

# ELECTRICAL SERVICE REQUIREMENTS



Public Utility District #1 of Franklin County  
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*Last Revised: January 2021*

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## **1 – Engineering Overview**

This is a general summary of Franklin PUD (FPUD) policy for primary distribution line extension and service installation. Please call Engineering at 509-547-0556 for charges specific to your project.

FPUD Engineering is responsible for maintaining records and maps of the electrical system equipment in our service area. We know where all poles, transformers, wiring, meter, street and security lights are located. We use state-of-the-art technology including GIS (Geographic Information System) mapping system to maintain the current condition of the electric system.

### **Field Engineers are responsible for:**

- Design and construction of new line extensions to subdivisions, plats, homes, businesses, and irrigation services
- Document review for conformance to requirements and codes
- Installation inspection for conformance to requirements and codes
- Provide an estimate for development installation costs
- Design of construction for improvements to the distribution system

### **System Engineers are responsible for:**

- Maintenance and management of the electrical distribution system
- Load growth tracking and needs forecasting for new substations and system improvements
- Substation operations and monitoring using a SCADA system  
(*Supervisory Control and Data Acquisition*)
- Variable Frequency Drive (VFD) review and audits

*If you have any questions, please contact Engineering:  
1411 West Clark Street, P.O. Box 2407  
Pasco, WA 99302-2407  
(509) 547-0556 or 1-800-638-7701*

## 2 - Service Installation Fees

### Temporary Construction Service

*Underground - Customer provides conductor*

*Overhead - FPUD provides conductor*

- **Unmetered**      **\$300.00** (*residential only, 90-day limit, \$100 for 90-day extension*)
- **Metered**      **\$200.00 (+ Monthly Usage Billing)**

### Permanent Service: Single Family Residential, 1-Phase

*(service is owned and maintained by FPUD)*

#### **1. Service Connection Fee**

- Overhead      \$150.00
- Underground      \$400.00

#### **2. Transformer kVA Capacity Fee**

- All Electric Home      \$500.00 (12.5 kVA @ \$40.00/kVA)
- Gas/Electric Home      \$260.00 ( 6.5 kVA @ \$40.00/kVA)
- Large or remote home with dedicated transformer - Actual Transformer Cost

#### **3. Meter Installation Fee**

- Self-Contained Meter      1-Ph - \$150.00      3-Ph - \$250.00
- CT (current transformer)      1-Ph - \$500.00      3-Ph - \$850.00

### Excess Cable (beyond the first 100 feet)

- Overhead      \$1.50 per foot
- Underground      \$4.00 per foot

### Mobile Home Parks & Apartments (customer provided and owned)

- Self-Contained Meter      \$125.00
- CT Meter      Actual Cost

### Irrigation

- Underground services are customer-provided and owned
- FPUD may provide overhead service at our discretion

### **3 - Landscaping Guidelines**

If you wish to plant near overhead power lines, check the maximum mature height and width of each tree species being considered. For sites beneath overhead lines, please check with Engineering for the minimum line height on your property. If the line is 20 feet, choose a shrub or tree with a mature height of 10 feet or less.

**Electrical Equipment** - Electrical equipment such as meter bases, padmounted transformers, switch cabinets, or tops of underground vaults, must be kept free of obstructions for two basic reasons:

- 1. Service accessibility**
- 2. Air circulation to prevent equipment failure**

During power outages, crews often find fences, shrubs, and trees in front of electrical equipment. Removing these obstacles takes time and delays restoring power. Remember that plants need space to grow. You need to allow sufficient growing room so that the outside edges of mature plants will be at least two feet from the non-door-side of pad-mounted transformers and switch cabinets.

***Do not plant trees or shrubs that will grow to within eight feet of the door-side of pad-mounted transformers or switch cabinets when they have reached their full mature size.***

Transformers have underground wires. Before digging deeper than 12 inches near a transformer call **U-DIG** at **811** for free cable location service.

Fences may be built around transformers and switch cabinets, but not over them. The fence design must not inhibit air movement. Fence parts must be easy to remove (wall sections), or open (gates). Working clearances are the same as in the preceding paragraphs. Please contact Engineering if you have any questions.

Vaults require additional working area. Square vaults require eight feet of clearance on three sides and two feet of clearance on the backside. Grass or other very low ground covers are acceptable plant materials within the working clearance area.

**Above Underground Electric Cables** - Planting trees or large shrubs directly above underground electric cables is not recommended. If the underground electric lines need servicing, your trees and shrubs may be damaged during digging or need to be removed. Your electric utility is not responsible for damage to plants resulting from servicing needs. Fence posts should not be placed directly over underground electric lines.



**Landscaping Suggestions** - Carefully plan your landscaping near electrical equipment to allow for service working areas. Remember to use a plant's maximum mature height and width when determining the planting site. Choose ground cover within service working areas with care. Delicate flowers risk breakage if equipment must be serviced. Lawn and mulching materials are good choices. Avoid using plant materials with thorns or messy fruit such as barberry, hawthorn, mountain ash, pyracantha, etc., near electrical equipment, sidewalks, patios, and driveways. Design irrigation system to minimize exposure of electrical vaults and equipment to irrigation water and runoff. Using a variety of evergreens, flowering shrubs, deciduous trees, and seasonal flowers in your planting areas adds beauty to your property and to our region.

**Pruning Programs** - Sometimes trees and tall growing shrubs are planted under overhead lines by an owner with the intent that the plants will be regularly pruned. Consider the future – if the owner should no longer be capable of maintaining this lower height or if the property is sold to a new owner who is not committed to keeping the plant's height low, the plant will require ratepayer's funding for maintenance.

Regular tree trimming programs are operated by all electric utilities. These programs are inefficient because the results are only temporary. Repeated trimming is expensive for ratepayers. Proper placement and careful selection of trees planted now will help to reduce escalating costs.

Tree limbs that threaten the electrical system are removed by utilities. During routine maintenance the first 10 feet of individual service lines may be trimmed at the discretion of the utility. The property owner must arrange, and pay, for additional trimming from a qualified private service. To promote safety, your electric utility will (with 48-hour notice) disconnect and later reconnect individual electric service lines during normal working hours, at no charge, while the trimming is being done.

**Under or Near Overhead Lines** - Be sure the trunk and branches will not reach within 10 feet of overhead electric lines when fully grown. For example, a tree with a mature canopy 30 feet wide should be planted least 25 feet from electric lines. The distance is determined by dividing the mature width of 30 feet by 2 and adding 10 feet. This equates to 25 feet minimum distance for clearance from current carrying lines.

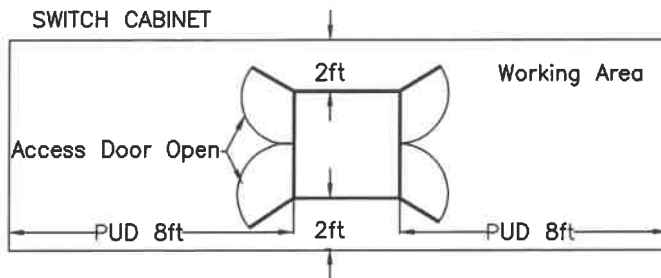
**Trees to Avoid Planting** - These deciduous trees are not recommended for planting near city streets, in small residential lots, or near utility lines. In many communities with tree ordinances, these trees are prohibited. Reasons for the prohibition include frequent limb-loss during storms, a history of pavement breaks, profuse sucker spreading, excessive seed, and fruit drop.

Our mid-Columbia climate supports a great diversity of plants. We can't begin to list all of the trees that can grow here. No one tree is perfect for all locations, soil types, or uses. Diversity of species within our communities is important to minimize the spread of diseases and insect pests.

Remember to select a tree species that when mature, will not outgrow its location or interfere with overhead lines. Many common shade trees are not listed because they can grow to tremendous height or widths and do not grow well in the small spaces of many urban planting locations.

Select plants with average or low maintenance, and general insect and disease resistance. Actual growth of an individual plant will depend on specific genetics, the site, and environmental factors. Contact local nurseries for stock available. New research results regarding plant suitability for urban settings, and new cultivars are available continually.

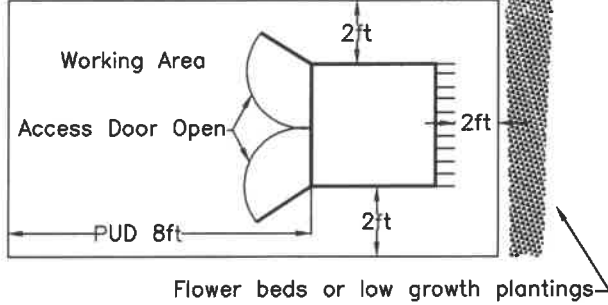
Pad Mounted Switch Cabinets & Transformers  
(Grass acceptable in work area)  
Top View



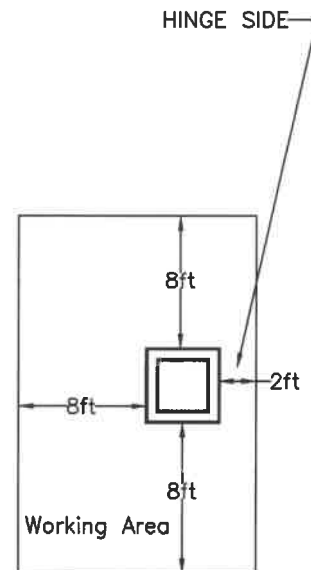
Tree size when planted

Mature tree size

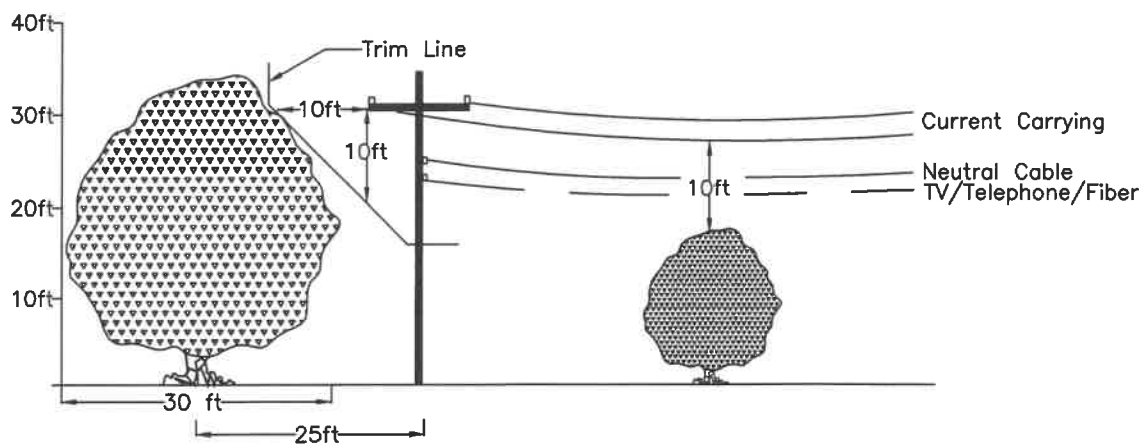
TRANSFORMER



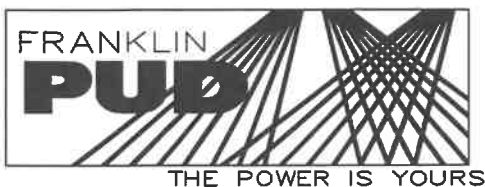
Underground Concrete Vaults  
(Grass acceptable in work area)  
Top View



DWG. 3



205.5.DWG



LANDSCAPING GUIDELINES

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APP. D. SAMS

DATE: 3/11  
UPDATED: 11/21/2019

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205.5



## 4 - Temporary Service Requirements

### General Requirements - Connecting a Temporary Service

- Complete a residential or commercial application for service with attached site plan. We can then determine availability, location, and conditions for the service.
- Double check the service location with a Field Engineer early to avoid delays in connecting your service.
- Install your temporary service post, and associated equipment, in the agreed upon location. Refer to specific requirements listed below and as shown on the attached drawing.
- Call the Washington State Electrical Inspector at 509-735-0100 for inspection and approval of your temporary service equipment.
- Pay the required FPUD fees.
- Temporary service will be connected within 5 to 7 business days.
- The temporary service will be disconnected when the permanent service is connected, unless you call Engineering to make other arrangements.

### General Specifications – Overhead & Underground

- If a meter is not required, install a U.L. listed temporary meter jumper cover prior to inspection by the State Electrical Inspector.
- If a meter is required, it must be a minimum of 4' 6" feet and a maximum of 5' 6" to the center of the meter above grade, unless it is a factory built meter pedestal.
- The temporary service pole may be made of 4"x 4" solid lumber or two (2) 2"x 4" lumbers laminated together. *(4"x 4" overall is the minimum acceptable)*
- The braces should be a minimum of 2" x 4" lumber. Drive stakes solidly into the ground, and firmly attach the braces. Take special care when installing these braces. Please make sure they do not block access to the transformer door.

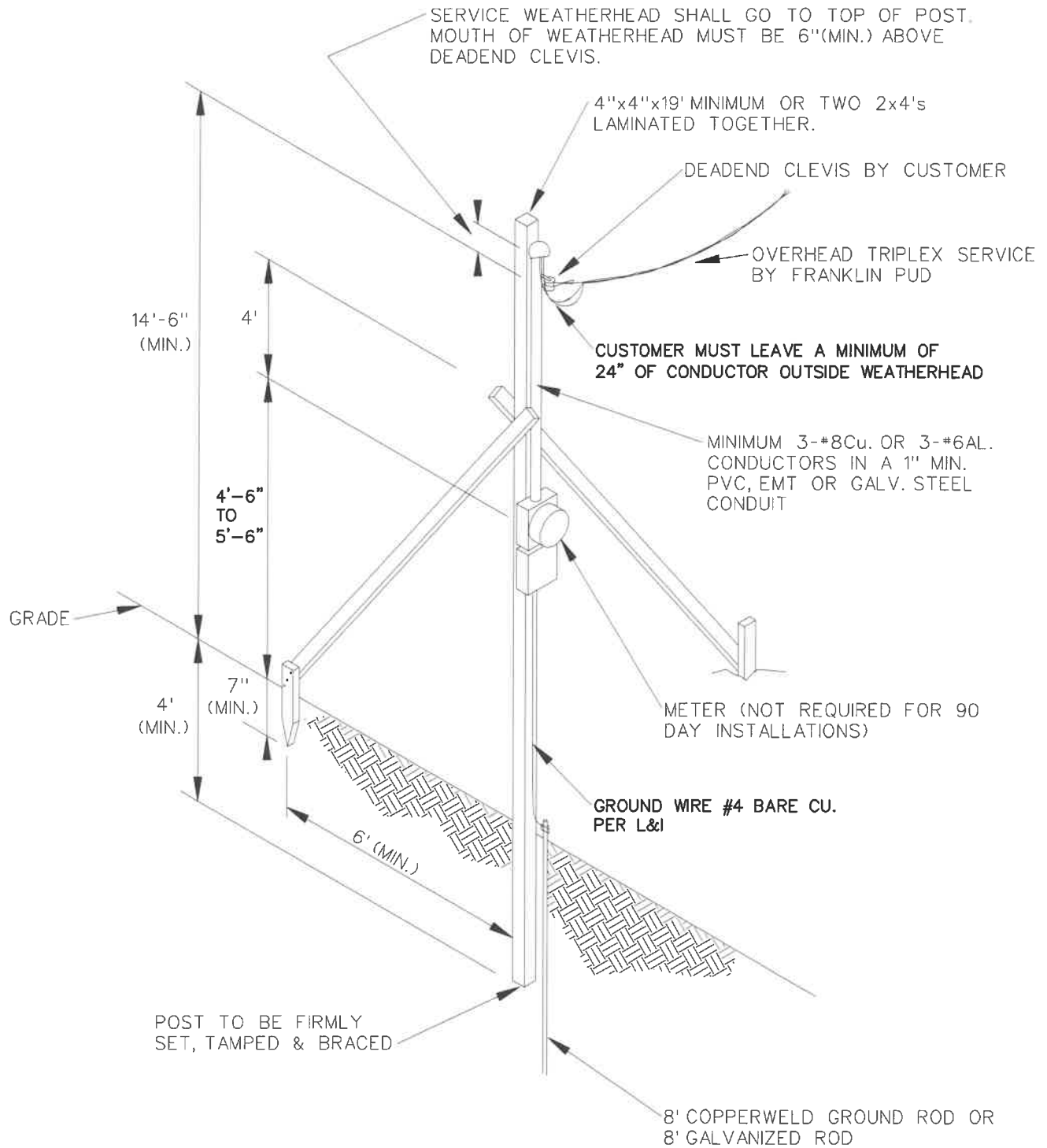
## Temporary - Underground Source

- After reviewing details of your temporary service with a Field Engineer, provide trench and backfill to within three feet of transformer. FPUD will trench and backfill the last three feet when the service is connected.
- Provide enough insulated conductor to reach the transformer, plus an additional six feet for making connections. FPUD will route your wire into the transformer box and make the connections.

***FPUD crew will not splice customer conductor.  
If the conductor is too short to connect in the transformer,  
you will need to replace it with longer conductor  
before our crew will connect it.***

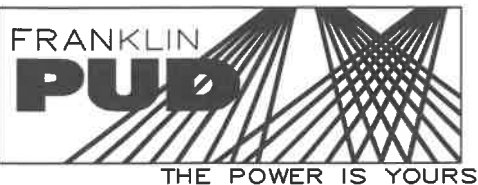
## Service Specifications - Overhead Source

- Customer will provide and install the service post and all materials.
- FPUD provides and installs the overhead service drop.
- The service post must be located a minimum of ten feet, and no further than 50 feet, from our nearest distribution transformer pole. Service length requirements that exceed 50 feet must have prior Engineering approval. Contact us before installing your service equipment.
- Service drop clearance requirements:
  - 16 feet minimum over private ground, including driveways
  - 18 feet over streets and alleys
  - 24 feet over state highways



NOTE: INSTALL TEMPORARY SERVICE POLE AT LEAST 10FT., BUT NO MORE THAN 50FT., FROM THE PUD'S DISTRIBUTION POLE.

211.1.DWG



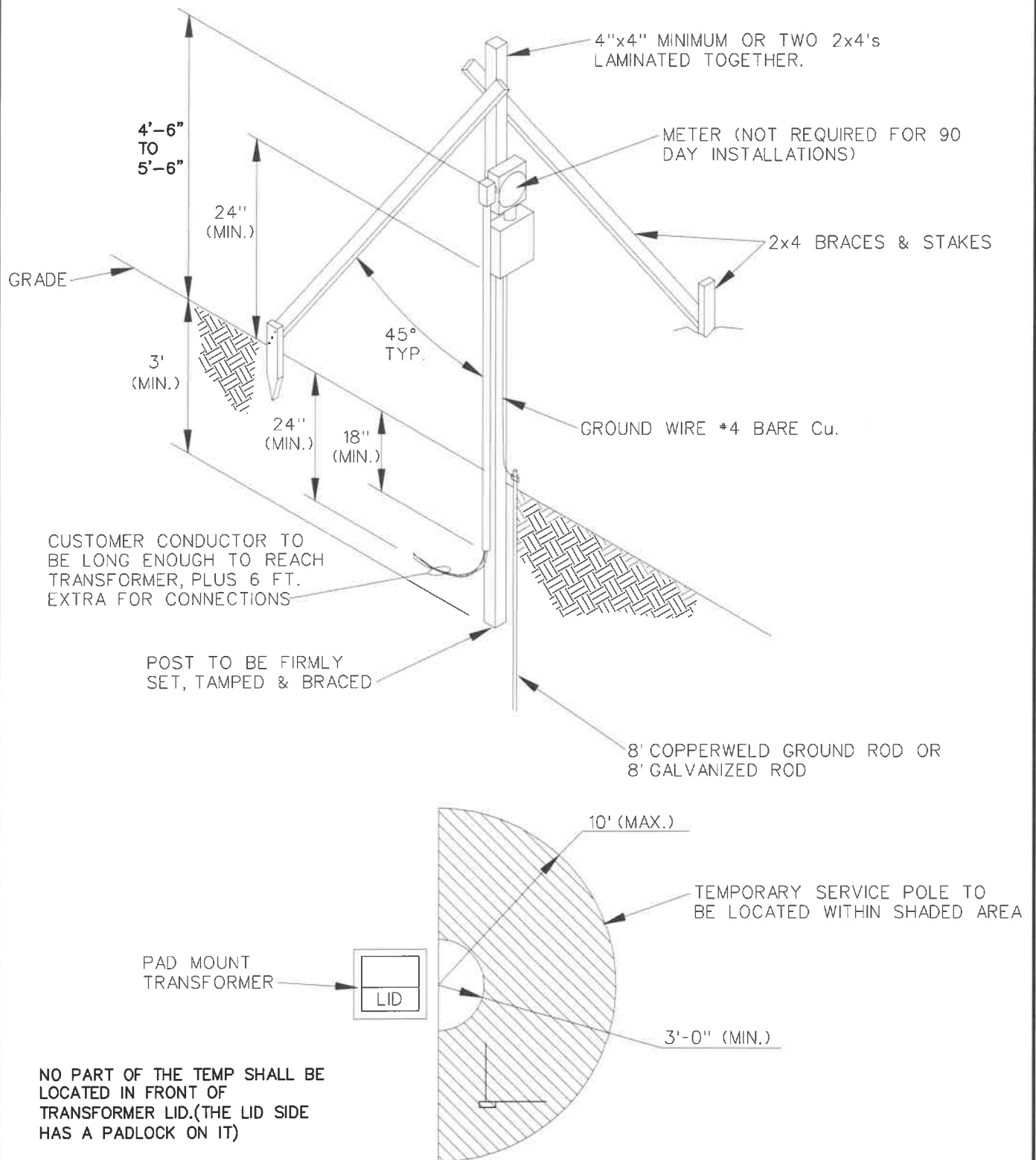
### TEMPORARY SERVICE REQUIREMENTS FOR OVERHEAD SOURCE

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APP. D. SAMS

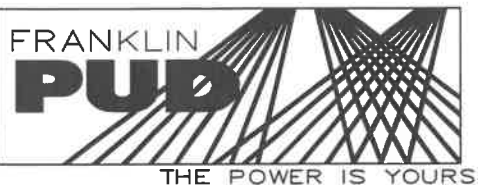
DATE: 3/31/03  
UPDATED: 11/21/2019

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## TEMPORARY SERVICE REQUIREMENTS FOR UNDERGROUND SOURCE

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DATE: 1/13/97  
UPDATED: 11/21/2019

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213.1

## **5 - Residential Service Requirements**

### **General Requirements**

- Contact FPUD Engineering at 509-547-0556.
- Determine type of service required. (overhead or underground)
- Fill out application and submit site plan.
- Obtain an electrical work permit from the Department of Labor and Industries.
- Call 811 for underground locates.
- Obtain easements for primary line and transformer.
- Provide all trenching, conduit, and backfill.
- Pay the cost of secondary conductor, beyond 100 feet in length, per dwelling unit.
- Provide all service entrance wiring and equipment.
- Call FPUD Engineering at 509-547-0556 for trench inspection.
- Pay required service fees.
- Call the Department of Labor and Industries for inspection and approval of your new service.
- FPUD normally supplies and installs the underground secondary cable, meter, and current transformers, when necessary.

