

## 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.

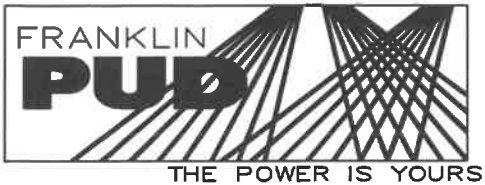
### Customers Pay FPUD to Provide the Following Material and Labor

- 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.***



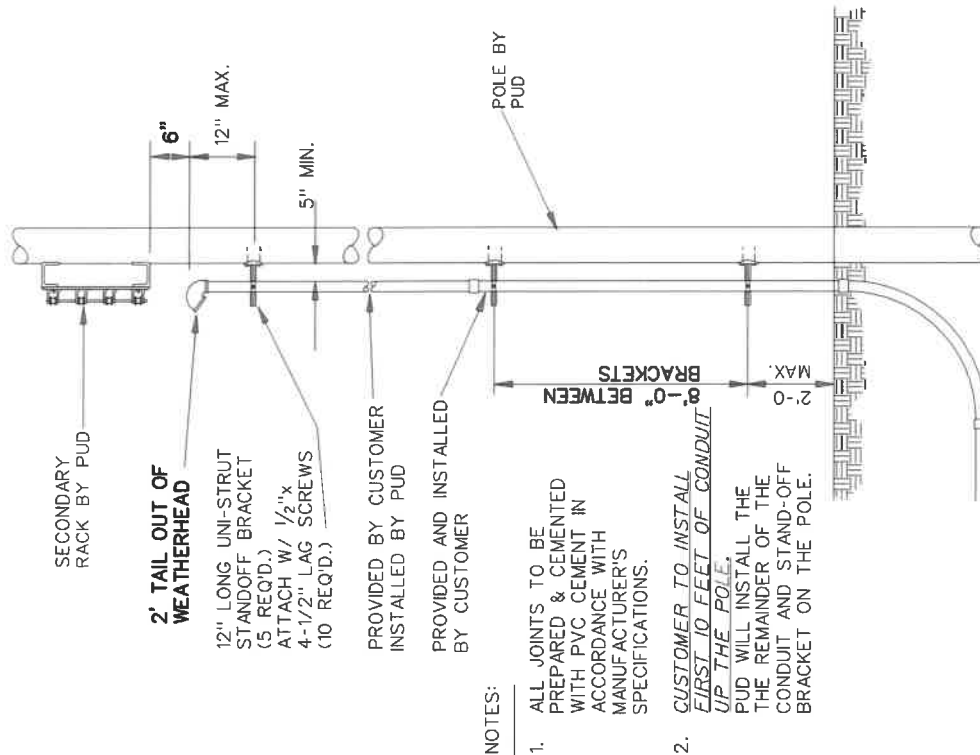
COMMERCIAL/IRRIGATION SERVICE  
LINE EXTENSION GUIDE

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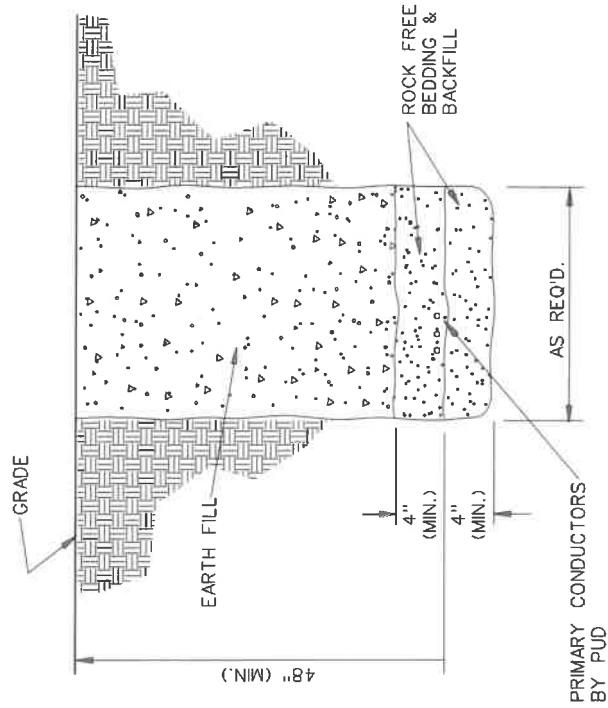
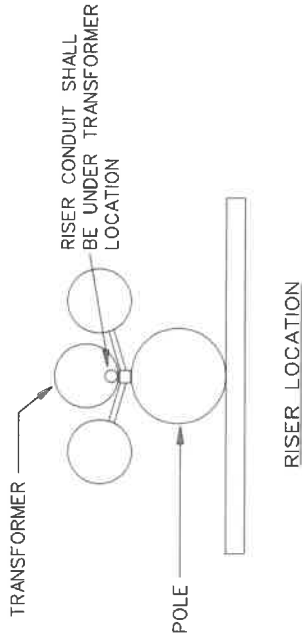
DATE: 3/31/03  
UPDATED: 11/22/2019

