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GENERAL

A TRANSFORMER VAULT IS AN ENCLOSED COMPARTMENT WITHIN A BUILDING OR BELOW GROUND LEVEL ESPECIALLY DESIGNED FOR THE TYPE TRANSFORMERS SPECIFIED BY THE COMPANY.

A TRANSFORMER ENCLOSURE IS A SPECIAL COMPARTMENT SUITABLE FOR INSTALLING COMPANY’S STANDARD TRANSFORMERS. SUCH ENCLOSURE MAY UTILIZE THE CUSTOMER’S BUILDING WALL(S) AS ONE OR MORE SIDES OF THE ENCLOSURE.

ALL ENCLOSURES MUST HAVE A REMOVABLE COVER APPROVED BY THE ENGINEER EXCEPT THOSE LOCATED IN ISOLATED OR PROTECTED AREAS WHERE, IN THE WRITTEN OPINION OF THE ENGINEER, THERE IS NO REASONABLY FORESEEABLE DANGER OF ACCESS BY MINORS, WORKMEN AND OTHER MEMBERS OF THE PUBLIC.

ONLY AUTHORIZED COMPANY PERSONNEL SHALL HAVE ACCESS TO TRANSFORMER VAULTS OR ENCLOSURES AND ALL ENTRY DOORS SHALL BE KEPT LOCKED UNLESS ATTENDED.

TRANSFORMER LOCATION

IT IS THE CUSTOMER’S RESPONSIBILITY TO PROVIDE A TRANSFORMER LOCATION OUTSIDE OF THE BUILDING THAT ALLOWS US TO USE OUR STANDARD MINERAL OIL FILLED TRANSFORMERS AND STANDARD FUSING METHODS. IF THIS IS NOT POSSIBLE, PROGRESS ENERGY WILL INSTALL TRANSFORMERS, SWITCHES AND FUSES INSIDE A BUILDING IN A CUSTOMER SUPPLIED VAULT THAT IS IN COMPLIANCE WITH NEC ARTICLE 450. THIS ARTICLE STATES THAT UNDER CERTAIN CONDITIONS, MINERAL OIL TRANSFORMERS CAN BE INSTALLED INSIDE BUILDINGS. HOWEVER, TO AVOID CONFUSION AND TO KEEP PROGRESS ENERGY FROM HAVING TO MONITOR CONTINUED COMPLIANCE WITH THESE CONDITIONS, ALL VAULTS WITHIN A BUILDING WILL BE EQUIPPED WITH TRANSFORMERS USING A LESS FLAMMABLE DIELECTRIC. IN ADDITION THE TRANSFORMER(S) WILL BE FUSED WITH CURRENT LIMITING FUSES. AS MENTIONED IN THE FUSE SECTION ABOVE. THIS CURRENT LIMITING FUSE (CL) REDUCES THE FAULT CURRENT AVAILABLE WITHIN THE TRANSFORMER TANK. THE LESS FLAMMABLE DIELECTRIC, COOPER “FR3”, RAISES THE FIRE POINT OF THE TRANSFORMER DIELECTRIC TO ABOVE 300° C. THIS COMBINATION GREATLY REDUCES THE CHANCE OF CATASTROPHIC FAILURE DURING A PRIMARY FAULT IN THE TRANSFORMER.

TRANSFORMERS

SPECIAL THREE-PHASE VAULT TRANSFORMERS ARE AVAILABLE. THESE TRANSFORMERS ARE STAINLESS STEEL UNITS AND ARE FILLED WITH LESS-FLAMMABLE FLUID. THEY ARE ALSO FULLY RATED FOR OPERATION IN A 50°C AMBIENT ENVIRONMENT.

FOR VAULT TRANSFORMER BANKS CONSISTING OF BANKED SINGLE-PHASE UNITS, STANDARD SINGLE-PHASE DOUBLE BUSHING TRANSFORMERS CAN BE USED PROVIDING THEY ARE MODIFIED. USE A STANDARD STAINLESS STEEL UNIT WHEN AVAILABLE. THESE UNITS SHOULD BE DRAINED AND FLUSHED OF THE EXISTING MINERAL OIL AND FILLED WITH A LESS-FLAMMABLE FLUID SUCH AS FR3. ARRANGEMENTS SHOULD BE MADE WITH THE TRANSFORMER SHOP TO HAVE THIS DONE. THE TRANSFORMERS SHOULD ALSO BE CONVERTED FROM LIVE BUSHINGS TO BUSHING WELLS IN THE TRANSFORMER SHOP. THE TRANSFORMERS SHOULD BE DERATED FOR OPERATION IN THE HIGHER AMBIENT TEMPERATURE CONDITIONS BY 1.5% FOR EACH 1°C ABOVE A 30°C AMBIENT.

FUSES

FULL RANGE CURRENT LIMITING SUBMERSIBLE FUSES ARE AVAILABLE FOR USE IN VAULTS. SEE SECTION 29.04 FOR AVAILABLE FUSES. FULL RANGE CURRENT LIMITING FUSES ARE ALSO AVAILABLE FOR FUSING TRANSFORMERS IN VAULTS WHEN THE FUSE IS OUTSIDE THE VAULT. CONTACT DISTRIBUTION STANDARDS FOR ADDITIONAL INFORMATION.