### **Installation & Material Specifications**

- **General:** Conduit runs over 175 feet may require special conduit sweeps unless prior approval is obtained from Engineering. A maximum total of 270 degrees of sweeps (elbows) are allowed. 90 degrees at the service location, 90 degrees in the trench, and 90 degrees at the meter base. If more than 270 degrees of sweeps are required, a pull box must be installed or trench must be rerouted, at FPUD discretion.
- **Grading:** Final grade should be established prior to trenching and installation of ducts or vaults. If final grade cannot be established prior to duct and vault excavation, grade stakes shall be installed for reference. Any changes in the grade that would put the conduits, vaults or pull boxes at a depth less than required, or

leave any installation in an undesirable condition, would require the customer to correct it at their expense. The height to the center of the meter base must be met for both the construction grade, when the meter and service conductor are installed and at final grade. For example, during construction the elevation in front of the meter base provides 5' of clearance to the center of the meter base. Adding 6" of additional cover would result in a final grade with 4'6" to the center of the meter base.

- **Excavation:** Excavating should be done only as necessary for installing the duct and vault system. Trenches for underground ducts need to be true to line and grade, as shown on the drawings and specifications. Trenches shall be wide enough to allow separation requirements for other utilities, if needed. Maintain trenches free from standing water when installing ducts or vaults. Trenches shall be cleaned of excess rock, earth, and debris prior to installation of ducts and vaults.
- **Conduit:** Underground duct (conduit) must be **gray** Polyvinyl Chloride (PVC) Schedule 40, conform to NEMA TC2 Specifications and be permanently marked at regular intervals with the manufacturer's name or symbol, size, "SCH 40" and "PVC". Conduit size will be determined by FPUD Engineering (normally 3-inch, 4-inch, and 6-inch).
- **Couplers and Fittings:** Must be PVC Schedule 40, factory-made and conform to the same specifications as the conduit. All sweeps (elbows) and fittings must have a minimum 36-inch center radius, except secondary sweeps under residential padmounted transformers, which shall be 3", 90-degrees with a 24" radius. Heat bent angles shall not be allowed. Fiberglass sweeps may be required at the discretion of FPUD Engineering.
- **Installation of Conduit System:** Ducts shall run in a straight line. Standard sweeps as specified above, may be used as required. Install couplings, connectors, and fittings to provide a rigid mechanical assembly with conduit cut square, reamed and without burrs. Cement conduit joints as recommended by the manufacturer. **Heat bent angles will be rejected.**
- **Duct Bedding and Encasement:** A minimum of four (4) inches of bedding and four (4) inches of cover shall be used to encase the duct when native material is deemed unacceptable by the Engineer. The minimum depth from finished grade to bottom of trench from primary cable is forty-eight (48) inches and thirty-six (36) inches for secondary services. Sand, clean soil, or pea gravel shall be used for the encasement of the duct. **Crushed stone or other similar aggregate with sharp points is NOT acceptable.**



**Inspections:** After installation of the duct, pull boxes, and the 4-inch bedding beneath the duct, call Engineering at 509-546-0556 for an inspection before proceeding.

***If you fail to obtain FPUD approval before backfilling the trench,  
we will require that you expose all or part of the duct run  
for inspection before we will install cable.***

- **Backfill:** Excavation material may be used for backfill provided it is free from frozen particles, rock, vegetation, or trash. Backfill should be placed uniformly in layers and each layer thoroughly compacted. Leave ends of conduit exposed for FPUD crews to gain access. **Conduit must be sealed with a factory manufactured conduit plug.**
- **Vaults & Covers:** The concrete primary junction vaults with covers, transformer vaults and covers and secondary junction boxes will be specified by Engineering after preliminary design is complete. **Equivalent products must have prior written approval of Engineering.**

The top of a vault (not including the cover) is installed at the final grade level so that when the 6" cover is in place; the top of the cover will be 6" above the final grade of the surrounding surface. Knockouts should be made from the inside of the vault. For vaults installed in pavement, reference drawing 243.1.

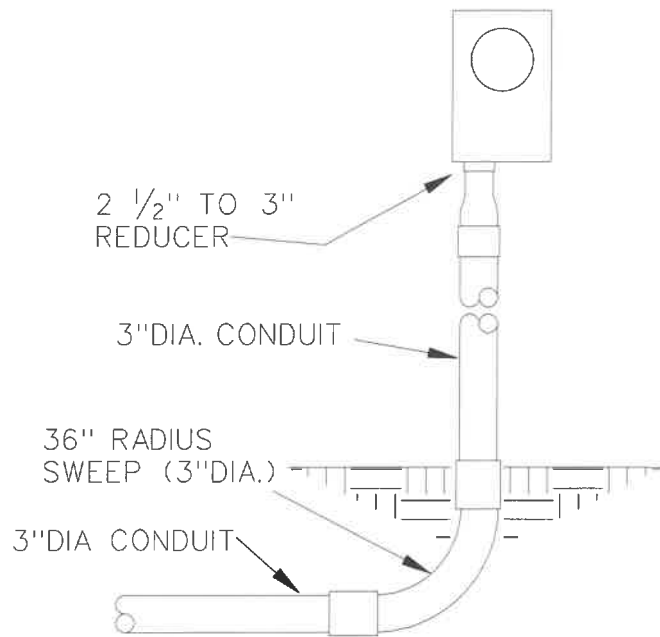
**Completely remove center knockout in bottom of vault prior to installation to allow vault to drain.** For vaults in paved areas, discuss grade requirements with the Engineer before excavating. All vaults and junction boxes shall be placed on a minimum of 6" of compacted crushed rock.

- **Secondary Conductors:** Commercial secondary conductors should be installed into the transformer vault prior to installing the transformer. Secondary conductors must be limited to a maximum of eight per phase. More than eight conductors per phase may require the customer to provide a special terminating cabinet. Contact an FPUD Engineer if more than eight secondary conductors per phase will be needed. **Secondary conductors must extend a minimum of eight feet above the transformer pad.**
- **Access to Equipment:** Where 24-hour access to FPUD equipment is restricted by fences or other means, you will need to provide a key box or double locking gate which will allow FPUD personnel access by use of a FPUD key.



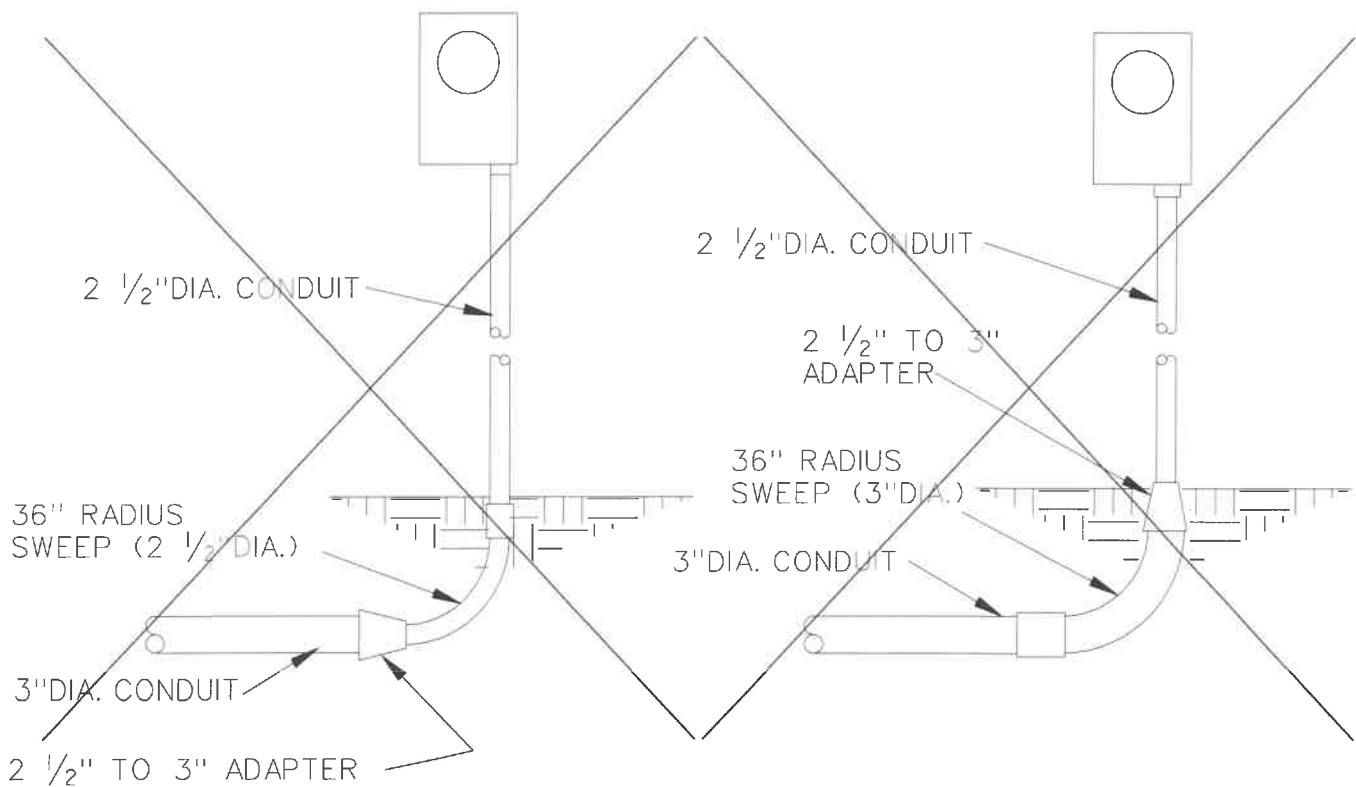


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## APPROVED

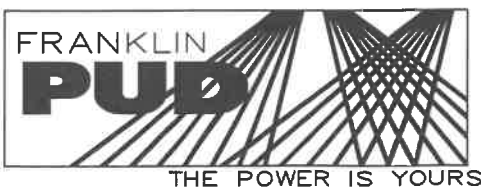
200 AMP METER BASE SHOWN. FOR 320 AMP METER BASES AND CT COMPARTMENTS, RUN 3 INCH CONDUIT ALL THE WAY INTO METER BASE



## NOT APPROVED

## NOT APPROVED

224.1.DWG



### USE OF ADAPTERS IN CONTINUOUS PVC CONDUIT RUNS

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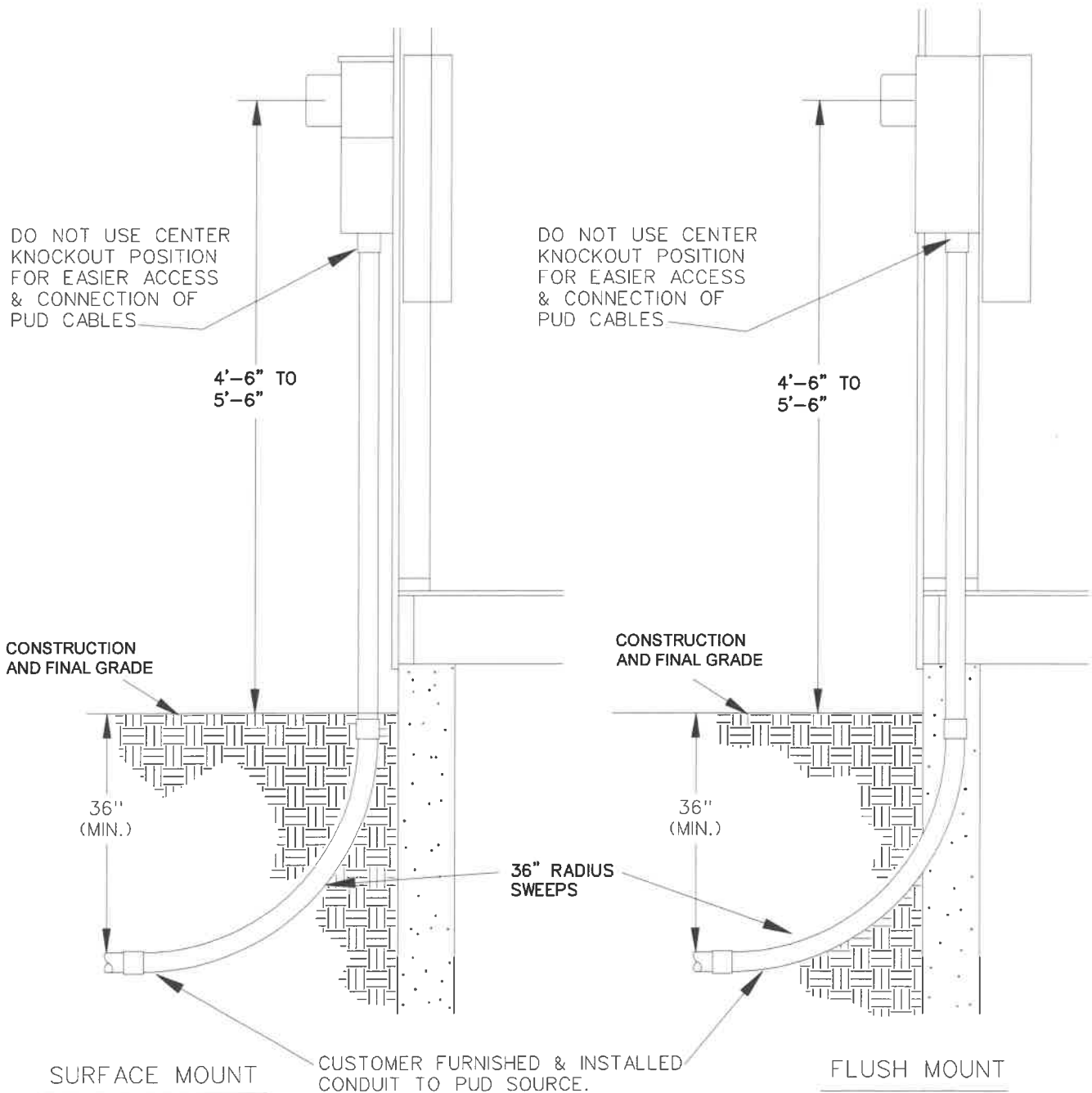
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UPDATED: 11/21/2019

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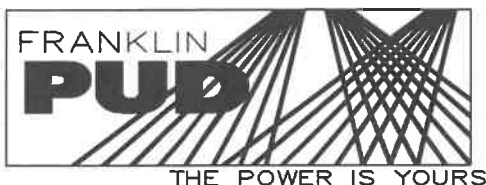
224.1

## NOTES:

1. CUSTOMER FURNISHES ALL EXCAVATION AND MATERIALS. EXCEPT METER AND SERVICE CONDUCTOR.
2. CUSTOMER SERVICE EQUIPMENT NEEDS TO BE INSPECTED AND "APPROVED FOR SERVICE" BY THE STATE ELECTRICAL INSPECTOR PRIOR TO CONNECTION BY THE PUD. SERVICE EQUIPMENT MAINTENANCE REMAINS CUSTOMER'S RESPONSIBILITY.
3. REFER TO "RESIDENTIAL SERVICE UNDERGROUND LINE EXTENSION GUIDE" FOR TRENCHING AND CONDUIT INSTALLATION DETAILS.
4. PUD SERVICE CONDUCTORS TERMINATE AT THE "LINE SIDE" METER BASE TERMINAL LUGS
5. TRENCH MUST BE COMPLETELY BACKFILLED FROM METERBASE BEFORE SERVICE IS PULLED & METER SET
6. CONDUIT SHALL NOT RUN UNDER THE HOUSE AND SHALL EXIT CONCRETE AS SOON AS PRACTICAL



225.1.DWG



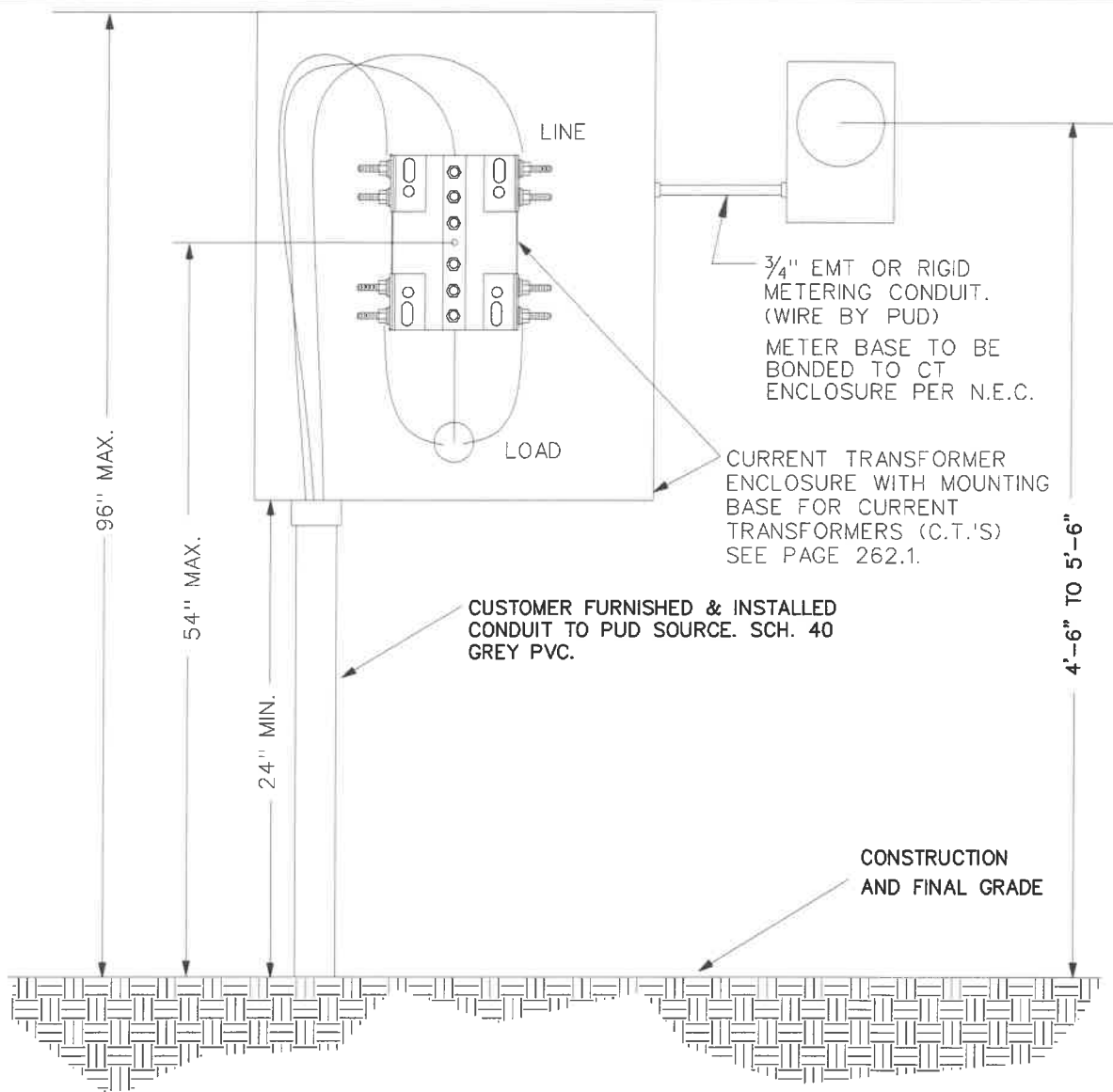
## UNDERGROUND RESIDENTIAL SERVICE ENTRANCE 200 AMP OR SMALLER

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APP. D. SAMS

DATE: 4/9/03  
UPDATED: 11/21/2019

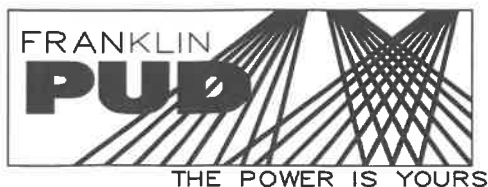
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1. CUSTOMER FURNISHES ALL EXCAVATION AND MATERIALS. EXCEPT METER AND SERVICE CONDUCTOR.
2. CUSTOMER SERVICE EQUIPMENT NEEDS TO BE INSPECTED AND "APPROVED FOR SERVICE" BY THE STATE ELECTRICAL INSPECTOR PRIOR TO CONNECTION BY THE PUD. SERVICE EQUIPMENT MAINTENANCE REMAINS CUSTOMER'S RESPONSIBILITY.
3. REFER TO "RESIDENTIAL SERVICE UNDERGROUND LINE EXTENSION GUIDE" FOR TRENCHING AND CONDUIT INSTALLATION DETAILS.
4. THE C.T. COMPARTMENT IS TO BE WEATHER TIGHT WITH METER SEAL CLOSURES. DO NOT USE THE CENTER KNOCKOUT POSITION.(SEE PAGE 262.1 FOR DETAILED C.T. ENCLOSURE REQUIREMENTS).
5. THE PUD'S SERVICE CONDUCTORS TERMINATE AT THE LINE SIDE OF CURRENT TRANSFORMER COMPARTMENT.
6. THE CUSTOMER SERVICE ENTRANCE CONDUCTORS NEED TO BE LEFT WITH A MINIMUM 6'-0" TAIL IN THE C.T. COMPARTMENT FOR CONNECTION BY PUD.
7. TRENCH MUST BE COMPLETELY BACKFILLED FROM C.T. CAN BEFORE SERVICE IS PULLED & METER SET.

