



Customer Conduit Installation Procedures and Specifications

Revised on 05/08/2023



Installing Tampa Electric's Conduit System

Customer installed conduit shall be in an easement adjacent to or near Customer's property and in consideration of the covenants outlined in this document, the parties agree to the following:

1. When the Customer chooses to install the conduit for the Company's underground facilities, the Customer must accept all conduit-related materials from the Company. The Customer must provide the appropriate flatbed truck or trailer with no lip, no sides or removable sides and load securing equipment to pick up material(s) from the Company storeroom location. The trailer must be able to accommodate 20' sticks of bundled conduit or individual sticks laying flat. The conduit cannot be cut or modified on Company property. If the Customer does not provide the appropriate transportation, Storeroom personnel have the authority to not issue the material(s). All issued material(s) become the responsibility of the Customer until the completion of the work. In the event the Customer reassigns the work to an alternate contractor, all conduit-related material(s) will remain the responsibility of the Customer, and the transfer of all the conduit-related material(s) between parties will be managed by the Customer. In addition, once the Customer accepts the work; the job includes all necessary trenching (as defined on page 6), directional boring (as defined on page 5), feeder/ primary manholes, feeder/primary pull boxes, primary/secondary hand holes, pads, pad site preparation and grounding. An Onsite Grounding report must be filled out and submitted to the Company for each grounding installation location (Exhibit 1). The scope of work outlined above does not include stand-alone crossing, residential underground primary, secondary or service Work Requests (WRs).

Only a qualified/ certified lineworker is authorized to work in the Company's energized equipment and the subcontractor must have at least one qualified/ certified lineworker on staff to be able to perform this required part of the project.

When the Customer installs the conduit, the Customer is responsible for the conduit system (stub up to stub up) until the cable and equipment is installed by the Company or our Contractor.
2. The Customer shall pay the Company a Contribution in Aid of Construction (CIAC) (will be referred to as the Contribution). This payment is based on the currently effective retail electric tariff filed with the Florida Public Service Commission (the Commission) by the Company.
3. A feeder credit (the Credit) shall be provided to the Customer for trenching, backfilling, installation of provided material and other work, if applicable, and approved by the Company. A minimum of one business day advance notice shall be given to the Underground Field Inspector prior to the installation of any materials that require a TECO inspection. These installations shall remain open until the inspection is performed and passed by the Company's Underground Field Inspector. Inspections will be performed within two business days following the installation. Materials that require a TECO inspection include the installation of all required PVC conduit, conduit stub ups, PVC and galvanized risers at terminal pole locations, galvanized elbows, pits, pads, hand holes and pull box or manhole locations. Company provided mule tape is the **only** authorized pull string to be installed in the conduit system. The mule tape must be "blown in" using a rabbit in every conduit run. It is not permissible to use a vacuum system to "suck in" the mule tape. If the installation of the Conduit system does not conform to the Company's installation specifications provided on the Company's website, <https://www.tampaelectric.com/business/construction/>, the Customer will correct the installation and inform the Underground Field Inspector when it is ready for a re-inspection. Any fees assessed for re-inspection shall be paid by the Customer.

4. The Contribution and Credit amounts are subject to adjustment when revisions to the Company's tariff are approved by the Commission. If the Customer has requested that the Company delay the scheduled installation date or the Company's tariff is changed by Commission action, changes in the amount of the Contribution or Credit may be made reflecting such changes. Any additional costs caused by a change in Customer's plans submitted to the Company on which the Contribution was based, shall be paid for by the Customer.
5. Ownership of the Conduit or facilities shall always remain with the Company.
6. Prior to the Company's construction the Customer shall:
 - a. Clear the Company easement on the Customer's property of all trees, tree stumps, and other obstructions that conflict with construction, including the drainage of all flooded areas and well pointing if required. The Customer shall be responsible for clearing, compacting, boulder and large rock removal, stump removal, paving, and addressing other special conditions. The easement shall be graded to within six inches of final grade with soil stabilized. The Customer shall be responsible for compaction and density under paved areas.
 - b. Provide property line and corner stakes, designated by a licensed surveyor, to establish a reference for locating the underground Conduit or Cable trench route in the easement. Additional reference stakes are required by the Company to be installed every 50 feet for runs over 100'. Also, the Customer shall provide stakes identifying the location, depth, size, and type of facility for all underground facilities not owned by the Company within or near the easement where the Company's Facilities will be installed. The Customer shall maintain these stakes, and if any of these stakes are lost, destroyed, or moved and the Company requires their use, the Customer shall replace the stakes at no cost to the Company. The Customer shall provide staking for Company equipment including pad mounted transformers, switch gear, manholes, pull boxes, handholes and streetlights.
 - c. Pay the cost of any subsequent relocation or repair of the Company's Facilities, once installed. If said relocation or repair is a result of a change in the grading by the Customer or any of the Customer's contractors or subcontractors, the pad mounted transformer and cable installation will not be scheduled until the relocation or repairs have been made by the Customer's contractors or subcontractors and passed inspected by the Underground Field Inspector.
 - d. Pay for all additional costs incurred by the Company which may include, but are not limited to engineering, design, administration, and relocation due to changes made to the subdivision, development layout or grade.
 - e. Provide applicable trenching, backfilling, installation of Company-provided material and other work in accordance with the Company specifications provided on the Company's website, <https://www.tampaelectric.com/business/construction/>. At the discretion of the Company, either correct within two (2) working days any discrepancies found in the installation that are inconsistent with the instructions and specifications or pay the associated cost to correct the installation within thirty (30) days of receiving the associated bill, and in either case, reimburse the Company for costs associated with lost crew time due to such discrepancies.

7. Company shall:

- a. Provide the Customer with a construction print showing the location of all Company underground facilities, point of delivery, transformer locations and specifications required by the Company and to be adhered to by the Customer.
- b. Install cable and equipment, own, and maintain the Facilities up to the designated point of delivery except when otherwise noted.
- c. Request the Customer to participate in a pre-construction meeting with the Customer's contractors, the Company's representatives, and representatives of other affected utilities within six (6) weeks prior to the start of construction. At the pre-construction meeting, the Company shall provide the Customer with an estimate of the date when service may be provided.

The Customer and the Company will coordinate closely in fulfilling obligations to avoid delays in providing permanent electric service at the time of the Customer's receipt of a certificate of occupancy.

Directional Bore Requirements

Per the Distribution Engineering Technical Manual (DETM) Underground Line Design section, if a TECO operations or engineering representative determines that a conduit route must be installed using the directional bore method, then the on-site contractor shall install that conduit route using the directional bore method. Any immediate or future damage caused by the on-site contractor due to deviating from the directional bore installation method is the sole responsibility of the on-site contractor to correct. All future liability to structures, trees, landscaping or grass will be assumed by the on-site contractor.

The Customer has the option to schedule and install a directional bore using an on-site contractor. However, the Customer must provide the following qualifying documents for the on-site contractor to the TECO Underground Field Inspector. By choosing this option, the Customer assumes the role and responsibilities of the Master Service Agreement (MSA) Contractor. Directional bore MSA Contractors are required to have the following documents.

Prior to construction:

1. Current insurance certificate showing coverage in the amount of \$5 million dollars or larger.
2. A valid Florida Certified Underground & Excavation Contractor License.

After construction:

1. Accurate bore logs. See Exhibit 2 for sample bore log.

The Customer will be responsible for following all applicable state laws concerning digging. They will also be responsible for the installation and associate costs of the HDPE conduit used for the directional bore from the beginning to the end of directional bore. The Company does not stock or issue directional bore pipe to the Customer or our Contractors. The Company will provide (2) 90-degree elbows and the mule tape. If applicable, (1) 10' galvanized stick of conduit to go up the terminal pole with the associated clamps. The mule tape must be blown through the conduit, tied and taped to the stub ups.

If the TECO Underground Field Inspector has a concern with the accuracy of the bore log, they can require the Customer to pothole the locations of concern to verify the depth at the customers expense. If it is found that the conduit is shallow, it will be the responsibility of the Customer to have the directional bore re-installed at the customers expense.

Trenching Requirements

1. Staking shall be performed per Tampa Electric specs. 1-44 & 1-45 for typical subdivisions
Layouts within said easement and spec. 1-46 for zero lot line or commercial applications.
 - Once staking is installed, the On-site contractor must call the Underground Field Inspector.
 - Conduit installation should not start until the staking has been approved by the Tampa Electric service main line inspector.
2. Conduit should be buried at a minimum of 36 inches per specs. 1-43 & 1-44
 - Trench should remain open until the Tampa Electric service area main line inspector approves the installation for proper depth and location.
 - Failure to leave the trench open can result in re-excavation until proper inspection has been completed by the Tampa Electric service area main line inspector.
3. Conduit stub ups at transformer locations shall be at proper location within the transformer window per specs. 1-48 & 7.26 for a single-phase transformer and specs. 1-47 for a three-phase transformer.
 - Failure to stub up conduit at proper location within the transformer window may result in a re-installation and re-inspection.
4. Pad site preparation shall be compacted and graded to final grade in a 6x6 foot area per spec. 1-48 for single-phase transformers and a 12x12 foot area per spec. 1-47 for a three-phase pad mounted transformer application.
5. Once all conduit is installed, pad sites have been prepared and grounding is installed, contractor shall call the Tampa Electric Service area main line inspector for inspection and final approval.
Please note: After all the above steps are completed, the pad mounted transformers and cable portion of this project is now ready to be scheduled. Tampa Electric schedules all work on the next available Plan of the Week (POW) which is a minimum of two weeks away from the final approved inspection.

The purpose of this procedure is to suggest recommended practices for joining PVC conduit using solvent cement. Field conditions should be taken into consideration. PVC conduit sections may be joined by using the factory installed coupling, bell or a separate coupling. When joining 3 inch or smaller PVC, use the Clear, Fast Drying Cement, TEC NO. 2007227; for PVC larger than 3 inches, use the Gray, Medium Drying Cement, TEC NO. 2007228. In either case, the following steps should be followed:

- Step 1) Examine each length of conduit and remove all debris such as paper, dirt, etc. Conduit should be dry.
- Step 2) Cut pipe square and remove any burrs from both the outside of the conduit end and the inside of the coupling to be joined. Wipe clean, and if wet, dry as much as possible.
- Step 3) Check dry fit, the conduit must enter at least 1/3 of the way into the socket without force.
- Step 4) Quickly apply cement inside fitting/bell to full depth of socket. Also apply heavy coat of cement to conduit end. **DO NOT** glob, splash or pour cement in the fitting, socket or joint - especially on bell end conduit.
- Step 5) While cement is wet, insert conduit into fitting (be sure of snug fit) turning $\frac{1}{4}$ to distribute cement evenly. When working with large conduit, extra workers or the use of mechanical helpers may be necessary. Hold joint together for one minute to set cement. Wipe excess cement off joint. Set period will depend on the following:
 - 1) Type of Cement
 - 2) Size of Conduit
 - 3) Air Temperature
 - 4) Dry Joint Tightness
 - 5) Temperature of Conduit

NOTES:

- The cement used in joining conduit contains materials that are toxic and highly flammable. When concentrated, these vapors can be harmful and explosive. Observe, read and follow all directions on the cement container when using the cement.
- Store cement cans in a dry place out of the sun when not being used.
- Cement should have consistency of syrup or honey. If, due to prolonged exposure to air, cement becomes thick or lumpy dispose of properly. Do not try to restore cement by stirring in more cement.
- The approximate number of joints per quart of cement is as follows - 2" Conduit - 80 joints; 3" Conduit - 60 joints; 4" Conduit - 50 joints; 6" Conduit - 24 joints.

◀ DENOTES LATEST REVISION

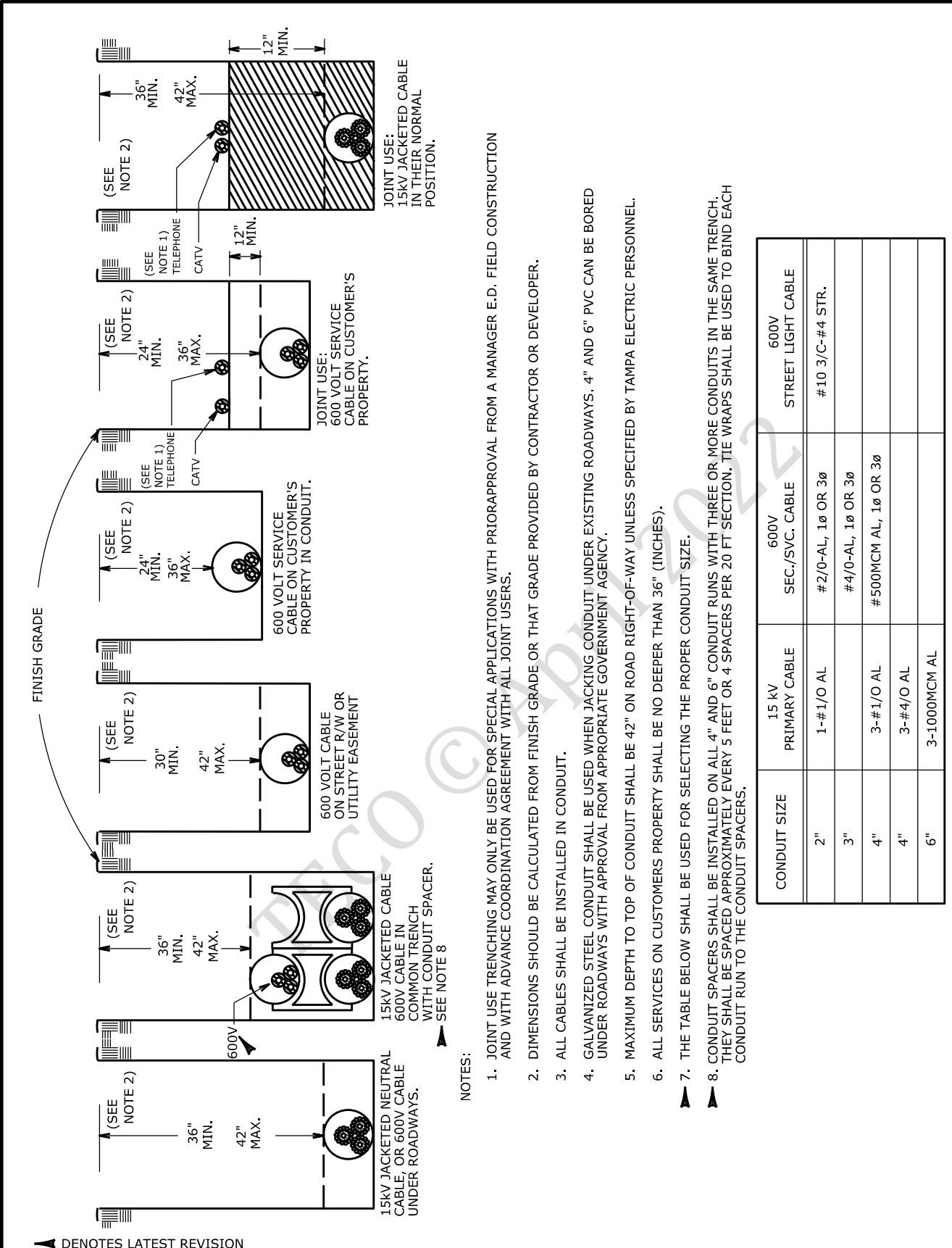
| | |
|------------|--------------------------|
| PWM | <i>Chip S. Whitworth</i> |
| MGR. STD'S | |
| APPR. DATE | 4-20-89 |
| SUPERSEDES | |
| 7-4 | |

PVC JOINING INSTALLATION USING SOLVENT CEMENT

TAMPA ELECTRIC CO.

STANDARDS

GENERAL RULES & SPECIFICATIONS UG.