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CUSTOMER SERVICE CONDUCTOR RISER  
ON DISTRIBUTION POLE

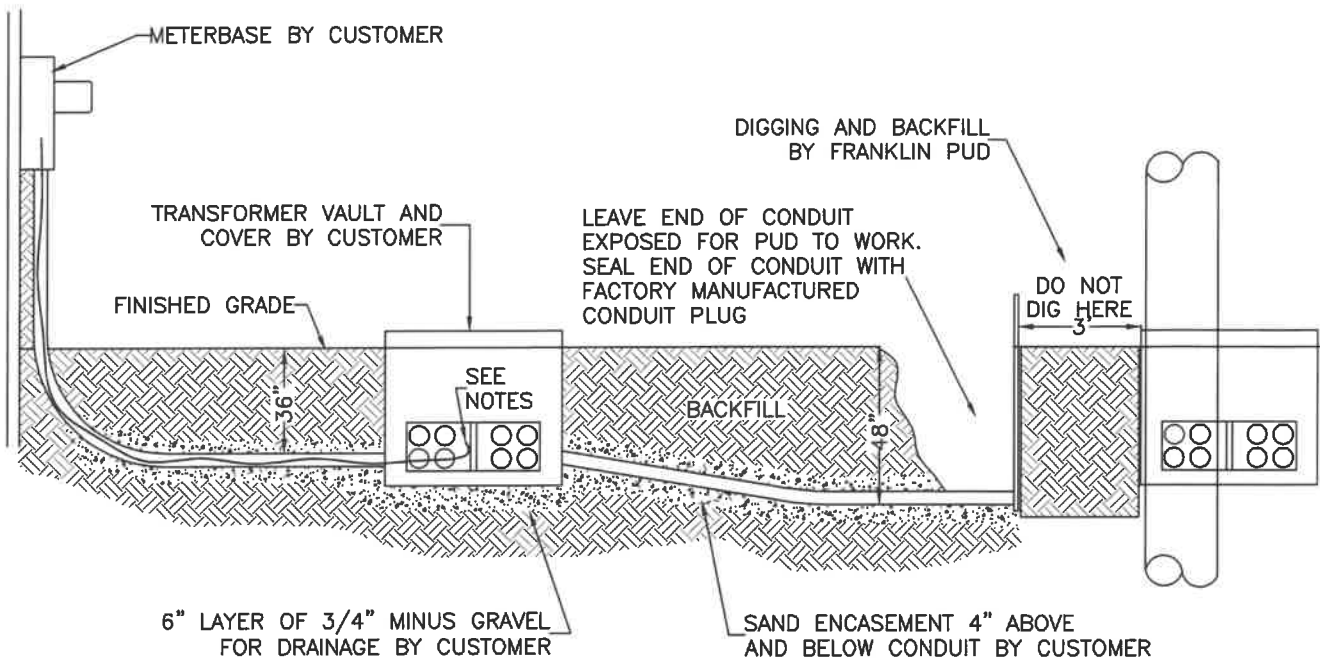
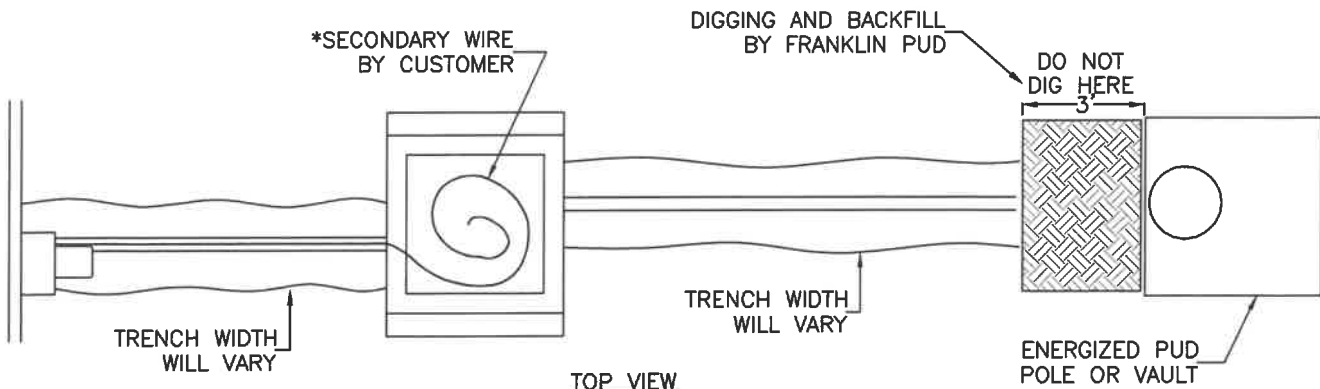


