

# **LAKELAND ELECTRIC**

## **ENERGY DELIVERY**

### **New Development Engineering**

**(863) 834-8868**

### **Quick Reference Guide For Installation Of Single Phase Residential Conduit Systems**



- Approved Material List
- Approved Contact List
- Field Inspection Schedule
- Lakeland Electric Requirements
- Conduit Contractor Requirements
- Conduit Contractor Responsibilities
- Detailed Notes, Standards, And illustrated Examples Of proper Conduit Installation

# Introduction

Lakeland Electric has prepared this **Quick Reference Guide** for the Conduit Contractor, with occasional references made to the Developer and/or Engineering Firm. The purpose of this guide is to answer frequent asked questions regarding single-phase subdivision conduit installations.

Lakeland Electric will do periodic inspections, but does not remove the ultimate proper conduit installation responsibility from the Developer or the Conduit Contractor. Lakeland Electric will meet with the Conduit Contractor at the beginning of the installation to approve the on-site materials (prior to installation), to review this guide, review the electric design/contractor's conduit print, and answer any other questions. The Conduit Contractor should refer to this booklet prior to calling the assigned project Engineering Technician. If the answer is not in this guide, please call the assigned Engineering Technician. It will be the Engineering Technician's responsibility to document the question, for the next guide revision.

This information or other policies, practices, or procedures are subject to change without notice. Check with your assigned Engineering Technician to obtain the latest **Conduit Installation Quick Reference Guide** revision.

# Specifications For Single Phase Residential Conduit Installation

- The customer/conduit installer shall furnish all labor, equipment, and approved materials, performing all necessary operations in connection with the installation of the complete conduit system for the installation of primary and secondary power from the Lakeland Electric approved point of origin to the development
- The Conduit Contractor will notify the Lakeland Electric Engineering Technician a minimum of 48 hours when there is to be a materials inspection, and 48 hours before the actual install of conduit will begin.
- Work shall be in accordance with conduit installation specifications per Lakeland Electric Design and approved materials list with Lakeland Electric New Development Engineering Technician field check(s) during the installation process, either specific or implied.
- The install is to include any and all land restoration necessary to obtain final grade condition. For example, transformer locations will be level and soil compacted under all transformer locations.
- General Notes and Issues:
  - Gray / Schedule 40 PVC / Rigid / 20 ft lengths / With Belled Ends / Conduit sizes
    - 2” for all single phase primary power locations
    - 2.5” for all secondary locations
    - 1” for all lighting locations
  - Elbow sweeps – 24” radius / 2’11” height.
  - Conduit depth – 36” – 40”
  - Red Warning Tape – 18” measured from top of pipe to tape, resting on top of clean backfilled dirt.
  - Pull string blown through all conduit with the exception of the service conductor conduit stub ups at the service locations.

- Total length of conduit install (in ground) before a Lakeland Electric approved 2'x 3'x3'6" pullbox for single phase primary and 4'x 4' x 4' for two or three phases of primary necessary shall be determined during the design phase and be communicated at the pre-construction meeting to address any concerns regarding the distance factor.
- Only two elbows allowed in a conduit run from point A to point B. Examples would be from the base of the pole location (Point of Delivery) and one at the stub up for the padmount transformer location (Desired Point of Termination), from padmount transformer location to next padmount transformer location, padmount transformer location to secondary pedestal location, padmount transformer location to service stub up location, secondary pedestal location to next secondary pedestal location, secondary pedestal location to service stub up location, or no stub up if going directly to a pull box from any previous location





## ENERGY DELIVERY NEW DEVELOPMENT ENGINEERING

### SPECIFICATIONS for CONDUIT SYSTEM INSTALLATION

- 1) Scope - The Developer shall furnish labor, equipment, and materials and perform other operations in connection with the installation of a complete electric distribution conduit system, ready for use. Work shall be in accordance with these specifications, the applicable plans, and all other terms and conditions of this policy, either specific or implied. The work is to include all land restoration necessary to obtain final grade condition.

- 2) Conduit sizes shall be as follows, unless otherwise noted on plans by LE:

PRIMARY (Three-Phase)	2.0 inch & larger
PRIMARY (Single-Phase)	2.0 inch
SECONDARY	2.5 inch
STREET LIGHTING	1.0 inch
SERVICE STUB-OUTS	2.5 inch
SERVICE LINES (Single-Phase)	2.5 inch
SERVICE LINES (Three-Phase)	To be sized by the owner's electrician or engineer.

- 3) Elbow sweeps shall have the following radiuses and riser heights.

2.5" Service	24" Radius	2'11" Heights
2.5" Secondary	24" Radius	2'11" Heights
2.0" Primary	24" Radius	2'11" Heights
3.0" Primary	36" Radius	3'11" Heights
4.0" Primary	36" Radius	3'11" Heights

- 4) All conduit shall be installed at the following depths, measured from finished grade to top of conduit.

PRIMARY	36 - 40 inches
SECONDARY	36 - 40 inches
STREET LIGHTING	24 - 26 inches
SERVICE STUB-OUTS	24 - 26 inches
SERVICE LINES	24 - 26 inches

- 5) All conduit in City, County, or State Rights-of-Way or Ingress-Egress Public Access Utility Easements shall be a minimum of 36" below final grade, measured from top of sub-base/final grade to top of conduit.
- 6) A minimum of **five (5) foot horizontal separation** shall be maintained between electric conduits and other utilities or entities in parallel installations.
- 7) A minimum of **one (1) foot vertical separation** shall be maintained between electric conduits and other utilities or entities when crossing perpendicular.
- 8) A minimum of **five (5) foot separations** shall be maintained between the above grade electric utility facilities and driveways (paved or non-paved).
- 9) A minimum of **five (5) foot separation** shall be maintained between electric utility facilities and trees (outside diameter of tree trunk.) No trees shall be planted in the easement.
- 10) When the minimum horizontal or vertical separation/clearance from other utilities or entities cannot be met, contact LE as soon as possible.
- 11) **NO** other utility pipe, conduit, wire, etc., shall be installed directly below any LE pad mounted equipment.
- 12) Trench construction and backfill procedure under present and future pavement areas including roads shall be in conformance with Article 125-8.3 of the Florida Department of Transportation Specifications for Road and Bridge Construction.
- 13) Density tests are not a requirement unless LE deems it necessary if, in its opinion, a reasonable effort to obtain suitable compactions is not being made, or is required by another authorized agency.
- 14) Trenches shall be back-filled in such a manner that the conduit remains in a straight line within the trench.
- 15) Backfill shall be clean material free from foreign material such as rocks, bricks, concrete, roots, bottles, cans, clumps of clay or phosphate, etc. It shall be tamped in twelve inch (12") increments to insure that settling will not occur in the trench.
- 16) When installing PVC conduit, cleaner and cement shall be applied to each end before connection.
- 17) Conduits shall have the edges chamfered by a blade to eliminate sharp edges. The open ends of all conduits shall be taped with duct tape except the customer's service side stub-ups or subdivision phase stub-ups to prevent the entrance of all foreign matter. The ends of all customer's service stub-ups shall be covered with a glued Schedule Twenty (20) PVC cap on each end. End of subdivision phase stub-ups shall be covered with a glued Schedule 20 PVC cap.
- 18) PVC conduit shall be installed straight and without sweeps unless specified or approved by LE.
- 19) ALL Conduits installed parallel in the same ditch shall have a 3" minimum separation measured from conduit outside diameter to conduit outside diameter.
- 20) All conduits shall be terminated in accordance with LE policy.

- 21) Placement of conduit terminations for future facilities (i.e. transformers, pedestals, pullboxes, manholes, switches, etc.) shall be in accordance with plans provided by LE.
- 22) Pullboxes shall be installed four (4") inches above final grade when installed except in driveways and parking lots.
- 23) Pullbox stub-outs shall have mitered belled flared ends. Pullbox knockouts shall be mitered.
- 24) Printed underground warning tape shall be installed **directly over the pipe** during the back-filling operation, continuously throughout all trenches containing electric line conduits, at the following depths, measured from **top of pipe to tape**:

PRIMARY	18 inches
SECONDARY	18 inches
STREET LIGHTING	12 inches
SERVICE STUB-OUTS	N/A
SERVICE LINES	12 inches
- 25) Twenty feet (20') of aluminum conduit in ten foot (10') lengths of the size specified by LE shall be provided at termination poles for risers for each individual conduit run. One ten foot (10') length shall be installed from the conduit run sweep, up the pole. The second ten foot (10') length shall be provided to LE for installation.
- 26) Underground Prelubricated Cable Pulling/Conduit Measuring Flat Woven Polyester Tape with sequential foot markings, 1250 lb minimum tensile strength shall be blown into conduit, except service stub-ups, and tied to the conduit at each end. The conduit shall then be taped over the opening with duct tape.
- 27) Tracer wire will be required at the discretion of LE.

## **MATERIALS for UNDERGROUND INSTALLATION**

- 1) Conduit manufactured by approved suppliers and approved by LE Materials Standard Committee may be used.
- 2) Conduit shall be polyvinyl chloride (PVC), galvanized steel or aluminum as specified hereunder.
- 3) PVC conduits shall be gray Schedule Forty (40), heavy wall rigid, in twenty (20) foot lengths with factory belled couplings.
  - a) EXCEPT 2.5" Schedule Forty (40) for service runs directly into the meter may be in ten (10) foot lengths.
  - b) EXCEPT 1.0" Schedule Forty (40) for COL Lighting may be in ten (10) foot lengths.
- 4) Adapters (from PVC to metal) shall be PVC.
- 5) Primary ninety degree (90°) sweeps shall be galvanized, shall have a 24" radius and 2'11" riser, and must be factory made.
- 6) Secondary ninety degree (90°) sweeps shall be PVC, shall have a 24" radius and 2'11" riser, and must be factory made.
- 7) Services (including stub-outs) ninety degree (90°) sweeps may be PVC, shall have a 24" radius and 2'11" riser, and must be factory made.
- 8) All service stub-ups shall be glued with a Schedule Twenty (20) PVC cap on customer end--LE end taped with duct tape.
- 9) Risers shall be aluminum in ten foot (10') lengths with one (1) aluminum coupling attached. Two sticks shall be furnished by the Developer/contractor for every run of pipe installed up the pole.
- 10) Factory flared bell ends stubbed into pullboxes and mitered.
- 11) Underground Prelubricated Cable Pulling/Conduit Measuring Flat Woven Polyester Tape with sequential foot markings, 1250 lb minimum tensile strength shall be blown into conduit, except service stub-ups, and tied to the conduit at each end. The conduit shall then be taped over the opening with duct tape.
- 12) Printed underground warning tape shall have the wording **"CAUTION BURIED ELECTRIC LINE"** continuously in black lettering on a red background. Tape shall be three (3") or six inches (6") in width and 4 mil polyethylene.
- 13) Tracer wire shall be 14 AWG solid copper with 600volt rated jacket.

## **CONDUIT/ MATERIALS**

Hughes Electric Supply  
335 N Ingraham Ave.  
Lakeland, Fl  
863 / 688 – 5511

Raybro Electric Supply  
520 N Ingraham Ave.  
Lakeland, Fl  
863 / 688 – 7951

Graybar Electric Supply  
2100 Crystal Grove Dr  
Lakeland, Fl  
863 / 665 – 6822

Aldan Electric Supply  
630 Gary Rd N  
Lakeland, Fl  
863 / 683 – 8707

City Electric Supply  
1131 E Lime St  
Lakeland, Fl  
616 – 9302

## **PULLBOX INFORMATION**

Old Castle Pre-Cast Inc.  
690 W Taft-Vineland Rd  
Orlando, Fl / 32824  
407 / 855 – 7580  
407 / 851 – 4829 (fax)



## **APPROVED MATERIAL LIST**

### **MATERIAL**

### **APPROVED MANUFACTURER**

Female PVC Adapter  
Male PVC Adapter  
PVC Coupling  
PVC Caps--Schedule 20  
End Flared Bell W/Socket  
PVC Conduit  
PVC Elbows  
Galvanized Elbows

Carlton/Cantex/Allied-Ga Pipe / LCP / Queen City Plastics  
CentaurLap/SedcoPipe/Heritage

Aluminum Conduit

Open Market

UG Warning Tape  
3" - 4" Width, Black  
Lettering On Red Tape

Allen System / Electromark Reef Industry Shield Tec  
Reef Industry Shield Tec /  
Terra Tape / Panduit / Magnatec

Tape U/G Cable Pulling/Conduit  
Measuring1250 lb Min Tensile  
Strength on 3000foot reels/flat  
woven polyester with sequential  
ft markings/prelubricated

Amco-WP 12 3000 / Neptco-WP 1250P

Tracer Wire #14AWG Solid  
Copper 600 volt rated

Open Market

Conduit Spacers

Carlton

200 Amp Walsdorf  
Enclosure Pit

OldCastle Pre-Cast

2' X 3' X 3'6" Pullbox

Old Castle Pre-Cast / Part # 3902136

4' X 4' X 4' Pullbox

OldCastle Pre-Cast / Part # 3955143  
Mack Concrete / Part # LE-4X4 PB  
Leesburg Concrete / CC-Pullbox 48X48x48 W/Lid  
Lindsay / Part # 484LP PB Lakeland

4' X 6'6" X 4'6" Pullbox

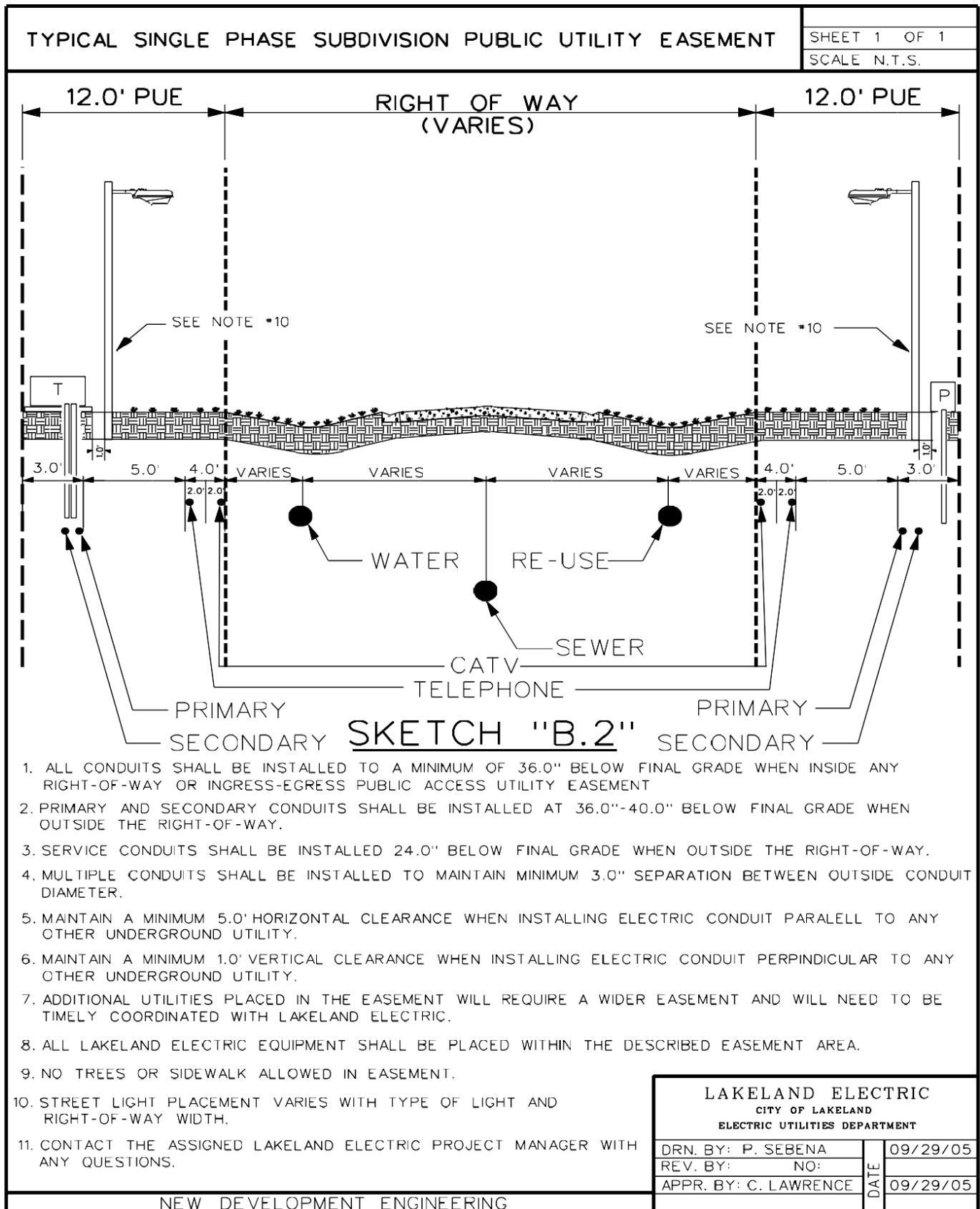
OldCastle Pre-Cast / Part # 3963322  
Mack Concrete / Part # LE 4X6 PB

75-500 KVA Concrete Pad  
750-1000 KVA Concrete Pad  
1500-2000 KVA Concrete Pad

Quickset / Dekalb Concrete / Old Castle Pre-Cast  
Quickset / Dekalb Concrete / Old Castle Pre-Cast  
Quickset / Dekalb Concrete / Old Castle Pre-Cast

*Revised 10 / 13 / 2015 Psebe*

# Typical Easement Cross Section





## Single-Phase Transformer Pad Details Lakeland Electric Supplied

**Note: Transformer Service Cable Capacity Is Limited To A MAXIMUM Of 6 Runs (i.e. 18 Total Conductors) Of No More Than 500 MCM Diameter This Illustration Displays 4 Runs Of Secondary And 2 Runs Of Service Conduit Which Displays The Size Of The New Transformer Pad/Window Area**

**Level Transformer Locations And Compact Soil Under Transformer Locations By Mechanical Means To A Firm And Level Condition**

**2.0" Schedule 40 PVC Conduit**

**2.5" Schedule 40 PVC Conduit**

**12"**

Primary

Primary

Primary

**6"** Distance

**6 Separation Between  
2.0 and 2.5 Schedule 40  
PVC Conduit**

Secondary

Secondary

Secondary

Secondary

Service

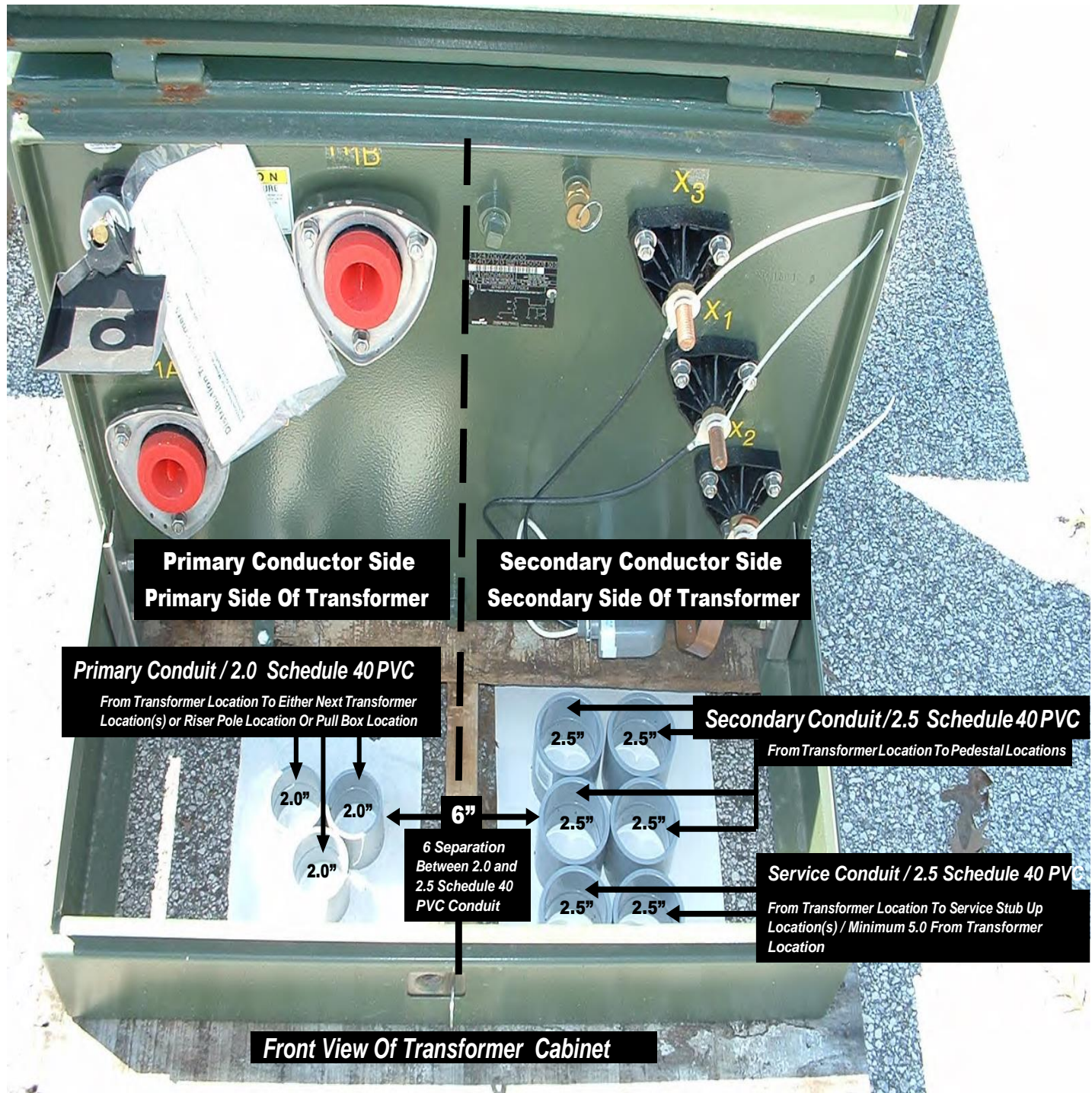
Service

**27"**

**All PVC at transformer locations shall be 18" above leveled final grade, taped off, with string blown through, except for service conduit.**