FERRESONANCE

FERRESONANCE IS POSSIBLE WITH UNDERGROUND CABLES AND SINGLE-PHASE SWITCHES FEEDING A DELTA PRIMARY TRANSFORMER BANK OR A FLOATING-WYE TO DELTA TRANSFORMER BANK. THE PREFERRED METHOD TO PREVENT THE POSSIBILITY OF FERRESONANCE IN VAULTS IS TO USE A GANGED SWITCH TO ENERGIZE OR DE-ENERGIZE THE TRANSFORMER BANK. IF THE BANK IS A FLOATING-WYE TO DELTA TRANSFORMER BANK AND ONLY SINGLE-PHASE SWITCHING IS AVAILABLE, FERRESONANCE CAN BE PREVENTED BY TEMPORARILY GROUNDING THE NEUTRAL BEFORE ENERGIZING THE BANK. SEE DWG. 29.03-05 FOR MORE INFORMATION ON FERRESONANCE PREVENTION.
GENERAL REQUIREMENTS FOR VAULT ROOMS

DESIGN

VAULT SPECIFICATIONS AND REQUIREMENTS SHALL BE PROVIDED TO THE CUSTOMER BY PROGRESS ENERGY ENGINEERING REPRESENTATIVE. CUSTOMER MUST FURNISH DETAILED DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

THE ROOM'S INSIDE DIMENSIONS ARE TO BE A MINIMUM OF 20' LENGTH X 14' WIDTH X 10' HEIGHT. THE LENGTH WILL BE REQUIRED TO BE MORE THAN 20' IF MORE THAN ONE TRANSFORMER IS REQUIRED.

ONLY EQUIPMENT OWNED BY PROGRESS ENERGY WILL BE ALLOWED INSIDE THE VAULT ROOM.

VAULT ROOM MUST MEET ALL THE REQUIREMENTS OF NEC 450 SECTION III, TRANSFORMER VAULTS, INCLUDING THE CONSTRUCTION OF WALLS, ROOFS AND FLOORS, DOORWAYS, VENTILATION, DRAINAGE, ETC.

THE VAULT ROOM MUST REMAIN READILY ACCESSIBLE TO PROGRESS ENERGY OR PROGRESS ENERGY CONTRACTOR LINE AND SERVICE VEHICLES AT ALL TIMES.

THE AREA IN FRONT OF THE ENTRANCE FOR A GROUND LEVEL VAULT MUST BE LEVEL PAVEMENT OR CONCRETE IN ORDER TO ALLOW EQUIPMENT TO BE EASILY ROLLED UP TO THE DOOR. THERE SHALL NO OBSTRUCTIONS TO THE ENTRANCE OF A GROUND LEVEL VAULT AND NO OVERHANGS ABOVE A BELOW GROUND VAULT.

ROOM SHALL BE ILLUMINATED WITH LIGHT FIXTURES APPROVED BY PROGRESS ENERGY AND AT LOCATIONS SPECIFIED BY PROGRESS ENERGY. THE LIGHT SWITCH LOCATION SHALL BE AS SPECIFIED BY PROGRESS ENERGY. THE LIGHTING SHALL BE INSTALLED PER NEC REQUIREMENTS AND SERVED BY CUSTOMER'S ELECTRICAL PANEL. IF AN EMERGENCY GENERATOR PANEL EXISTS, THE LIGHTS SHALL BE SERVED BY THE EMERGENCY PANEL.

ACCEPTANCE PRIOR TO PROGRESS ENERGY INSTALLING FACILITIES

PROGRESS ENERGY ENGINEERING AND LINE AND SERVICE ARE TO HAVE A FINAL INSPECTION FOR COMPLIANCE PRIOR TO FINAL ACCEPTANCE.

PROGRESS ENERGY LINE AND SERVICE WILL REQUIRE A MINIMUM OF THREE WEEKS TO COMPLETE THE EQUIPMENT INSTALLATION AFTER FINAL ACCEPTANCE BY PROGRESS ENERGY.

VAULT IS TO BE CLEANED OF DIRT, MUD, AND DEBRIS PRIOR TO PROGRESS ENERGY ACCEPTANCE.

METERING

CUSTOMER TO PROVIDE A METERING ROOM FOR ALL ELECTRICAL METERS. CUSTOMER IS TO PROVIDE ACCESS TO THE METER ROOM FOR PROGRESS ENERGY OR PROGRESS ENERGY CONTRACTOR PERSONNEL FOR MAINTENANCE OR METER READING. ALL METERS ARE TO BE INSTALLED PER PROGRESS ENERGY AND NEC SPECIFICATIONS AND MUST BE CLEAR OF OBSTRUCTIONS WITH SAFE ACCESS FOR MAINTENANCE OR METER READING. SITE SPECIFIC METERING ISSUES TO BE DETERMINED BY PROGRESS ENERGY ENGINEER AND CUSTOMER ENGINEER.

WALLS

WALLS TO BE CONSTRUCTED OF SOLID MASONRY AND IN SUCH A WAY THAT CLIMBING IS NOT POSSIBLE. ALL WALLS MUST MEET APPLICABLE BUILDING AND FIRE CODES.

WALLS SHALL BE CAPABLE OF WITHSTANDING A RADIAL FORCE EQUAL OR GREATER THAN THE STRENGTH OF THE PULLING EYES.

THE HEIGHT OF THE INTERIOR SHALL BE A MINIMUM OF 12 FEET FROM THE FLOOR TO THE BOTTOM OF THE CEILING SUPPORT BEAMS.

CUSTOMER IS TO PROVIDE CONDUIT KNOCKOUT-TYPE OPENINGS OR PVC SLEEVES IN THE ROOM'S FLOOR TO PROVIDE ACCESS FOR PROGRESS ENERGY CABLES ENTRANCES. ALL CABLE ENTRANCES SHALL BE COORDINATED WITH THE PROGRESS ENERGY ENGINEER.

PULLING EYES

THERE ARE TO BE A MINIMUM OF THREE PULLING EYES IN THE BACK WALLS EQUALLY SPACED ALONG THE WALLS. THERE ARE TO BE A MINIMUM OF TWO PULLING EYES IN THE END WALLS EQUALLY SPACED ALONG THE WALLS. THE PULLING EYES ARE TO BE INSTALLED APPROXIMATELY 6" - 18" ABOVE THE FLOOR. THE PULLING EYES SHALL HAVE A MINIMUM TENSIILE STRENGTH OF 15,000 POUNDS. THE CUSTOMER WILL SUPPLY THE WALL MOUNTING HARDWARE TO SECURE THE PULLING EYES IN PLACE.
CONDUIT FOR PRIMARY SECONDARY AND METERING CONDUCTORS

THE NUMBER AND SIZE OF PRIMARY, SECONDARY AND METERING CONDUITS INTO THE VAULT AND THEIR EXACT LOCATION SHALL BE NEGOTIATED WITH CUSTOMER AND AGREED UPON WITH COMPANY ENGINEER.