TRENCHING SPECIFICATION  
DIRECT BURIAL CONDUCTORS

### 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.



**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.**

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

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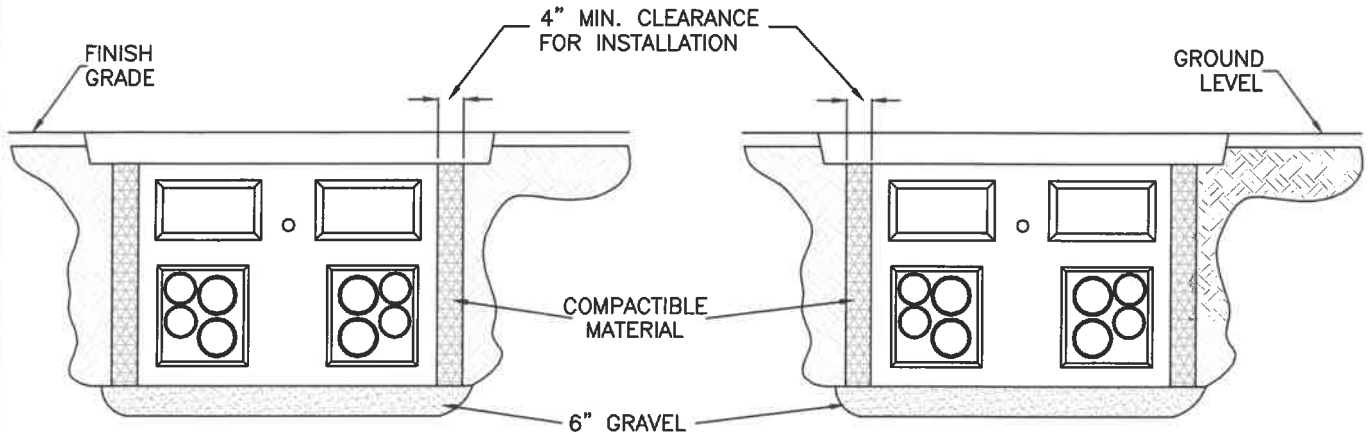
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TYPICAL INSTALLATION ALONG ROADWAY, SIDEWALKS, PARKING AREAS AND OTHER GRADED AREAS.

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 FROM 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.