▲ DENOTES LATEST REVISION

NOTES:

1. JOINT USE TRENCHING MAY ONLY BE USED FOR SPECIAL APPLICATIONS WITH PRIOR APPROVAL FROM A MANAGER E.D. FIELD CONSTRUCTION AND WITH ADVANCE COORDINATION AGREEMENT WITH ALL JOINT USERS.
2. DIMENSIONS SHOULD BE CALCULATED FROM FINISH GRADE OR THAT GRADE PROVIDED BY CONTRACTOR OR DEVELOPER.
3. ALL CABLES SHALL BE INSTALLED IN CONDUIT.
4. GALVANIZED STEEL CONDUIT SHALL BE USED WHEN JACKING CONDUIT UNDER EXISTING ROADWAYS. 4" AND 6" PVC CAN BE BORED UNDER ROADWAYS WITH APPROVAL FROM APPROPRIATE GOVERNMENT AGENCY.
5. MAXIMUM DEPTH TO TOP OF CONDUIT SHALL BE 42" ON ROAD RIGHT-OF-WAY UNLESS SPECIFIED BY TAMPA ELECTRIC PERSONNEL.
6. ALL SERVICES ON CUSTOMERS PROPERTY SHALL BE NO DEEPER THAN 36" (INCHES).
7. THE TABLE BELOW SHALL BE USED FOR SELECTING THE PROPER CONDUIT SIZE.
8. CONDUIT SPACERS SHALL BE INSTALLED ON ALL 4" AND 6" CONDUIT RUNS WITH THREE OR MORE CONDUITS IN THE SAME TRENCH. THEY SHALL BE SPACED APPROXIMATELY EVERY 5 FEET OR 4 SPACERS PER 20 FT SECTION. TIE WRAPS SHALL BE USED TO BIND EACH CONDUIT RUN TO THE CONDUIT SPACERS.

| CONDUIT SIZE | 15 KV PRIMARY CABLE | 600V SEC./SVC. CABLE | 600V STREET LIGHT CABLE |
|--------------|---------------------|----------------------|-------------------------|
| 2" | 1-#1/O AL | #2/0-AL, 1Ø OR 3Ø | #10 3/C-#4 STR. |
| 3" | | #4/0-AL, 1Ø OR 3Ø | |
| 4" | 3-#1/O AL | #500MCM AL, 1Ø OR 3Ø | |
| 4" | 3-#4/O AL | | |
| 6" | 3-1000MCM AL | | |

MGR; STD'S
 APPR, DATE 4-7-22
 SUPERSEDES 1-43/6-21-01

TRENCHING FOR UNDERGROUND CABLES

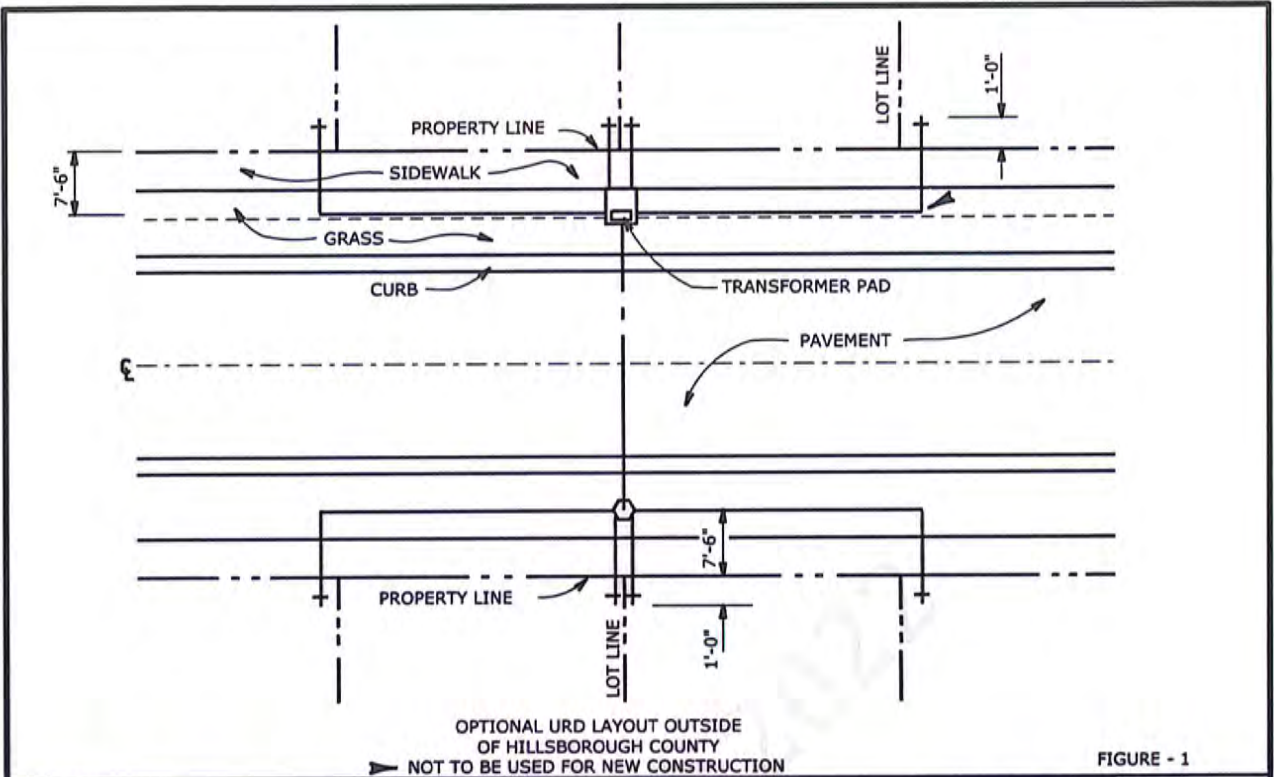


FIGURE - 1

- NOTES:
1. THIS LAYOUT IS TYPICAL FOR HILLSBOROUGH COUNTY AND IS PREFERRED THROUGHOUT OUR SERVICE AREA.
 2. DO NOT GLUE ELL'S ON CUSTOMERS PROPERTY.

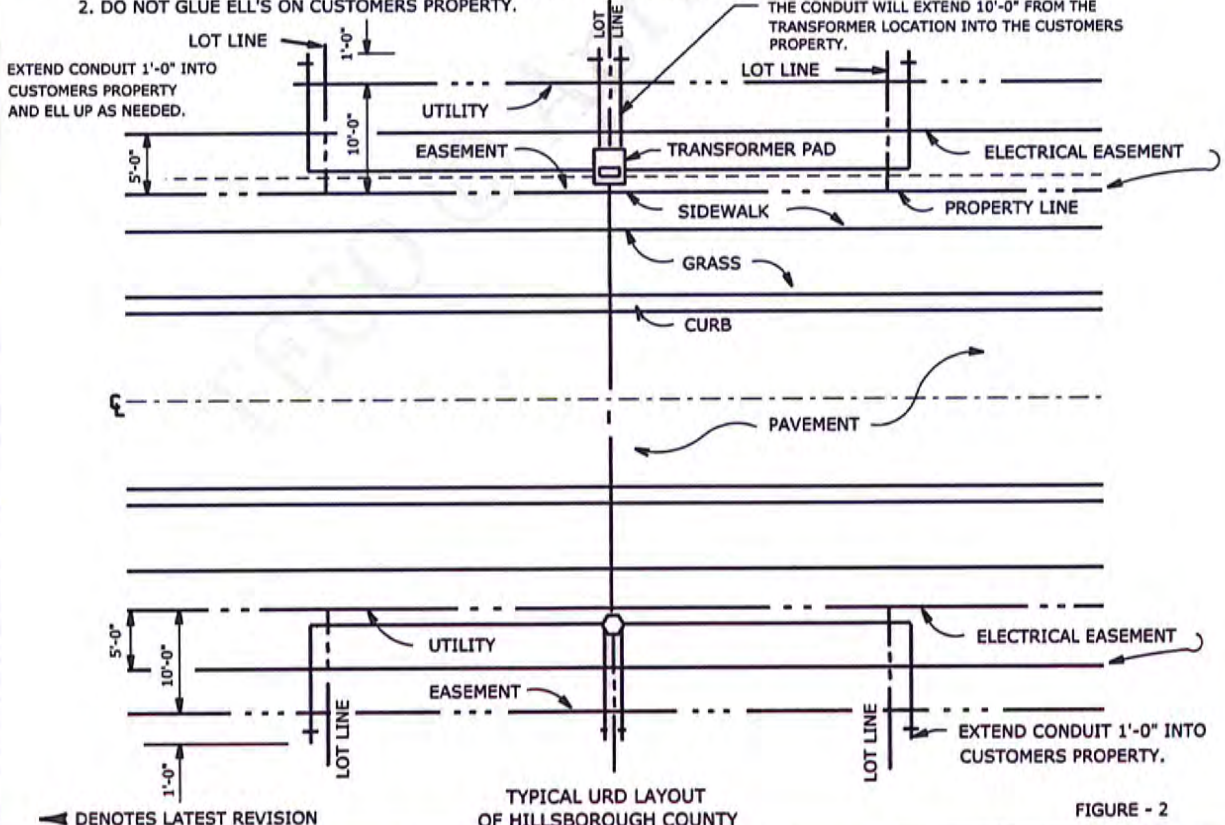
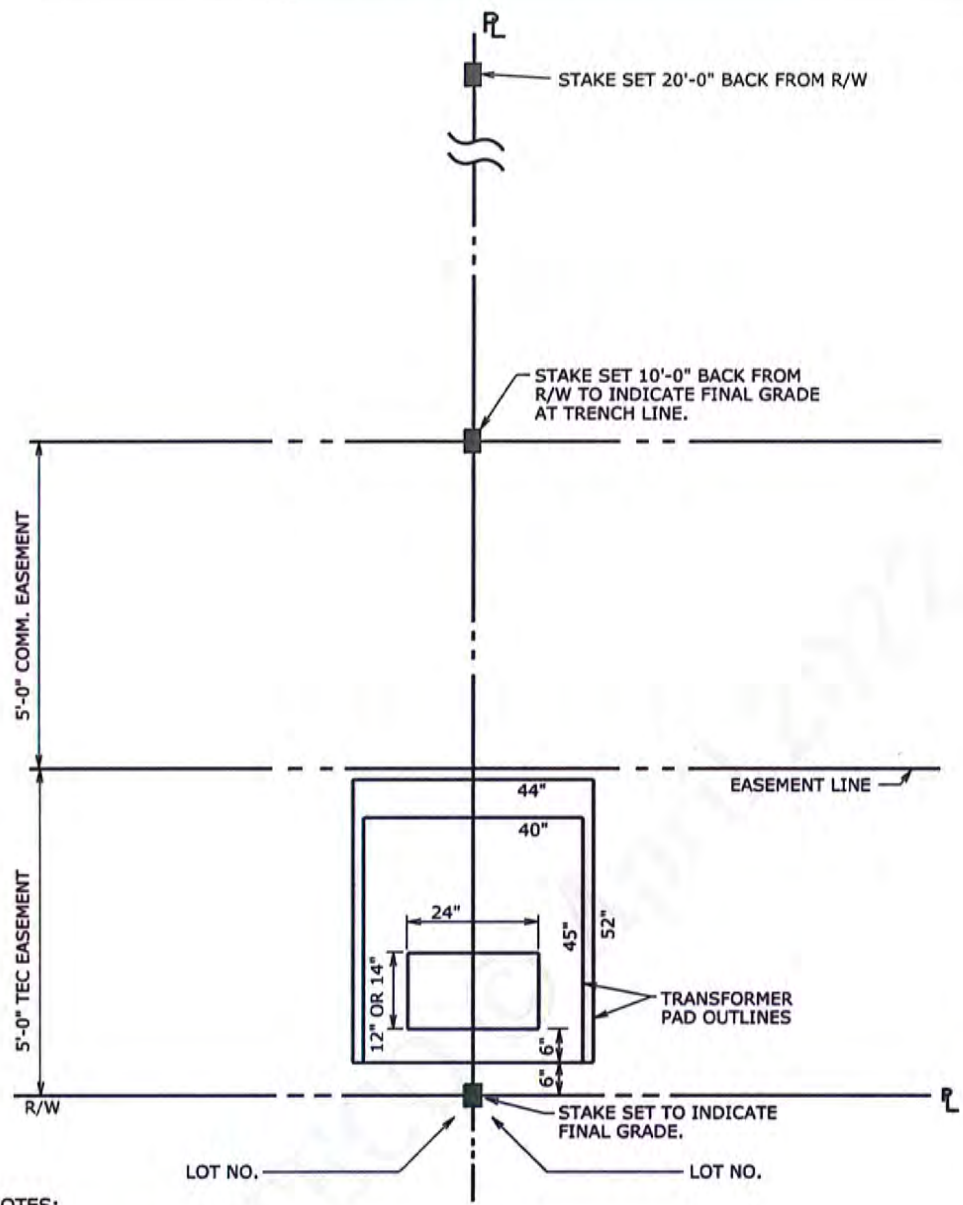


FIGURE - 2

URD LAYOUTS

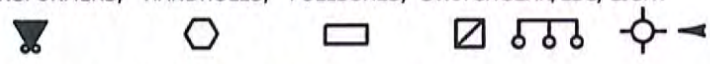
MGR, STO'S
 APPR. DATE 6-25-18
 SUPERSEDES 1-44/B-20-92

| REFERENCES | |
|------------|--|
| GR&S-UG | |
| STD. 1-43 | |
| STD. 1-44 | |
| STD. 11-1 | |



NOTES:

1. ALL STAKES TO BE INSTALLED BY DEVELOPER.
2. STAKES & GRADE REQUIRED ON ALL STREET SIDE LOT CORNERS, ON CURVED PORTIONS OF R/W AT 50' INTERVALS, AND ANY R/W THAT WOULD EXCEED 100' WITHOUT STAKES.
3. STAKING REQUIRED FOR ALL TEC EQUIPMENT.
4. OFFSET STAKING REQUIRED FOR TEC EQUIPMENT - TRANSFORMERS, HANDHOLES, PULLBOXES, SWITCHGEAR/LBC, LIGHT



5. STAKES SHALL INCLUDE LOT NUMBERS ON EACH SIDE.

| NO. | CK'D | DATE | REVISION |
|-----|------|---------|---|
| 5 | RGH | 4-22-20 | REVISED NOTE 4 & ADDED LIGHT SYMBOL |
| 4 | RGH | 6-06-18 | ADDED NOTE 5. |
| 3 | MPK | 8-18-05 | REVISED NOTE 4 & REMOVED CONDUIT & S/L SYMBOL |
| 2 | REM | 4-17-03 | STAKE AT 20' FROM R/W, STAKE SET 10' AT TRENCH LINE |

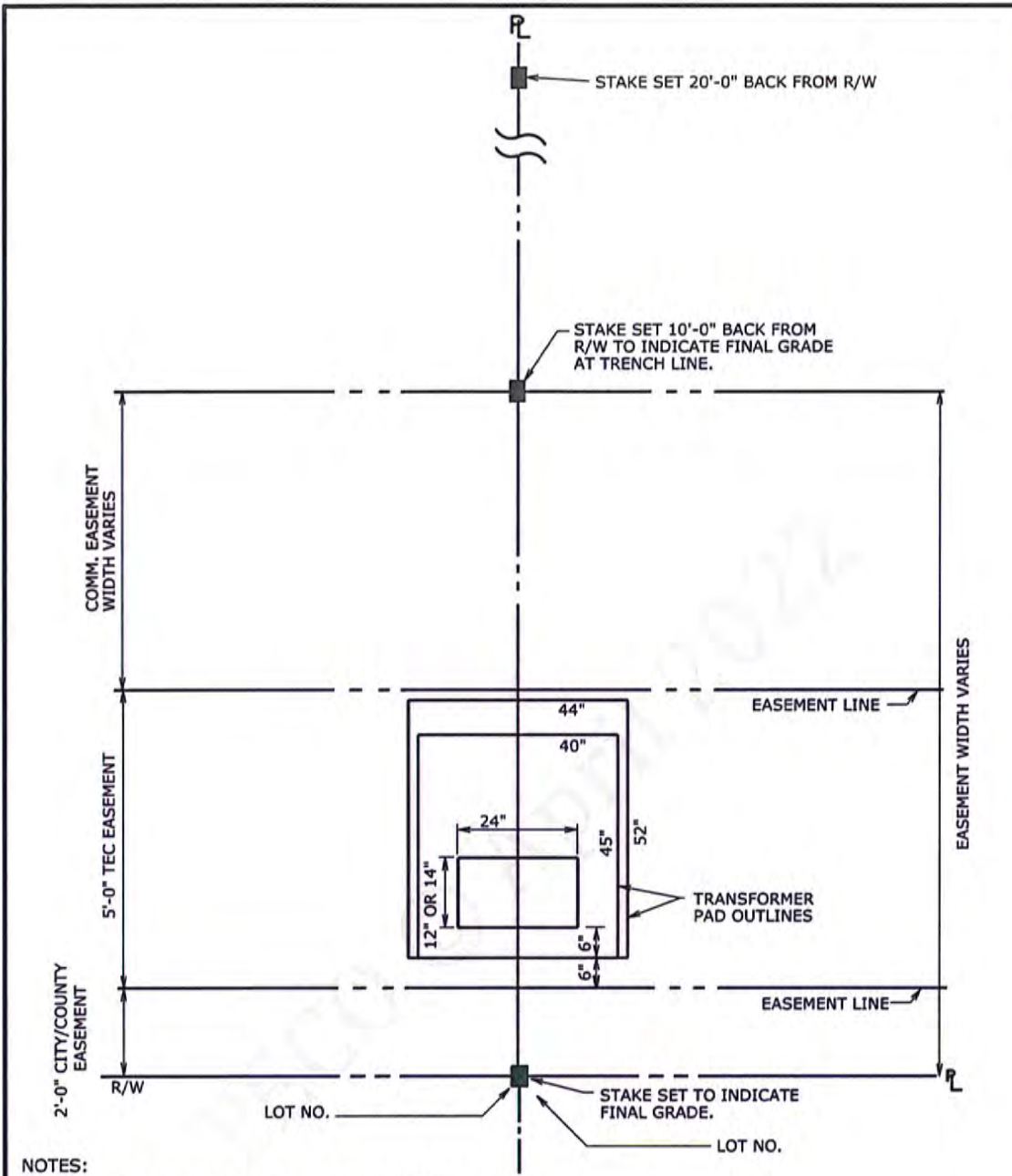
◀ DENOTES LATEST REVISION

HGR: STD'S
 APPR. DATE 4-22-20
 SUPERSEDES 1-45/6-06-18

SUBDIVISION STAKING REQUIREMENTS FOR ALL TEC EQUIPMENT IN EASEMENTS

REFERENCES

- GR&S-UG
- STD. 1-43
- STD. 1-44
- STD. 6-11
- STD. 11-1



NOTES:

