TAMPA ELECTRIC

Customer Conduit Installation Procedures and Specifications

TAMPA ELECTRIC

May 29, 2013

To: Developers, Civil Engineering Firms and Contractors

RE: Customer Installation of Tampa Electric Conduit Systems

You may be aware that Tampa Electric provides a credit to customers or contractors who choose to install conduit infrastructure required to support Tampa Electric's electrical distribution system.

Unfortunately, we are finding that many of the installations do not meet Tampa Electric's procedures and specifications. This results in additional costs and significant delays to providing electric service. This is why we recommend that our customers hire a contractor that is familiar with and has extensive experience with Tampa Electric's conduit installation procedures and specifications.

In an effort to remedy this situation, we are providing the enclosed copy of our Customer Conduit Installation Procedures and Specifications required for proper conduit infrastructure installation.

If you have questions, please contact our One Source Construction Team at (813) 635-1500. We are committed to providing you with reliable electric service and appreciate the opportunity to serve you.

Sincerely,

Tampa Electric
New Construction Department
702 Franklin Street
Tampa, FL 33602
(813) 635-1500

Customer Installation of Tampa Electric Conduit Systems

For underground development

The underground distribution installation agreement made between Customer and Tampa Electric Company (the Company) for customer installed conduit shall be in an easement adjacent to or near Customer's property, in consideration of the covenants and agreements herein set forth, the parties hereto covenant and agree as follows:

1. The Conduit in which the underground Facilities are to be placed shall be installed by the Customer.

2. The Customer shall pay the Company a Contribution in Aid of Construction (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 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. During the installation of conduit, trenches shall remain open until inspection is completed by the Company's field inspector. If the installation of the Conduit / Facilities does not conform to the Company's installation specifications provided on the Company's website, www.tampaelectric.com, the Customer will correct the installation and inform the field inspector for re-inspection. Any assessed fees 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 Florida Public Service 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/Facilities shall at all times 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 tree stumps, all trees, and other obstructions that conflict with construction, including the drainage of all flooded areas. 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/Cable trench route in the easement and additional reference points when required by the Company. 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 transformers, switch gear, manholes, handholes and street lights.

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 from the time the conduit was installed. Subsequent repair to the Company's system, once installed, will be paid for by the Customer if said repair is a result of damage caused by the Customer or any of the Customer's contractors or subcontractors. **When the Customer installs Conduit, the Customer is responsible for the Conduit system until the cable and equipment is installed.**

d. Provide sufficient and timely advance notice, as required by the Company, to install its Conduit prior to the installation of paving, landscaping, sodding, sprinkler systems, or other surface obstructions. In the absence of sufficient coordination, as determined by the Company, the Customer will pay all additional costs for trenching and backfilling, restoring paving, landscaping, grass, sprinkler systems and all other surface obstructions to their original condition.

e. 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 on the subdivision or development layout or grade.

f. Provide applicable trenching, backfilling, installation of Company-provided material and other work in accordance with the Company specifications provided on the Company's website, www.tampaelectric.com. 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 plan showing the location of all Company underground facilities, point of delivery, and 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 conference 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 conference, 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 in order to avoid delays in providing permanent electric service at the time of the Customer's receipt of a certificate of occupancy.

Requirements for On-Site Conduit Installation

1. Staking shall be performed per Tampa Electric specs. 1-44 & 1-45 for typical subdivision layouts within said easement and spec. 1-46 for zero lot line or commercial applications.
    - Once staking is complete, contractor must call the local Tampa Electric inspector for inspection and approval.
    - Conduit installation should not start until the staking has been approved by a Tampa Electric inspector.

2. Conduit should be buried at a minimum of 36 inches per specs. 1-43 & 1-44.
    - Trench should remain open until a Tampa Electric 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 a Tampa Electric 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 sites 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.
    - Once pad sites have been properly prepared, contractor shall call the area Tampa Electric inspector for inspection and approval.

5. Once all conduits have been installed and pad sites are prepared and ready, Tampa Electric will ground all transformer locations per Tampa Electric guidelines.

***After all the above steps are completed, the job site is ready for transformer and cable scheduling. Please note: Tampa Electric is on a two week-ahead-schedule and the project cannot be put on the schedule until all inspections and requirements above are met.

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 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

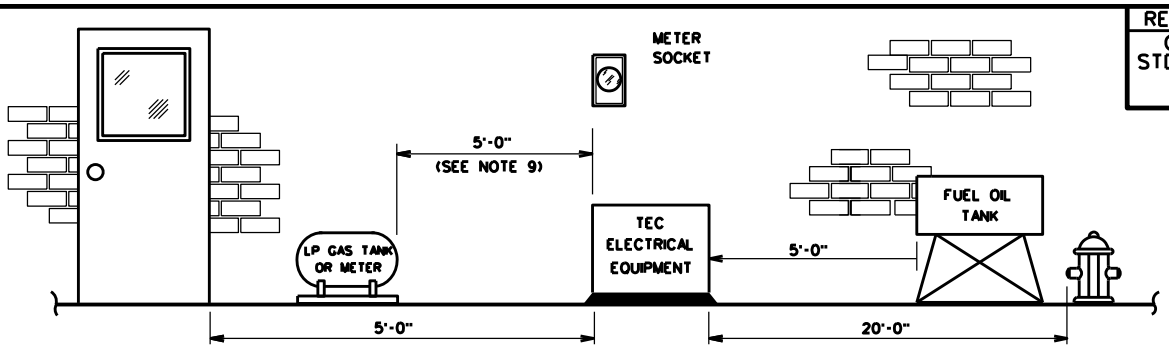
PWM Chip S. Whitworth
MGR: STD'S
APPR. DATE 4-20-89
SUPERSEDES

PVC JOINING INSTALLATION USING SOLVENT CEMENT

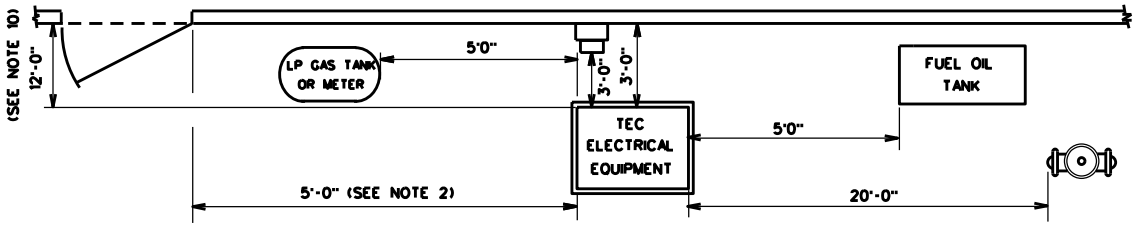
7-4

TAMPA ELECTRIC CO. | STANDARDS | GENERAL RULES & SPECIFICATIONS UG.

REFERENCES
GR&S UG.
STD. 1-19

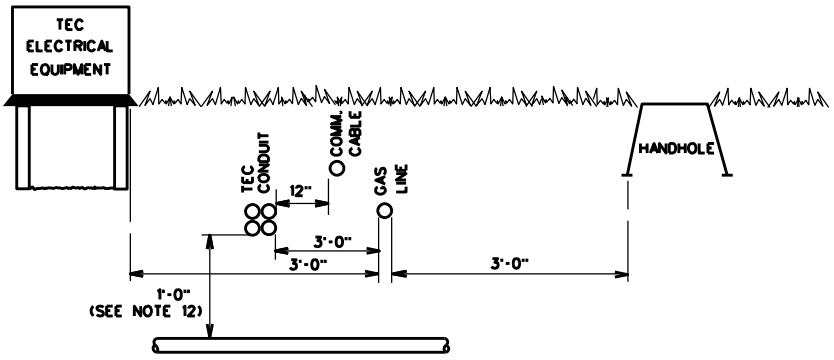


ELEVATION



PLAN VIEW

ABOVE GRADE



BELOW GRADE

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. THE 20'-0" MINIMUM DIMENSION TO THE FIRE HYDRANT ALSO APPLIES TO FIRE ESCAPES.
9. 5'-0" DIMENSION ALSO PERTAINS TO LP GAS PIPELINE CONNECTIONS, VALVES, OR GAUGES.
10. THIS 12'-0" DIMENSION APPLIES TO EQUIPMENT PLACED IN FRONT OF DOORS OR OPEN STAIRWAYS.
11. PRIMARY CABLES WILL NOT BE PERMITTED UNDER BUILDINGS AND STRUCTURES.
12. 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 (2012 NESC RULE 353B).
13. 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.