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**VAULT INSTALLATION GUIDLINES**

|                            |                                   |                       |
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## 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**

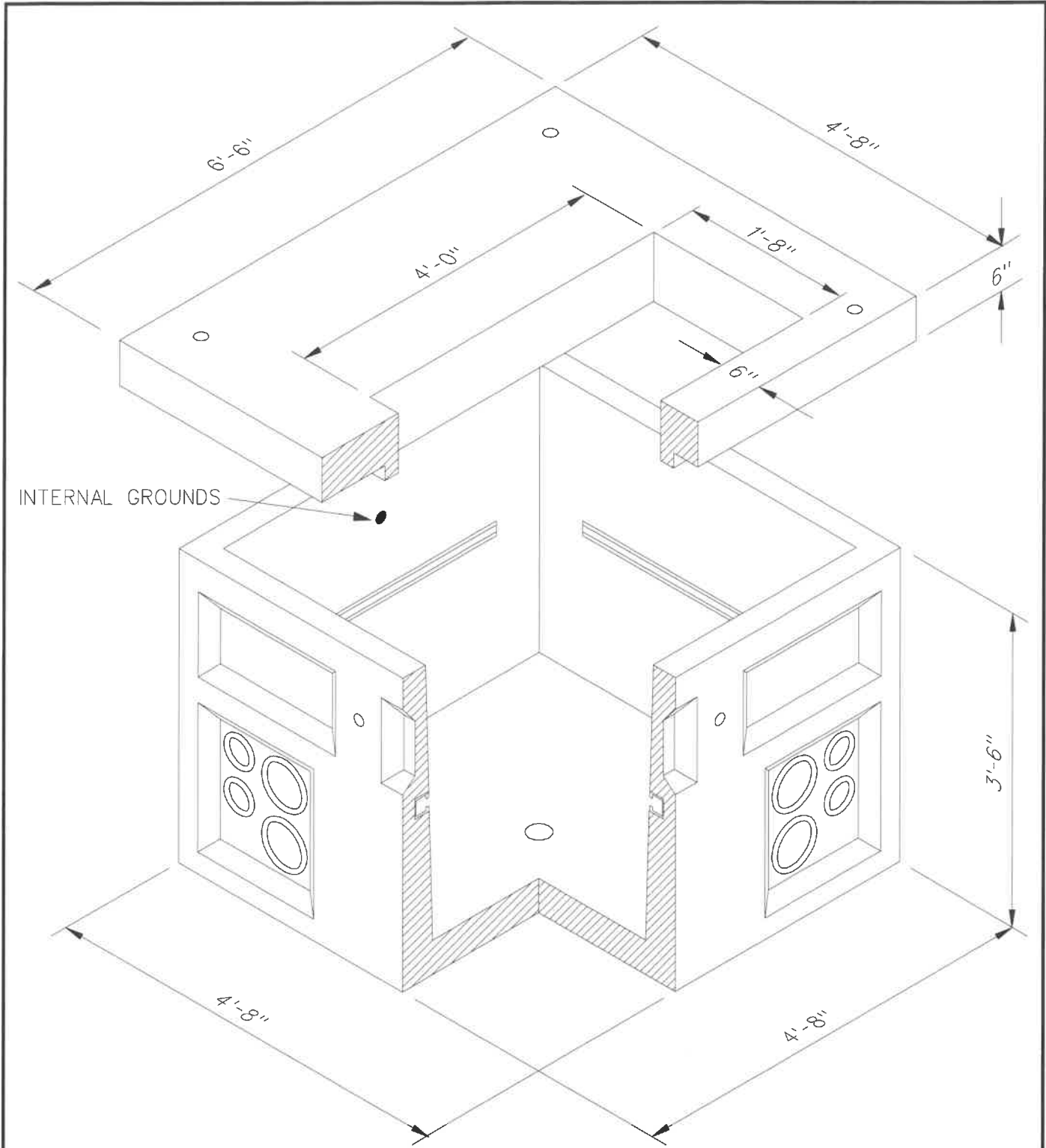
2808 A Street SE  
Auburn, WA 98002  
(800) 892-1538

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

#### **H2 Pre Cast**

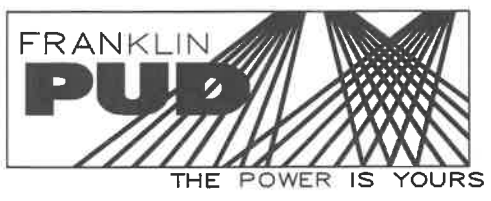
4919 Contractors Drive  
East Wenatchee, WA 98802  
(509) 884-6644

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"