1. ALL STAKES TO BE INSTALLED BY DEVELOPER.
2. STAKES & GRADE REQUIRED ON ALL STREET SIDE LOT CORNERS, ON CURVED PORTIONS OF R/W AT 50' INTERVALS, AND ANY R/W THAT WOULD EXCEED 100' WITHOUT STAKES.
3. STAKING REQUIRED FOR ALL TEC EQUIPMENT.
4. OFFSET STAKING REQUIRED FOR TEC EQUIPMENT - TRANSFORMERS, HANDHOLES, PULLBOXES, SWITCHGEAR/LBC, LIGHT



5. STAKES SHALL INCLUDE LOT NUMBERS ON EACH SIDE.

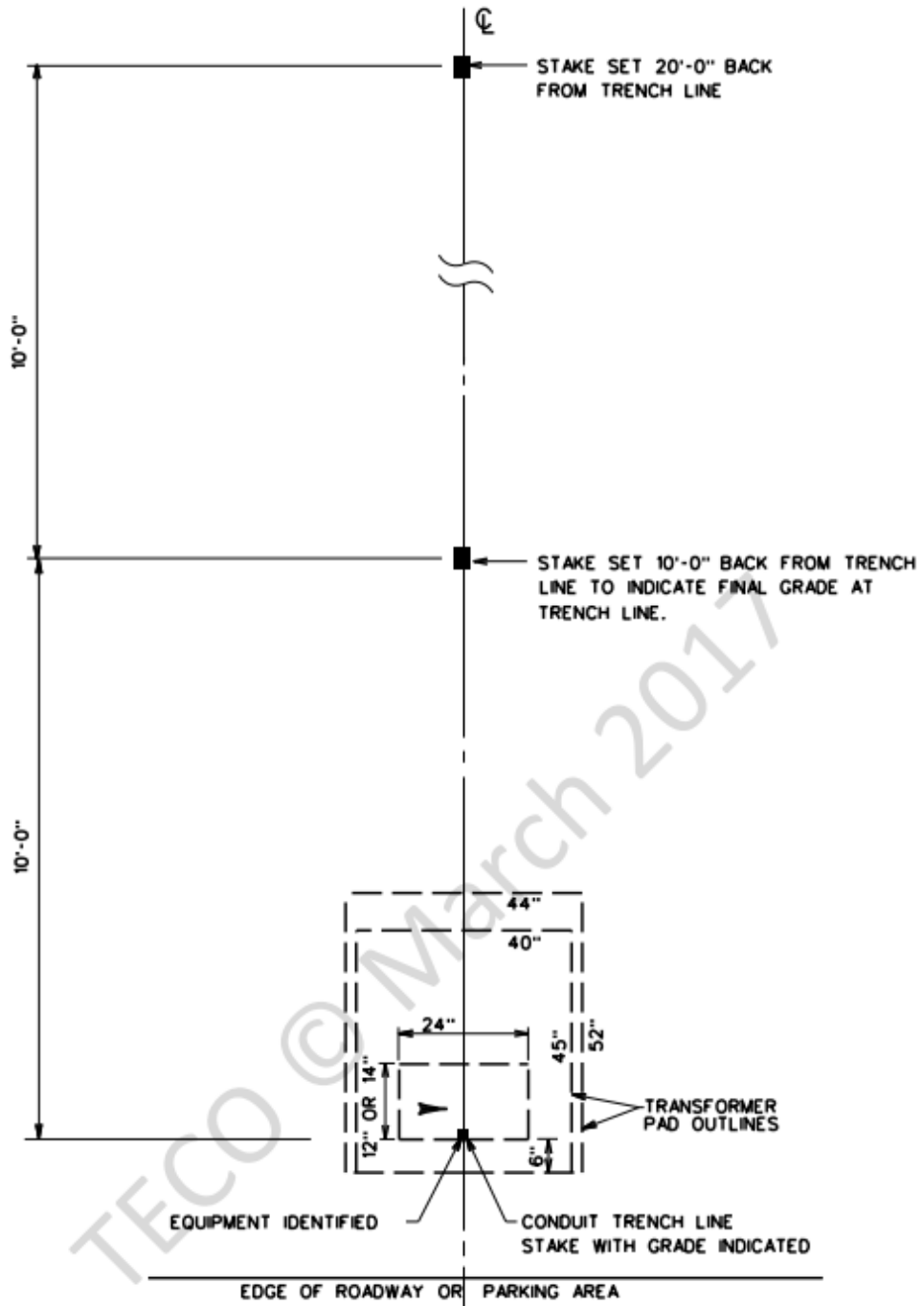
▲ DENOTES LATEST REVISION

| NO. | CK'D | DATE | REVISION |
|-----|------|---------|-------------------------------------|
| 3 | RGH | 4-22-20 | REVISED NOTE 4 & ADDED LIGHT SYMBOL |
| 2 | RGH | 6-06-18 | ADDED NOTE 5. |
| 1 | RGH | 6-17-17 | NEW SPECIFICATION |

POLK COUNTY SUBDIVISION STAKING REQUIREMENTS FOR ALL TEC EQUIPMENT IN EASEMENTS

HGR STD'S
 APPR. DATE 4-22-20
 SUPERSEDES 1-45/6-06-18

| REFERENCES | |
|------------|--|
| GR&S UG. | |
| STD. 1-17 | |
| STD. 1-43 | |
| STD. 1-44 | |
| STD. 11-1 | |



NOTES:

1. ALL STAKES TO BE INSTALLED BY DEVELOPER.
2. STAKES & GRADE REQUIRED EVERY 100' FOR CONDUIT TRENCH LINE, ON CURVED PORTIONS AT 25' INTERVALS, OR LESS IF REQUESTED.
3. STAKING REQUIRED FOR ALL TEC EQUIPMENT.
- ▶ 4. OFFSET STAKING REQUIRED FOR TEC EQUIPMENT - TRANSFORMERS, HANDHOLES, PULLBOXES, SWITCHGEAR/LBC.

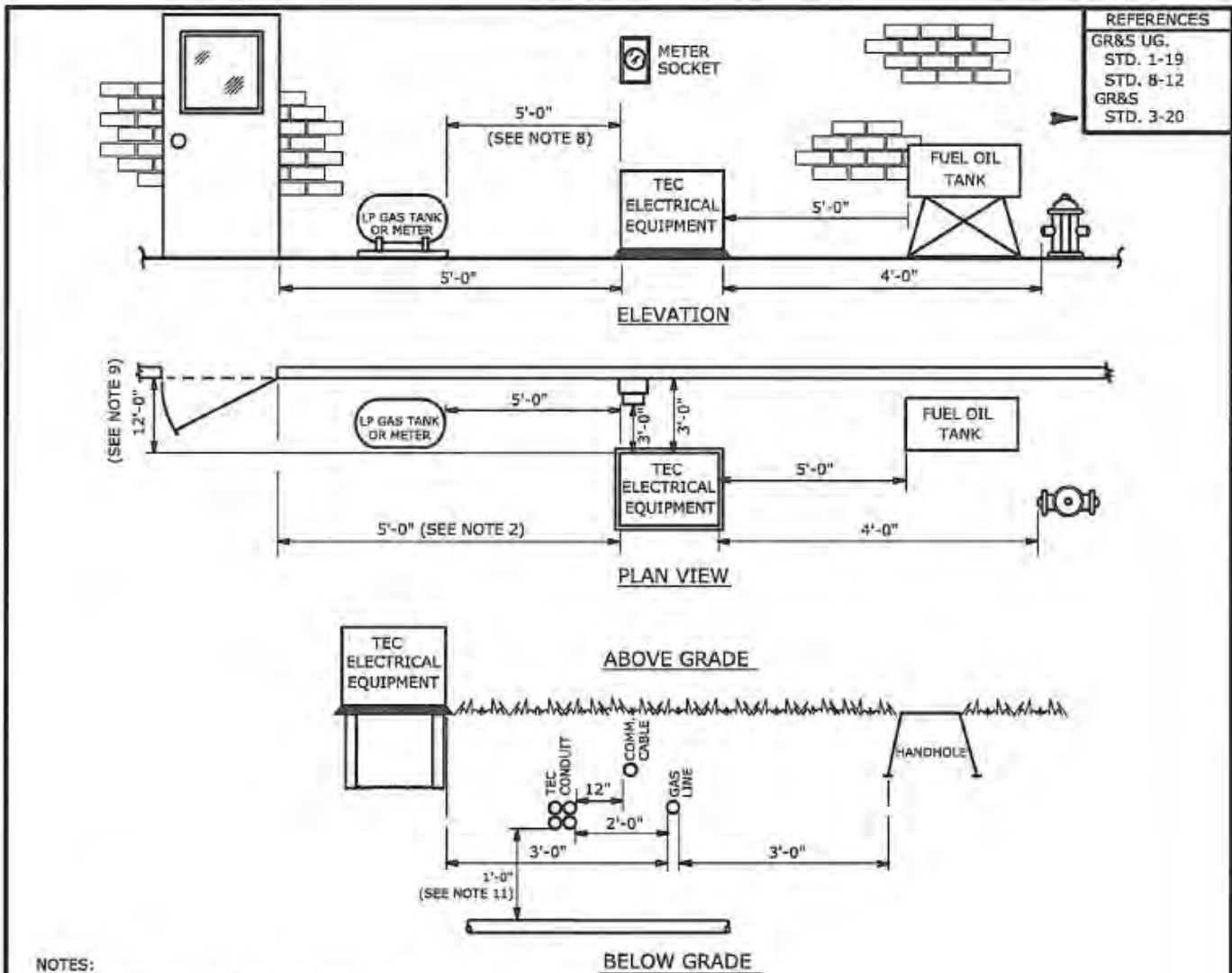


| NO. | CK'D | DATE | REVISION |
|-----|------|----------|--|
| 4 | MFK | 8-18-05 | REVISED REFERENCE BLOCK |
| 3 | MFK | 8-18-05 | REVISED NOTE 4 & REMOVED CONDUIT & S/L SYMBOL |
| 2 | CRM | 10-16-03 | TITLE CHANGE |
| 1 | REM | 4-17-03 | CLARITY ON STAKE LOCATION FROM EDGE OF WINDOW OF PAD |

◀ DENOTES LATEST REVISION

STAKING REQUIREMENTS FOR APARTMENTS AND COMMERCIAL ZERO LOT LINE APPLICATIONS

D.S. SUPR. *Bob Shilling*
 APPR. DATE 8-18-05
 SUPERSEDED 1-46/10-16-03



| REFERENCES | |
|------------|-----------|
| GR&S UG. | STD. 1-19 |
| | STD. 8-12 |
| GR&S | STD. 3-20 |

NOTES:

1. ALL DIMENSIONS SHOWN ARE MINIMUM.
2. THIS DIMENSION ALSO APPLIES TO OPEN STAIRWAYS.
3. THERE SHALL BE NO PIPING OR CONDUIT UNDER THE PAD OTHER THAN THOSE REQUIRED TO CONNECT THE EQUIPMENT.
4. NO PORTION OF THE BUILDING SHALL EXTEND OVER EQUIPMENT, OTHER THAN METER EQUIPMENT.
5. ADEQUATE PASSAGeways TO ACCOMMODATE TRUCKS OR OTHER NECESSARY LIFTING AND HAULING EQUIPMENT SHALL BE PROVIDED TO ALLOW FOR EQUIPMENT REPLACEMENT.
6. THE EQUIPMENT SHALL BE INSTALLED SO THAT THE FRONT OF THE UNIT FACES AWAY FROM THE BUILDING.
7. THERE SHALL BE NO ABOVE GROUND OBSTRUCTIONS SUCH AS COOLING TOWERS, SHRUBS, PLANTS, FENCES, ETC. WITHIN 10'-0" OF THE FRONT OF THE EQUIPMENT, OR WITHIN 3'-0" OF THE SIDES OR BACK.
8. 5'-0" DIMENSION ALSO PERTAINS TO LP GAS PIPELINE CONNECTIONS, VALVES, OR GAUGES.
9. THIS 12'-0" DIMENSION APPLIES TO EQUIPMENT PLACED IN FRONT OF DOORS OR OPEN STAIRWAYS.
10. PRIMARY CABLES WILL NOT BE PERMITTED UNDER BUILDINGS AND STRUCTURES.
11. A VERTICAL SEPARATION OF 1'-0" OR GREATER IS REQUIRED WHEN CROSSING OVER OTHER UNDERGROUND STRUCTURES (SEWER LINE, WATER LINE, GAS LINE, FLAMMABLE MATERIAL LINE, BUILDING FOUNDATION, STEAM LINE, ETC.) OR CABLE. THE CABLE SHALL BE SUITABLY SUPPORTED OR HAVE SUFFICIENT VERTICAL SEPARATION TO LIMIT THE LIKELIHOOD OF TRANSFERRING A DETRIMENTAL LOAD ONTO THE STRUCTURE (2017 NESC RULE 353B).
12. EQUIPMENT AND CONDUIT SHALL MAINTAIN A 3'-0" CLEARANCE FROM SEPTIC TANKS, DRAIN FIELDS, AND ASSOCIATED PIPING, AND CONDUIT SHALL NOT BE INSTALLED UNDER DRAIN FIELDS.
13. IF ANY PART OF TEC'S ELECTRICAL EQUIPMENT WILL NEED TO BE CLOSER TO ANY OUTSIDE WALL OF A BUILDING THAN INDICATED ABOVE, LOCATED IN THE R.O.W., OR LOCATED UNDERNEATH ANY PART OF THE BUILDING IT WILL LIKELY NEED TO BE PLACED IN A VAULT-SEE UG GRS SECTION 13 AND CONTACT DISTRIBUTION ENGINEERING.