# Single-Phase Transformer Cabinet Details



## Single Phase / Single Transformer Pad Location On Lot Corner / Secondary And Service Conduit

**Transformer Location / Roadside View / Front View Of Transformer Location**

**Level Transformer Location And Compact Soil Under Transformer Pad By Mechanical Means To A Firm And Level Condition**

**2.5 Conduit / Minimum 6 From Transformer Location / No String Blown Through / White Caps On Top Of Conduit / Stubbed Up Minimum 24 Above Final Grade / Run Installed To Transformer Location 24 Below Final Grade**

**6' Minimum Distance From Transformer Location**

**6 Separation Between Primary And Secondary Conduit**

**6' Minimum Distance From Transformer Location**

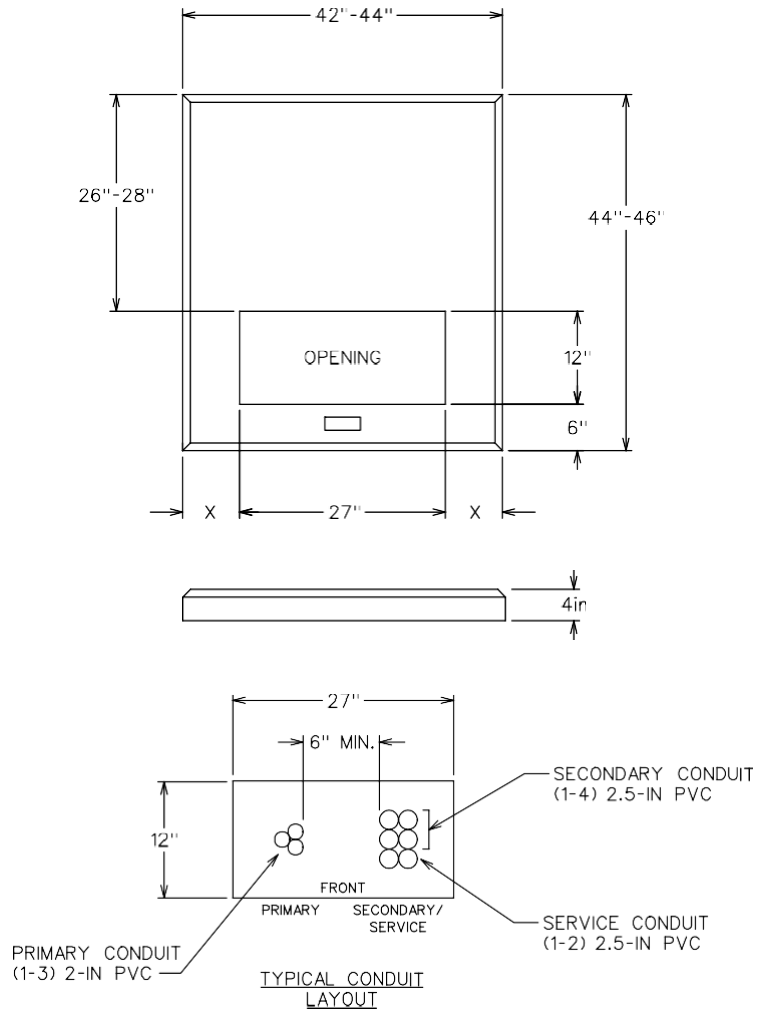
**2.0 Conduit  
Primary Side Of Transformer  
(Left Side)  
String Blown Through  
Taped Off At Top  
18 Above Final Grade  
36 Below Final Grade**

**2.5 Conduit  
Secondary Side Of Transformer (Right Side)  
String Blown Through  
Secondary Conduit And  
Taped Off At Top / Service  
Conduit Placed In Front Of  
Secondary Conduit / No  
String Blown Through /  
Taped Off At Top  
18 Above Final Grade  
36 Below Final Grade**

**6"**

# 120/240 Single Phase Transformer Pad Details

E21TXPD001	PAD, TRANSFORMER, 1 PH, INSTALLATION DETAILS	ASSEMBLY
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## NOTES:

1. TOP OF PAD SHALL BE INSTALLED 2 INCHES ABOVE FINISHED GRADE.
2. SOIL UNDER THE PAD SHALL BE COMPACTED BY MECHANICAL MEANS TO A FIRM AND LEVEL CONDITION.
3. PRIMARY AND SECONDARY CONDUITS SHALL BE STUBBED UP 18 INCHES ABOVE GRADE.
4. OPENING IS CENTERED IN PAD SO THAT DIMENSION X IS EQUAL ON BOTH SIDES.
5. SERVICE CONDUITS SHALL BE LOCATED IN FRONT OF THE SECONDARY CONDUITS.
6. SEE E20TXPD001 FOR PAD DETAILS.

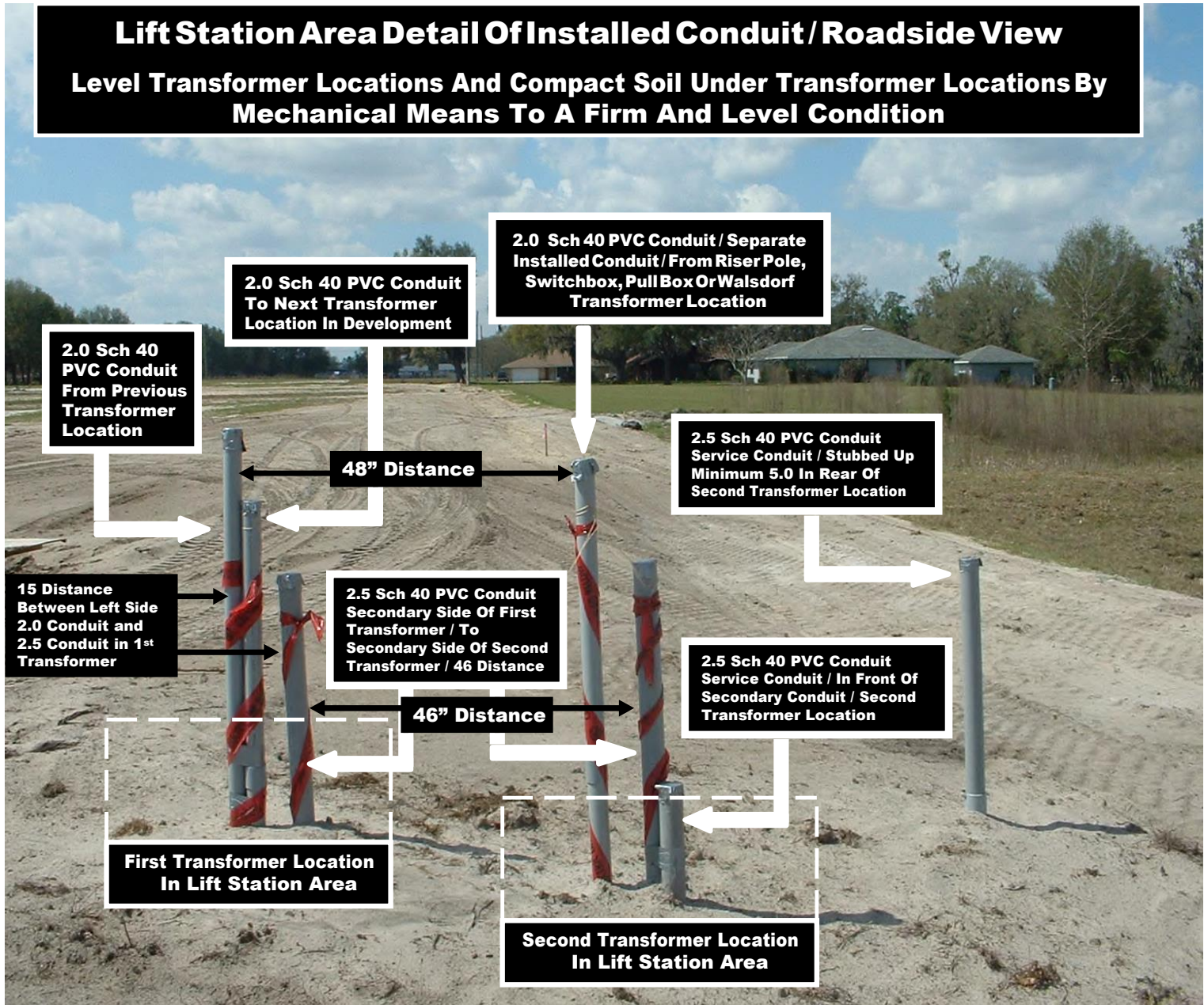
Drafted By: BRS	7/3/97	UNDERGROUND PRIMARY CONSTRUCTION	
Revision By: BRS No: 1	11/6/04		
Approved By: MDO	7/3/97		
Manager of Engineering		203	



# 120/240 Three Phase Lift Station Detail

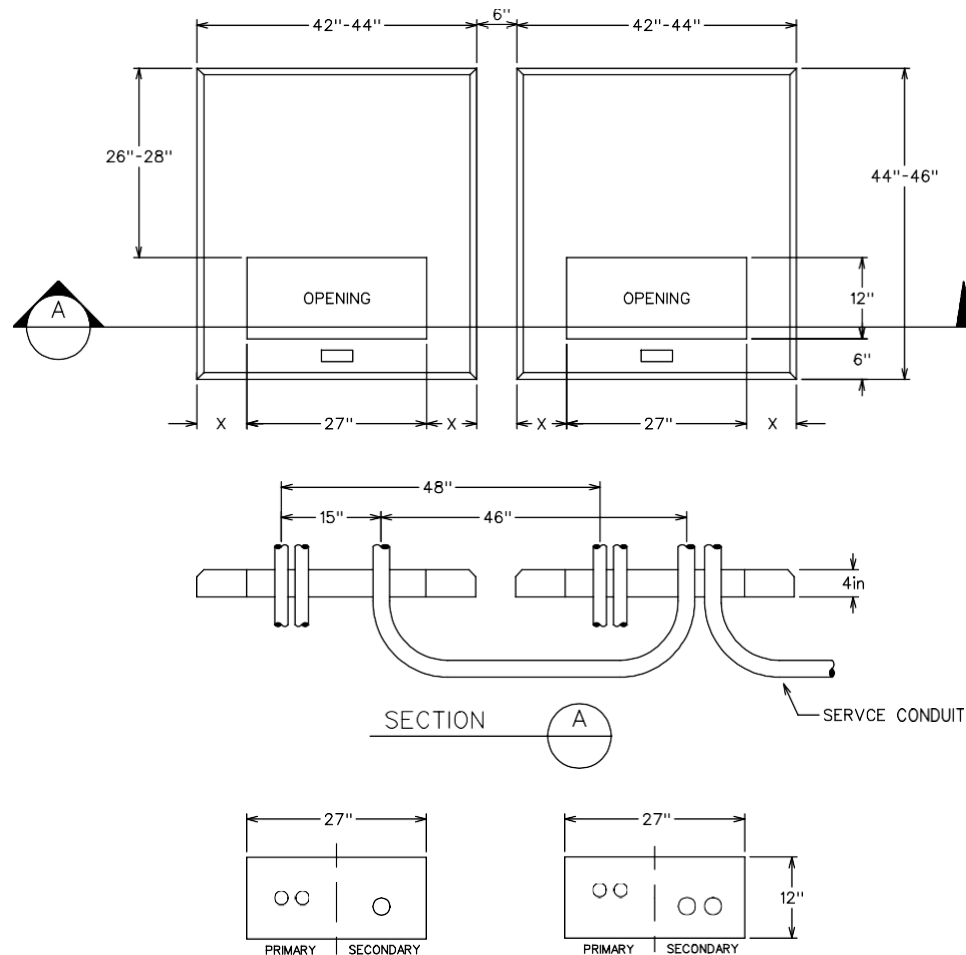
## Two LE Supplied Transformers and Pads

### Open Delta Configuration



# 120/240 Open Delta Lift Station Standards Detail

E21TXPD008	PAD, TRANSFORMER, 3 PHASE, OPEN DELTA, INSTALLATION DETAILS	ASSEMBLY
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FRONT - FACING ROAD  
TYPICAL CONDUIT LAYOUT

## NOTES:

1. TOP OF PAD SHALL BE INSTALLED 2 INCHES ABOVE FINISHED GRADE.
2. SOIL UNDER THE PAD SHALL BE COMPACTED BY MECHANICAL MEANS TO A FIRM AND LEVEL CONDITION.
3. PRIMARY AND SECONDARY CONDUITS SHALL BE STUBBED UP 18 INCHES ABOVE GRADE.
4. PRIMARY CONDUITS SHALL BE STUBBED UP ON LEFT SIDE AND SECONDARY CONDUITS SHALL BE STUBBED UP ON THE RIGHT SIDE AS YOU FACE THE FRONT OF THE TRANSFORMERS.
6. OPENING IS CENTERED IN PAD SO THAT DIMENSION X IS EQUAL ON BOTH SIDES.
7. SEE E20TXPD001 FOR PAD DETAILS.

Drafted By: BRS	62499	UNDERGROUND DISTRIBUTION	
Revision By: BRS No: 1	3805		
Approved By: MDO	62499		
Manager of Engineering		203	

E21TXPD008.DGN



## Open Delta Lift Station LE Supplied Transformer Pad Placement

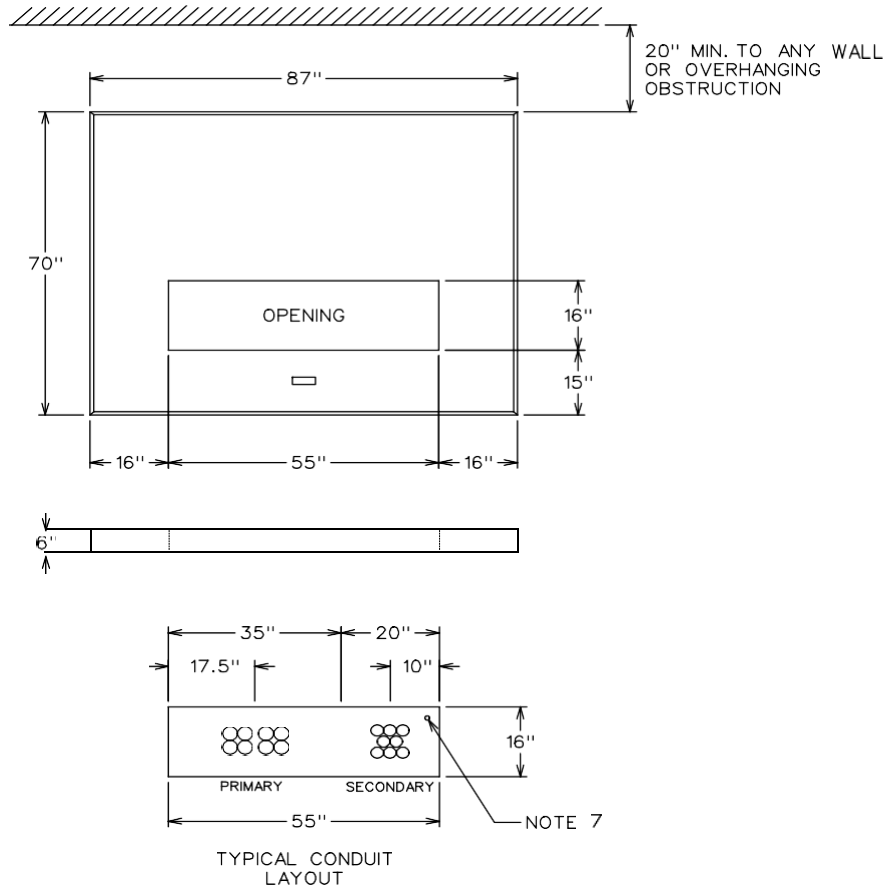




## 3 Phase Transformer / Details

### Customer Supplied Transformer Pad

E21TXPD002	PAD, TRANSFORMER, 3 PHASE, 75-500 KVA, INSTALLATION DETAILS	ASSEMBLY
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#### NOTES:

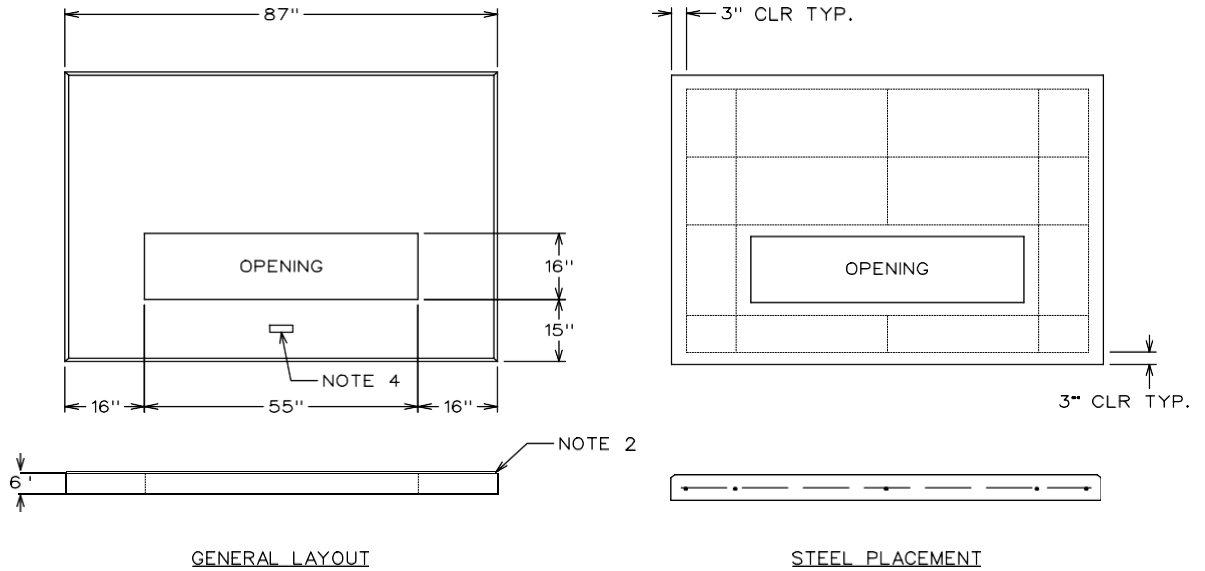
1. TOP OF PAD SHALL BE INSTALLED 3 INCHES ABOVE FINISHED GRADE.
2. SOIL UNDER THE PAD SHALL BE COMPACTED BY MECHANICAL MEANS TO A FIRM AND LEVEL CONDITION.
3. PRIMARY AND SECONDARY COINUITS SHALL BE CUT FLUSH WITH THE TOP OF THE PAD.
4. PRIMARY AND SECONDARY CONDUITS SHALL BE GROUPED AND CENTERED IN EACH RESPECTIVE SIDE OF WINDOW.
5. THE CONTRACTOR SHALL PROVIDE 6 FEET OF SECONDARY CONDUCTOR ABOVE THE PAD FOR MAKEUP.
6. SECONDARY CONDUCTORS SHALL NOT BE INSTALLED UNTIL AFTER THE TRANSFORMER HAS BEEN INSTALLED. LAKELAND ELECTRIC WILL NOT BE RESONSIBLE FOR DAMAGED SECONDARY CONDUCTOR WHEN THIS PROCEDURE IS NOT FOLLOWED.
7. THE CONTRACTOR SHALL PROVIDE AN ALUMINUM OR GALVANIZED CONDUIT STUBBED UP 8 INCHES ABOVE TOP OF PAD WITH WEATERHEAD FOR METERING. THE CONDUIT DIAMETER SHALL BE 1 INCH PREFERRED OR 1 1/4 INCH ACCEPTABLE. THIS CONDUIT SHALL BE LOCATED IN A 3 INCH X 3 INCH WINDOW IN THE RIGHT REAR CORNER OF THE PAD OPENING.
8. SEE E20TXPD002 FOR PAD DETAILS.

