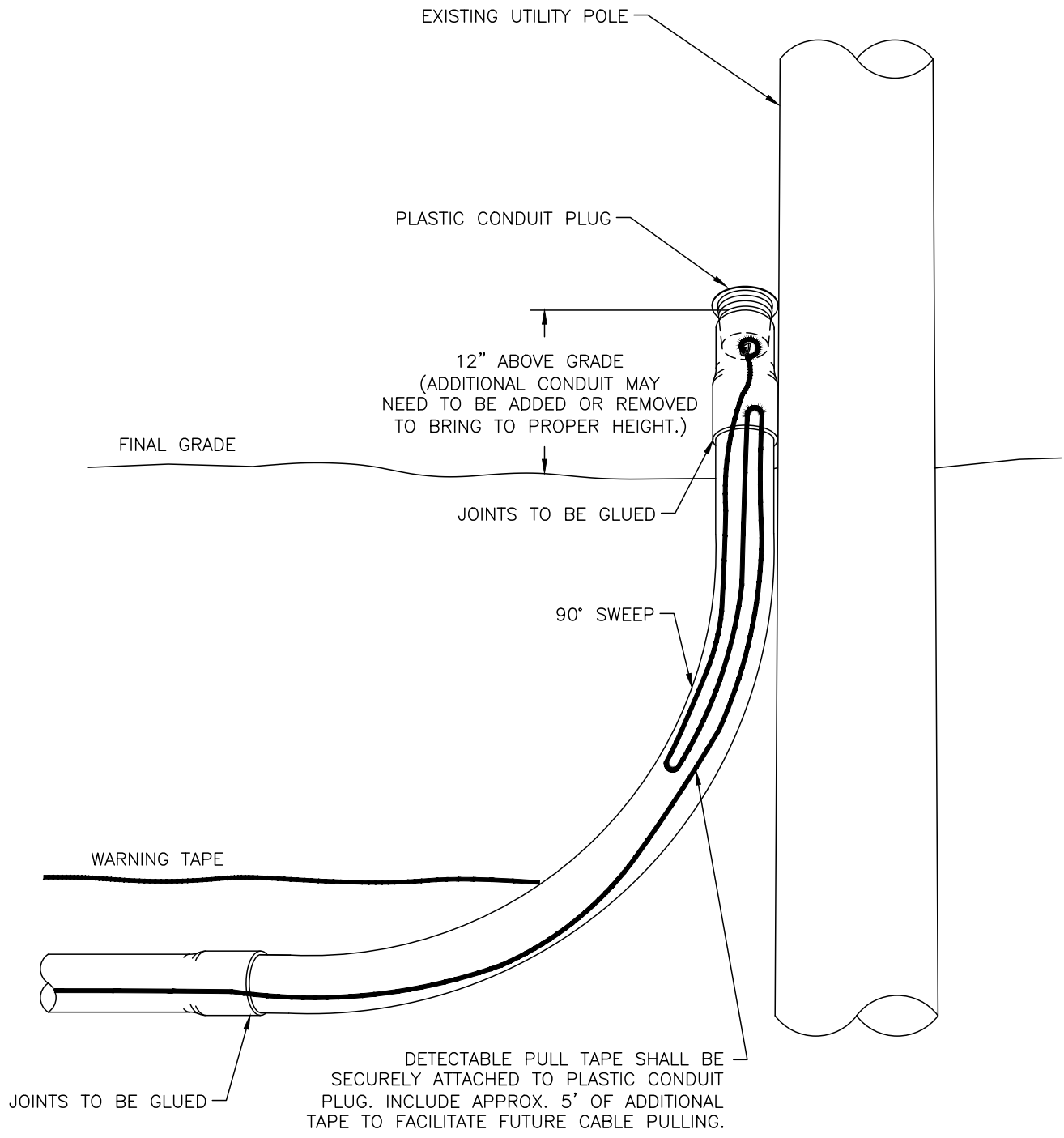
NOTES

1. THE CONDUIT, (GREY, SCHEDULE 40 PVC, UL RATED,) CONDUIT MARKER (RED PLASTIC MARKER), RED ELECTRONIC MARKER, WARNING TAPE, END CAPS AND GLUE WILL BE SUPPLIED BY NOVEC, BUT INSTALLED BY THE DEVELOPER.
2. UNDER ROAD SURFACES THE COVER TO TOP OF CONDUIT SHALL BE A MINIMUM OF 36". OUTSIDE OF ROAD SURFACES THE COVER TO TOP OF CONDUIT SHALL BE A MINIMUM OF 36" TO FINISHED GRADE AND MUST ADHERE TO LOCAL, COUNTY AND/OR STATE ROAD CROSSING SPECIFICATIONS.
3. A MINIMUM OF 12" HORIZONTAL AND VERTICAL SEPARATION BETWEEN NOVEC FACILITIES AND "ALL" OTHER UTILITIES IN ALL PUBLIC AND ROAD RIGHT OF WAYS .
4. THE EXACT LOCATION OF THE ROAD CROSSINGS TO INCLUDE SIZE AND QUANTITY WILL BE SPECIFIED BY NOVEC.
5. CONDUIT WILL BE INSTALLED TO A DISTANCE OF 5' BEHIND THE ROAD RIGHT OF WAY ON TO PRIVATE PROPERTY.
6. ALL CONDUIT WILL BE CAPPED AT THE ENDS, ALL JOINTS ARE TO BE GLUED AND ELECTRONIC MARKERS INSTALLED.
7. DEVELOPER SHALL SUPPLY AND INSTALL DETECTABLE PULL TAPE.
8. TO ENSURE PROPER DEPTHS VARIOUS SWEEPS ARE AVAILABLE UPON REQUEST FROM NOVEC.



**INSTALLATION DRAWING FOR
CROSSING ROADS WITH
CURB AND GUTTER OR OPEN DITCH**

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	01/26/04
Revision	KJB	MLH	SPEC. COMMITTEE	04/24/06
Revision	KJB	HPZ	SPEC. COMMITTEE	12/05/11
Revision	KJB			



INSTALLATION DRAWING FOR
CONDUIT POLE RISER

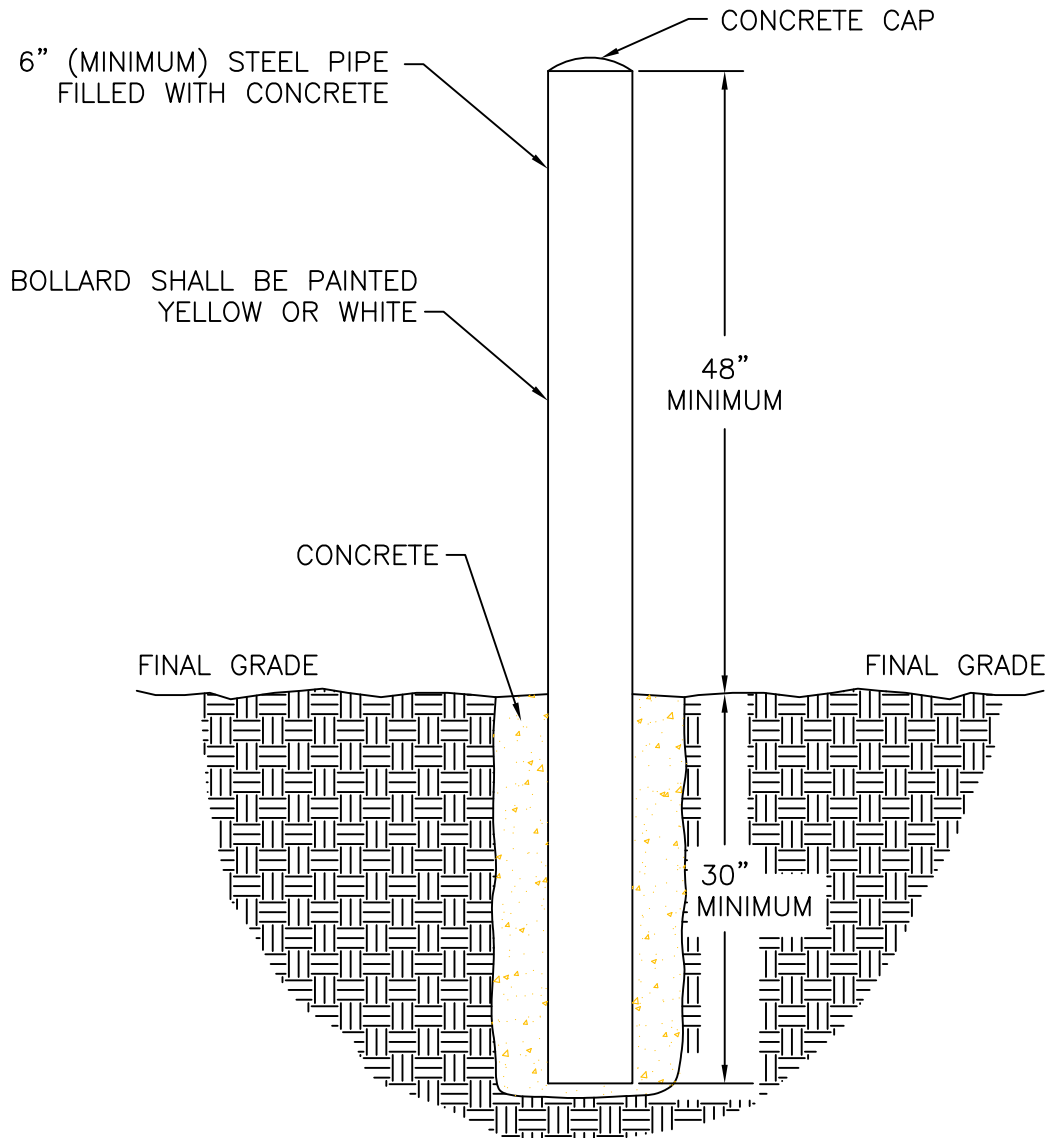


	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	01/26/04
Revision	KJB	MLH	SPEC. COMMITTEE	11/29/04
Revision	KJB	MLH	SPEC. COMMITTEE	12/12/05
Revision	KJB	KMW	SPEC. COMMITTEE	11/26/19

EQUIPMENT

NOTES:

1. BOLLARDS SHALL BE INSTALLED AROUND ALL PADMOUNTED EQUIPMENT THAT IS EXPOSED TO VEHICULAR TRAFFIC.
2. ALL BOLLARD LOCATIONS SHALL BE APPROVED BY NOVEC PRIOR TO INSTALLATION.
3. FOR PROPER POSITIONING REFER TO SPECIFICATION ID-BL.
4. BOLLARDS SHALL BE INSTALLED AT A MINIMUM OF 18" FROM A POLE.

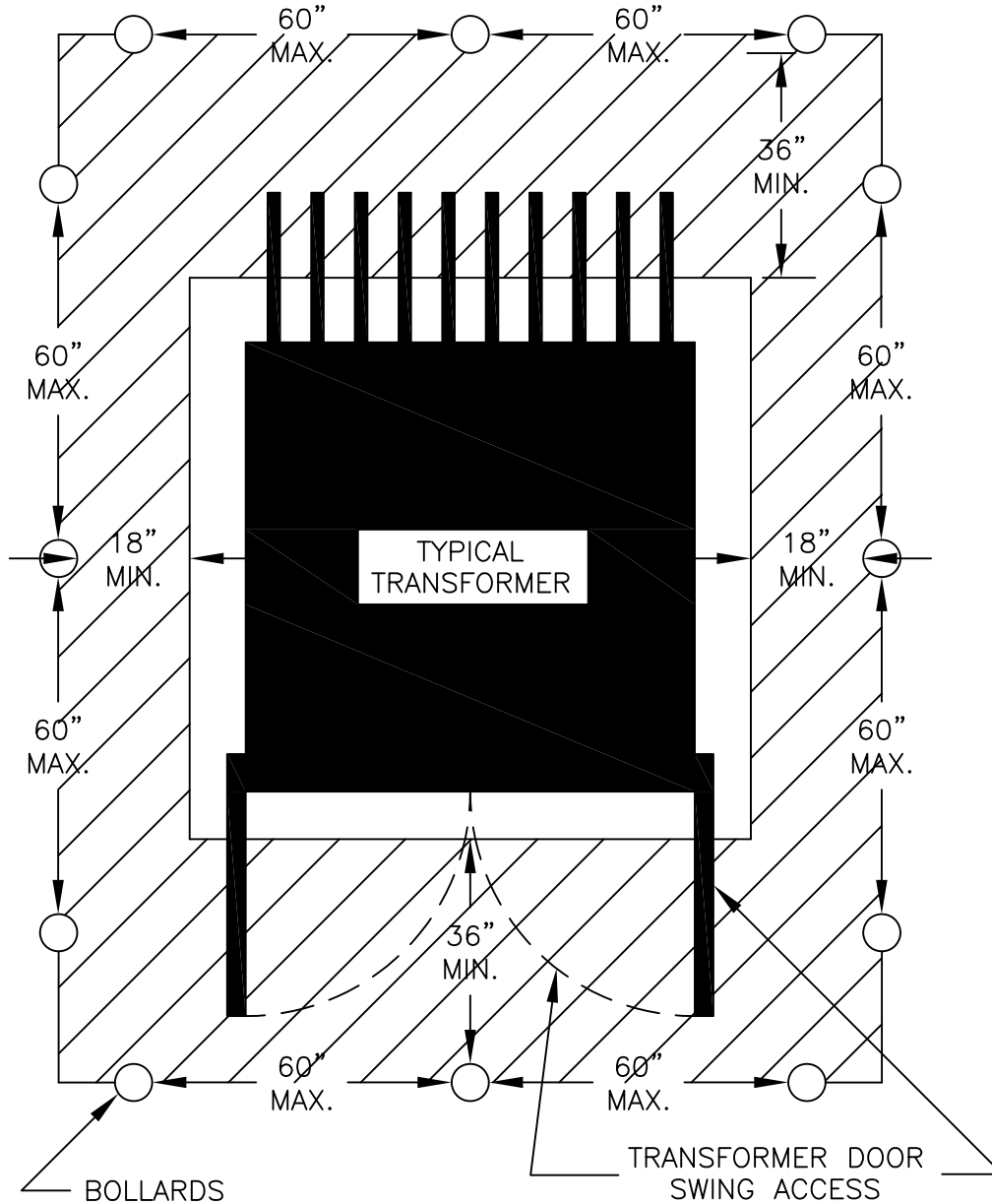


INSTALLATION DRAWING FOR
BOLLARD INSTALLATION

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	05/22/03
Revision	KJB	MLH	SPEC. COMMITTEE	11/07/05
Revision				
Revision				

NOTES:

1. BOLLARDS SHALL BE INSTALLED AROUND ALL PADMOUNTED EQUIPMENT THAT IS EXPOSED TO VEHICULAR TRAFFIC.
2. BOLLARDS SHALL NOT INTERFERE WITH THE OPENING OF ANY AND ALL ACCESS DOORS OF THE PADMOUNT EQUIPMENT.
3. INSTALLATION OF BOLLARDS SHALL BE COMPLETE BEFORE THE PRIMARY CABLE IS ENERGIZED.
4. ALL BOLLARD LOCATIONS SHALL BE APPROVED BY NOVEC PRIOR TO INSTALLATION.
5. FOR PROPER INSTALLATION REFER TO ID-B.

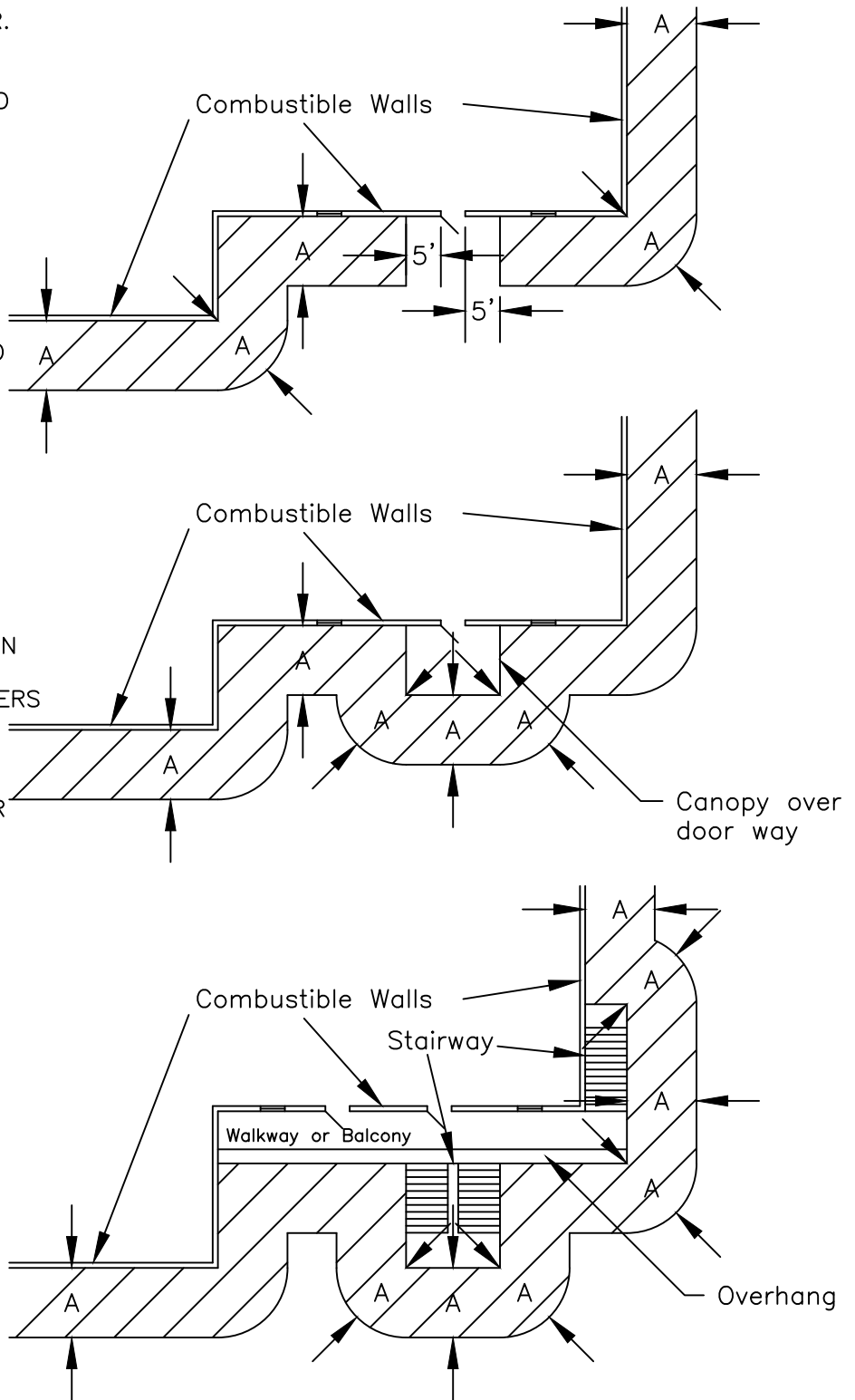


INSTALLATION DRAWING FOR
BOLLARD LOCATIONS AROUND
PADMOUNT EQUIPMENT

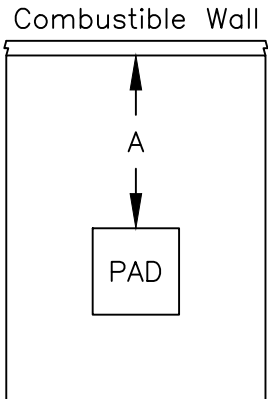
	By	Checked	Approved	Date
Original	J	HPZ	SPEC. COMMITTEE	05/17/07
Revision				
Revision				
Revision				

NOTES:

1. COMBUSTIBLE WALLS ARE DEFINED AS HAVING A FIRE RESISTANCE RATING OF LESS THAN ONE HOUR.
2. TRANSFORMER PADS SHALL BE LOCATED OUTSIDE OF THE SHADED AREA "A".
3. BUILDINGS OF THREE FLOORS OR LESS; "A" SHALL BE MEASURED FROM OUTER EDGE OF ALL OVERHANGS.
4. BUILDINGS OF FOUR OR MORE FLOORS; "A" SHALL BE MEASURED FROM THE BUILDING WALL.
5. FOR CLEARANCE PURPOSES, FIRE ESCAPES, OUTSIDE STAIRS, AND COVERED WALKWAYS ATTACHED TO OR BETWEEN BUILDINGS, SHALL BE CONSIDERED AS PART OF THE BUILDING.
6. FRONT OF TRANSFORMER SHALL NOT FACE WALL AND REMAIN OPEN AND ACCESSIBLE. FOR OTHER CLEARANCES AROUND TRANSFORMERS SEE DRAWING ID-TC1.
7. IF CLEARANCE "A" CANNOT BE OBTAINED, REFER TO ID-BW FOR CLEARANCES.



TRANS. KVA	1-PH	3-PH	DIST. "A"
25-167	X		10 FT.
75-500		X	20 FT.
500-2500		X	30 FT.

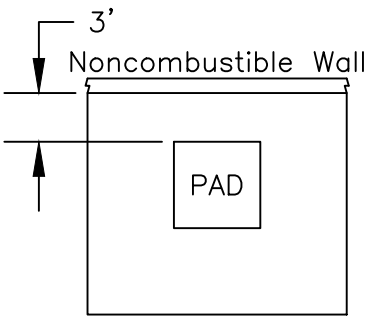
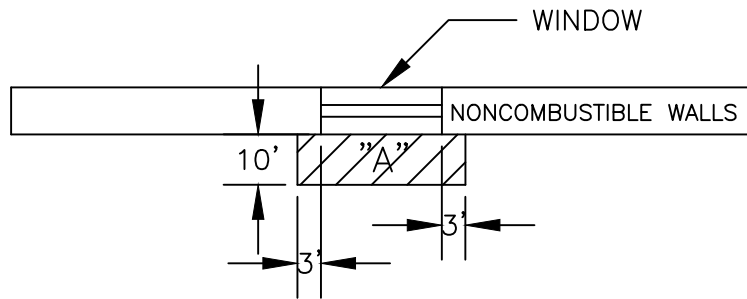
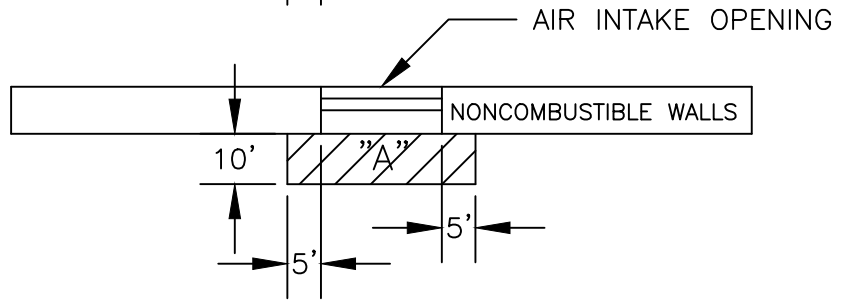
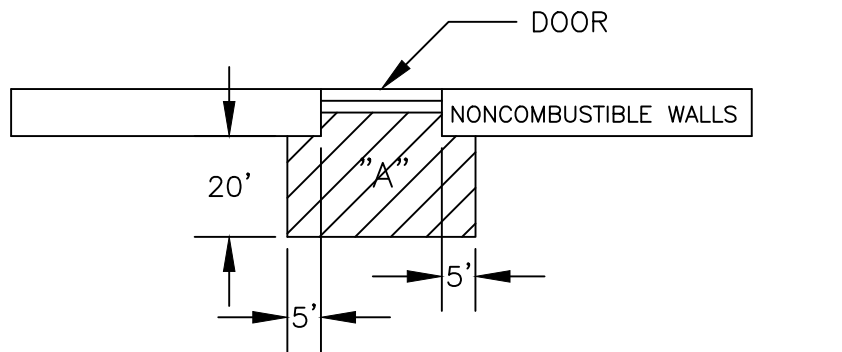
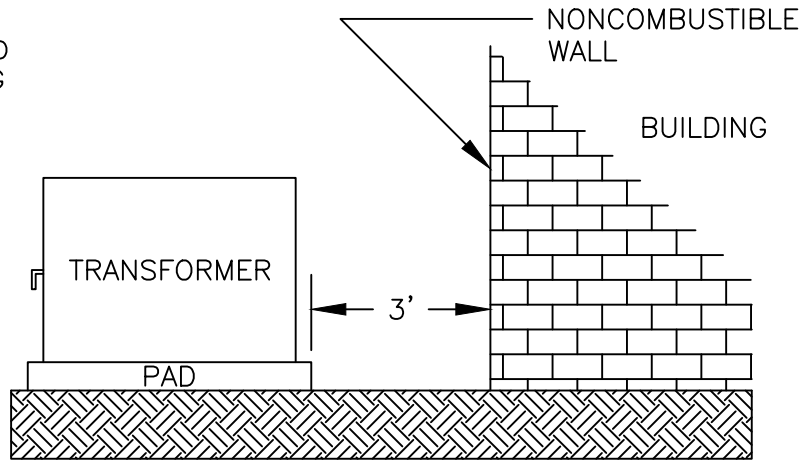


INSTALLATION DRAWING FOR CLEARANCES OF PADMOUNT TRANSFORMERS TO COMBUSTIBLE WALLS

	By	Checked	Approved	Date
Original	J	HPZ	SPEC. COMMITTEE	06/14/07
Revision	J	HPZ	SPEC. COMMITTEE	12/03/09
Revision				
Revision				

NOTES:

1. NONCOMBUSTIBLE WALLS ARE DEFINED AS HAVING A FIRE RESISTANCE RATING EQUAL TO OR GREATER THAN ONE HOUR.
2. TRANSFORMER PADS SHALL BE LOCATED OUTSIDE OF THE SHADED AREA "A".
3. BUILDINGS OF THREE FLOORS OR LESS; "A" SHALL BE MEASURED FROM OUTER EDGE OF ALL OVERHANGS.
4. BUILDINGS OF FOUR OR MORE FLOORS; "A" SHALL BE MEASURED FROM THE BUILDING WALL.
5. FRONT OF TRANSFORMER SHALL NOT FACE WALL AND REMAIN OPEN AND ACCESSIBLE. FOR OTHER CLEARANCES AROUND TRANSFORMERS SEE DRAWING ID-TC1.
6. IF CLEARANCE "A" CANNOT BE OBTAINED, REFER TO ID-BW FOR CLEARANCES.

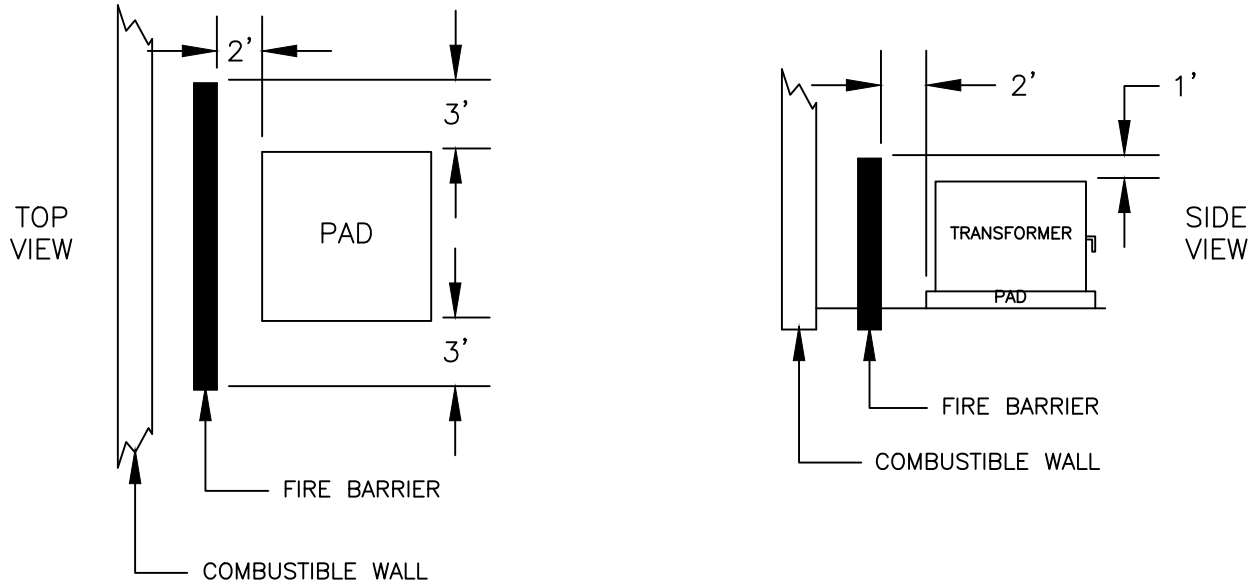


INSTALLATION DRAWING FOR CLEARANCES OF PADMOUNT TRANSFORMERS TO NONCOMBUSTIBLE WALLS

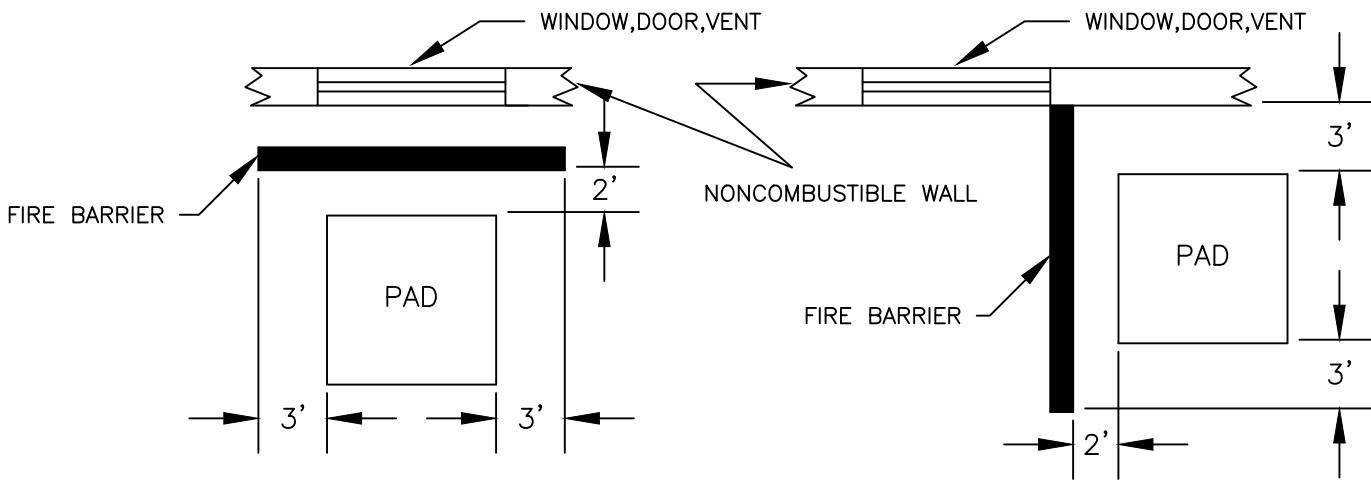
	By	Checked	Approved	Date
Original	J	HPZ	SPEC. COMMITTEE	06/14/07
Revision	J	HPZ	SPEC. COMMITTEE	12/03/09
Revision				
Revision				

- NOTES:
1. THE FIRE BARRIER SHALL HAVE A MINIMUM FIRE RESISTANCE RATING OF ONE HOUR.
 2. ALL FIRE BARRIERS SHALL BE FREE STANDING AND NOT CONNECTED TO ANY STRUCTURE.
 3. ALL FIRE BARRIERS FOR COMBUSTIBLE WALLS SHALL EXTEND A MINIMUM OF ONE FOOT ABOVE THE TOP OF THE TRANSFORMER.
 4. THE FRONT OF THE TRANSFORMER SHALL NOT FACE ANY WALL AND REMAIN OPEN AND ACCESSIBLE. FOR OTHER CLEARANCES AROUND TRANSFORMERS SEE DRAWING ID-TC1.