REFERENCE: 2017 NESC

◀ DENOTES LATEST REVISION

| NO. | CK'D | DATE | REVISION |
|-----|------|----------|--|
| 9 | SJH | 10-17-19 | ADDED NEW NOTE 13 |
| 8 | TQB | 03-07-17 | REVISED TO MEET 2017 NESC |
| 7 | TQB | 06-15-15 | REV. 20'-0" TO 4'-0", REF. BLK., DELETE NOTE B |
| 6 | TQB | 07-30-14 | REDUCED THE 3' CLEARANCE TO 2' FOR PEOPLES/TEC |

MGR; STD'S

 APPR. DATE 10-21-19
 SUPERSEDES 1-16/6-15-15

LOCATION OF NON-OIL FILLED ELECTRICAL EQUIPMENT

1-16

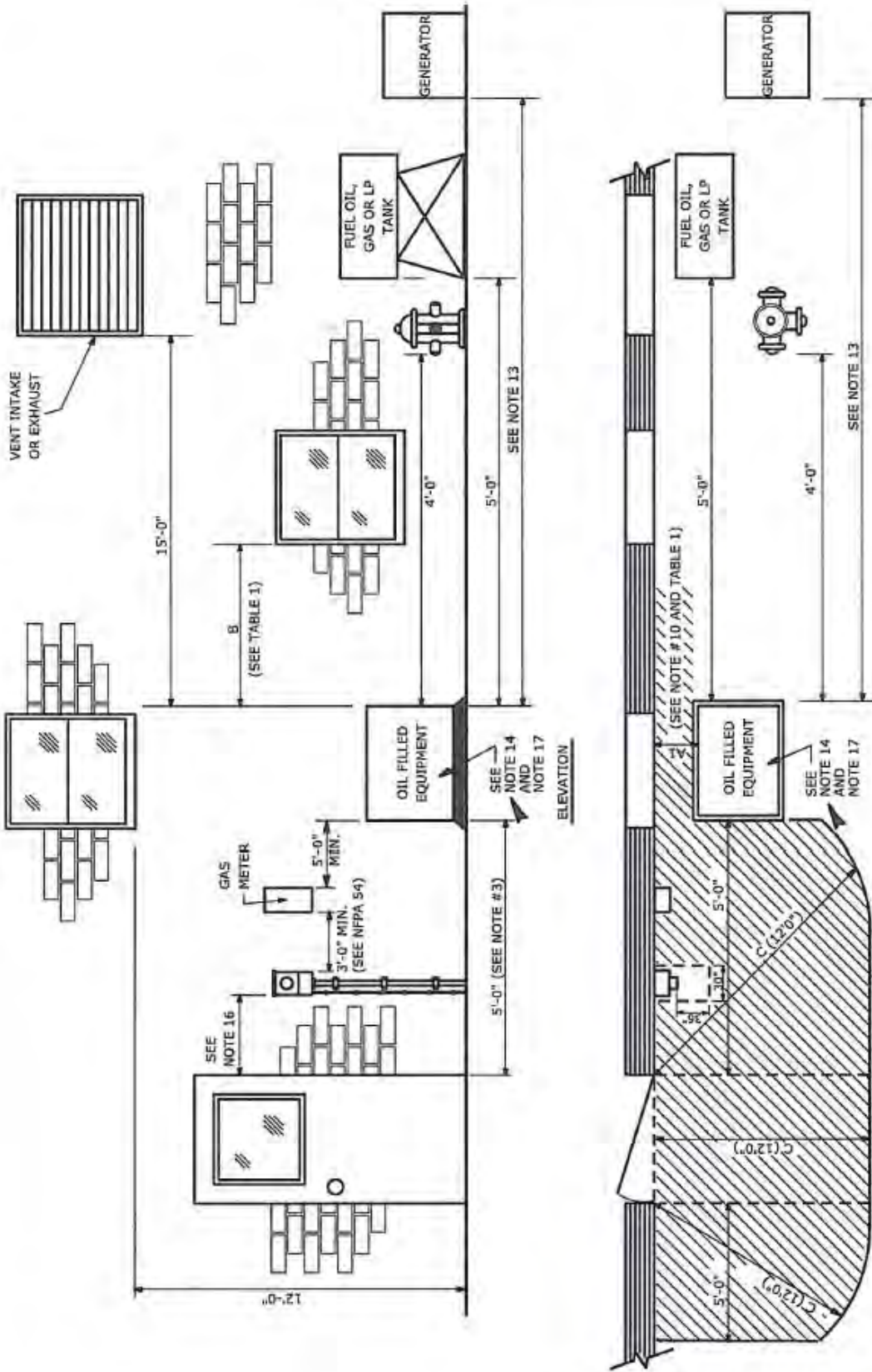
TAMPA ELECTRIC CO.

STANDARDS

GENERAL RULES & SPECIFICATIONS

REFERENCES

- GR&S STD. 3-22
- GR&S UG. STD. 1-19
- STD. 8-12
- SESR 7.39



PLAN VIEW

SEE NOTES ON PAGE 2 OF 2

| NO. | CK'D | DATE | REVISION |
|-----|------|----------|--|
| 8 | SJH | 10-21-19 | ADDED NEW NOTE 17 ON PAGE 2 |
| 7 | TQB | 6-15-15 | ADDED NOTE 14 THAT WAS REVISED ON PAGE 2 |
| 6 | TQB | 6-15-15 | ADDED 4'-0" FROM EQUIPMENT TO FIRE HYDRANT |
| 5 | RAG | 3-19-09 | ADD NOTE 16, NFPA 54 & DIMENSIONS AROUND METER CAN |

◀ DENOTES LATEST REVISION

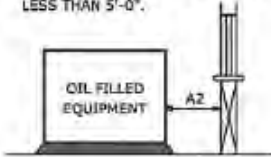
GRS 3-22

LOCATION OF OIL FILLED PAD-MOUNTED EQUIPMENT

MGR; STD'S
 APPR. DATE **10-21-19**
 SUPERSEDES **1-17/3-19-09**

| REFERENCES | |
|------------|---|
| ▶ | GR&S STD. 3-22 |
| ▶ | GR&S UG. STD. 1-19 STD. 8-12 SESR 7.39 |

WINDOW LESS THAN 12'-0" ABOVE GROUND BEHIND EQUIPMENT WITH "B" DIMENSION LESS THAN 5'-0".



WINDOW WITH 45 MINUTE FIRE RATED GLASS LESS THAN 12'-0" ABOVE GROUND BEHIND EQUIPMENT WITH "B" DIMENSION LESS THAN 5'-0".

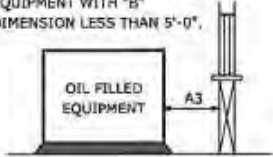


TABLE 1 (MINIMUM CLEARANCES)

| * STRUCTURES | A1 | A2 | A3 | B | C |
|------------------|--------|--------|--------|-------|--------|
| STEEL OR MASONRY | 5'-0" | 12'-0" | 8'-0" | 5'-0" | 12'-0" |
| WOOD | 12'-0" | 12'-0" | 12'-0" | 5'-0" | 12'-0" |

* MASONRY: CONCRETE BLOCK OR FULL BRICK
WOOD: WOOD FRAME OR WOOD FRAME WITH STUCCO VENEER.

NOTES: (APPLY TO PAGE 1 & 2)

- ALL DIMENSIONS SHOWN ARE MINIMUM. AN AUTHORITY HAVING JURISDICTION OR ANOTHER CODE MAY REQUIRE ADDITIONAL CLEARANCE. REDUCTION OF THE ABOVE DIMENSIONS REQUIRES WRITTEN APPROVAL FROM THE STATE FIRE MARSHALL AND TEC.
- DRAINAGE OF THE AREA SURROUNDING THE EQUIPMENT SHOULD BE AWAY FROM BUILDING.
- THIS DIMENSION ALSO APPLIES TO OPEN STAIRWAYS, WHEEL CHAIR RAMP, ETC.
- THERE SHALL BE NO PIPING OR CONDUIT UNDER THE PAD OTHER THAN THOSE REQUIRED TO CONNECT THE EQUIPMENT.
- NO PORTION OF THE BUILDING SHALL EXTEND OVER THE EQUIPMENT.
- PAVED AND UNOBSTRUCTED PASSAGEWAYS TO ACCOMMODATE TRUCKS OR OTHER NECESSARY LIFTING AND HAULING EQUIPMENT SHALL BE PROVIDED TO ALLOW FOR EQUIPMENT REPLACEMENT.
- THE EQUIPMENT SHALL BE INSTALLED SO THAT THE FRONT OF THE UNIT FACES AWAY FROM THE BUILDING.
- THERE SHALL BE NO ABOVE GROUND OBSTRUCTIONS SUCH AS COOLING TOWERS, SHRUBS, PLANTS, FENCES ETC. WITHIN 10'-0" IN FRONT OF THE OIL FILLED EQUIPMENT DOORS, OR WITHIN 3'-0" OF THE SIDES OR BACK.
- THE MINIMUM CLEARANCE REQUIREMENTS FOR DOORWAY ALSO APPLIES TO FIRE ESCAPES.
- DIMENSION A1 IS APPLICABLE WHERE THERE IS NO WINDOW ABOVE THE EQUIPMENT OR THERE IS A WINDOW AT A HEIGHT OF 12'-0" OR MORE AS SHOWN IN THE ELEVATION ABOVE. SEE A2, A3 AND TABLE 1 WHEN WINDOW IS NEAR.
- DIMENSION C IS APPLICABLE WHEN OIL FILLED EQUIPMENT IS LOCATED IN FRONT OF DOOR.
- DIMENSIONS ALSO APPLY TO TRANSCLOSURE CABINET WALLS.
- TAMPA ELECTRIC CO. REQUIRES THAT THE EXHAUST OUTLET FOR CUSTOMER-OWNED GENERATORS BE AT LEAST 15'-0" FROM ALL TAMPA ELECTRIC EQUIPMENT BECAUSE OF HEAT, NOISE & EXHAUST FUMES.
- TAMPA ELECTRIC CO. REQUIRES A MINIMUM SWITCHING CLEARANCE OF 10 FEET IN FRONT OF THE EQUIPMENT DOORS AND 3 FEET ON THE SIDES AND BACK OF EQUIPMENT FOR MAINTENANCE ACCESS.
- PRIMARY CABLES WILL NOT BE PERMITTED UNDER BUILDINGS AND STRUCTURES.
- PROVIDE 3'-0" MINIMUM CLEARANCE TO DOORWAY. FOR DOORS WIDER THAN 3'-0", THE MINIMUM CLEARANCE SHALL BE INCREASED TO THE WIDTH OF THE DOOR. CLEARANCE IS REQUIRED REGARDLESS OF DIRECTION OF DOOR SWING OR HINGE LOCATION.
- ▶ IF ANY PART OF TEC'S OIL FILLED EQUIPMENT WILL NEED TO BE CLOSER TO ANY OUTSIDE WALL OF A BUILDING THAN INDICATED ABOVE, LOCATED IN THE R.O.W., OR LOCATED UNDERNEATH ANY PART OF THE BUILDING IT WILL LIKELY NEED TO BE PLACED IN A VAULT - SEE UG GRS SECTION 13 AND CONTACT DISTRIBUTION ENGINEERING.

| | | | |
|-----|-----|----------|--|
| 8 | SJH | 10-17-19 | ADDED NEW NOTE 17 |
| 7 | TQB | 6-15-15 | REVISED NOTE 14 |
| 6 | TQB | 7-19-12 | REMOVED 7'-6" CLEARANCE TO FIRE HYDRANT IN NOTE 14 |
| 5 | RAG | 3-19-09 | REVISED NOTES 6, 13 & 14, ADD NOTE 16 |
| NO. | CKD | DATE | REVISION |

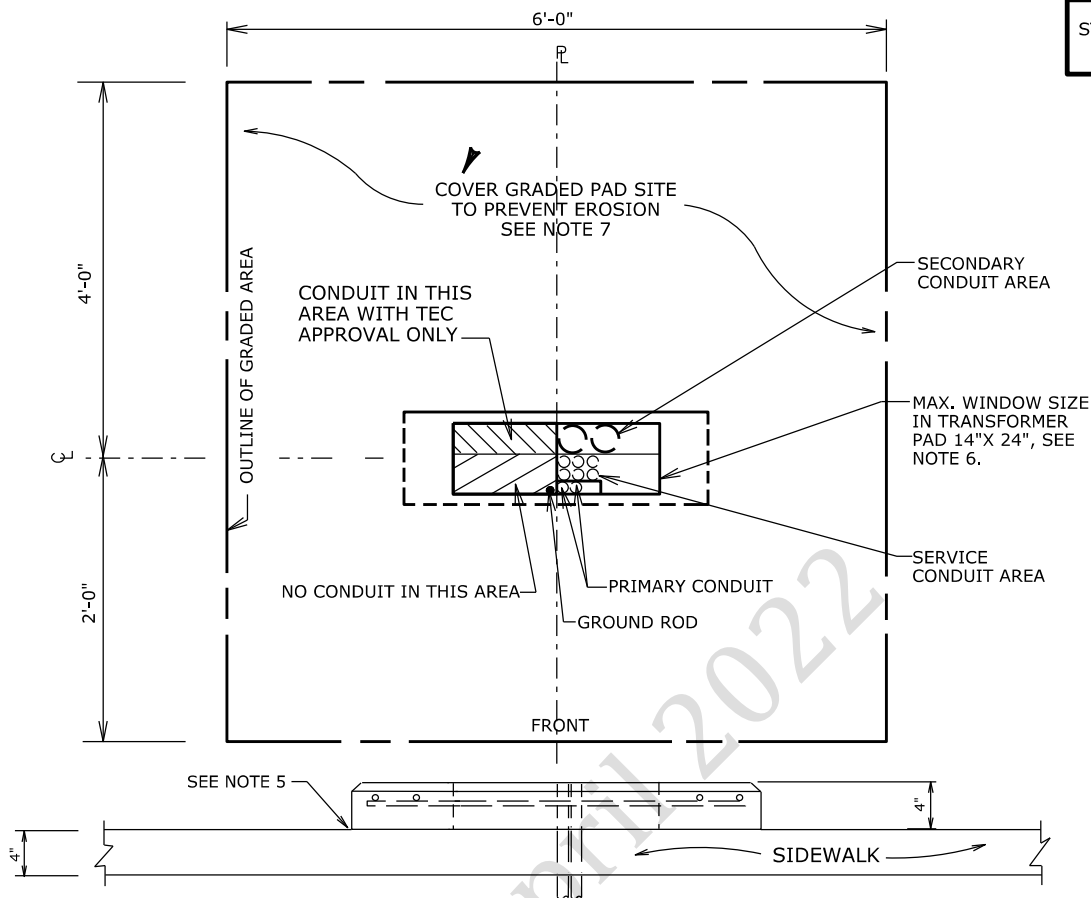
◀ DENOTES LATEST REVISION

GRS 3-22

MGR; STD'S
APPR. DATE 10-21-19
SUPERSEDES 1-17/7-19-12

LOCATION OF OIL FILLED PAD MOUNTED EQUIPMENT

| |
|---------------------|
| REFERENCES |
| GR&S UG STD. 9-5 |



CONDUIT INSTALLATION

1. ALL CONDUITS TO HAVE 36" MIN. COVER
- ▶ 2. STACK CONFIGURATION TO BE AS SHOWN ABOVE WITH CONDUITS ALLIGNED IMMEDIATELY TO THE RIGHT OF PAD CENTERLINE. CONDUITS SHALL BE KEPT OUT OF THE AREA DIRECTLY UNDER THE TRANSFORMER SPADES.
3. PRIMARY & STREET LIGHT CONDUITS TO BE INSTALLED TOWARD FRONT OF WINDOW AND IDENTIFIED WITH BLACK MARKER AS FOLLOWS:

PL-PRIMARY LEFT
PR-PRIMARY RIGHT
SL-STREET LIGHT

4. TEC FIELD ENGINEER TO SPECIFY NUMBER OF CONDUITS.

TRANSF. SITE PREPARATION

1. FINISHED GRADE MARK TO BE NOTED ON PRI. CONDUIT WITH BLACK MARKER. PROPERTY CORNERS TO BE PLAINLY MARKED.
2. PROVIDE 6'X 6' FLAT LEVEL AREA AROUND CONDUITS COMPACTED AND AT FINAL GRADE. SEE OUTLINE ABOVE.
3. AT HANDHOLE LOCATIONS PROVIDE 4'X 4' FLAT LEVEL AREA AROUND CONDUITS AT FINISHED GRADE. FINISHED GRADE TO BE MARKED ON SEC. CONDUIT.

TRANSF. SITE PREPARATION CONT'D

- ▶ 4. ALL CUSTOMER CONDUITS MUST BE IN PLACE & STUBBED OUT 10' BEYOND PAD WITH SECONDARY CABLE PLAINLY MARKED & IDENTIFIED WHEN INSTALLED.
5. BOTTOM OF PAD TO BE EQUAL TO TOP OF SIDEWALK, SOD, DIRT, MULCH & CONCRETE, ETC.
6. SMALL & LARGE PADS TEC NO. 2001001 & 2001002 MADE AFTER AUGUST OF 2000 HAVE BEEN STANDARDIZED TO A 14" X 24" WINDOW. LARGE PADS, TEC NO. 2001002 BUILT BEFORE AUGUST OF 2000 WILL HAVE A 12" X 24" WINDOW.
- ▶ 7. THE 6' X 6' GRADED SITE SHALL BE SURROUNDED WITH SOD TO PROTECT IT FROM EROSION. AREAS ADJACENT TO THE SITE MAY ALSO REQUIRE EROSION PROTECTION AT TEC PERSONNEL'S DISCRETION.
8. SLOPED AREAS ADJACENT TO THE SITE MAY REQUIRE EROSION PROTECTION AT THE DIRECTION OF TEC PERSONNEL.
- ▶ 9. FOR MOUNDED TYPE PAD SITE, ADD GRADE 2' BEYOND PAD SITE.