Drafted By: BRS	7/14/97	UNDERGROUND PRIMARY CONSTRUCTION	203	E21TXPD002.DGN 
Revision By: BRS No:	1/7/05			
Approved By: MDO Manager of Engineering	12/16/99			

# 3 Phase Transformer / Pad Details

## Customer Supplied Transformer Pad

E20TXPD002	PAD, TRANSFORMER, 3 PHASE, 75-500 KVA, DESIGN DETAILS	ASSEMBLY
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### NOTES:

1. ALL REINFORCING STEEL SHALL BE #5 REBAR AND PLACED IN CENTER OF PAD.
2. PAD SHALL HAVE A  $\frac{3}{4}" \times \frac{3}{4}" \times 45^\circ$  CHAMFER AROUND THE TOP EDGE OF PAD.
3. CONCRETE SHALL DEVELOP A MINIMUM OF 3000 POUNDS PER SQUARE INCH AT 28 DAYS.
4. MANUFACTURER'S IDENTIFICATION (BRAND) SHALL BE CAST IN TOP SURFACE OF PAD AS NOTED.
5. SEE E21TXPD002 FOR INSTALLATION INFORMATION.

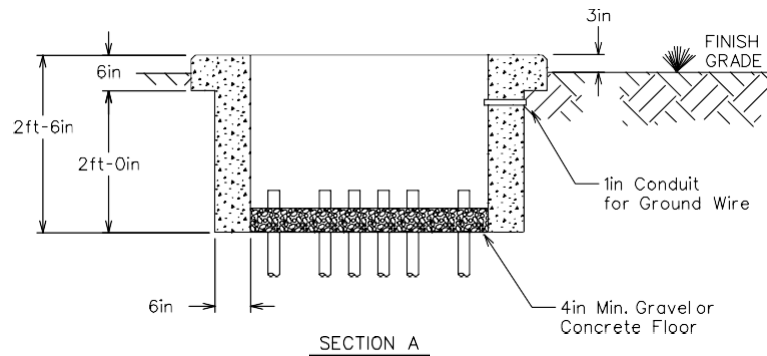
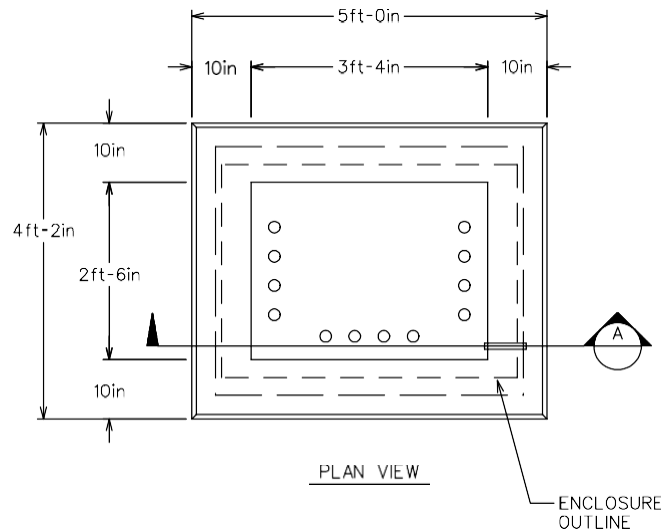
Drafted By: BRS	7/14/97	UNDERGROUND PRIMARY CONSTRUCTION	
Revision By: BRS No: 1	1/19/05		
Approved By: MDO Manager of Engineering	12/16/99		
		203	

E20TXPD002.DGN

# Walsdorf Enclosure Pad Details

## Contractor Install Option # 1

E21DFPD001	PAD, ENCLOSURE, WALSDORF, DEADFRONT, 200A, INSTALLATION DETAILS	ASSEMBLY
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### NOTES:

1. TOP OF PAD SHALL BE INSTALLED 3 INCHES ABOVE FINISHED GRADE.
2. SOIL UNDER THE PAD SHALL BE COMPACTED BY MECHANICAL MEANS TO A FIRM AND LEVEL CONDITION.
3. PIT FLOOR SHALL CONSIST OF A MINIMUM 4 INCH THICKNESS OF CONCRETE OR GRAVEL. THE FLOOR MATERIAL SHALL BE FREE OF ANY LARGE ROCKS OR DEBRIS.
4. CONDUITS SHALL BE CUT 3 INCHES ABOVE TOP OF GRAVEL OR CONCRETE FLOOR.
5. CONDUITS SIZES AND ARRANGEMENT ARE JOB SPECIFIC AND WILL BE PROVIDED BY PROJECT MANAGER.
6. SEE E20DFPD001 FOR PIT DETAILS.

Drafted By: BRS	11/10/97	UNDERGROUND DISTRIBUTION	203	
Revision By: BRS No: 1	1/30/06			
Approved By: MDO	11/10/97			
Manager of Engineering				

E21DFPD001.DGN

## **Walsdorf Enclosure Pit Contractor Install Option # 1**



## Walsdorf Cabinet and Pad/Pi

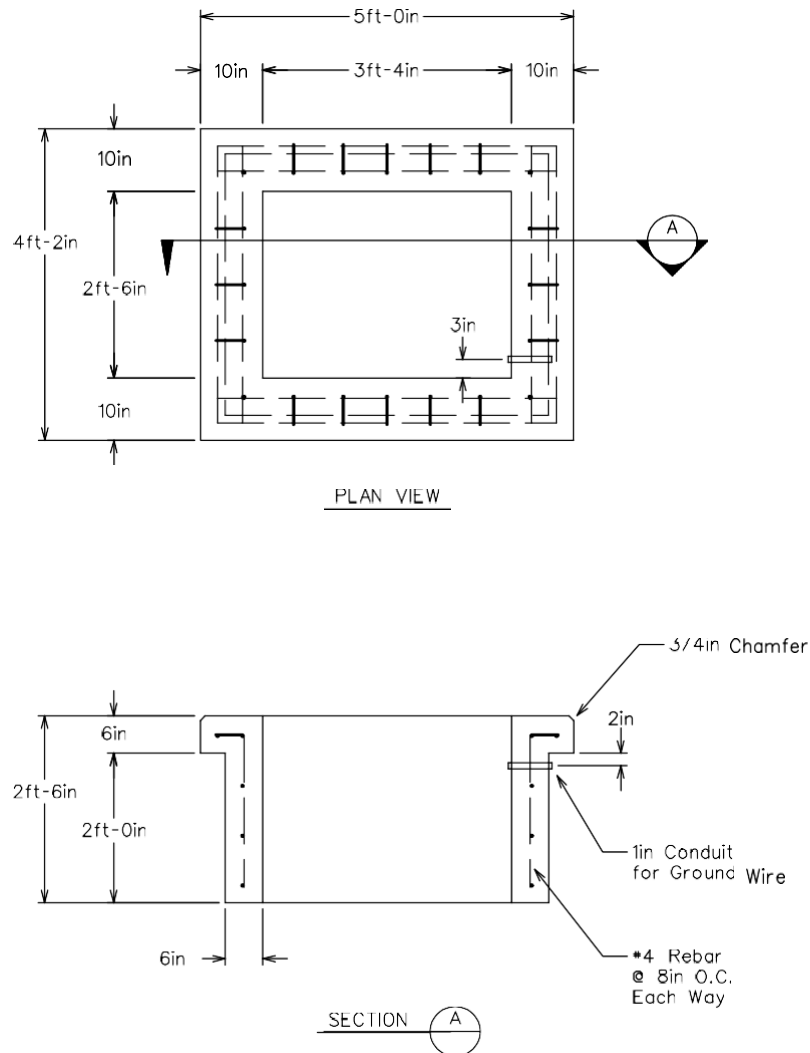


**Walsdorf Cabinet**

## Walsdorf Cabinet / Front View

# Walsdorf Pit Details

E20DFPD001	PAD, ENCLOSURE, WALSDORF, DEADFRONT, 200A, DESIGN DETAILS	ASSEMBLY
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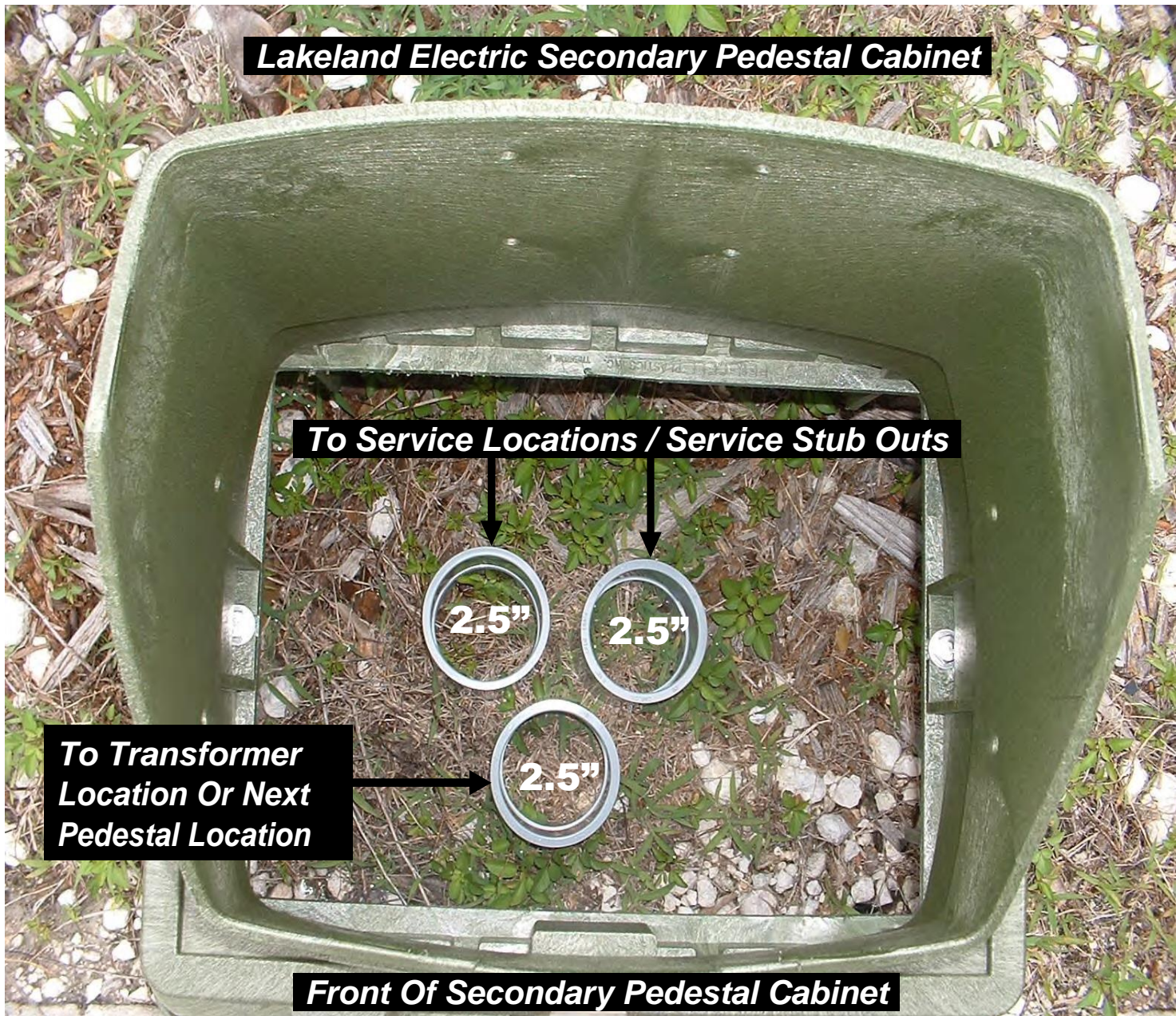
## NOTES:

1. CONCRETE SHALL DEVELOP 3000 PSI AT 28 DAYS.
2. REINFORCING BARS SHALL BE GRADE 60 DEFORMED BARS OR WELDED WIRE MESH.
3. PROVIDE #4 CORNER BARS OR WRAP HORIZONTAL BARS AROUND CORNERS..
4. ALL REINFORCING BARS SHALL HAVE A MINIMUM CONCRETE COVER OF 1 1/2 INCHES.
5. PAD SHALL HAVE A 3/4 INCH CHAMFER ALONG OUTSIDE EDGE.
6. SEE E21DFPD001 FOR INSTALLATION DETAILS.

Drafted By: BRS	1/10/97	UNDERGROUND DISTRIBUTION	<div style="text-align: right;">E20DFPD001.DGN</div> 
Revision By: BRS No: 1	1/31/06		
Approved By: MDO	1/10/97		
Manager of Engineering		203	

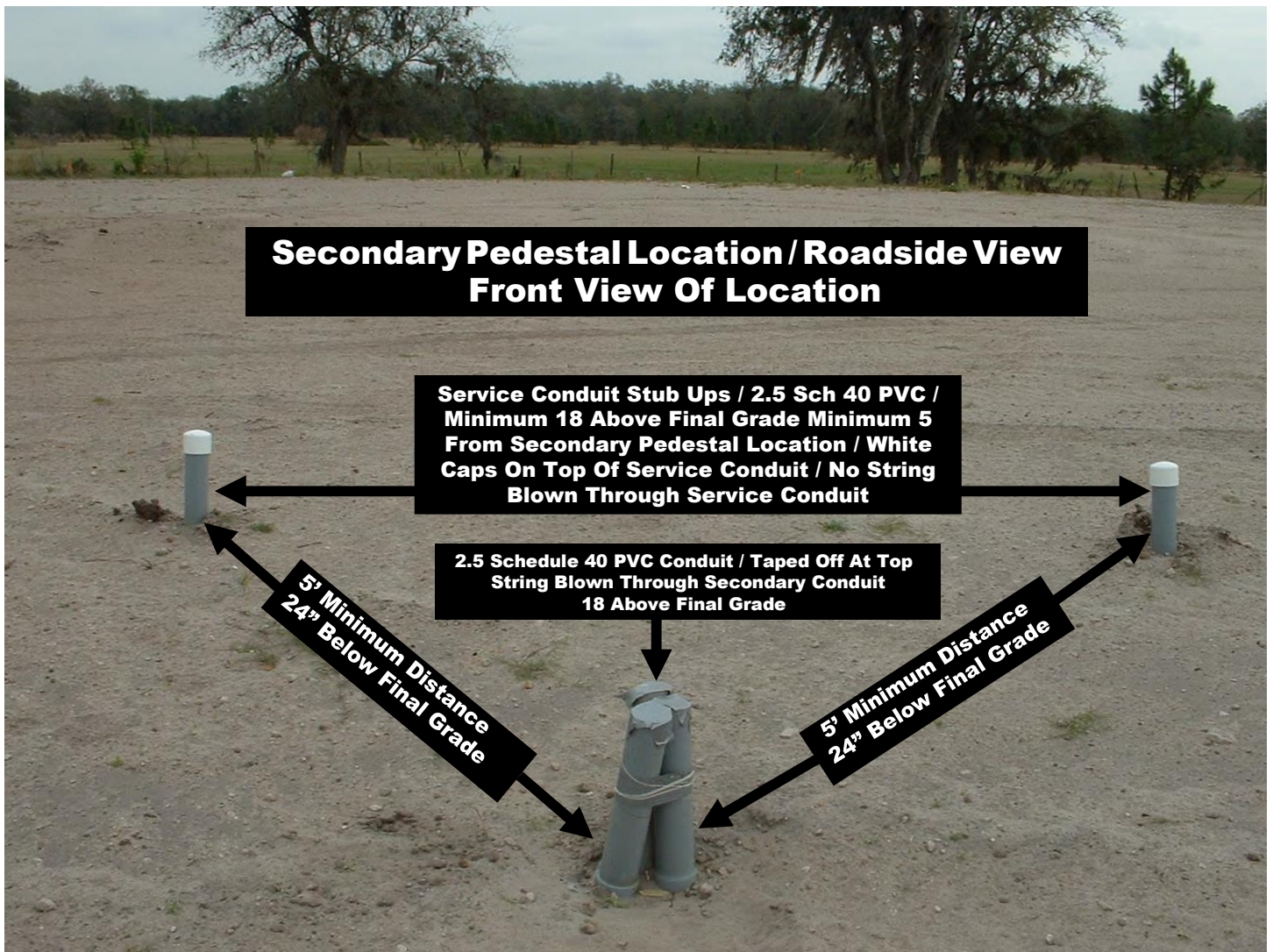


## Secondary Pedestal Cabinet



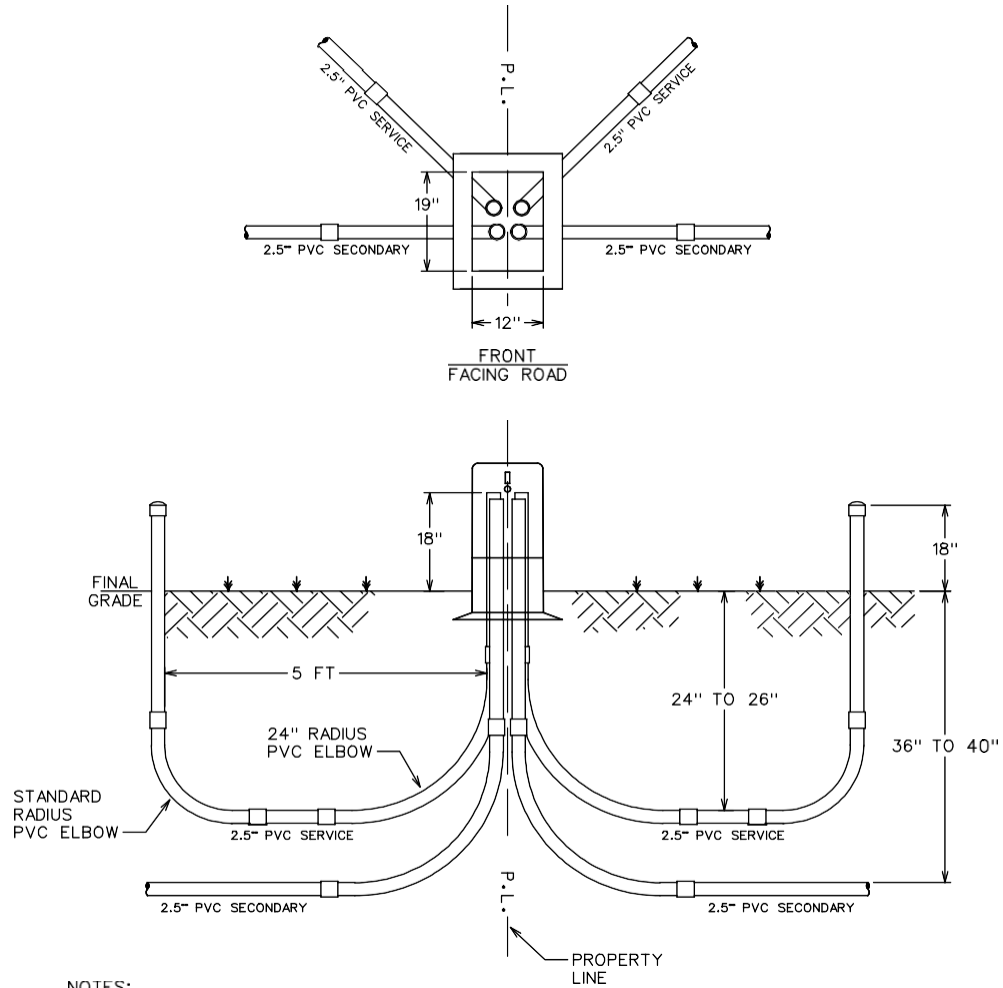


## Typical Pedestal Location / Serving 2 Lots



# Secondary Pedestal Details

E20CDPCL01	PEDESTAL CONDUIT LAYOUT	ASSEMBLY
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## NOTES:

1. ALL SERVICE STUB OUTS SHALL BE 2-1/2" SCHD. 40 GRAY PVC CONDUIT INSTALLED AT A DEPTH OF 24-IN TO 26-IN. SEE EXCEPTION IN NOTE 6 BELOW.
2. SECONDARY AND SERVICE ELBOWS AT PEDESTAL SHALL BE SCHD. 40 GRAY PVC WITH A RADIUS OF 24-IN. ELBOWS AT FIELD END OF STUBOUTS MAY BE STANDARD RADIUS ELBOWS.
3. STUB OUTS SHALL EXTEND A MINIMUM OF 5-FT IN DIRECTION OF FUTURE SERVICE.
4. STUB UPS SHALL EXTEND 18-IN ABOVE FINAL GRADE WITH A SCHEDULE 20 PVC CAP GLUED TO THE OPENING.
5. ALL SECONDARY CONDUIT SHALL BE 2-1/2" SCHD. 40 GRAY PVC INSTALLED AT A DEPTH OF 36-IN TO 40-IN.
6. EXCEPTION: ALL CONDUIT INSTALLED IN CITY, COUNTY, OR STATE RIGHT-OF-WAY OR INGRESS-EGRESS PUBLIC ACCESS UTILITY EASEMENT SHALL BE A MINIMUM OF 36-IN BELOW FINAL GRADE MEASURED FROM TOP OF GRADE TO TOP OF CONDUIT.