GR&S 3-20

◄ DENOTES LATEST REVISION

NO.	CK'D	DATE	REVISION
5	RAG	9-20-12	ADDED NEW NOTE 13
4	TOB	3-15-12	REVISED TO MEET 2012 NESC CODE
3	TOB	10-14-10	REVISED BELOW GRADE DETAIL, ADDED NEW NOTE 12
2	RAS	9-20-07	ADDED NEW NOTE 11

MGR: STD'S
APPR. DATE 9-20-12
SUPERSEDES 1-16/3-15-12

LOCATION OF NON-OIL FILLED ELECTRICAL EQUIPMENT

1-16

TAMPA ELECTRIC CO. | STANDARDS | GENERAL RULES & SPECIFICATIONS UG.

1-43

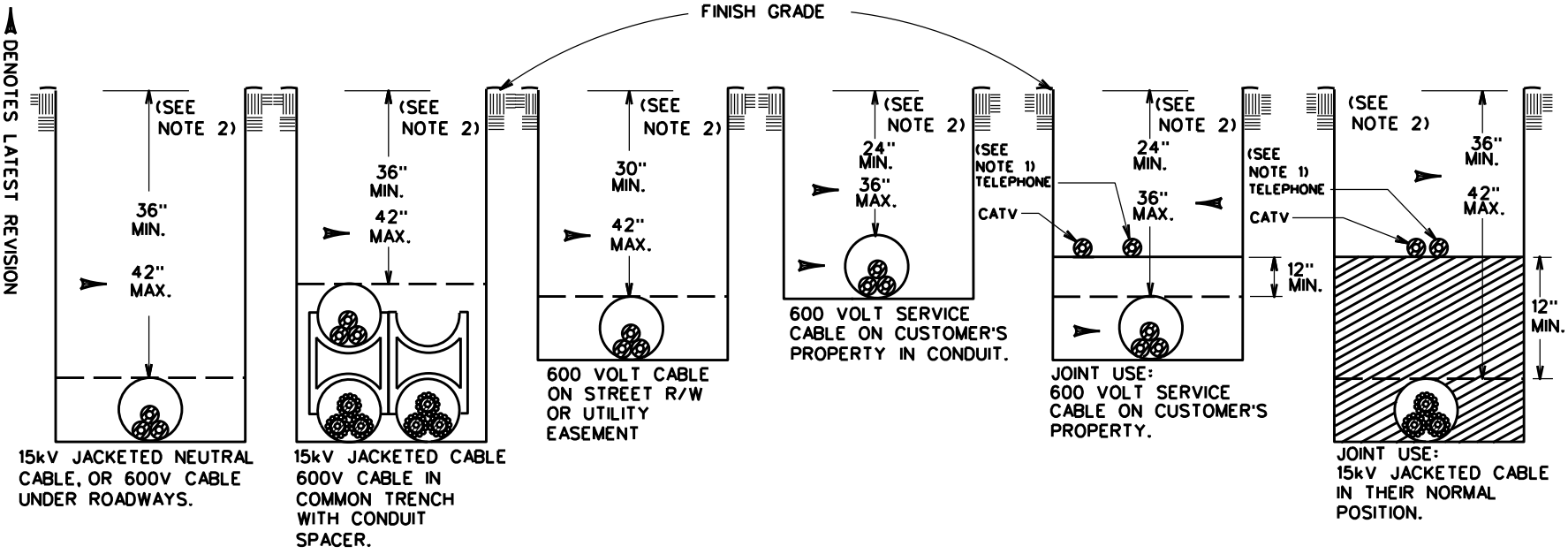
KLM MGR. STD'S
APPR. DATE 6-21-01
SUPERSEDES 1-43/2-15-96

POWER ENGINEERING & CONSTRUCTION INC.

GENERAL RULES & SPECIFICATIONS UG.

TRENCHING FOR UNDERGROUND CABLES

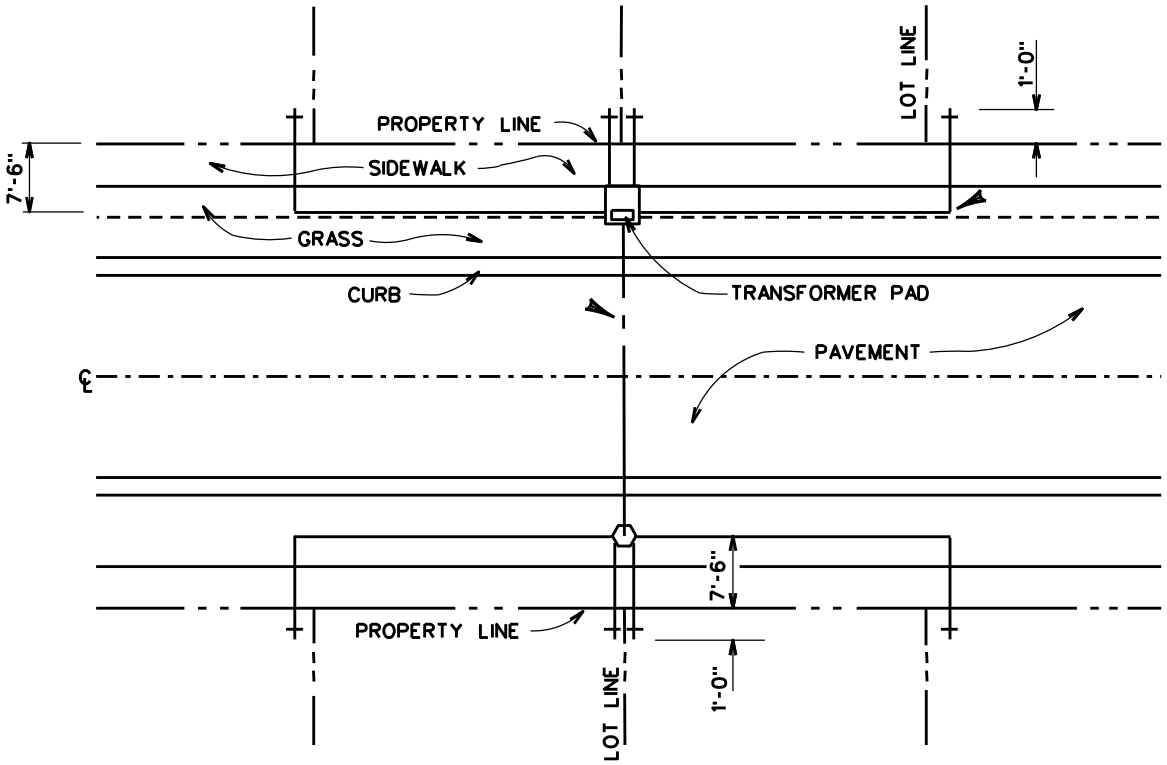
DENOTES LATEST REVISION



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 FOLLOWING GUIDE MAY BE USED FOR SELECTING THE PROPER CONDUIT SIZE.

CONDUIT SIZE	15 kV PRIMARY CABLE	600V SEC./SVC. CABLE	600V STREET LIGHT CABLE
2"	1-#1/0 AL	#2/0-AL, 10/OR 30/	#10 3/C-#4 STR.
3"		#4/0-AL, 10/OR 30/	
4"	3-#1/0 AL	#500MCM AL, 10/OR 30/	
4"	3-#4/0 AL		
6"	3-1000MCM AL		