FIRE BARRIERS FOR COMBUSTIBLE WALLS

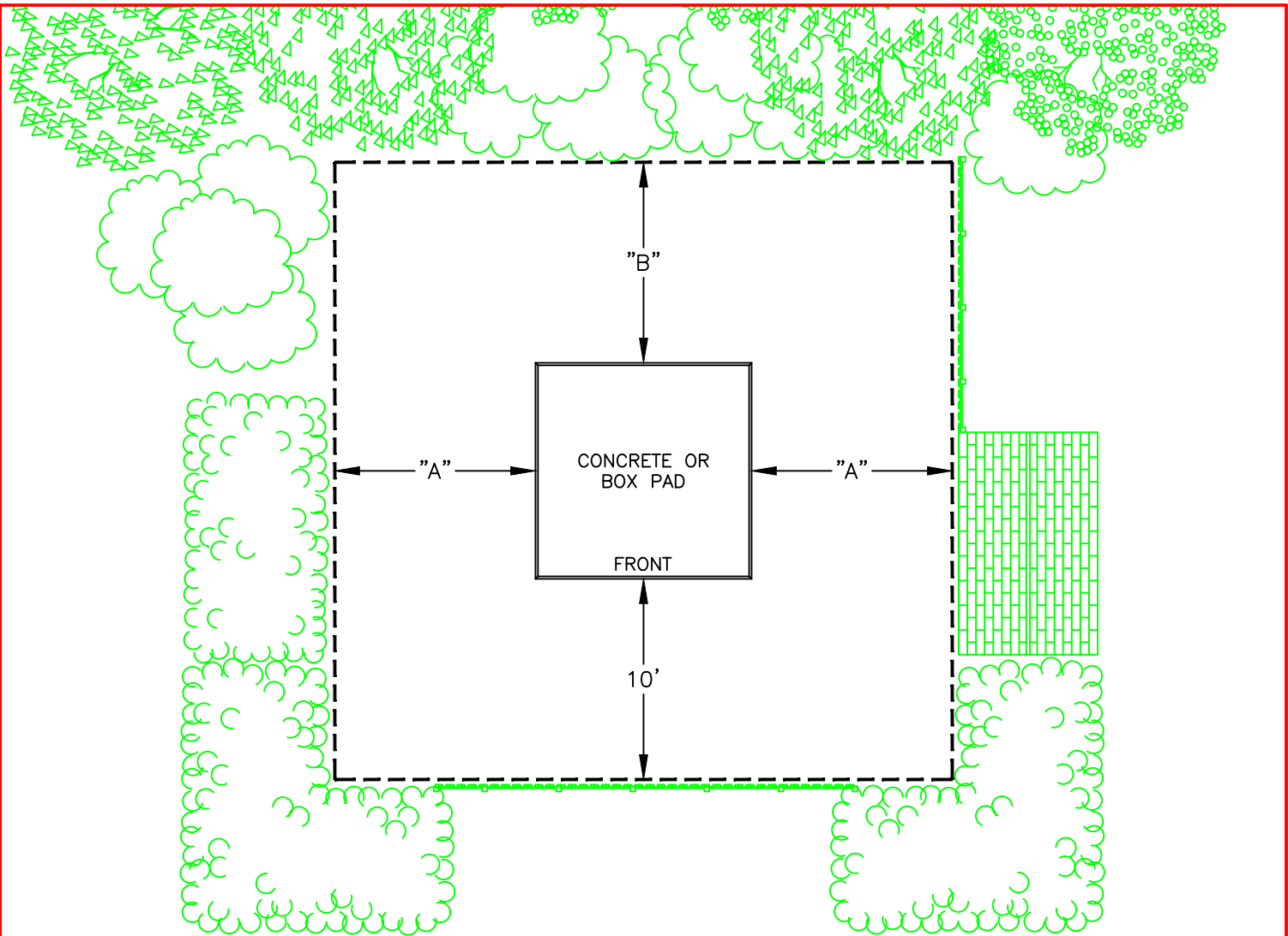


FIRE BARRIERS FOR NONCOMBUSTIBLE WALLS



INSTALLATION DRAWING FOR
CLEARANCES OF PADMOUNT TRANSFORMERS
TO BARRIER WALLS

	By	Checked	Approved	Date
Original	J	HPZ	SPEC. COMMITTEE	06/14/07
Revision	J	HPZ	SPEC. COMMITTEE	12/03/09
Revision				
Revision				



APPARATUS	"A" DIMENSION	"B" DIMENSION
TRANSFORMER	5'	5'
SINGLE PHASE ENCLOSURE	5'	5'
THREE PHASE ENCLOSURE	10'	5'
PAD MOUNT SWITCH GEAR	5'	10'

NOTES:

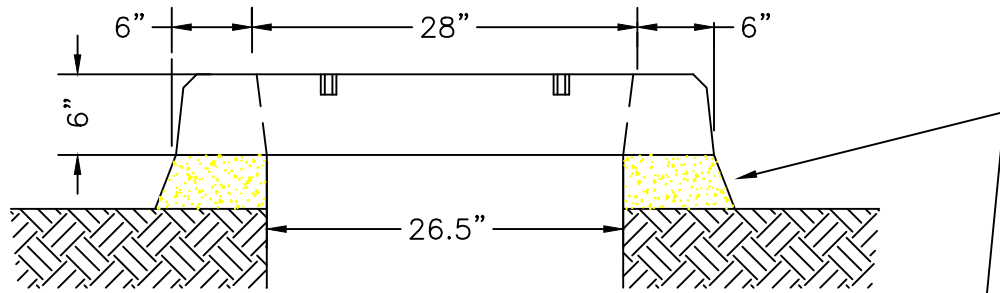
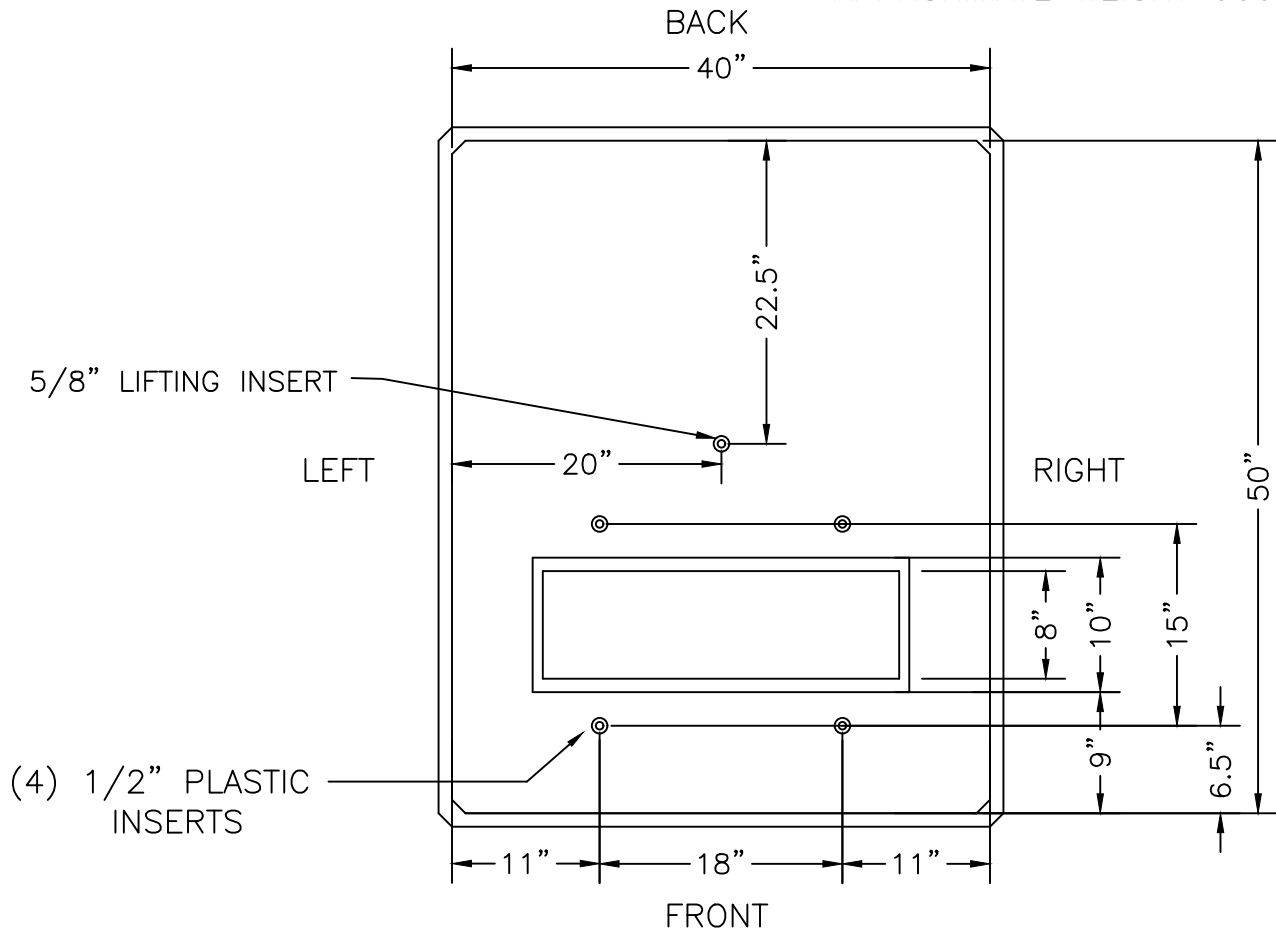
- STRUCTURES OR PLANTS SHALL NOT BE PLACED WITHIN THE ABOVE DEFINED AREA FOR THE GIVEN APPARATUS. VIOLATIONS ARE SUBJECT TO REMOVAL WITHOUT NOTIFICATION.
- THE INSTALLATION OF BOLLARDS SHALL BE REQUIRED IN HEAVY VEHICULAR TRAFFIC AREAS. LOCATION OF BOLLARDS SHALL BE DESIGNATED BY NOVEC.



INSTALLATION DRAWING FOR PADMOUNT EQUIPMENT CLEARANCES

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	05/25/00
Revision	KJB	MLH	SPEC. COMMITTEE	04/19/04
Revision	J	HPZ	SPEC. COMMITTEE	09/03/09
Revision				

APPROXIMATE WEIGHT 900 LBS



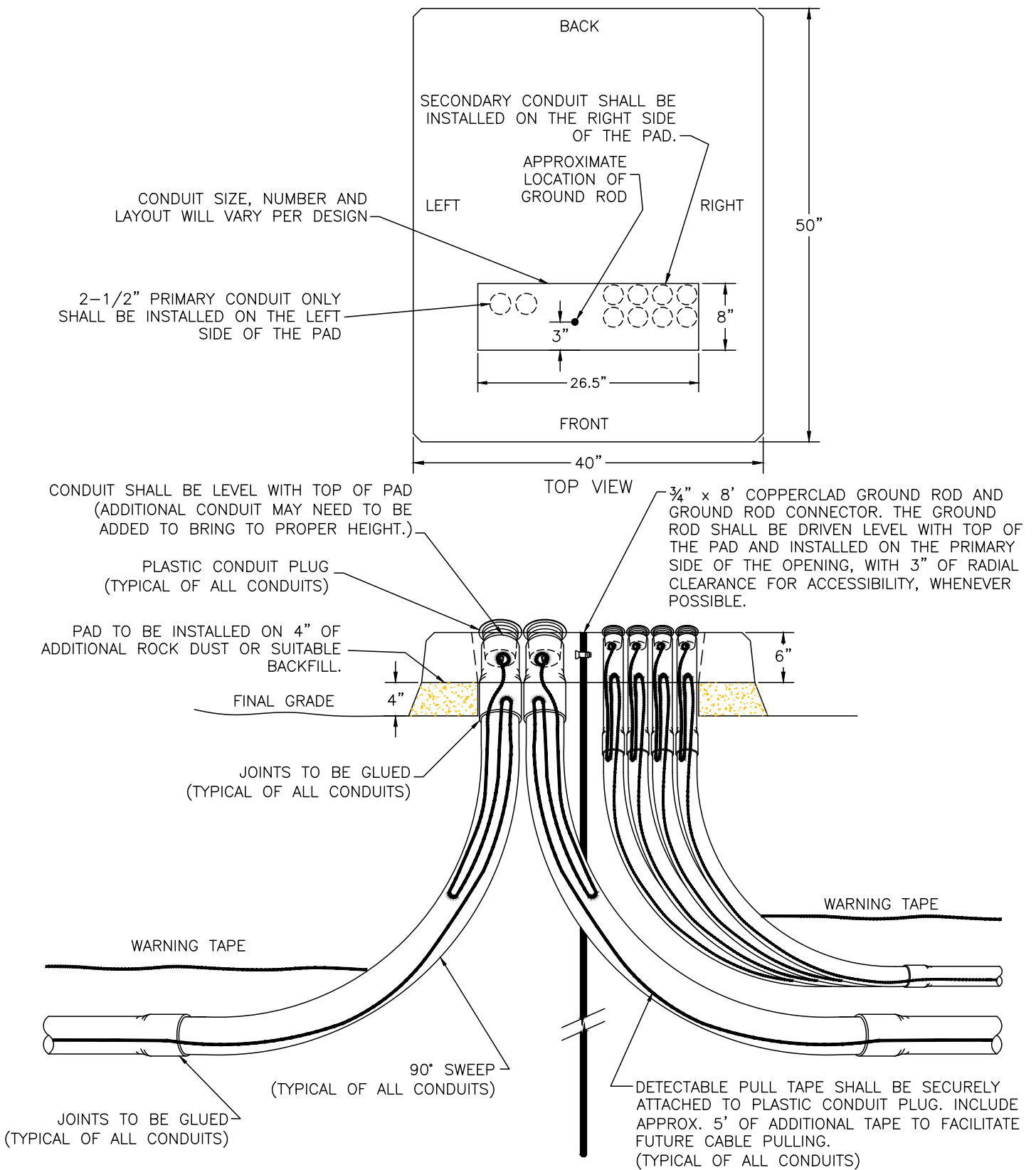
TO ENSURE ACCESSIBILTY, PADS FOR SINGLE PHASE TRANSFORMERS AND SINGLE PHASE ENCLOSURES SHALL BE INSTALLED ON 4" OF ADDITIONAL ROCK DUST OR SUITABLE BACKFILL.



CONCRETE PAD FOR SINGLE PHASE TRANSFORMER OR ENCLOSURE

	By	Checked	Approved	Date
Original	LTD	MLH	SPEC. COMMITTEE	10/05/93
Revision	KJB	MLH	SPEC. COMMITTEE	05/31/01
Revision	KJB	MLH	SPEC. COMMITTEE	03/05/03
Revision	KJB	KMW	SPEC. COMMITTEE	06/23/16

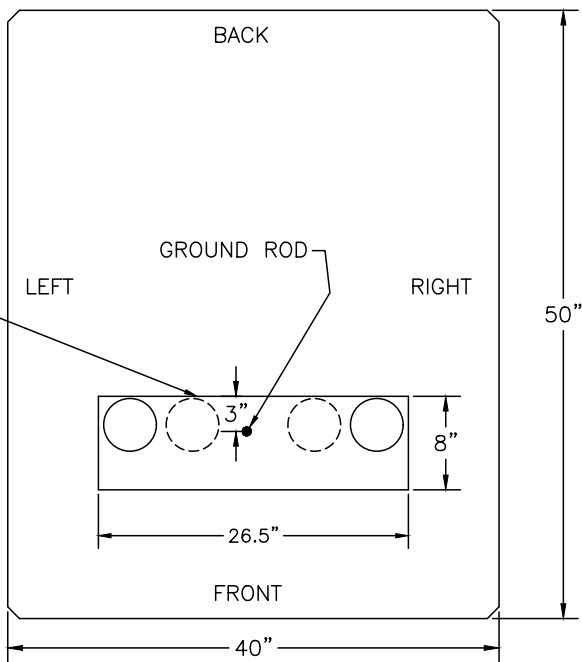
UP1001



INSTALLATION DRAWING FOR
CONDUIT AND SINGLE PHASE
TRANSFORMER PAD

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	01/26/04
Revision	KJB	MLH	SPEC. COMMITTEE	12/12/05
Revision	J	HPZ	SPEC. COMMITTEE	03/01/07
Revision	KJB	KMW	SPEC. COMMITTEE	11/25/19

CONDUIT SIZE, NUMBER AND LAYOUT WILL VARY PER DESIGN



TOP VIEW

CONDUIT SHALL BE LEVEL WITH TOP OF PAD (ADDITIONAL CONDUIT MAY NEED TO BE ADDED TO BRING TO PROPER HEIGHT.)

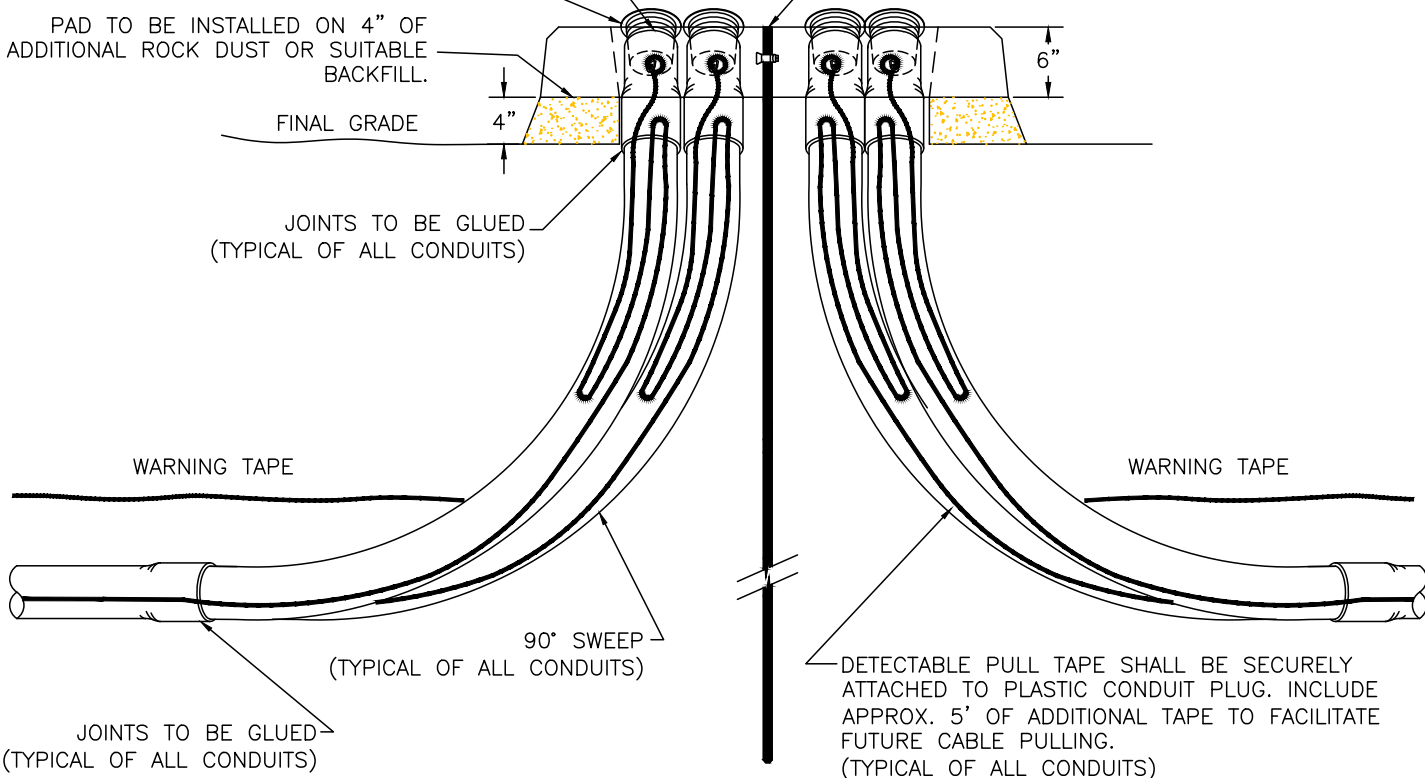
PLASTIC CONDUIT PLUG (TYPICAL OF ALL CONDUITS)

PAD TO BE INSTALLED ON 4" OF ADDITIONAL ROCK DUST OR SUITABLE BACKFILL.

FINAL GRADE

JOINTS TO BE GLUED (TYPICAL OF ALL CONDUITS)

3/4" x 8' COPPERCLAD GROUND ROD AND GROUND ROD CONNECTOR. THE GROUND ROD SHALL BE LEVEL WITH TOP OF THE PAD AND INSTALLED WITH 3" OF RADIAL CLEARANCE FOR ACCESSIBILITY WHENEVER POSSIBLE.



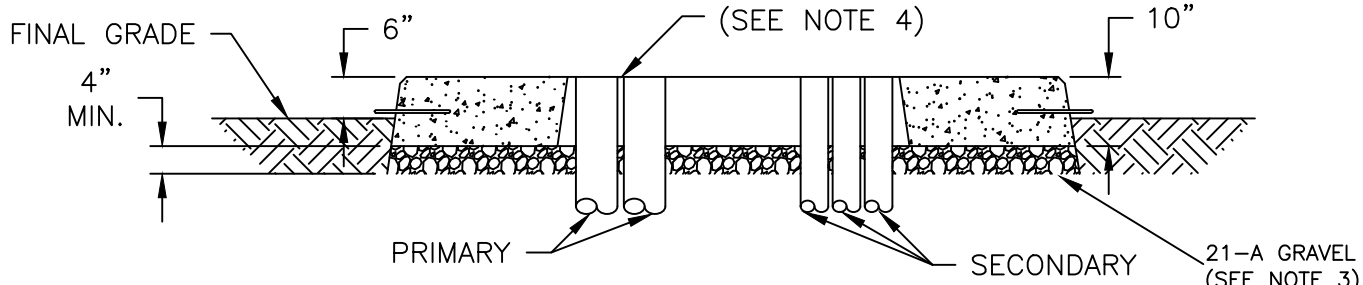
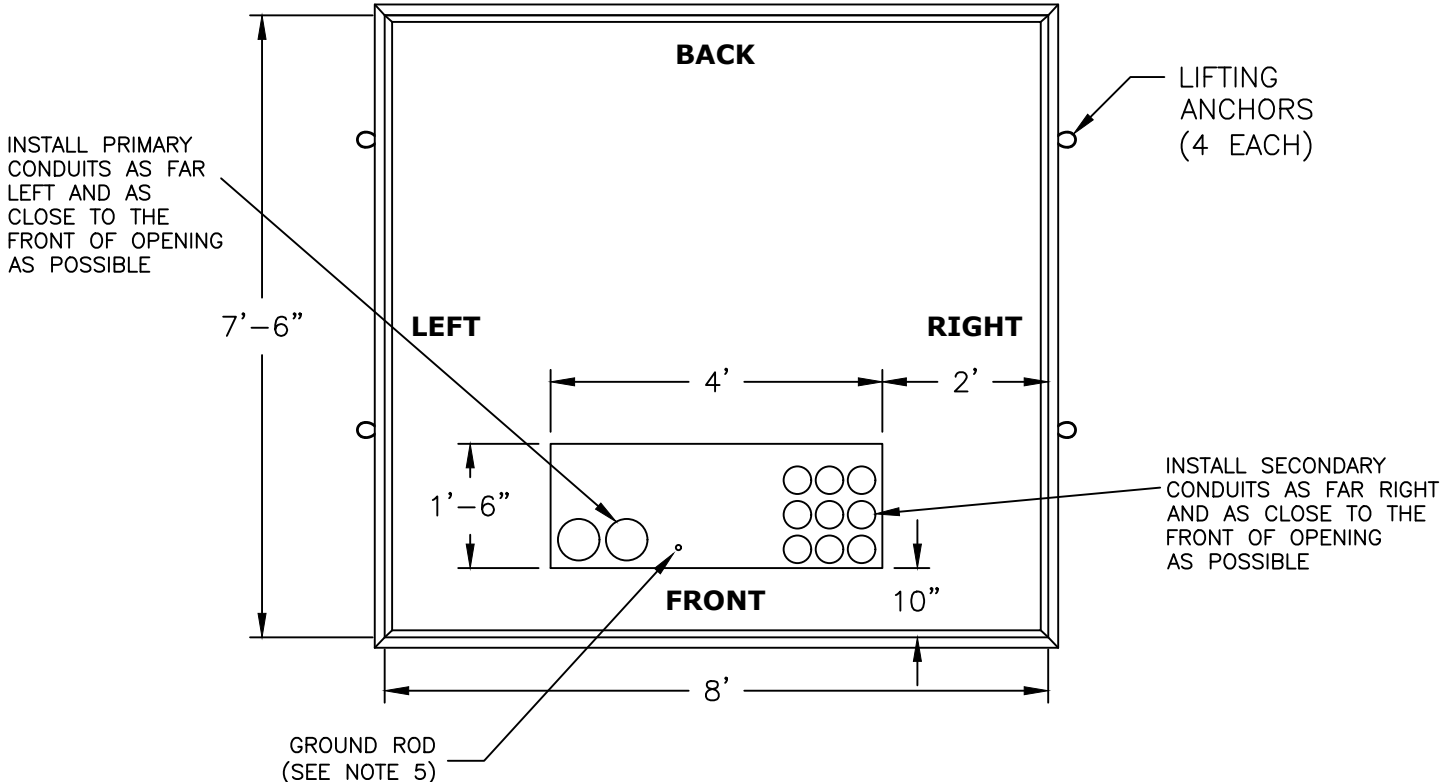
JOINTS TO BE GLUED (TYPICAL OF ALL CONDUITS)

DETECTABLE PULL TAPE SHALL BE SECURELY ATTACHED TO PLASTIC CONDUIT PLUG. INCLUDE APPROX. 5' OF ADDITIONAL TAPE TO FACILITATE FUTURE CABLE PULLING. (TYPICAL OF ALL CONDUITS)



INSTALLATION DRAWING FOR CONDUIT AND SINGLE PHASE ENCLOSURE PAD

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	01/26/04
Revision	KJB	MLH	SPEC. COMMITTEE	11/29/04
Revision	KJB	MLH	SPEC. COMMITTEE	12/12/05
Revision	KJB	KMW	SPEC. COMMITTEE	11/25/19



NOTES:

1. APPROVED MANUFACTURERS:

ROTONDO PRECAST: P/N: NOVEC 75-500KVA
 5115 MASSAPONAX CHURCH RD.
 FREDERICKSBURG, VA. 22407
 PHONE: 540-898-6300

SMITH-MIDLAND: P/N: UPDT876
 5119 CATLETT RD.
 MIDLAND, VA 22728
 PHONE 540-439-3266

2. APPROXIMATE WEIGHT: 8550 LBS.

3. ANY DISTURBED EARTH OR FILL SHALL BE COMPACTED PRIOR TO INSTALLING PAD. A 4" BASE OF 21-A COMPACTED GRAVEL IS REQUIRED.

4. ALL CONDUIT SHALL BE CUT OFF FLUSH WITH THE TOP OF THE CONCRETE PAD.

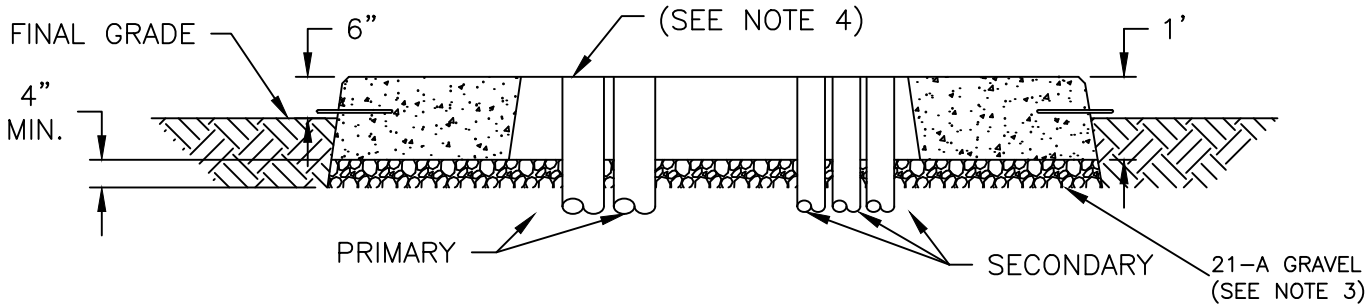
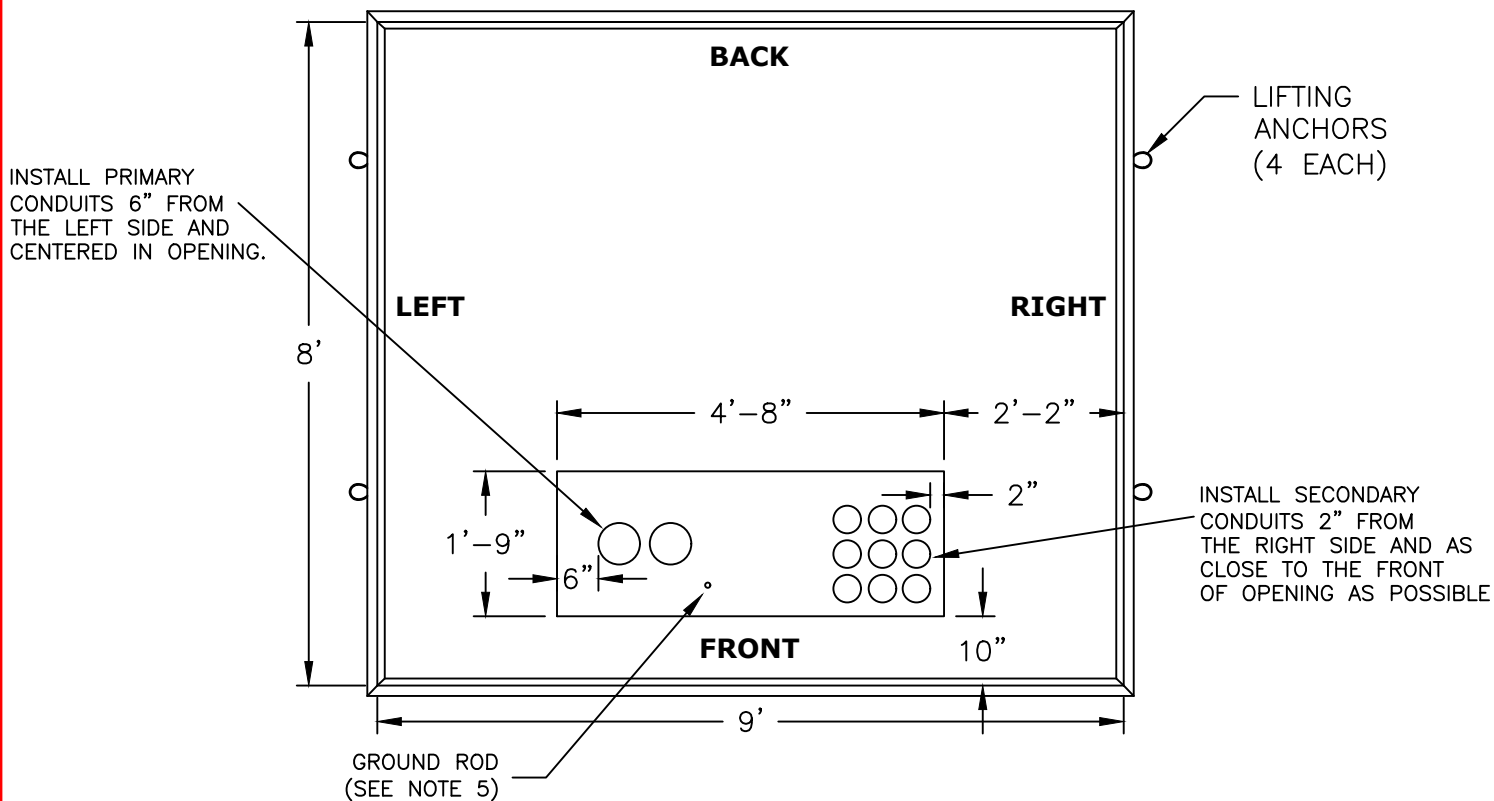
5. INSTALL A 3/4" X 8' COPPERCLAD GROUND ROD AND GROUND ROD CONNECTOR APPROXIMATELY WHERE SHOWN. THE GROUND ROD SHALL BE DRIVEN TO WITHIN 6" OF GROUND LEVEL, AND INSTALLED ON THE PRIMARY SIDE OF THE OPENING, WITH 3" OF RADIAL CLEARANCE FOR ACCESSIBILITY.

6. BOLLARDS SHALL BE INSTALLED IN TRAFFIC AREAS. REFER TO ID-BL AND ID-B FOR INSTALLATION,



CONCRETE PAD FOR 75 TO 500 KVA
 THREE PHASE TRANSFORMER

	By	Checked	Approved	Date
Original	J	HPZ	SPEC. COMMITTEE	11/01/07
Revision	J	HPZ	SPEC. COMMITTEE	06/16/09
Revision	KJB	HPZ	SPEC. COMMITTEE	12/06/13
Revision				



NOTES:

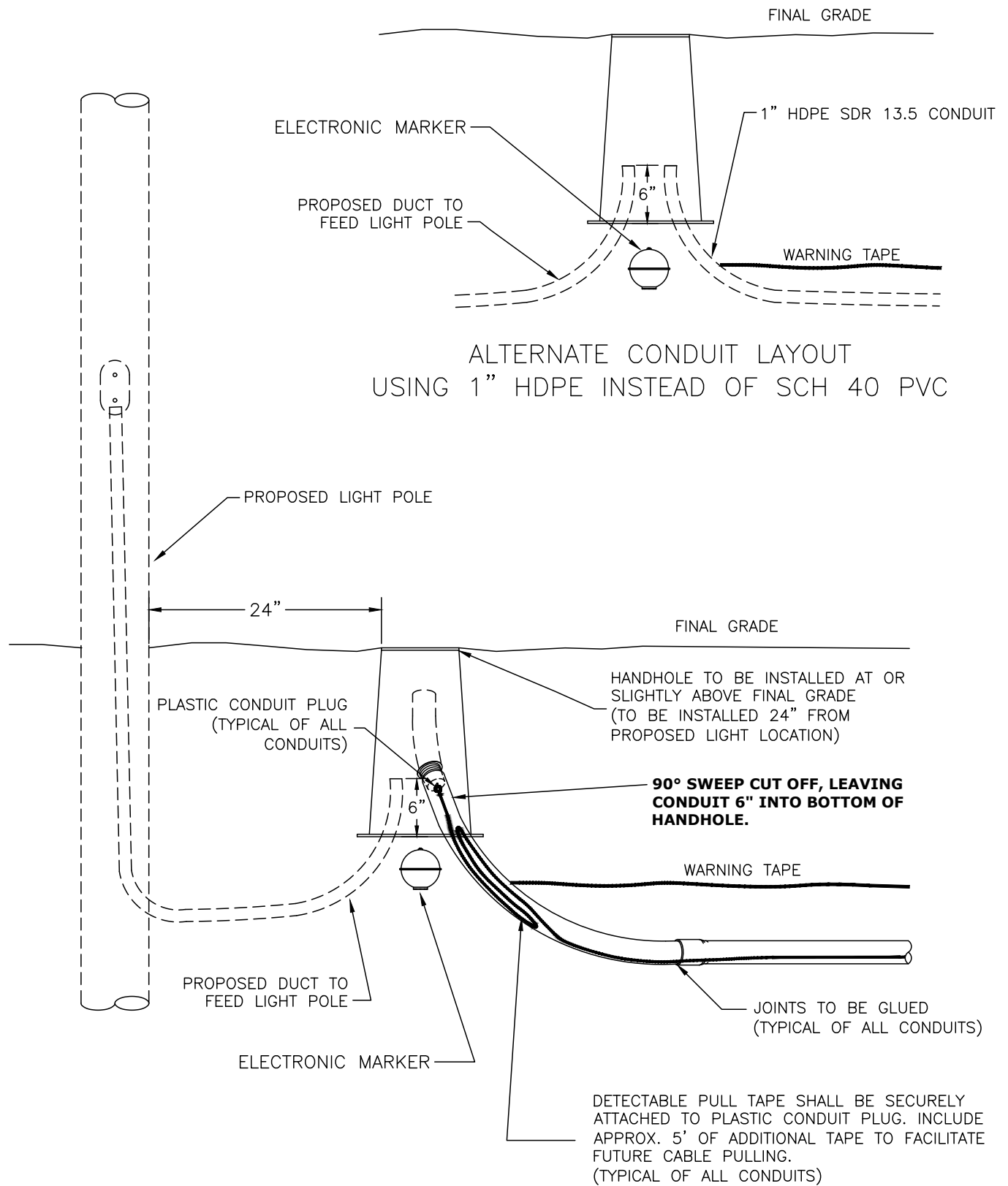
1. APPROVED MANUFACTURERS:

<p><u>ROTONDO PRECAST:</u> P/N: NOVEC 750-2500KVA 5115 MASSAPONAX CHURCH RD. FREDERICKSBURG, VA. 22407 PHONE: 540-898-6300</p>	<p><u>SMITH-MIDLAND:</u> P/N: UPDT-89 5119 CATLETT RD. MIDLAND, VA 22728 PHONE 540-439-3266</p>
---	--
2. APPROXIMATE WEIGHT: 12375 LBS.
3. ANY DISTURBED EARTH OR FILL SHALL BE COMPACTED PRIOR TO INSTALLING PAD. A 4" BASE OF 21-A COMPACTED GRAVEL IS REQUIRED.
4. ALL CONDUIT SHALL BE CUT OFF FLUSH WITH THE TOP OF THE CONCRETE PAD.
5. INSTALL A 3/4" X 8' COPPERCLAD GROUND ROD AND GROUND ROD CONNECTOR APPROXIMATELY WHERE SHOWN. THE GROUND ROD SHALL BE DRIVEN TO WITHIN 6" OF GROUND LEVEL, AND INSTALLED ON THE PRIMARY SIDE OF THE OPENING, WITH 3" OF RADIAL CLEARANCE FOR ACCESSIBILITY.
6. BOLLARDS SHALL BE INSTALLED IN TRAFFIC AREAS. REFER TO ID-BL AND ID-B FOR INSTALLATION,



CONCRETE PAD FOR 750 TO 2500 KVA
THREE PHASE TRANSFORMER

	By	Checked	Approved	Date
Original	J	HPZ	SPEC. COMMITTEE	11/01/07
Revision	J	HPZ	SPEC. COMMITTEE	06/16/09
Revision	KJB	HPZ	SPEC. COMMITTEE	06/16/09
Revision				