E20CDPCL01.DGN

Drafted By: BRS	7/22/05	UNDERGROUND DISTRIBUTION	
Revision By: No:		208	
Approved By: MDO	7/22/05		
Manager of Engineering			

## **Pull Box Information**

### **2' X 3' X 3'6" Pull Box**

- Pull Box Shall be Installed 4" Above Final Grade
- Pull Box Knock Outs Shall Be Mitered
- Pull Box Stub Outs Shall Have Installed And Mitered Bell Flared Ends

**1/2" Stainless Steel Penta Head Bolts For Lid Tie Down. Non Corrosive Metal Threaded Inserts For Penta Head Bolts**

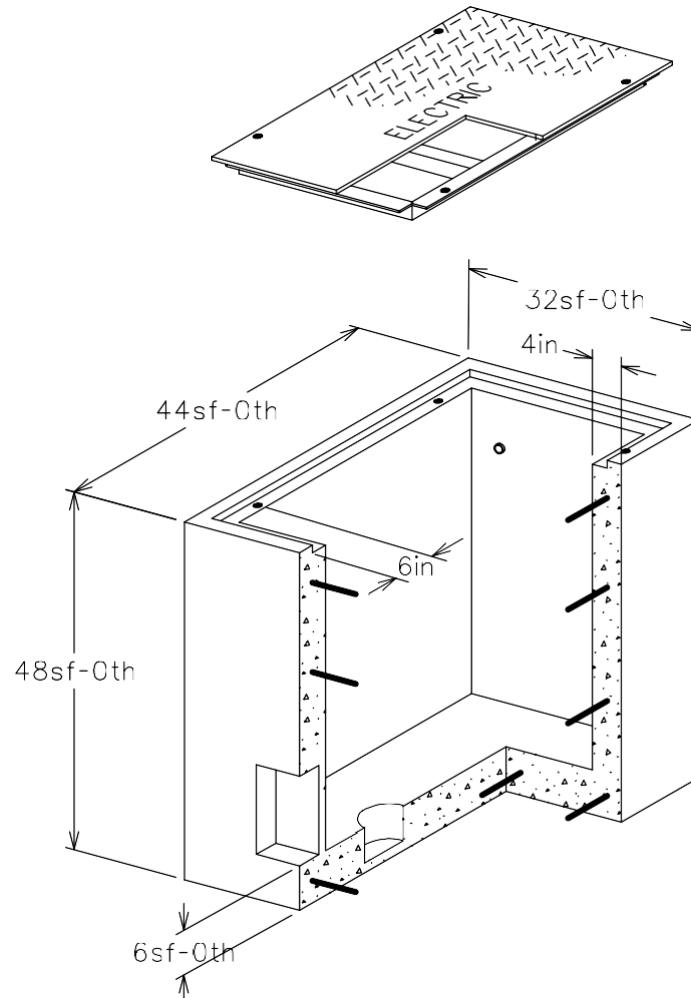
**ELECTRIC**

**"Electric" Shall Be Bead Welded On The Cover With 2.0" Letters Prior To Galvanizing**

**Installed Traffic Bearing 24 X 36" X 42" Lakeland Electric Approved Pull Box**

## 2' X 3' X 3'6" Pull Box Details


E21TBPB001	PULL BOX, TRAFFIC BEARING 2' x 3' x 3' 6"	ASSEMBLY
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WEIGHT:  
BOX = 2412 LBS.  
LID = 115 BLS.  
TOTAL = 2527 LBS.

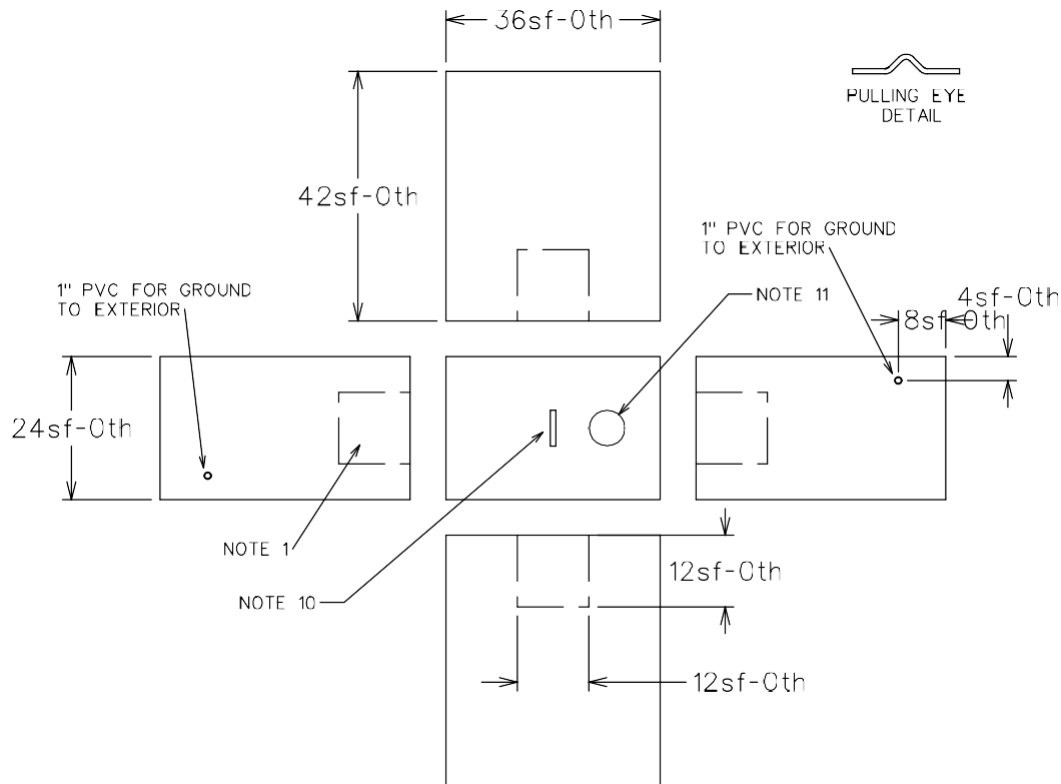
### NOTES:

1. TOP OF PULL BOX SHALL EXTEND 4 INCHES ABOVE FINAL GRADE WHEN INSTALLED IN GRASS AREAS.
2. THE PULL BOX SHALL BE INSTALLED WITH A 1 INCH KNOLL WHEN INSTALLED IN A PARKING LOT AND FLUSH WITH A DRIVEWAY.

E21TBPB001.DGN			
Drafted By: BRS	11/4/97	UNDERGROUND PRIMARY CONSTRUCTION	
Revision By: BRS No: 1	3/7/05		
Approved By: MDO	6/24/99		
Manager of Engineering		204	

## 2' X 3' X 3'6" Pull Box Details

E20TBPB001	PULL BOX, TRAFFIC BEARING 2' x 3' x 3' 6"	ASSEMBLY
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### NOTES:

1. THIN WALL KNOCKOUTS CENTERED HORIZONTALLY ON ALL 4 WALLS SHALL BE PROVIDED AS SHOWN.
2. NUMBER 5 REBAR SPACED AS REQUIRED FOR TRAFFIC BEARING CAPABILITY.
3. CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4000-PSI AT 28 DAYS.
4. DESIGN LOADING SHALL INCLUDE DEAD LOAD, LIVE LOAD, IMPACT LOAD, HYDROSTATIC PRESSURE LOAD, AND OTHER LOADS WHICH MAY BE PLACED UPON THE STRUCTURE. LIVE LOADING DESIGN SHALL CONFORM TO AASHTO HS-20-44 SPECIFICATIONS, AND SHALL BE THE LOADING WHICH PRODUCES THE MAXIMUM SHEAR AND BENDING MOMENTS IN THE STRUCTURE.
5. "ELECTRIC" SHALL BE BEAD-WELDED ON THE COVER WITH 2" LETTERS PRIOR TO GALVANIZING.
6. THE LID SHALL BE SECURED TO BOX BY 1/2" STAINLESS STEEL PENTA HEAD BOLTS IN 4 LOCATIONS.
7. THREADED INSERTS FOR LID TIE DOWN BOLTS SHALL BE NON-CORROSIVE METAL.
8. BOLT HEAD RECESSES IN COVER MUST ACCOMMODATE 1/2" PENTA HEAD BOLT AND STANDARD SOCKET.
9. GALVANIZED COVER SHALL BE FLUSH MOUNTED IN A GALVANIZED FRAME CAST IN THE BOX.
10. PULLING IRONS SHALL BE 1/2" DIAMETER, STRESS-RELIEVED CARBON STEEL CABLE (7 STRAND, WITH AN ULTIMATE TENSILE STRENGTH RATING OF 270,000 PSI) FITTED WITH A RUSTPROOF SLEEVE AT THE HOOK POINT, WITH ALL EXPOSED SURFACES AND PART OF THE EMBEDDED SURFACES ENCAPSULATED IN A POLYESTER JACKET (AS MANUFACTURED BY PENNSYLVANIA INSERTS OR APPROVED EQUAL).
11. SUMP SHALL BE 6" DIAMETER BY 4-5/8" DEEP, AND OFFSET TOWARD ONE END TO AVOID PULLING IRON.

E21TBPB001.DGN

Drafted By: BRS	11/4/97	UNDERGROUND PRIMARY CONSTRUCTION	
Revision By: BRS No: 1	3/7/05		
Approved By: MDO	6/24/99		
Manager of Engineering		204	



## **Pull Box Information**

### **4' X 4' X 4' Pull Box**

- Pull Box Shall be Installed 4" Above Final Grade
- Pull Box Knock-Outs Shall Be Mitered
- Pull Box Stub-Outs Shall Have Installed And Mitered Bell Flared Ends

**"Electric" Shall Be Bead-Welded On The Cover With 2.0" Letters Prior To Galvanizing**

ELECTRIC

**Frame and Cover Are To Be Galvanized, Hinged, and Traffic Rated**

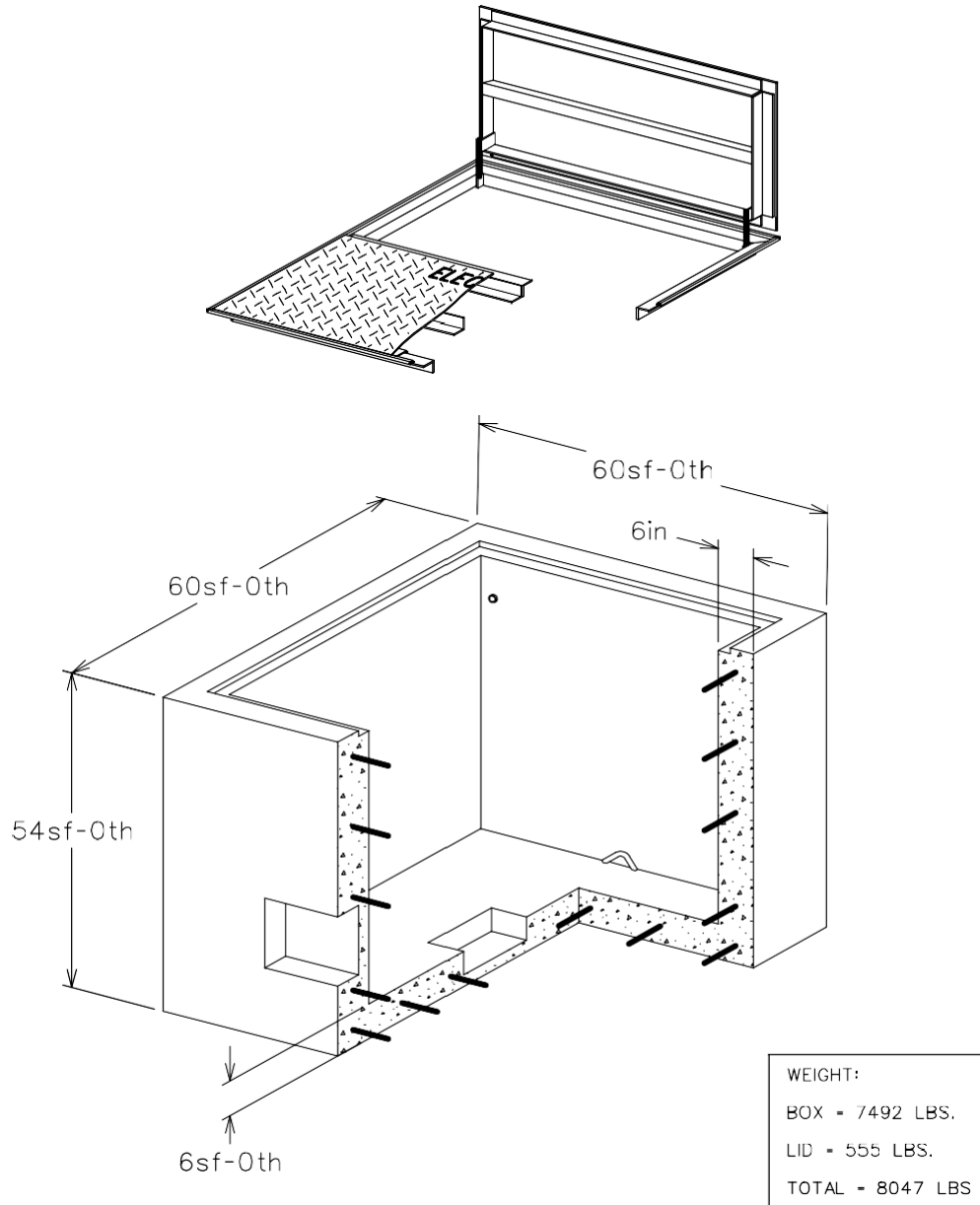
**All 2.0" Schedule 40 PVC Conduit Entering And Leaving Pull Box Shall Run Parallel With The Seam Of The Door**

**1/2" Stainless Steel Penta Head Bolts For Lid Tie Down. Non Corrosive Metal Threaded Inserts For Penta Head Bolts**

**4' X 4' X 4" Lakeland Electric Approved Traffic Bearing Concrete Pull Box**

## 4' X 4' X 4' Pull Box Details

E21TBPB002	PULL BOX, TRAFFIC BEARING 4' x 4' x 4'	ASSEMBLY
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**NOTE:**

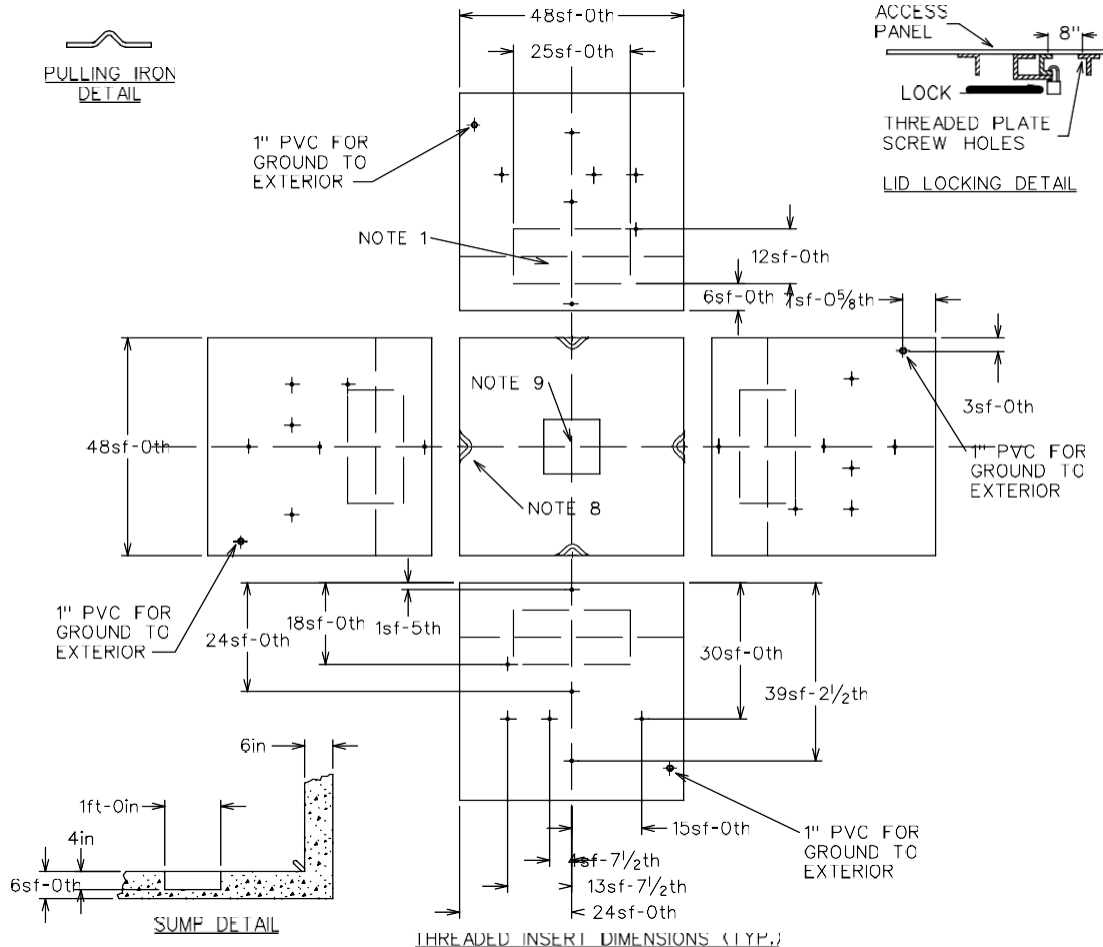
1. TOP OF PULL BOX SHALL EXTEND 4 INCHES ABOVE FINAL GRADE WHEN INSTALLED IN GRASS AREAS.
2. IN ASPHALT PARKING LOTS, PULL BOXES SHALL BE INSTALLED WITH A 1 INCH KNOLL. PULL BOXES SHALL BE INSTALLED FLUSH WITH GRADE IN STREETS, SIDEWALKS, DRIVEWAYS, AND CONCRETE PARKING LOTS.