226.1.DWG



## UNDERGROUND RESIDENTIAL SERVICE ENTRANCE LARGER THAN 400 AMP

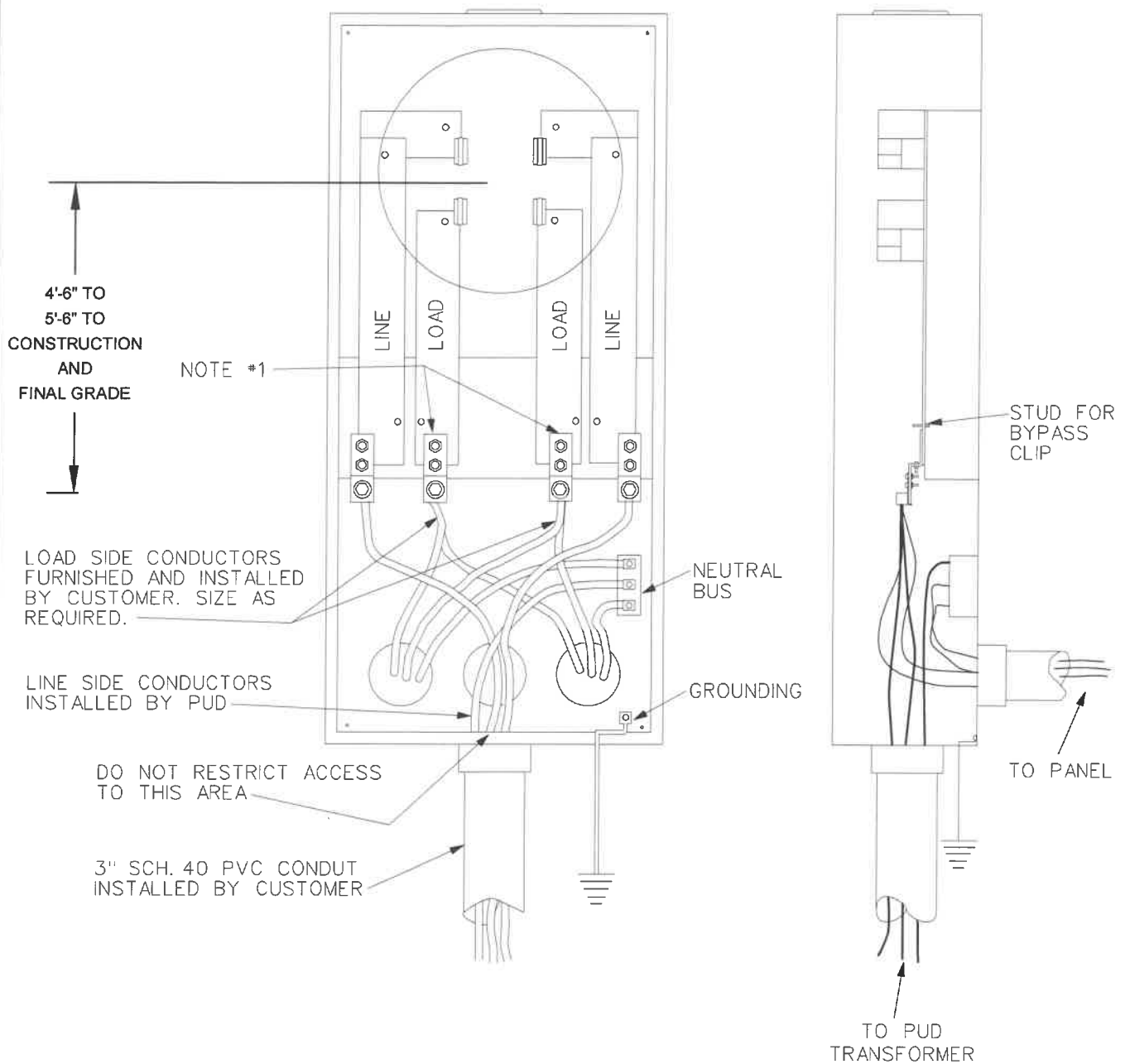
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DATE: 3/28/03  
UPDATED: 11/22/2019

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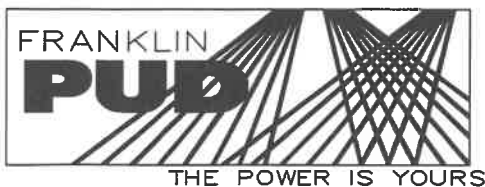




**NOTES:**

1. THE CUSTOMER PROVIDES AND INSTALLS THE LOAD SIDE CONNECTORS.
2. SEE GENERAL METERING REQUIREMENTS FOR APPROVED METER BASES.
3. INSTALL GROUND RODS AT EACH METER LOCATION PER N.E.C.
4. NO ACCESS TYPE FITTINGS ARE ALLOWED IN THE LINE SIDE CONDUIT
5. SERVICE CONDUIT MUST BE IN A POSITION NOT TO CONFLICT WITH CONDUITS AND WIRES FROM METER BASE TO PANELBOARD.
6. TRENCH MUST BE COMPLETELY BACKFILLED FROM METER BASE BEFORE SERVICE IS PULLED & METER IS SET

227.1.DWG



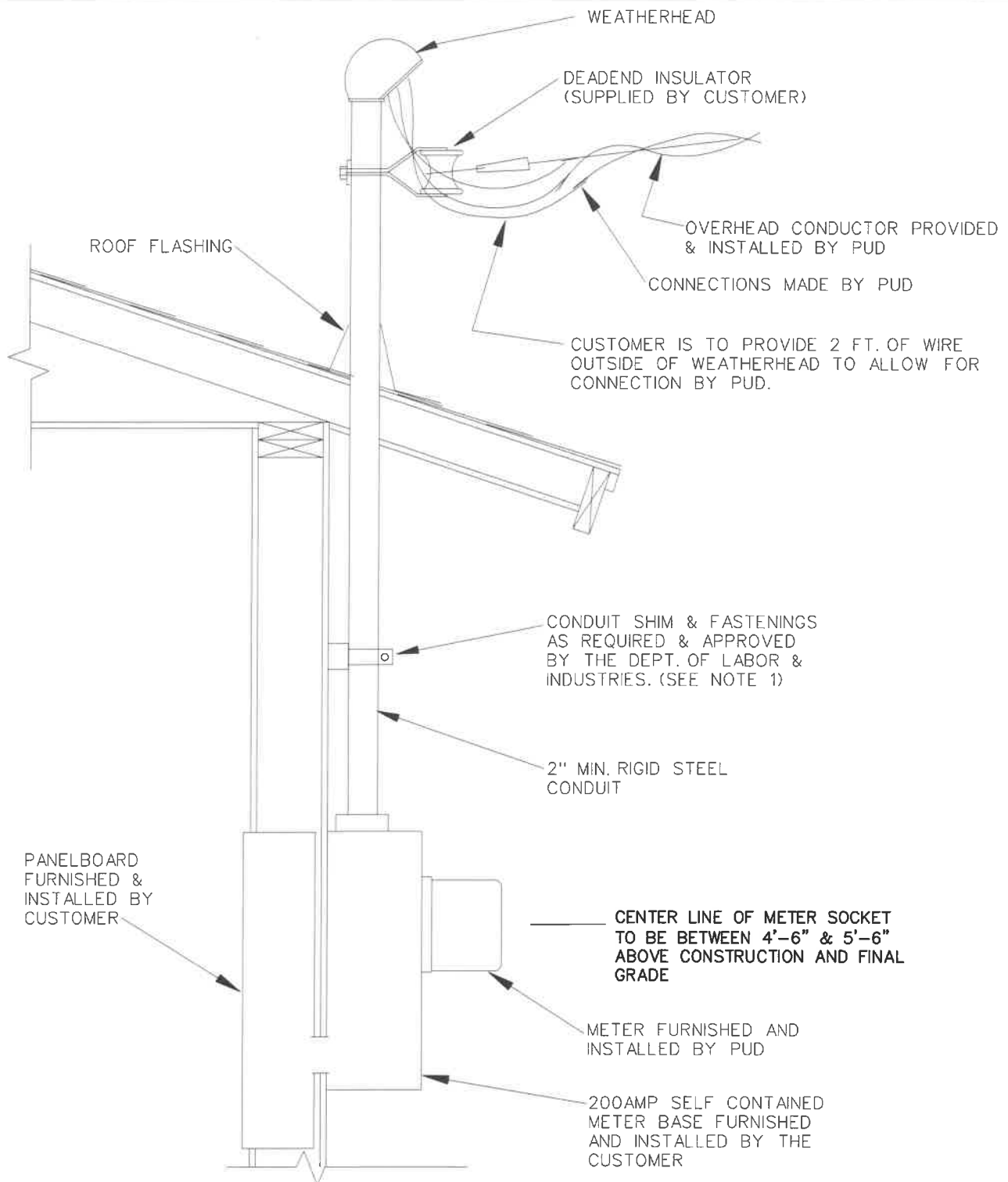
**UNDERGROUND SOURCE - RESIDENTIAL  
320 AMP METER BASE 120/240 V. SINGLE PHASE**

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APP. D. SAMS

DATE: 3/28/03  
UPDATED: 11/22/2019

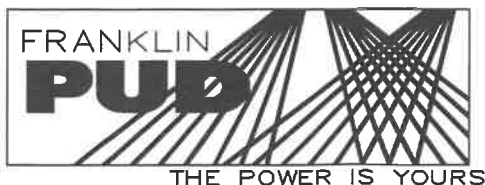
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**227.1**



1. SEE CURRENT WASHINGTON STATE DEPARTMENT OF LABOR & INDUSTRIES SERVICE MAST DRAWINGS E-101, E-102 & E-103 FOR MORE DETAILED REQUIREMENTS.
2. CONSULT ALL OTHER AGENCIES THAT MAY ADMINISTER ANY CODES RELATING TO ELECTRICAL WIRING & INSTALLATION.

230.1.DWG



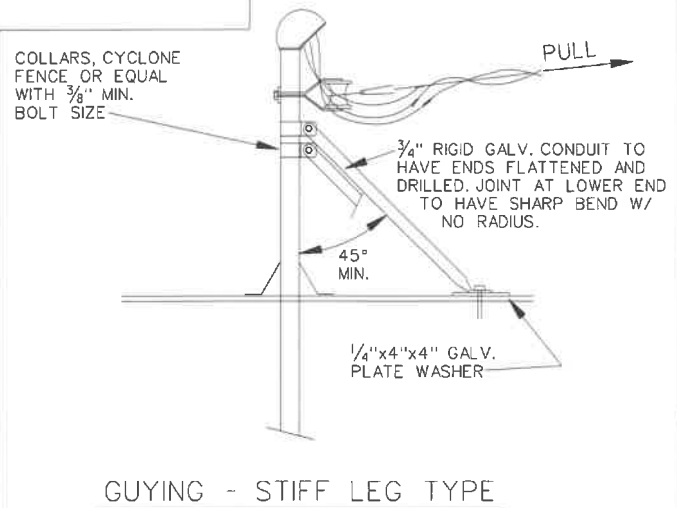
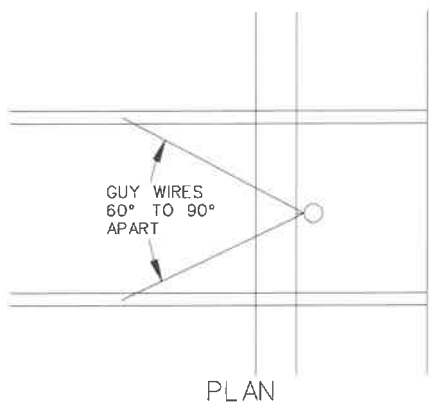
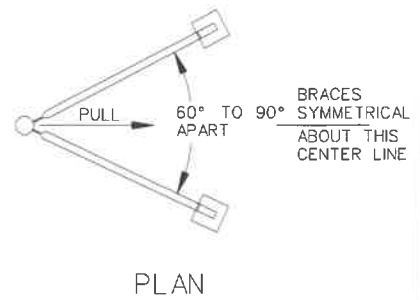
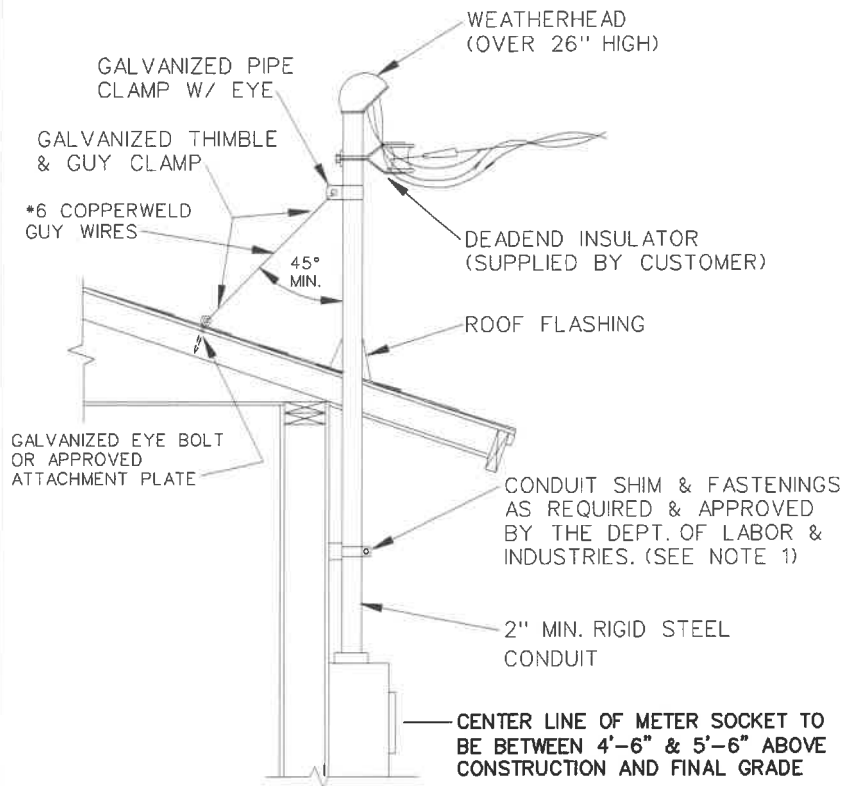
## OVERHEAD SERVICE MAST NOT OVER 26" HIGH

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APP. D. SAMS

DATE: 1/13/97  
UPDATED: 11/22/2019

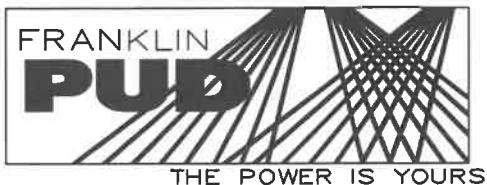
DWG. NO.

230.1



1. SEE CURRENT WASHINGTON STATE DEPARTMENT OF LABOR & INDUSTRIES SERVICE MAST DRAWINGS E-101, E-102 AND E-103 FOR MORE DETAILED REQUIREMENTS.
2. CONSULT ALL OTHER AGENCIES THAT MAY ADMINISTER ANY CODES RELATING TO ELECTRICAL WIRING AND INSTALLATION.

231.1.DWG

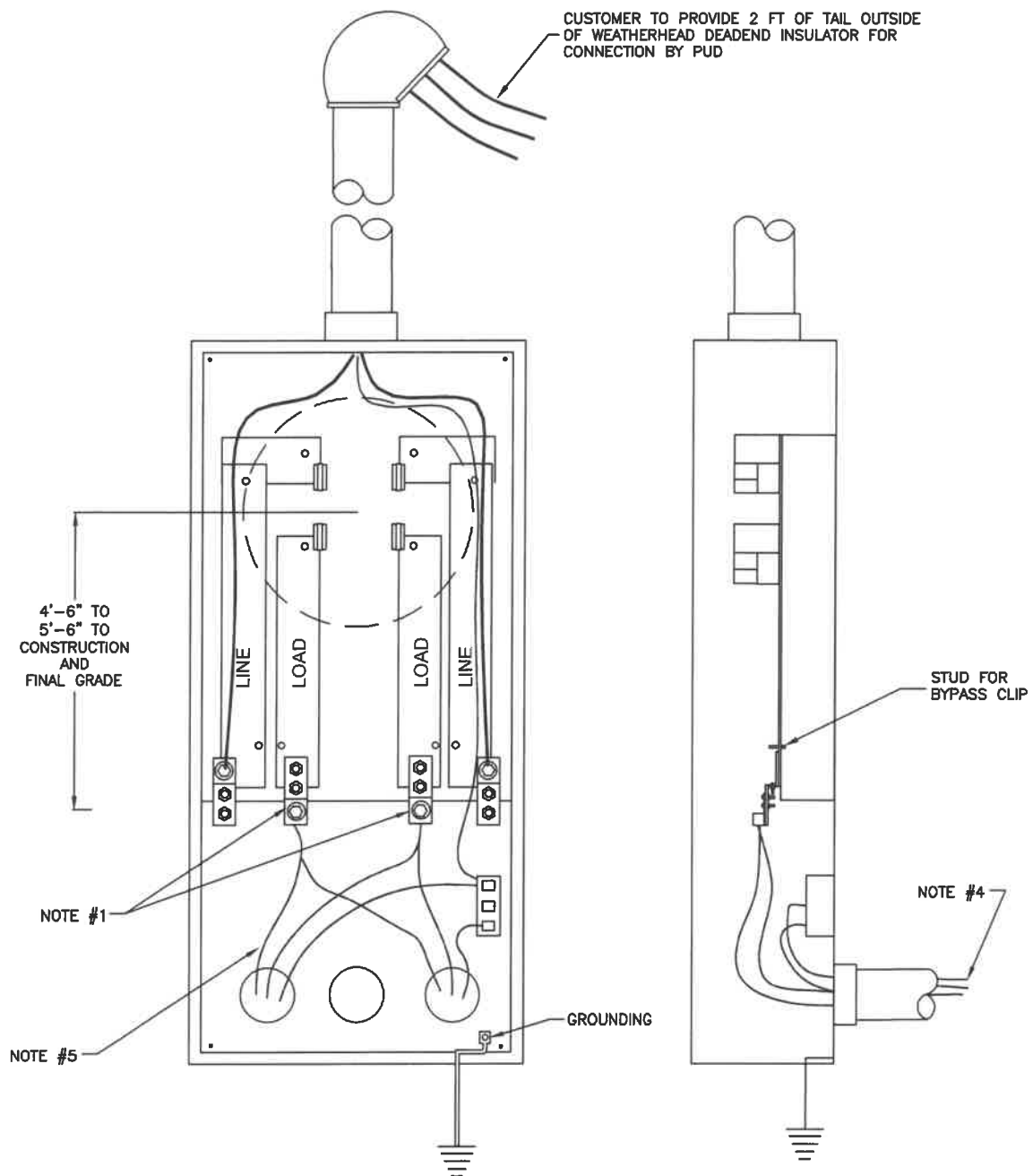


## OVERHEAD SERVICE MAST OVER 26" HIGH

DWN.  
WR  
APP. D. SAMS

DATE: 1/13/97  
UPDATED: 11/22/2019

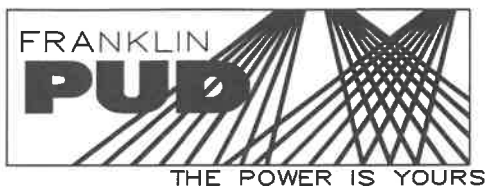
DWG. NO.  
**231.1**



**NOTES:**

1. THE CUSTOMER PROVIDES AND INSTALLS THE LOAD SIDE CONNECTORS.
2. SEE GENERAL METERING REQUIREMENT FOR APPROVED METER BASES.
3. INSTALL GROUND RODS AT EACH METER LOCATION PER N.E.C.
4. LOAD SIDE CONDUCTORS FURNISHED AND INSTALLED BY CUSTOMER. SIZE AS REQUIRED.