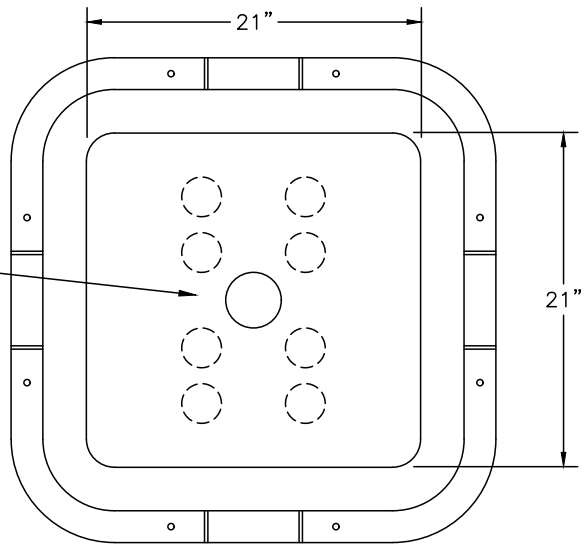


INSTALLATION DRAWING FOR
HANDHOLE
(UK8001)

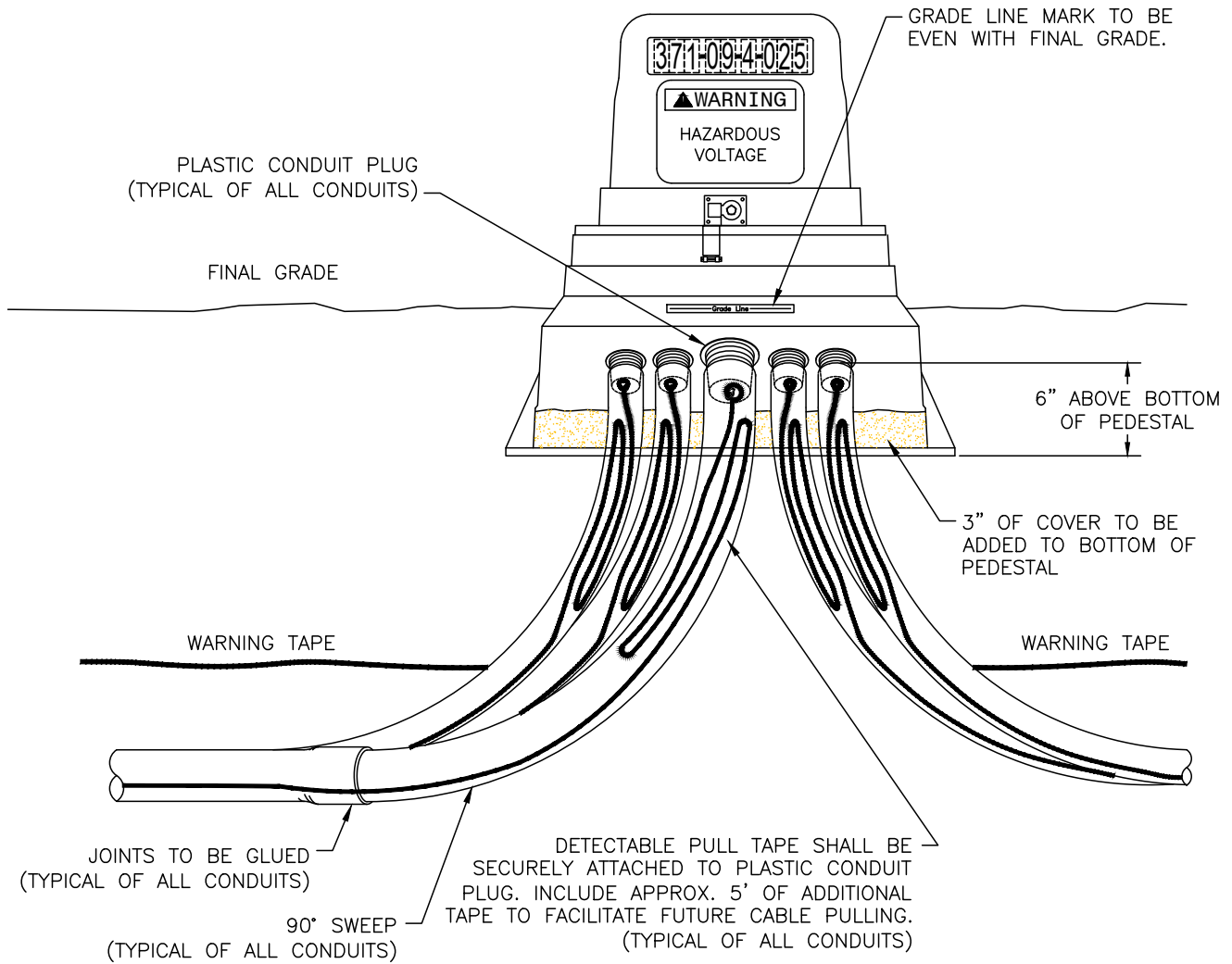
	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	12/12/05
Revision	J	HPZ	SPEC. COMMITTEE	12/03/06
Revision	J	HPZ	SPEC. COMMITTEE	09/03/09
Revision	KJB	HPZ	SPEC. COMMITTEE	12/05/11

ID-HH1

CONDUIT SIZE, NUMBER AND LAYOUT WILL VARY PER DESIGN



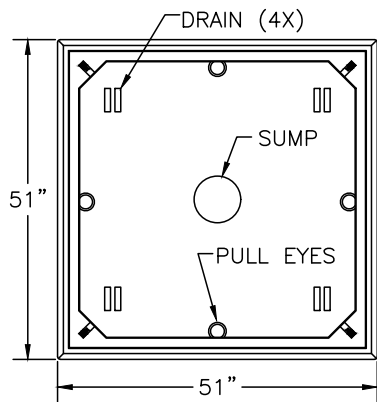
TOP VIEW



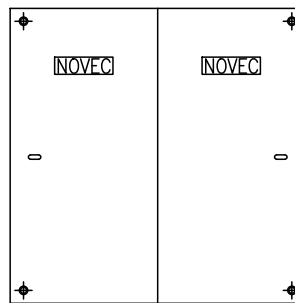
INSTALLATION DRAWING FOR CONDUIT AND PEDESTAL



	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	01/26/04
Revision	KJB	MLH	SPEC. COMMITTEE	11/29/04
Revision	KJB	MLH	SPEC. COMMITTEE	12/12/05
Revision				

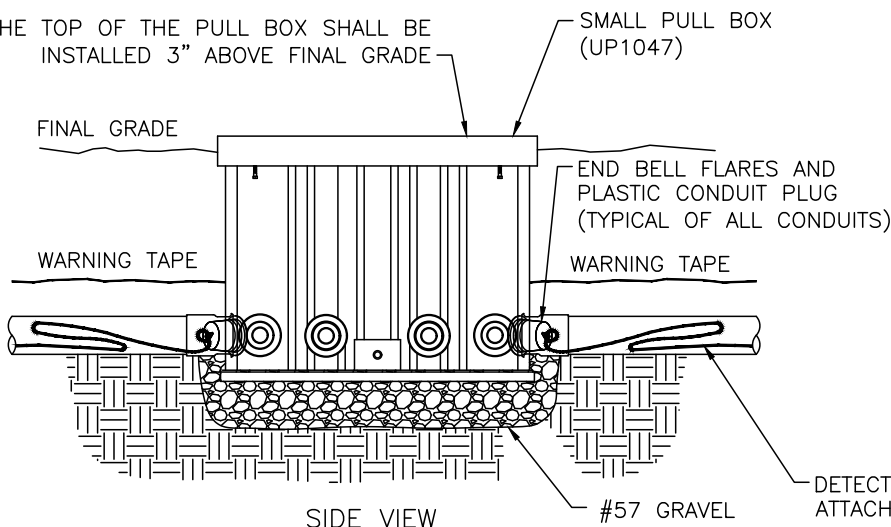


TOP VIEW



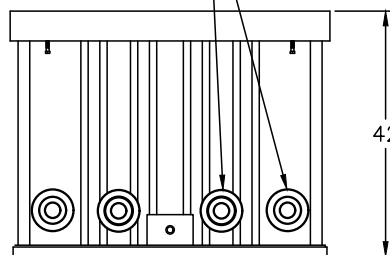
TWO PIECE COVER

THE TOP OF THE PULL BOX SHALL BE INSTALLED 3" ABOVE FINAL GRADE



SIDE VIEW

7", 5" & 3" KNOCKOUTS TYPICAL OF ALL SIDES OF PULL BOX.



END VIEW

DETECTABLE PULL TAPE SHALL BE SECURELY ATTACHED TO PLASTIC CONDUIT PLUG. INCLUDE APPROX. 5' OF ADDITIONAL TAPE TO FACILITATE FUTURE CABLE PULLING. (TYPICAL OF ALL CONDUITS)

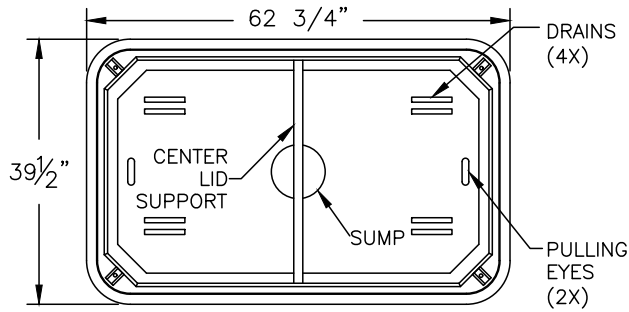
NOTES:

1. SET PULL BOX ON A LEVEL 6" LAYER OF #57 GRAVEL FOR DRAINING PURPOSES.
2. BEFORE BACKFILLING AND COMPACTING, MAKE SURE COVERS ARE IN PLACE AND SECURE. LAYER 6" TO 8" OF BACKFILL AROUND THE PULLBOX. TAMP EACH INDIVIDUAL LAYER OF BACKFILL. CONTINUE THE LAYERING AND TAMPING UNTIL FINAL GRADE IS REACHED.
3. END BELL FLARES SHALL BE INSTALLED ON ALL CONDUITS IN PULL BOX AND SHOULD FIT FLUSH AGAINST THE INTERIOR WALL, SHALL BE PLUGGED AND SHALL HAVE DETECTABLE PULL TAPE INSTALLED.
4. ANY CONDUIT AND RELATED EQUIPMENT INSTALLED BY THE BUILDER SHALL BE INSPECTED BY A NOVEC REPRESENTATIVE AND APPROVED BEFORE ANY BACKFILLING IS DONE. FAILURE TO DO SO WILL RESULT IN EXPOSING ANY AREA NOT INSPECTED.
5. NUMBER AND SIZES OF CONDUITS TO BE SPECIFIED BY THE DISTRIBUTION ENGINEERING DEPARTMENT.
6. ALL INSTALLED CONDUITS MUST BE UL RATED SCHEDULE 40 GRAY PVC.
7. LARGE PULL BOX (UP1048) SHALL BE USED WHEN PULLING FEEDER CABLE. SMALL PULL BOX (UP1047) SHALL BE USED WHEN PULLING DISTRIBUTION CABLE.
8. APPROXIMATE WEIGHT IS 680 LBS.
9. NOT TRAFFIC RATED.



INSTALLATION DRAWING FOR
SMALL PULL BOX
(UP1047)

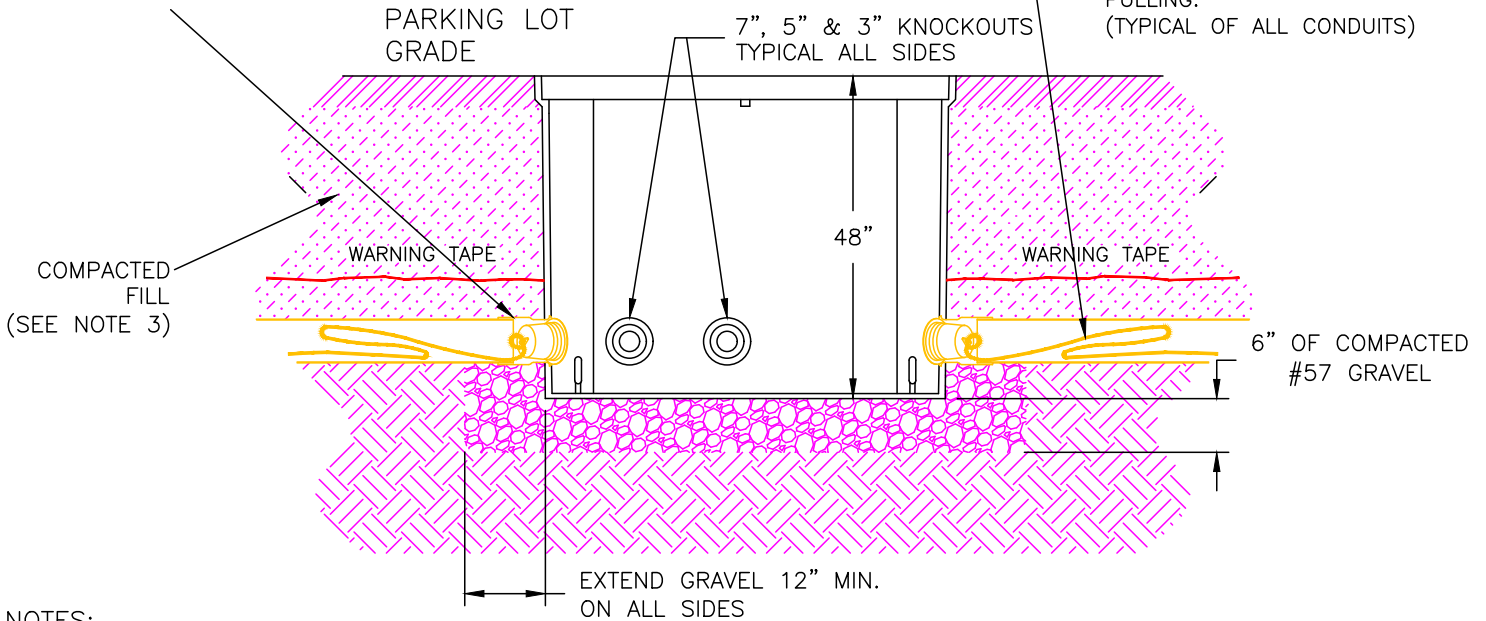
	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	01/26/04
Revision	KJB	MLH	SPEC. COMMITTEE	11/29/04
Revision	KJB	MLH	SPEC. COMMITTEE	12/12/05
Revision	KJB	MLH	SPEC. COMMITTEE	01/12/06



TOP VIEW

END BELL FLARES AND PLASTIC CONDUIT PLUG (TYPICAL OF ALL CONDUITS)

DETECTABLE PULL TAPE SHALL BE SECURELY ATTACHED TO PLASTIC CONDUIT PLUG. INCLUDE APPROX. 5' OF ADDITIONAL TAPE TO FACILITATE FUTURE CABLE PULLING. (TYPICAL OF ALL CONDUITS)



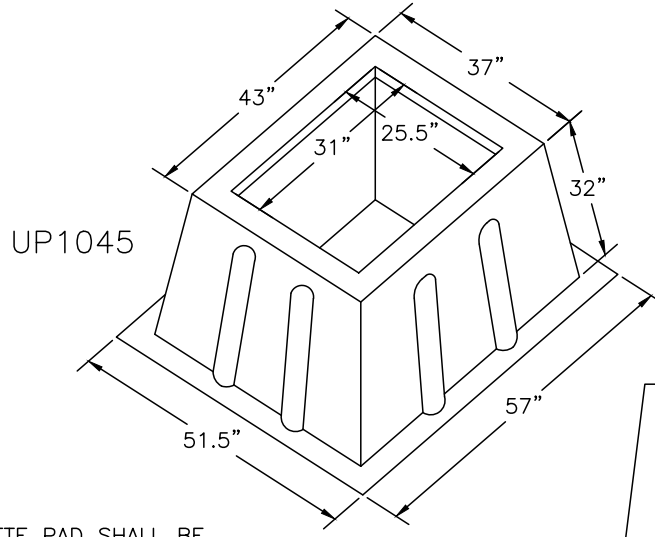
NOTES:

1. SET PULL BOX ON A LEVEL 6" LAYER OF COMPACTED #57 GRAVEL FOR DRAINING PURPOSES.
2. TOP OF BOX SHALL BE FLAT AND LEVEL WITH THE FINAL PARKING LOT GRADE.
3. BEFORE BACKFILLING AND COMPACTING, MAKE SURE COVERS ARE IN PLACE AND SECURE. LAYER 6" TO 8" OF BACKFILL AROUND THE PULLBOX. TAMP EACH INDIVIDUAL LAYER OF BACKFILL. CONTINUE THE LAYERING AND TAMPING UNTIL FINAL GRADE IS REACHED.
4. END BELL FLARES SHALL BE INSTALLED ON ALL CONDUITS IN PULL BOX, SHOULD FIT FLUSH AGAINST THE INTERIOR WALL, SHALL BE PLUGGED, AND SHALL HAVE DETECTABLE PULL TAPE INSTALLED.
5. ANY CONDUIT AND RELATED EQUIPMENT INSTALLED BY THE BUILDER SHALL BE INSPECTED BY A NOVEC REPRESENTATIVE AND APPROVED BEFORE ANY BACKFILLING IS DONE. FAILURE TO DO SO WILL RESULT IN EXPOSING ANY AREA NOT INSPECTED.
6. NUMBER AND SIZES OF CONDUITS TO BE SPECIFIED BY THE DISTRIBUTION ENGINEERING DEPARTMENT.
7. ALL INSTALLED CONDUITS MUST BE UL RATED SCHEDULE 40 GRAY PVC.
8. APPROXIMATE WEIGHT: 894 lbs.



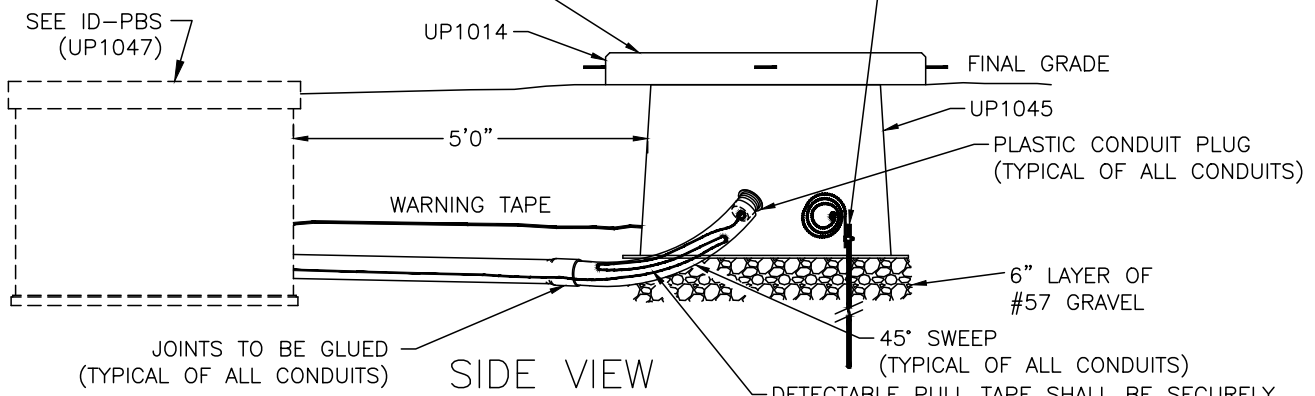
INSTALLATION DRAWING FOR
PARKING LOT RATED
SMALL PULL BOX
(UP1047T)

	By	Checked	Approved	Date
Original	J	HPZ	SPEC. COMMITTEE	11/29/07
Revision				
Revision				
Revision				



CONCRETE PAD SHALL BE SUPPORTED BY FINAL GRADE.

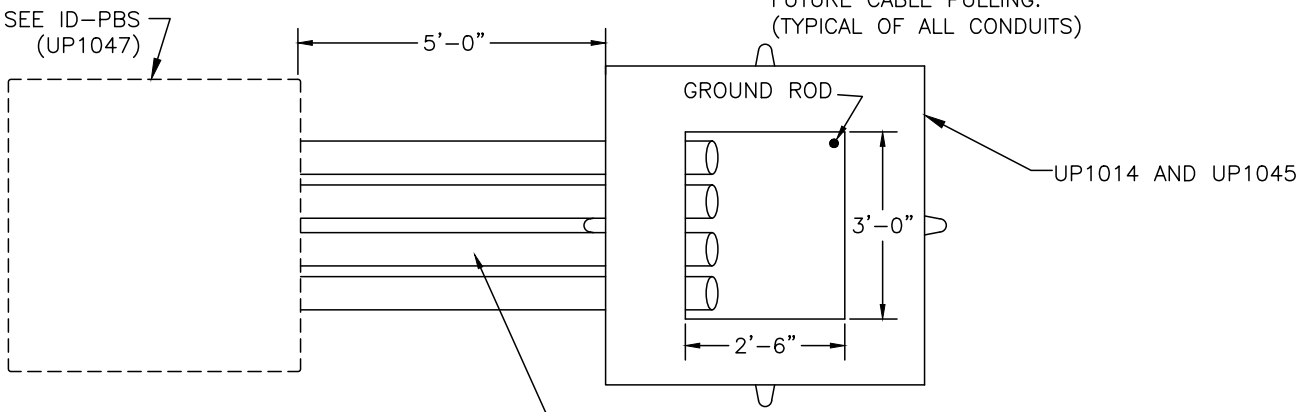
3/4" x 8' COPPERCLAD GROUND ROD, GROUND ROD CONNECTOR AND #4 BARE SOFT DRAWN SOLID COPPER GROUND WIRE. THE GROUND ROD SHALL BE 4" ABOVE BOTTOM OF PAD IN A CORNER OF THE BOX PAD. THE GROUND WIRE SHALL BE SECURELY CONNECTED TO THE GROUND ROD WITH 6' OF WIRE COILED ABOVE THE SOIL INSIDE THE BOX PAD.



JOINTS TO BE GLUED (TYPICAL OF ALL CONDUITS)

SIDE VIEW

DETECTABLE PULL TAPE SHALL BE SECURELY ATTACHED TO PLASTIC CONDUIT PLUG. INCLUDE APPROX. 5' OF ADDITIONAL TAPE TO FACILITATE FUTURE CABLE PULLING. (TYPICAL OF ALL CONDUITS)



TOP VIEW

CONDUITS ARE TO BE INSTALLED BETWEEN PULL BOX AND FIBERGLASS BOX PAD. (NUMBER AND SIZE TO BE DETERMINED BY NOVEC)

ALL PULLING SHALL BE DONE WITHIN THE PULL BOX. THE SHORT RUNS IN THE ENCLOSURE BOX PAD ARE TO BE PUSHED IN AFTER THE CABLE HAS BEEN PULLED INTO THE PULL BOX.

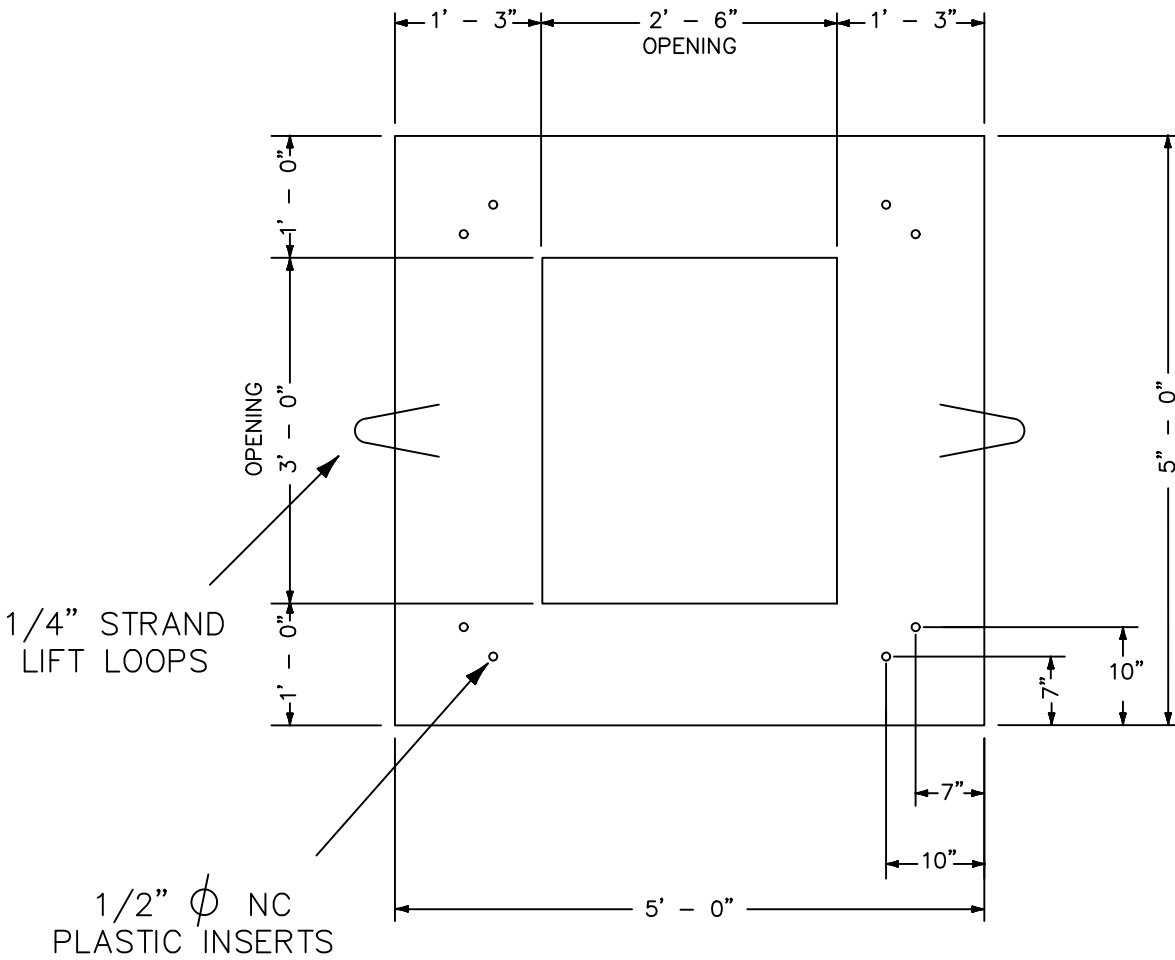


INSTALLATION DRAWING FOR 3 PHASE ENCLOSURE BOX PAD AND CONCRETE PAD

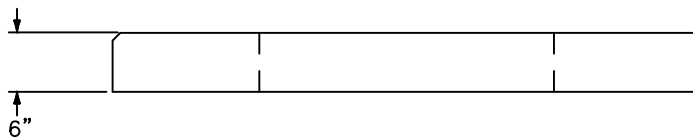
	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	01/26/04
Revision	KJB	MLH	SPEC. COMMITTEE	11/29/04
Revision	KJB	MLH	SPEC. COMMITTEE	12/12/05
Revision	KJB	MLH	SPEC. COMMITTEE	01/13/06

APPROXIMATE WEIGHT 1300 LBS

PLAN VIEW



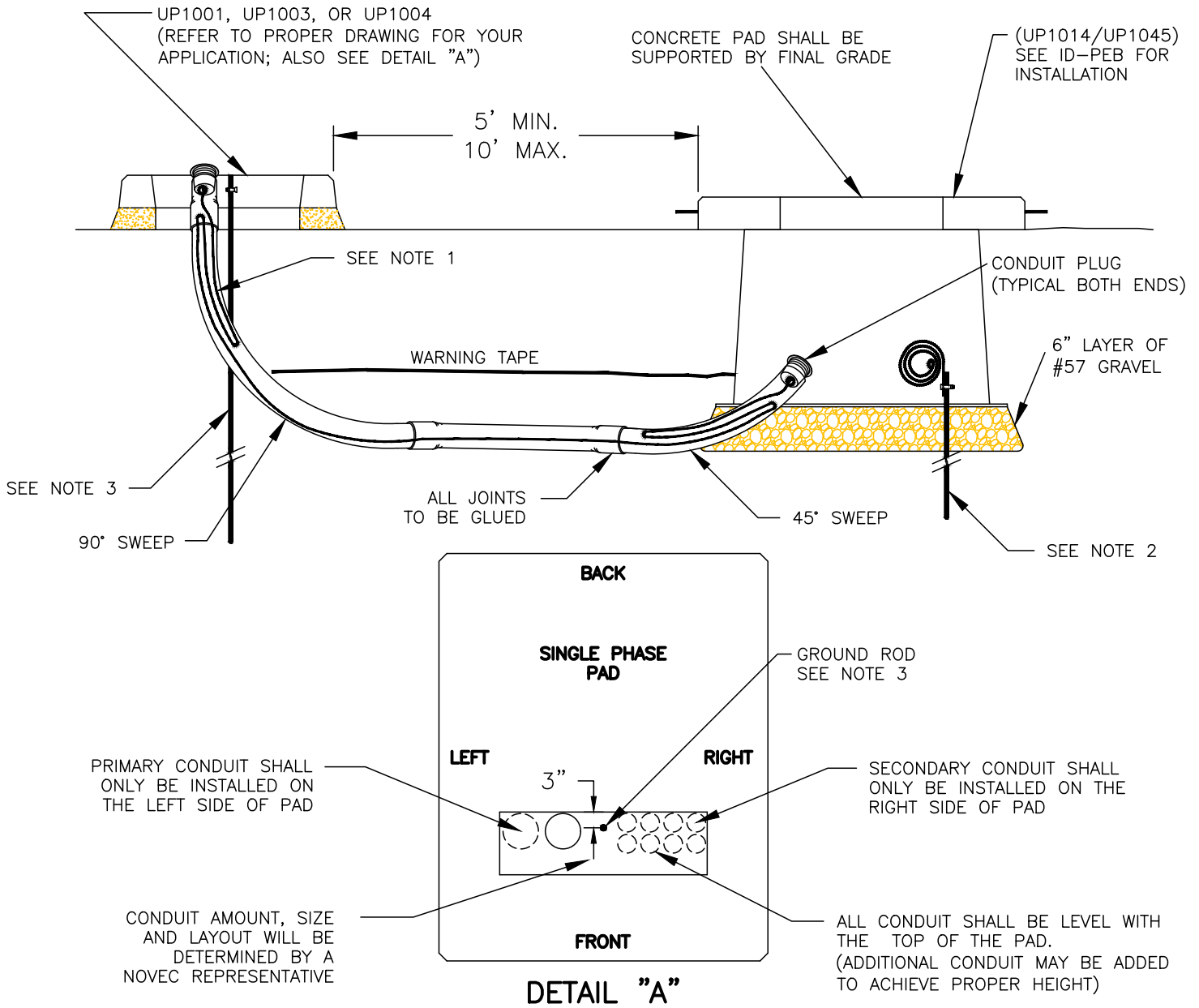
SIDE VIEW



CONCRETE PAD FOR
THREE PHASE ENCLOSURE

	By	Checked	Approved	Date
Original	CRG	WRC	SPEC. COMMITTEE	09/16/91
Revision	CRG	MLH	SPEC. COMMITTEE	03/18/92
Revision	DWB	MLH	SPEC. COMMITTEE	02/03/99
Revision				

UP1014



- NOTES:
1. DETECTABLE PULL TAPE SHALL BE SECURELY ATTACHED TO PLASTIC CONDUIT PLUG. INCLUDE APPROXIMATELY 5' OF ADDITIONAL TAPE TO FACILITATE FUTURE CABLE PULLING.
 2. THE GROUND ROD SHALL BE INSTALLED IN A CORNER OF THE BOX PAD, 4" ABOVE THE BOTTOM OF THE PAD. THE GROUND WIRE SHALL BE SECURELY CONNECTED TO THE GROUND ROD, 6 FEET OF WIRE SHALL BE COILED INSIDE THE BOX PAD, ABOVE GROUND LEVEL.
 3. THE GROUND ROD SHALL BE DRIVEN LEVEL WITH THE TOP OF THE PAD, AND INSTALLED WITH 3" OF RADIAL CLEARANCE FOR ACCESSIBILITY. FOR THREE PHASE APPLICATIONS SEE DRAWING UP1003 OR UP1004

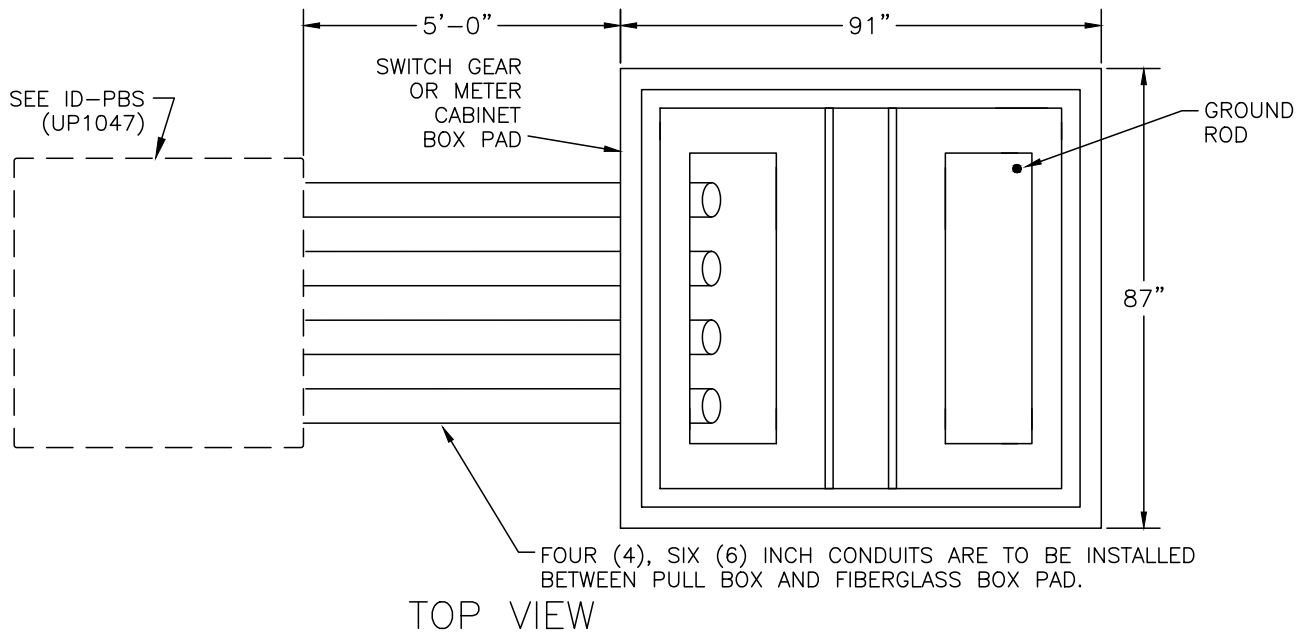
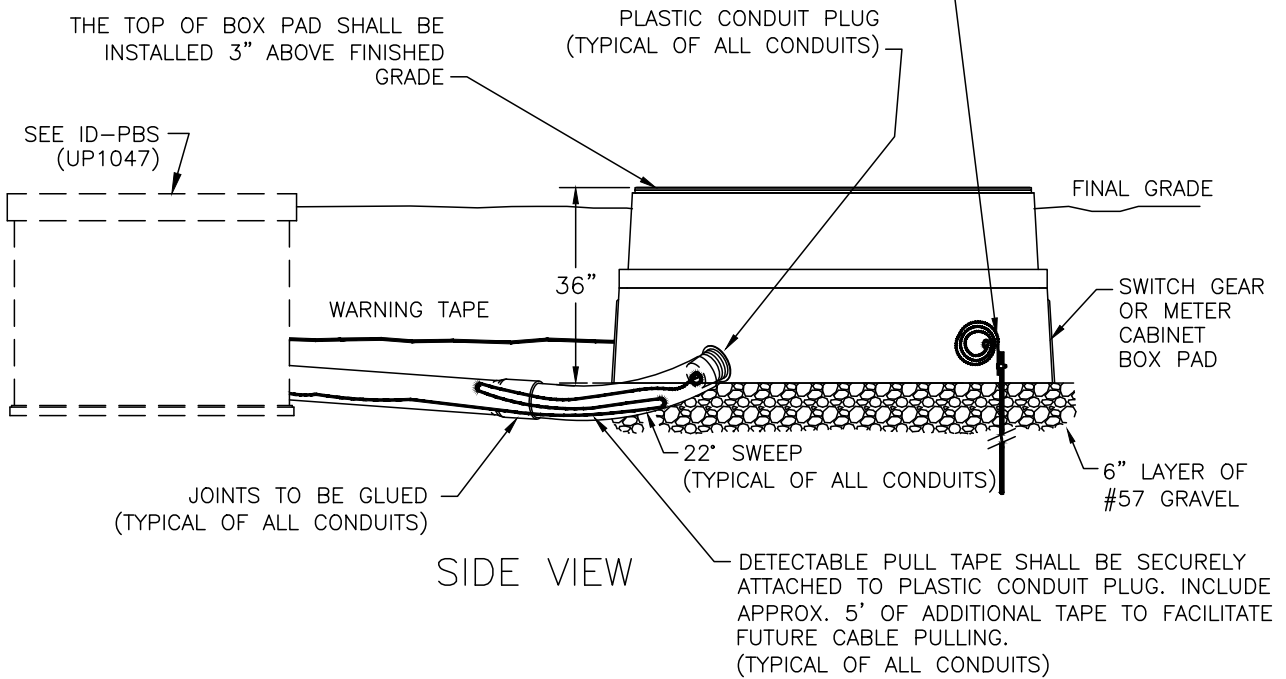


INSTALLATION DRAWING FOR
THREE PHASE ENCLOSURE
TO TRANSFORMER PAD

	By	Checked	Approved	Date
Original	J	HPZ	SPEC. COMMITTEE	11/29/07
Revision				
Revision				
Revision				

ID-PEBPT

3/4" x 8' COPPERCLAD GROUND ROD, GROUND ROD CONNECTOR AND #4 BARE SOFT DRAWN SOLID COPPER GROUND WIRE. THE GROUND ROD SHALL BE 4" ABOVE BOTTOM OF PAD IN A CORNER OF THE BOX PAD. THE GROUND WIRE SHALL BE SECURELY CONNECTED TO THE GROUND ROD WITH 6' OF WIRE COILED ABOVE THE SOIL INSIDE THE BOX PAD



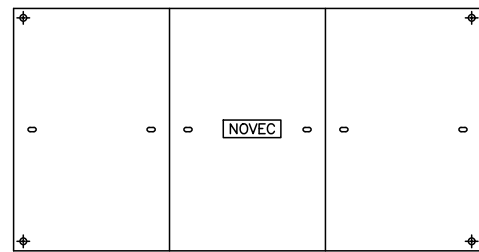
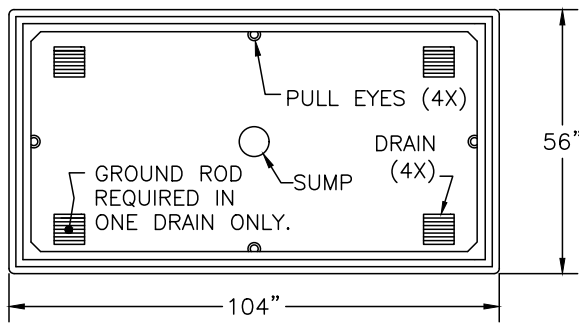
ALL PULLING SHALL BE DONE WITHIN THE PULL BOX. THE SHORT RUNS IN THE BOX PAD ARE TO BE PUSHED IN AFTER THE CABLE HAS BEEN PULLED INTO THE PULL BOX.