Drafted By: BRS	11597	UNDERGROUND PRIMARY CONSTRUCTION	204	
Revision By: No:				
Approved By: MDO	11597			
Manager of Engineering				



# 4' X 4' X 4' Pull Box Details

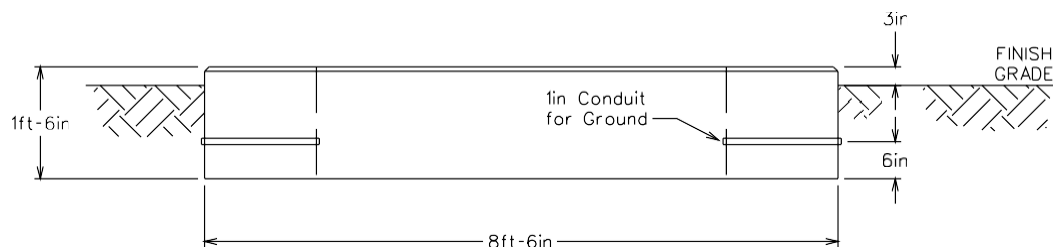
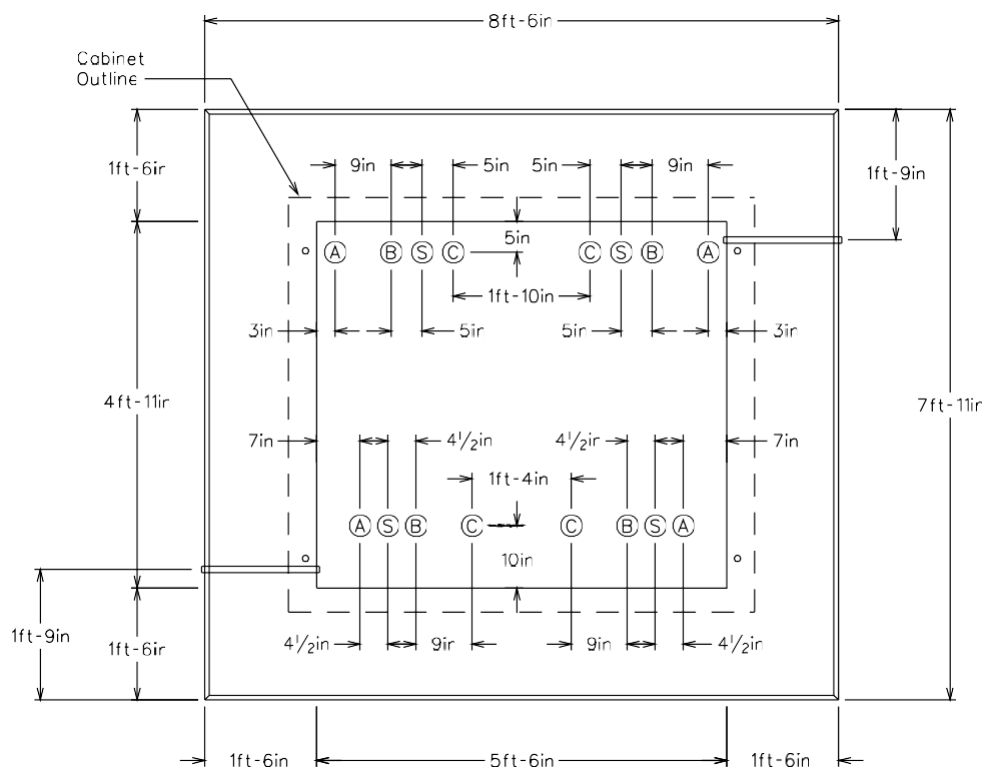
E20TBPB002	PULL BOX - TRAFFIC BEARING 4' x 4' x 4'	ASSEMBLY
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Drafted By: BRS	2/1/98	UNDERGROUND DISTRIBUTION	
Revision By: BRS No: 1	3/7/05		
Approved By: MDO	2/1/98		
Manager of Engineering		204	

# Switch Gear / PME – 9 Deadfront Details

E21SWPD001	PAD, UG SWITCH, PME-9, INSTALLATION DETAILS	ASSEMBLY
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## NOTES:

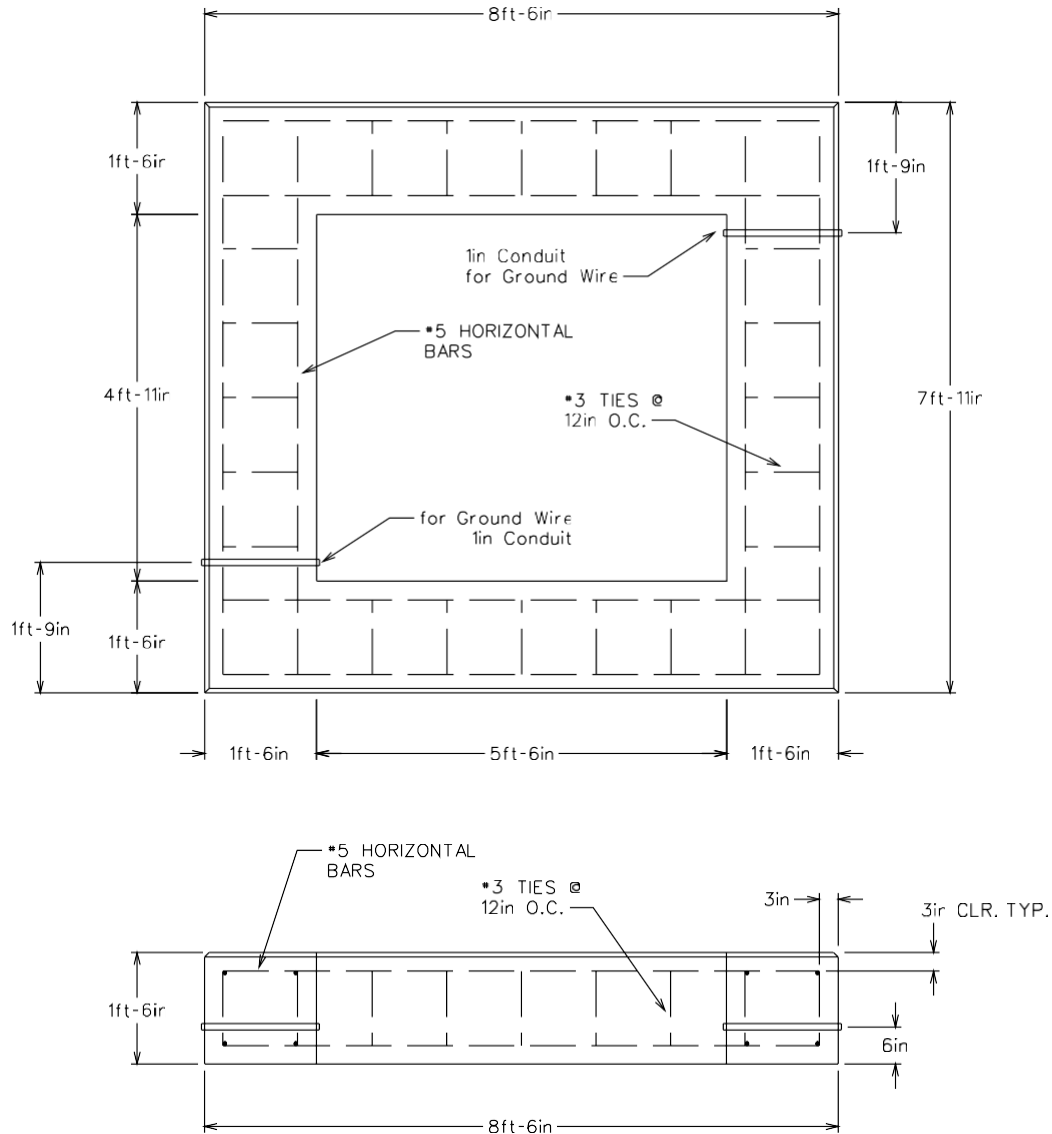
1. TOP OF PAD SHALL BE INSTALLED 3 INCHES ABOVE FINISHED GRADE.
2. SOIL UNDER THE PAD SHALL BE COMPACTED BY MECHANICAL MEANS TO A FIRM AND LEVEL CONDITION.
3. PRIMARY CONDUITS SHALL BE CUT 16 INCHES BELOW TOP OF PAD.
4. CONDUIT LOCATION DIMENSIONS ARE FROM INSIDE EDGE OF PAD WINDOW. THESE DIMENSIONS ARE CRITICAL AND SHALL BE WITHIN 1/2 INCH TOLERANCE.
5. (S) DENOTES SPARE CONDUITS AND MAY BE REQUIRED FOR SPECIFIC JOBS.
6. SEE E20FPD001 FOR PAD DETAILS.

E21SWPD001.DGN

Drafted By: BRS	2306	UNDERGROUND DISTRIBUTION	
Revision By: No:			
Approved By: MDO	2306	203	
Manager of Engineering			

# Switch Gear / PME – 9 Deadfront Pad Details

E20SWPD001	PAD, UG SWITCH, PME-9, DESIGN DETAILS	ASSEMBLY
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## NOTES:

1. CONCRETE SHALL DEVELOP 3000 PSI AT 28 DAYS.
2. REINFORCING BARS SHALL BE GRADE 60 DEFORMED BARS OR WELDED WIRE MESH.
3. PROVIDE #5 CORNER BARS OR WRAP HORIZONTAL BARS AROUND CORNERS..
4. ALL REINFORCING BARS SHALL HAVE A MINIMUM CONCRETE COVER OF 3 INCHES.
5. PAD SHALL HAVE A  $\frac{3}{4}$  INCH CHAMFER ALONG OUTSIDE EDGE.
6. SEE E21SWPD001 FOR INSTALLATION DETAILS.

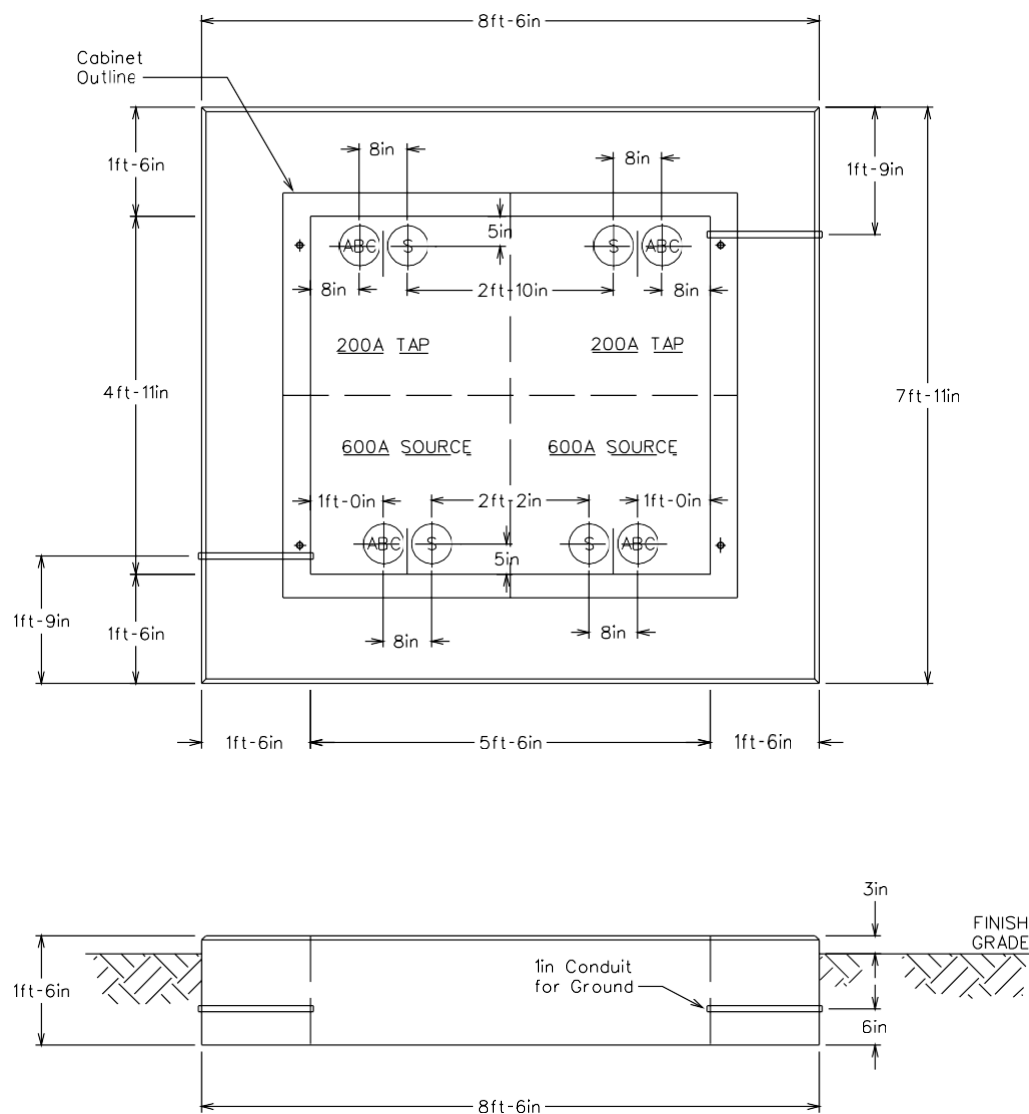
E20SWPD001.DGN

Drafted By: BRS	2306	UNDERGROUND DISTRIBUTION	
Revision By: No:			
Approved By: MDO	2306		
Manager of Engineering		203	

## Switch Gear / PME – 9 Deadfront Pad Details

### 3 Conductors in 1 Conduit Install

E20SWPD101	PAD, UG SWITCH, PME-9, CONDUIT DETAIL, 3 CONDUCTORS PER CONDUIT	ASSEMBLY
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#### NOTES:

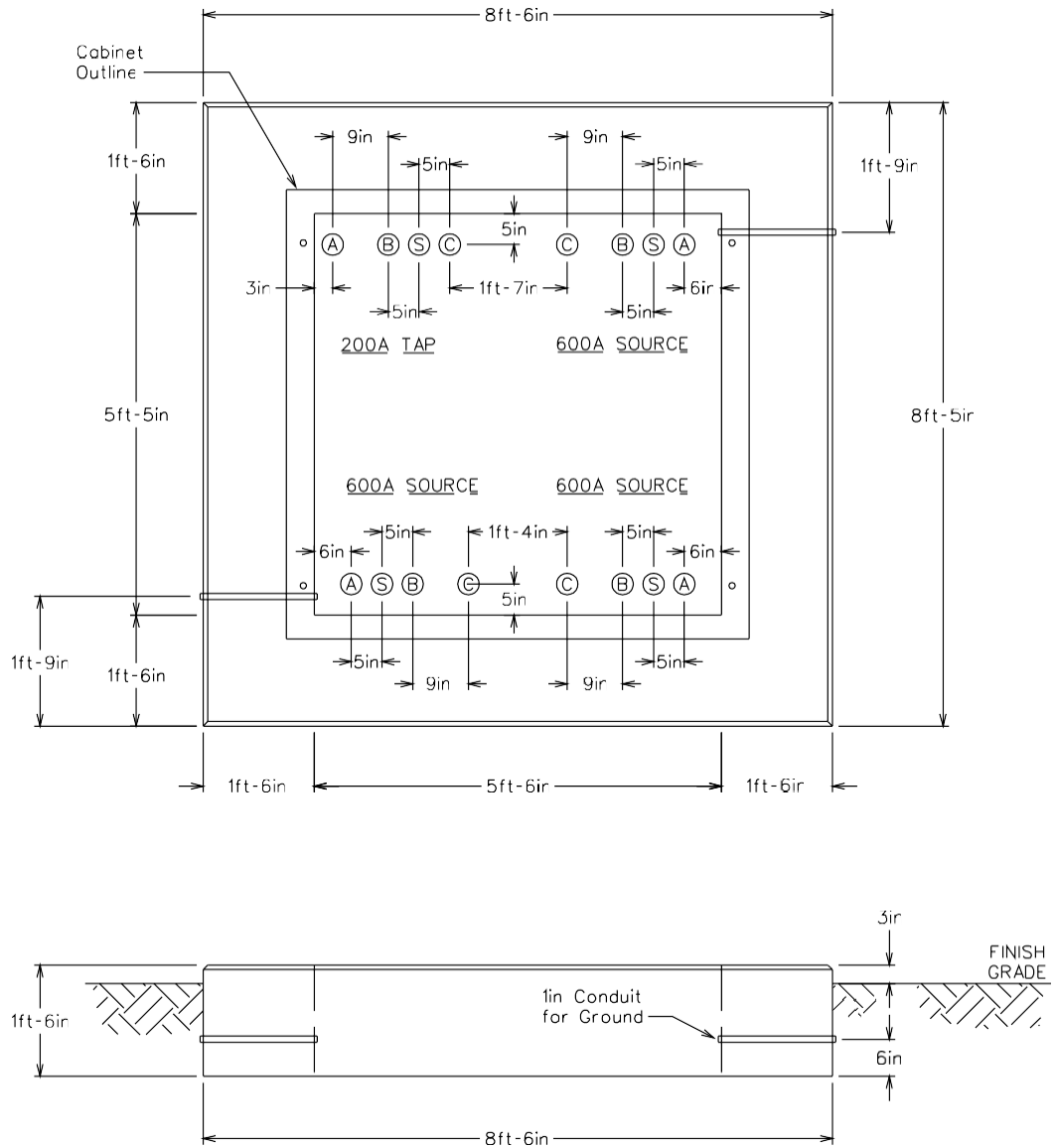
1. TOP OF PAD SHALL BE INSTALLED 3 INCHES ABOVE FINISHED GRADE.
2. SOIL UNDER THE PAD SHALL BE COMPACTED BY MECHANICAL MEANS TO A FIRM AND LEVEL CONDITION.
3. PRIMARY CONDUITS SHALL BE CUT 16 INCHES BELOW TOP OF PAD.
4. CONDUIT LOCATION DIMENSIONS ARE FROM INSIDE EDGE OF PAD WINDOW. THESE DIMENSIONS ARE CRITICAL AND SHALL BE WITHIN 1/2 INCH TOLERANCE.
5. (S) DENOTES SPARE CONDUITS AND MAY BE REQUIRED FOR SPECIFIC JOBS.
6. SEE E20FPD001 FOR PAD DESIGN DETAILS.

E20SWPD101.DGN

Drafted By: BRS	2306	UNDERGROUND DISTRIBUTION	
Revision By: No:			
Approved By: MDO	2306	203	
Manager of Engineering			

# Switch Gear / PME – 11 Deadfront Details

E21SWPD002	PAD, UG SWITCH, PME-11, INSTALLATION DETAILS	ASSEMBLY
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## NOTES:

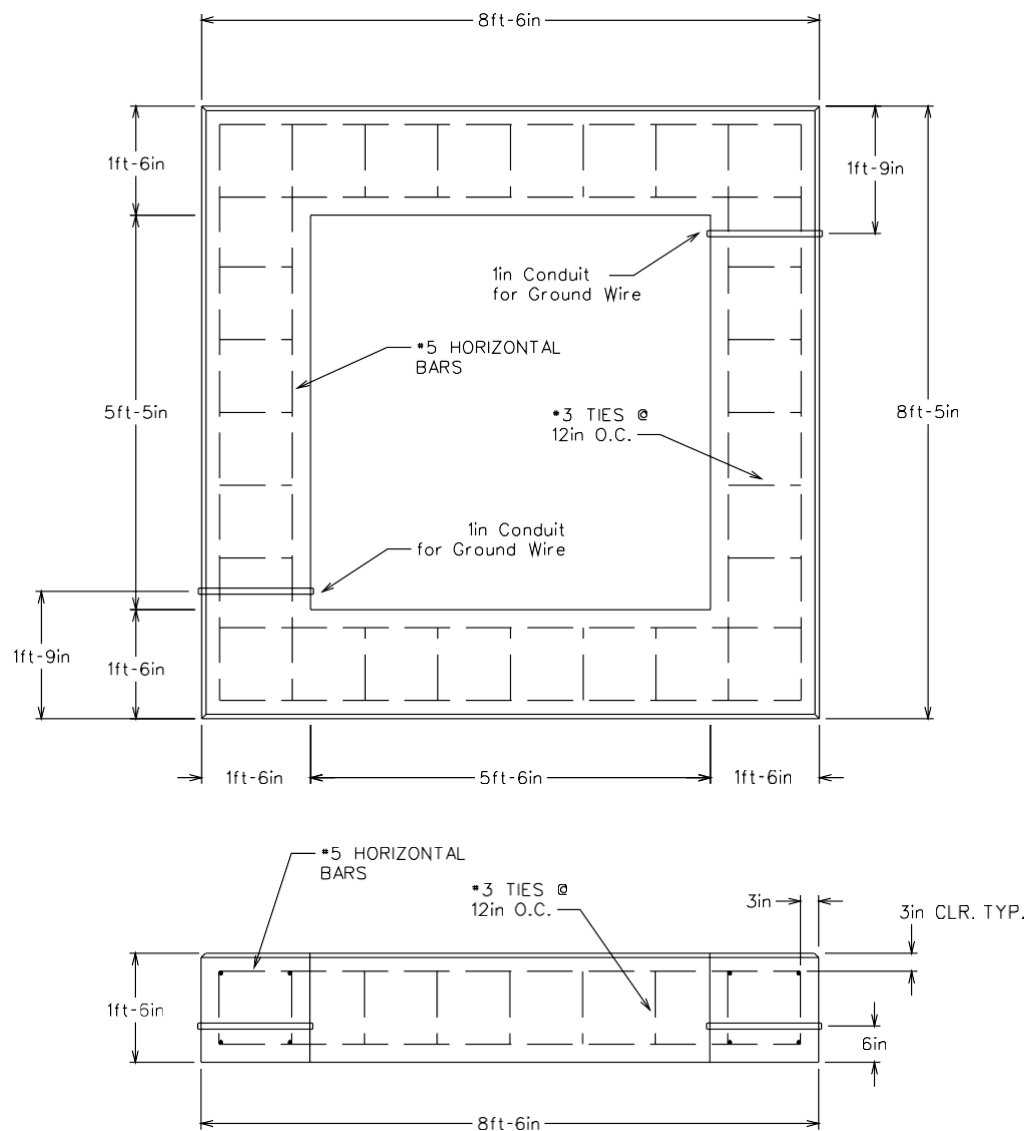
1. TOP OF PAD SHALL BE INSTALLED 3 INCHES ABOVE FINISHED GRADE.
2. SOIL UNDER THE PAD SHALL BE COMPACTED BY MECHANICAL MEANS TO A FIRM AND LEVEL CONDITION.
3. PRIMARY CONDUITS SHALL BE CUT 16 INCHES BELOW TOP OF PAD.
4. CONDUIT LOCATION DIMENSIONS ARE FROM INSIDE EDGE OF PAD WINDOW. THESE DIMENSIONS ARE CRITICAL AND SHALL BE WITHIN 1/2 INCH TOLERANCE.
5. (S) DENOTES SPARE CONDUITS AND MAY BE REQUIRED FOR SPECIFIC JOBS.
6. SEE E20FPD002 FOR PAD DESIGN DETAILS.

E21SWPD002.DGN

Drafted By: BRS	030508	UNDERGROUND DISTRIBUTION	
Revision By: No:			
Approved By: MDO	030508		
Manager of Engineering			
		203	

## Switch Gear / PME – 9 Deadfront Pad Details


E20SWPD002	PAD, UG SWITCH, PME-11, DESIGN DETAILS	ASSEMBLY
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### NOTES:

1. CONCRETE SHALL DEVELOP 3000 PSI AT 28 DAYS.
2. REINFORCING BARS SHALL BE GRADE 60 DEFORMED BARS OR WELDED WIRE MESH.
3. PROVIDE #5 CORNER BARS OR WRAP HORIZONTAL BARS AROUND CORNERS..
4. ALL REINFORCING BARS SHALL HAVE A MINIMUM CONCRETE COVER OF 3 INCHES.
5. PAD SHALL HAVE A  $\frac{3}{4}$  INCH CHAMFER ALONG OUTSIDE EDGE.
6. SEE E21SWPD002 FOR INSTALLATION DETAILS.