232.1.DWG



**OVERHEAD SOURCE - RESIDENTIAL  
320 AMP METER BASE 120/240 V. SINGLE PHASE**

DWN.  
WR  
APP. D. SAMS

DATE: 4/9/03  
UPDATED: 11/22/2019

DWG. NO.

232.1

## 6 - Commercial Service Requirements

### Customers Provide the Following:

- A plot plan showing the preferred fencing and transformer location. Engineering will work out the actual transformer location together as we finalize the engineering plans.
- Service Voltage requirements.
- Total connected load in kW, broken down into requirements for lighting, heating, air-conditioning, electric motors (along with their size), etc.
- Estimated demand in kW.
- Projected growth in electrical power requirements in kW in the next few years.
- Size and type of service wire to be installed.

A "Request for Electrical Service Information" form is attached. Please complete the form and return it to Engineering at your earliest convenience. Call FPUD Engineering at 509-547-0556 for an appointment to review your plans with a Field Engineer.

If temporary power is required, Engineering will discuss availability, applicable construction charges, and the approximate date when temporary power will be needed.

Outlined below are items normally provided by FPUD and those that are the responsibility of customer/contractor.

### Customers Pay FPUD to Provide the Following Material and Labor

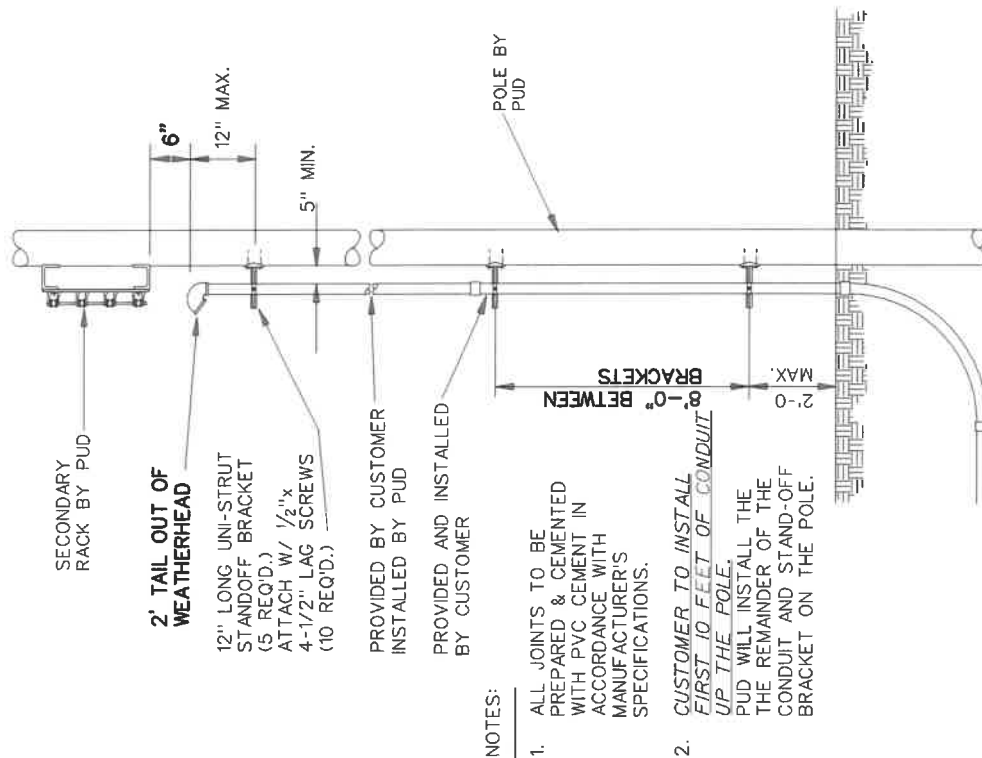
- Padmounted transformer with one of the following secondary voltages:
  - 120/240 Volt 1-phase, 3-wire
  - 208Y/120 Volt 3-phase, 4-wire
  - 480Y/277 Volt 3-phase, 4-wire
- Primary (high voltage) conductor from the source to the pad-mounted transformer
- Current transformers
- Meter
- Overhead service conductor from pole to service mast (*for overhead services only*)

## **Builders Provide the Following:**

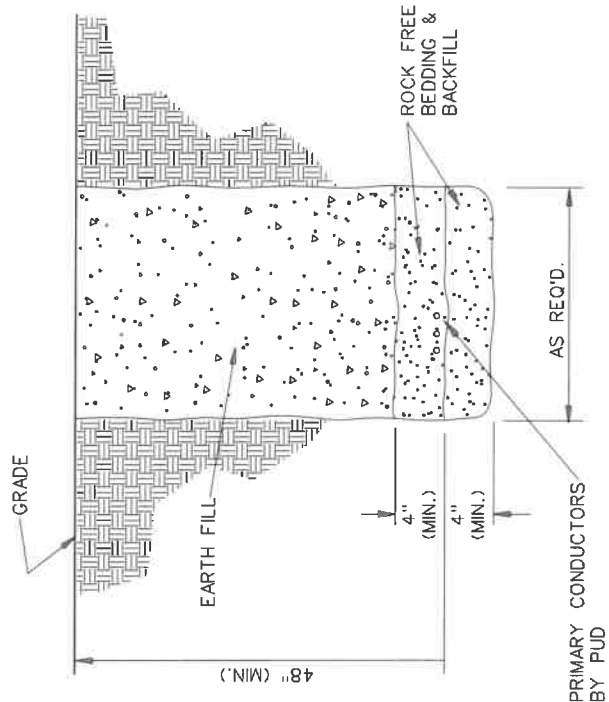
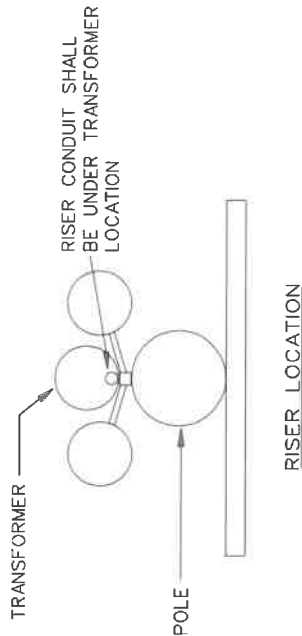
- Vault and lid for the padmounted transformer. FPUD will provide specifications after the transformer is sized.
- All service wire and conduit from secondary bushings of transformer, or designated junction box, to the customer's electrical panel. This service wire remains customer property and maintenance responsibility.
- Current transformer (CT) enclosure. FPUD will install the current transformer.
- Meterbase. FPUD will provide the specific type after the load data is received. FPUD will prewire your meter base before it is installed if a CT type meter base is required. Note meter base height requirement on drawings is to the center of the meter. Trench must be backfilled before service is pulled and meter set.
- For CT installations, continuous run of conduit, (1" for 3-phase, 3/4" for 1-phase), from the current transformer enclosure to the meter base. This conduit must not be more than 25 feet in length with no condulets throughout its length.
- All trench, conduit, bedding, backfill, vaults and vault installation for primary and secondary conductors.
- Grade stakes for vaults as needed.
- Easements for primary lines and the transformer(s).
- Key box or double locking gate. FPUD personnel must have 24-hour access to FPUD equipment. Access must be by FPUD key.
- Additional items may be required after final loads are known and FPUD design is finalized
- Attached is a copy of FPUD's "3-Phase Line Extension Guide."
- When preliminary engineering is complete, FPUD will provide an estimate of line extension fee. Payment of all line extension fees must be paid before FPUD construction crews are scheduled.
- Delivery time for special materials or transformers could be six months or longer.
- The sooner information is provided; the sooner material can be ordered.

***You may be required to pay for large transformers and equipment before it is ordered.***





**CUSTOMER SERVICE CONDUCTOR RISER  
ON DISTRIBUTION POLE**

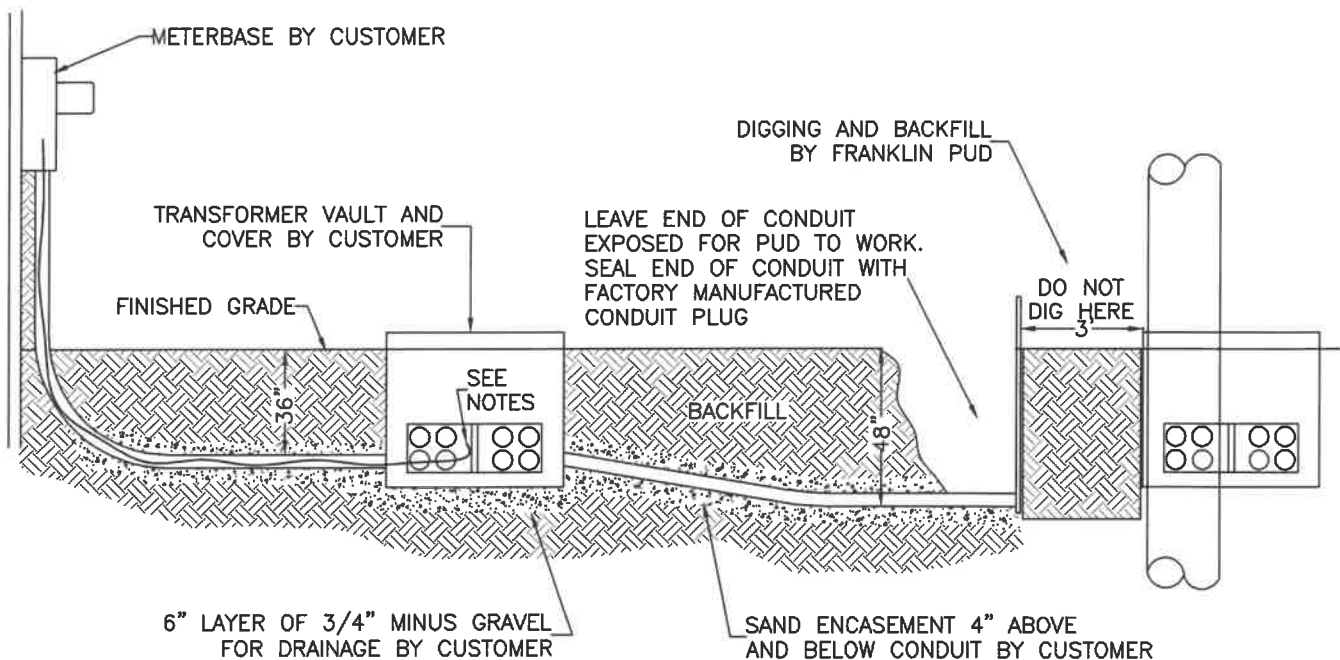
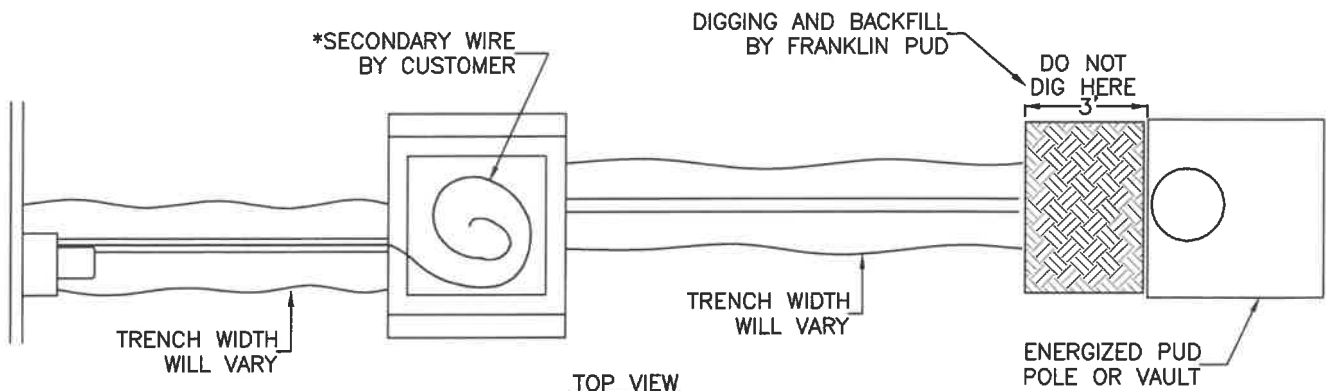


**TRENCHING SPECIFICATION  
DIRECT BURIAL CONDUCTORS**

### 3-Phase Commercial Service

The following requirements are incorporated into our “Rules & Regulations” for 3-Phase Underground Line Extension.

- A Field Engineer will determine:
  1. Availability, location, and conditions of service
  2. Easements if necessary
  3. Dollar amount of line extension fee for your new service
  4. Call Engineering at 509-547-0556 early in your planning process
- Customer provides and installs all trenching, conduit, primary junction vaults, transformer vaults, backfill, secondary conductor, as well as service entrance wiring and equipment. Customer retains ownership and maintenance responsibility for customer-provided service conductors and equipment.
- A Field Engineer will meet the customer and/or representative, at the construction site, to finalize the scope of the work. If additional customer-furnished items are required, a Field Engineer will review them with you in greater detail as the job progresses.
- FPUD will supply and install the meter when the new service is connected. FPUD will also provide and install current transformers (CT's) when required. Check with Engineering for detailed meter socket, test switch, and installation requirements. The customer must pay all metering costs before the service is connected.
- Customer obtains all permits required from city, county, and state agencies before excavating on any public lands, or right-of-way, and installation must comply with the requirements of these agencies.



PLAN VIEW

**NOTES:**

\* LOOP ENOUGH SECONDARY WIRE SLACK IN VAULT TO ALLOW CABLE TO EXTEND 8' ABOVE VAULT COVER. CHECK WITH FRANKLIN PUD ENGINEERING FOR SECONDARY DETAILS.

ALLOW FOR OVER HANG OF TRANSFORMER COOLING FINS BEYOND EDGE OF TRANSFORMER VAULT COVER. THE VAULT COVER SHOULD BE PLACED 10- FEET FROM ALL COMBUSTIBLE SURFACES, OVERHANGS, WINDOWS AND DOORS OR 4- FEET FROM ANY NON- COMBUSTIBLE SURFACES HAVING NO WINDOWS OR DOORS WITHIN 10- FEET OF VAULT COVER.

**DO NOT DIG WITHIN 3- FEET OF FRANKLIN PUD POWER POLE OR ENERGIZED VAULT.**

242.3.DWG



**3-PHASE COMMERCIAL SERVICE  
UNDERGROUND LINE EXTENSION GUIDE**

DWN.  
WR  
APP. D. SAMS

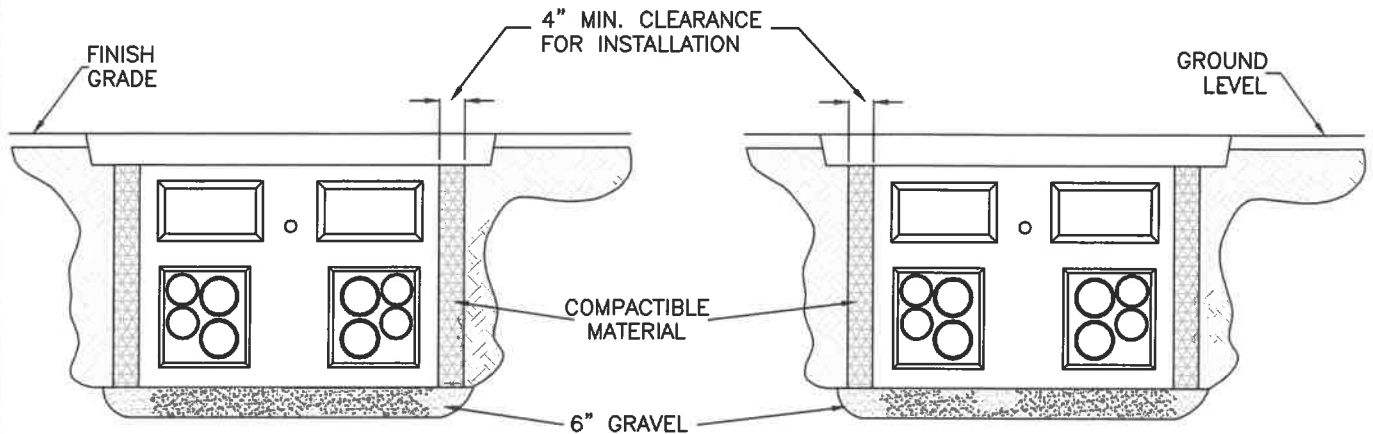
DATE: 8/13  
UPDATED: 11/22/2019

DWG. NO.

**242.3**

TYPICAL INSTALLATION ALONG  
ROADWAY, SIDEWALKS, PARKING  
AREAS AND OTHER GRADED AREAS.

INSTALLATION FOR AREAS THAT  
ARE NOT GRADED.



**NOTES:**

**EXCAVATION AND BEDDING:** EXCAVATE TO ALLOW FOR OVERALL ASSEMBLED HEIGHT OF THE VAULT, PLUS ADDED HEIGHT OF RISERS AND BEDDING MATERIALS, GRADE BEDDING MATERIAL LEVEL. BEDDING MATERIAL SHOULD BE 3" TO 6" OF 3/4" MINUS GRAVEL.

**BACKFILLING:** BACKFILL AROUND ALL VAULTS SHOULD CONSIST OF GOOD COMPACTIBLE MATERIAL SUCH AS PEA GRAVEL, SAND OR CLEAN EARTH FILL. COMPACT FILL MATERIAL AROUND VAULT LEAVING NO VOIDS BETWEEN THE VAULT WALLS AND NATIVE SOIL OF EXCAVATION. MAKE CERTAIN TO COMPACT THE BACKFILL PROGRESSIVELY IN 6" LIFTS FROM THE BOTTOM TO THE TOP SURFACE. BACKFILL ONLY AFTER VAULT IS COMPLETELY ASSEMBLED.

**GROUTING:** WE RECOMMEND A CEMENT GROUT CONSISTING OF TWO PARTS SAND AND ONE PART CEMENT AND SUFFICIENT WATER TO FORM A PLASTIC SLURRY. APPLY GROUT TO FILL ALL VOIDS IN THE JOINT BEING SEALED AND DUCT ENTRY HOLES ARE TO BE GROUTED AFTER DUCT INSTALLATION.

**KNOCKOUTS:** FROM INSIDE THE VAULT, REMOVE THE KNOCKOUT BY STRIKING ITS CENTER WITH A HAMMER. THIS METHOD ALLOWS FOR EASY REMOVAL WITHOUT EXCESS CHIPPING OR DAMAGE TO THE VAULT. COMPLETELY REMOVE CENTER KNOCKOUT IN BOTTOM OF VAULT PRIOR TO INSTALLATION TO ALLOW VAULT TO DRAIN.

**PAVING AROUND VAULT:** PRIOR TO PAVING OR POURING SIDEWALKS AROUND THE VAULT, AND BEFORE INSTALLATION OF THE PUD'S TRANSFORMERS, CALL OUR ENGINEERING DEPARTMENT SO WE MAY HAVE GROUNDING CONDUCTORS INSTALLED.

**CONDUIT INSTALLATION:** TO INSURE PROPER SEPARATION BETWEEN HIGH VOLTAGE AND LOW VOLTAGE CONDUCTORS, REVIEW CONDUIT INSTALLATION WITH OUR ENGINEER BEFORE EXTENDING CONDUITS INTO THE VAULT.

243.1.DWG



**VAULT INSTALLATION GUIDLINES**

DWN.  
WR  
APP. D. SAMS

DATE: 8/13  
UPDATED: 11/22/2019

DWG. NO.

243.1

## Transformer Vaults & Lids

Engineering will specify concrete transformer vault and lids after determining transformer size. Equivalent products must have prior written Engineering approval. The top of the vault (not including the cover) is installed at final grade level so that when 6" cover is in-place; the top of the cover will be 6" above the final grade of the surrounding surface.

Knockouts should be made from the inside of the vault. Completely remove center knockout in bottom of vault prior to installation to allow vault to drain. All vaults shall be placed on a 6" base of compacted crushed rock.