INSTALLATION DRAWING FOR
SWITCH GEAR OR METER CABINET BOX PAD
TO SMALL PULLBOX

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	01/26/04
Revision	KJB	MLH	SPEC. COMMITTEE	12/12/05
Revision	KJB	MLH	SPEC. COMMITTEE	11/05/13
Revision	KJB	KMW	SPEC. COMMITTEE	05/28/20

ID-PSB1

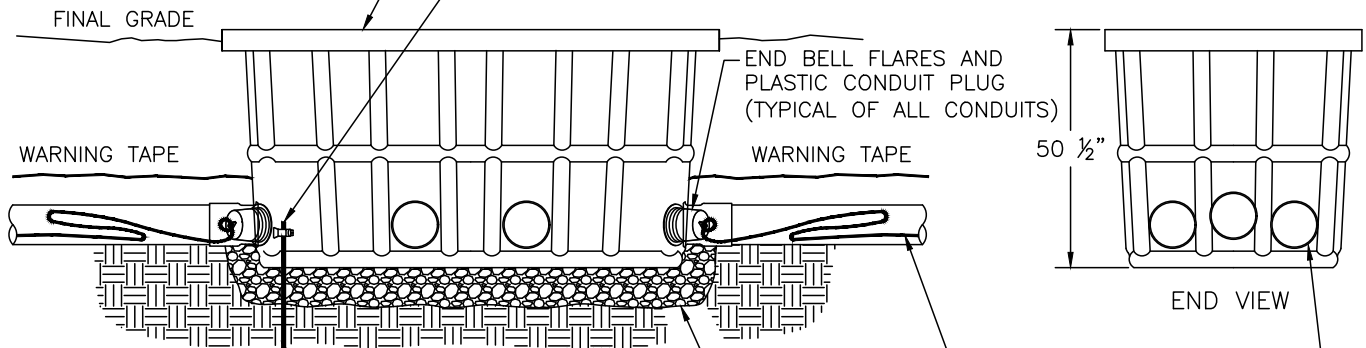


THREE PIECE COVER

TOP VIEW

THE TOP OF THE PULL BOX SHALL BE INSTALLED 3" ABOVE FINAL GRADE

ONLY WHEN REQUIRED, INSTALL A 3/4" x 8' COPPERCLAD GROUND ROD AND GROUND ROD CONNECTOR. 4" OF GROUND ROD WITH GROUND ROD CONNECTOR SHALL EXTEND UP THROUGH DRAIN SLOT INTO PULLBOX. NORMALLY NO GROUND ROD IS INSTALLED.



DETECTABLE PULL TAPE SHALL BE SECURELY ATTACHED TO PLASTIC CONDUIT PLUG. INCLUDE APPROX. 5' OF ADDITIONAL TAPE TO FACILITATE FUTURE CABLE PULLING. (TYPICAL OF ALL CONDUITS)

NOTES:

1. SET PULL BOX ON A LEVEL 6" LAYER OF #57 GRAVEL FOR DRAINING PURPOSES
2. BEFORE BACKFILLING AND COMPACTING, MAKE SURE COVERS ARE IN PLACE AND SECURE. LAYER 6" TO 8" OF BACKFILL AROUND THE PULLBOX. TAMP EACH INDIVIDUAL LAYER OF BACKFILL. CONTINUE THE LAYERING AND TAMPING UNTIL FINAL GRADE IS REACHED.
3. END BELL FLARES SHALL BE INSTALLED ON ALL CONDUITS IN PULL BOX AND SHOULD FIT FLUSH AGAINST THE INTERIOR WALL, SHALL BE PLUGGED AND SHALL HAVE PULL STRING/TAPE INSTALLED.
4. ANY CONDUIT AND RELATED EQUIPMENT INSTALLED BY THE BUILDER SHALL BE INSPECTED BY A NOVEC REPRESENTATIVE AND APPROVED BEFORE ANY BACKFILLING IS DONE. FAILURE TO DO SO WILL RESULT IN EXPOSING ANY AREA NOT INSPECTED.
5. NUMBER AND SIZES OF CONDUITS TO BE SPECIFIED BY THE DISTRIBUTION ENGINEERING DEPARTMENT.
6. ALL INSTALLED CONDUITS MUST BE UL RATED SCHEDULE 40 GRAY PVC.
7. LARGE PULL BOX (UP1048) SHALL BE USED WHEN PULLING FEEDER CABLE. SMALL PULL BOX (UP1047) SHALL BE USED WHEN PULLING DISTRIBUTION CABLE.
8. APPROXIMATE WEIGHT IS 1350 LBS.
9. NOT TRAFFIC RATED.

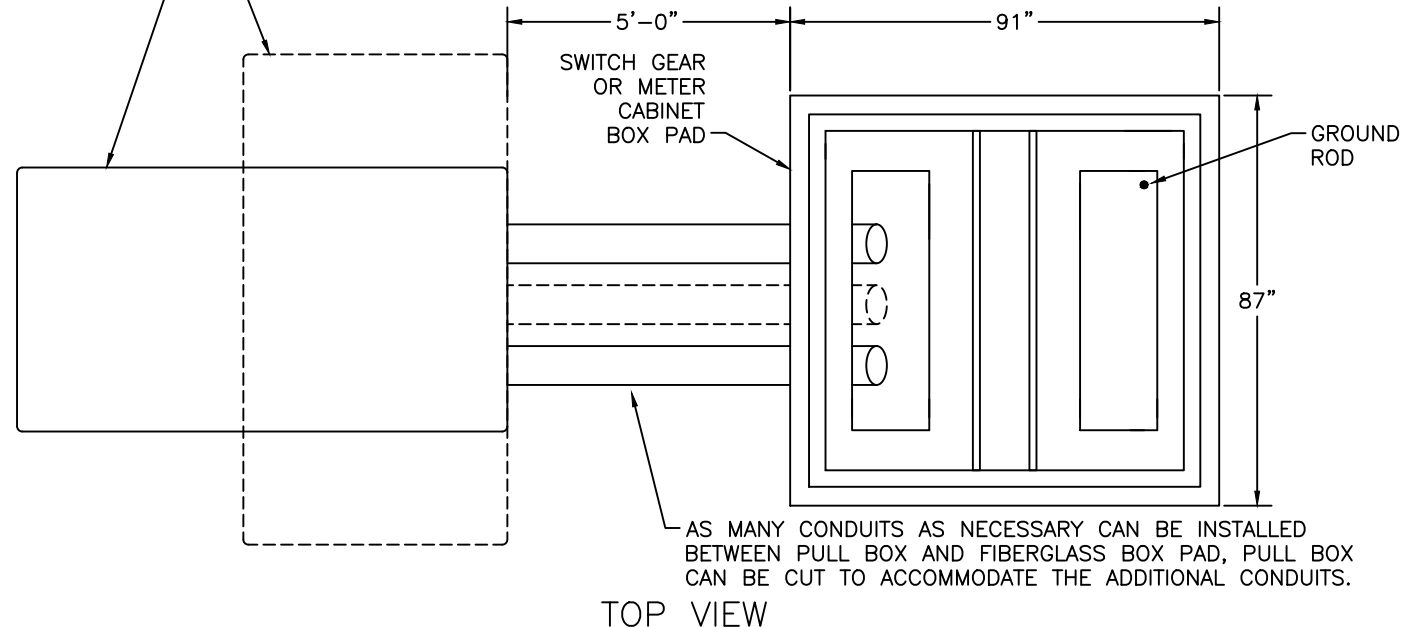
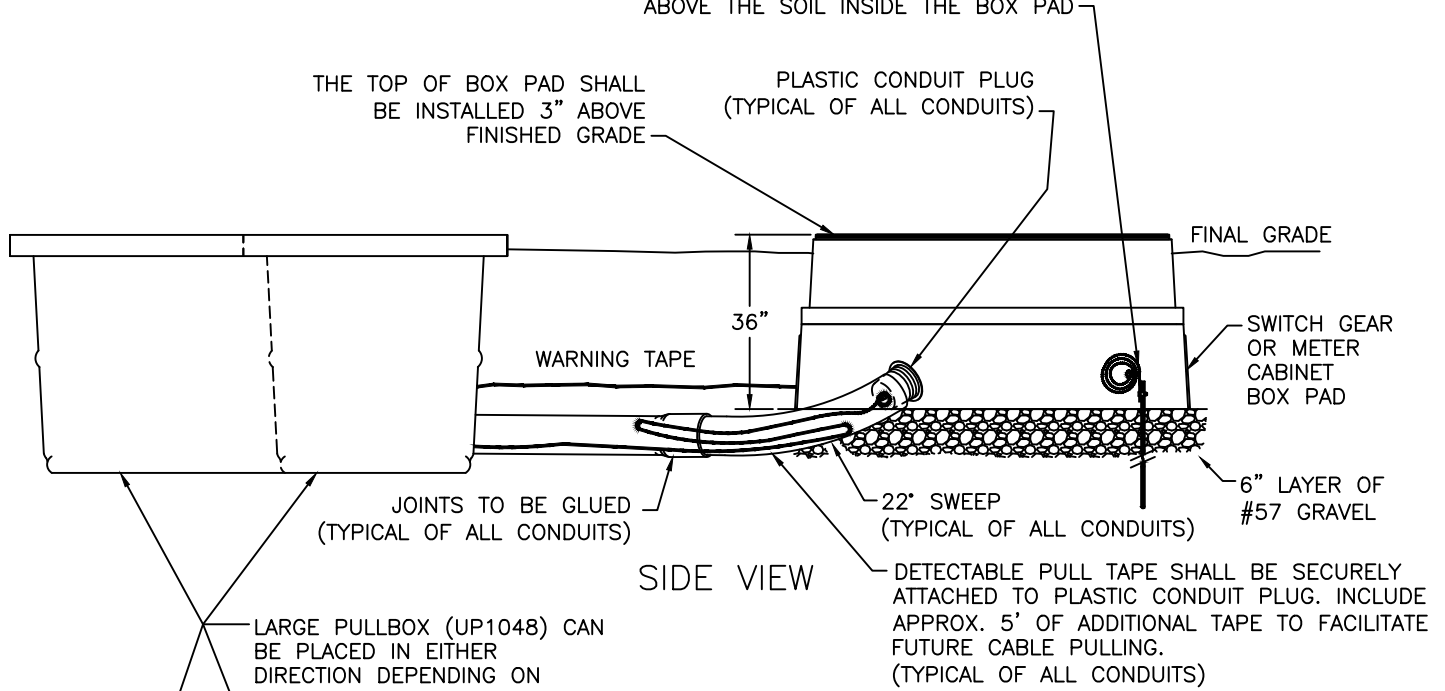


INSTALLATION DRAWING FOR
LARGE PULL BOX
(UP1048)

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	01/26/04
Revision	KJB	MLH	SPEC. COMMITTEE	12/12/05
Revision	KJB	KMW	SPEC. COMMITTEE	06/27/16
Revision	KJB	KMW	SPEC. COMMITTEE	05/28/20

ID-PBL

3/4" x 8' COPPERCLAD GROUND ROD, GROUND ROD CONNECTOR AND #4 BARE SOFT DRAWN SOLID COPPER GROUND WIRE. THE GROUND ROD SHALL BE 4" ABOVE BOTTOM OF PAD IN A CORNER OF THE BOX PAD. THE GROUND WIRE SHALL BE SECURELY CONNECTED TO THE GROUND ROD WITH 6' OF WIRE COILED ABOVE THE SOIL INSIDE THE BOX PAD



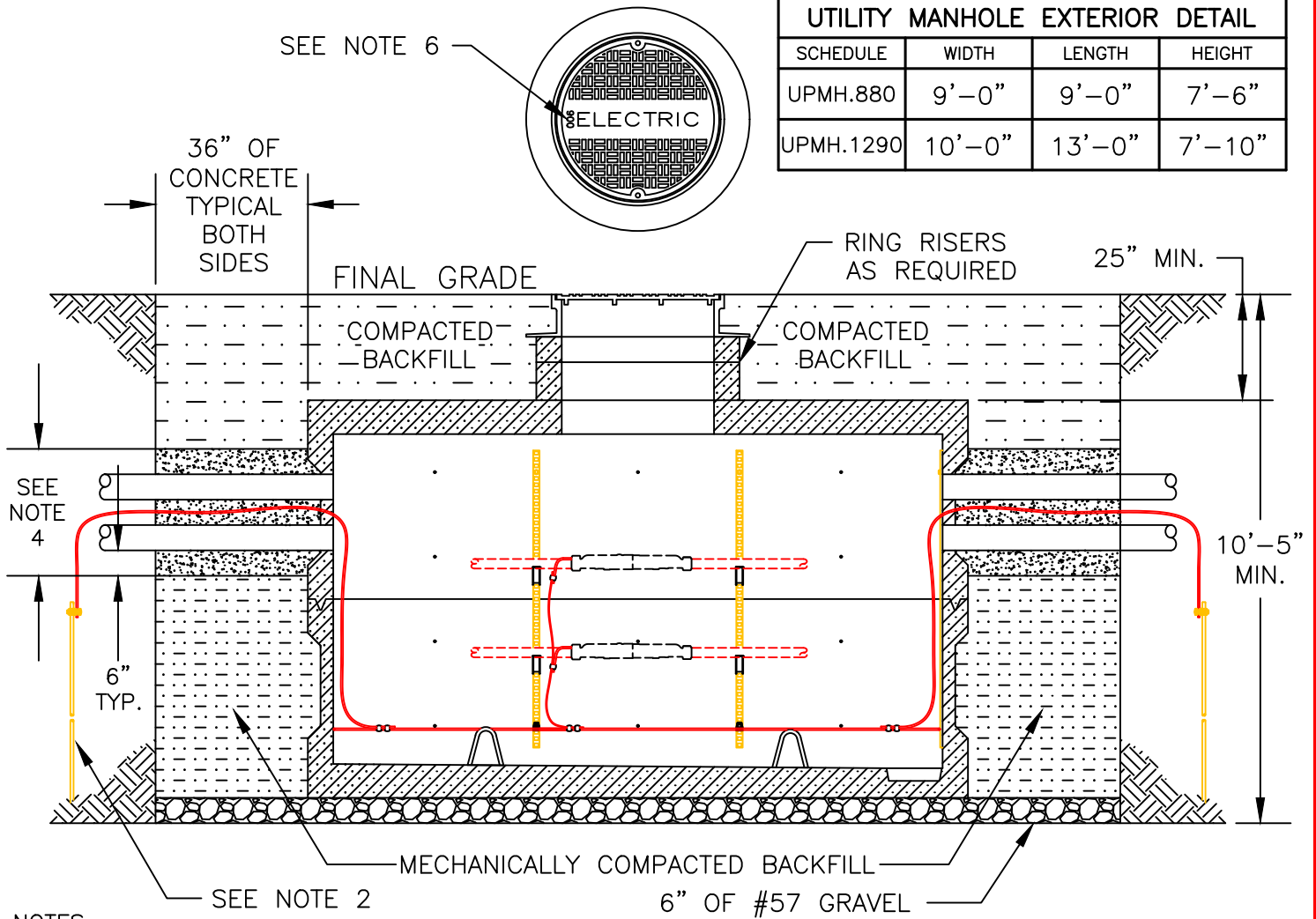
ALL PULLING SHALL BE DONE WITHIN THE PULL BOX. THE SHORT RUNS IN THE BOX PAD ARE TO BE PUSHED IN AFTER THE CABLE HAS BEEN PULLED INTO THE PULL BOX.



INSTALLATION DRAWING FOR SWITCH GEAR OR METER CABINET BOX PAD TO LARGE PULL BOX

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	01/26/04
Revision	KJB	MLH	SPEC. COMMITTEE	12/12/05
Revision	KJB	HPZ	SPEC. COMMITTEE	11/05/13
Revision	KJB	KMW	SPEC. COMMITTEE	05/28/20

UTILITY MANHOLE EXTERIOR DETAIL			
SCHEDULE	WIDTH	LENGTH	HEIGHT
UPMH.880	9'-0"	9'-0"	7'-6"
UPMH.1290	10'-0"	13'-0"	7'-10"



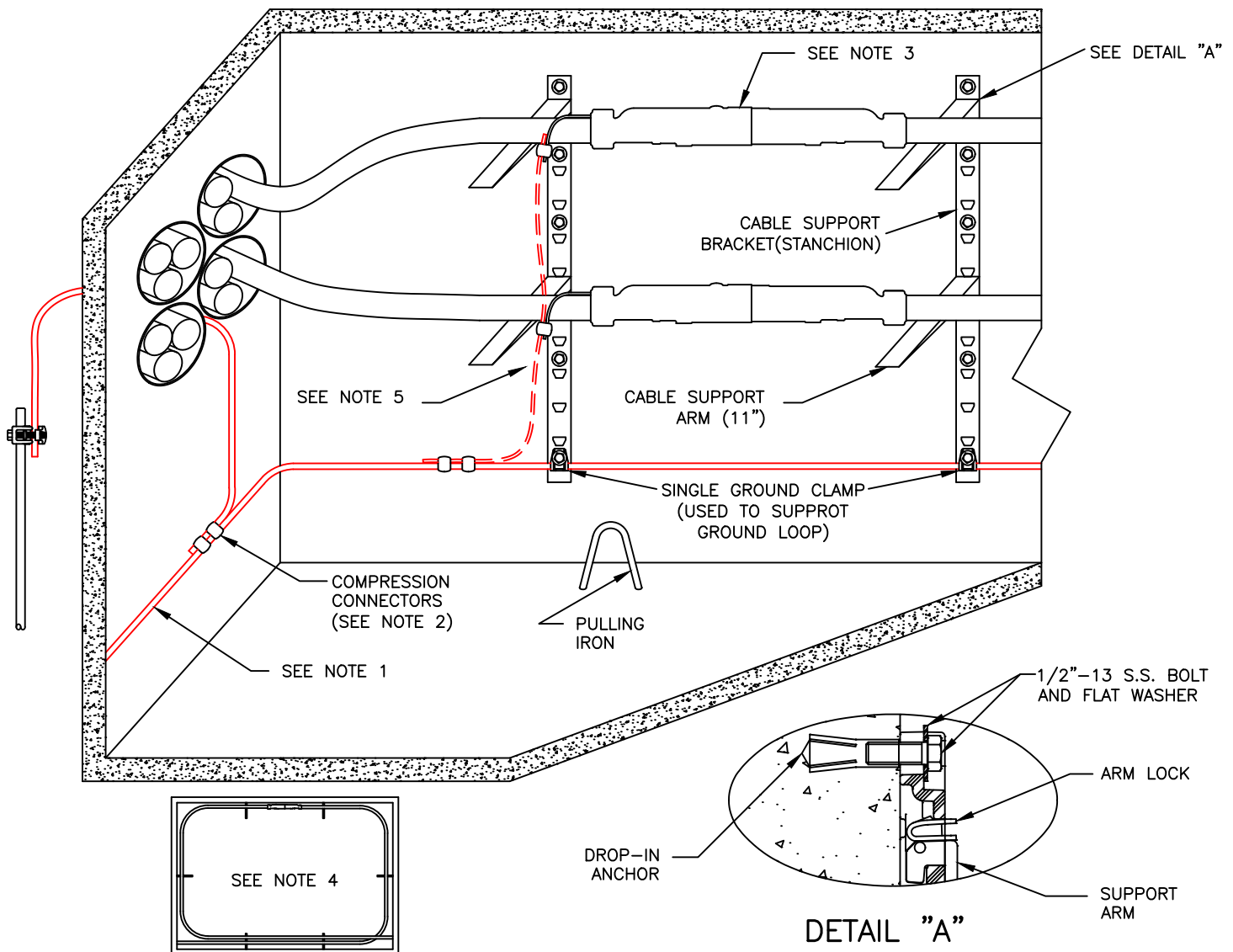
- NOTES:
- MANHOLE SHALL BE INSTALLED PLUMB AND LEVEL ON A MINIMUM OF 6" OF #57 GRAVEL. IF THIS CANNOT BE ACHIEVED THE SUMP SHALL BE ORIENTED TO THE LOWEST CORNER.
 - GROUND RODS SHALL BE CALLED FOR SEPARATELY USING ASSEMBLY# UPMH.GRD.** THE GROUND RODS SHALL BE DRIVEN INTO UNDISTURBED EARTH IN OPPOSITE CORNERS OUTSIDE THE MANHOLE. 2/0 BARE CU GROUND WIRE SHALL BE ATTACHED TO THE GROUND RODS, THEN ROUTED THROUGH THE CONDUIT ACCESS BEFORE GROUTING. A MINIMUM OF 6' OF EXCESS WIRE SHALL BE COILED INSIDE THE MANHOLE, FOR ATTACHMENT TO THE GROUND LOOP.
 - USE END BELL FLARES AND GROUT SMOOTH AROUND CONDUITS AFTER MANHOLE WALL PENETRATION TO CREATE A WATER TIGHT SEAL.
 - ALL CONDUITS SHALL HAVE A MINIMUM OF 6" OF CONCRETE ENCASEMENT. THE CONCRETE SHALL HAVE A MINIMUM STRENGTH RATING OF 3000 PSI.
 - MANHOLE RING AND COVER SHALL BE ADJUSTED USING MORTAR AND A COMBINATION OF 6" AND 9" RISERS, TO A MAXIMUM OF 48" HIGH, TO SUIT SURFACE TREATMENT AND ELEVATION. SEE DRAWING UPMH.RISER._ FOR DETAILS.
 - MANHOLE LIDS SHALL HAVE THE LAST (3) THREE DIGITS OF THE MAP LOCATION ADDED BY; PAINTING OR WELDING A BEAD TO REPRESENT THE NUMBER.
 - FOR INTERIOR DETAILS REFER TO DRAWING ID-MH1



8' X 8' AND 12' X 9'
UTILITY MANHOLE WITH COVER
FOR SINGLE AND MULTIPLE FEEDERS

	By	Checked	Approved	Date
Original	J	HPZ	SPEC. COMMITTEE	07/26/07
Revision				
Revision				
Revision				

UPMH.880
UPMH.1290



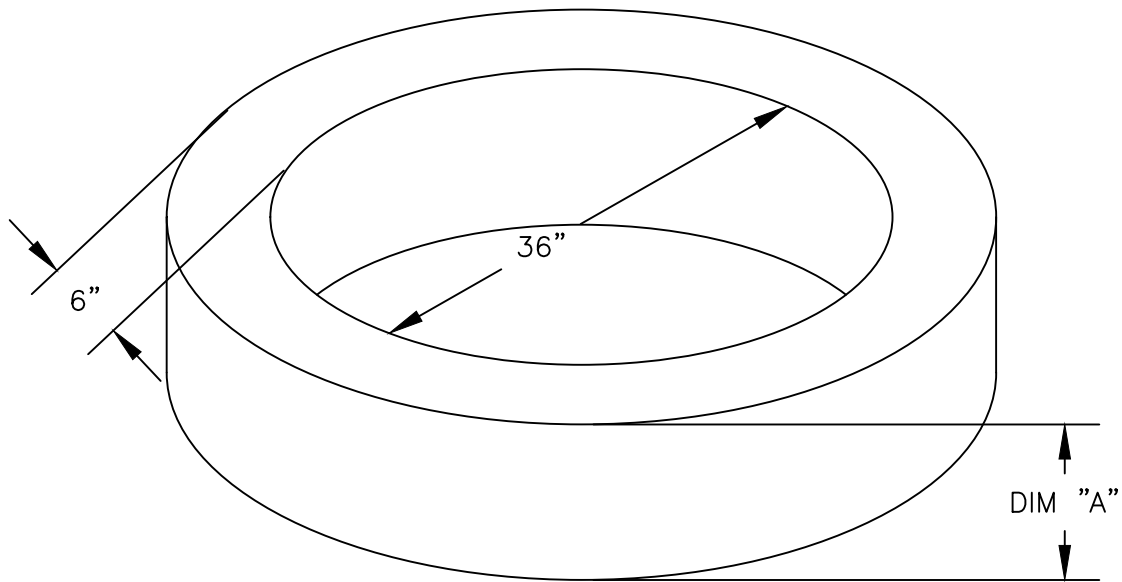
NOTES:

1. A CONTINUOUS LOOP OF 2/0 BARE CU WIRE SHALL BE INSTALLED INSIDE THE ENTIRE MANHOLE. THE BOTTOM BOLT OF THE CABLE SUPPORT BRACKET SHALL BE USED TO ATTACH THE LOOP TO THE WALL, OR THE LOOP MAY BE ATTACHED DIRECTLY TO BOTTOM BOLT HOLE WHEN BRACKET IS NOT USED.
2. TWO 3/4" X 8' GROUND RODS SHALL BE DRIVEN INTO UNDISTURBED EARTH IN OPPOSITE CORNERS OUTSIDE THE MANHOLE. GROUND RODS SHALL BE THEN CONNECTED TO 2/0 BARE CU GROUND WIRE, WHICH SHALL THEN BE ATTACHED TO THE 2/0 BARE CU GROUND LOOP INSIDE THE MANHOLE, USING TWO COMPRESSION CONNECTORS.
3. COMPLETED SPLICE SHALL BE SUPPORTED BETWEEN TWO CABLE SUPPORT ARMS.
4. WHENEVER POSSIBLE FEEDER CABLES SHALL BE LOOPED AROUND ENTIRE INSIDE OF MANHOLE, TO PROVIDE AS MUCH EXCESS CABLE AS POSSIBLE.
5. GROUND SPLICE ONLY WHEN REQUIRED. (SEE ID-GF1)



INSTALLATION DRAWING FOR
MANHOLE INTERIOR DETAIL

	By	Checked	Approved	Date
Original	J	HPZ	SPEC. COMMITTEE	06/28/07
Revision	J	HPZ	SPEC. COMMITTEE	11/29/07
Revision	HPZ	HPZ	SPEC. COMMITTEE	12/05/11
Revision				



RING RISER DIM. "A"

UPMH.RISER.6 6"
 UPMH.RISER.9 9"

NOTES:

1. MANHOLE RING AND COVER SHALL BE ADJUSTED USING MORTAR AND A COMBINATION OF 6" AND 9" RISERS, TO SUIT SURFACE TREATMENT AND ELEVATION.
2. THE MAXIMUM NUMBER OF RISERS SHALL NOT EXCEED 4 EACH OF 9" OR A TOTAL OF 36" HIGH.
3. ALL JOINTS SHALL BE SEALED WITH AN APPROVED WATER RESISTANT JOINT SEALER.
4. GROUTING SHALL BE APPLIED TO THE OUTSIDE SEAM BETWEEN COVER AND TOP RISER.



6 AND 9 INCH RING RISERS
 FOR MANHOLES

	By	Checked	Approved	Date
Original	J	HPZ	SPEC. COMMITTEE	06/28/07
Revision				
Revision				
Revision				

UPMH.RISER.6
 UPMH.RISER.9

METERS

METERING EQUIPMENT & TERMINATING SERVICES:

I. Residential Meter Bases:

UNDERGROUND – 100 amp, 200 amp, 320 amp

1. NOVEC shall terminate the service conductor on the line side of the meter base and the electrician is responsible for terminating the conductor on the load side of the meter base.
2. The left bottom knock-out of the meter base is reserved for NOVEC's service conductors. The customer's service must exit the meter base out the center bottom, right bottom, right back, or right side. The customer's service shall not exit the left side of the meter base.
3. NOVEC shall provide the meter base which shall be mounted by the electrician at 54", +/- 6" to the center of the glass above finished grade to keep the meter mounting height between 4' and 6'.

OVERHEAD- 100 amp, 200 amp, 320 amp, 400 amp

1. NOVEC shall terminate the service conductors at the weather head. The electrician supplies and installs the service riser and the weather head. The electrician shall make all connections in the meter base.

II. Commercial Services:

NOVEC shall provide phase identification on all NOVEC service conductors.

Single phase and three phase apartment/condo services:

1. Gang type meter enclosures shall be provided by the customer.
2. NOVEC shall terminate its service conductors in the meter enclosure landing compartment.

**Single phase and three phase services for retail sites:
100amp, 200amp, 320amp, 400amp, 600amp**

Single meter base services:

1. NOVEC shall terminate the service conductor on the line side of the meter base and the electrician is responsible for terminating the conductor on the load side of the meter base.

Multiple meters fed from a trough or tap box:

1. NOVEC shall terminate all conductors on the landing pads at the tap box or make all connections in the trough.
2. The electrician shall be responsible for terminating conductors in the meter bases after the tap box or trough.

Single phase or three phase, CT rated services:

1. NOVEC shall provide up to 30' of conductor after the CT cabinet or after entrance into the structure to the first switch or trough for large services using switch gear or indoor tap boxes in electric rooms. NOVEC shall mark phasing on each conductor with color coded tape. The electrician shall coordinate with NOVEC to be on site to verify the termination of service conductors at switchgear.

Color codes:

A- phase	Red
B- phase	Yellow
C- phase	Blue
Neutral	White

2. The electrician shall be responsible for providing the CT cabinet or CT compartment per NOVEC specifications. NOVEC shall provide the meter enclosure to be installed by the electrician. NOVEC shall install the metering equipment (meter, cable, CTs, PTs and test switch).
3. Where inside service points cannot be reached with 30' of cable, the metering equipment and termination point for NOVEC's service shall be located on the outside of the building. NOVEC shall terminate all conductors on the landing pads at the tap box or CT cabinet.

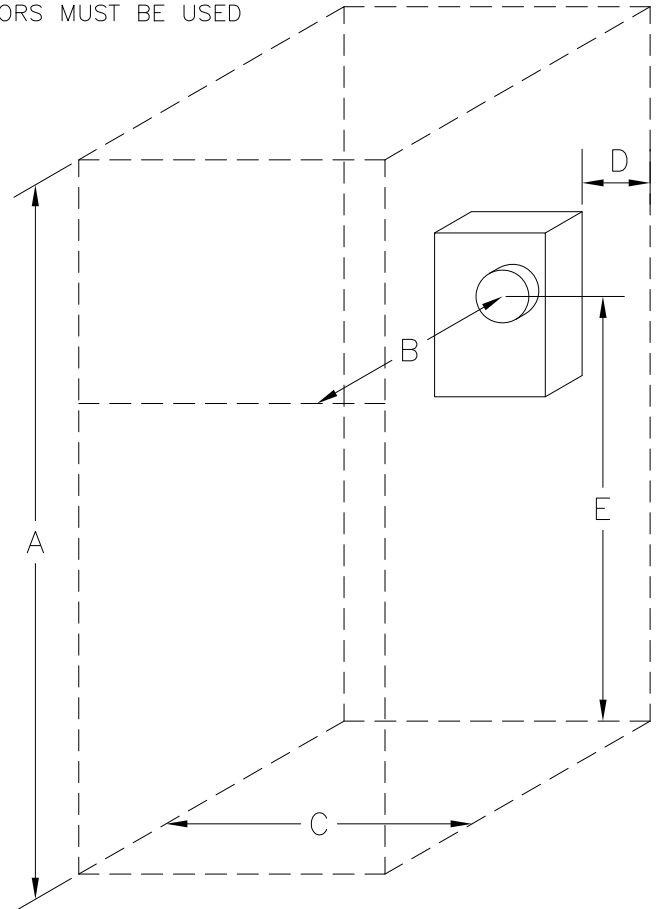
MINIMUM CLEAR SPACE REQUIREMENTS

- A. 7'0" FROM FINISHED GRADE TO LOWEST OBSTRUCTION.
- B. 60" MEASURED FROM FACE OF METER.
- C. 36" WIDE UNOBSTRUCTED TRAVEL WAY.
- D. 2" ON BOTH SIDES OF METER TO ANY OPENING ON THE SAME PLANE INTO THE BUILDING OR SIDE OBSTRUCTION.
- E. CENTER OF METERBASE GLASS SHALL BE INSTALLED AT 54" ± 6" ABOVE FINISHED GRADE.