FLOORS

FLOOR TO BE CONCRETE WITH SUFFICIENT STRUCTURAL STRENGTH TO SUPPORT A MINIMUM EQUIPMENT WEIGHT OF 16000 POUNDS DISTRIBUTED OVER A FOOTPRINT OF 69" X 40".

THE FLOORS MUST HAVE A 4" PVC CONDUIT SLEEVE IN EACH CORNER OF THE VAULT TO ALLOW PROGRESS ENERGY TO INSTALL GROUND RODS. THE SLEEVES MUST EXTEND THROUGH THE FLOOR TO THE GROUND BELOW. THE SLEEVES ARE TO BE LOCATED APPROXIMATELY 12" FROM THE WALLS.

THE FLOOR, AT ANY ENTRANCE, MUST HAVE A SILL THAT IS A MINIMUM HEIGHT OF 4 INCHES TO ENSURE ANY OIL SPILL IS CONTAINED WITHIN VAULT ROOM.

DOOR

THE DOOR, WHEN INSTALLED, MUST HAVE A MINIMUM HORIZONTAL OPENING OF 8 FOOT AND MEET ANY APPLICABLE NEC, BUILDING, OR FIRE CODES.

THE DOOR MUST BE ACCESSIBLE BY PROGRESS ENERGY PERSONNEL ONLY.

THE DOOR MUST NOT OPEN INTO THE VAULT ROOM.

ENTRY DOORS SHALL HAVE A STURDY HASP SUITABLE FOR COMPANY'S STANDARD LOCK OR LOCK TUMBLERS WITHIN THE DOOR TO ACCOMMODATE COMPANY'S STANDARD KEY. SELF-LOCKING DOORS AND DOORS WITH LOCK TUMBLERS SHALL BE READILY OPENED FROM THE INSIDE WITHOUT A KEY.

COMPANY'S STANDARD "DANGER HIGH VOLTAGE" SIGN SHALL BE AFFIXED TO THE OUTSIDE OF ALL ENTRY DOORS OF TRANSFORMER VAULTS INSIDE OF BUILDINGS AND OF TRANSFORMER ENCLOSURES. THIS SIGN SHOULD BE SECURELY AFFIXED AND MAINTAINED AT A PLACE EASILY SEEN.

THE DOOR'S HEIGHT ABOVE THE SILL SHALL BE A MINIMUM OF 8'.

CUSTOMER'S ELECTRICAL CONDUCTORS

CUSTOMER IS TO PROVIDE ELECTRICAL CABLES IN THE VAULT. ENTRANCE LOCATIONS ARE TO BE APPROVED BY THE PROGRESS ENERGY ENGINEERING REPRESENTATIVE PRIOR TO CONSTRUCTION. RIGID BUS DUCT IS ACCEPTABLE AND IF PROVIDED, PROGRESS ENERGY WILL MAKE SECONDARY CONNECTION FROM THE SUPPLY TRANSFORMER TO THE RIGID BUS DUCT AND THE POINT OF CONNECTION SHALL BE THE POINT OF DELIVERY.

GROUNDING

ALL CIRCUITS, PHASE CABLES, AND NEUTRAL CABLES SHALL BE CLEARLY MARKED TO MEET THE REQUIREMENTS OF THE NEC.

CUSTOMER SHALL PROVIDE SUFFICIENT GROUNDING CONNECTION AVAILABLE TO COMPANY FOR GROUNDING COMPANY EQUIPMENT. THIS SHALL BE CONDUIT SLEEVE(S) FOR INSTALLING GROUND RODS TO EARTH BELOW, OR A COPPER CONNECTION TO BUILDING STEEL. COPPER CONNECTION PROVIDED BY CUSTOMER TO BUILDING STEEL SHALL BE A MINIMUM #3/0 COPPER. IF BUILDING STEEL IS USED, THE AUTHORITY HAVING JURISDICTION (ELECTRICAL INSPECTOR) SHALL INSPECT AND APPROVE THE METHOD OF CONNECTION.

SECONDARY CONDUCTORS

THE MAXIMUM ALLOWED NUMBER OF CONDUCTORS SHALL BE 14, SIZE 750 KCMIL CU OR AL MAXIMUM. SMALLER SIZES ARE ACCEPTABLE AS LONG AS THE NUMBER IS 14 OR LESS.

POINT OF DELIVERY

THE POINT OF DELIVERY WILL BE WHERE THE CUSTOMER'S CONDUCTORS OR BUS CONNECT TO THE PROGRESS ENERGY SECONDARY CONDUCTORS.
THE LADDER IS SHOWN IN A TYPICAL PRECAST VAULT. SPECIFY THE EXACT LENGTH NEEDED WHEN ORDERING.

NOTES:
1. THIS IS A NON-STOCK STANDARD ITEM FOR NEW OR EXISTING VAULTS.
2. ALLOW 8 WEEKS FOR DELIVERY.
3. GROUND LADDER TO VAULT GROUNDING GRID.
4. ENGINEER MUST SPECIFY HATCH TYPE ON ACCESS DOOR WITH RECESS LOCK BOX.
NOTES:
1. GROUND ALL METAL PARTS (SUMP, LIGHTS, AND PANEL).
NOTES:

1. USE PUMP WITH STANCOR OIL MINDER CONTROLLER. SEE FLOAT OFF LEVEL 4 1/4" FROM BASEPLATE

2. OIL-MINDER PROBE TIP MUST BE BELOW FLOAT OFF LEVEL. ADJUST FLOAT ACCORDINGLY.

3. INSTALL PUMP CONTROL AS HIGH ON THE VAULT WALL AS THE LIQUID LEVEL CABLES WILL ALLOW.

4. USE CAROLINAS STOCK 2" SCH 40 PVC FOR DISCHARGE PIPE. IF THE SUMP IS SMALL ENOUGH THAT HEAD WATER DRAINING BACK INTO SUMP AFTER THE PUMP CUTS OFF CAUSES THE PUMP TO CYCLE, INSTALL A 2" TO 3" ADAPTER AND A 3" ONE WAY FLUSH VALVE IN THE DISCHARGE PIPE. THIS SHOULD BE PURCHASED FROM A LOCAL PLUMBING SUPPLY OUTLET.