### **3-Phase Pad-Mount V-3 (45 kVA-300 kVA)**

#### **Old Castle Precast**

2808 A Street SE  
Auburn, WA 98002  
(800) 892-1538

504 Vault w/irons & grounds (0060025)  
56-2044 Pad (0060265)

#### **H2 Pre Cast**

4919 Contractors Drive  
East Wenatchee, WA 98802  
(509) 884-6644

VB554-B-F Base with internal grounds  
TPFV3 (6'-6" X 4'-8" X 6" lid with 4'-6"x1'-8"  
opening)

#### **Spokane Concrete Products**

P.O. Box 5178  
Spokane, WA 99205  
(509) 487-2726

E11-KO Pad-mount Vault  
with internal grounds

### **3-Phase Pad-Mount V-3.1 (500 kVA-750 kVA)**

#### **Old Castle Precast**

2808 A Street SE  
Auburn, WA 98002  
(800) 892-1538

644LA Vault w/irons & grounds (0090115)  
89-1850 Pad (0090242)

#### **H2 Pre Cast**

4919 Contractors Drive  
East Wenatchee, WA 98802  
(509) 884-6644

VB464 Base with internal grounds  
TPFV3.1 (6'-6" X 6'-6" X 6" lid  
with 4'-6" X 1'-8" opening)

### **3-Phase Pad-Mount V-3.2 (1,000 kVA and larger)**

#### **Old Castle Precast**

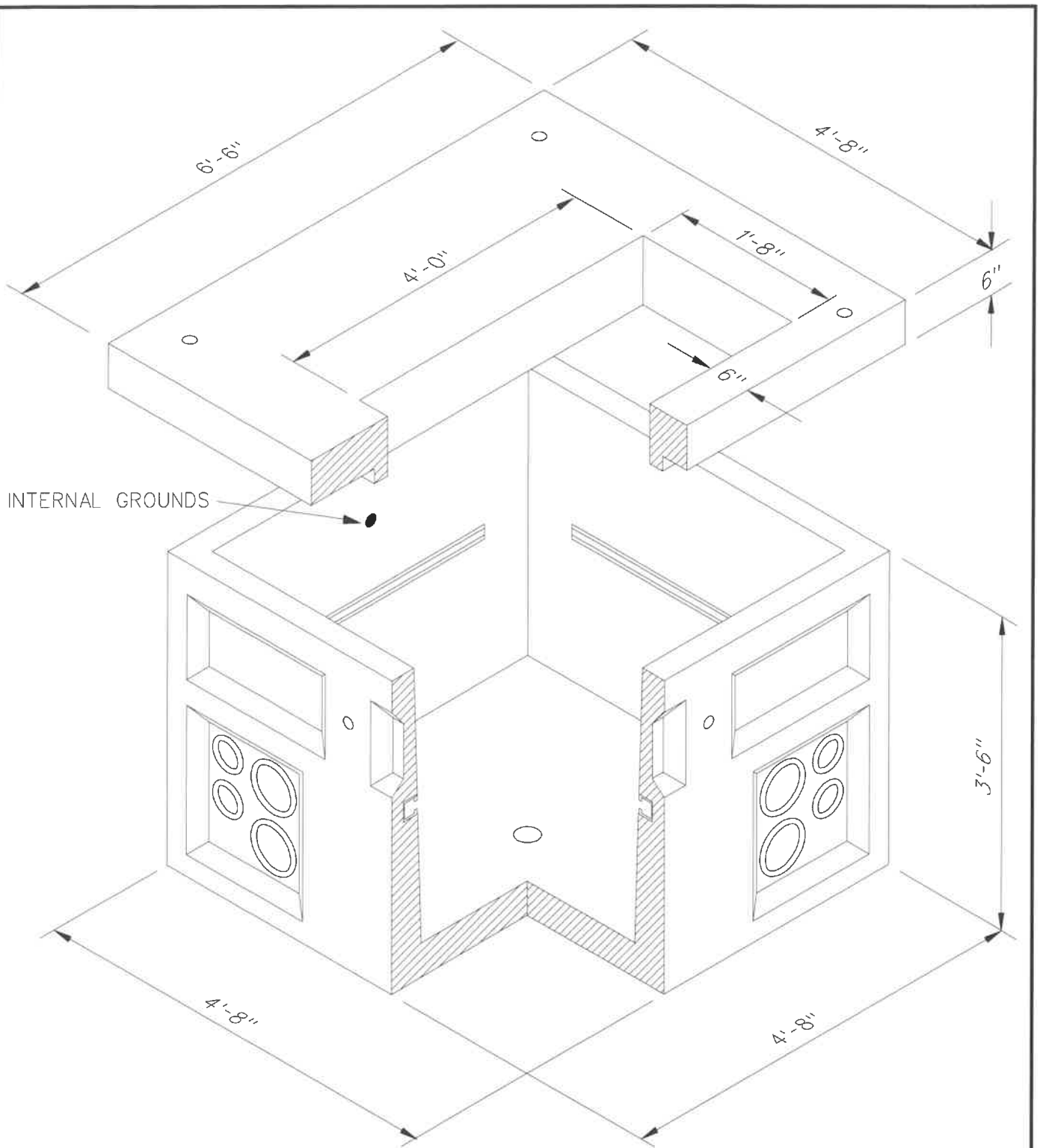
2808 A Street SE  
Auburn, WA 98002  
(800) 892-1538

575-LA Vault w/internal grounds (0080005)  
89-1850 Pad (0090242)  
85"x106" Pad with 3'x3' door (Special Order)

#### **H2 Pre Cast**

4919 Contractors Drive  
East Wenatchee, WA 98802  
(509) 884-6644

VB-575-B-F with internal grounds  
TPF3PH (8'-0" X 9'-0" X 8" lid  
with 5'-0" X 1'-8" opening)  
85"x106" lid with 3'x3' diamond plate door

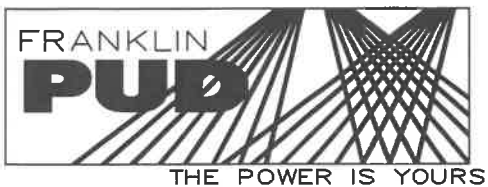


**NOTES:**

1. SEE "VAULT INSTALLATION GUIDELINES"

244\_1.DGN

244.1.DWG



**VAULT, TRANSFORMER  
3-PHASE PAD-MOUNT (45-300 KVA)**

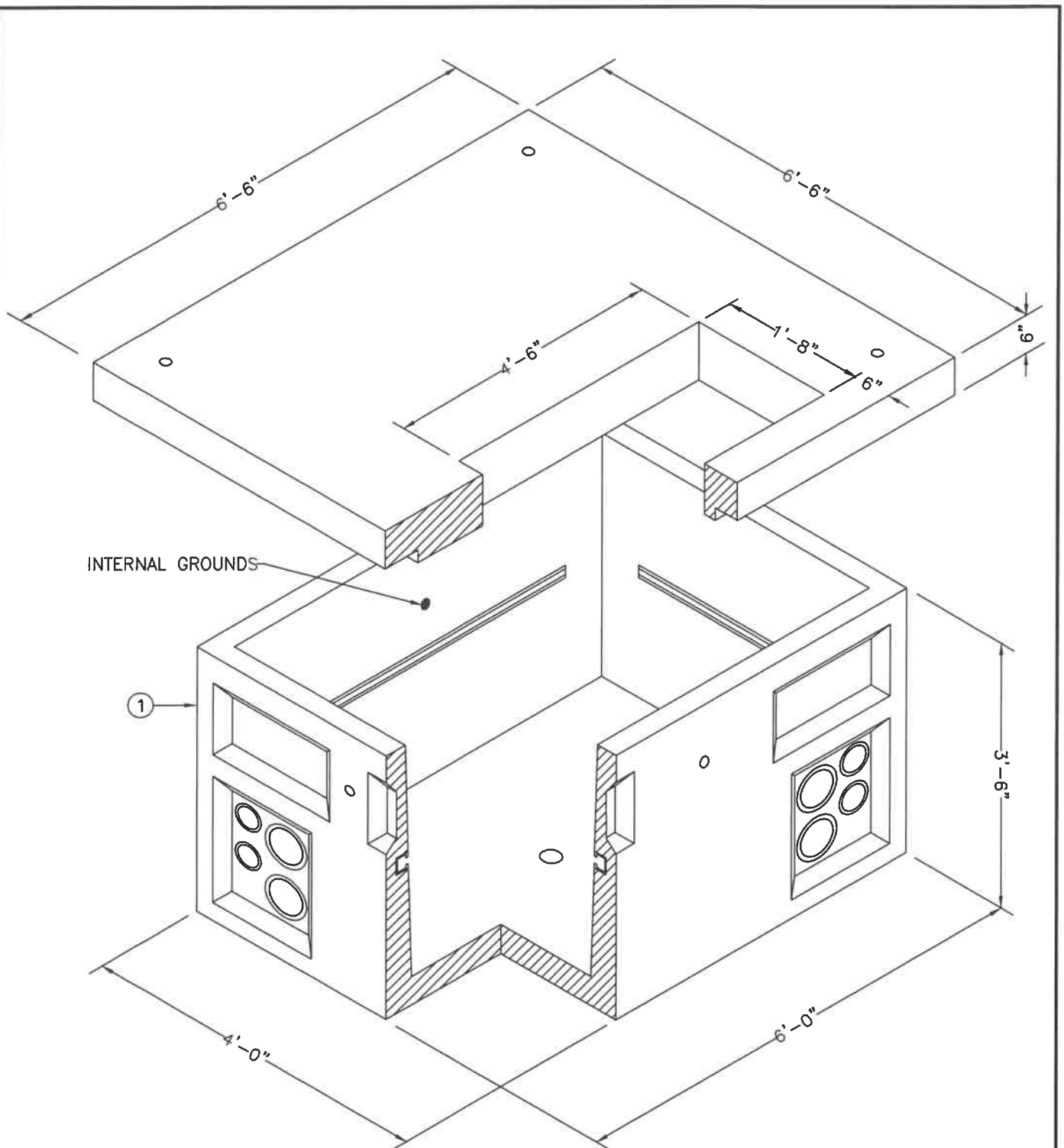
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APP. D. SAMS

DATE: 4/2/03  
UPDATED: 11/22/2019

DWG. NO.

**244.1**





**NOTES:**

1. SEE "VAULT INSTALLATION GUIDELINES".

245.1.DWG



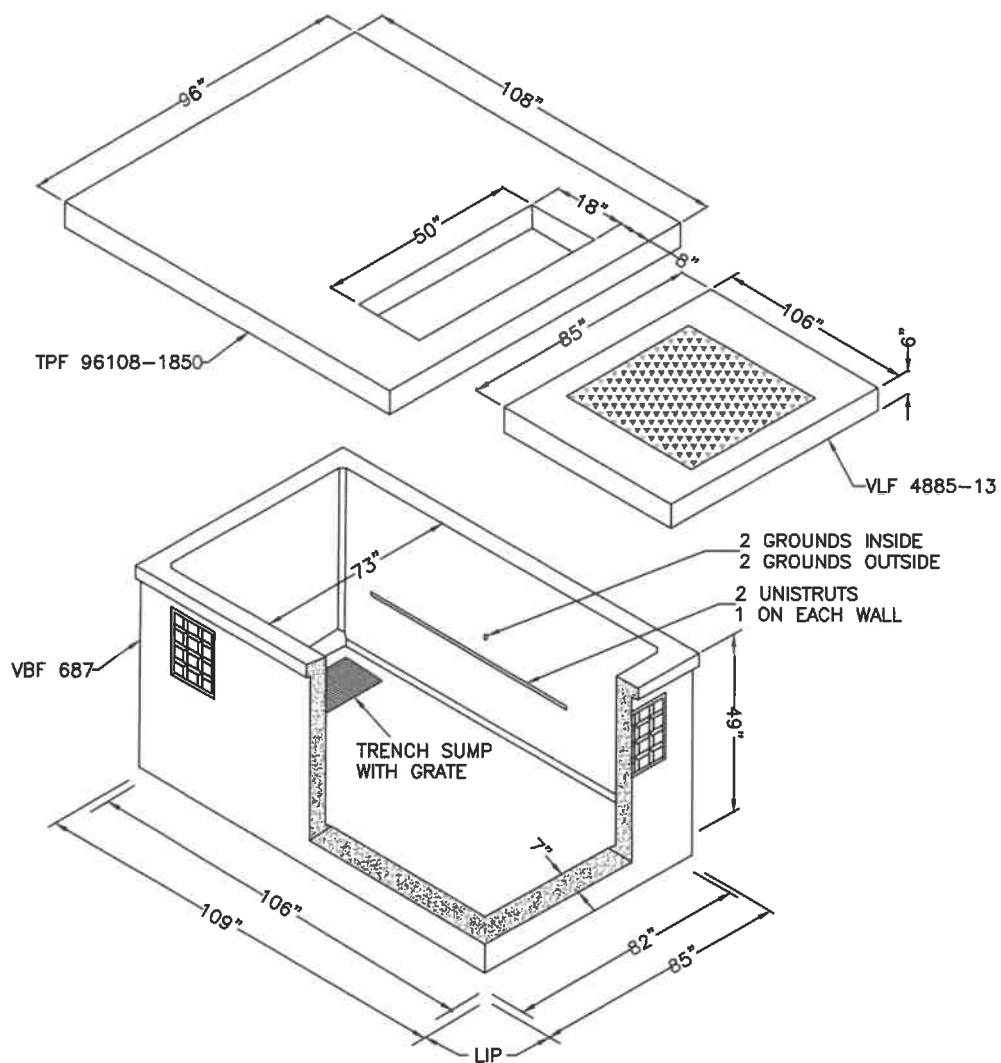
**VAULT, TRANSFORMER  
3-PHASE PAD-MOUNT (500-750 KVA)**

DWN.  
WR  
APP. D. SAMS

DATE: 3/12  
UPDATED: 11/22/2019

DWG. NO.

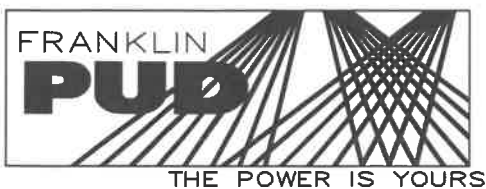
**245.1**



**NOTES:**

1. SEE "VAULT INSTALLATION GUIDELINES".

246.1.DWG

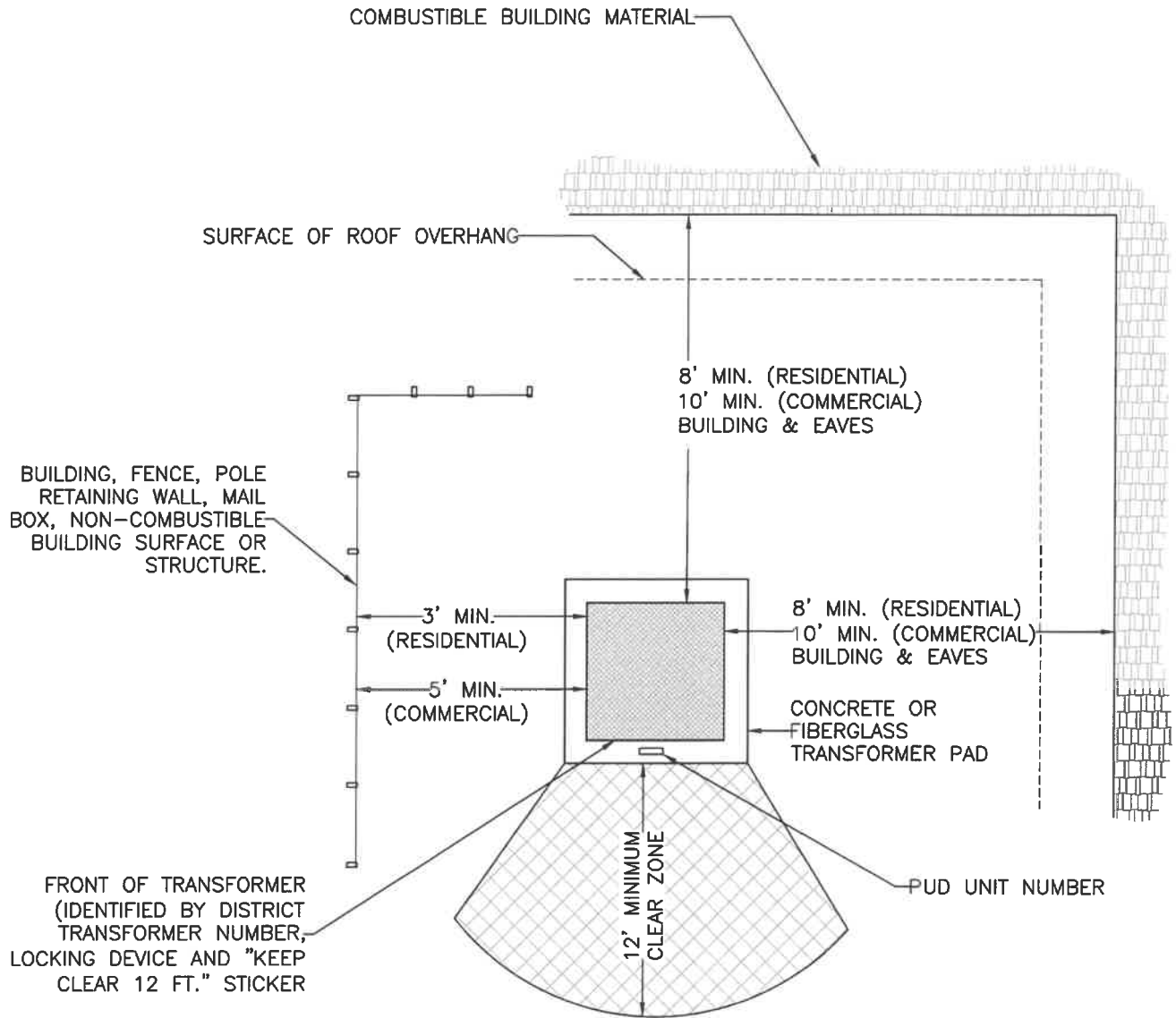


**VAULT, TRANSFORMER  
3-PHASE PAD-MOUNT (1000 KVA & ABOVE)**

DWN.  
WR  
APP. D. SAMS

DATE: 5/09  
UPDATED: 11/22/2019

DWG. NO.  
**246.1**



- NO OBSTRUCTIONS ALLOWED OVER TRANSFORMER.
- A MINIMUM 8 FT. CLEARANCE IS REQUIRED FROM ALL DOORS AND WINDOWS.
- DRAINAGE AT PADMOUNT TRANSFORMER MUST BE AWAY FROM BUILDING IN CASE OF OIL LEAKAGE.
- REFER TO LANDSCAPING GUIDELINES.

247.1.DWG



### TYPICAL TRANSFORMER CLEARANCES

DWN.  
N. RUMMEL  
APP.

DATE: 12/95  
UPDATED: 8/13

B. WYATT

DWG. NO.