SUPPORT REQUIREMENTS

- * METERBASE SHALL BE ATTACHED TO DWELLING WITH 4 SCREWS (MINIMUM #10, 1" IN LENGTH).
- * DRYWALL SCREWS ARE NOT ACCEPTABLE.
- * METERBASE SHALL BE ATTACHED TO PLYWOOD, SOLID STUD, BRICK, BLOCK, OR CONCRETE BACKING SUBJECT TO NOVEC APPROVAL. ANCHORS MUST BE USED WHEN INSTALLING IN MASONRY OR CONCRETE.

METER BASES ON SINGLE FAMILY HOMES MUST BE WITHIN 10' OF THE CORNER CLOSEST TO THE DESIGNED ELECTRIC SOURCE OR THE CUSTOMER SHALL BE REQUIRED TO INSTALL CONDUIT. THE CONDUIT MUST EXTEND 5' BEYOND THE HOUSE TOWARDS THE SOURCE AS DESIGNATED BY NOVEC. (SEE ID-RM1 AND ID-BG002)



UNACCEPTABLE METERBASE LOCATIONS

- * ELEVATED PLATFORMS.
- * MOUNTED ON A CHIMNEY.
- * UNDER DECKS LOWER THAN 7'.
- * BELOW A WINDOW ACCESSIBLE TO THE GROUND.
- * INSIDE FENCED AREAS WITH NO GATED ACCESS.
- * LESS THAN 1' HORIZONTAL SEPARATION FROM GAS.
- * INSIDE STRUCTURES EXCEPT IN APPROVED METER ROOMS.
- * LESS THAN 3' FROM THE GAS METER VENT TO THE EDGE OF THE ELECTRIC METER GLASS.
- * ANY AREA WHERE EQUIPMENT INHIBITS SAFE ACCESS OR OBSTRUCTS WORKING CLEARANCES.
- * ANY AREA WHERE A DOOR MAY STRIKE THE METER/METERBASE.



INSTALLATION DRAWING FOR
INSTALLING METER BASES

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	06/16/04
Revision	J	HPZ	SPEC. COMMITTEE	12/03/08
Revision	KJB	KMW	SPEC. COMMITTEE	05/21/19
Revision	KJB	KMW	SPEC. COMMITTEE	08/31/20

ID-MB

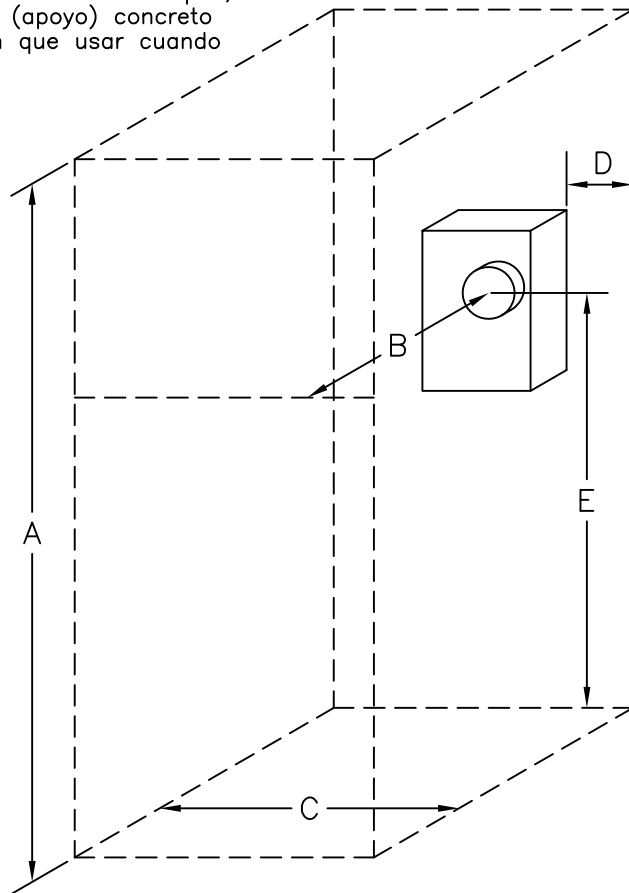
REQUISITOS DE MÍNIMU ESPACIO LIBRE

- A. 7'0" del nivel completo a la obstruccion mas baja.
- B. 60" medido del frente del contador.
- C. 36" de ancho libre para camino de paso.
- D. 2" en los dos lados al contador para cualquier abertura en el mismo plano entrando al edificio o obstruccion de lado.
- E. El vidrio del centro de la base debe estar instalado a 54" ± 6" del nivel completo.

REQUISITOS DE SOPORTE

- * La base del contador se tiene que soportar al edificio (vivienda) con 4 tornillos (mínimo #10, 1" de largo)
- * Tornillos de mampostería no son aceptable (admisible)
- * La base del contador se tiene que soportar con un tablero de varias capas, una tachuela solida, un ladrillo, un bloque, o con un respaldo (apoyo) concreto sujeto de ser aprobado por NOVEC. Sostenores se tienen que usar cuando se instala en mampostería o concreto.

Bases de contadores en casas individuales en terreno mas pequeños de 2.5 acres, tienen que estar dentro de 5' de la esquina mas cercana del diseñado fuente de energía o el cliente sera requerido a instalar conducto. El conducto tiene que extender 5' mas allá de la casa para la fuente de energía como sea diseñado por NOVEC. (Mire ID-RM1 y ID-SC1)



LUGARES INADMISIBLES PARA LA BASE DEL CONTADOR

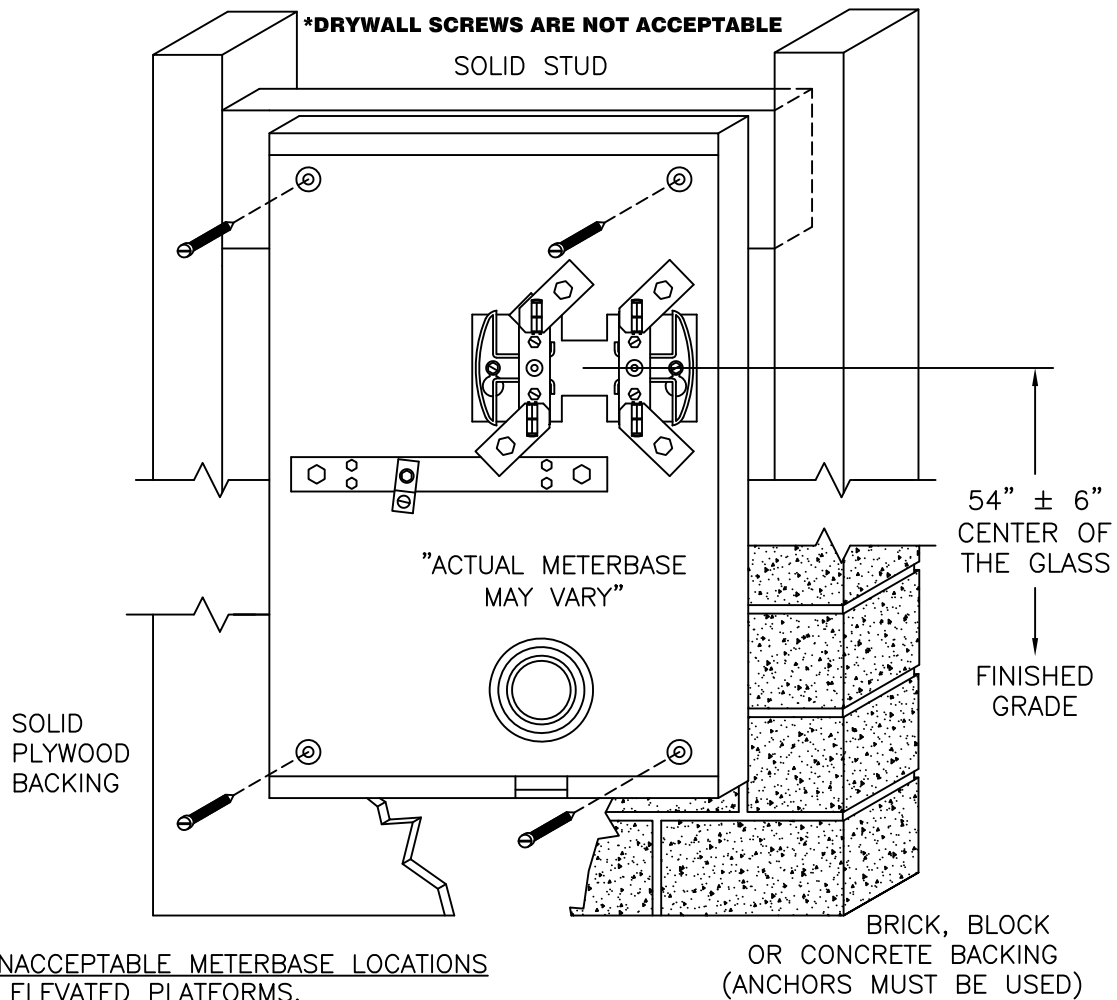
- * Plataformas elevadas.
- * Montada en chimeneas.
- * Debajo de terrazas mas bajas de 7'.
- * Debajo de una ventana accesible a ras del suelo.
- * Adentro de areas con rejas sin acceso de puerta.
- * Menos de 1' de separacion horizontal del gas natural.
- * Adentro de estructuras menos en cuartos de contadores aprobados.
- * Menos de 3' del contador de gas natural al borde del cristal del contador electrico.
- * En cualquier area adonde equipos cohibe (impide) acceso seguro o obstruye los espacios de trabajo.
- * En cualquier area adonde una puerta puede golpear al contador/la base del contador.



Guia Para Instalar Bases de Contadores Para Contratistas

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	06/16/04
Revision	KJB	HPZ	SPEC. COMMITTEE	04/21/06
Revision	J	HPZ	SPEC. COMMITTEE	12/03/08
Revision	KJB	KMW	SPEC. COMMITTEE	05/21/19

***4 SCREWS (MINIMUM), CORROSION RESISTANCE #10 1" IN LENGTH**



UNACCEPTABLE METERBASE LOCATIONS

- * ELEVATED PLATFORMS.
- * MOUNTED ON A CHIMNEY.
- * UNDER DECKS LOWER THAN 7'.
- * BELOW A WINDOW ACCESSIBLE FROM THE GROUND.
- * INSIDE FENCED AREAS WITH NO GATED ACCESS.
- * LESS THAN 1' HORIZONTAL SEPARATION FROM GAS.
- * INSIDE STRUCTURES EXCEPT IN APPROVED METER ROOMS.
- * LESS THAN 3' FROM THE GAS METER VENT TO THE EDGE OF THE ELECTRIC METER GLASS.
- * ANY AREA WHERE A DOOR MAY STRIKE THE METER/METERBASE.
- * ANY AREA WHERE EQUIPMENT INHIBITS SAFE ACCESS OR OBSTRUCTS WORKING CLEARANCES.

NOTES

- * CENTER OF METERBASE GLASS SHALL BE INSTALLED AT 54" ± 6" ABOVE FINISHED GRADE.



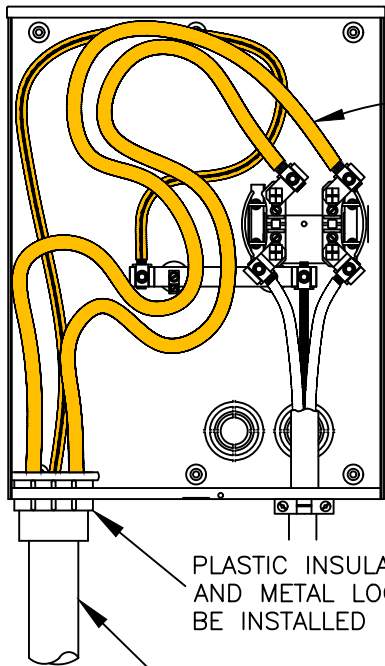
INSTALLATION DRAWING FOR
METER BASE INSTALLATION STICKER

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	02/04/02
Revision	KJB	MLH	SPEC. COMMITTEE	06/15/04
Revision	KJB	MLH	SPEC. COMMITTEE	01/13/06
Revision	KJB	KMW	SPEC. COMMITTEE	05/21/19

NOTES:

1. METER BASE FURNISHED BY NOVEC, INSTALLED BY CUSTOMER.
2. UM8025 (2-1/2" METER CONDUIT, 2" 90° SWEEP, 2" CONDUIT)
UM8030 (3" METER CONDUIT, 2-1/2" 90° SWEEP, 2-1/2" CONDUIT)
UM8035 (3-1/2" METER CONDUIT, 3" 90° SWEEP, 3" CONDUIT)
3. DITCH MUST BE TAMPED AT METER BASE BEFORE BACK FILLING.
4. SWEEP SHALL BE RESTING ON UNDISTURBED OR COMPACTED SOIL.
- 5. DITCH MUST BE BACK FILLED BEFORE METER BASE IS MADE UP.**
6. CABLE MUST BE PUSHED DOWN TO THE BOTTOM OF THE METER BASE TO ALLOW FOR EARTH SETTLEMENT.
- 7. WRAP INNER CONDUIT WITH ELECTRICAL TAPE (2 FULL WINDINGS MIN.) WHERE THE METER CONDUIT AND INNER CONDUIT MEET. IMPORTANT: THIS WILL BE USED TO CHECK FOR CONDUIT SETTLEMENT.**

SERVICE CABLE	METER RISER
2/0	UM8025
4/0	UM8030
350	UM8035
500	UM8035

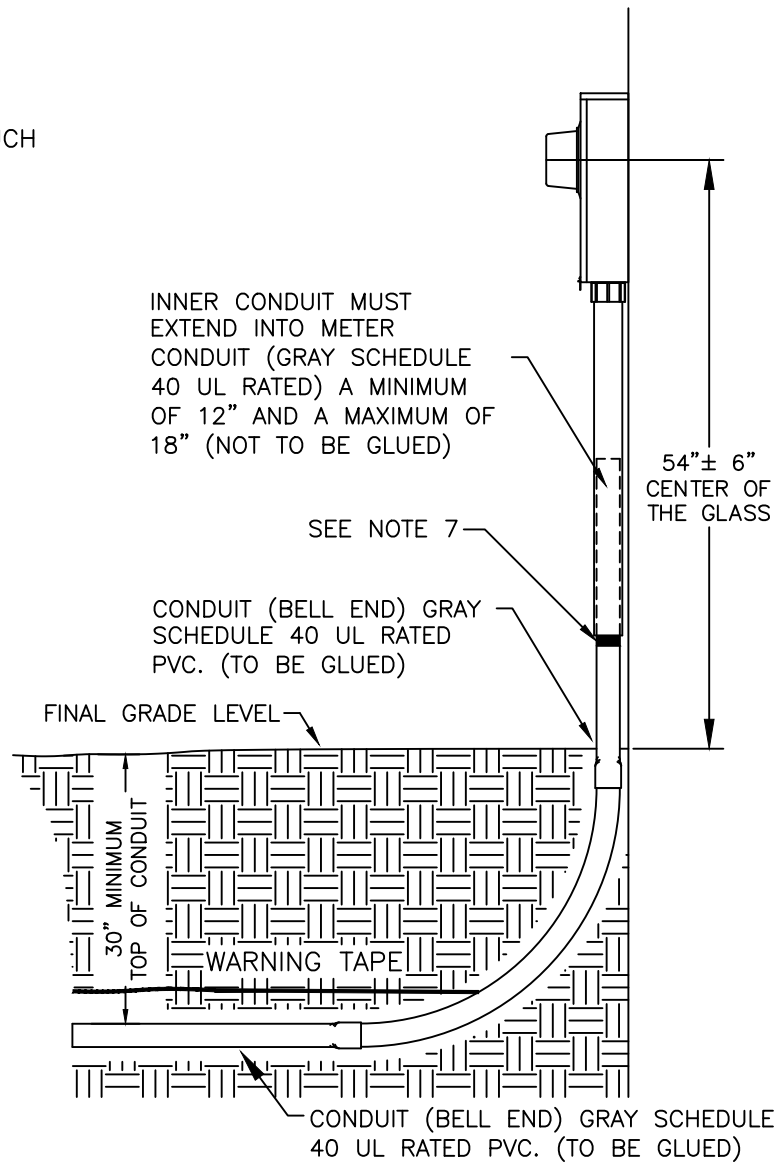


PROVIDE AS MUCH SLACK AS POSSIBLE IN METER BASE

PLASTIC INSULATING BUSHING AND METAL LOCKNUT MUST BE INSTALLED

CONDUIT SHALL BE INSTALLED ON LEFT SIDE OF METERBASE

MINIMUM RADIAL SEPARATION BETWEEN ELECTRICAL CONDUIT AND ALL OTHER UTILITIES SHALL BE TWELVE (12) INCHES. (UNLESS A JOINT USE AGREEMENT HAS BEEN ESTABLISHED. NOVEC SHALL MAINTAIN 12" SEPARATION BETWEEN GAS AT ALL TIMES)



INNER CONDUIT MUST EXTEND INTO METER CONDUIT (GRAY SCHEDULE 40 UL RATED) A MINIMUM OF 12" AND A MAXIMUM OF 18" (NOT TO BE GLUED)

54" ± 6" CENTER OF THE GLASS

SEE NOTE 7

CONDUIT (BELL END) GRAY SCHEDULE 40 UL RATED PVC. (TO BE GLUED)

FINAL GRADE LEVEL

30" MINIMUM TOP OF CONDUIT

WARNING TAPE

CONDUIT (BELL END) GRAY SCHEDULE 40 UL RATED PVC. (TO BE GLUED)



RESIDENTIAL UNDERGROUND METER RISER

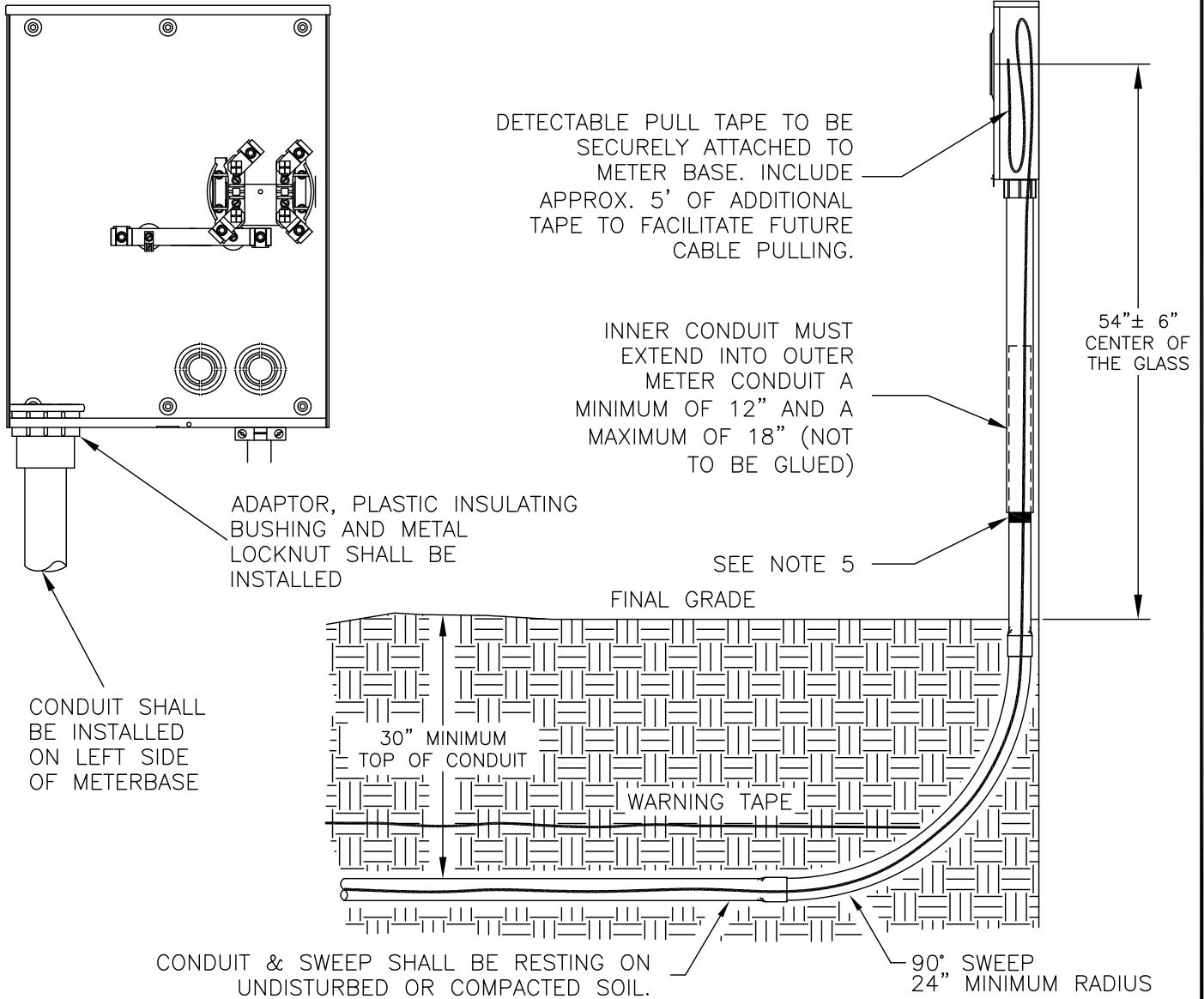
	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	10/13/04
Revision	J	HPZ	SPEC. COMMITTEE	12/05/11
Revision	KJB	HPZ	SPEC. COMMITTEE	05/24/13
Revision	KJB	KMW	SPEC. COMMITTEE	05/28/20

UM8025
UM8030
UM8035

NOTES:

1. METER BASE SHALL BE FURNISHED BY NOVEC, AND INSTALLED BY CUSTOMER.
2. FOR:
 - 2" CONDUIT, USE 2-1/2" METER RISER CONDUIT
 - 2-1/2" CONDUIT, USE 3" METER RISER CONDUIT
 - 3" CONDUIT, USE 3" SPECIAL METER RISER CONDUIT (AVAILABLE FROM NOVEC)
3. **DITCH SHALL BE TAMPED AT METER BASE BEFORE BACK FILLING.**
4. ALL CONDUIT SHALL BE GRAY SCHEDULE 40 UL RATED PVC.
5. **WRAP INNER CONDUIT WITH ELECTRICAL TAPE (2 FULL WINDINGS MIN.) WHERE THE METER CONDUIT AND INNER CONDUIT MEET. IMPORTANT: THIS WILL BE USED TO CHECK FOR CONDUIT SETTLEMENT.**

**MINIMUM RADIAL SEPARATION BETWEEN ELECTRICAL CONDUIT AND ALL OTHER UTILITIES SHALL BE TWELVE (12) INCHES.
(UNLESS A JOINT USE AGREEMENT HAS BEEN ESTABLISHED.)
NOVEC SHALL MAINTAIN 12" SEPARATION BETWEEN GAS AT ALL TIMES.**



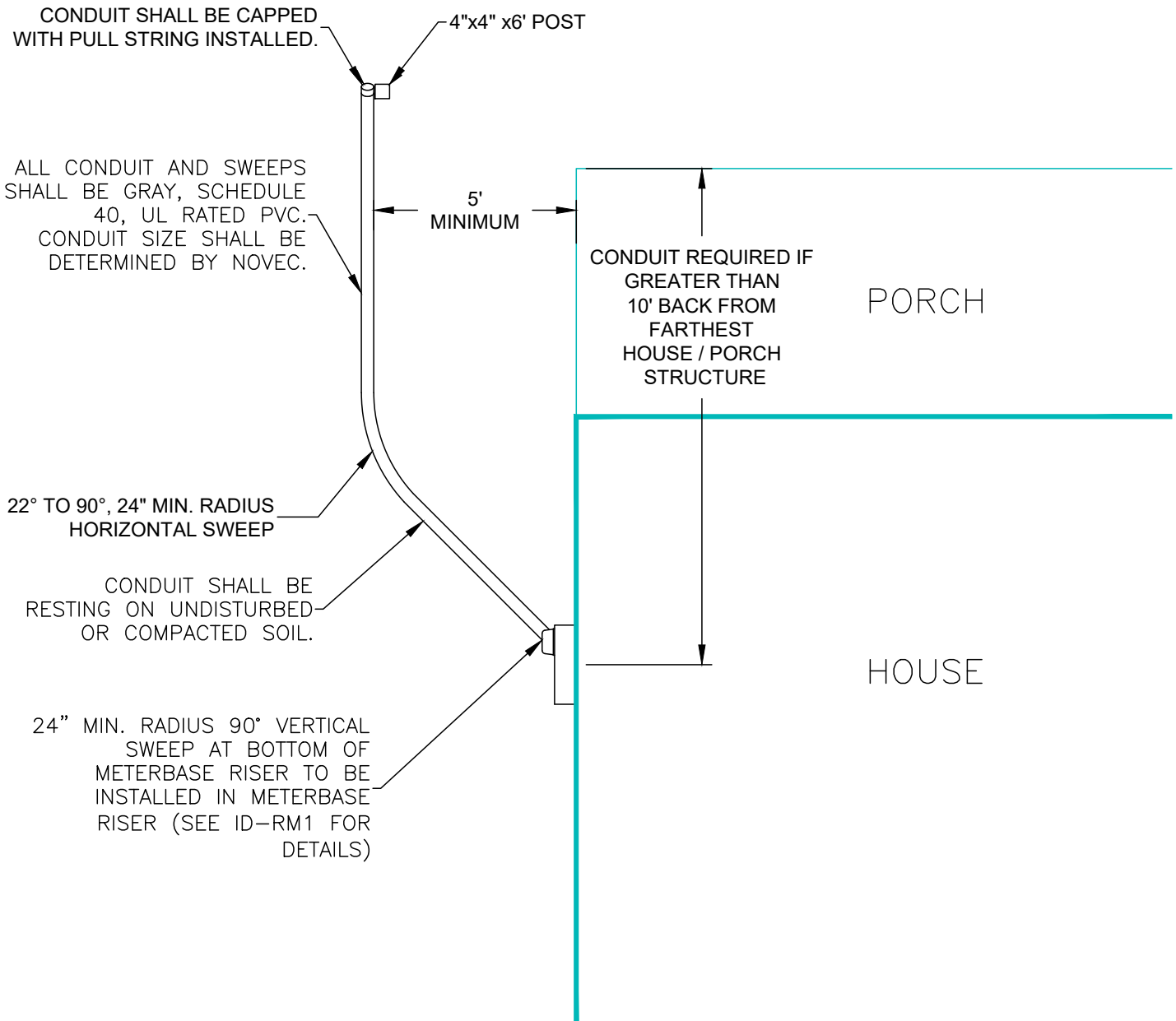
INSTALLATION DRAWING FOR
METER BASE AND RISER PIPE

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	11/29/04
Revision	J	HPZ	SPEC. COMMITTEE	04/17/08
Revision	J	HPZ	SPEC. COMMITTEE	05/13/10
Revision	KJB	KMW	SPEC. COMMITTEE	05/21/19

ID-RM1

NOTES:

- 1) THE TRENCHES SHALL BE DUG SO THAT THE BOTTOM HAS A SMOOTH GRADE. LARGE ROCKS, STONES AND GRAVEL IN EXCESS OF 1 INCH SHALL BE REMOVED FROM THE BOTTOM OF THE TRENCH. WHERE REQUIRED, 6 INCHES OF BEDDING SHALL BE PLACED IN THE BOTTOM OF THE TRENCH BEFORE INSTALLING CONDUIT.
- 2) CONDUIT SHALL NOT BE INSTALLED IN DIRECT CONTACT WITH OTHER UTILITIES



INSTALLATION DRAWING FOR SERVICE CONDUIT FOR NON-STANDARD METER LOCATION ON DESIGNATED SIDE OF HOUSE

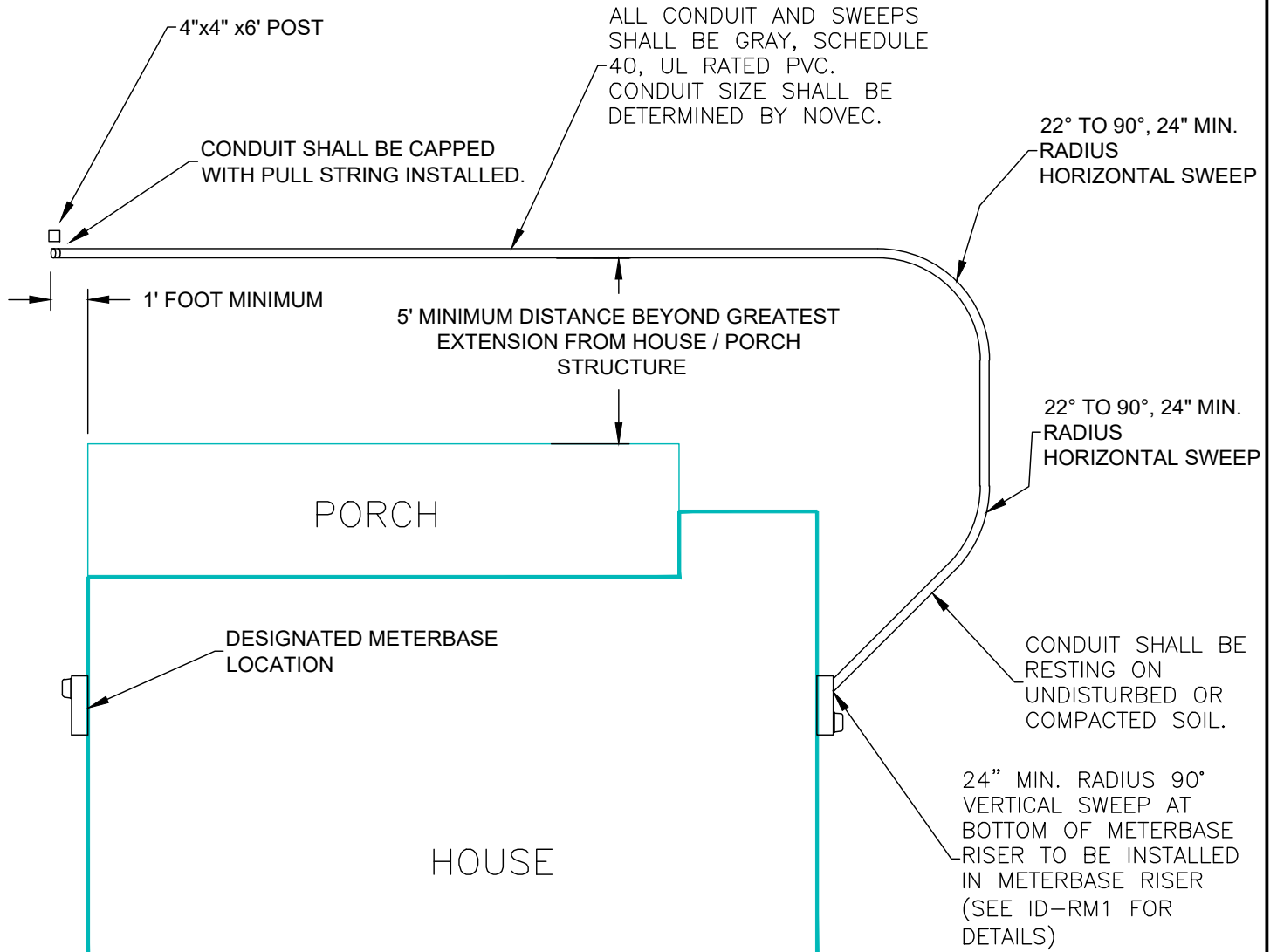
	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	10/25/99
Revision	KJB	HPZ	SPEC. COMMITTEE	04/25/06
Revision	KJB	KMW	SPEC. COMMITTEE	08/31/20
Revision				

REVISIONS:
08-31-20 KJB - CHANGED 5' TO 10' BACK FROM FRONT OF HOUSE

ID-BG002

NOTES:

- 1) THE TRENCHES SHALL BE DUG SO THAT THE BOTTOM HAS A SMOOTH GRADE. LARGE ROCKS, STONES AND GRAVEL IN EXCESS OF 1 INCH SHALL BE REMOVED FROM THE BOTTOM OF THE TRENCH. WHERE REQUIRED, 6 INCHES OF BEDDING SHALL BE PLACED IN THE BOTTOM OF THE TRENCH BEFORE INSTALLING CONDUIT.
- 2) CONDUIT SHALL NOT BE INSTALLED IN DIRECT CONTACT WITH OTHER UTILITIES



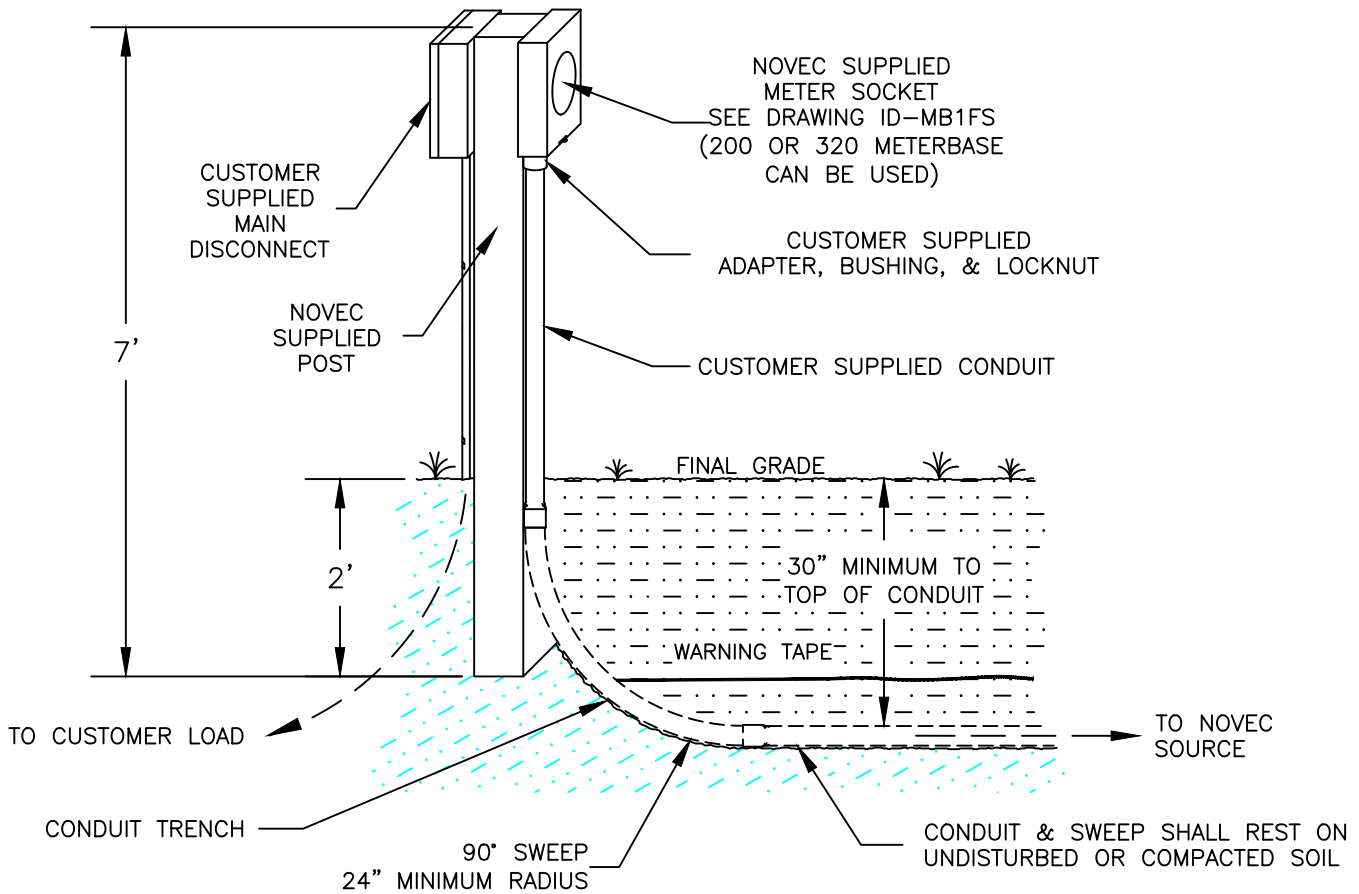
INSTALLATION DRAWING FOR
 SERVICE CONDUIT FOR METER LOCATION
 ON NON-DESIGNATED SIDE OF HOUSE
 (LOCATION REQUIRES WRITTEN APPROVAL BY NOVEC)