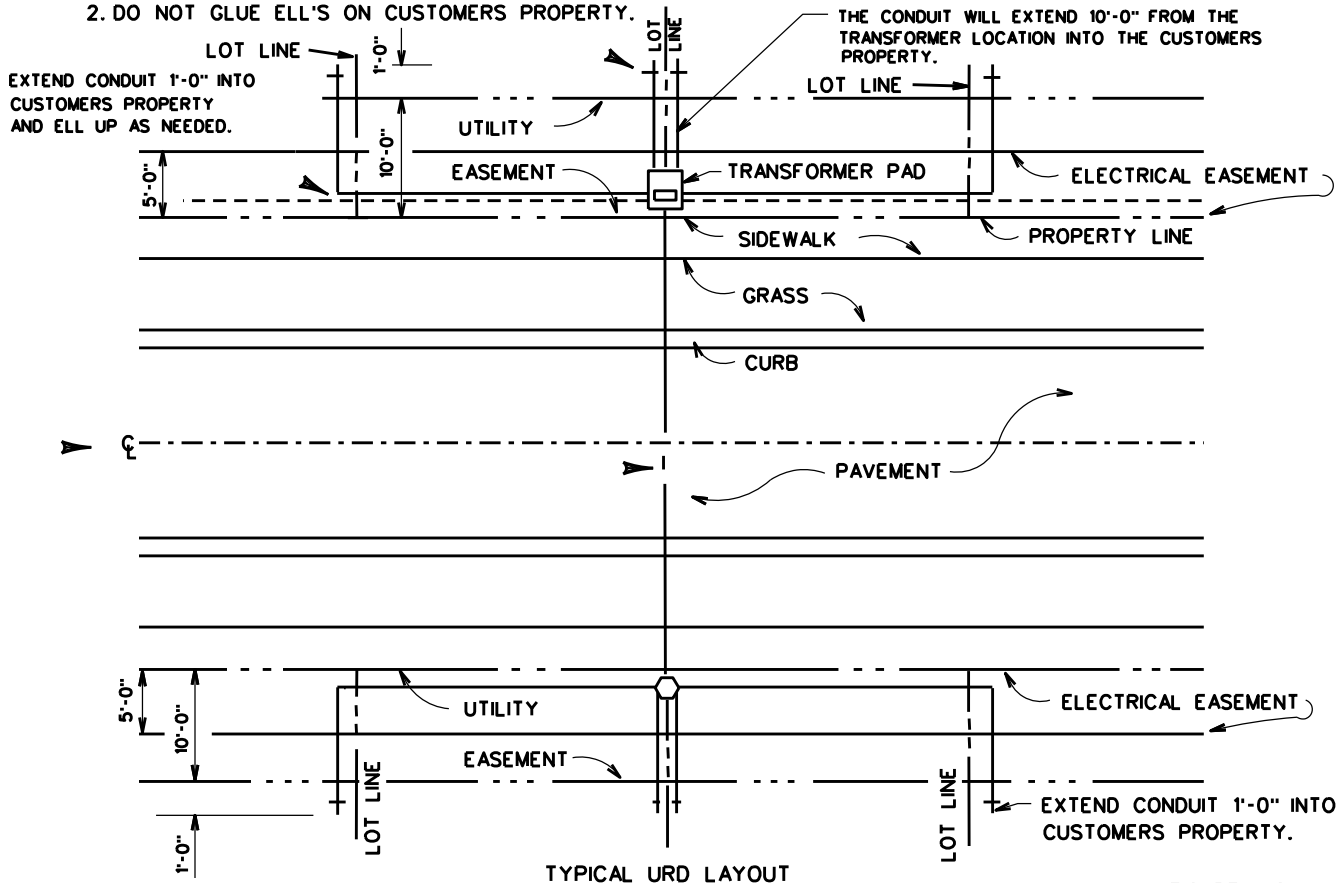


OPTIONAL URD LAYOUT OUTSIDE
OF HILLSBOROUGH COUNTY

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.



DENOTES LATEST REVISION

TYPICAL URD LAYOUT
OF HILLSBOROUGH COUNTY

FIGURE - 2

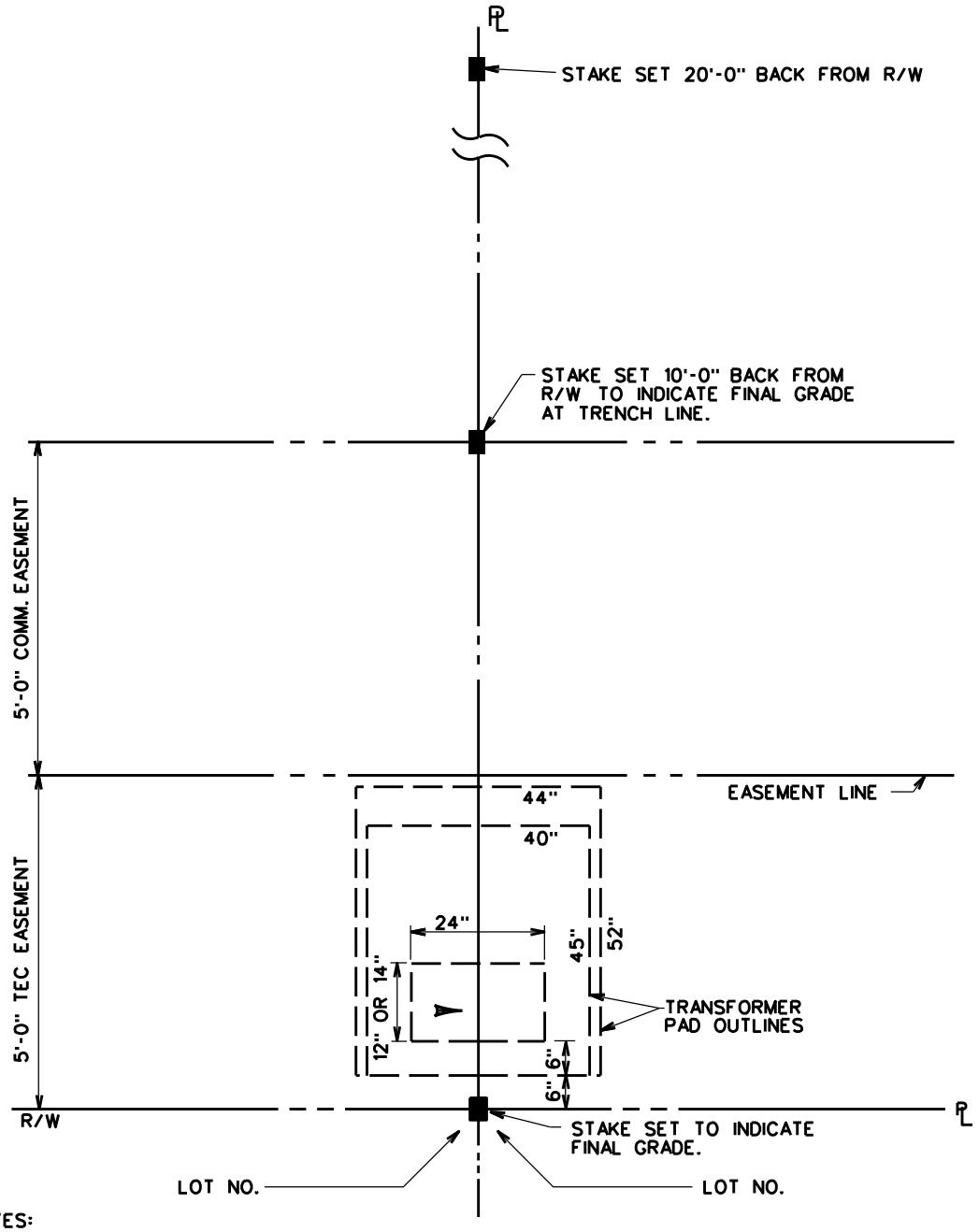
URD LAYOUTS

AM Chip S. Whitesworth
MGR: STD'S
APPR. DATE 7-16-98
SUPERSEDES 1-44/8-20-92

TAMPA ELECTRIC CO. | STANDARDS | GENERAL RULES & SPECIFICATIONS UG.

1-44

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.

NO.	CK'D	DATE	REVISION
4	MFK	8-18-05	REVISED NOTE 4 & REMOVED CONDUIT & S/L SYMBOL
3	REM	4-17-03	STAKE AT 20' FROM R/W, STAKE SET 10' AT TRENCH LINE
2	REM	4-17-03	STAKE SET TO INDICATE FINAL GRADE
1	REM	4-17-03	TO SHOW PROPER PROPORTION