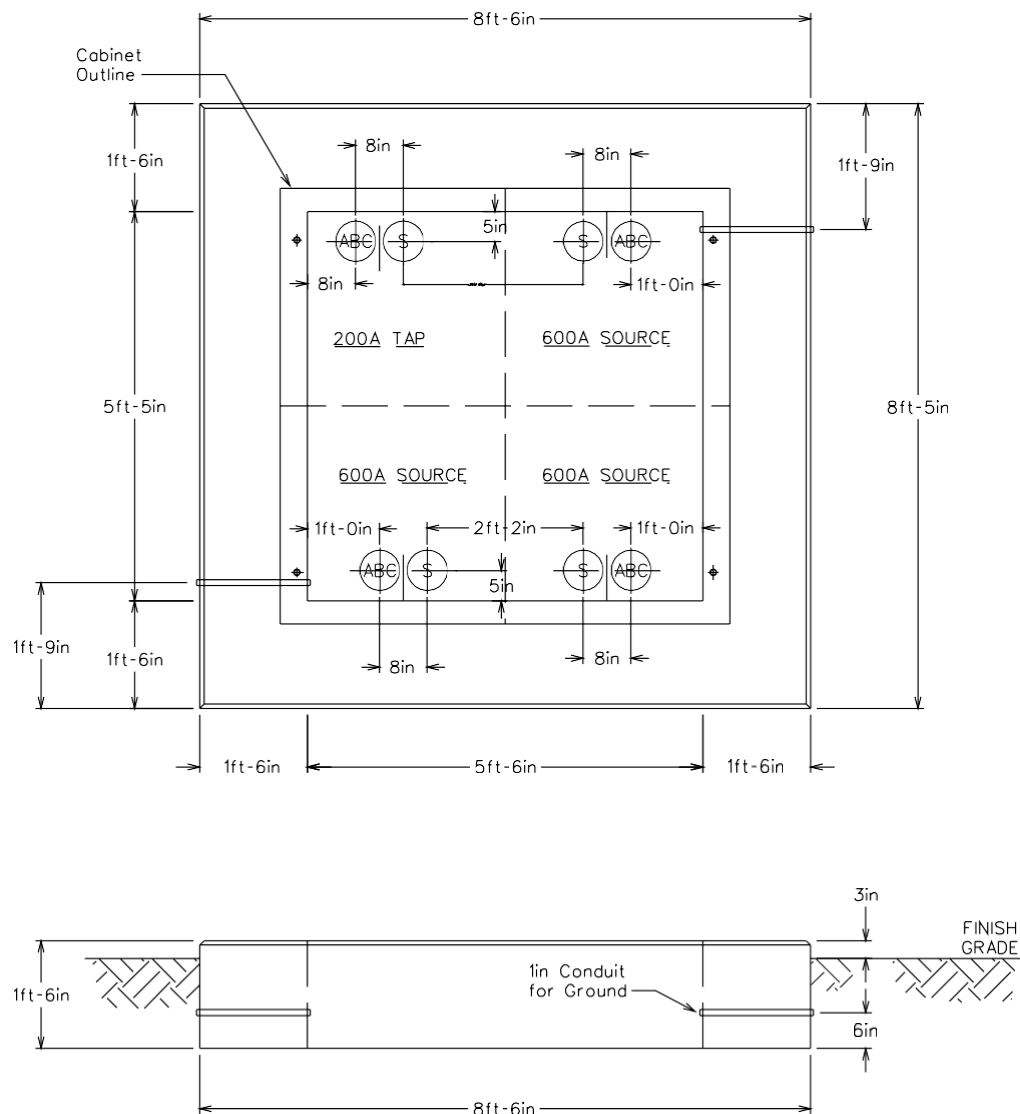
E20SWPD002.DGN

Drafted By: BRS	03/05/08	UNDERGROUND DISTRIBUTION	
Revision By: No:			
Approved By: MDO	03/05/08		
Manager of Engineering		203	

# Switch Gear / PME – 9 Deadfront Pad Details

## 3 Conductors in 1 Conduit Install

E20SWPD102	PAD, UG SWITCH, PME-11, CONDUIT DETAIL, 3 CONDUCTORS PER CONDUIT	ASSEMBLY
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### NOTES:

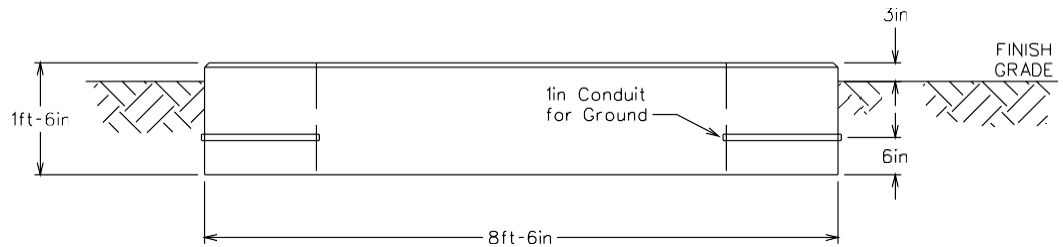
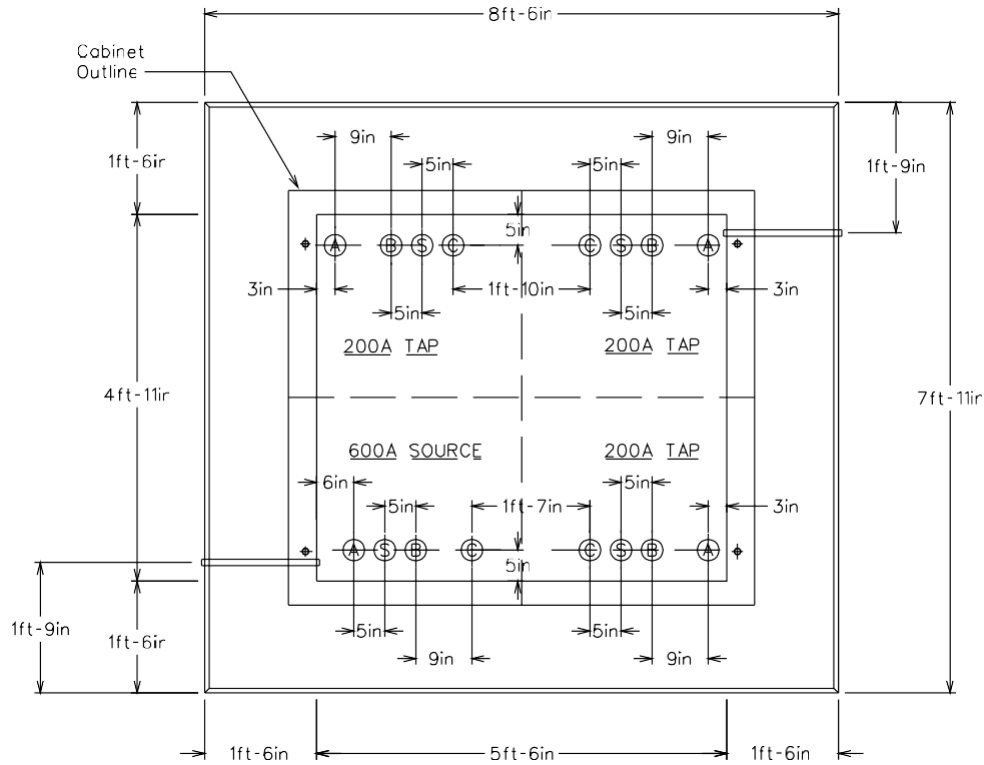
1. TOP OF PAD SHALL BE INSTALLED 3 INCHES ABOVE FINISHED GRADE.
2. SOIL UNDER THE PAD SHALL BE COMPACTED BY MECHANICAL MEANS TO A FIRM AND LEVEL CONDITION.
3. PRIMARY CONDUITS SHALL BE CUT 16 INCHES BELOW TOP OF PAD.
4. CONDUIT LOCATION DIMENSIONS ARE FROM INSIDE EDGE OF PAD WINDOW. THESE DIMENSIONS ARE CRITICAL AND SHALL BE WITHIN  $\frac{1}{2}$  INCH TOLERANCE.
5. (S) DENOTES SPARE CONDUITS AND MAY BE REQUIRED FOR SPECIFIC JOBS.
6. SEE E20FPD002 FOR PAD DESIGN DETAILS.

E20SWPD102.DGN

Drafted By: BRS	030508	UNDERGROUND DISTRIBUTION	
Revision By: No:			
Approved By: MDO	030508		
Manager of Engineering		203	

# Switch Gear / PME – 12 Deadfront Details

E21SWPD003	PAD, UG SWITCH, PME-12, INSTALLATION DETAILS	ASSEMBLY
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## NOTES:

1. TOP OF PAD SHALL BE INSTALLED 3 INCHES ABOVE FINISHED GRADE.
2. SOIL UNDER THE PAD SHALL BE COMPACTED BY MECHANICAL MEANS TO A FIRM AND LEVEL CONDITION.
3. PRIMARY CONDUITS SHALL BE CUT 16 INCHES BELOW TOP OF PAD.
4. CONDUIT LOCATION DIMENSIONS ARE FROM INSIDE EDGE OF PAD WINDOW. THESE DIMENSIONS ARE CRITICAL AND SHALL BE WITHIN 1/2 INCH TOLERANCE.
5. (S) DENOTES SPARE CONDUITS AND MAY BE REQUIRED FOR SPECIFIC JOBS.
6. SEE E20FPD003 FOR PAD DESIGN DETAILS.

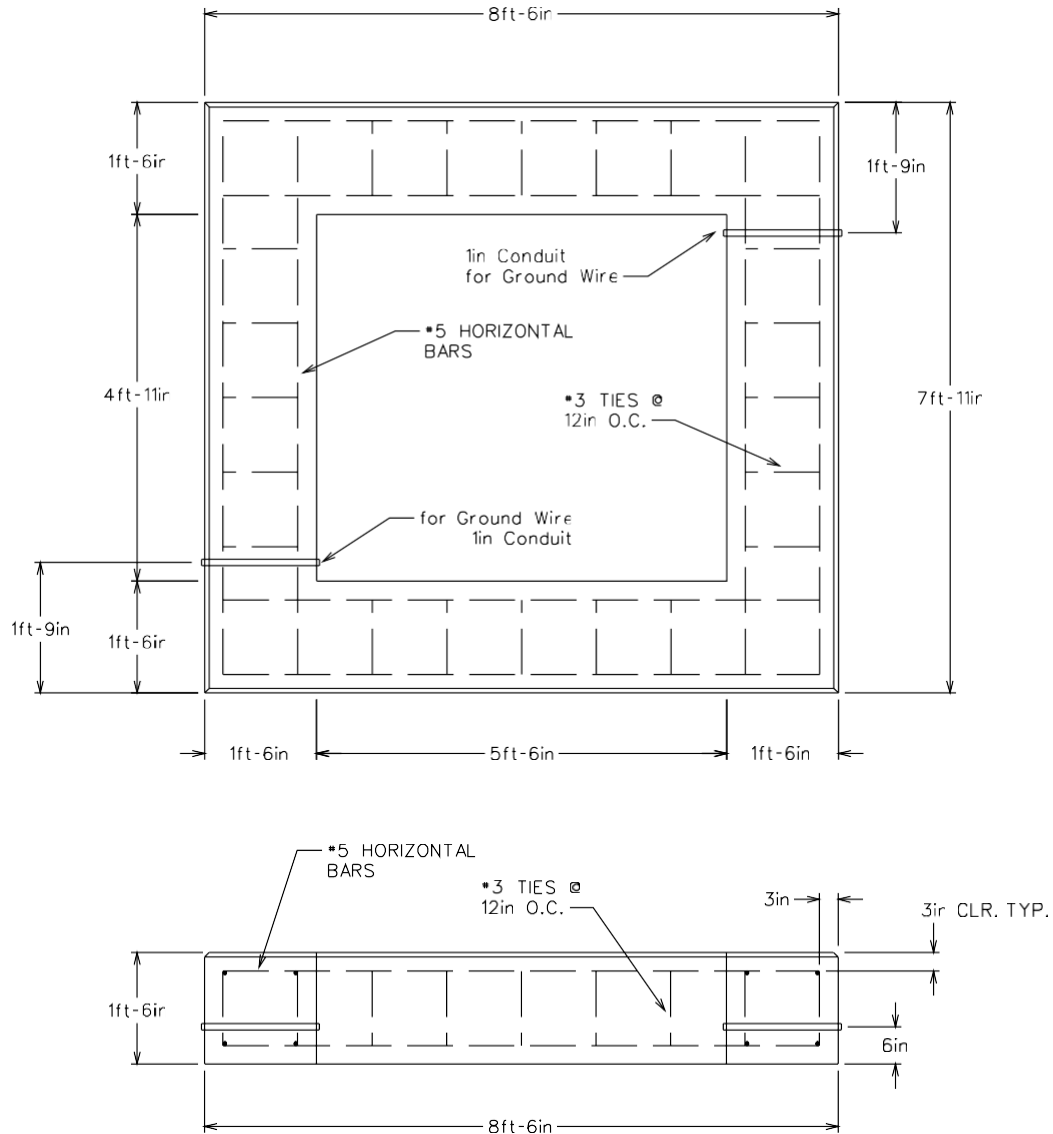
E21SWPD003.DGN

Drafted By: BRS	6999	UNDERGROUND DISTRIBUTION	
Revision By: BRS No: 1	22206		
Approved By: MDO	6999		
Manager of Engineering		203	



# Switch Gear / PME – 12 Deadfront Pad Details

E20SWPD003	PAD, UG SWITCH, PME-12, DESIGN DETAILS	ASSEMBLY
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## NOTES:

1. CONCRETE SHALL DEVELOP 3000 PSI AT 28 DAYS.
2. REINFORCING BARS SHALL BE GRADE 60 DEFORMED BARS OR WELDED WIRE MESH.
3. PROVIDE \*5 CORNER BARS OR WRAP HORIZONTAL BARS AROUND CORNERS..
4. ALL REINFORCING BARS SHALL HAVE A MINIMUM CONCRETE COVER OF 3 INCHES.
5. PAD SHALL HAVE A  $\frac{3}{4}$ " CHAMFER ALONG OUTSIDE EDGE.
6. SEE E21SWPD003 FOR INSTALLATION DETAILS.

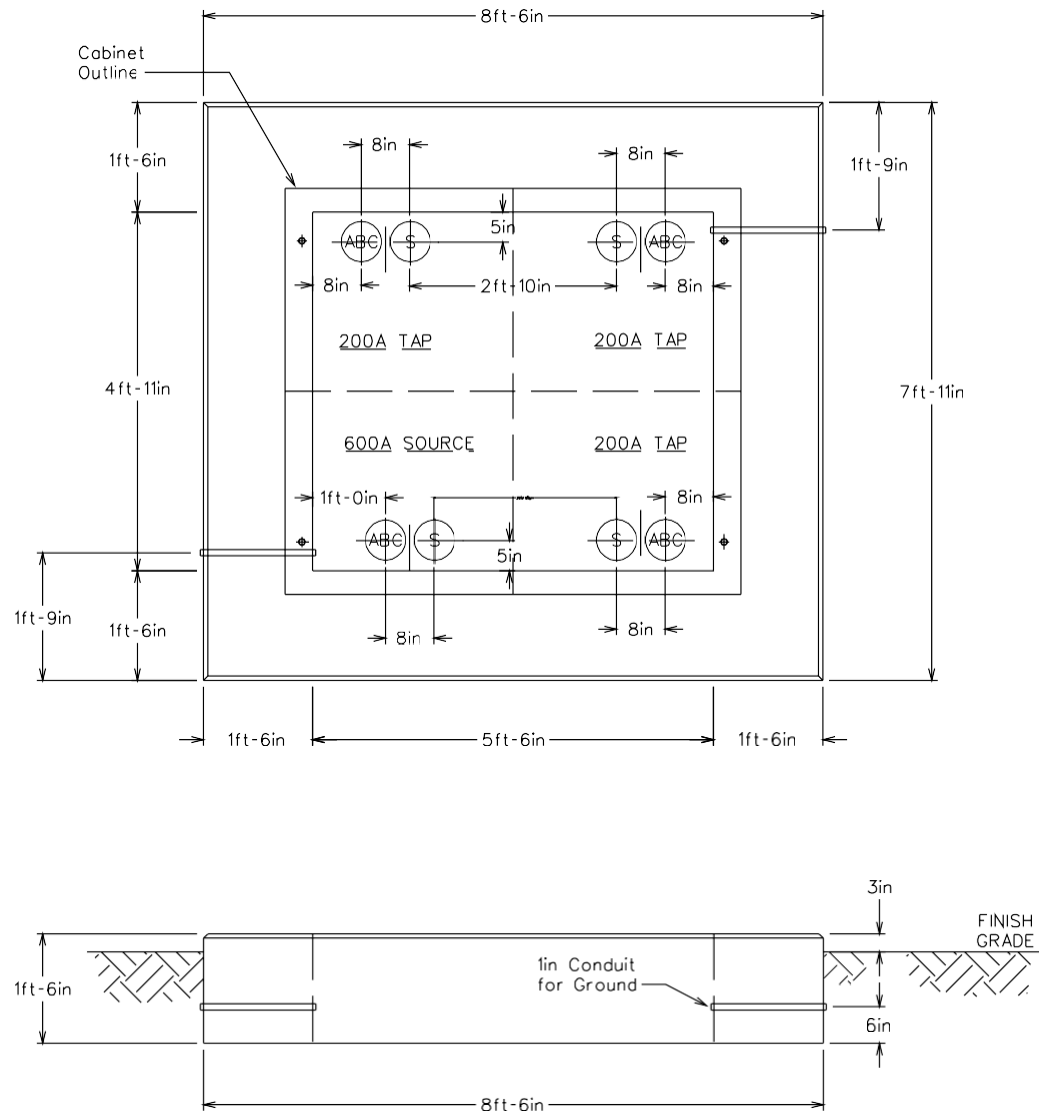
E20SWPD003.DGN

Drafted By: BRS	6999	UNDERGROUND DISTRIBUTION	
Revision By: BRS No: 1	22206		
Approved By: MDO	6999	203	
Manager of Engineering			

# Switch Gear / PME – 12 Deadfront Pad Details

## 3 Conductors in 1 Conduit Install

E20SWPD103	PAD, UG SWITCH, PME-12, CONDUIT DETAIL, 3 CONDUCTORS PER CONDUIT	ASSEMBLY
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### NOTES:

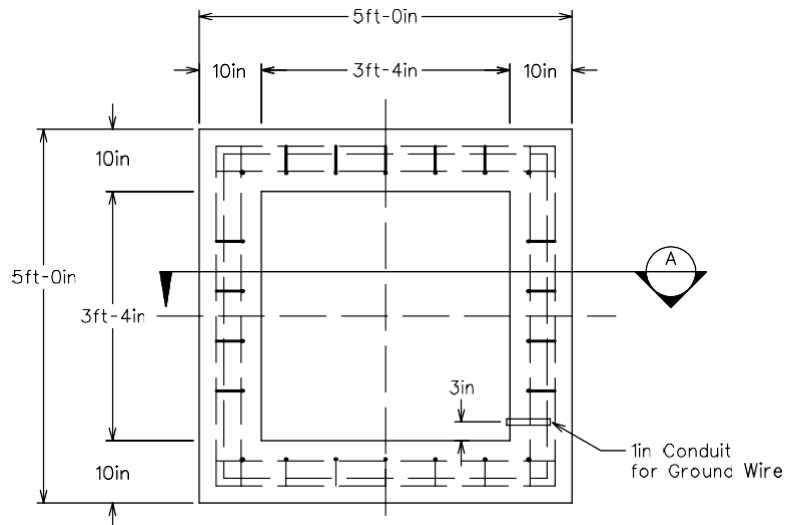
1. TOP OF PAD SHALL BE INSTALLED 3 INCHES ABOVE FINISHED GRADE.
2. SOIL UNDER THE PAD SHALL BE COMPACTED BY MECHANICAL MEANS TO A FIRM AND LEVEL CONDITION.
3. PRIMARY CONDUITS SHALL BE CUT 16 INCHES BELOW TOP OF PAD.
4. CONDUIT LOCATION DIMENSIONS ARE FROM INSIDE EDGE OF PAD WINDOW. THESE DIMENSIONS ARE CRITICAL AND SHALL BE WITHIN 1/2 INCH TOLERANCE.
5. (S) DENOTES SPARE CONDUITS AND MAY BE REQUIRED FOR SPECIFIC JOBS.
6. SEE E20FPD003 FOR PAD DESIGN DETAILS.