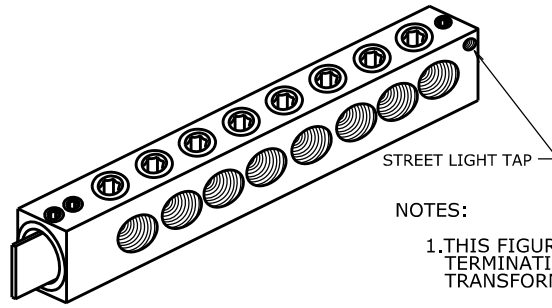
◀ DENOTES LATEST REVISION

| | | | |
|-----|------|---------|--|
| 6 | WDD | 3-28-22 | REVISED NOTE 2 |
| 5 | DWP | 5-06-21 | REVISED NOTE 7 |
| 4 | RGH | 4-17-19 | MODIFIED NOTE 4 & 7 . ADDED NOTE 9. |
| 3 | MFK | 6-15-06 | ADDED NOTES 7 & 8, COVER GRADED PAD SITE |
| NO. | CK'D | DATE | REVISION |

**CONDUIT INSTALLATION/SITE PREPARATION
SINGLE-PHASE PAD-MOUNT
TRANSFORMER INSTALLATION**

| | |
|------------|-----------------|
| MGR: STD'S | <i>Kabnicka</i> |
| APPR. DATE | 3-28-22 |
| SUPSEDES | 1-48/5-06-21 |

| REFERENCES |
|------------|
| GR&S UG |
| STD. 8-2 |
| STD. 9-7 |
| STD. 11-1 |
| STD. 12-26 |



NOTES:

1. THIS FIGURE IS THE PREFERRED SECONDARY TERMINATION FOR SINGLE-PHASE PAD-MOUNT TRANSFORMERS.
2. USE JAM NUT TO LOCK ALL SCREW ON CONNECTORS ON TRANSFORMER SECONDARY STUD.

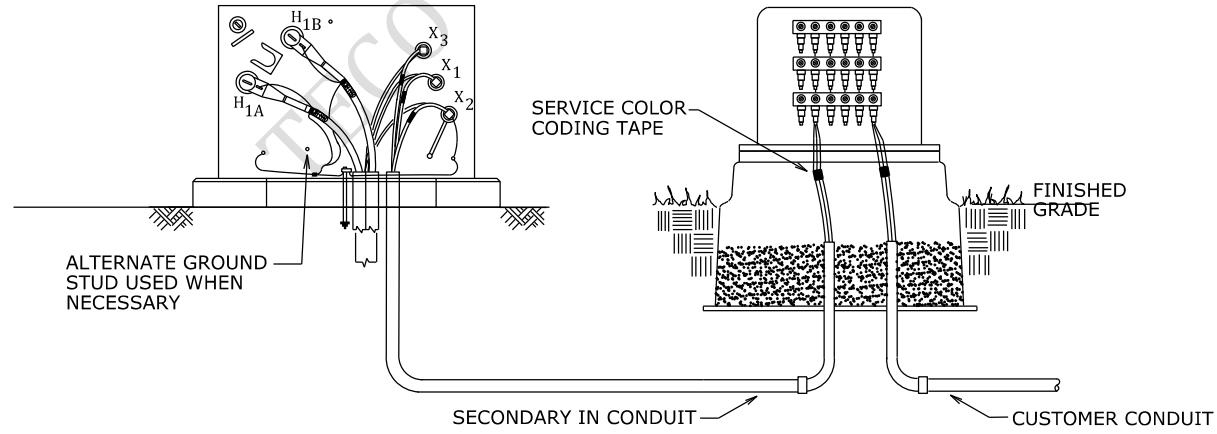
FIGURE 1

| TRANSFORMER KVA | MAX ALLOWED SERVICE CABLES / CONDUITS PER LEG** | SECONDARY CONNECTOR TEC NO. | CABLE RANGE CU. OR AL. | CONNECTOR DESCRIPTION |
|-----------------|--|-----------------------------|------------------------|---------------------------|
| 25 THRU 75 | (8) SETS OF 3 WIRE OR 4 WIRE IN 2" CONDUIT MAX OR (6) SETS OF 3 WIRE OR 4 WIRE IN 3" CONDUIT MAX OR (4) SETS OF 3 WIRE OR 4 WIRE IN 4" CONDUIT MAX | 2004948 | #10-350 kCMIL | 6 TAPS, 5/8" - 11 THREADS |
| | | 2004954 | #6-500 kCMIL | 6 TAPS, 5/8" - 11 THREADS |
| | | 2004902 | 1/0-750 kCMIL** | 6 TAPS, 5/8" - 11 THREADS |
| | | 2004950 | #6-250 kCMIL | 8 TAPS, 5/8" - 11 THREADS |
| | | 2004904 | #6-500 kCMIL | 8 TAPS, 5/8" - 11 THREADS |
| 100 THRU 250 | (8) SETS OF 3 WIRE OR 4 WIRE IN 2" CONDUIT MAX OR (6) SETS OF 3 WIRE OR 4 WIRE IN 3" CONDUIT MAX OR (4) SETS OF 3 WIRE OR 4 WIRE IN 4" CONDUIT MAX | 2004952 | #2-500 kCMIL | 6 TAPS, 1" - 14 THREADS |
| | | 2004901 | 1/0-750 kCMIL** | 6 TAPS, 1" - 14 THREADS |
| | | 2004903 | #2-500 kCMIL | 8 TAPS, 1" - 14 THREADS |

NOTES:

1. THE MAXIMUM ALLOWED SERVICE CABLES PER LEG DOES NOT INCLUDE AN ADDITIONAL STREETLIGHT TAP WHICH IS PROVIDED ON CONNECTORS.
2. IF THE NUMBER OF CABLES THE CONTRACTOR WISHES TO INSTALL EXCEEDS THE MAXIMUM ALLOWED SERVICE CABLES PER LEG, A TAMPA ELECTRIC PAD-MOUNTED SECONDARY TERMINATION CABINET TEC NO. 2004579 (REFER TO GR&S UG 12-26) OR A TAMPA ELECTRIC HANDHOLE (REFER TO GR&S UG 9-7) MAY BE USED. INSTALLATION OF THE HANDHOLE AND CABLE CONNECTIONS WILL BE COMPLETED BY TAMPA ELECTRIC PERSONNEL AT THE CUSTOMER'S EXPENSE.

** CONTRACTORS MUST OBTAIN TEC APPROVAL TO INSTALL CONNECTORS LARGER THAN 750 kCMIL.



| | | | |
|-----|------|----------|--|
| 7 | RGH | 8-26-21 | REVISED NOTES IN COLUMN 2 |
| 6 | SJH | 11-07-19 | ADDED NUMBER OF CONDUITS TO TABLE, UG GRS 11-1 REF. |
| 5 | RGH | 6-04-19 | REV. IN TABLE TX RANGE TO INCLUDE 250KVA, MODIFIED NOTES |
| 4 | SJH | 7-20-16 | REV. IN TABLE CABLE RANGE FROM #6-500 kCMIL TO 1/0-750 kCMIL |
| NO. | CK'D | DATE | REVISION |

◀ DENOTES LATEST REVISION

| | |
|------------|----------------|
| MGR; STD'S | <i>Rabusek</i> |
| APPR. DATE | 8-26-21 |
| SUPERSEDES | 11-2/11-07-19 |

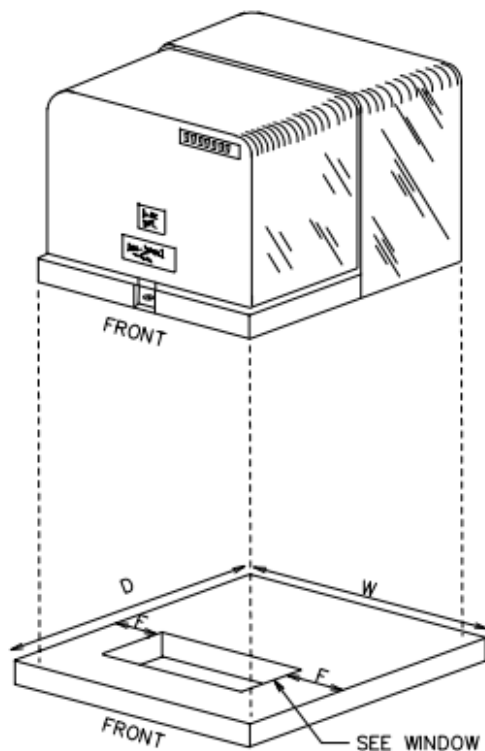
SECONDARY CONNECTORS SINGLE-PHASE URD PAD-MOUNT TRANSFORMER

11-2

TAMPA ELECTRIC CO.

STANDARDS

GENERAL RULES & SPECIFICATIONS UG.



| TRANSFORMER SIZES | D | F | W |
|-------------------|-----|-----|-----|
| 25-50 kVA | 45" | 8" | 40" |
| 75-250 kVA | 52" | 10" | 44" |

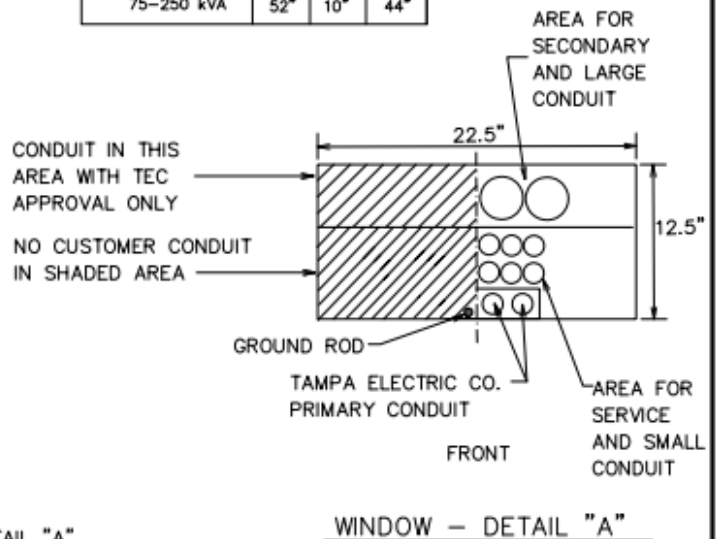


TABLE 1

| TRANSFORMER kVA | ALLOWABLE SERVICE CABLES PER LEG | SECONDARY CONNECTOR TEC NO. | CABLE RANGE CU OR AL |
|--------------------|----------------------------------|-----------------------------|----------------------|
| 25 THRU 75 | 6 | 2004948 | #10-350 kCMIL |
| | 6 | 2004954 | #6-500 kCMIL |
| | 6 | 2004902 | 1/0-750 kCMIL |
| | 8 | 2004950 | #6-250 kCMIL |
| | 8 | 2004904 | #6-500 kCMIL |
| 100 THRU 250 | 6 | 2004952 | #2-500 kCMIL |
| | 6 | 2004901 | 1/0-750 kCMIL |
| | 8 | 2004903 | #2-500 kCMIL |

NOTES:

1. CONCRETE PAD AND ITS LOCATION WILL BE SPECIFIED BY TAMPA ELECTRIC CO.
2. LOCATION OF PAD-MOUNT TRANSFORMERS MUST MEET THE LOCATION REQUIREMENTS FOR OIL FILLED EQUIPMENT (SEE 7.39).
3. ALL CUSTOMER-OWNED CONDUITS SHALL STUB UP BETWEEN 1" AND 3" ABOVE PAD WINDOW. BEGIN INSTALLING CONDUIT FROM THE RIGHT REAR OF THE WINDOW.
4. TAMPA ELECTRIC CO. WILL MAKE ALL SECONDARY CONNECTIONS.
5. SECONDARY CONNECTORS FOR SPECIFIC WIRE SIZES ARE LISTED IN THE TABLE AND SUPPLIED BY TAMPA ELECTRIC CO., ANY OTHER CONNECTOR MUST BE APPROVED BY TAMPA ELECTRIC CO.. FOLLOWING APPROVAL, THE CUSTOMER SHALL PROVIDE THE CONNECTORS AND ONE SET OF SPARES TO TAMPA ELECTRIC CO. FOR INSTALLATION.
6. WHEN THE NUMBER OF SECONDARY CABLES EXCEED TABLE 1, A PAD-MOUNT SECONDARY CABINET WILL BE REQUIRED (SEE 7.28).
7. A SINGLE SERVICE SHALL NOT BE GREATER THAN 1,200 AMPERES CONTINUOUS LOAD. CONTACT DISTRIBUTION ENGINEERING FOR LARGER SERVICES.

◀ DENOTES LATEST REVISION

REQUIREMENTS FOR SINGLE-PHASE
URD PADMOUNT TRANSFORMER INSTALLATIONS

TAMPA
ELECTRIC
COMPANY

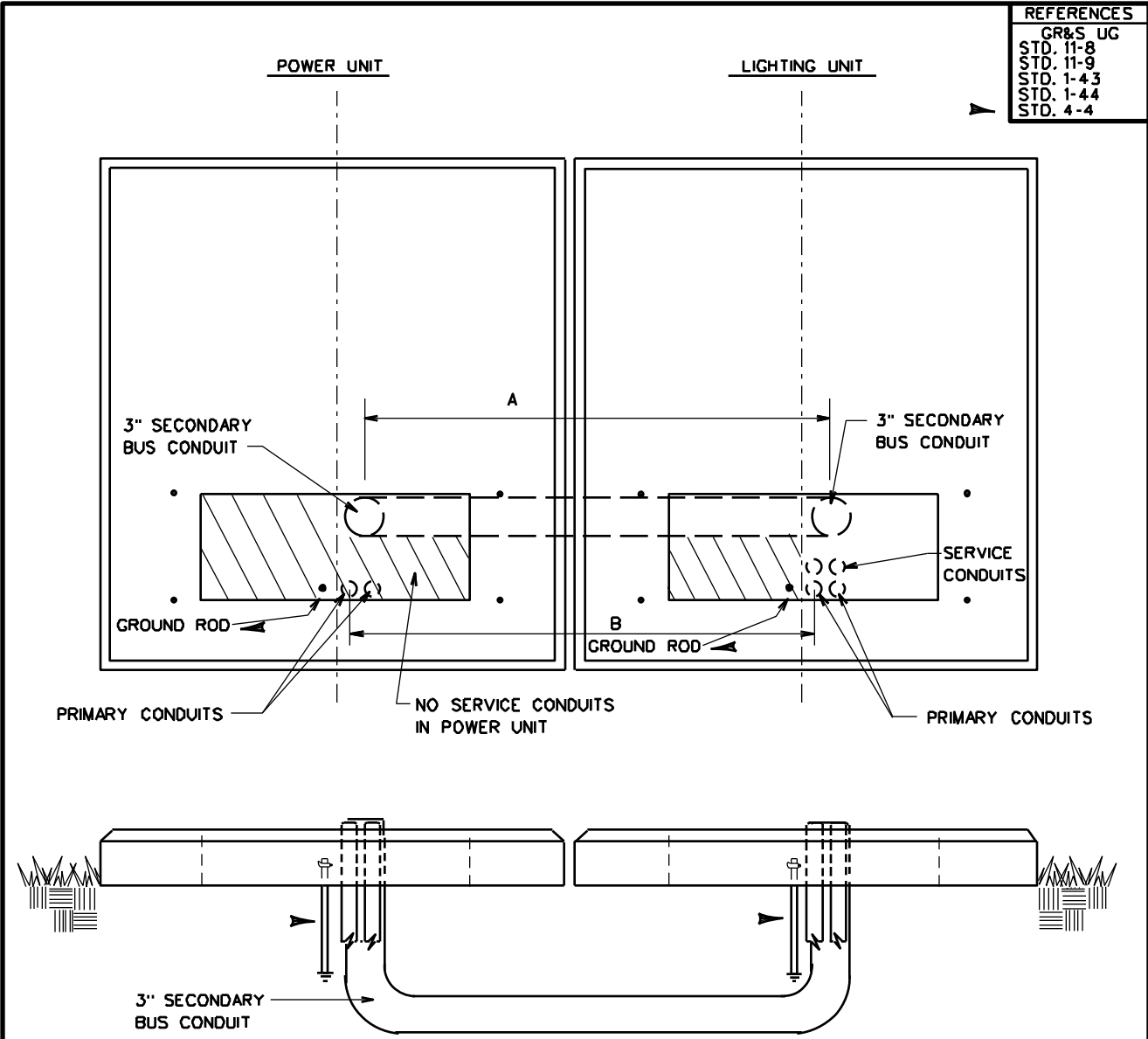
STANDARD ELECTRICAL
SERVICE REQUIREMENTS