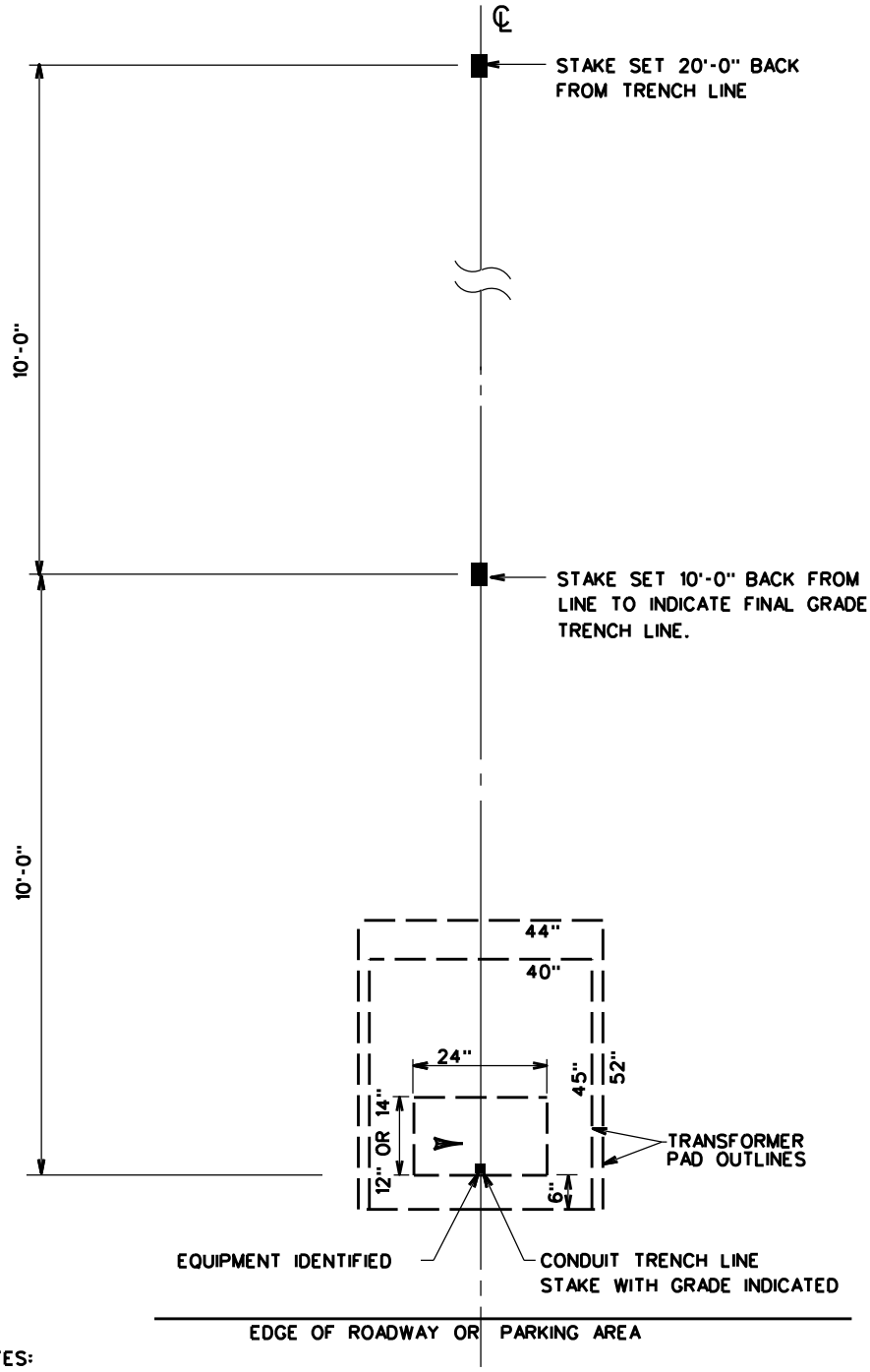
◄ DENOTES LATEST REVISION

MGR: STD'S Bob Shirley
APPR. DATE 8-18-05
SUPERSEDES 1-45/4-17-03

SUBDIVISION STAKING REQUIREMENTS FOR ALL TEC EQUIPMENT IN EASEMENTS

1-45 | TAMPA ELECTRIC CO. | STANDARDS | GENERAL RULES & SPECIFICATIONS UG.

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



NOTES:

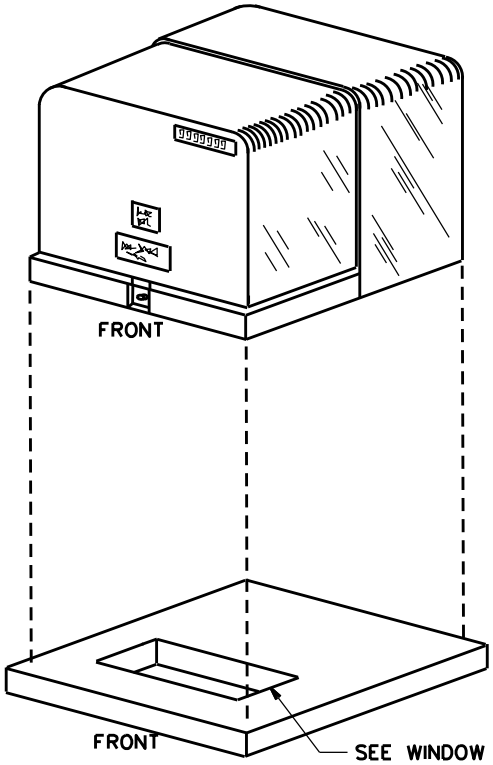
1. ALL STAKES TO BE INSTALLED BY DEVELOPER.
2. STAKES & GRADE REQUIRED EVERY 100' FOR CONDUIT TRENCH LINE, ON CURVED PORTIONS AT 25' INTERVALS, OR LESS IF REQUESTED.
3. STAKING REQUIRED FOR ALL TEC EQUIPMENT.
4. OFFSET STAKING REQUIRED FOR TEC EQUIPMENT - TRANSFORMERS, HANDHOLES, PULLBOXES, SWITCHGEAR/LBC.

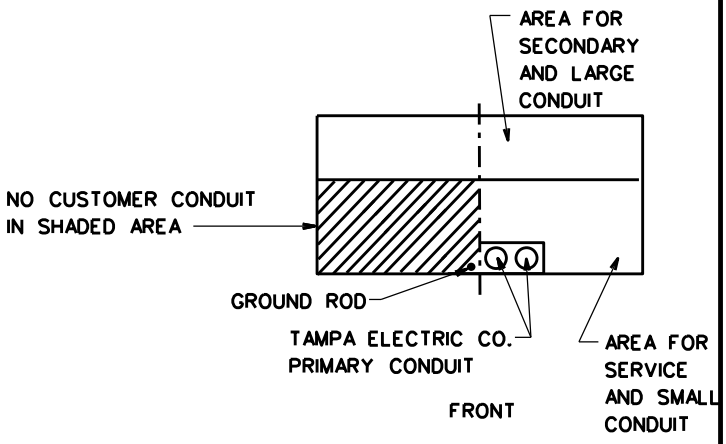
DENOTES LATEST REVISION

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

STAKING REQUIREMENTS FOR APARTMENTS AND COMMERCIAL ZERO LOT LINE APPLICATIONS

D.S. SUPR. Bob Shirley
APPR. DATE 8-18-05
SUPERSEDES 1-46/10-16-03





WINDOW - DETAIL "A"

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 AND 167	6	2004952	#2-500 kCMIL
	6	2004901	1/0-750 kCMIL
	8	2004903	#2-500 kCMIL
250	6	2004941	#6-500 kCMIL

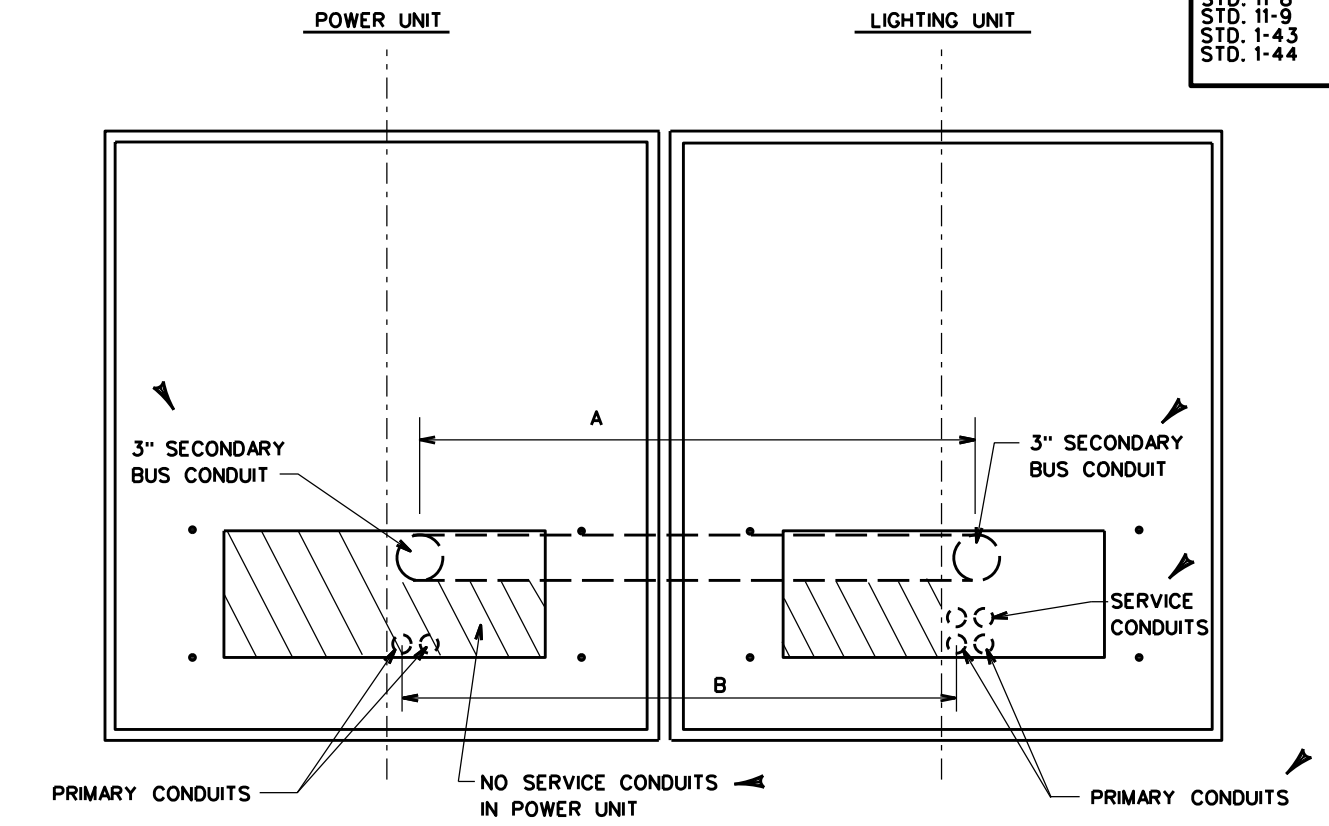
NOTES:

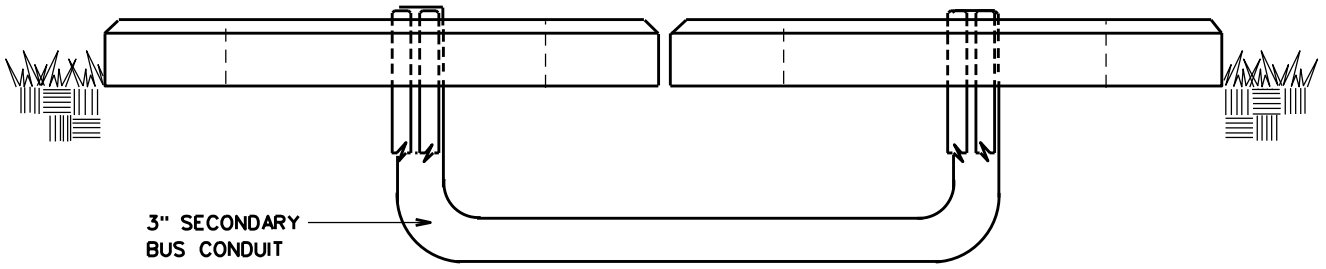
1. CONCRETE PAD AND ITS LOCATION WILL BE SPECIFIED BY TAMPA ELECTRIC CO.
2. LOCATION OF PAD-MOUNT TRANSFORMERS MUST MEET THE LOCATION REQUIREMENTS FOR OIL FILLED EQUIPMENT (SEE 7.39).
3. ALL CUSTOMER-OWNED CONDUITS SHALL STUB UP BETWEEN 1" AND 3" ABOVE PAD WINDOW. BEGIN INSTALLING CONDUIT FROM THE RIGHT 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.

REQUIREMENTS FOR SINGLE-PHASE UD 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: 04-2-12	7.26

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





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.

◄ DENOTES LATEST REVISION

NO.	CK'D	DATE	REVISION
3			
2	MFK	8-18-05	REVISED CONDUIT SHOWN IN WINDOW
1	MFK	11-4-04	ADDED NOTE AND SERVICE CONDUIT

CONDUIT DETAIL FOR OPEN WYE-OPEN DELTA TRANSFORMER BANK USING SINGLE-PHASE TRANSFORMERS

MGR: STD'S Bob Shirley
APPR. DATE 8-18-05
SUPERSEDES 7-19/11-4-04

TAMPA ELECTRIC CO. | STANDARDS | GENERAL RULES & SPECIFICATIONS UG.

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

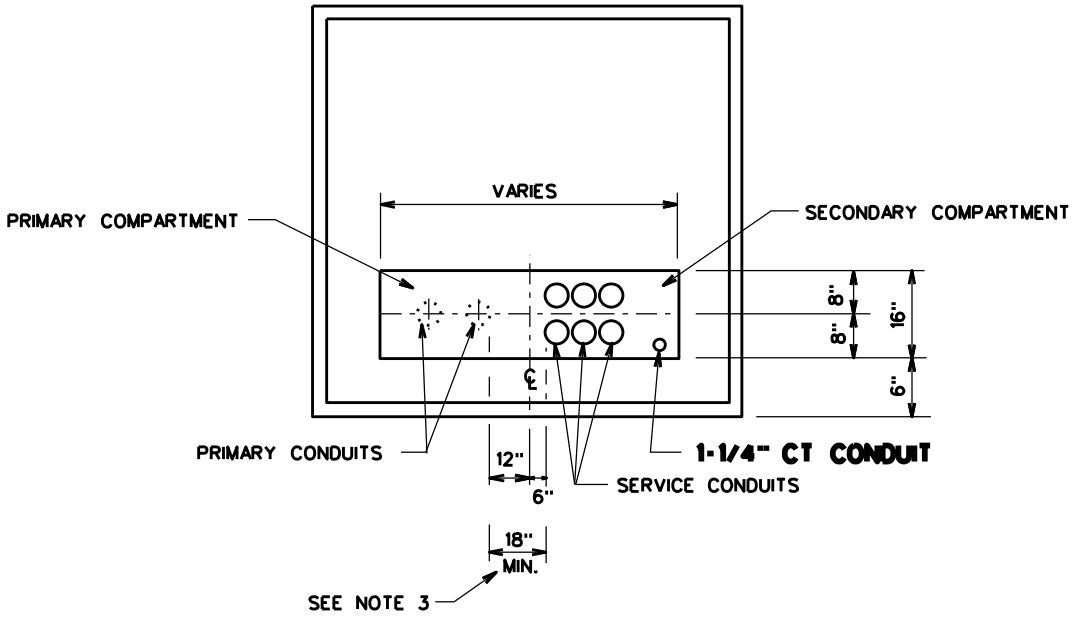


TABLE 1

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

* ONE ADDITIONAL CONDUIT IS ALLOWED FOR CT WIRING.

NOTES:

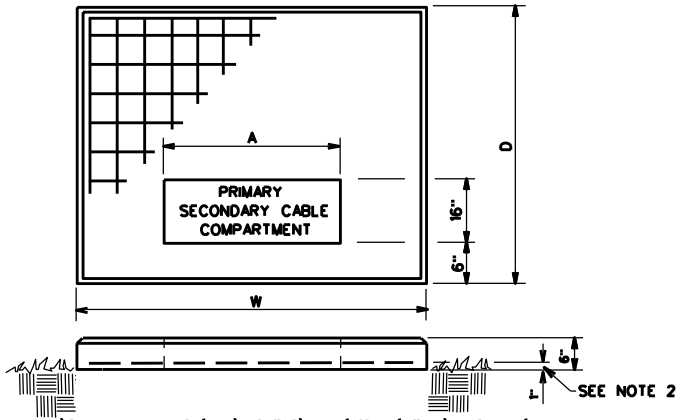
1. PRIMARY CONDUIT TO BE CENTERED IN PRIMARY COMPARTMENT.
2. SERVICE CONDUIT TO BE CENTERED IN SECONDARY COMPARTMENT. CUSTOMERS SHOULD RECEIVE APPROPRIATE PAD DETAIL PRIOR TO INSTALLING CONDUIT.
3. PRIMARY & SERVICE CONDUIT TO BE SEPARATED A MINIMUM OF 18".
4. MAXIMUM SECONDARY CONDUITS INCLUDE THOSE 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.

NO.	CK'D	DATE	REVISION
3			
2	MFK	8-18-05	ADDED NOTE 6, REVISED REFERENCE BLOCK
1	MFK	7-22-04	TABLE REVISED, NEW NOTE 4, RENUMBERED NOTE 4 TO 5

DENOTES LATEST REVISION

MGR: STD'S Bob Shirley
APPR. DATE 8-18-05
SUPERSEDES 7-16/7-22-04

CONDUIT DETAIL FOR THREE-PHASE PAD-MOUNTED TRANSFORMER



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 96" D X 56" A	Poured in Place Pad *
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 84" D X 56" A	Poured in Place Pad *
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	Poured in Place Pad *
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	Poured in Place Pad *
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			
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