E20SWPD103.DGN

Drafted By: BRS	6999	UNDERGROUND DISTRIBUTION	
Revision By: BRS No: 1	22206		
Approved By: MDO	6999		
Manager of Engineering		203	

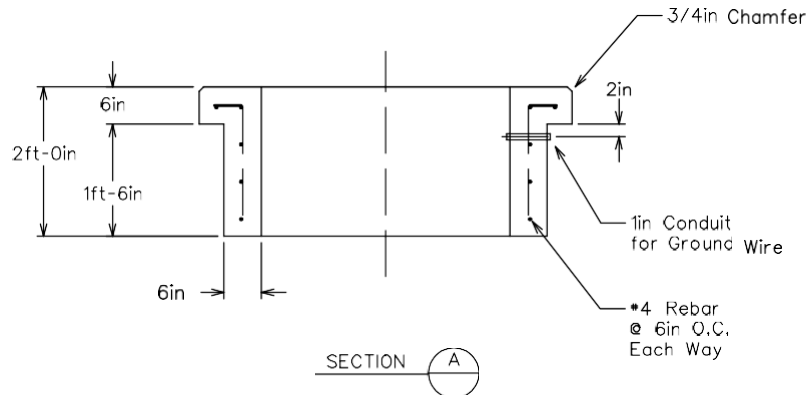
## Secondary Termination Cabinet Details

E20STCP001	PAD, SECONDARY TERMINATION CABINET, DESIGN DETAILS	ASSEMBLY
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CABINET FRONT

PLAN VIEW



SECTION A

### NOTES:

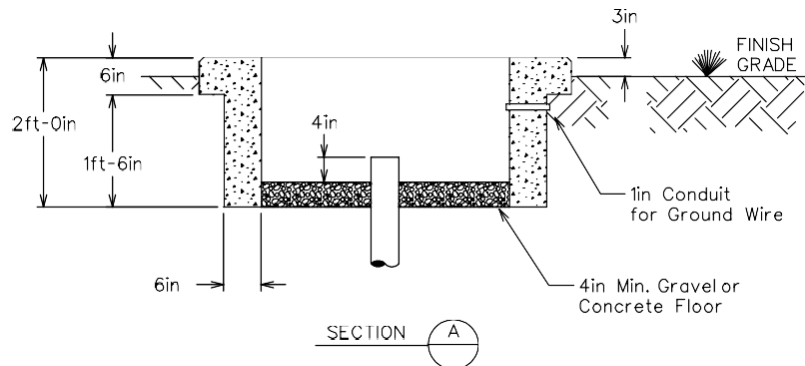
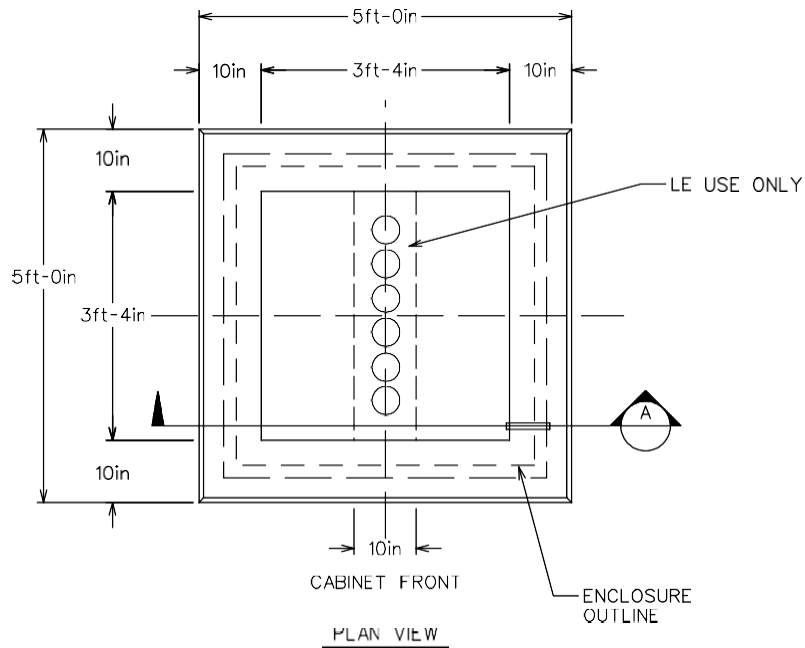
1. CONCRETE SHALL DEVELOP 3000 PSI AT 28 DAYS.
2. REINFORCING BARS SHALL BE GRADE 60 DEFORMED BARS OR WELDED WIRE MESH.
3. PROVIDE #4 CORNER BARS OR WRAP HORIZONTAL BARS AROUND CORNERS..
4. ALL REINFORCING BARS SHALL HAVE A MINIMUM CONCRETE COVER OF 1½ INCHES.
5. PAD SHALL HAVE A ¾ INCH CHAMFER ALONG OUTSIDE EDGE.
6. SEE E20STCP002 FOR PAD INSTALLATION DETAILS.

E20STCP001.DGN

Drafted By: BRS	02/28/08	UNDERGROUND DISTRIBUTION	
Revision By: No:			
Approved By: MDO	02/28/08	203	
Manager of Engineering			

## Secondary Termination Cabinet Pad Details


E20STCP002	PAD, SECONDARY TERMINATION CABINET, INSTALLATION DETAILS	ASSEMBLY
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### NOTES:

1. TOP OF PAD SHALL BE INSTALLED 3 INCHES ABOVE FINISHED GRADE.
2. SOIL UNDER THE PAD SHALL BE COMPACTED BY MECHANICAL MEANS TO A FIRM AND LEVEL CONDITION.
3. PIT FLOOR SHALL CONSIST OF A MINIMUM 4 INCH THICKNESS OF CONCRETE OR GRAVEL. THE FLOOR MATERIAL SHALL BE FREE OF ANY LARGE ROCKS OR DEBRIS.
4. CONDUITS SHALL BE CUT 4 INCHES ABOVE TOP OF GRAVEL OR CONCRETE FLOOR.
5. ORIENTATION OF 4 INCH CONDUIT FOR LE USE SHALL BE RELATIVE TO PIT FRONT.
6. SEE E20STCP001 FOR PAD DESIGN DETAILS.

E20STCP002.DGN

Drafted By: BRS	02/28/08	UNDERGROUND DISTRIBUTION	
Revision By: No:			
Approved By: MDO	02/28/08	203	
Manager of Engineering			

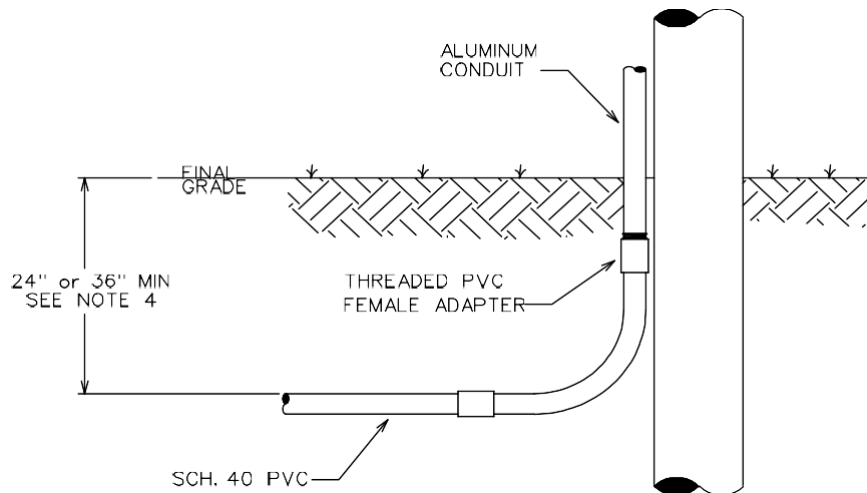
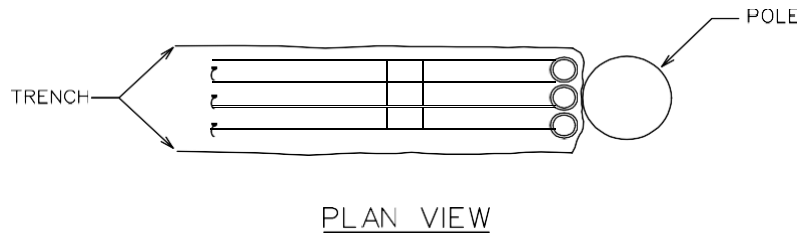


## Primary Riser Pole Information



# Primary Riser Pole Details

E20CDRCL01	TYPICAL RISER CONDUIT LAYOUT	REFERENCE
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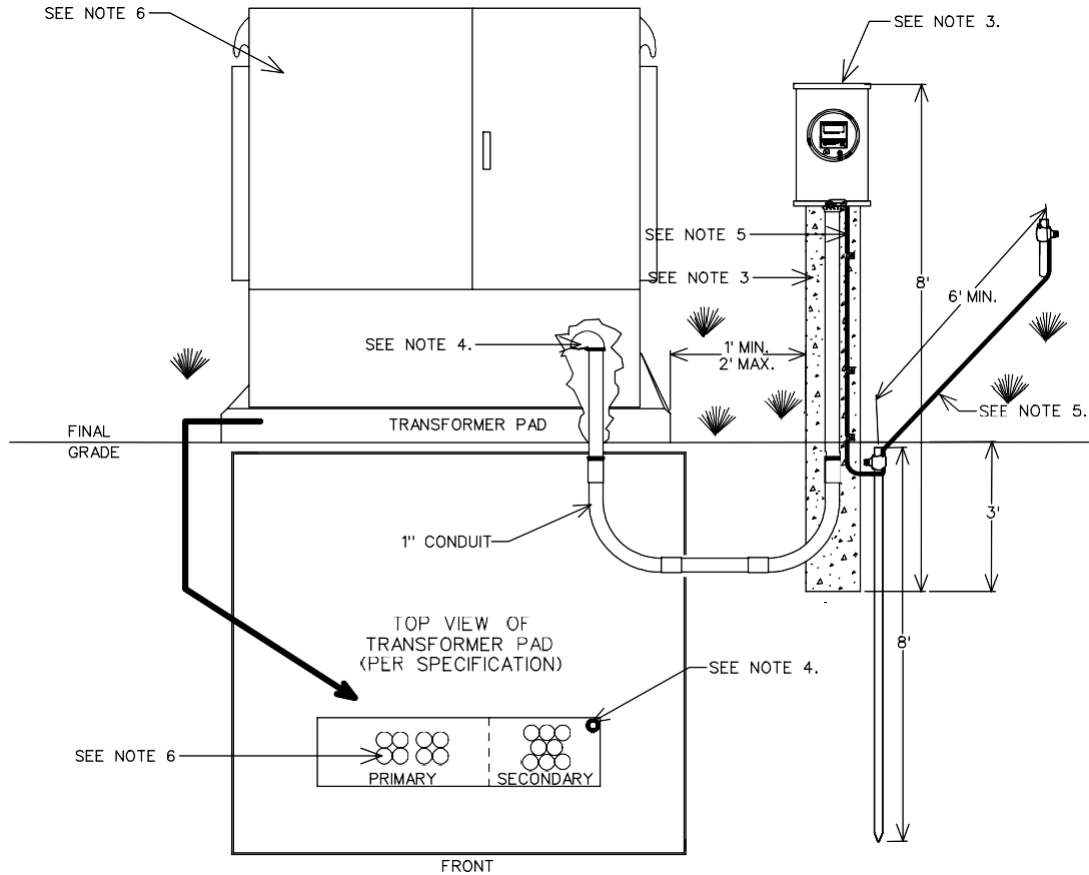
## NOTES:

1. PVC CONDUIT SHALL NOT BE EXPOSED ABOVE FINAL GRADE AT PRIMARY OR SERVICE UNDERGROUND CONDUIT RISER POLES.
2. THE POINT AT WHICH THE RISER CONDUIT ATTACHES TO THE POLE SHALL BE DETERMINED BY LAKELAND ELECTRIC.
3. THE CONDUIT CONTRACTOR SHALL PROVIDE TWO 10-FOOT STICKS OF ALUMINUM CONDUIT FOR EACH PRIMARY OR SERVICE UNDERGROUND CONDUIT RISER. ONE STICK SHALL BE INSTALLED IN PLACE.
4. THE MINIMUM INSTALLED DEPTH FOR ALL PRIMARY CONDUIT IS 36-INCHES. THE MINIMUM INSTALLED DEPTH FOR ALL SERVICE CONDUIT IS 24-INCHES. ALL CONDUIT DEPTHS ARE MEASURED FROM FINAL GRADE TO THE TOP OF THE CONDUIT.
5. PRIMARY, SECONDARY, & SERVICE ELBOWS SHALL BE 24-INCH RADIUS WITH A 2'-11" RISER HEIGHT. ALL PRIMARY ELBOWS SHALL BE GALVANIZED. SECONDARY AND SERVICE ELBOWS SHALL BE SCH.40 PVC.
6. IF THE RISER POLE IS NOT READILY ACCESSIBLE BY A BUCKET TRUCK, RISER CONDUIT SHALL BE INSTALLED 6-INCHES OFF THE FACE OF THE POLE.

Drafted By: BRS	7/0105	UNDERGROUND DISTRIBUTION	
Revision By: No:			
Approved By: MDO	1/7/01	220	
Manager of Engineering			

# CT Install Inside Transformer

INSTALLATION DETAIL OF CT-RATED METERS FOR CT'S INSTALLED INSIDE TRANSFORMER.		
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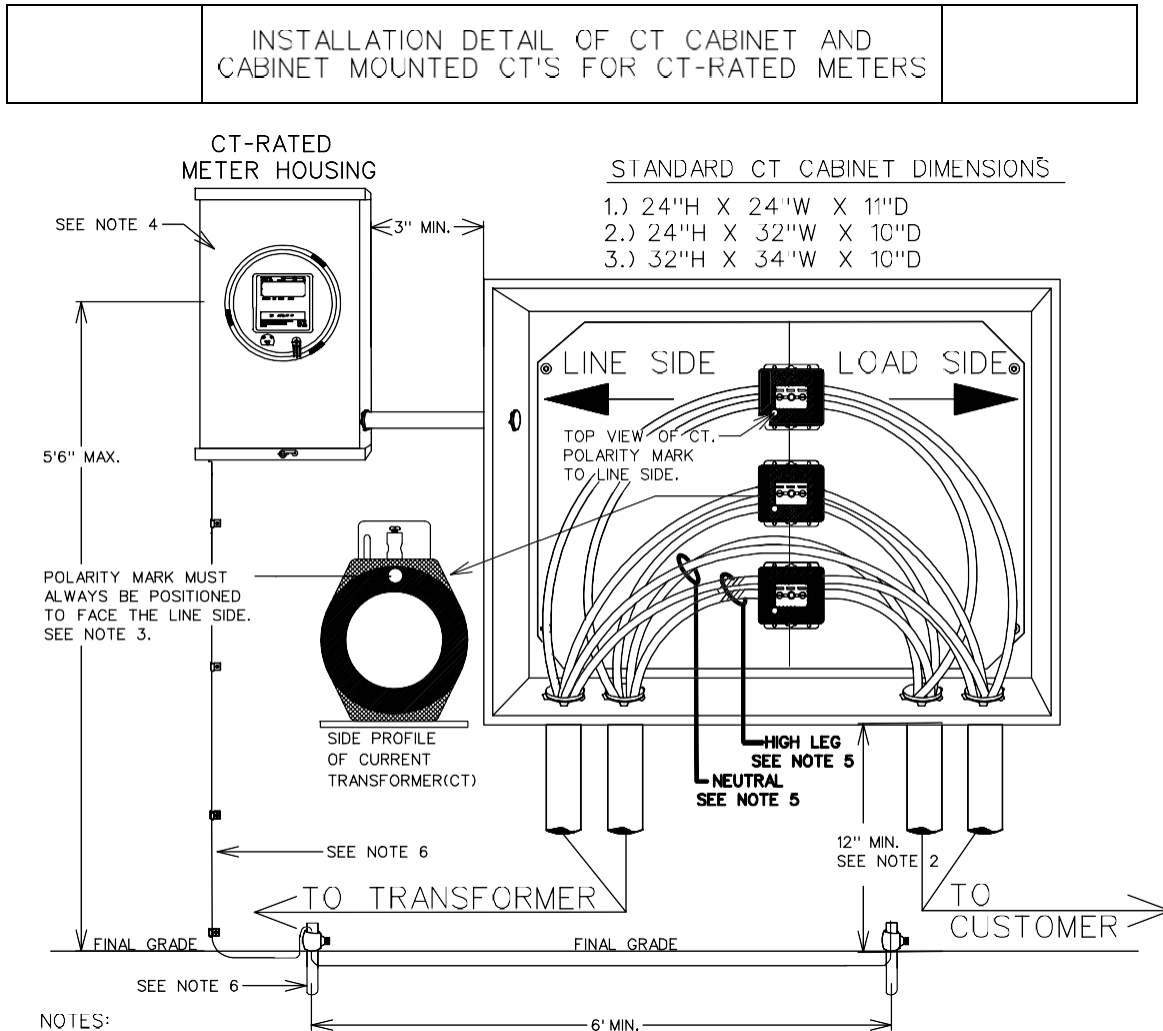


## NOTES:

- 1.) FOR SERVICES OF 400 AMPS OR MORE THAT ARE NOT CT'D INSIDE THE TRANSFORMER, CUSTOMER IS REQUIRED TO INSTALL A CT CABINET, CT'S AND METER SOCKET ISSUED BY LAKE LAND ELECTRIC.
- 2.) CT METER MAY BE INSTALLED ON A EXTERIOR WALL ONLY IF THE DISTANCE FROM THE TRANSFORMER TO THE PROPOSED POINT OF ATTACHMENT ON WALL DOES NOT EXCEED 25'. IF DISTANCE EXCEEDS 25' TO CLOSEST POINT OF ATTACHMENT, CT METER MUST BE POST MOUNTED
- 3.) CONCRETE POST FOR POST MOUNTED INSTALLATIONS MUST BE 8' LONG BY 6" X 6" STEEL REINFORCED BURIED AT 3' DEPTH. MOUNT METER SOCKET HOUSING ON POST SO THAT TOP EDGE IS FLUSH WITH THE TOP EDGE OF POST.
- 4.) INSTALL 1" CONDUIT FROM BASE OF METER SOCKET INTO SECONDARY WINDOW OF PAD AS SHOWN. ALL CONDUIT ABOVE GRADE SHALL BE ALUMINUM. INSIDE PAD WINDOW, STUB CONDUIT UP 12" ABOVE FINAL GRADE AND INSTALL WEATHERHEAD OVER OPENING FOR METER WIRE LEADS.
- 5.) INSTALL #4 SOFT-DRAWN SOLID COPPER GROUND WIRE TO GROUNDING LUG IN METER SOCKET. RUN THE GROUND WIRE THROUGH THE BASE OF THE METER SOCKET AND SECURE IT TO THE POST WITH WIRE J-CLIPS. INSTALL TWO  $\frac{5}{8}$ " 8' COPPER-CLAD GROUND RODS AT A MINIMUM OF 6' APART. SECURE GROUND WIRE TO EACH ROD USING "ACORN" TYPE CLAMP ONLY.
- 6.) NO SERVICE CONDUCTOR MAY BE PULLED INTO CONDUIT UNTIL THE TRANSFORMER IS INSTALLED ON PAD!