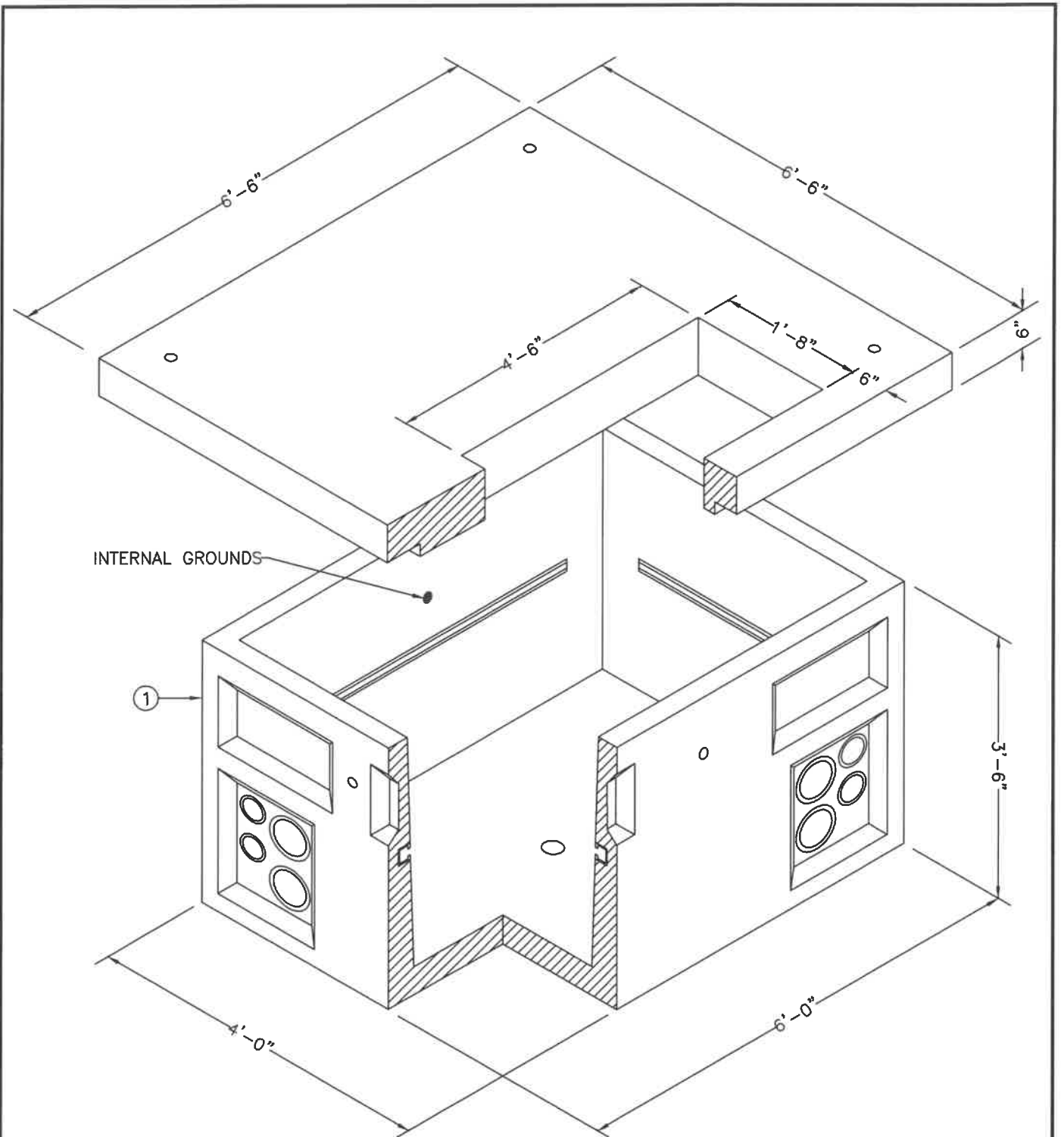
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**VAULT, TRANSFORMER  
 3-PHASE PAD-MOUNT (45-300 KVA)**

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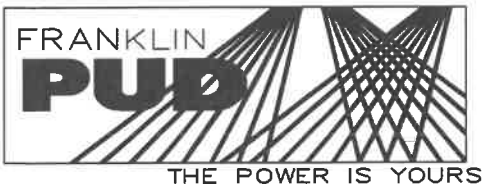