247.1

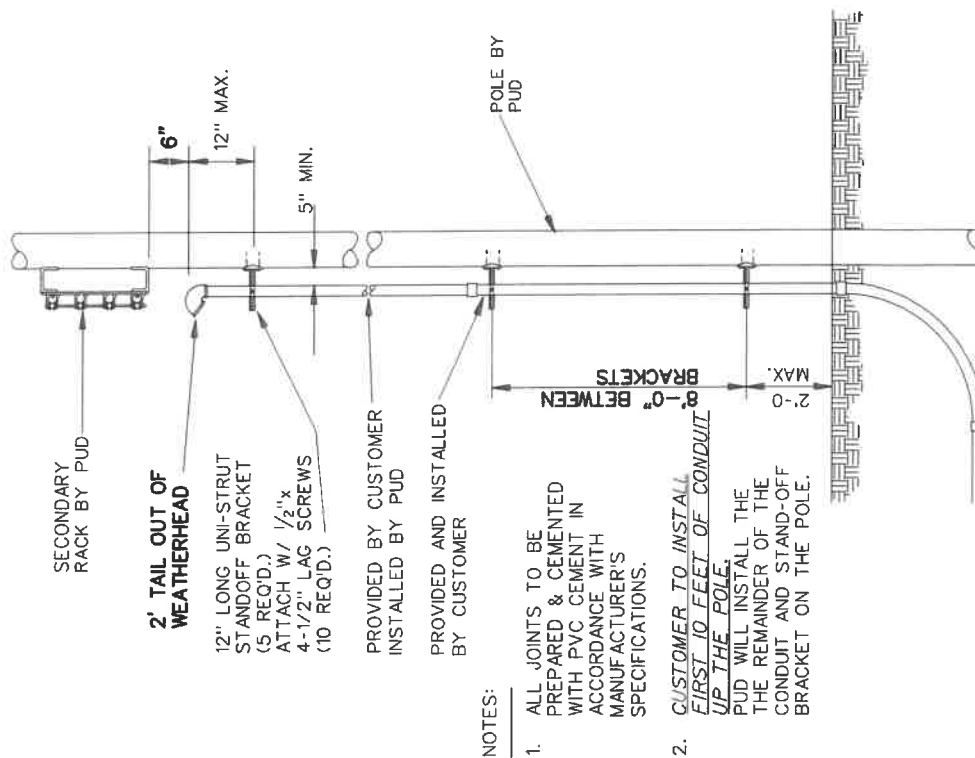
## 7 – Irrigation Service Requirements

### Customer Responsibilities

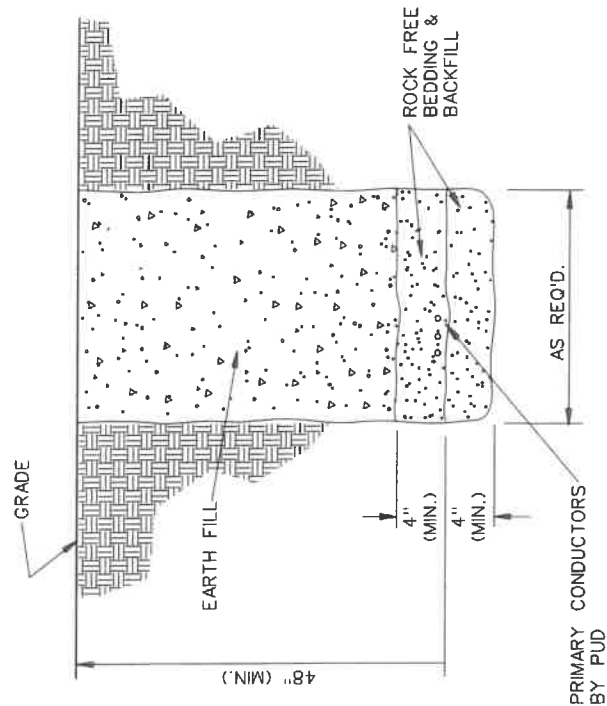
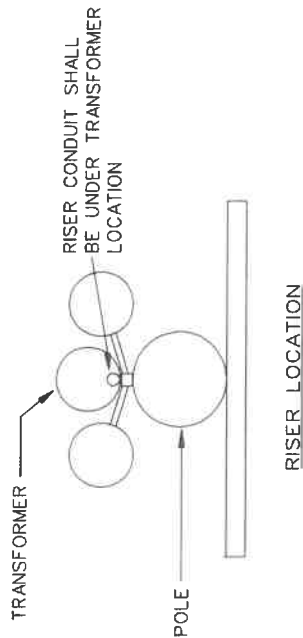
- Advise us of your service requirements before installing electrical equipment, trenches, conduit, and/or service poles, so FPUD may determine the availability, location, and conditions for the service. An Engineering representative will review with you the location of service, route, and other associated information.
- **Complete and return a "Request for Irrigation Service Information" form to help us plan your new electrical service requirements.**
- This information is important in helping us to plan your service connection. FPUD may require you to use reduced starting voltage or other equivalent measures. Any adjustable speed drives or other equipment with harmonic content should be noted on the "Request for Irrigation Service Information" form. **Check with engineering prior to purchasing adjustable speed drives.**
- Provide and install all trenches, conduit, transformer vaults or pads, backfill, secondary conductors, any required service poles, and all service entrance wiring and equipment.
- Supply and install the necessary meter socket and obtain inspection and approval from the State Electrical Inspector for your service entrance equipment. FPUD will supply and install the meter when the new service is connected. FPUD will also provide and install current transformers (CT's) when required. Check with Engineering for details.
- Obtain any permits required from city, county and state agencies before excavating on any public lands or right-of-way, and comply with the requirements of these agencies.
- Provide easements as required. If an easement is necessary, our representative will review this requirement with you in more detail.
- Payment of line extension fees covering FPUD labor, equipment, and material costs before FPUD construction crews will be scheduled.
- FPUD offers the following standard service voltages:  
1-phase, 120/240 V      3-phase, 208Y/120 V      3-phase, 480Y/277 V

FPUD may provide 3-phase, 480/240 Volt service to 480 Volt irrigation circle motor load.

***We STRONGLY recommend that you install "Phase Failure Protection" on your 3-phase service equipment to protect your pump motors.***



**CUSTOMER SERVICE CONDUCTOR RISER  
ON DISTRIBUTION POLE**



**TRENCHING SPECIFICATION  
DIRECT BURIAL CONDUCTORS**

## **Overhead Line Extensions**

Normally an overhead line extension, using pole-mounted transformers, is installed for irrigation service. All line extension costs are borne by the customer. FPUD will install distribution poles, conductor, and transformers. To avoid any interference with farming activities, FPUD will review the location of our facilities with the property owner or farmer.

The customer shall provide service poles and associated service entrance conductor and equipment. The FPUD may provide a short overhead service conductor from the distribution pole to your service pole. Your underground service conductor riser conduits may be attached to our distribution pole on standoffs, but other customer service entrance equipment, i.e., meter bases, panels, and disconnect switches shall not be attached and will be attached to the service pole. This equipment remains customer property and maintenance responsibility.

The customer or contractor representative should contact us to review specific service requirements prior to making any field installations.

## **Underground Line Extensions**

Normally underground primary (high voltage) line extensions use direct burial conductor (not in conduit). When a conduit system is necessary for protection from rodents or rock, or if other special conditions exist, we will provide specifications for material and installation.

- **Transformer Pad/Vault and Cover:** Normally, a pad-mounted transformer is installed on a concrete pad that customer has purchased. FPUD will supply the pad specification after the transformer size is determined.
- **For large installations, or where other special conditions exist,** FPUD may require a vault with a pad lid instead of the pad only. We will provide specifications after the transformer size and customer service wire size is known. Engineering must first approve equivalent products.
- **Secondary Conductors:** Install secondary conductors to the transformer vault/pad location before we install the transformer.

## 8 – Meter Requirements

The following are general requirements only, we encourage customers to consult with Engineering or the Meter Shop before you purchase and install your meter equipment.

### General Provisions

**Grounds:** Bond all meter sockets and CT enclosures to the customer ground in accordance with the National Electrical Code (NEC).

**Meter Location:** Check with Engineering before equipment is installed. Meters shall be:

- Front (roadside) or side exterior wall of the building within 6' of the front of the building.
- Accessible to FPUD personnel on a 24-hour basis.
- Height to center of meter shall be at or between 4'6" and 5'6" above construction and final grade.
- In developments with existing facilities along a rear lot line, verify the meter location with Engineering.
- Other locations will be at the discretion of FPUD. Permission needs to be in writing.

**Non-Residential Underground Services:** If underground conductor is customer-owned, customer or customer representative makes up service conductor connections in the CT can. FPUD will mount CT's and make meter connections. FPUD makes the connections to the transformer spades.

**Single Family Residential Underground Services:** The underground service conductor is owned and installed by FPUD. For installations above 320 A, the installation will be the same as a commercial installation, with FPUD making the service connections at the transformer spades only, but billed on a residential rate. The CT wiring will also be by FPUD.

### Self-Contained Metering

**Residential –** Customer provides the meter base and conduit to the line side of meter base. Conductor on the load side of the meter base into the customer system is owned and maintained by the customer.

- **Overhead Entrances –** Customer provides and owns the service wire from the weatherhead to the line side of the meter base. FPUD provides service conductor to the weatherhead "knuckle" connections. The "knuckle connection is the end of the utility owned service wire and the utility also owns the meter within the meter socket.

- Underground Entrances – FPUD owns and installs service conductor up to the terminal connections in top side of the meter socket. For above a 320A service, the customer owns and installs the service conductor and a CT can. FPUD only terminates the service wire at the transformer spades. FPUD will swap a CT meterbase with a pre-wired meterbase. FPUD will also provide and install CT metering wiring between the CT can and the CT meter socket. Check with FPUD Engineer for details.
- Meter sockets (meterbase) must be U.L. approved and meet the requirements of the National Electrical Code (NEC).
- Since FPUD requires ring-type meterbases, horn type bypasses and lever-type bypasses are not allowed, since they must be used within a ringless meterbase. Safety socket meterbases, with a bypass are required for all self-contained (non-CT) commercial installations. Only Terminal Block (TB) or Manual Circuit Closing (MCC) type bypasses are allowed. Bypasses are allowed on residential services, but not required.
- Sealing provisions are required on all metering service equipment.

### **Residential Single-Phase installations, 120/240 Volt, 3-wire:**

- Effective July 1, 2020, the Department of Labor & Industries require an integrated disconnect (breaker) with the meterbase socket for residential applications. Self-contained meter sockets shall be rated at 200 or 320 Amperes continuous and shall be ring type. Integrated meter sockets shall be UL labeled. Examples of meter sockets meeting FPUD requirements include:

### **Class 200 Ampere Meter Sockets:**

Are used for homes with one panelboard.

Eaton CMBEB200BTS (200A, 1-Phase, 4 Jaw, Ring-Type, 3-Wire, 120/240V, Surface Mount, Bottom or Top Feed, NEMA 3R. Main Disconnect: 200A, 2-Pole, 22 kAIC, No Bypass). CMBEB200BTF (same, with recessed flush mount).

Eaton MBEB200BTS (200A, 1-Phase, 4 Jaw, Ring-Type, 3-Wire, 120/240V, Surface Mount, Bottom or Top Feed, NEMA 3R. Main Disconnect: 200A, 2-Pole, 10 kAIC, No Bypass). MBEB200BTF (same, with recessed flush mount).

Or other manufacturers with identical features and a UL listing.



### Class 320 Ampere Meter Sockets:

Shall be used for residential services only and normally serve two panelboards. The heating load limit is 40 kW connected. Check with Engineering and the State Electrical Inspector to assure compatibility with available fault current. A minimum amperes interruption (AIC) rating for the main breaker of 10kA is required, but 22 kA is recommended.

Class 320 Ampere meter sockets shall be rated 320 Amp continuous (400A with a continuous rating of 80%), with meter mains and ring type. Meter socket design may incorporate a bypass link. Compression or setscrew type connectors are acceptable. An example of a meter socket meeting FPUD requirements includes:

Eaton	U4042MC (400A Meter Socket for 320A Meter, 1-Phase, 4 Jaw, Ring-Type, 3-Wire, 120/240V, Surface mount, Bottom Feed, NEMA 3R. Main Disconnect: (2) 200 Amp, 2-Pole, 10 kAIC Breakers, No Bypass. Use U4042MC with Overhead Kit CK8326 for overhead entry. Flush Trim Kit FK2438) Use U404MC for 22 kAIC Breakers.
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Or other manufacturers with identical features and a UL listing.

Residential services above 320A or 3-phase services shall coordinate with Franklin PUD engineering department for written approval of the meterbase before purchasing.

### Commercial Single-Phase installations, 120/240 Volt, 3-wire:

Self-contained meter sockets shall be rated 200 Amperes continuous for commercial installations and shall be ring type and are not required to have an integrated disconnect. **Meterbases with lever actuated jaw clamping or lever bypasses are not acceptable. A link bypass is required.** Meter sockets shall be UL labeled. Examples of meter sockets meeting FPUD requirements include:

The meterbase below does not include a main disconnect breaker:

Eaton	U264 (200A, 1-phase, 4 Jaw, Ring Type, 3-wire, 120/240V, Surface Mount, OH/UG feed, MCC Bypass) Add "F" for Flush Mount.
-------	--

Or other manufacturers with identical features and a UL listing.

The meterbases below include the main disconnect breaker:

Eaton	U224 MTBH MS45 (200A, 1-phase, 4 Jaw, Ring Type, 3-wire, 120/240V or 120/208V (w/ 5 <sup>th</sup> jaw kit), Surface Mount, OH/UG feed, Meter Main, 22 kAIC, TB Bypass)
Eaton	U224 MTBH MS15 (200A, 1-phase, 4 Jaw, Ring Type, 3-wire, 240/480V, Surface Mount, OH/UG feed, Meter Main, 22 kAIC, TB Bypass)

Or other manufacturers with identical features and a UL listing.

For multiple meter applications such as apartments, the customer shall provide material specifications and catalog cut sheets **prior to ordering equipment**. All the meter bases must be clearly marked according to "Meter base Identification Drawing 263.1." In addition, all apartment units shall be permanently labeled prior to energization.

Should meter base labeling be incorrect, FPUD personnel will not energize the service until corrections are made. If additional trips are required due to incorrect labeling, the customer will be required to pay actual cost for the additional trip(s) prior to the service being energized.

- Commercial loads requiring more than a 200A service shall have a CT installation, 320A self-contained meters are not available for commercial installations, in order to eliminate arc flash issues.

## Commercial 3-Phase Installations:

New installations shall have a voltage of either 208Y/120V or 480Y/277V.

- 240/120 Volt 3-phase delta - Self-contained meters are used up to 160 Amps NEC computed load, (200 Amp panel loaded to 80%), or 60 kW or 60 HP. **Terminate the wild leg on the far-right terminal, C-phase.** Call Engineering if you have any questions.
- 480/240 Volt 3-phase delta – **Terminate the wild leg on the far-right terminal, C-phase**
- 480Y/277 Volt wye or 480/240 Volt delta – Self-contained 200 Amp meters are used through 125 kW or 125 HP.
- 208Y/120 Volt 3-phase wye – self-contained meters are used up to 160 Amp NEC computed load, (200 Amp panel loaded to 80%) or 57.5 KW 50 HP.

Self-contained 3-phase meter sockets shall be rated 200 Amperes. **Meter bases with lever actuated jaw clamping or lever bypasses are not acceptable.** Manual link bypass type meter bases are acceptable. FPUD does not install self-contained 400 Amp 3-phase meters due to the arc flash hazard potential. Examples of meter sockets that meet FPUD requirements include:

The meterbase below does not include a main disconnect breaker:

Eaton	U267MS20 (200A, 3-Phase, 7 Jaw, Ring Type, 4-Wire, 600V, Surface Mount, Bottom or Top Feed, MCC Bypass) Add "F" for Flush Mount.
-------	--

Or other manufacturers with identical features and a UL listing.

The meterbases below include a main disconnect breaker:

Eaton	U227 MTBH MS45 (200A, 3-phase, 7 Jaw, Ring Type, 4-wire, 208Y/120V or 240/120V (w/ 5 <sup>th</sup> jaw kit), Surface Mount, OH/UG feed, Meter Main, 22 kAIC, TB Bypass)
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Eaton                      U227 MTBH MS15 (200A, 3-phase, 7 Jaw, Ring Type, 4-wire, 480Y/277V, Surface Mount, OH/UG feed, Meter Main, 22 kAIC, TB Bypass)

Or other manufacturers with identical features and a UL listing.

## CURRENT TRANSFORMER (CT) METERING

### CT Meter Socket:

- 1-phase meter sockets are to be six terminal with space in socket for a test switch. The test switch is provided and installed by FPUD.
- 3-phase meter sockets are to be thirteen-terminal with space in the socket for a test switch. The test switch is provided and installed by FPUD.
- **Approved Meter Base Sockets for all CT installations must be brought to the FPUD meter shop and traded for a pre-wired unit, which will include the test switch.**

The following meter sockets are approved for use.

- 1-phase: Six-terminal with provision for test switches

Cooper B-Line	12146
Milbank	UC-3436XL (Ring Type)

- 3-phase: Thirteen-terminal single socket with provision for test switches

Cooper B-Line	121413
Milbank	UC-3433-XL (Ring Type)

- All overhead services with CT metering are required to install a CT can or compartment. FPUD will not install CT's at the service mast.
- **If an existing service with CT's at the service mast is upgraded or altered the customer will be required to install a CT can.**

### Current Transformer (CT Can) Mounting Bases:

A CT mounting base is required to meet the following continuous and fault withstand ratings.

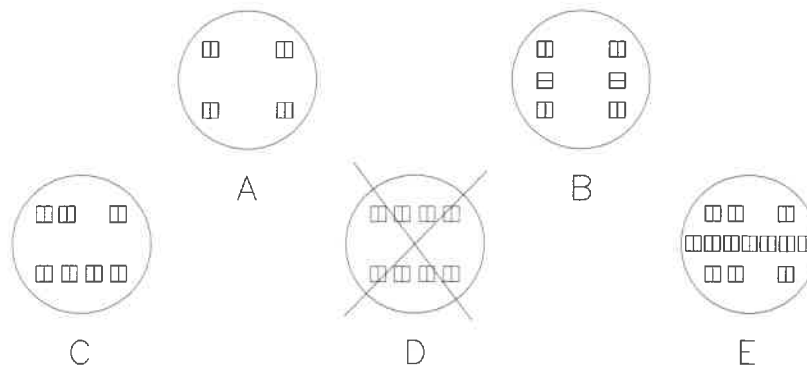
<u>Type</u>	<u>Continuous Rating</u>	<u>Withstand Rating</u>	<u>Approved Mounting bases</u>
1-phase	400 A	50,000 A	Cooper B-line 6019 - HA Milbank A4-k4797
1-phase	800 A	50,000 A	Cooper B-line 6019 - HE Milbank A-k4797
3-phase	400 A	50,000 A	Cooper B-line 6067 - HA Milbank B4-K4798
3-phase	800 A	50,000 A	Cooper B-Line 6067 - HE Milbank B –L4798

### Conduit

- 1-phase – ¾" EMT or Rigid
- 3-phase – 1" EMT or Rigid
- Conduit runs must be less than 25 feet and contain no condulets
- FPUD installs the CT metering wires

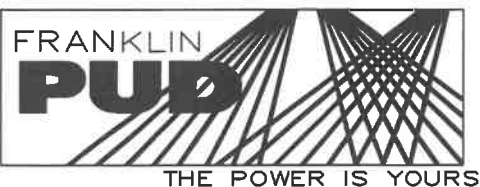
SINGLE PHASE							
		SELF-CONTAINED			WITH CURRENT TRANSFORMERS		
VOLTAGE	WIRES	AMP	NO. CLIPS	SOCKET	NO. C.T.	NO. CLIPS	SOCKET
120/240	3	200	4	A	-	-	-
<b>RESIDENTIAL ONLY</b>							
120/240	3	320	4	A	-	-	-
240/480	3	200	4	A	-	-	-
<b>120/240</b>	<b>3</b>	<b>400</b>	-	-	2	6	B
<b>120/208</b>	<b>3</b>	<b>200</b>	<b>5</b>	<b>A</b>	-	-	-

THREE PHASE							
		SELF-CONTAINED			WITH CURRENT TRANSFORMERS		
VOLTAGE	WIRES	MAX AMP	NO. CLIPS	SOCKET	NO. C.T.	NO. CLIPS	SOCKET
<b>208Y/120</b>	4	200	7	C	3	13	E
<b>240/120</b>	3 or 4	200	7	C	3	13	E
<b>480/240</b>	3 or 4	200	7	C	3	13	E
<b>480Y/277</b>	4	200	7	C	3	13	E



1. THE CUSTOMER PROVIDES AND INSTALLS ALL METER BASE.
2. THE PUD PROVIDES AND INSTALLS TEST SWITCHES.
3. TYPE B AND E METER BASES NEED TO BE BROUGHT TO THE PUD METER SHOP FOR TEST SWITCH INSTALLATION AND PRE-WIRING BEFORE CUSTOMER INSTALLS.

261.1.DWG

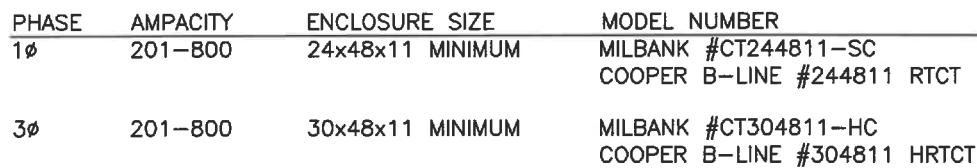


## METER SOCKET CLIP ARRANGEMENT

DWN.  
WR  
APP. D. SAMS

DATE: 12/26/96  
UPDATED: 11/22/2019

DWG. NO.  
**261.1**



## Current Transformer Enclosure (CT Can) Requirements

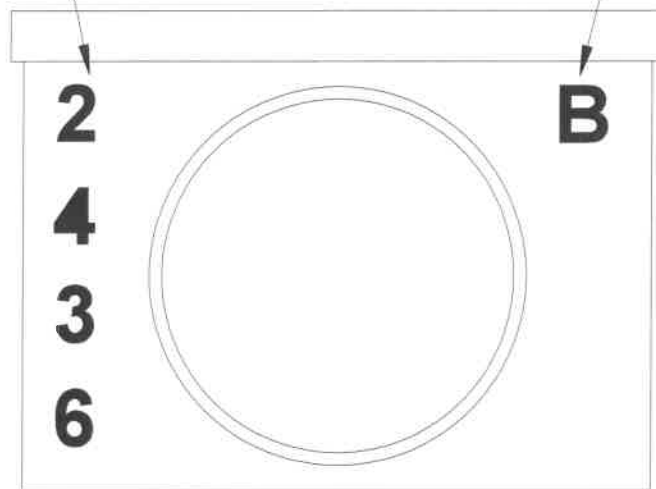
NOTES: (Consult FPUD regarding any exceptions to these requirements.)