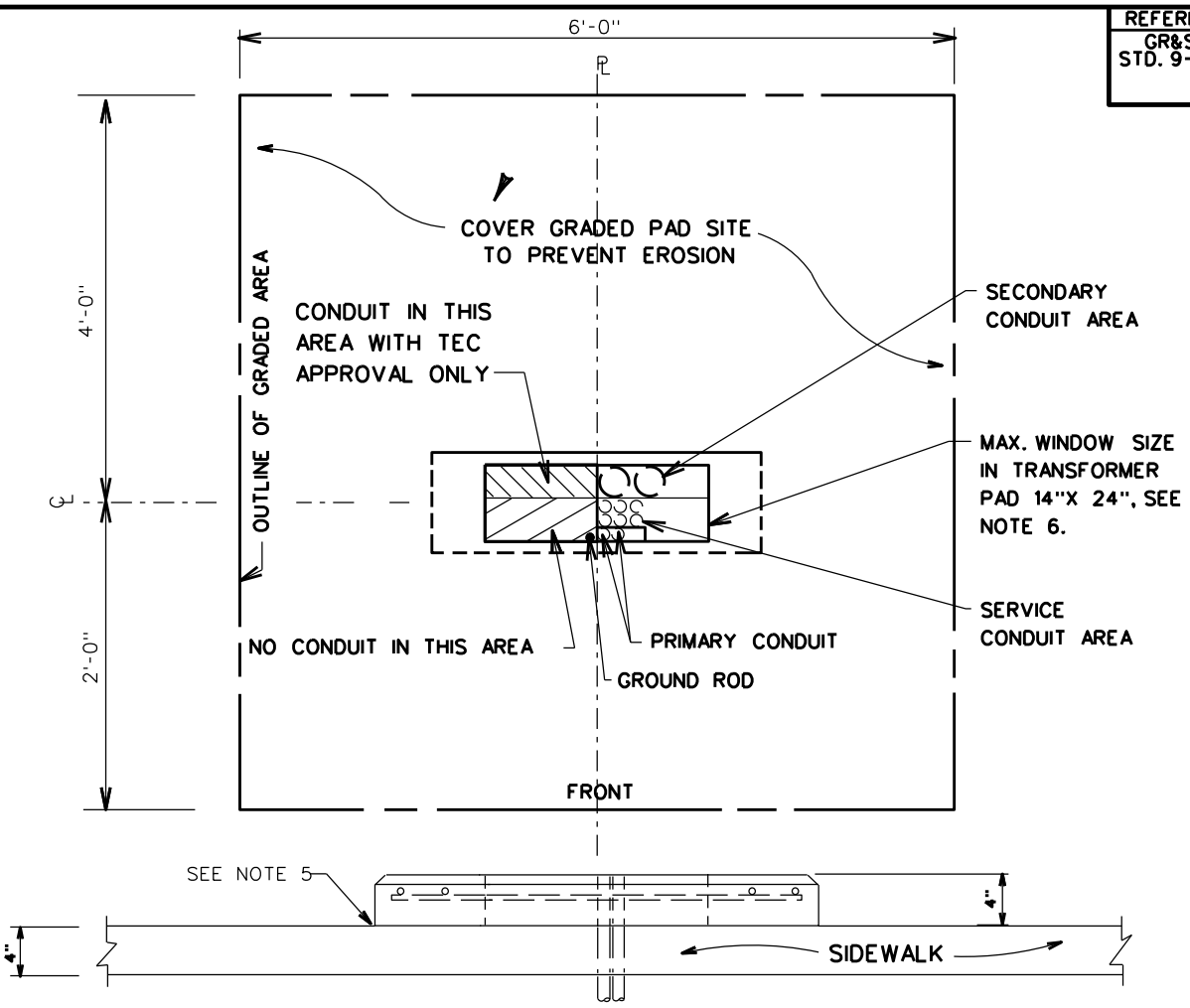
MGR: STD'S
APPR. DATE 3-21-13
SUPERSEDES 6-12/2-15-01

PAD DESIGN FOR THREE-PHASE PAD-MOUNTED TRANSFORMERS

6-12

TAMPA ELECTRIC CO. | STANDARDS | GENERAL RULES & SPECIFICATIONS UG.

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.
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.
4. ALL CUSTOMER CONDUITS MUST BE IN PLACE & 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 GRADED SITE SHALL BE COVERED WITH SOD OR SUITABLE PLASTIC TO PROTECT IT FROM EROSION.
8. SLOPED AREAS ADJACENT TO THE SITE MAY REQUIRE EROSION PROTECTION AT THE DIRECTION OF TEC PERSONNEL.

◄ DENOTES LATEST REVISION

NO.	CK'D	DATE	REVISION
3	MFK	6-15-06	ADDED NOTES 7 & 8, COVER GRADED PAD SITE
2	MFK	8-18-05	REVISED NOTE 3, 4, CONDUIT IN WINDOW AREA & TITLE
1	MFK	11-4-04	REVISED CONDUIT IN WINDOW, ADDED STD. 9-5 IN REF. BLK.

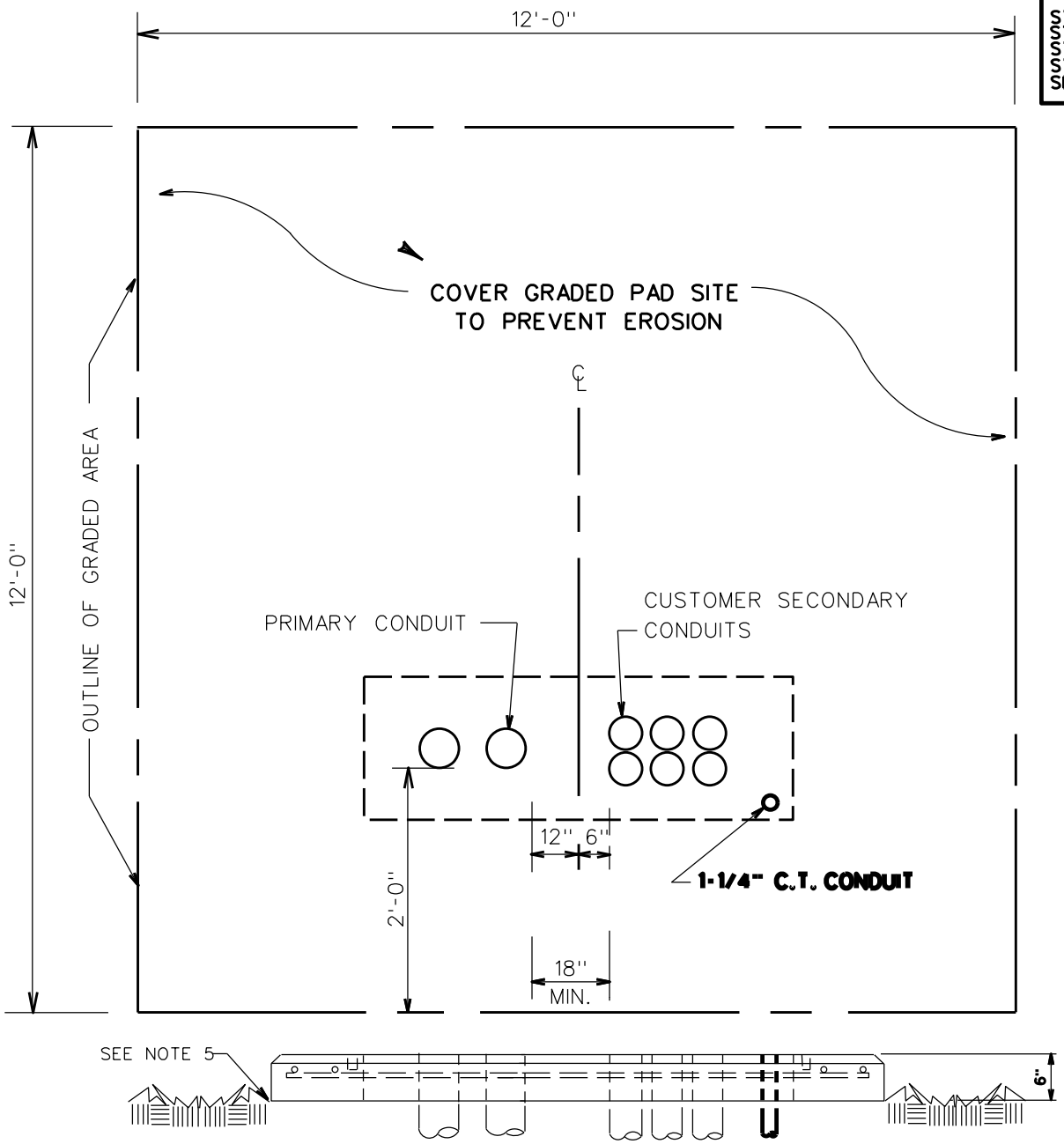
CONDUIT INSTALLATION/SITE PREPARATION SINGLE-PHASE PAD-MOUNT TRANSFORMER INSTALLATION

MGR: STD'S Bob Shickling
APPR. DATE 6-15-06
SUPERSEDES 1-48/8-18-05

TAMPA ELECTRIC CO. | STANDARDS | GENERAL RULES & SPECIFICATIONS UG.

1-48

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



NOTES:

1. CUSTOMER CONDUIT MUST BE IN PLACE 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 GRADED SITE SHALL BE COVERED WITH SOD OR SUITABLE PLASTIC TO PROTECT IT FROM EROSION.
8. SLOPED AREAS ADJACENT TO THE SITE MAY REQUIRE EROSION PROTECTION AT THE DIRECTION OF TEC PERSONNEL.