Drafted By:		UNDERGROUND PRIMARY CONSTRUCTION	
Revision By: No:			
Approved By:			
Manager of Engineering			

# CT Install Outside Of Transformer (Wall Mount)



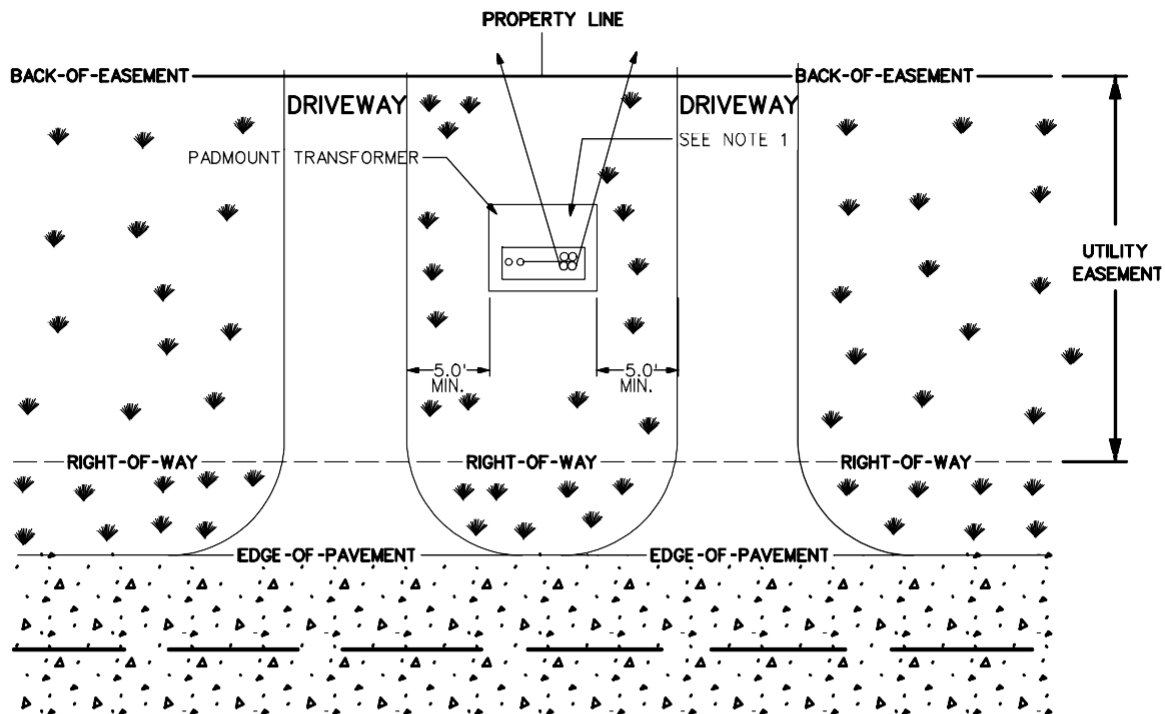
- 1.) ALL SERVICES ABOVE 400 AMPS REQUIRE CT METERING. THE CUSTOMER IS RESPONSIBLE FOR THE INSTALLATION OF THE CABINET, CT'S AND METER SOCKET. THESE ITEMS ARE ISSUED BY LAKELAND ELECTRIC AT NO CHARGE. CONTACT YOUR ASSIGNED PROJECT TECHNICIAN FOR MORE INFORMATION.
- 2.) INSTALL CT CABINET NO LESS THAN 12" FROM BOTTOM OF CABINET TO FINAL GRADE AND NO MORE THAN 6' FROM TOP OF CABINET TO FINAL GRADE.
- 3.) CURRENT TRANSFORMERS SHALL BE INSTALLED SO THAT THE WHITE POLARITY MARK ALWAYS FACES IN THE DIRECTION OF THE LINE SIDE. IF SECONDARY VOLTAGE INCLUDES A "HIGH LEG", THE CT FOR THE HIGH LEG SHALL BE MOUNTED ON THE FAR RIGHT-HAND SIDE. IF THE CT'S ARE MOUNTED IN A VERTICAL CONFIGURATION (AS SHOWN), INSTALL THE HIGH LEG CT ON THE BOTTOM.
- 4.) MOUNT LAKELAND ELECTRIC SUPPLIED METER SOCKET AT 5'6" FROM FINAL GRADE TO CENTERLINE OF METER SOCKET. NIPPLE OUT OF METER SOCKET WITH 1" ALUMINUM CONDUIT INTO CT CABINET. MAINTAIN A MINIMUM OF 3" CLEARANCE BETWEEN CT CABINET AND METER SOCKET.
- 5.) MARK HIGH LEG(S) (IF APPLICABLE) WITH ORANGE TAPE ONLY AND NEUTRAL(S) WITH WHITE TAPE ONLY. MARK OTHER LEGS WITH APPROPRIATE TAPE COLOR. ALL NEUTRALS MUST BE FULL SIZED.
- 6.) INSTALL #4 SOLID COPPER GROUND WIRE TO GROUNDING LUGS IN METER SOCKET. RUN GROUND WIRE THROUGH BASE OF METER HOUSING. SECURE GROUND WIRE WITH WIRE J-CLIPS AND CONNECT TO SYSTEM GROUND PER NEC. LAKELAND ELECTRIC REQUIRES TWO 5/8" 8' COPPER-CLAD GROUND RODS AT A MINIMUM 6' SEPARATION. ATTACH GROUND WIRE TO EACH GROUND ROD USING "ACORN" TYPE CLAMP ONLY AND BOND (SECURE) #4 WIRE TO CT CABINET.

Drafted By:		UNDERGROUND PRIMARY CONSTRUCTION	
Revision By:	No:		
Approved By:			
Manager of Engineering			



# Driveway Clearances

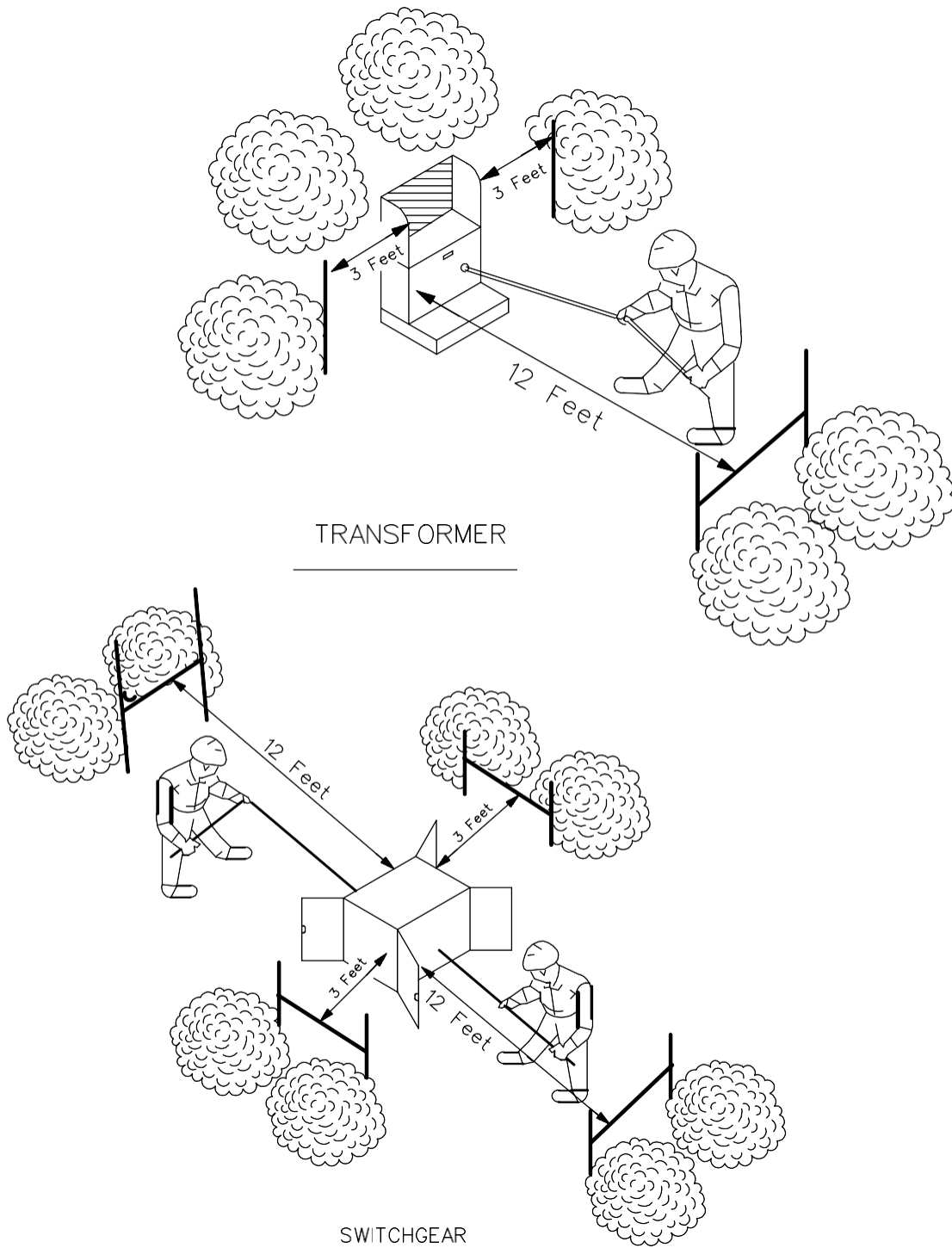
## TYPICAL UTILITY EASEMENT MINIMUM CLEARANCE REQUIREMENTS FOR DRIVEWAYS



1. WHEN INSTALLING A DRIVEWAY, A MINIMUM OF FIVE (5) FEET OF CLEARANCE SHALL BE MAINTAINED BETWEEN THE ABOVE GRADE FACILITIES AND THE OUTSIDE EDGE OF THE DRIVEWAY NEAREST THE FACILITY
2. MAINTAIN A MINIMUM 1.0' VERTICAL CLEARANCE WHEN INSTALLING ELECTRIC CONDUIT PERPENDICULAR TO ANY OTHER UNDERGROUND UTILITY.
3. ALL LAKE LAND ELECTRIC EQUIPMENT SHALL BE PLACED WITHIN THE DESCRIBED EASEMENT AREA.
4. IF COMPLIANCE WITH ANY OF THESE CONDITIONS CANNOT BE ACHIEVED, LAKE LAND ELECTRIC MUST BE NOTIFIED IMMEDIATELY PRIOR TO THE INSTALLATION OF THE ELECTRICAL CONDUIT.

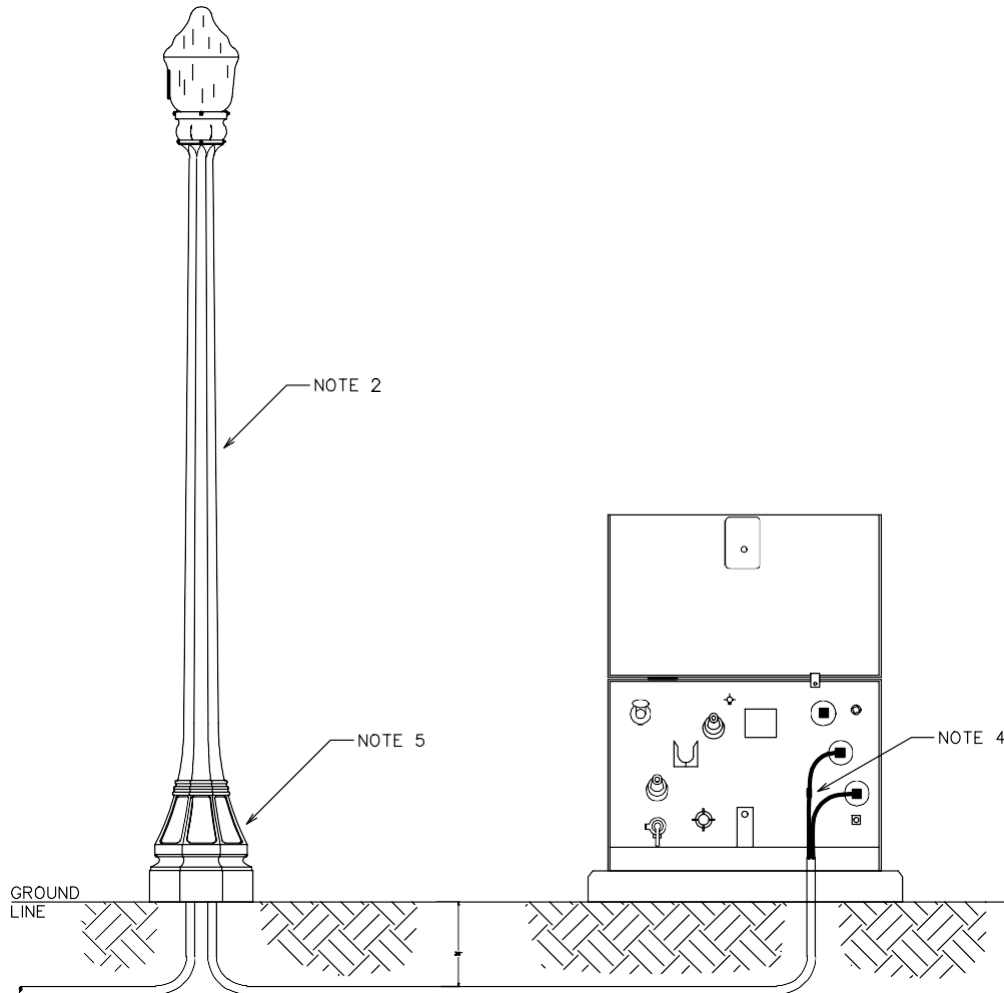
# Planting Clearances

## CLEARANCES FOR PADMOUNT TRANSFORMERS AND SWITCHES



# Lighting Conduit / Conductor Standards

E50WIRES00	TYPICAL INSTALLATION FOR CONDUCTORS USED IN UG LIGHTING	ASSEMBLY
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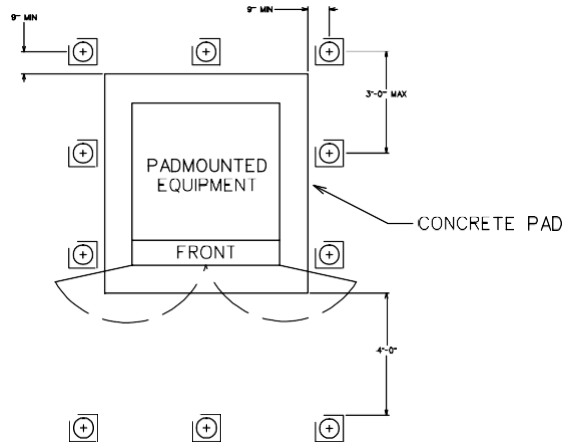
## NOTES:

1. SINCE STREET LIGHTING LOADS ARE CONTINUOUSLY ENERGIZED FOR LONG PERIODS, THE CONNECTED LOAD SHOULD NOT EXCEED 80% OF THE WIRE RATING. THE LOAD CALCULATION SHOULD BE BASED ON THE TOTAL AMPERE RATING OF THE BALLASTS, AND TRANSFORMERS OR REACTORS, NOT ON THE WATTAGE OF THE LAMPS.
2. WHEN RUNNING CONDUCTOR IN RACE WAY OF POLES 12-2 SHOULD BE USED UNLESS LOAD EXCEEDS N.E.C. RATING OF WIRE.
3. WHEN INSTALLING LIGHTS IN SERIES, #6 CU W/ #12 GREEN FOR BONDING SHALL BE USED.
4. ALL LIGHTING CIRCUITS SHALL BE FUSED AT THE SOURCE FOR THE PURPOSE OF PROTECTING THE CIRCUIT. THE FUSE HOLDER SHALL ALSO BE USED AS A VISUAL BREAK DISCONNECT FOR DE-ENERGIZING THE WHOLE CIRCUIT FOR MAINTENANCE.
5. ALL FIXTURES SHALL HAVE THEIR OWN FUSE IN ORDER TO PROTECT THE CIRCUIT FROM POSSIBLE DAMAGE. THE FUSE HOLDER SHALL ALSO BE USED AS A VISUAL BREAK DISCONNECT FOR DE-ENERGIZING THE FIXTURE FOR MAINTENANCE.

Drafted By: SAP	4604	LIGHTING	
Revision By: BRS No: 1	101708		
Approved By: MDO	4604		
Manager of Engineering		506	

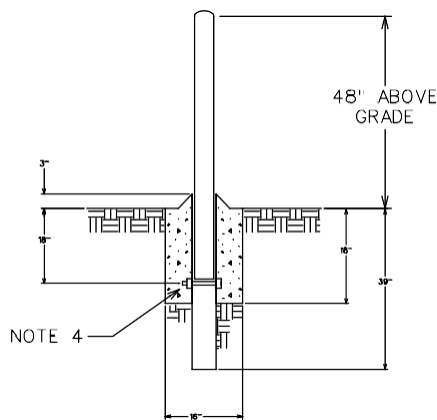
# Bollards Placement

E20CDEPB01	PADMOUNTED EQUIPMENT PROTECTIVE BARRIER	ASSEMBLY
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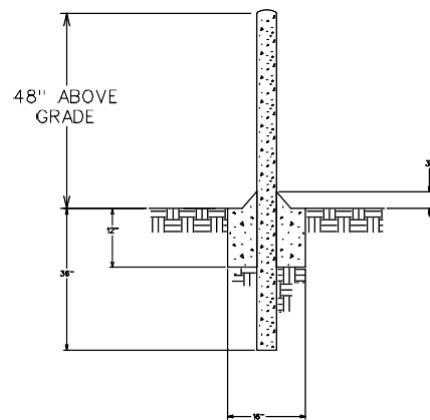


## NOTES:

1. REAR AND SIDE BARRIERS SHALL BE FIXED.
2. FRONT BARRIERS MAY BE FIXED OR REMOVABLE.
3. BARRIER SPACING SHALL BE A MAXIMUM OF 3' CENTER TO CENTER.



REMOVABLE BARRIER



FIXED BARRIER

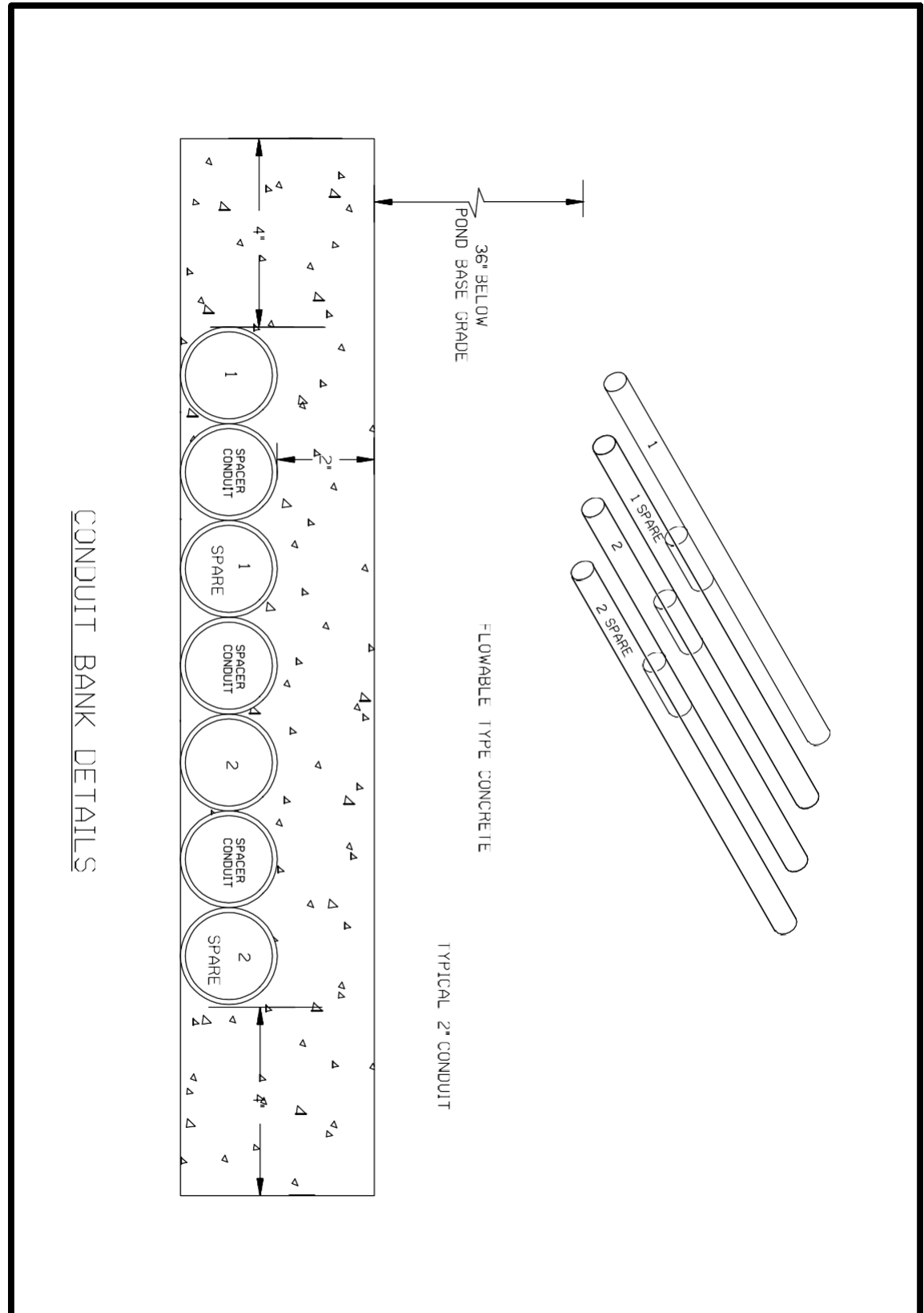
## NOTES:

1. FILL 4" GALVANIZED IRON PIPE WITH CONCRETE, LEAVE CROWN OF CONCRETE AT TOP.
2. PAINT PIPE TRAFFIC YELLOW.
3. BUILD SLOPED CONCRETE COLLAR AT GRADE TO SHED WATER.
4. FOR REMOVABLE BARRIER, INSTALL 5" GALVANIZED IRON PIPE FOR SLEEVE. INSTALL  $\frac{3}{4}$ " X 8" GALVANIZED MACHINE BOLT THROUGH SLEEVE 18" BELOW GRADE.
5. TAMP GROUND UNDER BARRIER UNTIL WELL COMPACTED.

Drafted By: B.ROSS	12/23/99	UNDERGROUND DISTRIBUTION	
Revision By: BRS No: 1	3/11/05		
Approved By: MDO	12/23/99		
Manager of Engineering		203	

E20CDEPB01.DGN

# Concrete Encased Conduit





## **Comments Page**

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