5. IF HEAD IS GREATER THAN 20 FEET, A LARGER PUMP WILL BE NECESSARY. CONTACT DISTRIBUTIONS STANDARDS.

6. CABLES FOR OIL SENSOR AND PUMP SWITCH COME WITH THE CONTROL. 20 FEET OF CABLE COMES WITH PUMP. 3 WIRE SOURCE VOLTAGE CABLE MUST BE SUPPLIED. 3#10 IS ADEQUATE.

7. MINIMUM BASIN DIAMETER IS 24 INCHES.

8. PUMP CONTROL IS WATER TIGHT BUT NOT SUBMERSIBLE.
STANCOR OIL MINDER SYSTEM CONTROLLER

OIL MINDER CONTROL BOX
CU CNTRLSMPC
CN 54041404

POWER
OIL FAULT
HIGH LEVEL
OVERLOAD
PUMP RUN

115 VAC
L1 N P1(N) P2(L)
RMS RELAY
F4F3F2F1
OIL PROBE
ON FLOAT
HIGH ALARM
SETTINGS
OVERLOAD
AMPS
SENSOR
10 AMPS @ 240 VAC
F4
F3
F2
F1

STANCOR
515 FAN HILL RD.
MONROE, CT 06468
www.stancorpumps.com
OIL MINDER II CONTROL
PATENTS: 2,752,188; 4,715,785; 6,203,281
MADE IN USA

RESET
SILENCE

10 FT. PIGTAIL INCLUDED

POWER
POWER TO PUMP
PROBE
FLOAT

DUKE ENERGY.
1. Weld a collar shim around the top to the edge angle.
2. Remove the top panels and the support steel and put shims in the beam pockets the same thickness as the collar in step 1.
3. Weld shims to the end angle the same thickness as the collar in step 1.
4. Replace the support steel and the panels.
5. CN 54051305 access panel with 1/2 grating panel (spec high heel or standard grating half panel) 2 access panels can be installed back to back if one door is needed for remote operators, specify on the order drawing.
6. CN 54051206 specify high heel grating (lifting device for high heel grate to be left in the vault).
7. CN 54051206 specify standard grating
8. CN 54052105 solid concrete panel
9. CN 54052204 brick paver panel
10. For vault ladder details see dwg. 29.01-05.

Access Door Panel Features:
- Stainless steel compression spring assist
- Auto-lock stainless steel hold open arms with release handles
- Stainless steel hinges and attaching hardware
- Stainless steel slam lock w/ removable key
- Double leaf construction
- H-20 load rating
- Recessed locking box.

The vaults are non-stock

Standard allow 6 months delivery time

15' vault shown
21' vault has 2 more panels

Plan View Steel Details

Work this drawing with dwg. 29.02-05

10' x 15' and 10' x 21'
Traffic rated precast vaults (steel details)
NOTES:

1. ALL 4 CORNERS OF VAULT HAVE PIPE INSERTS FOR THE INSTALLATION OF GROUND RODS. ATTACH #2 BC GROUNDING RING AROUND THE VAULT ABOVE THE FLOOR. ATTACH THE GROUND RING TO THE 4 GROUND ROD LOCATIONS AND ATTACH THE #2 BC TO THE WALL WITH NEUTRAL SPOOLS AND TIE WIRE.

2. SPECIFY SUMP AND SUMP PUMP DISCHARGE PIPE LOCATION ON THE ORDER DRAWING.

3. SEE DWGS. 29.01-09, 29.01-11 AND 29.01-13 FOR SUMP PUMP.

4. CONDUIT PANEL LOCATIONS AND SIZE SHOULD BE SPECIFIED ON THE ORDER DRAWING. PANEL LOCATIONS WILL BE MEASURED AS SHOWN ABOVE. THE KNOCKOUT IS 30" FROM THE TOP OF THE VAULT WALL OR 30" BELOW THE JOINT LINE. MINIMUM 12" FROM ANY WALL TO THE START OF A CONDUIT PANEL. THE PANELS CAN ONLY BE 3 VERTICAL BY 6 HORIZONTAL (MAXIMUM). PANELS MAY BE AS SMALL AS 2 VERTICAL BY 2 HORIZONTAL.

5. VAULTS ARE SOMETIMES MANUFACTURED WITH SLOPE TO MATCH THE SLOPE OF FINISHED GRADE. THE CONTRACTOR SHOULD MEASURE THE VAULT PRIOR TO INSTALLATION, AND PROPERLY LEVEL THE EXCAVATED AREA. THIS WILL ELIMINATE THE NEED TO RE-EXCAVATE FOR THE PURPOSE OF LEVELING AFTER THE VAULT HAS BEEN SET.

WORK THIS DRAWING WITH DWG. 29.02-03.
1. THESE ENCLOSURES ARE APPROVED FOR PURCHASE, NON-STOCK AND SHOULD BE SPECIAL ORDERED.

2. FOR OVERHEAD TRANSFORMER DIMENSIONS SEE DWG. 06.00-12.

3. USE OVERHEAD TYPE TRANSFORMERS WITH BUSHING WELLS. (TRANSFORMERS HAVE TO BE REQUESTED AND REWORKED FROM THE TRANSFORMER SHOP).