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	10/25/99
Revision	KJB	HPZ	SPEC. COMMITTEE	04/25/06
Revision	KJB	KMW	SPEC. COMMITTEE	08/31/20
Revision				

REVISIONS:
 ???/???/??? INITIALS ---

ID-BG004

NORTHERN VIRGINIA ELECTRIC COOPERATIVE
FREE STANDING METER INSTALLATION



MATERIALS:

NOVEC SUPPLIED:

- 1- METER SOCKET
- 1- 7' POST
- 1- WARNING TAPE

CUSTOMER SUPPLIED:

- 1- MALE CONDUIT ADAPTER
- 1- PLASTIC INSULATING BUSHING
- 1- METAL LOCKNUT FOR CONDUIT
- 1- MAIN DISCONNECT

AS REQ.-PVC CONDUIT (SIZE & LENGTH SPECIFIED BY NOVEC)

ALL MATERIAL LISTED TO BE INSTALLED BY
CUSTOMER



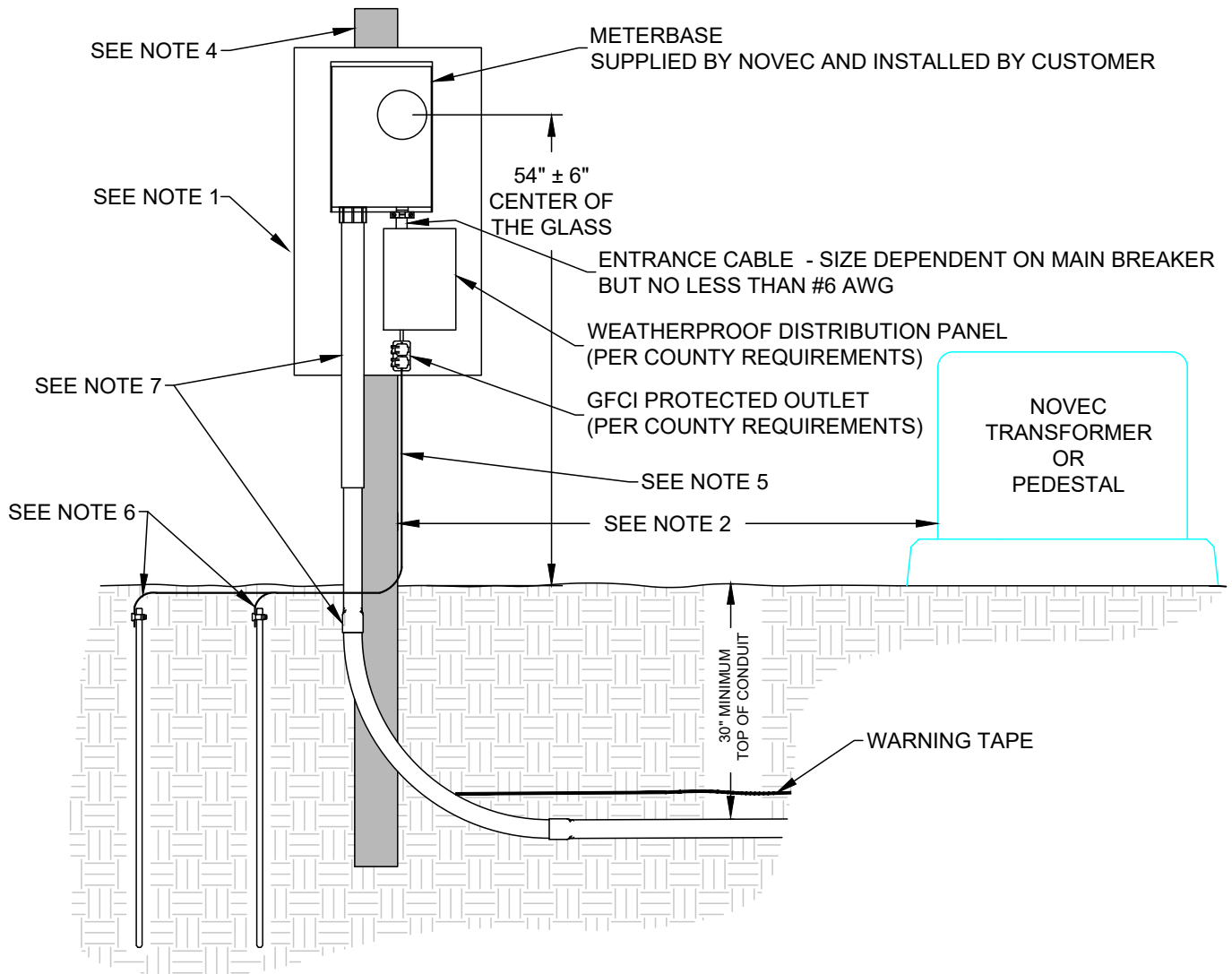
INSTALLATION DRAWING FOR
SINGLE PHASE
METER FREE STANDING

	By	Checked	Approved	Date
Original	KJB	HPZ	SPEC. COMMITTEE	04/25/06
Revision	J	HPZ	SPEC. COMMITTEE	10/15/09
Revision	KJB	HPZ	SPEC. COMMITTEE	08/30/12
Revision	KJB	KMW	SPEC. COMMITTEE	04/13/20

ID-MFS

NOTES:

1. TEMPORARY SERVICE STRUCTURES MUST BE STRONGLY BUILT TO WITHSTAND THE STRAINS IMPOSED BY THE ATTACHED EQUIPMENT. BACKBOARD MUST BE BUILT USING A MINIMUM 3/4" RIGID MATERIAL AND MUST BE TREATED FOR OUTDOOR USE.
2. SERVICE STRUCTURES ARE TO BE A MINIMUM OF 6 FEET FROM THE SOURCE. THE EXACT LOCATION OF THE STRUCTURE SHALL BE APPROVED BY NOVEC.
3. THE STRUCTURE MUST BE INSPECTED BY THE COUNTY ELECTRICAL INSPECTOR OR WHERE APPLICABLE, OR A SIGNED "FARM" SERVICE AGREEMENT MUST BE ON FILE, PRIOR TO THE INSTALLATION OF A METER BY NOVEC.
4. THE POST SHALL BE A MINIMUM 4X4 OR A POLE WITH A MINIMUM DIA. OF 6" AND SHALL BE TREATED FOR OUTDOOR USE. POST SHALL BE SET A MINIMUM OF 3' DEEP.
5. GROUND WIRE SHALL BE INSTALLED PER COUNTY REQUIREMENTS AND SHALL BE SECURELY FASTENED TO POST.
6. GROUND RODS SHALL BE INSTALLED PER COUNTY REQUIREMENTS WITH THE TOP OF THE ROD BELOW GRADE.
7. METER RISER (SEE ID-RM1) AND ALL CONDUIT SHALL BE INSTALLED BY THE CUSTOMER UNLESS OTHERWISE APPROVED BY NOVEC. NOVEC TO PROVIDE CONDUIT REQUIREMENTS AND PLACEMENT DETAILS.



INSTALLATION DRAWING FOR
TYPICAL UNDERGROUND
TEMPORARY SERVICE STRUCTURE

	By	Checked	Approved	Date
Original	DLB	MLH	SPEC. COMMITTEE	03/20/97
Revision	KJB	MLH	SPEC. COMMITTEE	04/25/06
Revision	JP	HPZ	SPEC. COMMITTEE	10/15/09
Revision	KJB	KMW	SPEC. COMMITTEE	06/03/20

ID-TS1

EYEBOLT

SUPPLIED BY NOVEC AND INSTALLED BY CUSTOMER, TO BE INSTALLED A MINIMUM OF (12) FEET ABOVE GROUND LEVEL (SEE NOTE 4)

WEATHERHEAD

TO BE INSTALLED 6" BELOW THE EYEBOLT. (3) FEET OF WIRE TO BE LEFT OUT OF WEATHERHEAD

OUTLET

(PER COUNTY REQUIREMENTS)

PANEL BOX

(PER COUNTY REQUIREMENTS)

GROUND ROD(S)

TOP OF RODS AND GROUND WIRE TO BE BELOW GRADE, BUT NOT TO BE COVERED UNTIL INSPECTED BY THE INSPECTING AUTHORITY. TO BE INSTALLED PER COUNTY REQUIREMENTS

POST

MUST BE AT LEAST A 6" X 6" OR A POLE WITH A MINIMUM DIAMETER OF 10" (MUST BE TREATED FOR OUTSIDE USE) POLE MUST BE SET AT LEAST FIVE (5) FEET DEEP

ENTRANCE CABLE

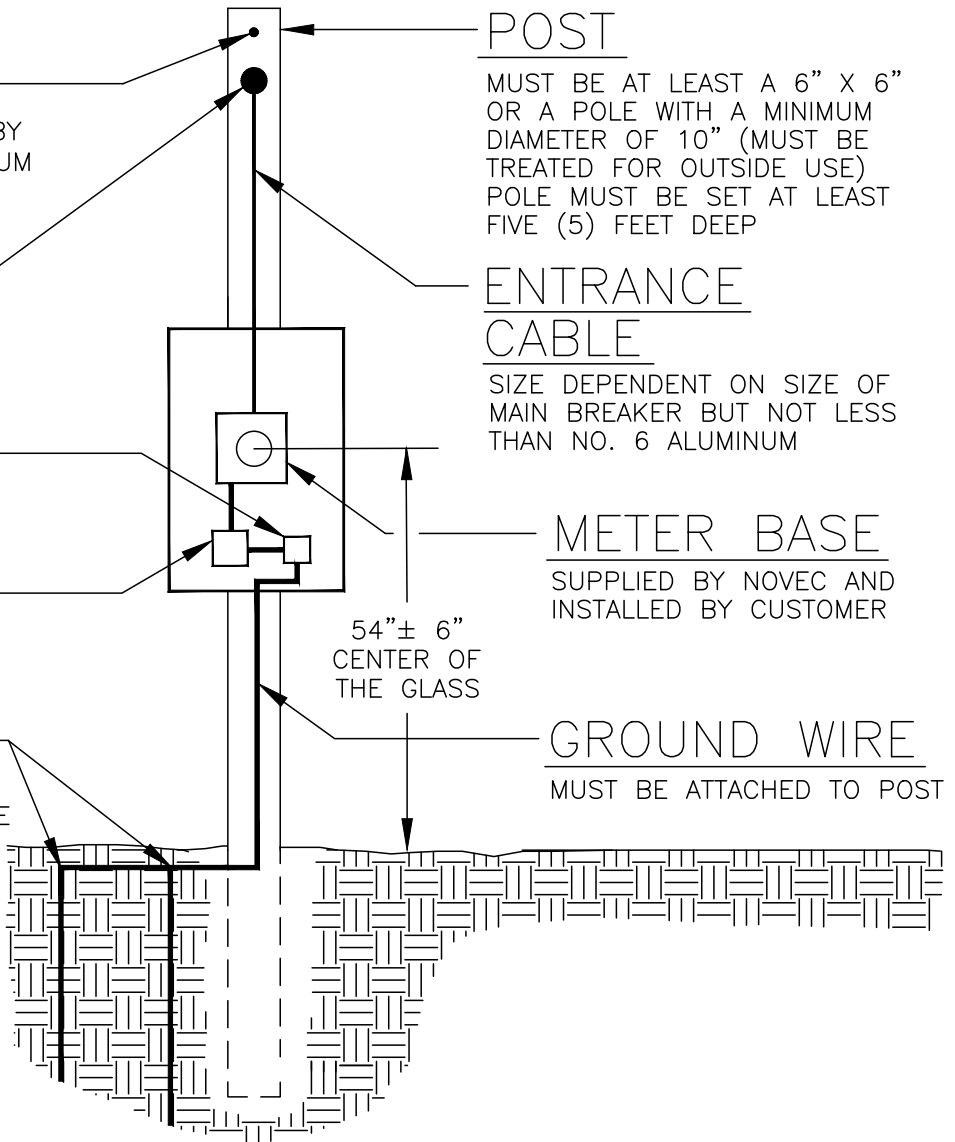
SIZE DEPENDENT ON SIZE OF MAIN BREAKER BUT NOT LESS THAN NO. 6 ALUMINUM

METER BASE

SUPPLIED BY NOVEC AND INSTALLED BY CUSTOMER

GROUND WIRE

MUST BE ATTACHED TO POST



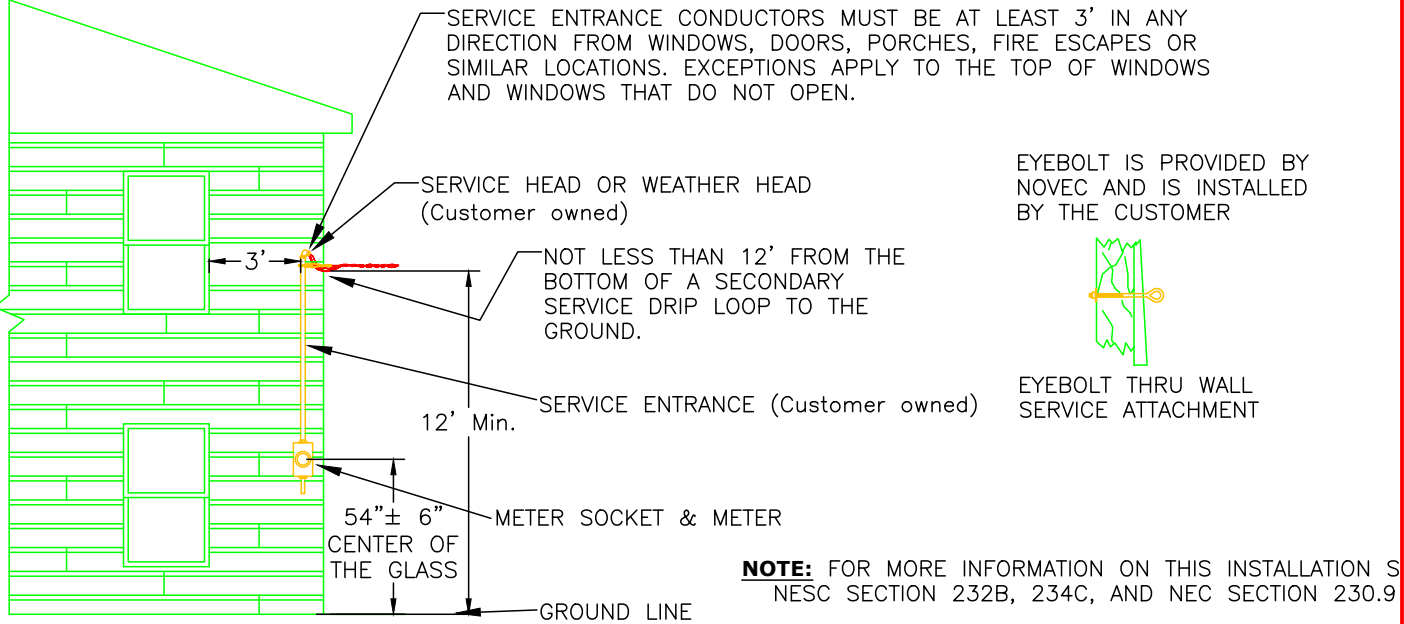
NOTES:

1. TEMPORARY SERVICE STRUCTURES MUST BE STRONGLY BUILT TO WITHSTAND THE STRAINS IMPOSED BY THE ATTACHED EQUIPMENT. BACKBOARD MUST BE BUILT USING A MINIMUM 3/4" RIGID MATERIAL (MUST BE TREATED FOR OUTSIDE USE).
2. SERVICE STRUCTURES MUST BE WITHIN 75 FEET OF THE TRANSFORMER POLE FROM WHICH THE SERVICE IS TO BE INSTALLED. THE EXACT LOCATION OF THE STRUCTURE WILL BE SPECIFIED BY NOVEC.
3. THIS STRUCTURE MUST BE INSPECTED BY THE COUNTY ELECTRICAL INSPECTOR OR WHERE APPLICABLE, A SIGNED "FARM" SERVICE AGREEMENT MUST BE ON FILE, PRIOR TO THE INSTALLATION OF A METER BY NOVEC.
4. THE HEIGHT OF ALL TEMPORARY STRUCTURES MUST BE SUCH THAT A MINIMUM CLEARANCE OF 18 FEET SHALL BE MAINTAINED OVER DRIVEWAYS, STREETS, ALLEYS AND AREAS ACCESSIBLE TO MOTOR VEHICLES, AND A MINIMUM CLEARANCE OF TWELVE (12) FEET SHALL BE MAINTAINED OVER SIDEWALKS AND LAWNS.

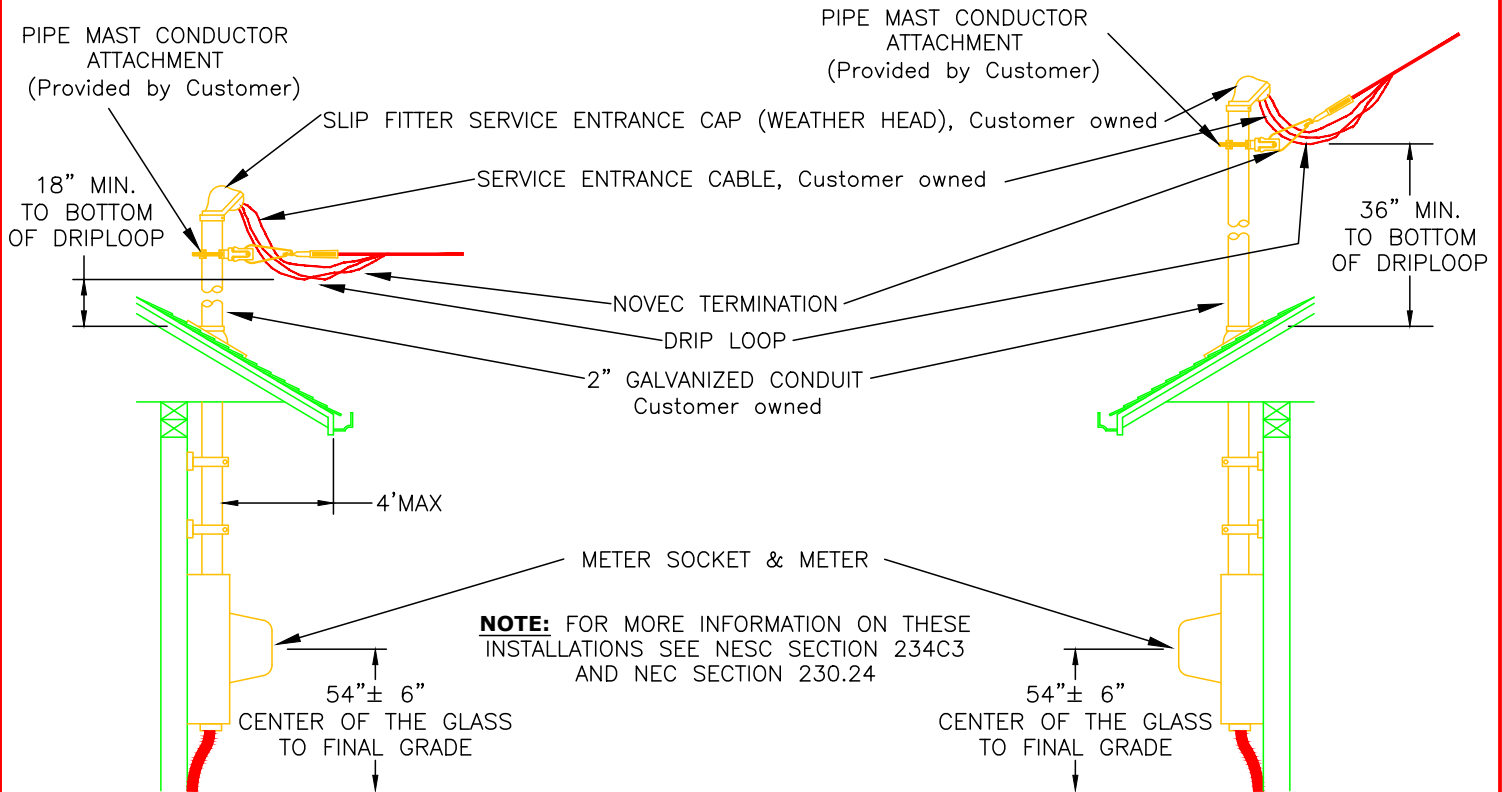


INSTALLATION DRAWING FOR
TYPICAL OVERHEAD
TEMPORARY SERVICE STRUCTURE

	By	Checked	Approved	Date
Original	DLB	MLH	SPEC. COMMITTEE	03/20/97
Revision	KJB	MLH	SPEC. COMMITTEE	04/25/06
Revision	J	HPZ	SPEC. COMMITTEE	10/15/09
Revision	KJB	KMW	SPEC. COMMITTEE	05/21/19



WALL MOUNTED SERVICE MAST INSTALLATION



SERVICE CONDUCTOR AWAY FROM ROOFLINE

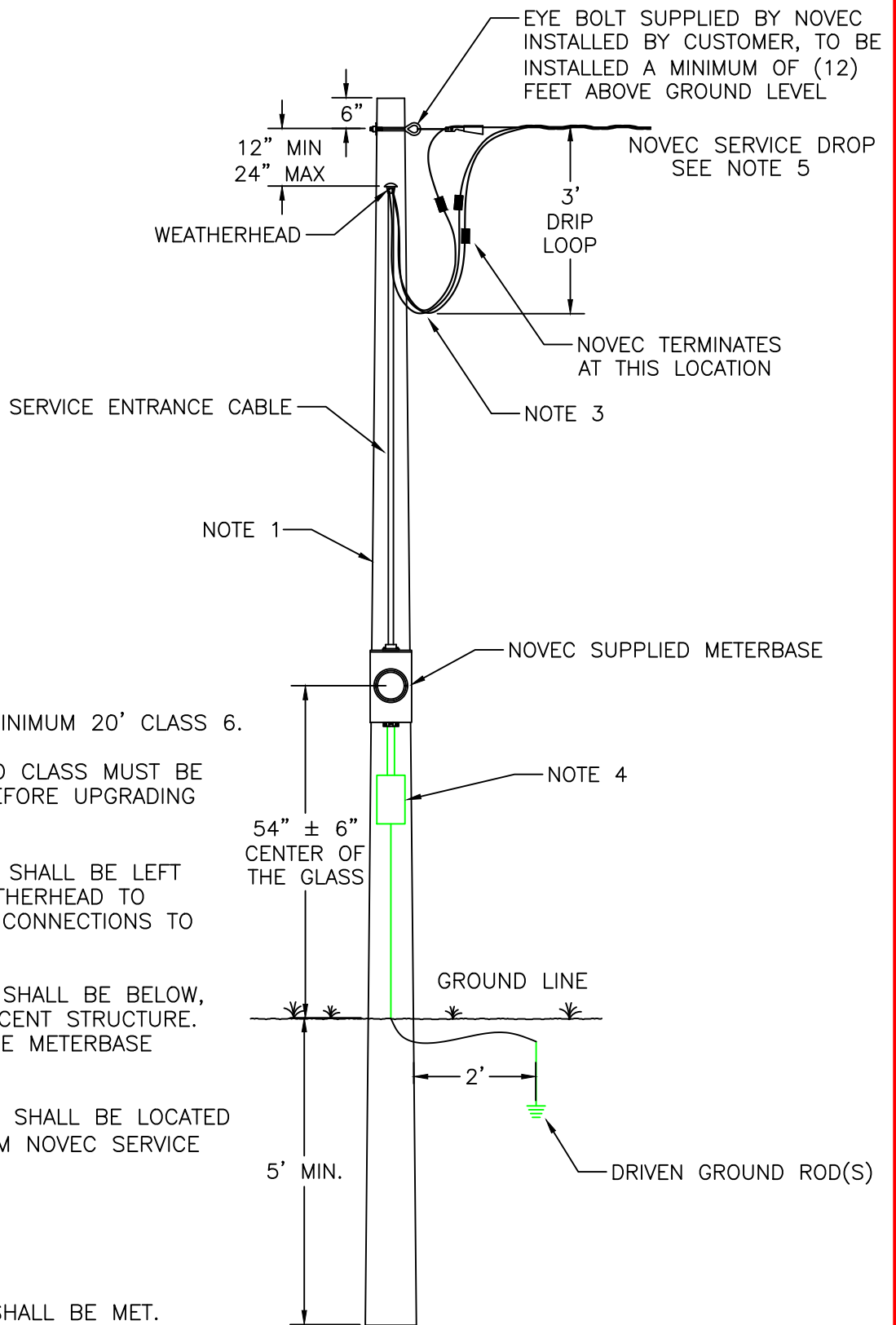
SERVICE CONDUCTOR OVER ROOFLINE

ROOF MOUNTED SERVICE MAST INSTALLATIONS (USEABLE FOR NON-READILY ACCESSIBLE ROOFS ONLY)



INSTALLATION DRAWING FOR OVERHEAD SERVICE

	By	Checked	Approved	Date
Original	KJB	HPZ	SPEC. COMMITTEE	04/25/06
Revision	J	HPZ	SPEC. COMMITTEE	05/15/08
Revision	J	HPZ	SPEC. COMMITTEE	10/15/09
Revision	KJB	KMW	SPEC. COMMITTEE	05/21/19



NOTES:

1. POLE SIZE WILL BE A MINIMUM 20' CLASS 6.
2. EXISTING POLE SIZE AND CLASS MUST BE APPROVED BY NOVEC BEFORE UPGRADING SERVICE.
3. 4' OF ENTRANCE CABLE SHALL BE LEFT EXTENDING OUT OF WEATHERHEAD TO ALLOW NOVEC TO MAKE CONNECTIONS TO SERVICE DROP.
4. CUSTOMER DISCONNECT SHALL BE BELOW, BEHIND OR ON AN ADJACENT STRUCTURE. ALL CONNECTIONS AT THE METERBASE SHALL BE WATERTIGHT.
5. CUSTOMER OWNED POLE SHALL BE LOCATED A MAXIMUM OF 50' FROM NOVEC SERVICE POLE.

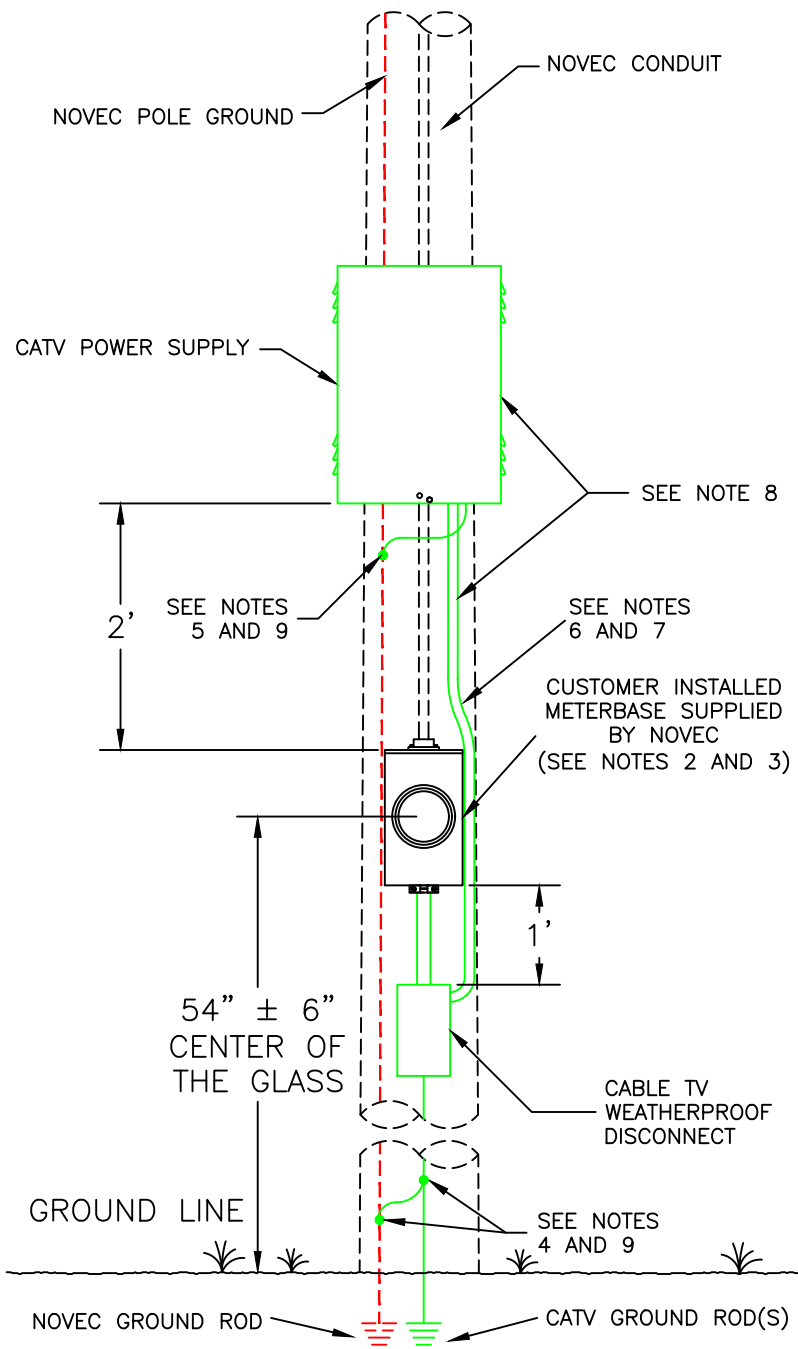
GENERAL NOTES

ALL NESC CLEARANCES SHALL BE MET.



INSTALLATION DRAWING FOR
OVERHEAD SERVICE
METER ON CUSTOMER OWNED POLE

	By	Checked	Approved	Date
Original	KJB	HPZ	SPEC. COMMITTEE	5/22/12
Revision	KJB	KMW	SPEC. COMMITTEE	05/21/19
Revision				
Revision				



NOTES:

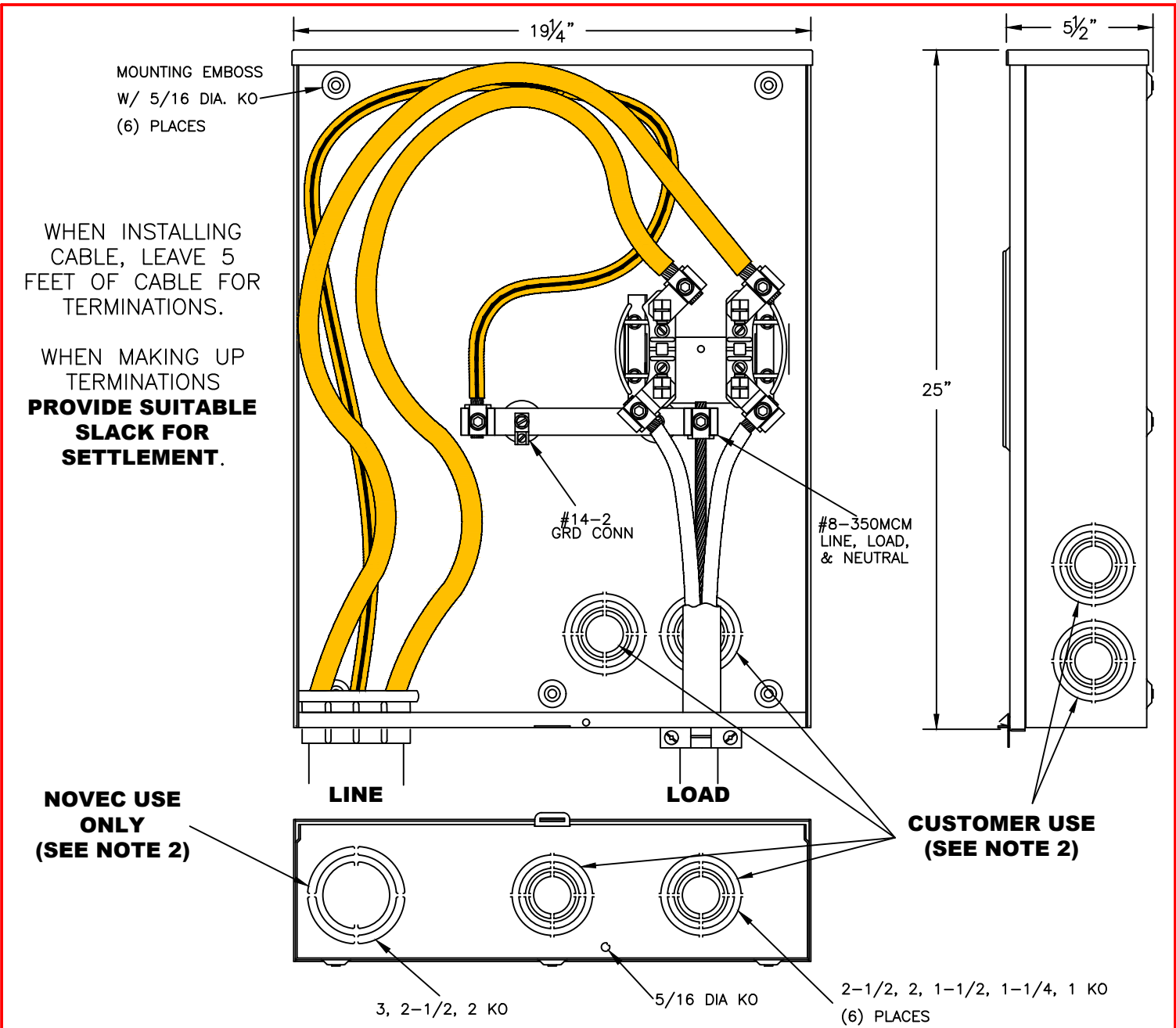
1. ALL INSTALLATIONS SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE, THE NATIONAL ELECTRICAL SAFETY CODE, AND ANY STATE OR FEDERAL CODES OR REQUIREMENTS.
2. THE CUSTOMER SHALL INSTALL THE METERBASE ON THE SAME SIDE OF THE POLE AS THE NEUTRAL, FOR CLIMBING SPACE PURPOSES. FOR PROPER INSTALLATION REFER TO INSTALLATION DRAWING ID-MB4.
3. THE CUSTOMER IS RESPONSIBLE FOR OBTAINING ANY REQUIRED ELECTRICAL INSPECTIONS. NOVEC SHALL TERMINATE THE SERVICE CONDUCTOR ON THE LINE SIDE OF THE METERBASE.
4. CATV'S SERVICE ENTRANCE EQUIPMENT MUST BE GROUNDED TO A CATV DRIVEN GROUND ROD(S). CATV SHALL BOND CATV GROUND WIRE TO NOVEC POLE GROUND WIRE. GROUNDING CONDUCTOR MUST BE #6 COPPER OR LARGER.
5. BONDS SHALL BE MADE BETWEEN THE POLE GROUND WIRE AND THE CABINET (NOT NEUTRAL BUS) OF THE POWER SUPPLY, TELEPHONE MESSENGER, AND CATV MESSENGER. THESE CONNECTIONS ARE TO AVOID POTENTIAL DIFFERENCES BETWEEN DEVICES ON THE POLE. BOND TO THE POWER SUPPLY CABINET SHALL BE EXTERNAL AND VISIBLE FROM THE GROUND.
6. ALL CUSTOMER'S WIRING MUST BE IN METALLIC OR RIGID PVC CONDUIT.
7. LINE AND LOAD CONDUCTORS MUST BE IN SEPARATE CONDUITS.
8. CATV EQUIPMENT SHALL BE INSTALLED ON THE SAME QUADRANT OF THE POLE AS THE METER FOR CLIMBING SPACE PURPOSES AND TO MINIMIZE POLE REPLACEMENT DIFFICULTIES.
9. BONDING CONNECTORS SHALL BE SUITABLE FOR CONDUCTOR TYPE AND CAN BE EITHER COMPRESSION OR BOLTED TYPE.
10. BOLTS SHALL NOT EXTEND MORE THAN 2-1/2" FROM POLE.
11. THE METERBASE SHALL BE THE POINT OF DEMARCATION. NOVEC SHALL INSTALL AND MAINTAIN THE LINE, THE RISER, THE WEATHERHEAD AND ALL OF THEIR ASSOCIATED CONNECTIONS ON THE SOURCE SIDE OF THE METERBASE.