DISTRIBUTION ENGINEERING
2200 E. SLIGH AVE
TAMPA FL. 33610
PH. - (813) 275-3053

DATE EFFECTIVE: 7-18-19

7.26

| REFERENCES | |
|------------|--|
| GR&S UG | |
| STD. 11-8 | |
| STD. 11-9 | |
| STD. 1-43 | |
| STD. 1-44 | |
| STD. 4-4 | |



| PAD | A | B | USE FOR TRANSFORMER SIZES |
|--|----|----|---------------------------|
| USING TWO PADS TEC NO. 2001315 | 40 | 40 | 25 - 50 kVA |
| USING TWO PADS TEC NO. 2001316 | 44 | 44 | 75 - 250 kVA |
| USING ONE OF EACH PAD TEC NO. 2001315 & 2001316 | 42 | 42 | 25 - 50 & 75 - 250 kVA |

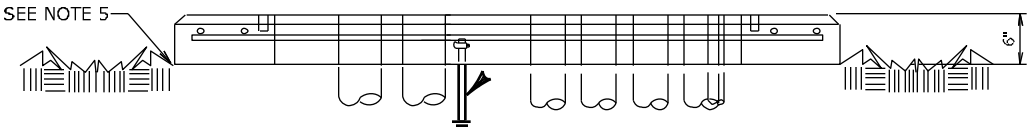
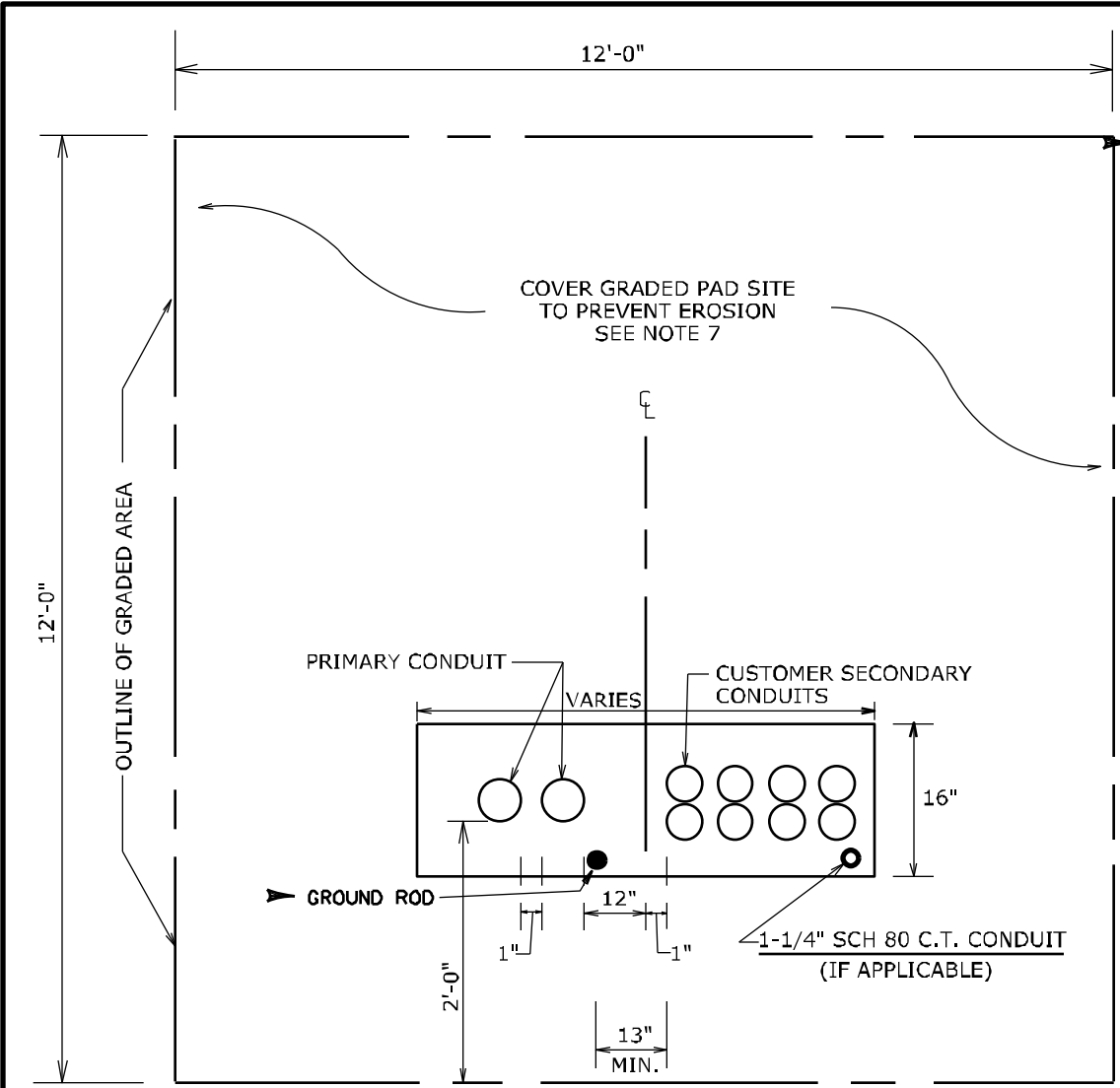
- NOTE:
1. ADD 12" TO DIMENSION A & B IF PADS ARE TO BE SPACED 12" APART IN AREA WITH NO TRUCK ACCESS.
 2. GROUND ROD SHALL BE INSTALLED TO A DEPTH OF 40 FEET. USE FOUR (4) TEN FOOT (10') RODS, WITH FOUR INCHES (4") EXPOSED ABOVE THE SOIL. IF 40' IS NOT POSSIBLE, CUT THE LAST ROD FOUR INCHES (4") ABOVE THE SOIL TO ALLOW CONNECTION. INDICATE THE DEPTH ACHIEVED ON THE WORK REQUEST.

| NO. | CK'D | DATE | REVISION |
|-----|------|---------|---------------------------------|
| 3 | WWD | 5/2/23 | ADD GROUND ROD LOCATION |
| 2 | MFK | 8-15-05 | REVISED CONDUIT SHOWN IN WINDOW |
| 1 | MFK | 11-4-04 | ADDED NOTE AND SERVICE CONDUIT |

◀ DENOTES LATEST REVISION

| | | |
|--|-----------|---|
| <h2>CONDUIT DETAIL FOR OPEN WYE-OPEN DELTA TRANSFORMER BANK USING SINGLE-PHASE TRANSFORMERS</h2> | | <p>MGR: STD'S APPR. DATE: 5-2-23 SUPERSEDES: 7-19/11-4-04</p> |
| TAMPA ELECTRIC CO. | STANDARDS | GENERAL RULES & SPECIFICATIONS UG. |
| | | 7-19 |

| REFERENCES | |
|------------|--|
| GR&S UG | |
| STD. 1-17 | |
| STD. 1-45 | |
| STD. 7-16 | |
| STD. 9-5 | |
| SEC. 6 | |
| STD 4-2 | |



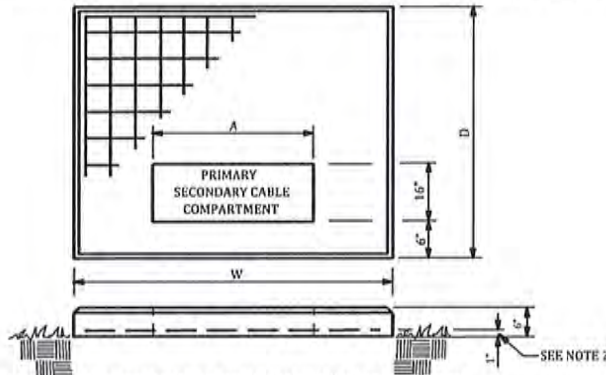
NOTES:

1. CUSTOMER CONDUIT MUST BE IN PLACE AND STUBBED OUT 10' BEYOND PAD BEFORE PAD IS SET OR POURED.
2. PROVIDE 12'X12' COMPACTED AND FLAT LEVEL AREA AT FINISHED GRADE SEE OUTLINE ABOVE.
3. ALL CONDUITS TO HAVE 36" MIN. COVER.
4. CUSTOMERS SECONDARY CABLE, WHEN INSTALLED TO BE MARKED & IDENTIFIED.
5. BOTTOM OF PAD TO BE EQUAL TO TOP OF SIDEWALK, SOD, DIRT, MULCH & CONCRETE, ETC.
6. FINISHED GRADE MARK TO BE NOTED ON PRIMARY CONDUIT WITH BLACK MARKER.
7. THE 12'-0" X 12'-0" GRADED SITE SHALL BE SURROUNDED WITH SOD TO PROTECT IT FROM EROSION. AREAS ADJACENT TO THE SITE MAY ALSO REQUIRE EROSION PROTECTION AT TEC PERSONNEL'S DISCRETION.
8. SLOPED AREAS ADJACENT TO THE SITE MAY REQUIRE EROSION PROTECTION AT THE DIRECTION OF TEC PERSONNEL.
9. PRIMARY & SERVICE CONDUIT TO BE SEPARATED A MINIMUM OF 13".
10. FOR MOUNDED TYPE PAD SITE, ADD GRADE 2' BEYOND PAD SITE.
11. GROUND ROD SHALL BE INSTALLED TO A DEPTH OF 40 FEET. USE FOUR (4) TEN FOOT (10') RODS, WITH FOUR INCHES (4") EXPOSED ABOVE THE SOIL. IF 40' IS NOT POSSIBLE, CUT THE LAST ROD FOUR INCHES (4") ABOVE THE SOIL TO ALLOW CONNECTION. INDICATE THE DEPTH ACHIEVED ON THE WORK REQUEST.

| NO. | CHK'D | DATE | REVISION |
|-----|-------|---------|--|
| 10 | WWP | 5-02-23 | ADD GROUND ROD LOCATION |
| 9 | WJP | 5-06-21 | REVISED NOTE 7 |
| 8 | RGI | 9-04-18 | ADD SCH 80 CONDUIT, ADD DIMENSIONS, MODIFY NOTES 1, 7, ADD 0 |
| 7 | SJH | 7-20-16 | ADD NOTE 9 |
| 6 | SJH | 7-20-16 | ADD 1" BETWEEN PRIMARY & SECONDARY CONDUITS |
| 5 | MFK | 6-15-06 | ADDED NOTES 7 & 8, COVER GRADED PAD SITE |

◀ DENOTES LATEST REVISION

| | |
|---|--|
| MERESTYS 5-02-23 APPLD BY SUPERVISOR 1-47/9-04-18 | <h2>SITE PREPARATION THREE-PHASE PAD-MOUNT TRANSFORMER INSTALLATION</h2> |
|---|--|



Use the following table to provide proper pad for installation of the following transformers.

| Transformer Material No. | Transformer KVA & Voltage Code | Pad Size | Precast Pad TEC No. |
|--------------------------|--------------------------------|-------------------------|------------------------|
| 2001526 | 2650075 | 74" W X 66" D X 48" A | 2001317 |
| 2001527 | 2650112 | 74" W X 66" D X 48" A | 2001317 |
| 2001528 | 2650150 | 74" W X 66" D X 48" A | 2001317 |
| 2001529 | 2650225 | 74" W X 66" D X 48" A | 2001317 |
| 2001530 | 2650300 | 74" W X 66" D X 48" A | 2001317 |
| 2001531 | 2650500 | 96" W X 96" D X 48" A | 2001323 |
| 2001532 | 2650750 | 96" W X 100" D X 56" A | 2117010 |
| 2001534 | 2660075 | 74" W X 66" D X 48" A | 2001317 |
| 2001535 | 2660150 | 74" W X 66" D X 48" A | 2001317 |
| 2001536 | 2660300 | 74" W X 66" D X 48" A | 2001317 |
| 2001537 | 2660500 | 96" W X 76" D X 48" A | 2001324 |
| 2001538 | 2660750 | 96" W X 100" D X 56" A | 2117010 |
| 2001539 | 2661000 | 108" W X 108" D X 56" A | Poured in Place Pad * |
| 2001540 | 2661500 | 120" W X 108" D X 56" A | Poured in Place Pad ** |
| 2001541 | 2662000 | 120" W X 108" D X 60" A | Poured in Place Pad ** |
| 2001542 | 2670075 | 74" W X 66" D X 48" A | 2001317 |
| 2001543 | 2670150 | 74" W X 66" D X 48" A | 2001317 |
| 2001544 | 2670225 | 74" W X 66" D X 48" A | 2001317 |
| 2001545 | 2670300 | 96" W X 76" D X 48" A | 2001324 |
| 2001546 | 2670500 | 96" W X 76" D X 48" A | 2001324 |
| 2001547 | 2670750 | 96" W X 100" D X 56" A | 2117010 |
| 2001549 | 2671000 | 108" W X 108" D X 56" A | Poured in Place Pad * |
| 2001551 | 2680075 | 74" W X 66" D X 48" A | 2001317 |
| 2001552 | 2680150 | 74" W X 66" D X 48" A | 2001317 |
| 2001553 | 2680300 | 96" W X 76" D X 48" A | 2001324 |
| 2001556 | 2680500 | 96" W X 76" D X 48" A | 2001324 |
| 2001559 | 2680750 | 96" W X 100" D X 56" A | 2117010 |
| 2001561 | 2681000 | 120" W X 108" D X 56" A | Poured in Place Pad ** |
| 2001563 | 2681500 | 120" W X 108" D X 56" A | Poured in Place Pad ** |
| 2001565 | 2682000 | 120" W X 108" D X 60" A | Poured in Place Pad ** |
| 2001568 | 2711000 | 120" W X 108" D X 56" A | Poured in Place Pad ** |
| 2001569 | 2712000 | 120" W X 108" D X 56" A | Poured in Place Pad ** |
| 2001570 | 2721000 | 120" W X 108" D X 56" A | Poured in Place Pad ** |
| 2001572 | 2722000 | 120" W X 108" D X 56" A | Poured in Place Pad ** |

NOTES:

- * 1. Contractor will use a concrete mix certified by the producer to develop 4,000 lbs. per sq. inch in 28 days.
- ** 2. Reinforcing material to be 6" x 6" (10/10 wire mesh) installed 1" from the bottom of the pad.
- * 3. Top of pad to be 2" above finished grade and have a 1" x 1" bevel around top edge.
- * 4. Allow pad to harden three days before installing transformers.
- 5. Pad sizes are based on the largest transformer under each code number and a minimum of 2" concrete skirt around the transformer.
- 6. Secondary ducts should be placed as far to right as possible within the secondary compartment.
- 7. Explanation of transformer KVA & Voltage code number is as follow:
 265 --- Live-Front Radial Feed 208Y/120V Secondary
 266 --- Live-Front Radial Feed 480Y/277V Secondary
 267 --- Dead-Front Loop Feed 208Y/120V Secondary
 268 --- Dead-Front Loop Feed 480Y/277V Secondary
 271 --- Live-Front Radial Feed 2400/ 4160Y Secondary
 272 --- Live-Front Radial Feed 2400/ 4160Y/ 2400 Secondary

◀ DENOTES LATEST REVISION

The last four digits give the KVA size.

| NO. | CK'D | DATE | REVISION |
|-----|------|---------|---|
| 4 | | | |
| 3 | SIH | 7-20-16 | REV. TO SHOW PAD FOR 750 kVA 3PH PMTX's |
| 2 | CRM | 3-21-13 | ADD COLUMN TRANSFORMER KVA & VOLTAGE CODE |
| 1 | CRM | 3-21-13 | ADD ASTERISK TO NOTES TO INDICATE POURED IN PLACE |

MGR. STD'S
 APPR. DATE 7-20-16
 SUPERSEDES 6-12/3-21-13

6-12

TAMPA ELECTRIC CO.

STANDARDS

GENERAL RULES & SPECIFICATIONS UG.