- Consult FPUD for available fault current before purchasing mounting base.
- Cover needs to be NEMA 3 or NEMA 3R rated (i.e. rain tight).
- 30 x 48 x 11 CT **hinged** enclosure and mounting base for 3-phase.
- 24 x 48 x 11 CT enclosure and mounting base for 1-phase.
- FPUD will provide and install CT's.
- Customer provides and installs enclosure and mounting base.
- Maximum of two (2) load conductors per phase without prior FPUD approval.
- FPUD will provide and install source side connectors for residential services.
- **Customer will provide and install both source-side and load-side connectors for commercial and irrigation applications.** The source conductors attach to the top of the CT and the load conductors attach to the bottom of the CT. Six feet of tail is recommended in order to properly train the wire within the CT can.
- Check with FPUD for alternate conduit locations.
- Only conductors associated with metering or grounding are permitted in the current transformer enclosure. No connections may be made in any current transformer enclosure to supply any other meter.
- Consult with FPUD on CT compartment location. The meter base is to be located within 25 feet of CT compartment. No condulets or junctions are allowed in meter conductor conduit. Cumulative **bends over 270° are not acceptable.**
- When current transformers or other equipment are installed in a location where it may be struck by a motorized vehicle, the customer is to install and maintain FPUD approved barrier posts to protect equipment.



ADDRESS NUMBER

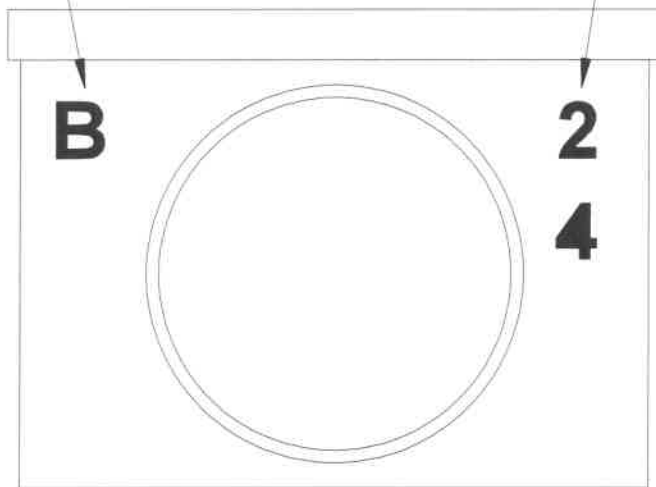
APT. OR UNIT LETTER



OR

BUILDING LETTER

APT. OR UNIT NUMBER



ALL MULTIPLE METERBASE INSTALLATIONS NEED TO BE APPROPRIATELY LABELED PRIOR TO CONNECTION OF SERVICE. ACCEPTABLE MARKING METHODS ARE SHOWN ABOVE.

LETTERS AND NUMBERS ARE TO BE A 1" MINIMUM HEIGHT, SECURELY FASTENED TO THE METERBASE BY SCREWS, RIVETS OR WATERPROOF ADHESIVE.

263.1.DWG



## METERBASE IDENTIFICATION

DWN.  
WR  
APP. D. SAMS

DATE: 1/13/97  
UPDATED: 11/22/2019

DWG. NO.  
263.1

## 9 - Subdivision & Plat Requirements

The following information outlines our general requirements for installing underground electrical facilities within a plat or subdivision. It also summarizes the practices and policies incorporated in FPUD's Rules and Regulations for Underground Line Extensions.

- Subdivisions and plats must be approved by the City or County and recorded.
- FPUD will design the distribution system, and install transformers, primary cable, and secondary cable. The distribution system normally consists of primary cable, conduit, vaults and pull boxes installed in public right-of-way or easement along the streets, alleys, or property lines. Front lot design is our current practice.
- Developer furnishes and installs trench, conduit, bedding, and backfill, and provides and installs primary junction vaults with covers, and transformer vaults and covers.
- FPUD requires payment covering all FPUD labor, equipment, and material costs before FPUD construction crews will be scheduled.
- Contact Engineering early in your planning process. They determine availability, location, and conditions of:
  - Services
  - Easements
  - Line Extensions
  - Applicable Fees and/or Charges
- Conduit: The underground duct (conduit) must be gray Polyvinyl Chloride (PVC) Schedule 40, conform to NEMA TC2 Specifications and be permanently marked at regular intervals with the manufacturer's name or symbol, size, "SCH 40" and "PVC". The conduit size will be determined by FPUD (normally 3", 4", or 6").
- Couplings and Fittings: Must be PVC Schedule 40, factory-made, and conform to the same specifications as the conduit. Special sweeps may be required, at the discretion of our Engineer. Sweeps must have a minimum 36" centerline radius. Heat bent angles are not allowed.
- Installation of the Conduit System: Ducts should run in a straight line. Standard bends, sweeps or offsets, as specified above, may be used as required. Install couplings, connectors, and fittings to provide a rigid mechanical assembly with conduit cut square, reamed, and without burrs. Cement conduit joints as recommended by the manufacturer. **Conduit must be sealed with a factory manufactured conduit plug.**

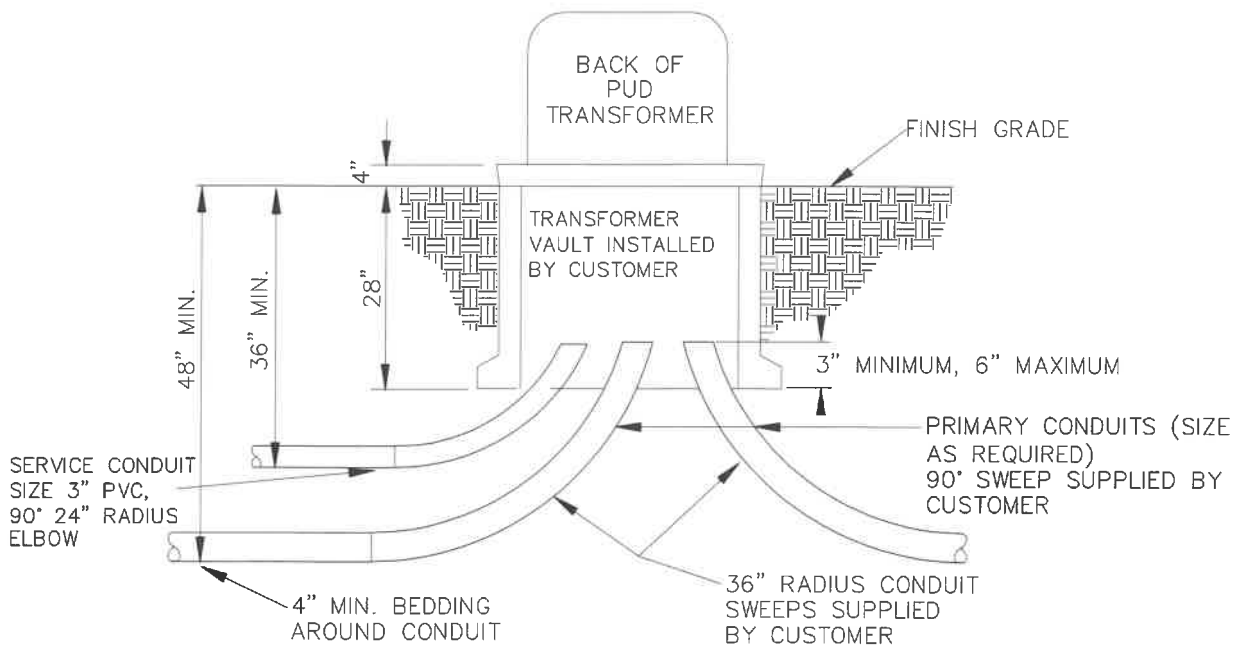
- Duct Bedding and Encasement: Minimum of four (4) inches of bedding and four (4) inches of cover is used to encase the ducts. The minimum depth from finished grade to bottom of trench for primary cable is forty-eight (48) inches, and thirty-six (36) inches to bottom of trench for secondary and street lighting circuits.

Sand or clean soil should be used for the encasement of the duct. Crushed stone or other similar aggregate with sharp points is NOT acceptable.


- Inspections: After installation of the duct and the 4" sand bedding beneath the duct, call Engineering for an inspection before proceeding. After installing the 4" sand cover over the conduit, call Engineering again for a final inspection before proceeding with the backfill.

***If you fail to obtain FPUD approval before backfilling the trench, we will require that you expose all or part of the duct run for inspection before we will install cable.***

- Backfill: Excavation material may be used for backfill provided it is free from vegetation, trash, rock, or frozen particles. Backfill should be placed uniformly in layers and each layer thoroughly compacted. **Conduit must be sealed with a factory manufactured conduit plug.**
- Vaults and Covers: The concrete primary junction vaults, transformer vaults and covers will be specified by Engineering. Engineering must approve any equivalent products prior to installation. The top of concrete junction vaults (not including the cover) is installed at the final grade level so that, when the 4" cover is in place, the top of the cover will be 4" above the final grade of the surrounding surface. Knockouts should be made from the inside of the vault. Completely remove center knockout in bottom of vault prior to installation to allow vault to drain. Vault penetrations will need to be grouted according to FPUD standards. Where vaults are to be placed in paved areas, and when fiberglass transformer vaults will be used, discussion of vault grade with Engineering is needed before excavating. All vaults shall be placed on a 6" base of compacted crushed rock.



FRANKLIN  
**PUD**



THE POWER IS YOURS

DWN.
WR
APP. D. SAMS

DATE: 3/12  
UPDATED: 11/22/2019

DWG. NO.	
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270.3

## Mobile Home Park Line Extension

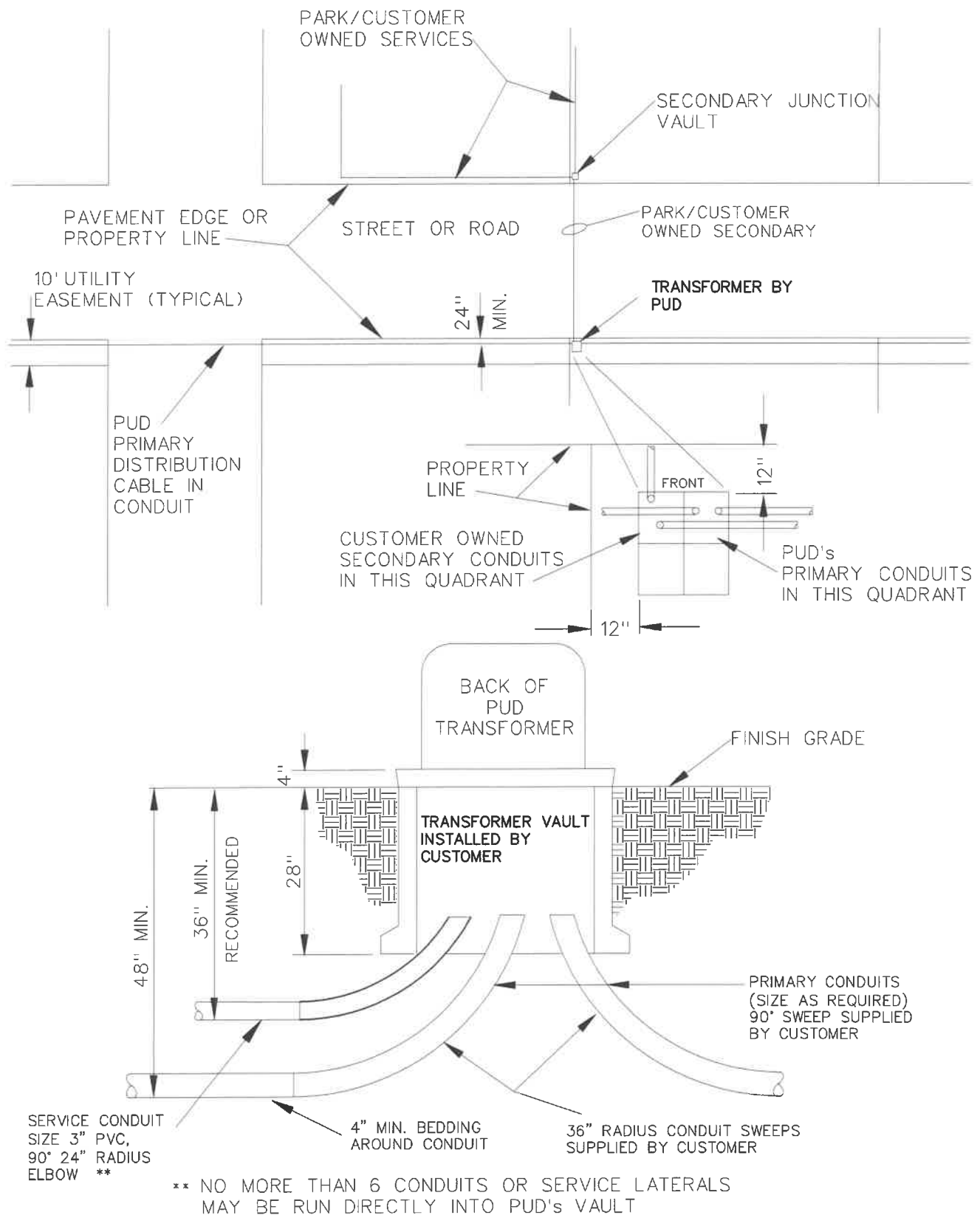
The following outlines our general requirements for installing underground electrical facilities within a mobile home park of single ownership. It summarizes the practices and policies that are incorporated into FPUD Rules of Regulations for Underground Line Extension.

- FPUD Engineering will determine the availability, location and conditions of service, easements, and line extension charges. Contact Engineering early in your planning process for this information.
- To comply with the requirements of city, county and state agencies, you must obtain all permits required from these agencies before excavating on any public land or rights-of-way.
- You normally furnish the following items. Additional items will be reviewed in greater detail as the job progresses.
- Complete conduit and vault system for FPUD primary voltage system. This includes all trenching, conduit, bedding, and backfill as well as providing and installing primary junction vaults and transformer boxes.

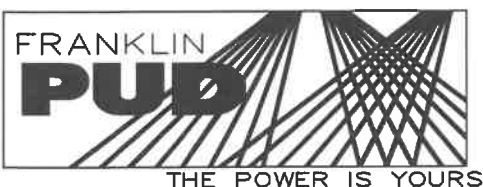
FPUD Engineering will provide a preliminary conduit and vault plan after receiving a copy of the initial development plan.

- Once the county or city that has jurisdiction has approved a development plan, FPUD can provide the final conduit and vault plan with transformer locations, vault specifications, customer cable marking instruction, and termination requirements.
- FPUD must receive a copy of your secondary service plan prior to construction in order to finalize transformer sizes.
- Excavation should be done only as necessary for installing the duct and vault system, exercising care for adjacent sidewalks, curbs, streets and underground utilities. Trenches for underground ducts must be true to line and grade, as shown on the drawings and indicated in the specifications. Keep banks of trenches vertical. Maintain trenches free from standing water when ducts or vaults are being installed, and cleaned of excess and loose rock and earth before installation of duct encasement.
- Conduit: The underground duct (conduit) must be gray Polyvinyl Chloride (PVC) Schedule 40, conform to NEMA TC2 Specifications and be permanently marked at regular intervals with the manufacturer's name or symbol, size, "SCH 40" and "PVC". FPUD Engineering will determine the conduit size (normally 3", 4", or 6").

- **Couplings and Fittings:** Must be PVC Schedule 40, factory-made, and conform to the same specifications as the conduit. Sweeps must have a 36" centerline radius, with the only exception being 3" 90-degree sweeps with a 24" radius under padmounted transformers for residential secondary. Depending on the length and the cumulative angle of sweeps, fiberglass sweeps may be required, at the discretion of FPUD Engineering.



271.4.DWG



### TYPICAL CONDUIT INSTALLATION FOR MOBILE HOME PARKS

DWN.  
WR  
APP. D. SAMS

DATE: 4/10/03  
UPDATED: 11/22/2019

DWG. NO.

271.4

## **Transformer Vault & Cover (V-2): Vault, Transformer, Open Cover 1-Phase Pad-Mount**

The concrete transformer vault and cover will be specified by Engineering Department after project engineering is complete. Equivalent products must have prior written approval of our Engineering Department. The top of the vault (not including the cover) is installed at the final grade level so that when the 4" cover is in place; the top of the cover will be 4" above the final grade of the surrounding surface. Conduits are swept up through the open bottom of the vault. All vaults shall be placed on a 6" base of compacted crushed rock.

Materials approved for use by customers of FPUD may be purchased from the following vendors:

### **Oldcastle Precast**

2808 A Street SE  
Auburn, WA 98002  
(800) 892-1538

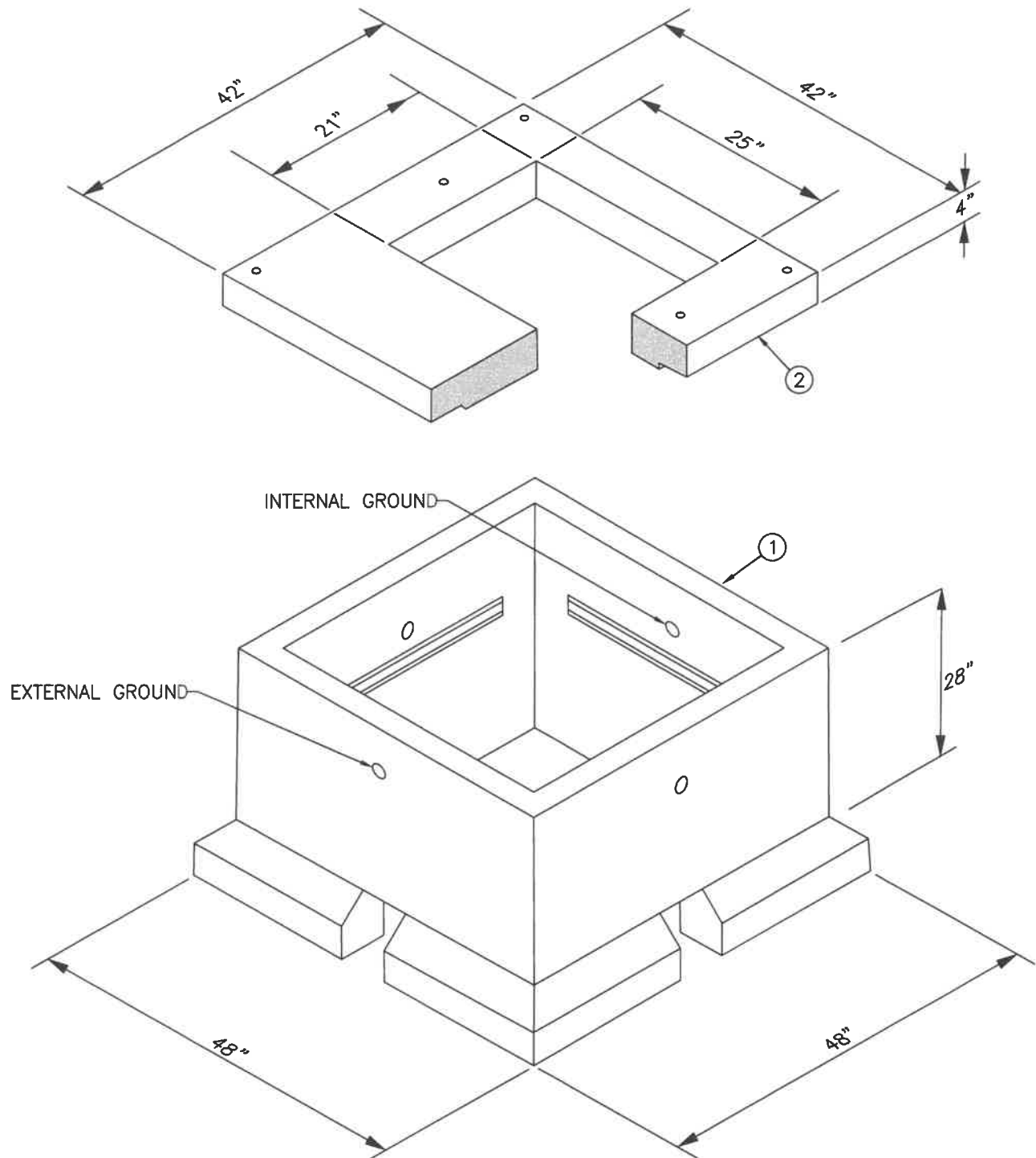
Vault 4242-LA Base w/grounds (0010520)  
Lid 4242-2125 (0010560)

### **H2 Precast**

4919 Contractors Dr.  
East Wenatchee, WA 98802  
(509) 884-6644

VB4242 base with internal grounds  
TPFV2 (4242 vault lid w blackout 2125)





1) VAULT, CONCRETE – 48"x 48"x 28" DEEP WITH (2) TWO INTERNAL GROUNDS ON OPPOSITE WALLS AND (1) ONE EXTERNAL GROUND.

2) LID, CONCRETE 42"x 42"x 6" WITH 21"x 25" OPENING.

272.V20P.1



VAULT, TRANSFORMER, OPEN COVER  
1-PHASE PAD MOUNT

DWN.  
N. RUMMEL  
APP.

DATE: 7/31/13  
UPDATED: 08-13

DWG. NO.

B. WYATT

272.V20P.1

## **1-Phase Primary Junction Vault & Cover V-2SL**

The concrete vault and cover will be specified by our Engineering Department after project engineering is complete. Equivalent products must have prior approval of our Engineering Department. The top of the vault (not including the cover) is installed at the final grade level. When the 4" cover is in place, the top of the cover will be 4" above the final grade of the surrounding surface. Conduits are swept up through the open bottom of the vault. All vaults shall be placed on a 6" base of compacted crushed rock.