4. FOR TRANSFORMER ENCLOSURE PADS, SEE DWGS. 24.02-01A & 24.02-01B.

5. REFER TO DWG. 27.06-05 FOR LOCATION OF OIL-FILLED PAD-MOUNTED TRANSFORMERS.

6. SEE SECTION 34 FOR PRIMARY METERING ENCLOSURES. THE ABOVE CABINET SHOULD NOT BE USED FOR PRIMARY METERING.

7. FOR 2 OR 3 CABINETS, USE THE ABOVE TABLE DIMENSIONS, CATALOG AND ASSEMBLY NUMBERS.

8. THESE ENCLOSURES WITH OVERHEAD TYPE TRANSFORMERS SHALL ONLY BE INSTALLED TO PROVIDE THREE-PHASE SERVICE THAT ISN'T AVAILABLE FROM THREE-PHASE, PAD-MOUNTED TRANSFORMERS.

9. USE DEEP DRIVEN GROUNDS. DWG. 29.03-03 SHOULD BE USED AS AN EXAMPLE ON GROUNDING.

TRANSFORMER TRANSCLOSURE CABINETS

DWG.

29.03-01
1. Run the secondary through the CT’s and then connect to the transformer terminals. The CT’s cannot be installed over the secondary bushings to meter a delta secondary.

2. Run a #4 copper grounding loop around the bottom of the transclosure and ground the cabinet at each bay. See DWG. 29.03-11. One deep driven ground rod consisting of 4 - 5’ rods assembled on top of one another shall be installed and connected to the #4 grounding loop.

3. This is a "typical" installation. See reference spec. DWG. 06.10-06 II. The bank shown is connected floating wye - delta. If the bank is energized one phase at a time the floating wye must be temporarily grounded.

The floating neutral is brought to a feed thru bushing.

To ground the neutral:
- Attach the yellow grounding elbow to the transclosure ground loop.
- Remove the dead-end receptacle from the feed thru bushing.
- Install the yellow grounding elbow on the feed thru bushing.

The bank can now be energized one phase at a time without producing damaging ferroresonance overvoltages.

After the bank is energized, the temporary ground must be removed by reversing the above procedure before leaving the bank in service.

4. The grounding feed thru can be mounted anywhere in the transclosure as long as it is operable with a hot stick and good clearance is maintained between the mounting hardware and any exposed secondary hot parts. See DWG. 26.04-06.

5. Support primary and secondary cables with cable ties and cable protectors as necessary.

6. A transclosure should be used for three-phase four-wire 240/120 volt or three-phase three-wire 240 volt service only. See standard practices section 06.

**NOTES:**

- Support primary and secondary cables with cable ties and cable protectors as necessary.
- A transclosure should be used for three-phase three-wire 240 volt service only. See standard practices section 06.

**TYPICAL TRANSCLOSURE INSTALLATION**

**FEED THRU BUSHING PARKING STAND**

**YELLOW GROUNDING ELBOW AVAILABLE FROM DISTRIBUTION TOOLS AND TEST EQUIPMENT**
**ENERGIZE**
1. OPEN SWITCH
2. CLOSE CUTOUTS
3. CLOSE SWITCH

**DE-ENERGIZE**
1. OPEN SWITCH
2. OPEN CUTOUTS

DELTA BANKS SOURCED BY AN UNDERGROUND CIRCUIT SHOULD HAVE A GANGED THREE-PHASE SWITCH TO ENERGIZE AND DE-ENERGIZE THE BANK. THIS CAN BE DONE BY USING A GANG OPERATED PMH OR VAULT SWITCH. FUSING FOR THE BANK CAN BE ON THE DIP POLE OR AT THE TRANSFORMER LOCATION.

**ENERGIZE**
1. ALL 3 CUTOUTS OPEN
2. REMOVE DEAD END RECEPTACLE FROM THE FEED THROUGH PARKING STAND
3. INSTALL THE YELLOW GROUNDING ELBOW ON THE FEED THROUGH PARKING STAND
4. CLOSE IN ALL 3 CUTOUTS
5. CHECK SECONDARY VOLTAGE
6. REMOVE GROUNDING ELBOW
7. INSTALL DEAD END RECEPTACLE ON FEED THROUGH PARKING STAND

**DE-ENERGIZE**
1. REMOVE DEAD END RECEPTACLE FROM THE FEED THROUGH PARKING STAND
2. INSTALL THE YELLOW GROUNDING ELBOW ON THE FEED THROUGH PARKING STAND
3. OPEN THE CUTOUTS

FLOATING WYE-DELTA BANKS SOURCED BY AN UNDERGROUND CIRCUIT SHOULD BE ENERGIZED BY A GANG OPERATED SWITCH OR BY TEMPORARILY GROUNDING THE FLOATING NEUTRAL WHILE THE BANK IS ENERGIZED FROM A SINGLE-PHASE SOURCE SUCH AS FUSED CUTOUTS OR SINGLE-PHASE DISCONNECTS. TEMPORARY GROUNDING SHOULD BE DONE BY BRINGING THE FLOATING NEUTRAL TO THE FRONT OF THE TRANSCLUSION OR VAULT.
TO PREVENT FERRORESONANCE WHILE ENERGIZING THIS BANK THROUGH UNDERGROUND PRIMARY - THE FLOATING NEUTRAL MUST BE TEMPORARILY GROUNDED AS SHOWN IN THIS DRAWING OR A THREE-PHASE GANG OPERATED SWITCH MUST BE INSTALLED.