PAD DESIGN FOR THREE-PHASE PAD-MOUNTED TRANSFORMERS

| REFERENCES | |
|------------|--|
| GR&S UG. | |
| STD. 1-43 | |
| STD. 1-44 | |
| STD. 1-47 | |
| STD. 6-12 | |
| STD. 4-5 | |

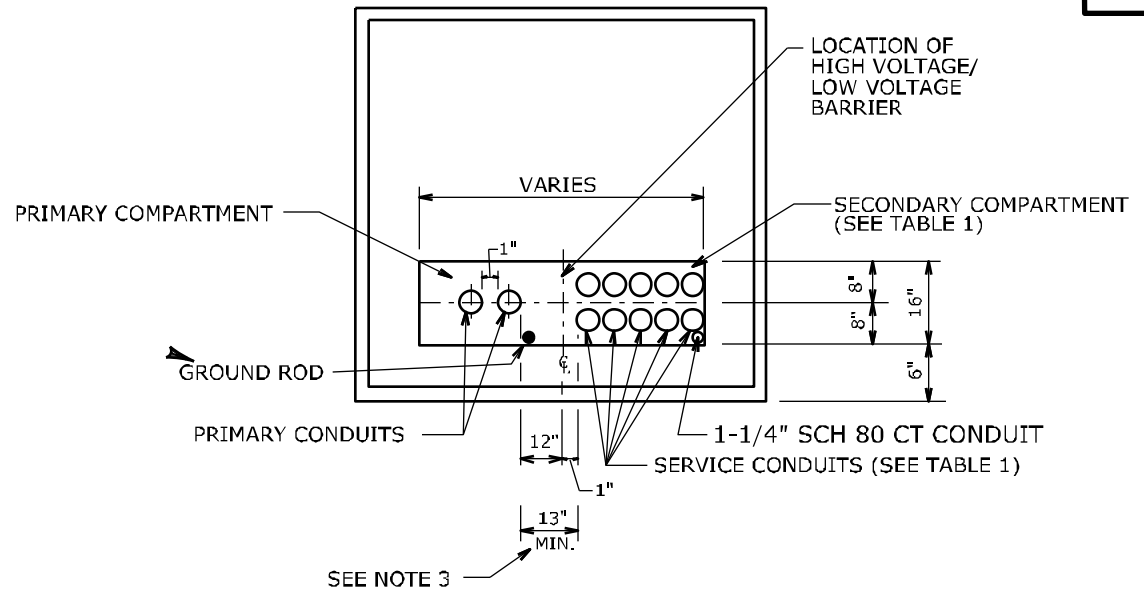


TABLE 1

| kVA | * MAXIMUM ALLOWED CONDUITS IN SECONDARY COMPARTMENT |
|------|---|
| 75 | 8 |
| 150 | 8 |
| 225 | 8 |
| 300 | 8 |
| 500 | 8 |
| 750 | 10 |
| 1000 | 10 |
| 1500 | 12 |
| 2000 | 12 |

NOTES:

* ONE ADDITIONAL CONDUIT IS ALLOWED FOR CT WIRING.

1. PRIMARY CONDUIT TO BE CENTERED IN PRIMARY COMPARTMENT.
2. SERVICE CONDUIT TO BE CENTERED IN SECONDARY COMPARTMENT. CUSTOMERS SHOULD RECEIVE APPROPRIATE PAD DETAIL PRIOR TO INSTALLING CONDUIT.
3. PRIMARY & SERVICE CONDUIT TO BE SEPARATED A MINIMUM OF 13".
4. MAXIMUM SECONDARY CONDUITS INCLUDE THOSE REQUIRED FOR TEC USE.
5. YOU MUST OBTAIN STANDARDS APPROVAL TO EXCEED MAXIMUM ALLOWED CONDUITS IN SECONDARY COMPARTMENT.
6. FINISHED GRADE MARK TO BE NOTED ON PRIMARY CONDUIT WITH BLACK MARKER.
7. GROUND ROD SHALL BE INSTALLED TO A DEPTH OF 40 FEET. USE FOUR (4) TEN FOOT (10') RODS, WITH FOUR INCHES (4") EXPOSED ABOVE THE SOIL. IF 40' IS NOT POSSIBLE, CUT THE LAST ROD FOUR INCHES (4") ABOVE THE SOIL TO ALLOW CONNECTION. INDICATE THE DEPTH ACHIEVED ON THE WORK REQUEST.

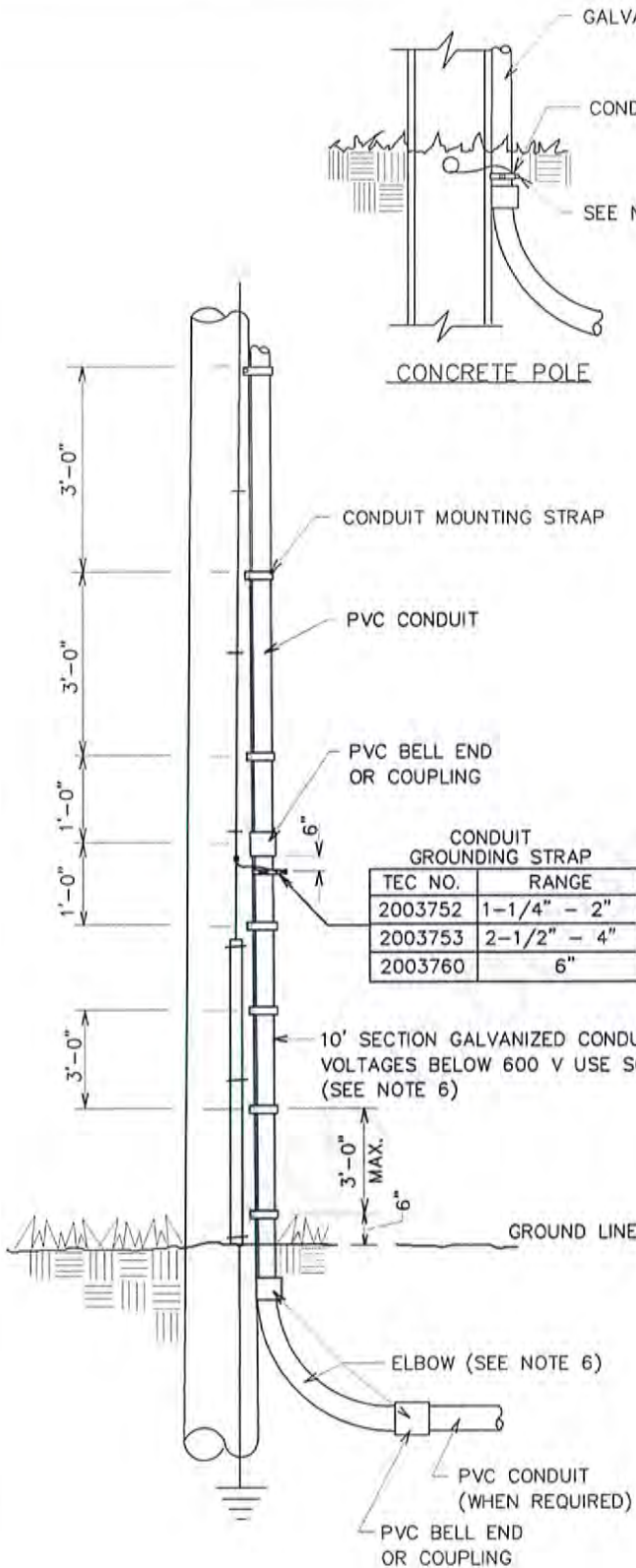
| | | | |
|-----|------|---------|---|
| 5 | VWD | 5-2-23 | ADD GROUND ROD |
| 4 | RGH | 2-12-20 | REVISED NOTE |
| 3 | SJH | 7-20-16 | REVISED 6 CONDUITS TO 10, ADD LOCATION OF HV/LV BARRIER |
| 2 | SJH | 7-20-16 | REV. NOTE 3, ADD MIN. 1" BETWEEN PRIMARY & SECONDARY CONDUITS |
| 1 | MPK | 8-18-05 | ADDED NOTE 6, REVISED REFERENCE BLOCK |
| NO. | CK'D | DATE | REVISION |

◀ DENOTES LATEST REVISION

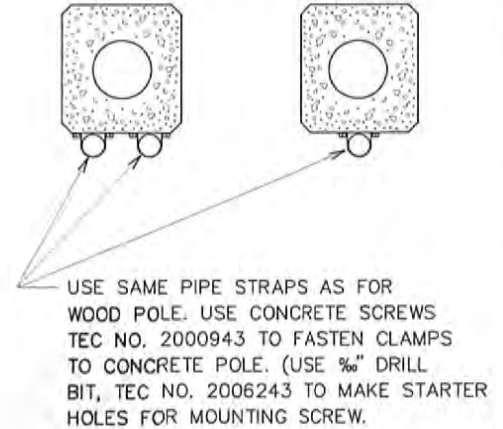
| | |
|------------|----------------|
| MCR: STD'S | <i>Revised</i> |
| APPR. DATE | 5-2-23 |
| SUPERSEDES | 7-16/7-20-16 |

**CONDUIT DETAIL FOR THREE-PHASE
PAD-MOUNTED TRANSFORMER**

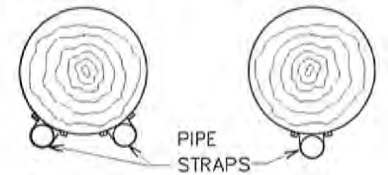
7-16



CONCRETE POLES
MULTI-CONDUIT SINGLE CONDUIT



WOOD POLES
MULTI-CONDUIT SINGLE CONDUIT



PIPE STRAPS

| TEC NO. | SIZE |
|---------|---|
| 2004382 | 1" |
| 2004403 | 2" |
| 2004415 | 3" |
| 2004432 | 4" |
| 2004443 | 6" |
| 2004658 | 1" X 10'-0" PERFORATED STRAP USE FOR 6" |

NOTES:

- ENGINEER SHALL SPECIFY ON WHICH FACE OR FACES OF POLE CONDUIT(S) WILL BE MOUNTED.
- CUT TOP SECTION OF CONDUIT TO DESIRED LENGTH.
- CONDUIT MOUNTING STRAP TO BE INSTALLED EVERY 3 FEET ON PVC.
- GROUND GALVANIZED CONDUIT WITH THE APPROPRIATE CONDUIT GROUNDING CLAMP AND NO. 4 STRANDED COPPER WIRE.
- INSTALL CONDUIT GROUNDING STRAP BELOW GROUND LINE ON CONCRETE POLES.
- IF SERVICE IN GALVANIZED CONDUIT IT SHALL BE GROUNDED TO DRIVEN GROUND AND SYSTEM NEUTRAL VIA POLE GROUND. FOR 500MCM GALVANIZED ELBOWS SHALL BE USED.

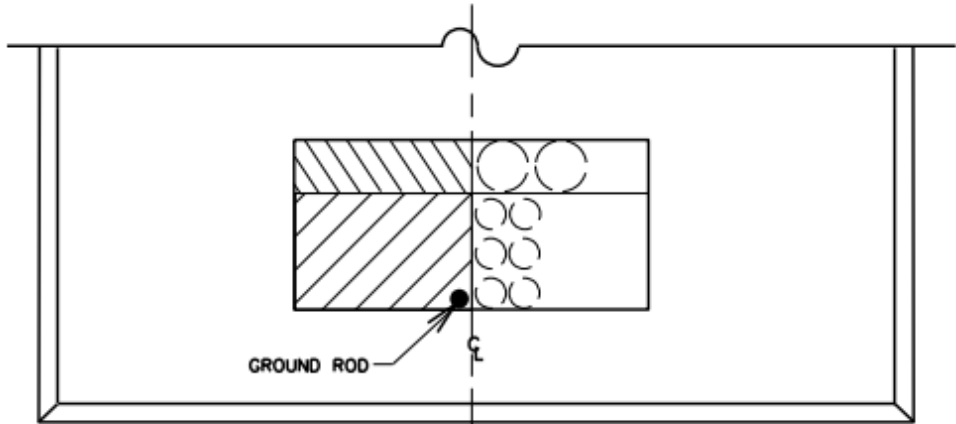
| NO. | CK'D | DATE | REVISION |
|-----|------|---------|--|
| 5 | RGH | 8-22-22 | REVISED NOTE 6 |
| 4 | JBL | 7-30-14 | REVISED NOTE 6 |
| 3 | JBL | 7-30-14 | CHANGED OUT FIBERGLASS ELBOWS TO GALVANIZED |
| 2 | SJH | 5-19-11 | ADDED NEW NOTE 6 |
| 1 | CRM | 7-22-04 | NOTE 3, ADDED FIRST STRAP AT 6", DIMENSION 3'-0" |

▲ DENOTES LATEST REVISION

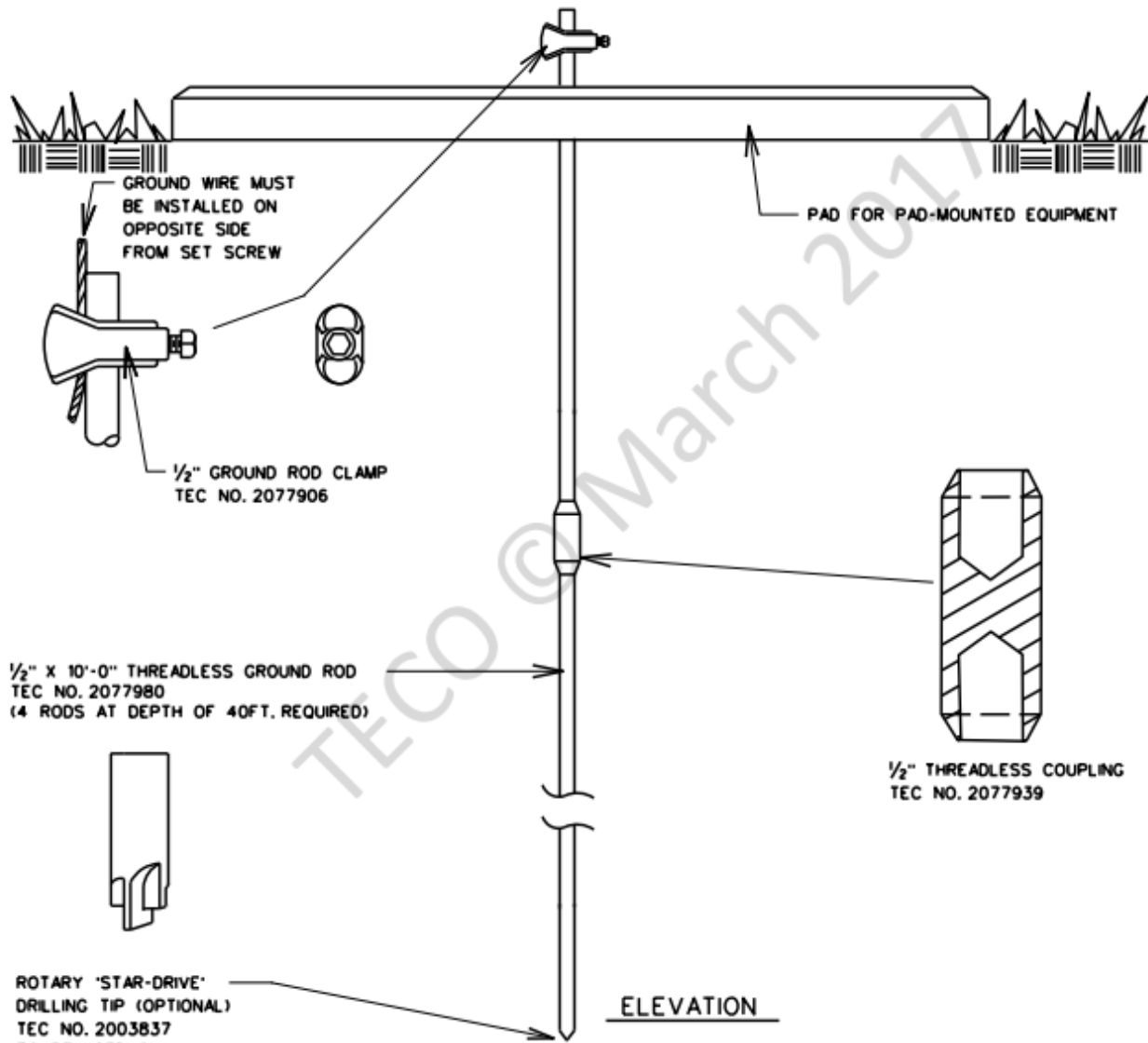
CONDUIT MOUNTING AND GROUNDING SPECIFICATIONS FOR PRIMARY AND SECONDARY TERMINAL POLES

MGR: STD'S *Wesley B. Robinson*
APPR: DATE 8-22-22
SUPERSEDES 7-1/7-30-14

| |
|------------|
| REFERENCES |
| GR&S UG |
| INDEX |
| SEC. 4 |
| STD. 11-1 |



TOP VIEW



ELEVATION

GROUND WIRE MUST BE INSTALLED ON OPPOSITE SIDE FROM SET SCREW

PAD FOR PAD-MOUNTED EQUIPMENT

1/2" GROUND ROD CLAMP
TEC NO. 2077906

1/2" X 10'-0" THREADLESS GROUND ROD
TEC NO. 2077980
(4 RODS AT DEPTH OF 40FT. REQUIRED)