NO.	CK'D	DATE	REVISION
5	MFK	6-15-06	ADDED NOTES 7 & 8, COVER GRADED PAD SITE
4	MFK	8-18-05	ADDED NOTE 6, REVISED REFERENCE BLOCK
3	MFK	11-4-04	ADD STD. 9-5 TO REFERENCE BLOCK
2	MFK	11-4-04	NOTE 6 AND 28" MAXIMUM REMOVED, ADD 18" MIN.
1	CRM	10-16-03	NOTE 6, 28" DIMENSION

◄ DENOTES LATEST REVISION

MGR: STD'S Bob Shirley
APPR. DATE 6-15-06
SUPERSEDES 1-47/8-18-05

SITE PREPARATION
THREE-PHASE PAD-MOUNT
TRANSFORMER INSTALLATION

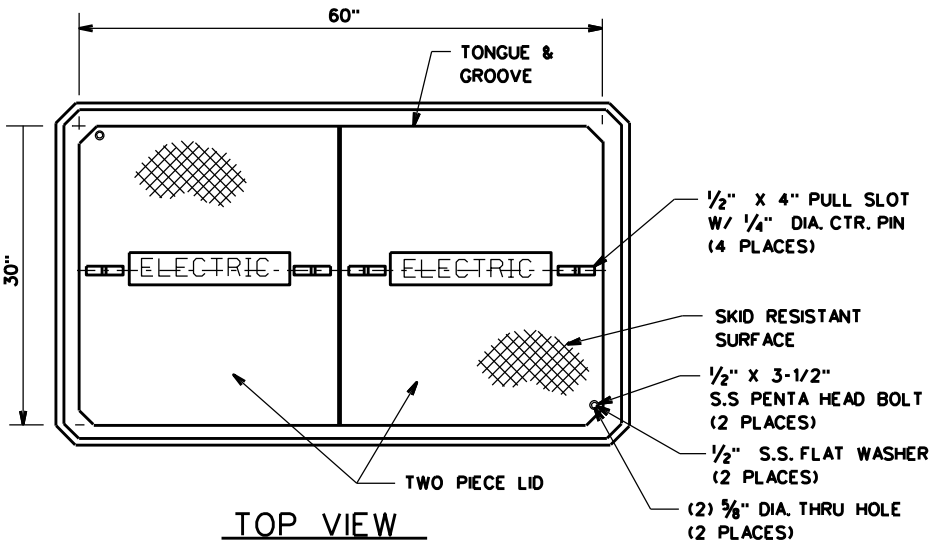
1-47

TAMPA ELECTRIC CO. | STANDARDS | GENERAL RULES & SPECIFICATIONS UG.

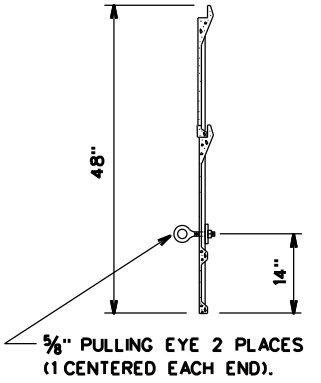
NOTES:

1. BOX WILL ACCOMMODATE (2) THREE-PHASE 1/0 OR 4/0 CIRCUITS AND (2) SINGLE-PHASE CIRCUITS.
2. USE TEC NO. 2004740 TO ORDER COMPLETE PULLBOX; TEC NO. 2004741 FOR TOP ½ ONLY.
3. BOTTOM OF PULLBOX TO BE FILLED WITH 3" OF GRAVEL.
4. THIS BOX MAY BE USED IN PLACE OF THE 2' X 5' POURED IN-PLACE PULLBOX.
5. THIS PULLBOX IS NOT FULL TRAFFIC RATED. THIS ASSEMBLY IS RATED FOR A STATIC DESIGN LOAD OF 8,000 LBS. OVER A 10" X 10" AREA AND MUST PASS A STATIC TEST LOAD OF 17,680 LBS.
6. USE CURB MARKER TEC NO. 2005212 ON CURB TO INDICATE MANHOLE/HANDHOLE LOCATION. CURB MARKERS SHOULD BE INSTALLED USING ADHESIVE TEC NO. 2007225.
7. CREWS SHALL INSTALL GROUND RODS, MAKE-UP GROUND WIRE FROM SPLICE AND MEASURE GROUND EARTH RESISTANCE TO BE 25 OHMS OR LESS. GROUND ROD LOCATION TO BE INSIDE ONE OF THE (4) CORNERS OF THE PULLBOX.

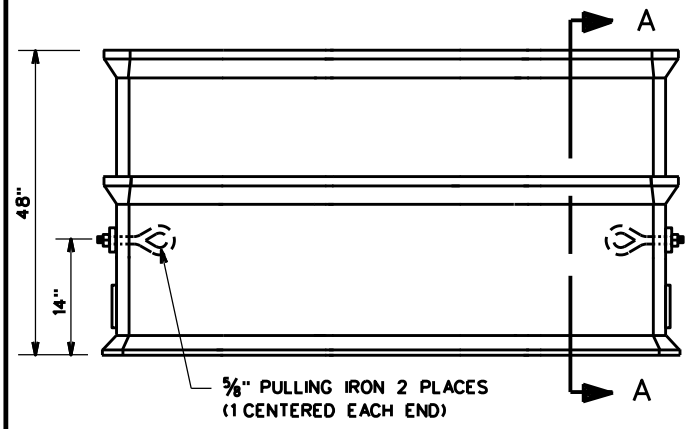
REFERENCES
GR&S UG
STD. 4-14



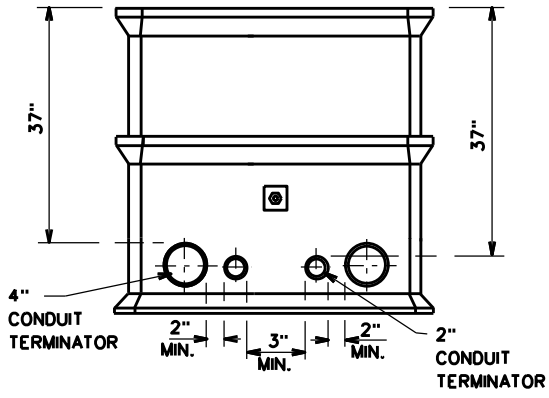
TOP VIEW



SECTION A-A



FRONT VIEW



END VIEW BOTH SIDES

TEC NO. 2004740

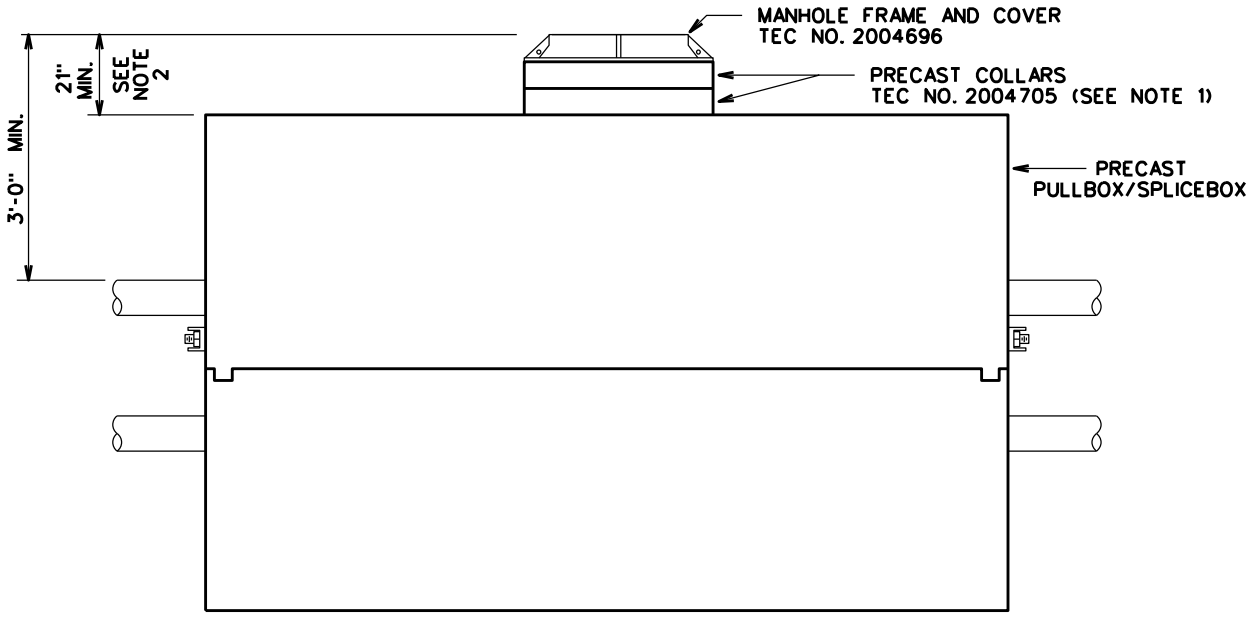
◄ DENOTES LATEST REVISION

NO.	CK'D	DATE	REVISION
3			
2	MEM	4-17-03	NOTES 5 AND 7 WERE REVISED.
1	MEM	4-17-03	THE POLYMER PULLBOX WAS REPLACED WITH A 3 PIECE BOX

30" x 60" x 48" POLYMER CONCRETE PULLBOX

FBT/
MGR: STD'S Bob Shirley
APPR. DATE 4-17-03
SUPERSEDES 6-7/4-16-98

REFERENCES
GR&S UG SEC. 6



NOTES:

1. A MINIMUM OF (2)-TWO AND A MAXIMUM OF (8)-EIGHT PRECAST COLLARS, TEC #2004705, SHOULD BE USED WITH EACH PRECAST PULLBOX/ SPLICEBOX INSTALLATION.
2. THE 21" MINIMUM INCLUDES (2)-TWO COLLARS, (1)-ONE FRAME & COVER AND THE REQUIRED AMOUNT OF GROUT.