FOR TEMPORARILY GROUNDED NEUTRAL TO ENERGIZE:
1. ALL 3 CUTOUTS OPEN
2. REMOVE DEAD END RECEPTACLE FROM THE FEED THRU PARKING STAND
3. INSTALL THE YELLOW GROUNDING ELBOW ON THE FEEDTHROUGH PARKING STAND
4. CLOSE IN ALL 3 CUTOUTS
5. CHECK SECONDARY VOLTAGE IN METER ENCLOSURE
6. REMOVE GROUNDING ELBOW
7. INSTALL DEAD END RECEPTACLE ON FEED THRU PARKING STAND

TO DE-ENERGIZE:
1. REMOVE DEAD END RECEPTACLE FROM THE FEED THRU PARKING STAND
2. INSTALL THE YELLOW GROUNDING ELBOW ON THE FEED THRU PARKING STAND
3. OPEN THE CUTOUTS

POSITION THE FEED THRU PARKING STAND TO ALLOW THE GROUNDING ELBOW TO BE INSTALLED AND REMOVED FROM OUTSIDE THE VAULT WITH A SHOTGUN STICK.

THE GROUNDING ELBOW MUST BE REMOVED WHEN NOT WORKING ON THE BANK.

THIS CONFIGURATION WILL ACCEPT UP TO 8 CUSTOMER CONDUCTORS PER PHASE.
NOTES:

1. START WITH A 26" PIECE OF 1/0 JACKETED PRIMARY CABLE.
2. REMOVE THE OUTER INSULATING JACKET AND THE CONCENTRIC NEUTRAL FOR THE ENTIRE LENGTH OF THE CABLE.
4. INSTALL THE CABLE INTO THE ELBOW AND INSTALL THE MALE CONTACT.
5. CUT BACK 8" OF SEMI-CON AND INSULATION FROM THE OTHER END OF THE CABLE LEAVING 8" OF EXPOSED 1/0 SOLID AMUMINUM.
6. AQUA-SEAL AND TAPE BETWEEN THE SEMI-CON AND BARE CONDUCTOR
7. INSTALL THE STATIC WIRE TO THE ELBOW AND AROUND THE SEMI-CON TO THE AQUA-SEAL AND THEN TO THE GROUND LOOP.
8. SQUEEZE THE #4 BC TO THE 1/0 ALUMINUM 2 TIMES. IF THE ALUMINUM 1/0 CONDUCTOR IS SUBJECT TO SALT CONTAMINANTS, AQUA SEAL AND TAPE THE CONNECTIONS.
9. THE #2 BUSHING MAY BE LEFT AS A CERAMIC BUSHING AND NOT CONVERTED TO A BUSHING WELL. THIS SHOULD BE COORDINATED WITH THE TRANSFORMER SHOP.
10. VAULTS REQUIRE ONE DEEP DRIVEN GROUND ROD CONSISTING OF 4 - 5' RODS IN ONE CORNER OF THE VAULT AND 1 - 5' ROD IN EACH OF THE OTHER CORNERS. TRANSCLOSURES REQUIRE ONE DEEP DRIVEN GROUND ROD CONSISTING OF 4 - 5' RODS ASSEMBLED ON TOP OF ONE ANOTHER. GROUND ROD(S) SHALL BE CONNECTED TO THE GROUND LOOP.
1. THE METER PT'S CAN BE MOUNTED IN THE VAULT OR THE VOLTAGE CIRCUIT CAN BE BROUGHT OUT OF THE VAULT. THE PT'S CAN BE INSTALLED IN A T1 CABINET MOUNTED NEXT TO THE METER ENCLOSURE.

2. THE INSTALLATION SHOWN IS A SPLIT BUS ON THE COMPANY SIDE AND ON THE CUSTOMER'S SIDE.

3. MOUNT CL FUSES VERTICALLY WITH SOURCE SIDE ON TOP. SEE DWGS. 29.04-12A AND 29.04-12B.

4. RUN #4 COPPER VAULT GROUND AROUND THE VAULT AND ATTACH TO GROUND RODS IN EACH CORNER.

5. EACH PIECE OF EQUIPMENT IS TO BE LOOP GROUNDED TO THE VAULT GROUND LOOP PER INDIVIDUAL EQUIPMENT SPEC DWG.

6. THE INSTALLATION SHOWN ASSUMES THE VAULT WILL NOT FLOOD TO THE LEVEL OF THE SECONDARY BUSHINGS ON THE TRANSFORMERS. IF THIS IS NOT TRUE, CONTACT DISTRIBUTION STANDARDS FOR SPECIAL SUBMERSIBLE SECONDARY CONNECTORS.

7. THE TRANSFORMERS SHOWN HAVE INTERNAL EXPULSION FUSES TO PREVENT THE FAILED COILS FROM BEING RE-ENERGIZED. THE TRANSFORMERS MUST STILL HAVE SOME TYPE OF PRIMARY FUSING AS SHOWN.

8. THE TRANSFORMERS HAVE TAPS AND A WYE-DELTA SWITCH.

9. IF THE TRANSFORMERS ARE PARALLELED, ON THE PRIMARY, INSTALL 3-WAY 200 AMP JUNCTIONS TO FEED THE INDIVIDUAL TRANSFORMERS FROM ONE FUSED SOURCE.

LARGE TWO TRANSFORMER VAULT
5000 KVA MAX.
1. Sometimes it will be necessary to serve secondary or additional small metered services from a transformer feeding the main large service in a vault. If these small loads cannot be connected to the transformer secondary bushings while leaving room for the CT, the transformer can be unloaded into a bus that will allow the small services to be tapped up before the main large service load current passes through the CT's to the customer's service entrance cables.
COOPER - CURRENT LIMITING
SUBMERSIBLE FUSE DIMENSIONS (REPLACEMENT)

NOTES:
1. COOPER FUSES SHOULD BE USED FOR ALL NEW INSTALLS. REQUIRES NEW UNIVERSAL BRACKET LISTED ON THIS DRAWING.
2. LABEL EACH FUSE AMP SIZE USING 1-5/8" LABELING STICKER KIT ON CENTER OF FUSE BODY.
3. USE STANDARD 9/16" GROUND LUG WITH BRACKET WITH #2 CU GROUND.
4. SEE DWG. 29.04-12B FOR FUSE SPECIFICATIONS AND COMPATIBLE UNITS.
### Single-Phase 13.2 kV

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**Notes:**

1. See DWG. 29.04-12A for fuse dimensions and details.
1. CHECK GAS PRESSURE BEFORE INSTALLING. DO NOT INSTALL IF GAS PRESSURE IS LOW.