1/2" THREADLESS COUPLING
TEC NO. 2077939

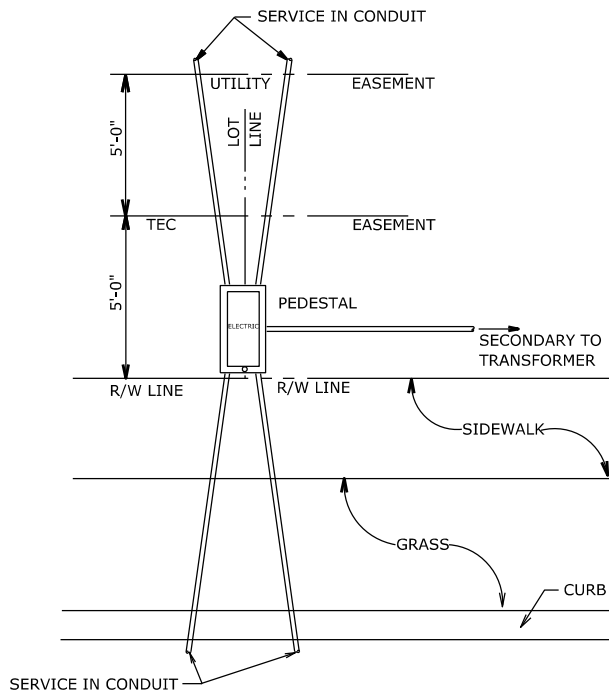
ROTARY 'STAR-DRIVE' DRILLING TIP (OPTIONAL)
TEC NO. 2003837
TO BE USED ONLY IN HARD PAN AREAS

| NO. | CK'D | DATE | REVISION |
|-----|------|---------|---|
| 4 | TOB | 6-15-15 | ADD 4 RODS AT DEPTH OF 40FT. REQUIRED |
| 3 | MFK | 8-18-05 | REVISED CONDUIT IN WINDOW |
| 2 | BCH | 4-17-03 | CHANGE ALLEN HEAD SCREW TO BOLT HEAD ON CLAMP |
| 1 | BCH | 4-17-03 | REMOVAL OF THREADLESS TO THREADED COUPLING DETAIL |

◀ DENOTES LATEST REVISION

[Signature]
MGR: JTD'S
APPR. DATE: 6-15-15
SUPERSEDES: 4-2/8-18-05

GROUND ROD ASSEMBLY AND INSTALLATION DETAILS



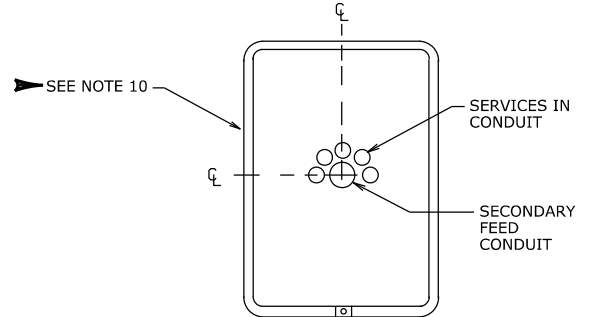
TYPICAL

NOTES:

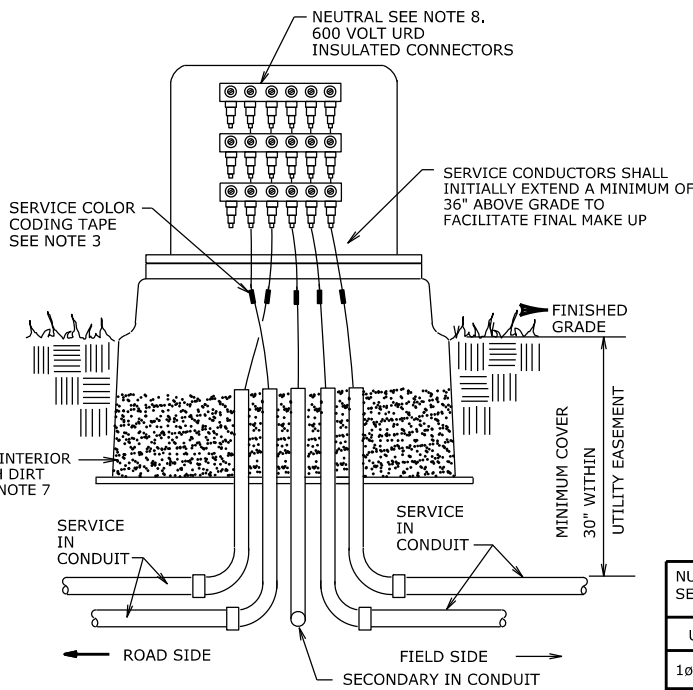
1. ALL CONDUCTORS SHALL BE STAGGERED TO EXTEND 8 TO 12 INCHES ABOVE THE HANDHOLE SO CONNECTIONS CAN BE EASILY MADE.
2. WIRE BRUSH CONDUCTORS.
3. SERVICE CONDUCTORS SHALL BE COLOR CODED AS SHOWN IN GR&S UG. SPEC. 8-2.
4. PLACE WARNING DECAL ON LOCKING MECHANISM SIDE (ROAD SIDE).
5. GROUND UNDER PEDESTAL SHOULD BE TAMPED TO PREVENT SETTLING.
6. PEDESTAL LOCKING MECHANISM SHALL BE INSTALLED A MINIMUM OF 2" ABOVE FINAL GRADE.
7. CONDUIT SHALL STUB UP 2" ABOVE INTERIOR DIRT FILL.
8. NEUTRAL SERVICE CONDUCTORS SHALL EXTEND ABOVE GRADE TO JUST UNDER HEIGHT OF COVER WHEN INSTALLED. HOT LEGS SHALL BE STAGGERED UNDER NEUTRAL PROVIDING ADEQUATE CLEARANCE FOR WORK.
9. TO BE USED FOR NEW CONSTRUCTION OUTSIDE OF R/W OR WHEN REPLACEMENTS TO NON LOAD BEARING HANDHOLES ARE NECESSARY.
10. FOR XL HANDHOLE (TSN 2130734) OFFSET THE HANDHOLE AND BRING CABLES UP ON ONE SIDE OF THE CENTER SUPPORT MEMBER IF AT ALL POSSIBLE.

REFERENCES

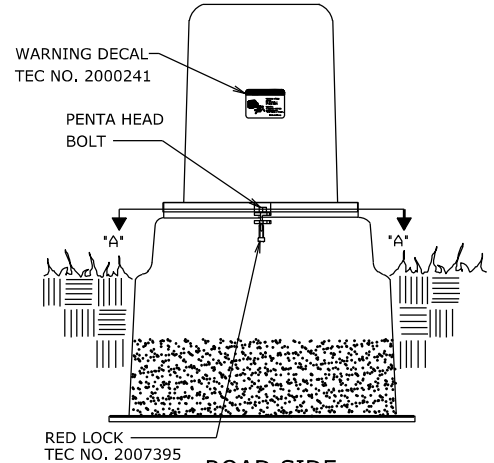
GR&S UG
STD. 8-2
AMC
SEC. 16



SECTION "A-A"



SIDE VIEW



ROAD SIDE FRONT VIEW

TYPICAL HANDHOLE GUIDELINE

| NUMBER OF SERVICES | SERVICE SIZE (AWG/KCMIL) | SECONDARY SIZE (AWG/KCMIL) | HANDHOLE SIZE | HANDHOLE TSN |
|--------------------|--------------------------|----------------------------|---------------|--------------|
| UP TO 3 | UP TO 4/0 | UP TO 4/0 | MEDIUM | 2004713 |
| 1ø UP TO 7 | UP TO 4/0 | UP TO 500 | LARGE | 2004714 |
| 3ø UP TO 5 | UP TO 4/0 | UP TO 500 | LARGE | 2004714 |
| 3ø UP TO 7 | UP TO 500 | UP TO 500 | EXTRA LARGE | 2130734 |
| UP TO 5 | UP TO 750 | UP TO 500 | EXTRA LARGE | 2130734 |

| NO. | CK'D | DATE | REVISION |
|-----|------|---------|--|
| 6 | WWD | 2-09-21 | ADDED NOTE 10 |
| 5 | WWD | 6-05-20 | REVISED TEC NO. FROM 2007500 TO 2000241 ON WARNING DECAL |
| 4 | WWD | 9-26-19 | CHANGED LOCK, MODIFIED NOTES 7, 8 & 9. ADDED XL SIZE. |
| 3 | JBL | 7-22-10 | ADD 2ND. TEC NO. 2004714 |

◀ DENOTES LATEST REVISION

URD ABOVE GRADE PEDESTAL INSTALLATION INSTRUCTIONS

TAMPA ELECTRIC CO.

STANDARDS

GENERAL RULES & SPECIFICATIONS UG.

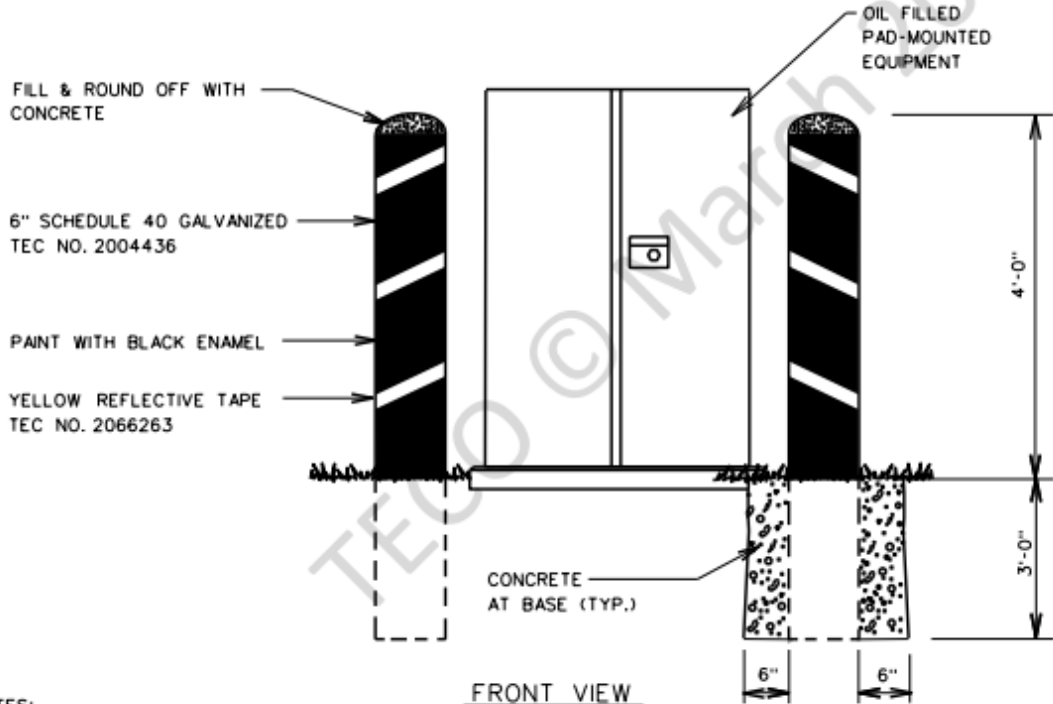
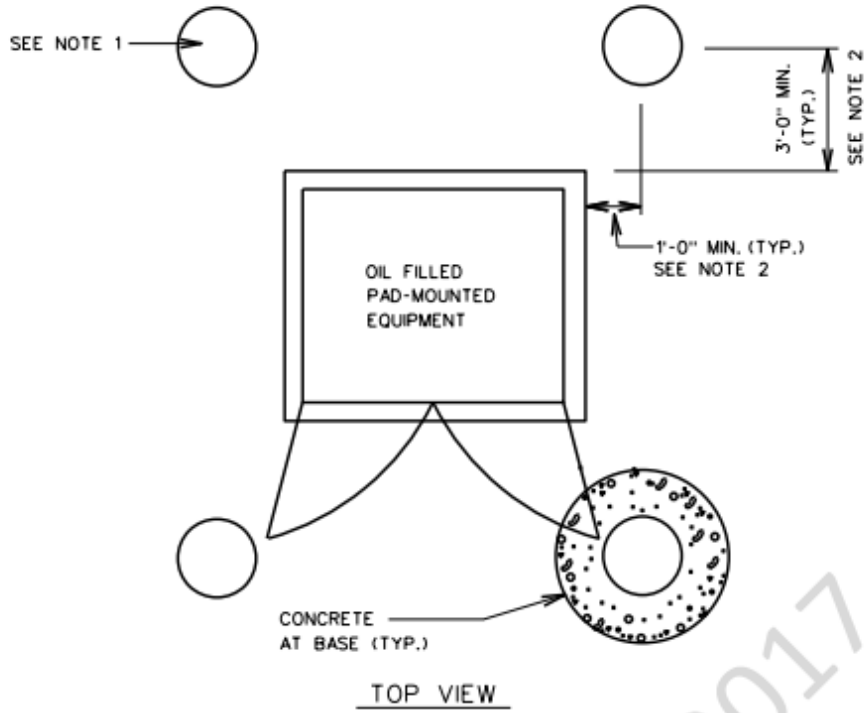
MGR. STD'S
APPR. DATE
SUPERSEDES

Rabuekka
2-09-21
9-7/6-05-20

9-7

REFERENCES

GR&S UG
 SPEC. 1
 SEC. 11
 SEC. 12



NOTES:

1. UP TO 4 BOLLARDS SHOULD BE INSTALLED AROUND PERIMETER WHEN OIL FILLED PAD-MOUNTED EQUIPMENT IS LOCATED IN ANY AREA ACCESSIBLE TO VEHICLES FOR PROTECTION OF AREAS THAT COULD BECOME CONTAMINATED WITH MINERAL OIL SUCH AS : DRAINAGE PONDS, FOOD SERVICE AREAS, PARKING LOT DRAINS, OR OTHER SENSITIVE AREAS.
2. DISTANCES CAN VARY WITH SIZE OF EQUIPMENT DOORS, DOOR STOP ANGLE AND TYPE OF MAINTENANCE/OPERATION PROCEDURES NECESSARY TO MAINTAIN/OPERATE/REPLACE EQUIPMENT IN A SAFE MANNER.

◀ DENOTES LATEST REVISION

| | | | |
|-----|------|---------|---------------------------|
| 3 | | | |
| 2 | | | |
| 1 | REM | 11-4-04 | MOVED TO MAKE 1-17, PG. 2 |
| NO. | CK'D | DATE | REVISION |

NOR: JYD'S
 APPR. DATE 11-4-04
 SUPERSEDES 1-18/11-17-93

INSTALLATION PROCEDURE FOR PROTECTIVE BOLLARDS USED WITH PAD-MOUNTED EQUIPMENT

Exhibit 2

Directional Bore Log

| | |
|-----------------------|------|
| Company Name: | |
| Company Address: | |
| Company Phone #: | |
| Forman: | Rig: |
| Date: | |
| Location: | |
| Drilling from: | |
| Road or Intersection: | |

| Rod Length | Depth | Station | Curb | Rod Length | Depth | Station | Curb |
|------------|-------|---------|------|------------|-------|---------|------|
| 6 | | | | 186 | | | |
| 12 | | | | 192 | | | |
| 18 | | | | 198 | | | |
| 24 | | | | 204 | | | |
| 30 | | | | 210 | | | |
| 36 | | | | 216 | | | |
| 42 | | | | 222 | | | |
| 48 | | | | 228 | | | |
| 54 | | | | 234 | | | |
| 60 | | | | 240 | | | |
| 66 | | | | 246 | | | |
| 72 | | | | 252 | | | |
| 78 | | | | 258 | | | |
| 84 | | | | 264 | | | |
| 90 | | | | 270 | | | |
| 96 | | | | 276 | | | |
| 102 | | | | 282 | | | |
| 108 | | | | 288 | | | |
| 114 | | | | 294 | | | |
| 120 | | | | 300 | | | |
| 126 | | | | 306 | | | |
| 132 | | | | 312 | | | |
| 138 | | | | 318 | | | |
| 144 | | | | 324 | | | |
| 150 | | | | 330 | | | |
| 156 | | | | 336 | | | |
| 162 | | | | 342 | | | |
| 168 | | | | 348 | | | |
| 174 | | | | 354 | | | |
| 180 | | | | 360 | | | |

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| Comments: |
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