Materials approved for use by FPUD customers are as follows:

### **Oldcastle Precast**

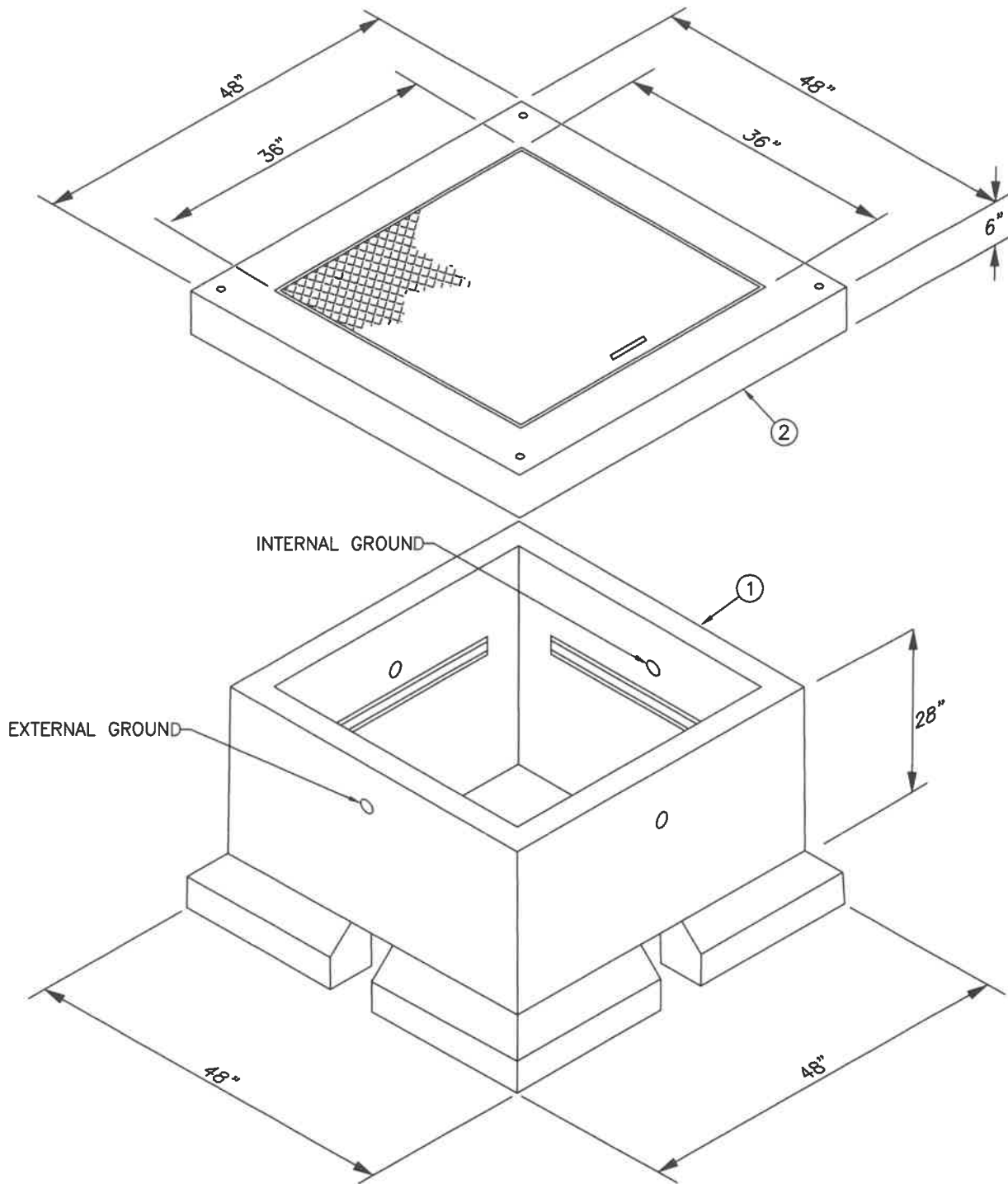
2808 A Street SE  
Auburn, WA 98002  
(800)892-1538

Vault 4242-LA Base w/grounds (0010520)  
LID 55 cover w/ID marker (0060155)  
332 diamond plate door unmarked (3150060)

### **H2 Precast**

4919 Contractors Dr.  
East Wenatchee, WA 98802  
(509) 884-6644

VB4242 base with internal grounds  
VL550-13 Steel door



1) VAULT, CONCRETE – 48"x 48"x 28" DEEP WITH (2) TWO INTERNAL GROUNDS ON OPPOSITE WALLS AND (1) ONE EXTERNAL GROUND.

2) LID, CONCRETE 48"x 48"x 6" WITH 36"x 36" STEEL DOOR.

272.V2SL.1.DWG



## VAULT, 1-PH PRIMARY JUNCTION

DWN.  
WR  
APP. D. SAMS

DATE: 8/13  
UPDATED: 11/22/2019

DWG. NO.

272.V2SL.1

### **Secondary Junction Vault & Cover:**

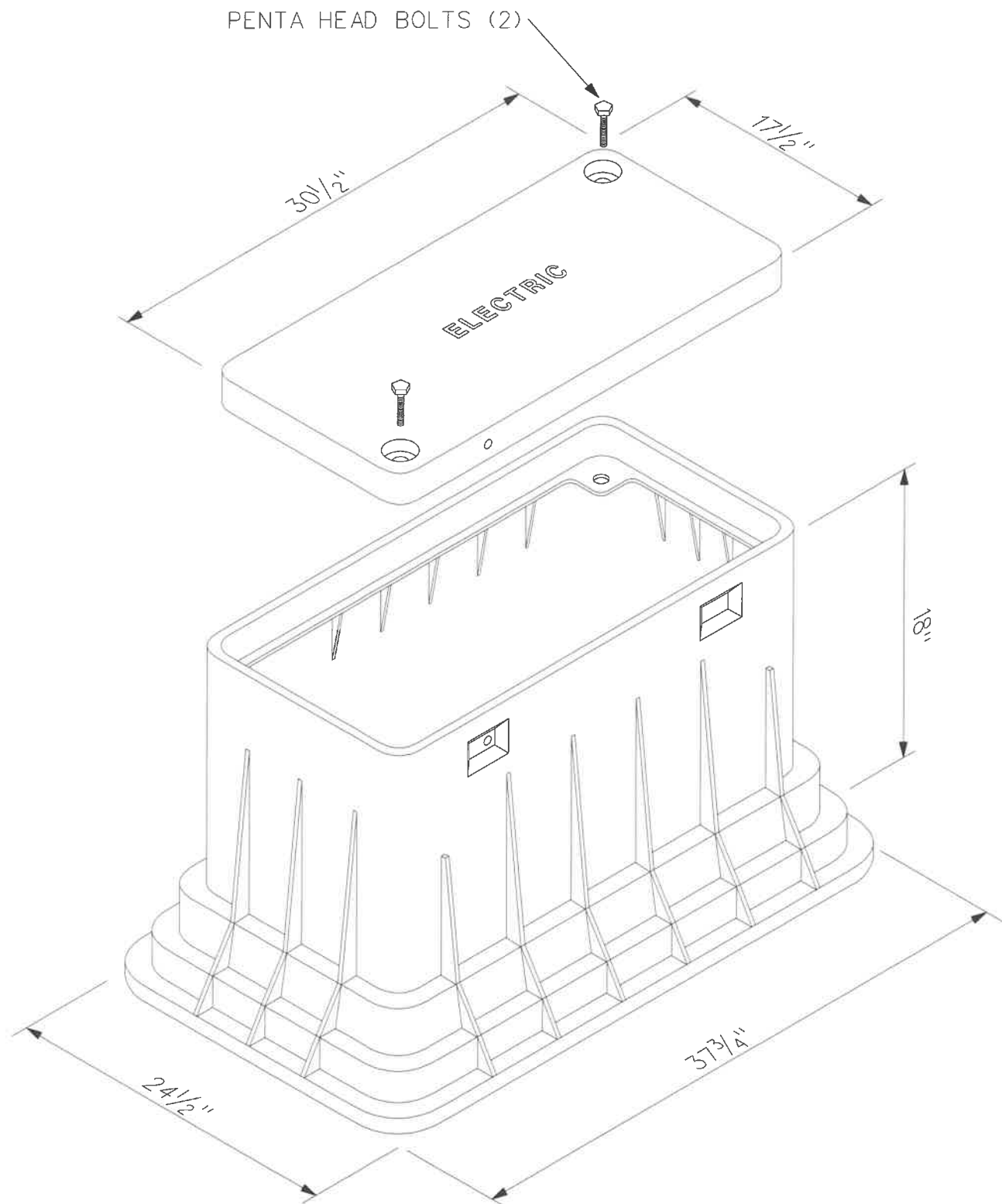
Engineering will specify the plastic/fiberglass vault and cover after project engineering is complete. Equivalent products must have prior approval from Engineering. The top of the vault is installed at the final grade level of the surrounding surface. Conduits are swept up through the open bottom of the vault.

Materials approved for use by customers of FPUD are as follows:

#### **HD Supply**

11303 E. Montgomery Drive, Suite 6  
Spokane Valley, WA 99206  
509-928-8292

CARSON 17301019  
Lid shall have penta-head  
L-bolt locks  
COLOR: GREEN



1. FOR USE IN AREAS NOT SUBJECT TO VEHICULAR TRAFFIC

272.VS1.1.DWG



## SECONDARY JUNCTION VAULT

DWN.  
WR  
APP. D. SAMS

DATE: 1/10/97  
UPDATED: 11/22/2019

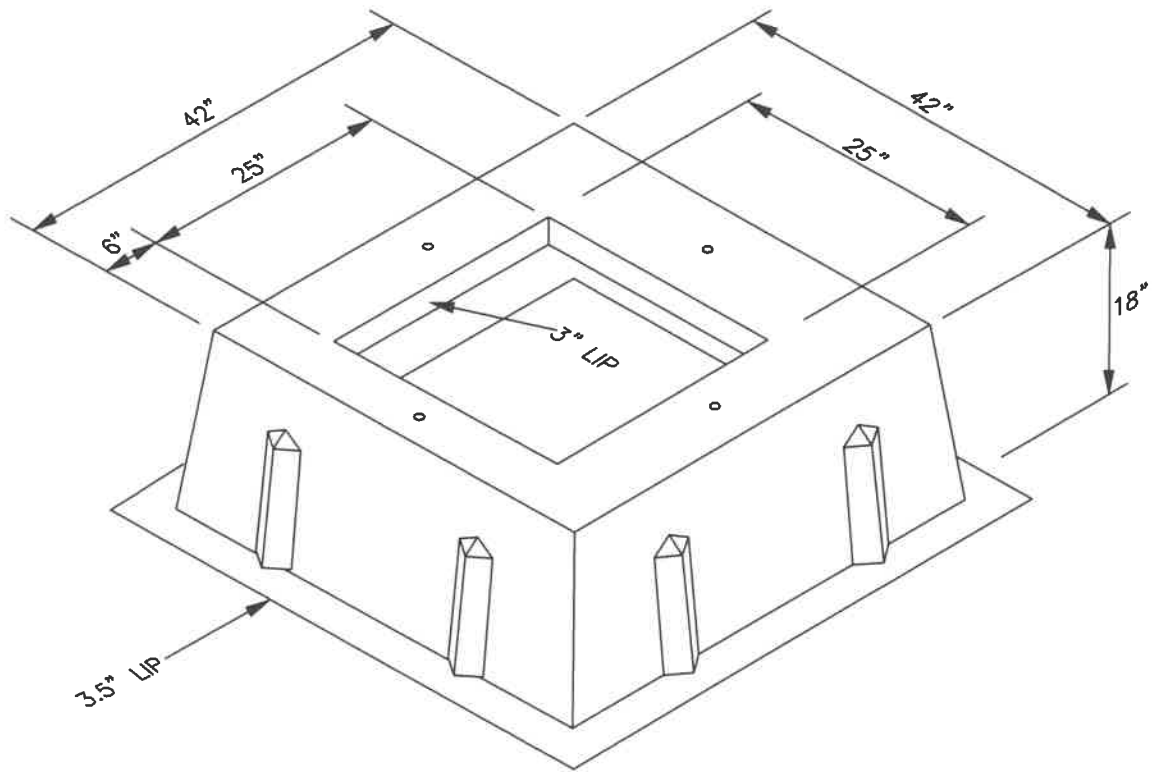
DWG. NO.

272.VS1.1

### **Transformer Vault & Cover: Vault, Fiberglass, Transformer 1-Phase Pad Mount**

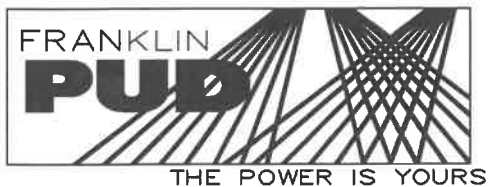
The fiberglass transformer vault will be specified by our Engineering Department after project engineering is complete. Equivalent products must have prior approval of our Engineering Department. The vault is installed so that the top of the vault will be 4" above the final grade of the surrounding surface. Conduits are swept up through the open bottom of the vault.

If specified, this vault may be purchased directly from FPUD.



1) VAULT, FIBERGLASS – 42"x 42"x 18" DEEP WITH 25"x 25" OPENING.

272.V2F.1.DWG



# VAULT, FIBERGLASS, TRANSFORMER 1-PHASE PAD MOUNT

DWN.  
WR  
APP. D. SAMS

DATE: 8/13  
UPDATED: 11/25/2019

DWG. NO.  
272.V2F.1

### **Primary Junction Vault & Cover V-4: Concrete with Steel Cover**

The concrete transformer vault and cover will be specified by Engineering Department after project engineering is complete. Equivalent products must have prior approval of our Engineering Department. The top of the vault (not including the cover) is installed at the final grade level so that when the 6" cover is in place; the top of the cover will be 6" above the final grade of the surrounding surface. Knockouts should be made from the inside of the vault. Completely remove center knockout in bottom of vault prior to installation to allow vault to drain. All vaults shall be placed on a 6" base of compacted crushed rock.

Materials approved for use by customers of FPUD are as follows:

#### **Oldcastle Precast**

2808 A Street SE  
Auburn, WA 98002  
(800) 892-1538

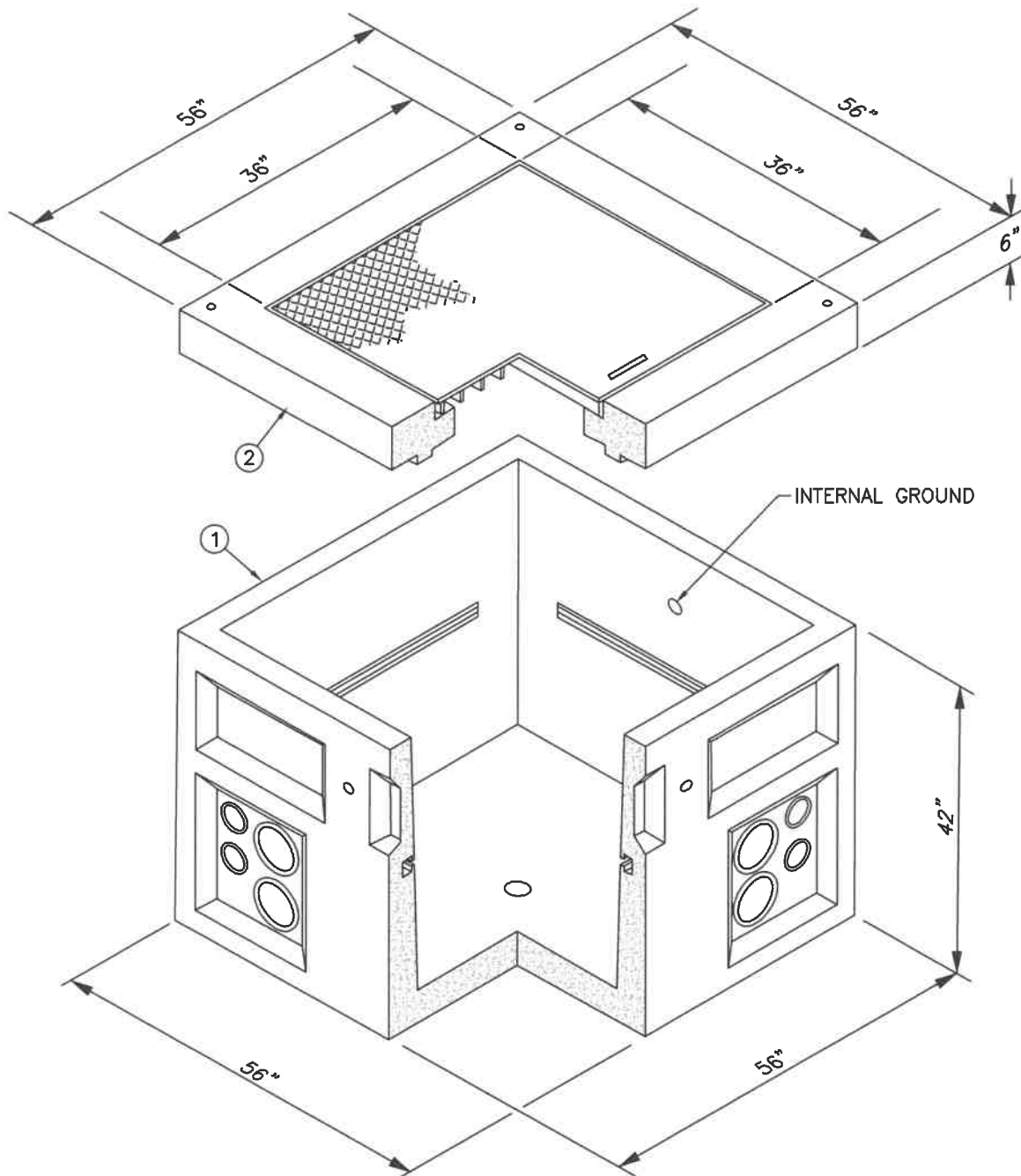
Vault 504-LA w/irons and grounds (0060025)  
Lid 55 Cover w/ID marker (0060155)  
332 Diamond plate door unmarked (3150060)

#### **H2 PreCast**

4919 Contractors Dr.  
East Wenatchee, WA 98802  
509-884-6644

VB554-B-F with internal grounds  
VL550-13 Steel door

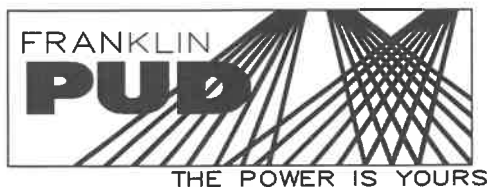




**NOTES:**

- 1) VAULT, CONCRETE – 56"x 56"x 42" DEEP WITH (2) TWO INTERNAL GROUNDS ON OPPOSITE WALLS.
- 2) LID, CONCRETE 56"x 56"x 6" WITH 36"x 36" STEEL DOOR.

272.V4.1.DWG



**PRIMARY JUNCTION VAULT  
CONCRETE WITH STEEL LID COVER**

DWN.  
WR  
APP. D. SAMS

DATE: 8/13  
UPDATED: 11/25/2019

DWG. NO.

**272.V4.1**

### **Primary Junction Vault & Cover V-6: Three (3) Piece with Steel Lid Covers**

The concrete transformer vault and cover will be specified by Engineering Department after project engineering is complete. Equivalent products must have prior approval of our Engineering Department. The top of the vault (not including the cover) is installed at the final grade level so that when the 12" cover is in place; the top of the cover will be 12" above the final grade of the surrounding surface. Knockouts should be made from the inside of the vault. Completely remove center knockout in bottom of vault prior to installation to allow vault to drain. All vaults shall be placed on a 6" base of compacted crushed rock.

Materials approved for use by customers of FPUD are as follows:

#### **Oldcastle Precast**

2808 A Street SE  
Auburn, WA 98002  
(800) 892-1538

Vault 575- LA base with internal ground (0080005)  
Extension 57R-24 w/strut (0080350)  
Lid 57-2-33F cover (0080350)  
2-332 diamond plate doors (3150102)

#### **H2 PreCast**

4919 Contractors Dr.  
East Wenatchee, WA 98802  
509-884-6644

VB-575-B-F with internal grounds  
VR570-24" with strut vault riser  
VL570-23 Steel door



## **10 - Security Lights Program**

**AVAILABLE:** New security lights can be installed where an existing 120V source is available. If there is space available on one of our existing distribution pole, we will install a 100-watt high-pressure sodium luminaire. If there is no distribution pole available, we provide a standard 35-foot pole specifically for the security light. This pole must be installed on public right-of-way, such as alleys or streets and cannot be installed on private property.

**POLE CHARGE:** The charge for installing this pole is \$200 and it is required upfront when pole is requested. There is no contract or minimum term required. The new light will be billed to an existing account. There is no charge if there is an existing pole.

**CONDITIONS OF SERVICE:** Pole is owned and maintained by FPUD. You will be asked to provide adequate access for a line truck to install and/or remove pole. For overhead service, FPUD supplies maximum 100 feet of conductor. For underground service customer supplies trench (36" deep) and 1" PVC – 180° maximum bend. 100-foot maximum length. FPUD supplies conductor.

A 10-foot easement is required where the overhead or underground service drop crosses property not served by the light.

**RATE SCHEDULE NO. 6:** \$7.02/ month included with monthly bill.