**NOTES:**

1. SEE "VAULT INSTALLATION GUIDELINES".

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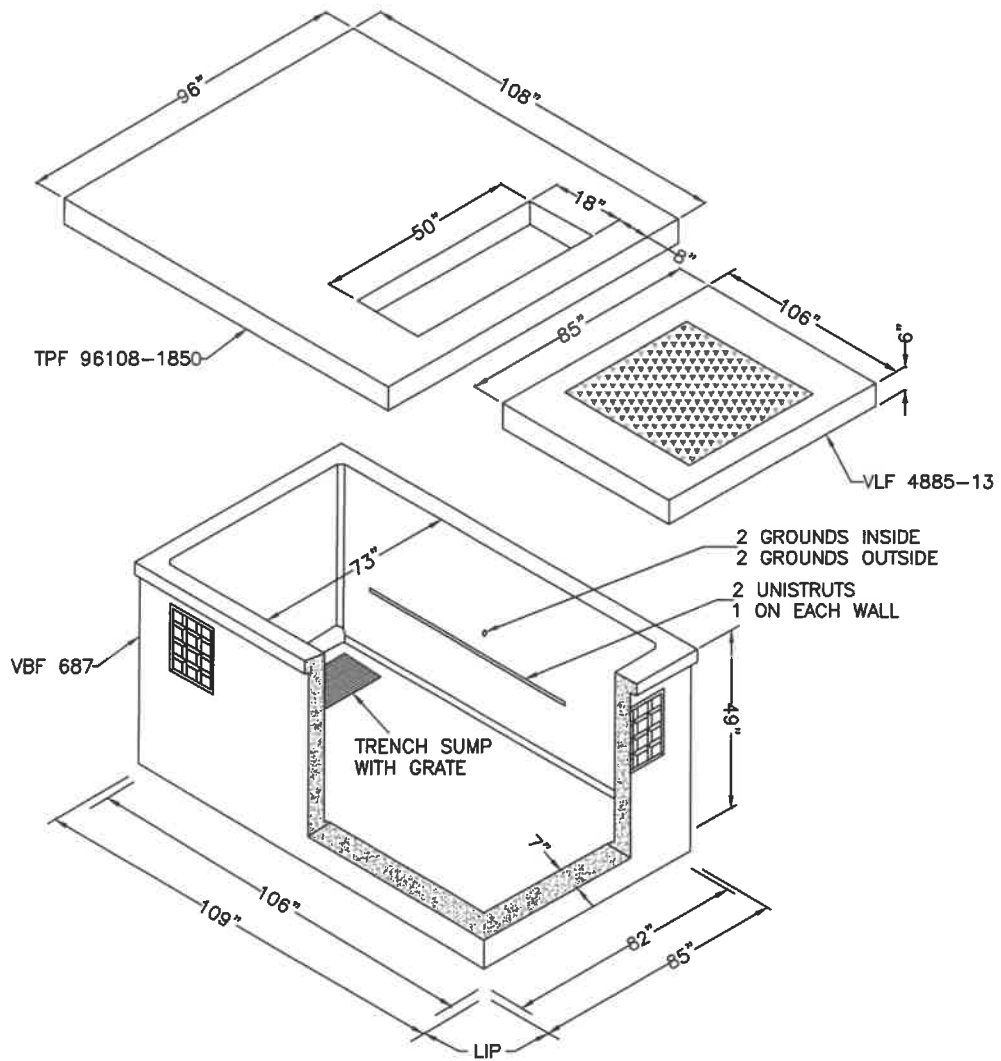


**VAULT, TRANSFORMER  
3-PHASE PAD-MOUNT (500-750 KVA)**

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

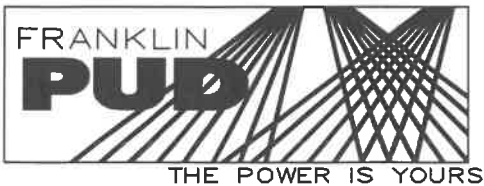
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**NOTES:**