2. 3-WAY SWITCH IS SHOWN. GROUND 2-WAY AND 4-WAY SWITCHES THE SAME.

3. SPECIAL BRACKETS TO MOUNT REMOTE OPERATORS ARE SHIPPED WITH THE 3-WAY SWITCH. THESE SHOULD BE USED IN PLACE OF THE BRACKETS SHIPPED WITH THE REMOTE OPERATORS ON THE 3-WAY SWITCH ONLY.

4. EACH SWITCH POSITION REQUIRES A SEPARATE REMOTE OPERATOR.

5. USE THREE-PHASE FAULT INDICATORS ON SOURCE AND FEED CIRCUITS (SEE SECTION 23).

6. USE SINGLE-PHASE FAULT INDICATORS IF TAP FEEDS FUSES OR A TRANSFORMER BANK (SEE SECTION 23).

ATTACH THE #2 BC TO THE SWITCH GROUNDING TABS WITH BRONZE LUGS

SEE NOTE 5

SEE NOTE 3

REMOTE OPERATOR INSTALLATION ON THE VACUUM SWITCH

AFTER REMOVING THE MANUAL HANDLE AND HASP LOOSELY ATTACH THE MOUNTING POST “1” TO THE THREADED BOSSES “2” ON THE SWITCH. USE THE THREADED STUD “3”.

LOOSELY ATTACH CABLE AND TOP BAR ASSEMBLY “4” WITH THE BOLTS AND WASHERS PROVIDED TO THE MOUNTING POSTS.

REMOVE THE DETENT PIN “5” FROM THE BRASS COUPLING “6” ON THE END OF THE CABLE.

MAKE SURE THE NEOPRENE BELLOWS “7” IS IN POSITION ON THE SWITCH OPERATING SHAFT.

POSITION THE BRASS COUPLING OVER THE OPERATOR SHAFT AND ATTACH WITH THE DETENT PIN. THEN TIGHTEN THE MOUNTING POST AND TOP BAR BOLTS.

ADJUST THE CABLE USING THE ADJUSTING NUTS “8” AS SHOWN.

WARNING: REMOTE OPERATORS ARE NOT INSULATED FROM THE VACUUM SWITCH.

FAULT INDICATOR READOUTS SHOULD BE MOUNTED NEAR THE CORRESPONDING REMOTE HANDLE AND LABELED TO ASSIST IN TROUBLESHOOTING FAULTED CIRCUITS.

TRAIN AND SECURE REMOTE CABLES TO NOT EXCEED 7” MINIMUM BENDING RADIUS. COIL EXCESS CABLE.

GROUND REMOTE HANDLE MOUNTING ANGLE WITH #2 BC TO THE VAULT GROUNDING GRID.
NOTES:

1. CHECK GAS PRESSURE BEFORE INSTALLING. DO NOT INSTALL IF GAS PRESSURE IS LOW.
2. VACUUM SWITCHES ARE SUBMERSIBLE AND CAN BE USED IN VAULTS OR MANHOLES. IF THE LOCATION IS SUBJECT TO FLOODING, SECURE THE SWITCH TO PREVENT FLOATING. VACUUM SWITCHES CAN BE MOUNTED ON WALLS OR UPSIDE DOWN.
3. VACUUM SWITCHES HAVE 600 AMP BUSHINGS (WITH REMOVABLE STUDS) TO ACCEPT 600 AMP ELBOWS AND TO REDUCE TO 200 AMP. SEE DWG. 26.03-09. HOWEVER, VACUUM SWITCHES CAN BE ORDERED WITH 200 AMP BUSHINGS IF SUFFICIENT LEAD TIME IS AVAILABLE.
4. AN EXTERNAL OPERATING SHAFT IS USED TO PERFORM THE SWITCHING FUNCTION; PUSH TO CLOSE, PULL TO OPEN. A LOCKING HASP IS PROVIDED TO PADLOCK THE OPERATING HANDLE IN THE OPEN OR CLOSED SWITCHED POSITION. SEE DWG. 29.05-01 FOR REMOTE OPERATORS.
5. CABLE TRAINING AND TERMINATION SHOULD BE CAREFULLY PLANNED. SUPPORT THE CABLES 3' TO 4' FROM THE ELBOW TERMINATIONS.
6. THE VACUUM BOTTLES ARE INSULATED WITH NONFLAMMABLE, HEAVIER THAN AIR, SF6 GAS. THE GAS PRESSURE SHOULD BE CHECKED DURING VAULT INSPECTIONS AND SCHEDULED MAINTENANCE. THE PRESSURE SHOULD BE BETWEEN 6 PSI AND 14 PSI. THIS SHOULD BE RECORDED AND COMPARED WITH LATER READINGS. IF THERE IS MORE THAN A 2 PSI DROP THE SWITCH SHOULD BE MONITORED CLOSELY FOR FURTHER DROP. IF THE PRESSURE IS BELOW 4 PSI (FOR NO APPARENT REASON) THE SWITCH SHOULD BE RECHARGED. (CONTACT MATERIAL RECOVERY FOR THE CHARGING KIT) IF SWITCH HAS AGAIN LOST PRESSURE WITHIN 6 MONTHS OF RECHARGING. THE SWITCH SHOULD THEN BE REPLACED. IF THE PRESSURE GAUGE ON THE SWITCH SHOWS LOW PRESSURE, DOUBLE CHECK WITH A TIRE GAUGE BEFORE TAKING ACTION. MATERIAL RECOVERY HAS A DIGITAL PRESSURE GAUGE AVAILABLE FOR LOAN. ALWAYS PUT THE CAP BACK ON THE VALVE STEM.
7. ASSIGN EACH SWITCH HANDLE A NUMBER. LABEL AT VACPAC AND AT REMOTE OPERATOR LOCATION. WHEN MORE THAN ONE VACPAC IS INSTALLED IN VAULT, USE NEW NUMBER FOR EACH SWITCH.