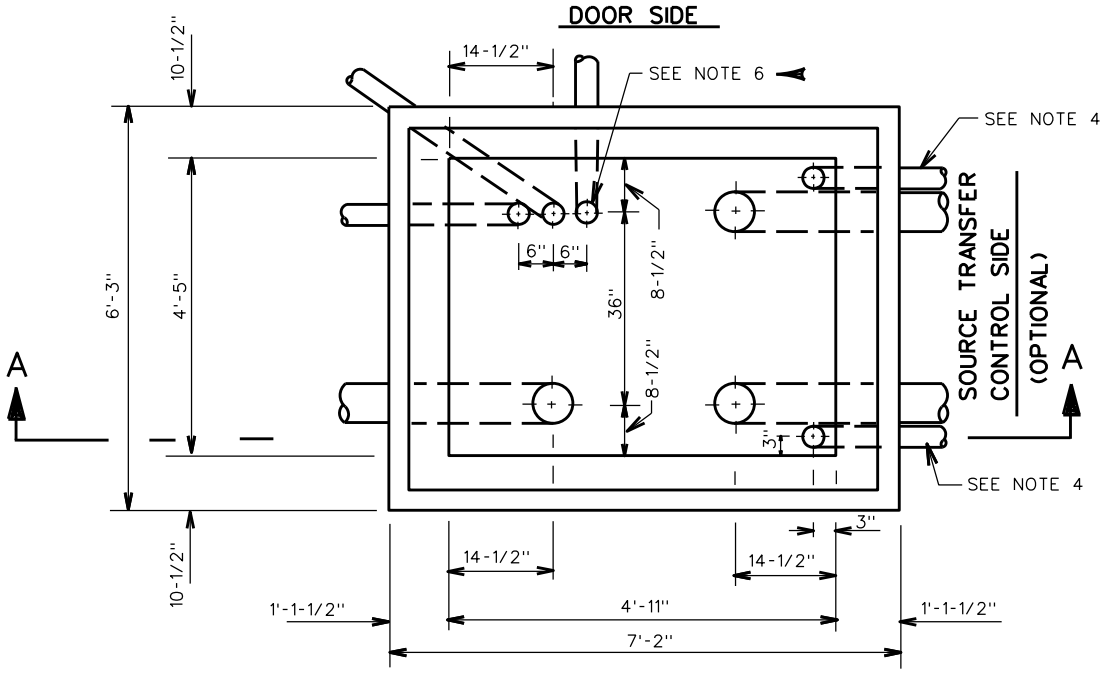
◄ DENOTES LATEST REVISION

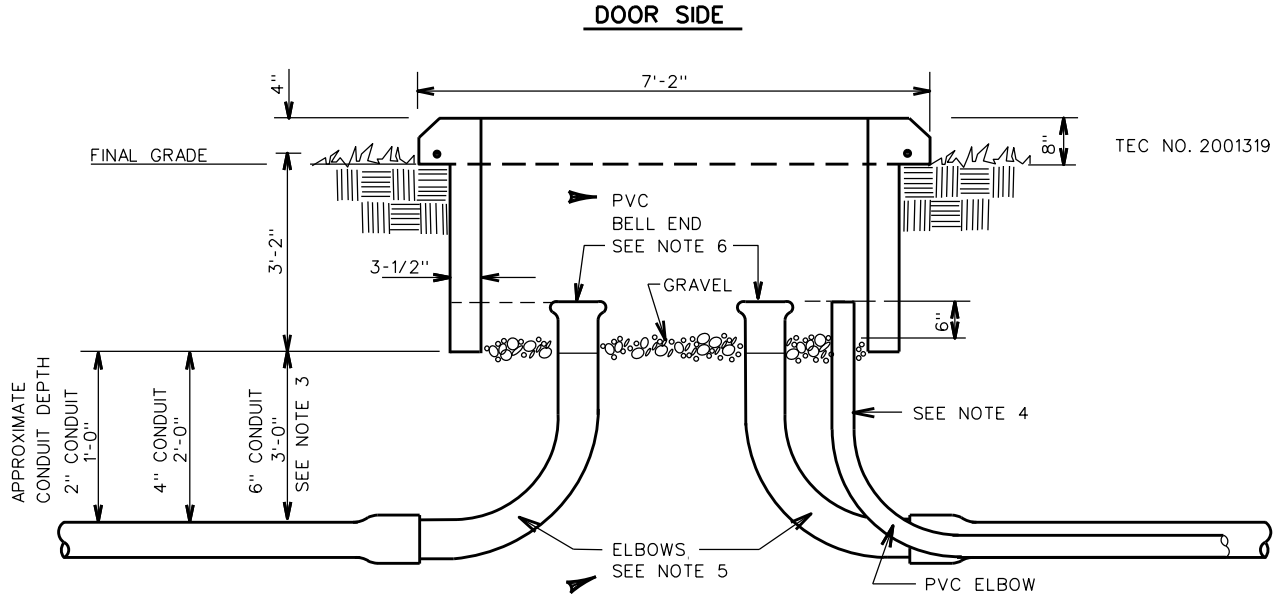
CONDUIT AND PULLBOX/SPLICEBOX INSTALLATION INSTRUCTIONS

JWT Chas S. Whitworth
MGR: STD'S
APPR. DATE 2-18-93
SUPERSEDES 7-15/6-19-86

TAMPA ELECTRIC CO.	STANDARDS	GENERAL RULES & SPECIFICATIONS UG.	7-15

REFERENCES





SECTION "A-A"

NOTES:

1. TEC NO. 2001319 IS A TWO PIECE PRECAST PAD. THE PAD PORTION WEIGHS APPROXIMATELY 2,344 LBS. & THE BOX PORTION WEIGHS APPROXIMATELY 3,140 LBS. IF PRECAST PAD IS NOT AVAILABLE USE POURED IN PLACE PAD PER M-DRAWING •M-5155.
2. FULL RADIUS ELBOWS SHOULD BE USED ON ALL INSTALLATIONS.
3. ON 6" CONDUIT INSTALLATIONS WHERE FULL RADIUS FIBERGLASS ELBOWS CANNOT BE USED, CUT AS NEEDED.
4. USE 2" PVC CONDUIT(S) FOR REMOTE INDICATION/SUPERVISORY CONTROL IN AUTO GEAR. CONDUIT TO BE IN SWITCH COMPARTMENT BEHIND SOURCE-TRANSFER CONTROL CABINET.
5. ELBOWS TO BE GALVANIZED (IF 2") OR FIBERGLASS (IF 4" OR GREATER).
6. FOR 4" CONDUIT USE 4" PVC BELL END TEC NO. 2004534 AND FOR 6" CONDUIT USE 6" PVC BELL END TEC NO. 2004563, FOR 2" GALVANIZED CONDUIT USE 2" PVC BELL END TEC NO. 2004494.

NO.	CK'D	DATE	REVISION
4			
3	SJH	5-19-11	ADDED BELL ENDS & NOTES 5 & 6, REVISED NOTES 3 & 4
2	MFK	4-17-03	CONDUIT MOVED OUT OF FUSE BAY INTO SWITCHING BAY
1	MFK	4-17-03	PROPER LOCATION OF THE COMMUNICATION CONDUIT

◄ DENOTES LATEST REVISION

MGR: STD'S
APPR. DATE 5-19-11
SUPERSEDES 6-18/4-17-03

CONDUIT/PAD DETAILS-600AMP-P.S.E. MULTI-COMPARTMENT GANG-OPERATED

6-18

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