INSTALLATION DRAWING FOR
OVERHEAD JOINT USE
POWER SUPPLY

	By	Checked	Approved	Date
Original	J	HPZ	SPEC. COMMITTEE	03/04/09
Revision	KJB	KMW	SPEC. COMMITTEE	03/28/16
Revision	KJB	KMW	SPEC. COMMITTEE	05/21/19
Revision				

ID-OHS.JU



WHEN INSTALLING CABLE, LEAVE 5 FEET OF CABLE FOR TERMINATIONS.

WHEN MAKING UP TERMINATIONS **PROVIDE SUITABLE SLACK FOR SETTLEMENT.**

NOVEC USE ONLY (SEE NOTE 2)

CUSTOMER USE (SEE NOTE 2)

NOTES:

1. NOVEC SHALL TERMINATE THE SERVICE CONDUCTOR ON THE LINE SIDE OF THE METER BASE AND THE ELECTRICIAN IS RESPONSIBLE FOR TERMINATING THE CONDUCTOR ON THE LOAD SIDE OF THE METER BASE.
2. THE LEFT BOTTOM OF UNDERGROUND METER BASES IS RESERVED FOR UTILITY USE ONLY. THE CUSTOMER'S SERVICE MUST EXIT THE METER BASE OUT THE RIGHT BOTTOM, SIDE OR BACK FOR UNDERGROUND METER BASES. THE CUSTOMER'S SERVICE CONDUCTOR CANNOT EXIT THE LEFT SIDE OF AN UNDERGROUND METER BASE AND SHALL NOT OBSTRUCT NOVEC'S LEFT BOTTOM ENTRY AREA INTO THE BASE.



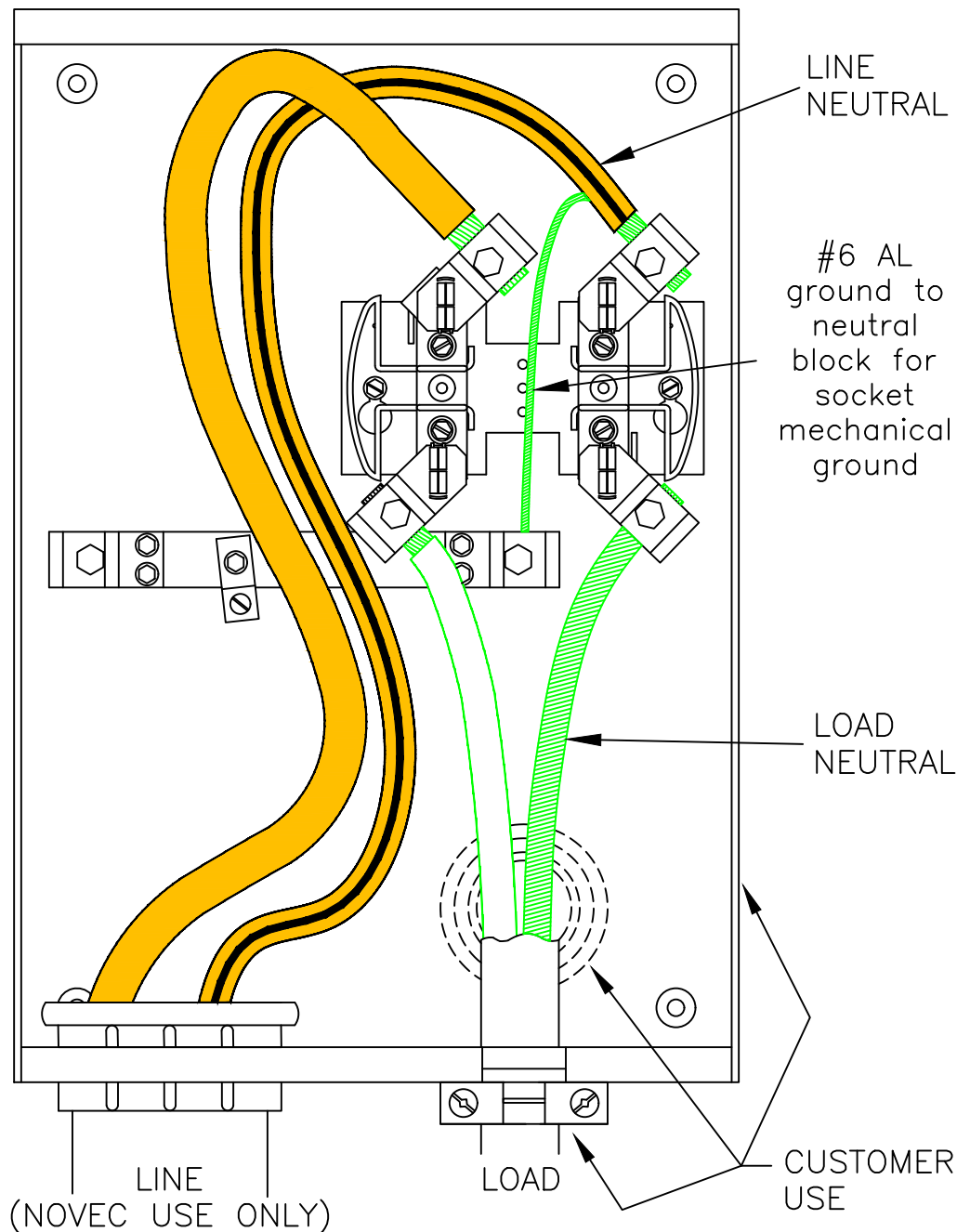
INSTALLATION DRAWING FOR
200 AMP UNDERGROUND
METER SOCKETS

	By	Checked	Approved	Date
Original	J	HPZ	SPEC. COMMITTEE	05/13/10
Revision	KJB	KMW	SPEC. COMMITTEE	05/21/19
Revision				
Revision				

ID-MB1

WHEN INSTALLING CABLE, LEAVE 4 FEET OF CABLE FOR TERMINATIONS.

WHEN MAKING UP TERMINATIONS **PROVIDE SUITABLE SLACK FOR SETTLEMENT.**



NOTES:

1. NOVEC SHALL TERMINATE THE SERVICE CONDUCTOR ON THE LINE SIDE OF THE METER BASE AND THE ELECTRICIAN IS RESPONSIBLE FOR TERMINATING THE CONDUCTOR ON THE LOAD SIDE OF THE METER BASE.
2. THE LEFT BOTTOM OF UNDERGROUND METER BASES IS RESERVED FOR UTILITY USE ONLY. THE CUSTOMER'S SERVICE MUST EXIT THE METER BASE OUT THE RIGHT BOTTOM, SIDE OR BACK FOR UNDERGROUND METER BASES. THE CUSTOMER'S SERVICE CONDUCTOR CANNOT EXIT THE LEFT SIDE OF AN UNDERGROUND METER BASE AND SHALL NOT OBSTRUCT NOVEC'S LEFT BOTTOM ENTRY AREA INTO THE BASE.



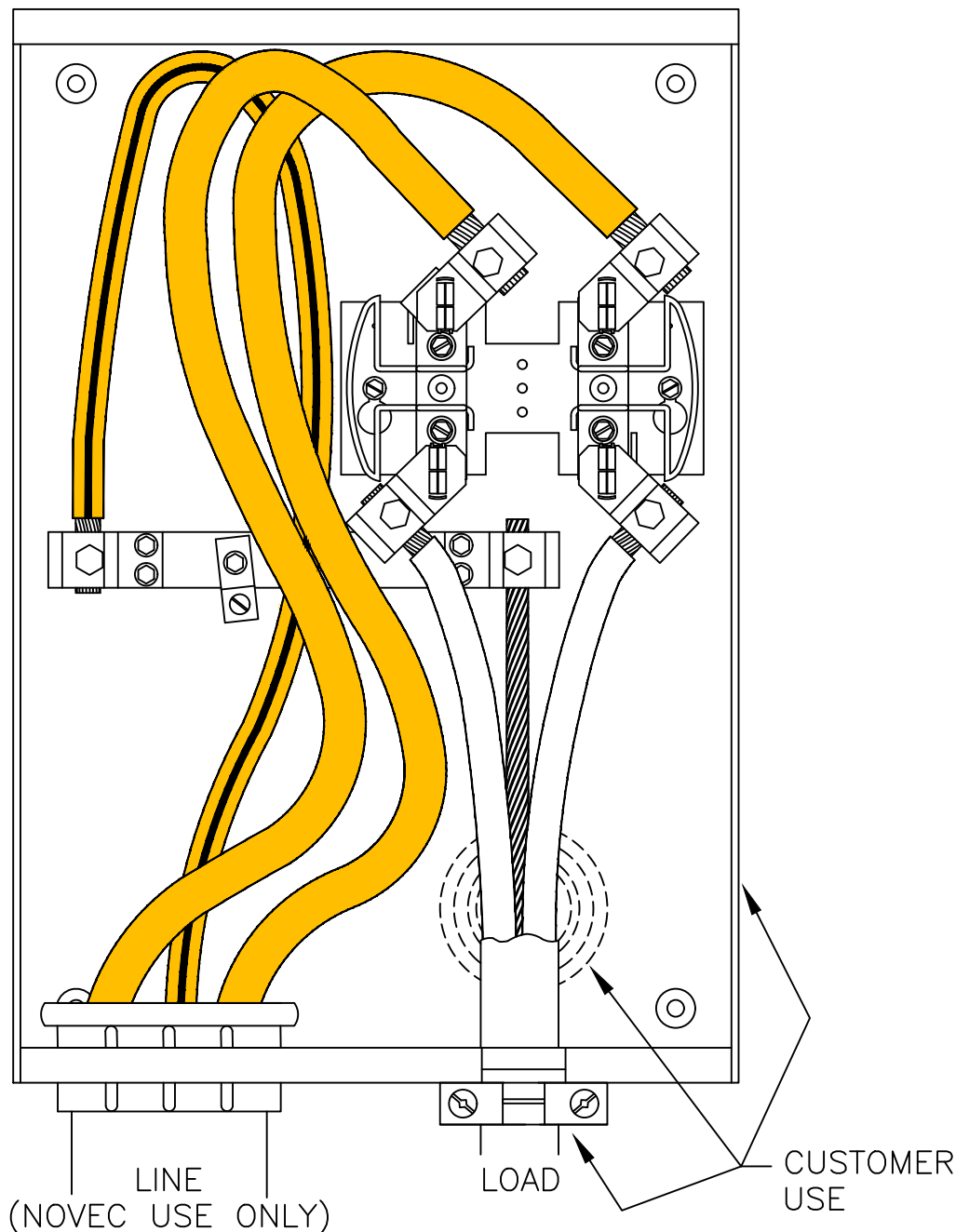
INSTALLATION DRAWING FOR
TWO WIRE UNDERGROUND
METER SOCKETS

	By	Checked	Approved	Date
Original	J	HPZ	SPEC. COMMITTEE	11/18/10
Revision	KJB	KMW	SPEC. COMMITTEE	05/21/19
Revision				
Revision				

ID-MB1.2W

WHEN INSTALLING
CABLE, LEAVE 4
FEET OF CABLE FOR
TERMINATIONS.

WHEN MAKING UP
TERMINATIONS
**PROVIDE SUITABLE
SLACK FOR
SETTLEMENT.**



1. NOVEC SHALL TERMINATE THE SERVICE CONDUCTOR ON THE LINE SIDE OF THE METER BASE AND THE ELECTRICIAN IS RESPONSIBLE FOR TERMINATING THE CONDUCTOR ON THE LOAD SIDE OF THE METER BASE.
2. THE LEFT BOTTOM OF UNDERGROUND METER BASES IS RESERVED FOR UTILITY USE ONLY. THE CUSTOMER'S SERVICE MUST EXIT THE METER BASE OUT THE RIGHT BOTTOM, SIDE OR BACK FOR UNDERGROUND METER BASES. THE CUSTOMER'S SERVICE CONDUCTOR CANNOT EXIT THE LEFT SIDE OF AN UNDERGROUND METER BASE AND SHALL NOT OBSTRUCT NOVEC'S LEFT BOTTOM ENTRY AREA INTO THE BASE.



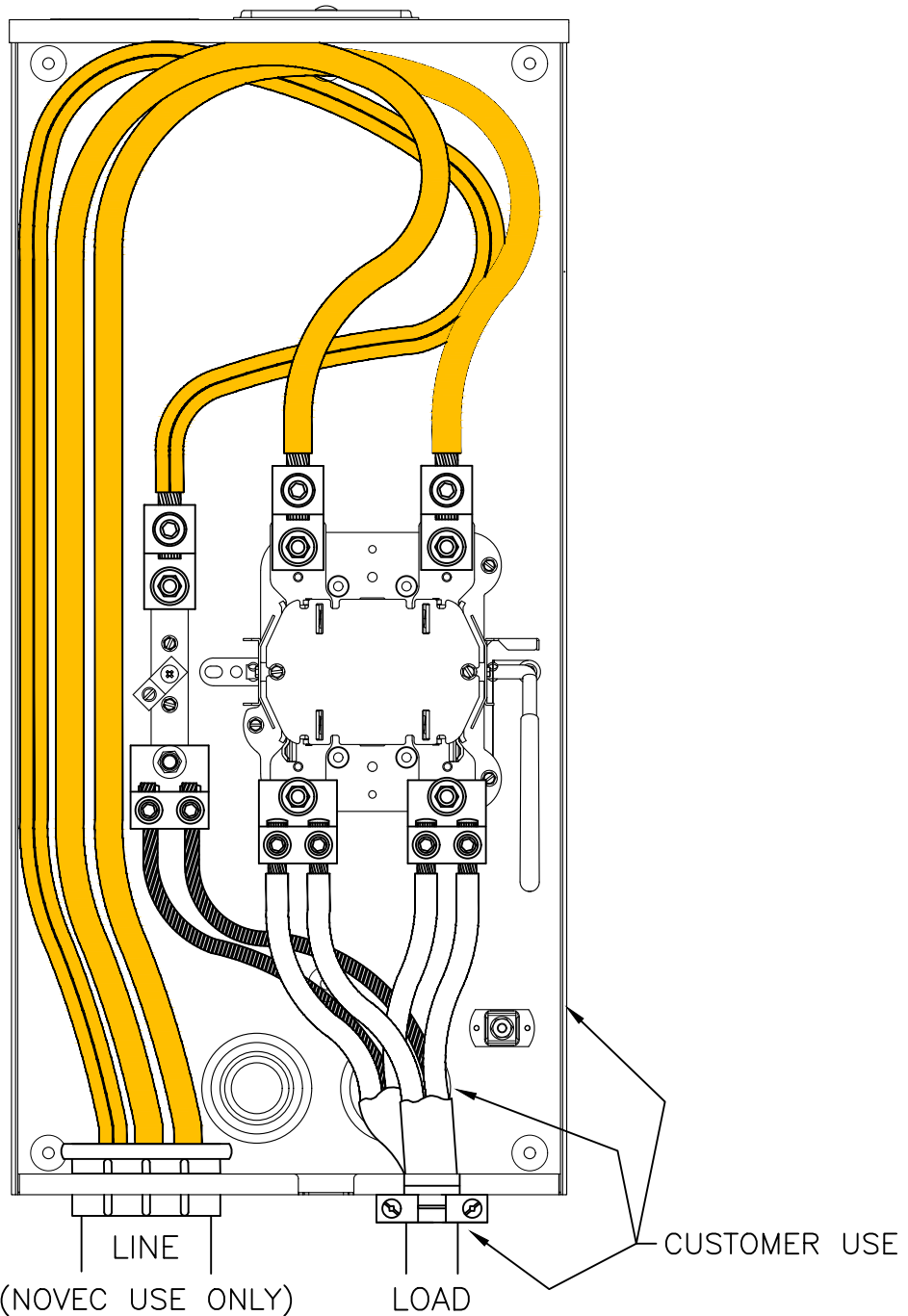
INSTALLATION DRAWING FOR
200 AMP SINGLE PHASE
FREE STANDING METER SOCKETS

	By	Checked	Approved	Date
Original	DWB	MLH	SPEC. COMMITTEE	04/01/97
Revision	KJB	HPZ	SPEC. COMMITTEE	04/25/06
Revision	J	HPZ	SPEC. COMMITTEE	05/13/10
Revision	KJB	KMW	SPEC. COMMITTEE	05/21/19

ID-MB1FS

WHEN INSTALLING
CABLE, LEAVE 6
FEET OF CABLE FOR
TERMINATIONS.

WHEN MAKING UP
TERMINATIONS
**PROVIDE AS MUCH
SLACK AS
POSSIBLE IN
METERBASE.**



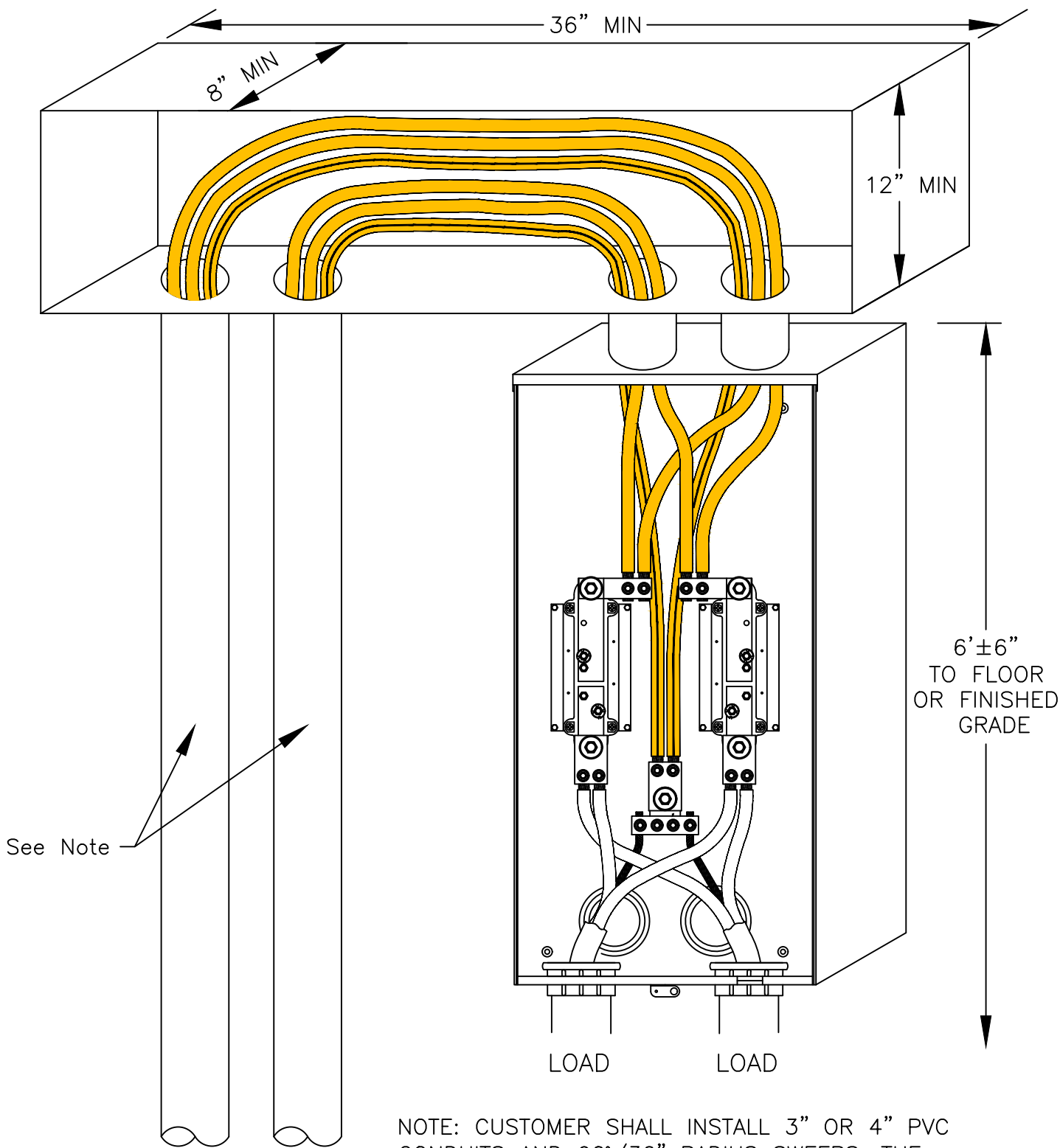
1. NOVEC SHALL TERMINATE THE SERVICE CONDUCTOR ON THE LINE SIDE OF THE METER BASE AND THE ELECTRICIAN IS RESPONSIBLE FOR TERMINATING THE CONDUCTOR ON THE LOAD SIDE OF THE METER BASE.
2. THE LEFT BOTTOM OF UNDERGROUND METER BASES IS RESERVED FOR UTILITY USE ONLY. THE CUSTOMER'S SERVICE MUST EXIT THE METER BASE OUT THE RIGHT BOTTOM, SIDE OR BACK FOR UNDERGROUND METER BASES. THE CUSTOMER'S SERVICE CONDUCTOR CANNOT EXIT THE LEFT SIDE OF AN UNDERGROUND METER BASE AND SHALL NOT OBSTRUCT NOVEC'S LEFT BOTTOM ENTRY AREA INTO THE BASE.



INSTALLATION DRAWING FOR
320 AMP UNDERGROUND
METER SOCKETS

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	04/01/97
Revision	KJB	MLH	SPEC. COMMITTEE	01/13/06
Revision	KJB	HPZ	SPEC. COMMITTEE	04/25/06
Revision	KJB	HPZ	SPEC. COMMITTEE	05/29/13

ID-MB2



NOTE: CUSTOMER SHALL INSTALL 3" OR 4" PVC CONDUITS AND 90°/36" RADIUS SWEEPS. THE BOTTOM OF THE SWEEPS SHALL REST 36" BELOW FLOOR OR FINISH GRADE.



INSTALLATION DRAWING FOR
400-600 AMP UNDERGROUND
K4 METER SOCKETS

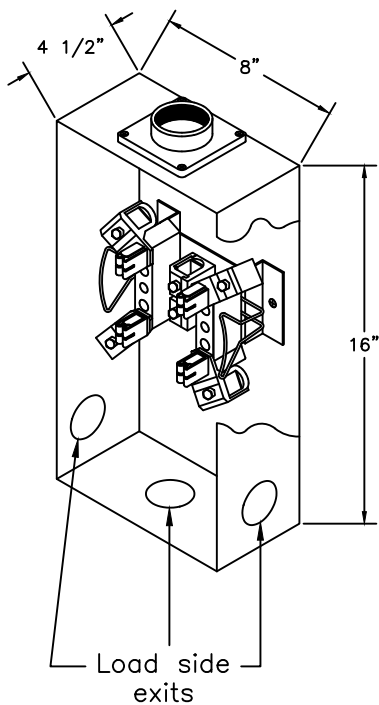
	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	06/18/04
Revision	KJB	MLH	SPEC. COMMITTEE	01/13/06
Revision	J	HPZ	SPEC. COMMITTEE	01/08/09
Revision	KJB	KMW	SPEC. COMMITTEE	??/??/??

NOVEC TERMINATES
AT THIS LOCATION

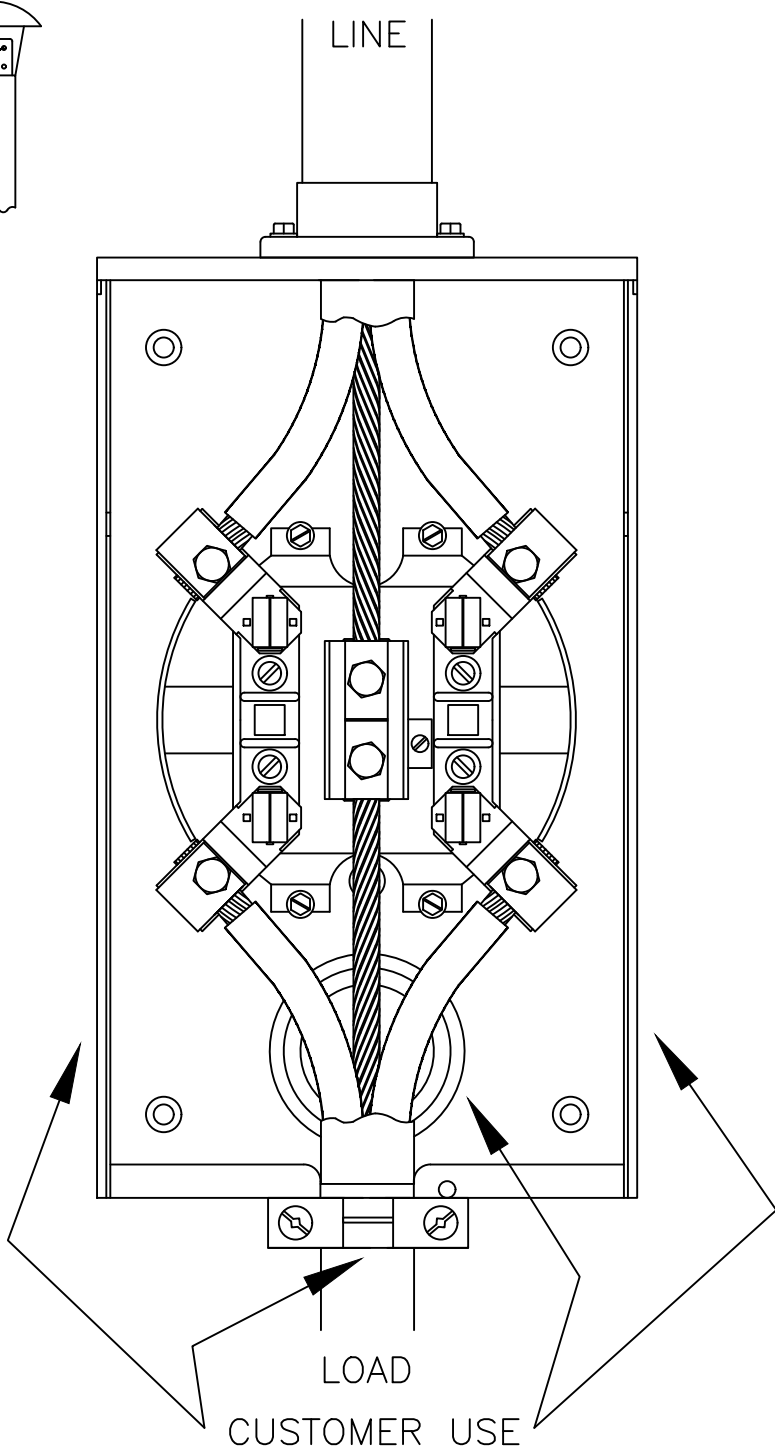
3' OF TAIL
OUT OF
WEATHER HEAD

Hub Size:

- 1 1/4" - 100 Amp
- 1 1/2" - 150 Amp
- 2" - 200 Amp



Knockout Size:
Up to 3"



1. NOVEC SHALL TERMINATE THE SERVICE CONDUCTOR AT THE WEATHER HEAD AND THE ELECTRICIAN IS RESPONSIBLE FOR TERMINATING THE CONDUCTORS INSIDE THE METER BASE.

2. THE TOP OF OVERHEAD METER BASES IS RESERVED FOR UTILITY USE ONLY WITH THE BOTTOM, BACK OR SIDES FOR THE CUSTOMER.



INSTALLATION DRAWING FOR
OVERHEAD
METER SOCKETS

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	04/01/97
Revision	KJB	MLH	SPEC. COMMITTEE	10/12/04
Revision	KJB	MLH	SPEC. COMMITTEE	01/13/06
Revision	KJB	HPZ	SPEC. COMMITTEE	04/25/06

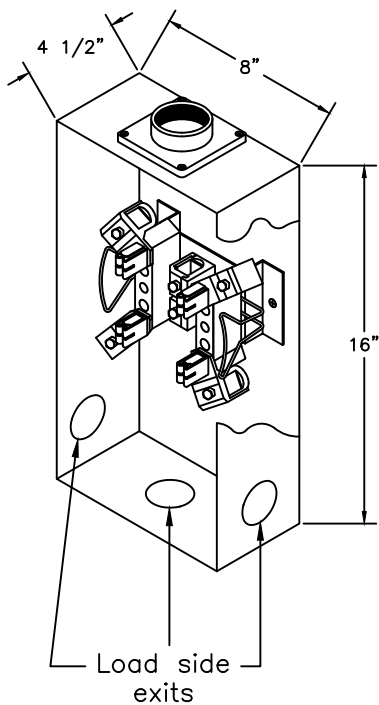
ID-MB4

NOVEC TERMINATES AT THIS LOCATION

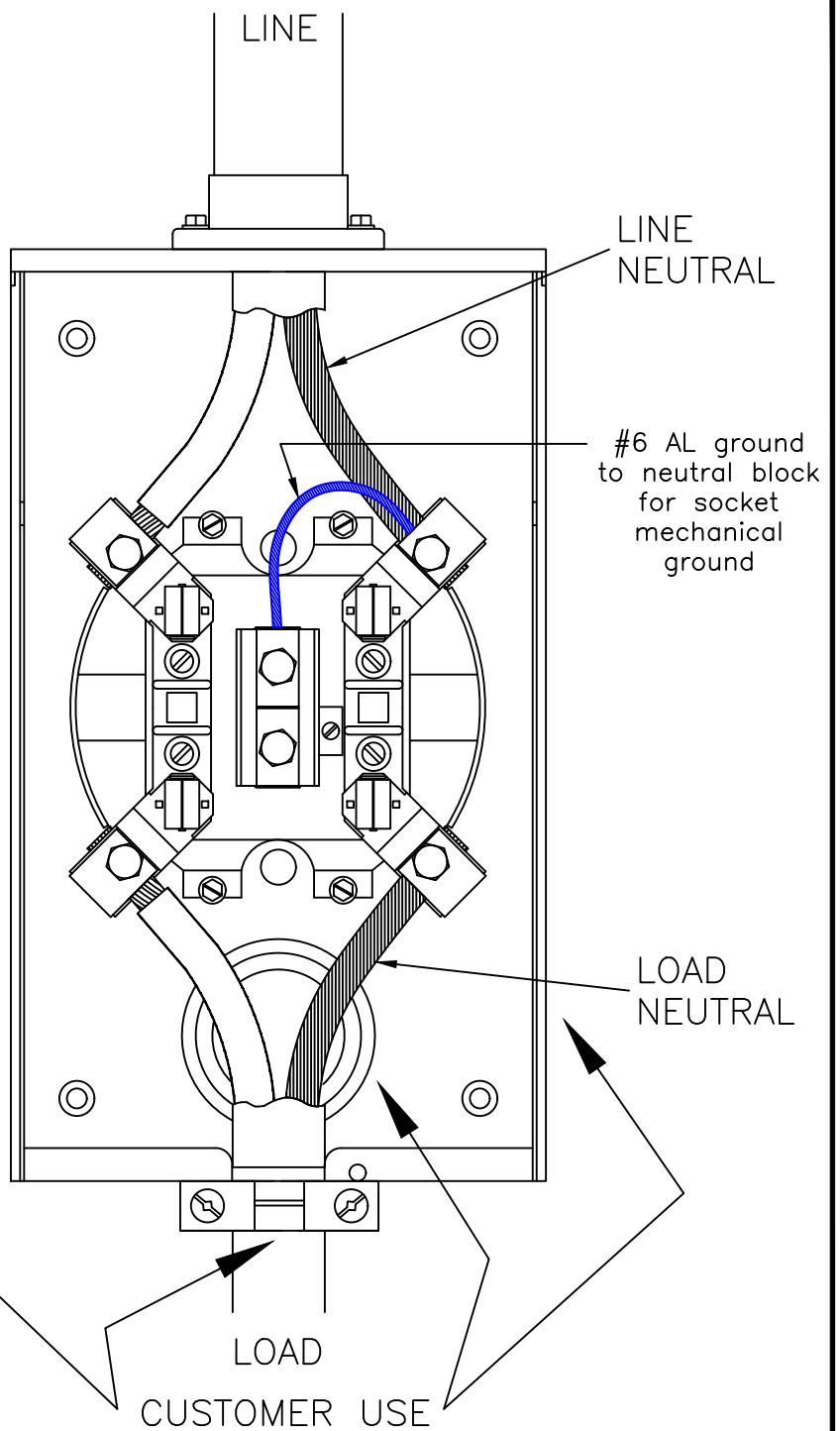
3' OF TAIL OUT OF WEATHER HEAD

Hub Size:

- 1 1/4" - 100 Amp
- 1 1/2" - 150 Amp
- 2" - 200 Amp



Knockout Size:
Up to 3"



NOTES:

1. NOVEC SHALL TERMINATE THE SERVICE CONDUCTOR AT THE WEATHER HEAD AND THE ELECTRICIAN IS RESPONSIBLE FOR TERMINATING THE CONDUCTORS INSIDE THE METER BASE.
2. THE TOP OF OVERHEAD METER BASES IS RESERVED FOR UTILITY USE ONLY WITH THE BOTTOM, BACK OR SIDES FOR THE CUSTOMER.



INSTALLATION DRAWING FOR
TWO WIRE OVERHEAD
METER SOCKETS

	By	Checked	Approved	Date
Original	J	HPZ	SPEC. COMMITTEE	11/18/10
Revision				
Revision				
Revision				

ID-MB4.2W

**AREA REQUIREMENTS FOR NOVEC
METERING EQUIPMENT IN ELECTRICAL ROOMS**

Each type of service is listed below with the minimum area of wall space required for Northern Virginia Electric Cooperative (NOVEC) metering equipment per each point to be metered. All equipment is to be mounted between 4' and 6' above finished grade.