1. SEE "VAULT INSTALLATION GUIDELINES".

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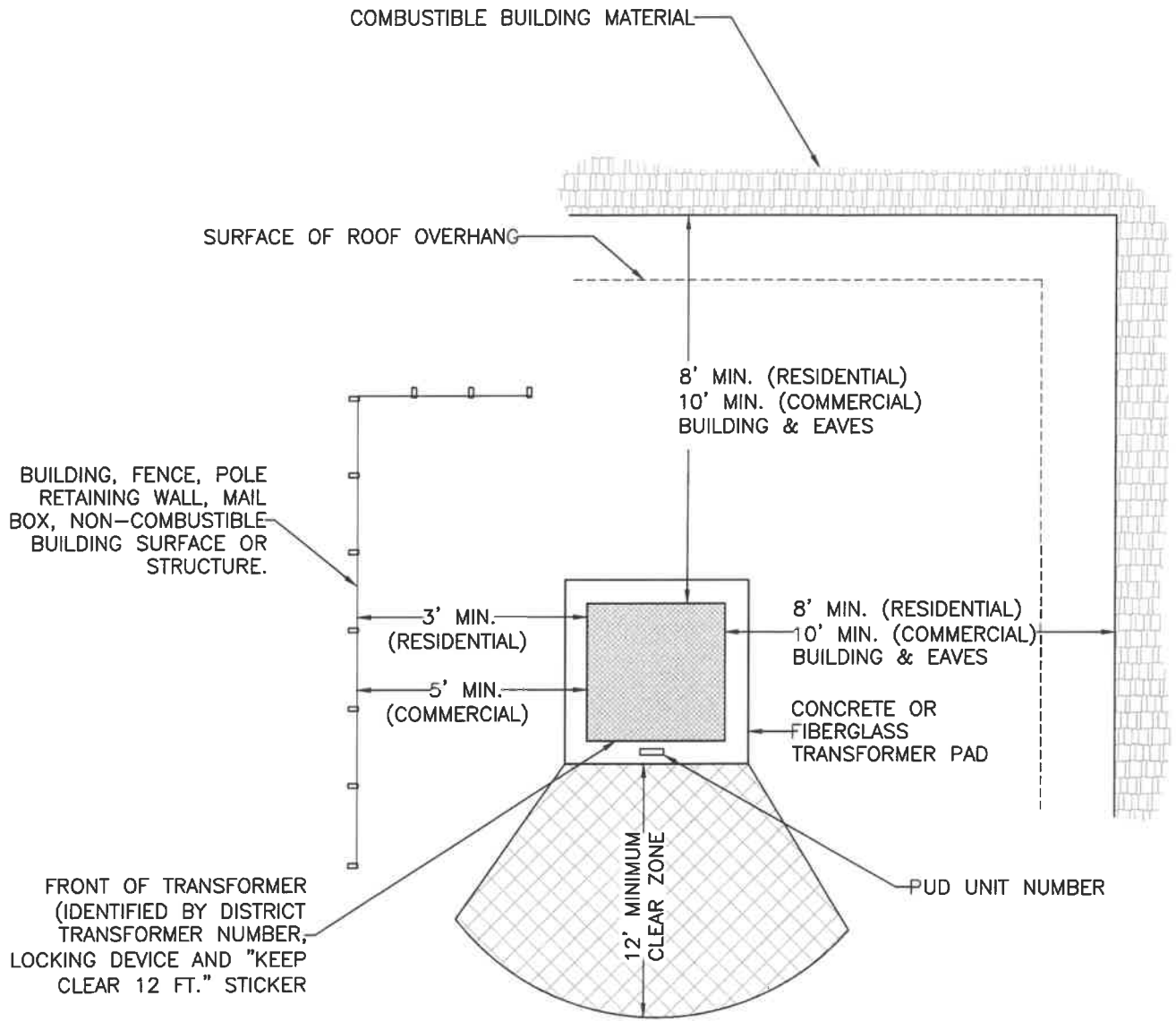
**VAULT, TRANSFORMER  
3-PHASE PAD-MOUNT (1000 KVA & ABOVE)**

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

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- 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.

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TYPICAL TRANSFORMER CLEARANCES

|                           |                              |                              |
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| DWN.<br>N. RUMMEL<br>APP. | DATE: 12/95<br>UPDATED: 8/13 | DWG. NO.<br><br><b>247.1</b> |
| B. WYATT                  |                              |                              |