Meter Sockets:

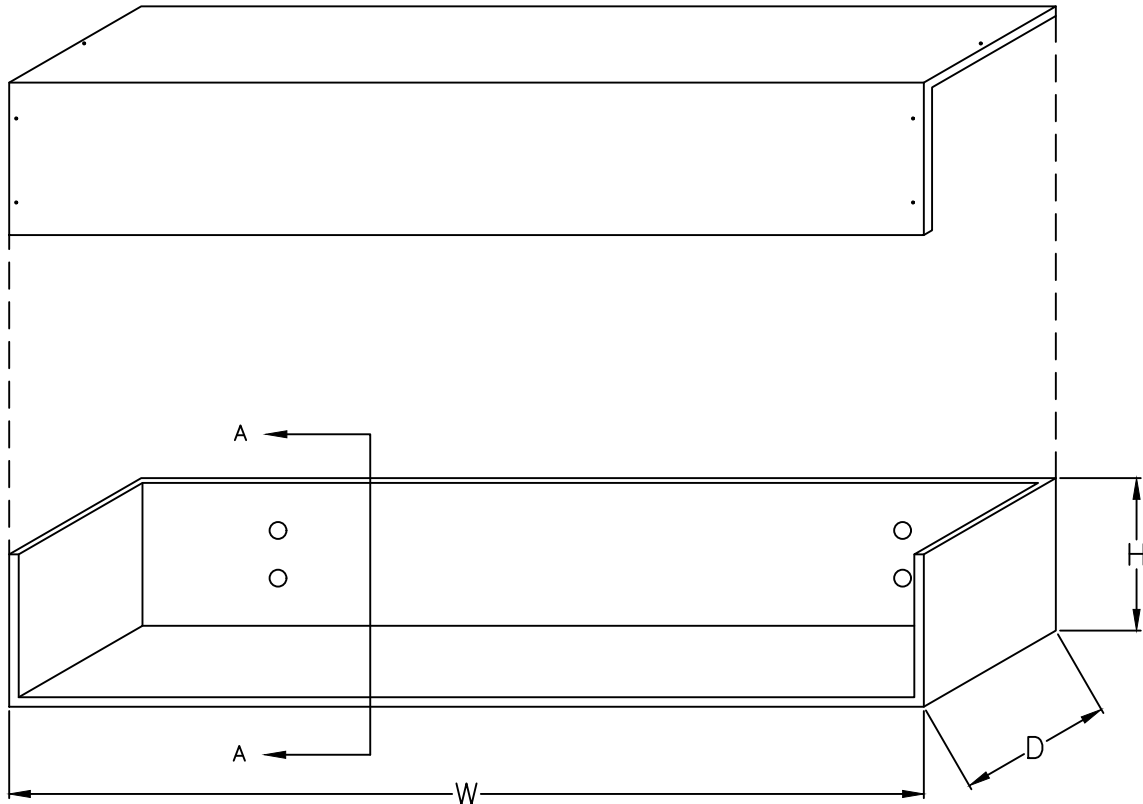
200 amp service	top feed	18''w x 24''l
200 amp service	bottom feed	24''w x 32''l
320 amp service	top or bottom feed	24''w x 38''l
400-600 amp service	top feed socket type only	44''w x 54''l

CT Cabinets with Meter Trim:

200-600 amp	60''w x 36''l
800-1200 amp	70''w x 54''l
1400-2000 amp	82''w x 54''l
2500-4000 amp	96''w x 62''l

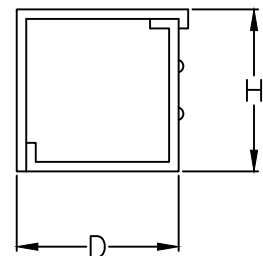
NOTE: All equipment, both socket and ct-rated, will project out 16''. Area requirements do not include disconnects and only reflect normal typical service requirements. Final approval for all meter rooms is reserved by NOVEC. Prior plan approval during design stages is strongly suggested. Please contact the Metering Supervisor for assistance.

Clare D. Bargerstock
Metering Supervisor



NOTES:

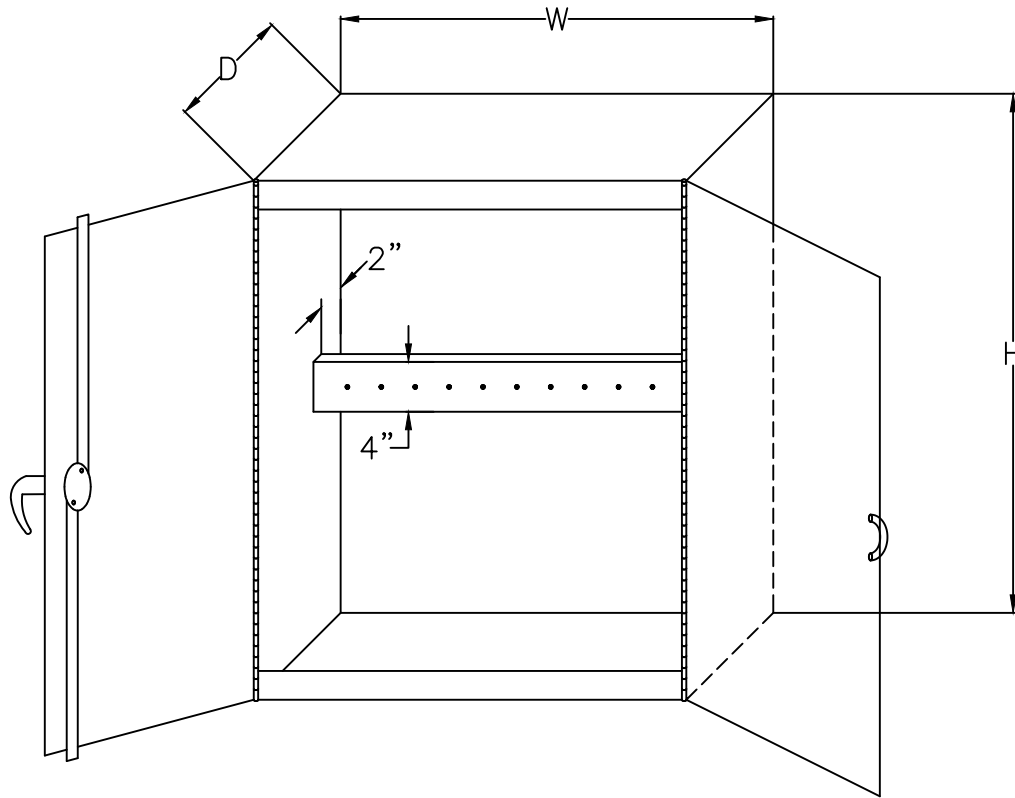
1. SERVICE TROUGH IS CONSTRUCTED OF 14 GA. GALVANIZED SHEET STEEL WITH ALL JOINTS AND SEAMS WELDED.
2. REMOVABLE COVER WITH STAINLESS STEEL SCREWS. GASKET UPON REQUEST.
3. EMBOSSED MOUNTING HOLES ON BACK OF TROUGH. NO KNOCKOUTS.
4. SERVICE TROUGH MUST BE SEALABLE.
5. DIMENSIONS AND KNOCKOUT LOCATIONS PROVIDED BY NOVEC METERING DEPARTMENT.



INSTALLATION DRAWING FOR
SERVICE TROUGH

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC COMMITTEE	10/20/04
Revision	KJB	HPZ	SPEC COMMITTEE	12/15/11
Revision				
Revision				

ID-M-ST



		H	W	D
TYPE 1	200A to 800A	36"	30"	13"
TYPE 2	800A to 1200A	48"	42"	15"
TYPE 3	1200A to 2000A	48"	54"	15"
TYPE 4	2000A to 3000A	54"	68"	16"

NOTES:

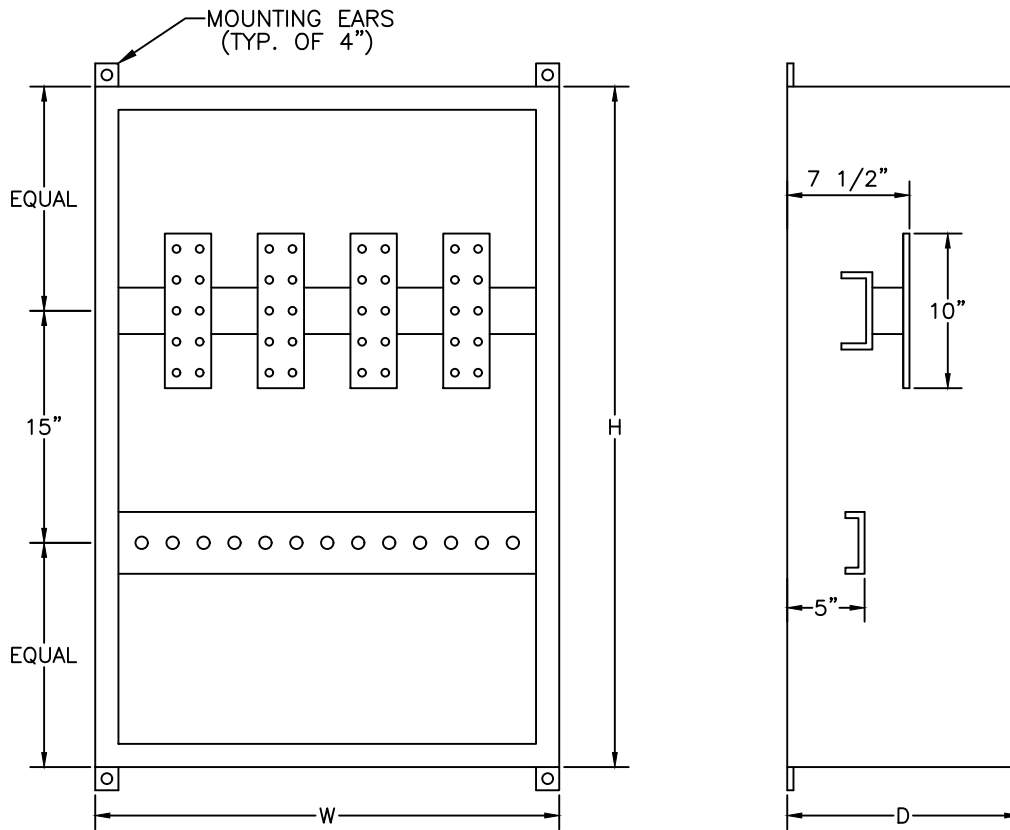
- 1) ALL WELDED CONSTRUCTION WITH CONTINUOUS PIANO HINGED DOUBLE DOORS AND HANSON THREE POINT VAULT HANDLE
- 2) MATERIAL TO BE 12GA GALVINEAL WITH PRIME AND FINISHED COAT OF ASA-61
- 3) CABINETS TO BE SUPPLIED IN NEMA-1,3R OR 12 AS REQUIRED
- 4) MOUNTING BRACKET TO BE CENTERED IN CABINET WITH 3/8" HOLES DRILLED ON 1-1/2" CENTERS ACROSS BRACKET LENGTH



INSTALLATION DRAWING FOR
INSTRUMENT TRANSFORMER CABINET

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	10/20/04
Revision				
Revision				
Revision				

ID-M-IC



		H	W	D
TYPE 1	200A to 800A	44"	30"	13"
TYPE 2	800A to 1200A	55"	42"	15"
TYPE 3	1200A to 2000A	55"	54"	15"
TYPE 4	2000A to 3000A	64"	68"	16"

* LANDING PADS ABOVE 1200 AMP NEED TO BE 8 HOLE INSTEAD OF 4 AS SHOWN

NOTES:

- 1) ALL WELDED CONSTRUCTION WITH CONTINUOUS PIANO HINGED DOUBLE DOORS AND HANSON THREE POINT VAULT HANDLE
- 2) MATERIAL TO BE 12GA GALVINEAL WITH PRIME AND FINISHED COAT OF ASA-61
- 3) CABINETS TO BE SUPPLIED IN NEMA-1,3R OR 12 AS REQUIRED
- 4) MOUNTING BRACKET TO BE CENTERED IN CABINET WITH 3/8" HOLES DRILLED ON 1-1/2" CENTERS ACROSS BRACKET LENGTH



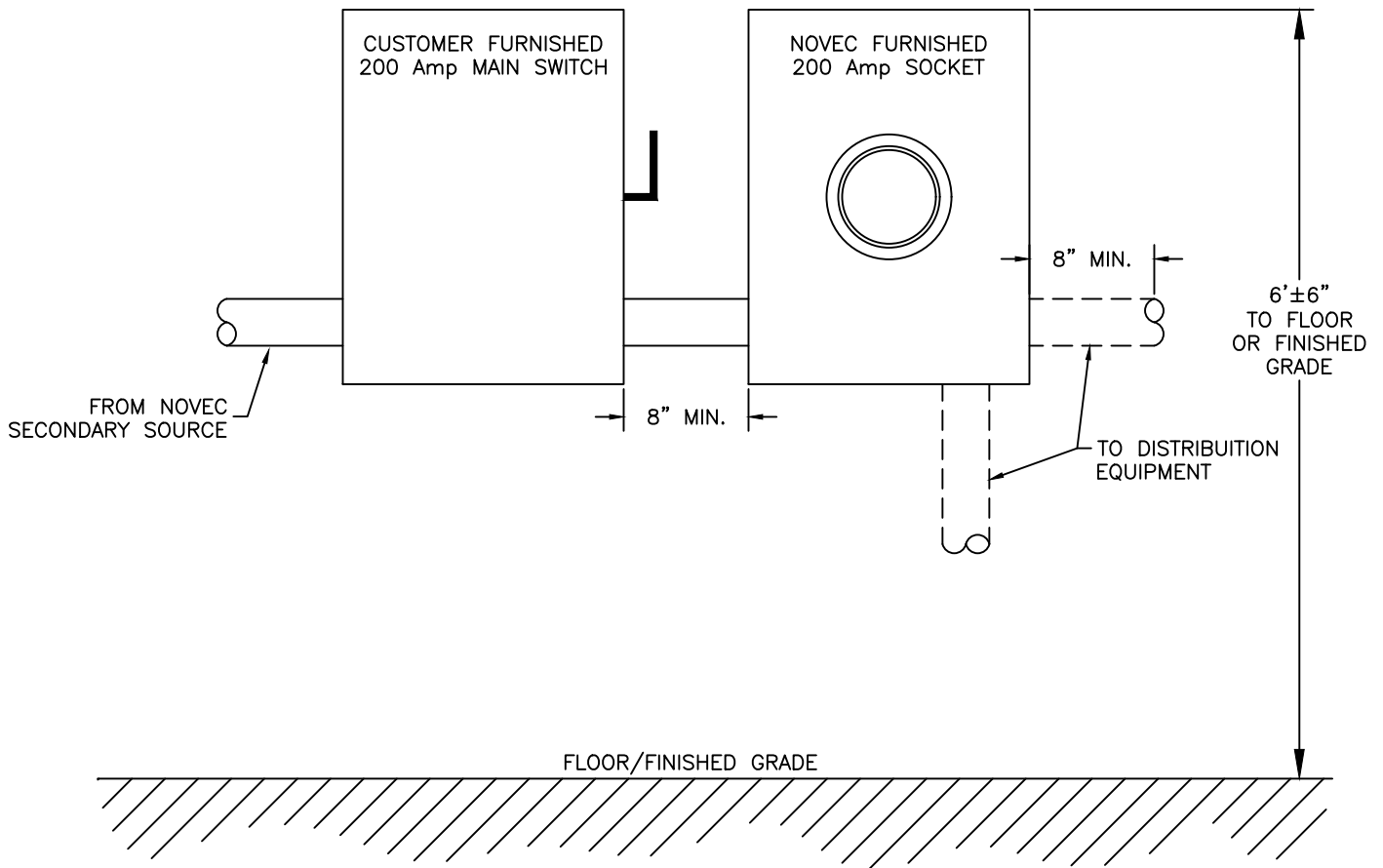
INSTALLATION DRAWING FOR INSTRUMENT TRANSFORMER CABINET

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	10/2/04
Revision				
Revision				
Revision				

ID-M-IC1

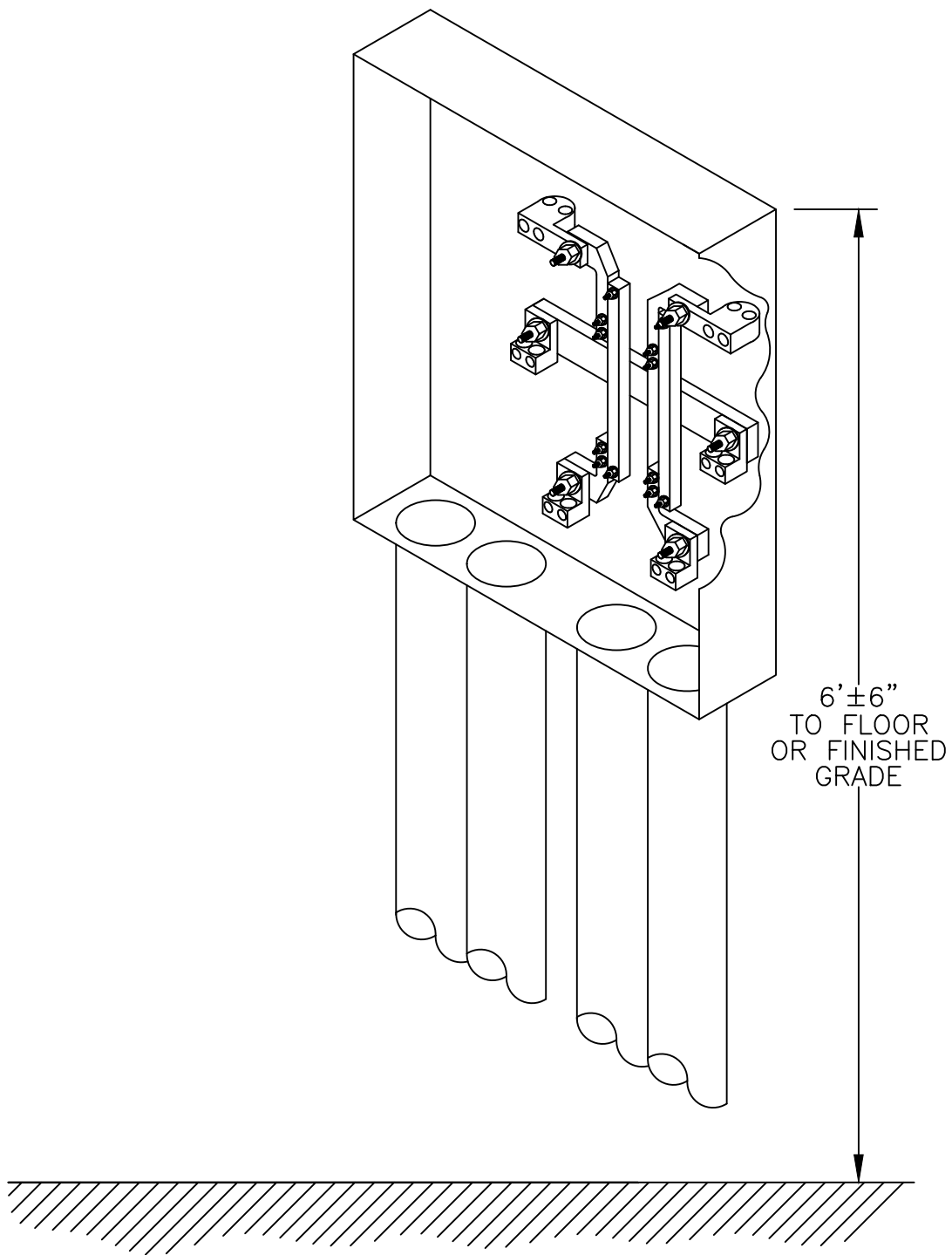
REQUIREMENTS FOR 277/480 VOLT, THREE PHASE, FOUR WIRE SERVICES.

- A. SERVICES 200 AMPERES AND BELOW:
- NOVEC WILL FURNISH 277/480 VOLT, SELF-CONTAINED METERS FOR 200 AMPERE SERVICES.
 - THE MAIN SWITCH WILL BE LOCATED AHEAD OF THE 200 AMPERE SELF CONTAINED METER AND INSTALLED PARALLEL TO THE METER SOCKET AS SHOWN ON THE ATTACHED DRAWING. (277/480 VOLT SELF-CONTAINED METER INSTALLATION) NOVEC WILL FURNISH NECESSARY METER SOCKETS.
 - THE CONTRACTOR/OWNER WILL INSTALL THE METER SOCKETS AND MAKE UP ALL CONDUCTORS WITHIN THE METER SOCKETS, SWITCHGEAR, TROUGHS, ETC.
- B. SERVICES RATED ABOVE 200 AMPERES:
- NOVEC WILL FURNISH AND INSTALL NECESSARY METERS, METERING CABLE, TEST SWITCHES AND INSTRUMENT TRANSFORMERS FOR SERVICES RATED ABOVE 200 AMPERES.
 - THE COOPERATIVE WILL FURNISH METER TRIMS FOR INSTALLATION BY THE CONTRACTOR/OWNER.
 - THE CONTRACTOR/OWNER WILL FURNISH AND INSTALL ALL INSTRUMENT TRANSFORMER CABINETS, SWITCHGEAR AND CONDUIT FOR METER TRIM AS DIRECTED BY THE COOPERATIVE.
- C. CONTRACTORS/OWNERS MUST ASSUME FULL RESPONSIBILITY FOR THEIR PERSONNEL PERFORMING WORK IN THE AREA OF THE COOPERATIVE'S METERING EQUIPMENT AND TAKE APPROPRIATE SAFETY PRECAUTIONS REQUIRED BY HIGHER SERVICE VOLTAGES.



INSTALLATION DRAWING FOR
277/480 VOLT SELF-CONTAINED
METER INSTALLATION
200 AMPERE SERVICE

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC. COMMITTEE	11/10/04
Revision	J	HPZ	SPEC. COMMITTEE	12/20/08
Revision				
Revision				

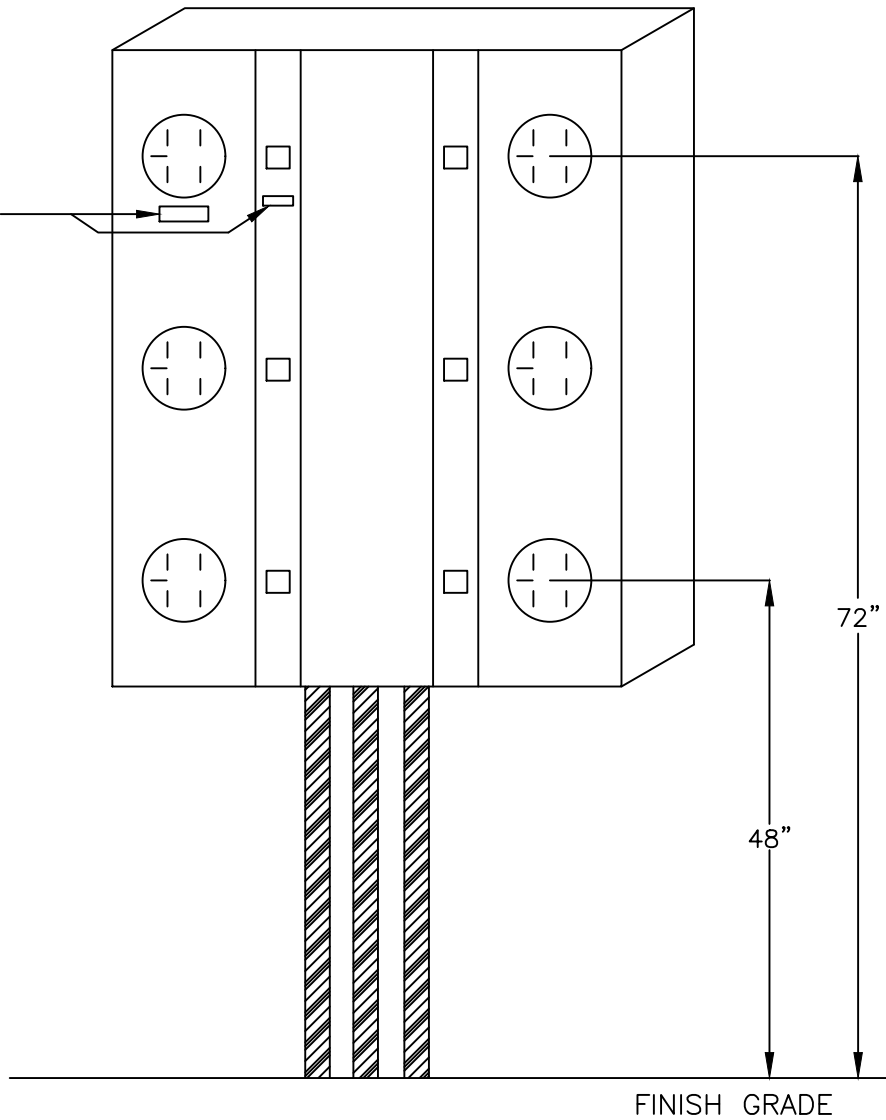


INSTALLATION DRAWING FOR
NOVEC K-7 METER BASE
400 AMP - 600 AMP 3 PHASE

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC COMMITTEE	01/11/05
Revision	KJB	MLH	SPEC COMMITTEE	01/13/06
Revision	J	MLH	SPEC COMMITTEE	04/17/08
Revision				

ID-M-K7

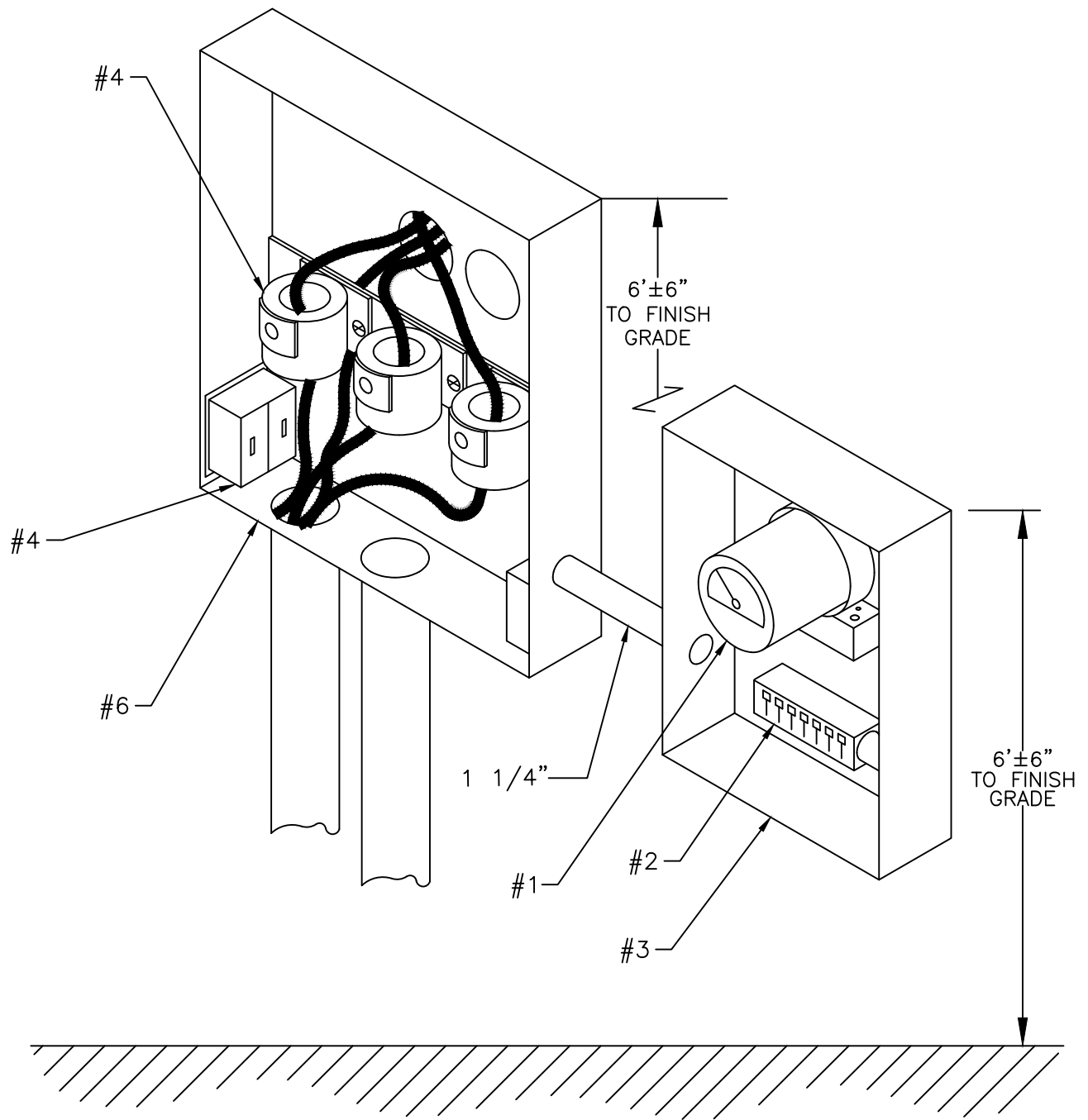
EACH SOCKET &
DISCONNECT MUST
HAVE PERMANENTLY
AFFIXED ADDRESS.



INSTALLATION DRAWING FOR
CLUSTER MOUNTED METER SOCKETS
120/208 VOLT WYE NETWORK
800AMP TO 1500AMP

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC COMMITTEE	10/20/04
Revision	KJB	MLH	SPEC COMMITTEE	01/13/06
Revision				
Revision				

ID-M-CM



MATERIAL:

1. WATTHOUR METER, A-BASE, 3 ϕ
2. TEST SWITCH
3. METER CABINET, OUTDOORS, 1-POSITION (NOVEC SUPPLIED/CUSTOMER INSTALLED)
4. INSTRUMENT TRANSFORMERS, POTENTIAL AND CURRENT
5. CABLE, 12 CONDUCTOR #10 AWG (NOT SHOWN)
6. CUSTOMER SUPPLIED CT CABINET

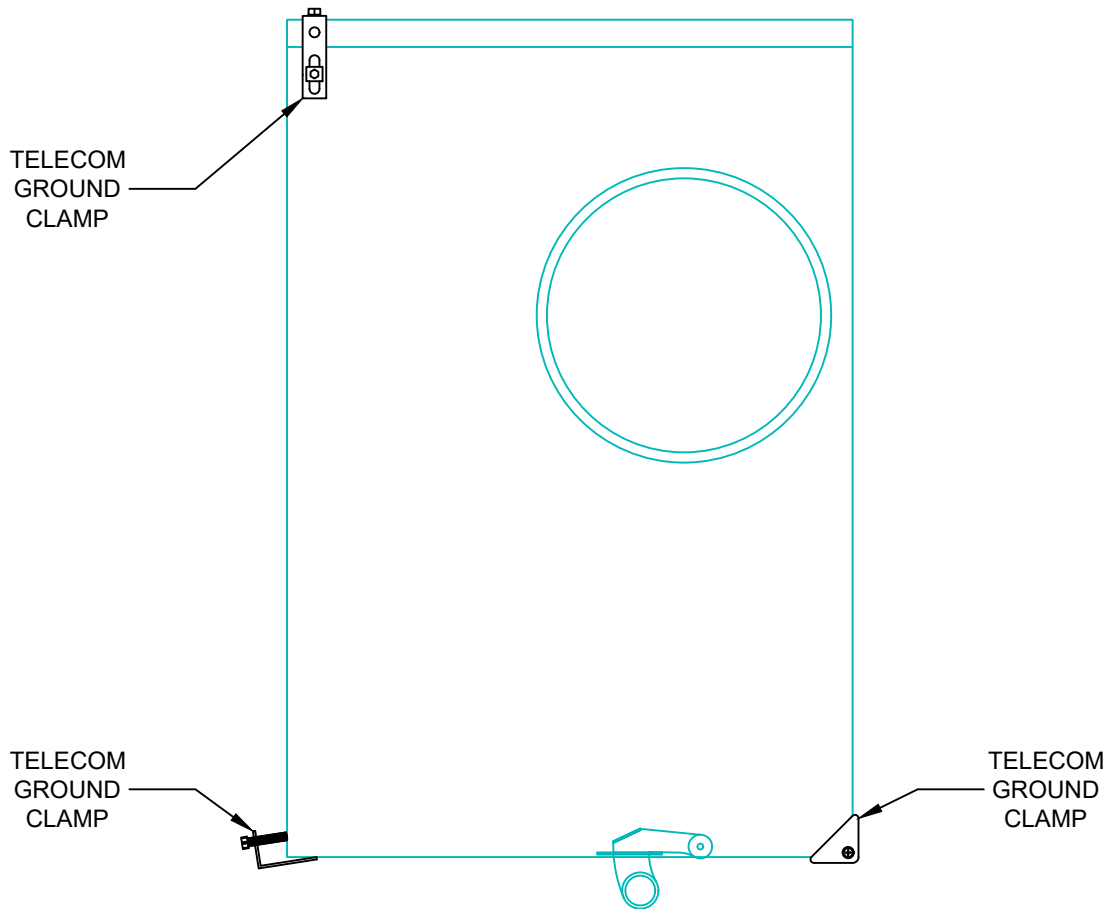


INSTALLATION DRAWING FOR
OUTDOOR TRANSFORMER-RATED
3 ϕ METER INSTALLATION

	By	Checked	Approved	Date
Original	KJB	MLH	SPEC COMMITTEE	10/20/04
Revision	KJB	MLH	SPEC COMMITTEE	01/13/06
Revision	J	HPZ	SPEC COMMITTEE	04/17/08
Revision				

ID-M-OT

UNACCEPTABLE GROUND CONNECTIONS



NOTES:

- 1) THE NATIONAL ELECTRIC CODE ALLOWS FOR INTERSYSTEM BONDING TERMINATIONS TO METER ENCLOSURES. HOWEVER, THEY MUST COMPLY WITH ALL CRITERIA LISTED IN SECTION 250.94 OF THE CODE. CONNECTIONS THAT ARE NOT IN COMPLIANCE WITH THE 2014 NATIONAL ELECTRIC CODE (NEC) SECTION 250.94 ARE CONSIDERED UNACCEPTABLE BY NOVEC.
- 2) **(NEC) SECTION 250.94 SUBSECTION (3)** INTERSYSTEM BONDING SHALL **"NOT INTERFERE WITH OPENING THE ENCLOSURE FOR A SERVICE, BUILDING OR STRUCTURE DISCONNECTING MEANS, OR METERING EQUIPMENT."**
- 3) GROUND CLAMPS THAT ATTACH TO, OBSTRUCT, OR OTHERWISE INTERFERE WITH REMOVAL OF THE METER BASE COVER SHALL NOT BE INSTALLED ON NOVEC METER BASES.
- 4) ANY METER BASE GROUND CLAMP THAT BY DESIGN OR PLACEMENT INTERFERES WITH THE ACCESSIBILITY OR WORKABILITY OF A NOVEC METER BASE WILL BE REMOVED.



INSTALLATION DRAWING FOR METER BASE GROUND CLAMPS

	By	Checked	Approved	Date
Original	TAJ	KMW	SPEC. COMMITTEE	06/01/20
Revision				
Revision				
Revision				

ID-MBGC

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