EXAMPLE:
TWO THREE WAY - USE NUMBERS 1, 2, 3, 4, 5 & 6.
SOME OF THE TERMS USED WITH TRANSFER SCHEMES ARE LISTED BELOW WITH AN EXPLANATION:

TRANSFER TIMER:
AN ADJUSTABLE TIMER, FROM 2-60 SECONDS, THAT ALLOWS THE ENGINEER TO DELAY THE TRANSFER FROM THE PREFERRED TO THE ALTERNATE SOURCE. THIS CAN BE SET TO COORDINATE WITH ANY OF THE FEEDER BREAKER OR RECLOSER DELAYED OPERATIONS ALLOWING THE TRANSFER TO TAKE PLACE FOLLOWING A QUICK TRIP THAT DID NOT CLEAR THE CIRCUIT OR ALLOWING PREFERRED SOURCE FEEDER BREAKER OR RECLOSER TO LOCKOUT BEFORE TRANSFERRING TO THE ALTERNATE SOURCE.

AUTO-MAN RESTORE SWITCH:
IF SET IN AUTO, THE LOAD WILL BE RETURNED TO THE RE-ENERGIZED PREFERRED SOURCE. IF SET IN MAN, THE LOAD WILL REMAIN ON THE ALTERNATE SOURCE EVEN AFTER THE PREFERRED SOURCE IS RE-ENERGIZED. IN THE MAN POSITION, SERVICE PERSONNEL WILL MANUALLY HAVE TO SWITCH BACK TO THE PREFERRED SOURCE.

RESTORE TIMER:
AN ADJUSTABLE TIMER, FROM 5-180 SECONDS, THAT ALLOWS THE ENGINEER TO DELAY THE AUTOMATIC TRANSFER BACK TO THE RE-ENERGIZED PREFERRED SOURCE.

NOTE: THE TRANSFER BACK TO THE PREFERRED SOURCE OCCURS ONLY IF THE RESTORE SWITCH IS SET IN THE AUTO POSITION.

CLOSE-OPEN TRANSITION SWITCH:

FAULT-BLOCK:

FOR PAD-MOUNTED TRANSFERS, THERE ARE SEVERAL PACKAGES AVAILABLE THAT (LIKE THE SUBMERSIBLE VERSION SHOWN ON DWG. 29.06-03) CAN BE TAILORED FOR SPECIAL APPLICATIONS AS NEEDED. CONTACT DISTRIBUTION STANDARDS FOR ASSISTANCE IN DESIGN AND ORDER INFORMATION.
FOR THREE-PHASE SENSING, USE THREE POTENTIAL TRANSFORMERS

VACUUM SWITCH CN 11243201

PT FOR VOLTAGE SENSING OF ONE PHASE AND CONTROL
POWER FOR THE OPPOSITE SOURCE TRANSFER OPERATOR

TRANSFER SEQUENCE

FAULT OCCURS UPSTREAM OF THE 200 AMP FAULT DETECTORS CAUSING A FEEDER LOCKOUT OR SINGLE PHASING DUE TO A BLOWN FUSE ON THE PREFERRED SOURCE.

CONTROL TIMES OUT AND OPENS THE PREFERRED SWITCH OPERATOR AND CLOSES THE ALTERNATE SOURCE SWITCH OPERATOR.

AFTER THREE-PHASE PREFERRED SOURCE IS RESTORED THE RESTORE TIMER OPENS THE ALTERNATE SWITCH POSITION AND CLOSES THE PREFERRED SWITCH POSITION RETURNING THE SYSTEM TO NORMAL.

THE CONTROLS HAVE AN OPEN OR CLOSE TRANSITION RESTORE SWITCH TO ALLOW THE RETURN TO THE PREFERRED SOURCE WITHOUT THE CUSTOMER EXPERIENCING A MOMENTARY. THIS PARALLELS THE PREFERRED AND ALTERNATE FEED FOR ABOUT 10 CYCLES.

FAULTED LOAD CIRCUIT DOWNSTREAM OF THE FAULT SENSORS

BANK FAULTS AND BLOWS DIP POLE FUSE(S)

FAULT BLOCK IS LATCHED FROM CURRENT FLOW THROUGH THE SENSORS ON THE LOAD CIRCUIT UPSTREAM OF THE TRANSFORMER BANK.

TRANSFER TIMES OUT AND PREFERRED SWITCH POSITION OPENS.

ALTERNATE FEED DOES NOT CLOSE DUE TO FAULT BLOCK.

SERVICE PERSONAL OPENS LOAD TAP WITH REMOTE HANDLE.

BANK TROUBLE IS CLEARED UP.

DIP POLE IS RE-FUSED

RESET FAULT BLOCK INSIDE THE CONTROL CABINET

RESTORE TRANSFER TIMER WILL CLOSE PREFERRED SOURCE.

LOAD TAP IS CLOSED BY REMOTE OPERATOR HANDLE.

FOR DELTA BANKS, USE A PHASE SEQUENCE RELAY FOR VOLTAGE SENSING.
STEP 1

LOOSELY ATTACH UNIVERSAL MOUNTING BRACKETS TO JUNCTION BACK PLATE AND PLACE ASSEMBLY AGAINST WALL. ADJUST BRACKETS FOR PROPER ALIGNMENT AND MARK THEIR LOCATION ON WALL.

STEP 2

DETACH UNIVERSAL MOUNTING BRACKETS FROM JUNCTION BACK PLATE. MOUNT BRACKETS ON WALL ACCORDING TO MARKS MADE IN STEP 1.

STEP 3

WITH UNIVERSAL MOUNTING BRACKETS SECURE, FASTEN BACK PLATE (WITH JUNCTION ATTACHED) TO MOUNTING BRACKETS, MAKING SURE PARKING STANDS ARE IN UPRIGHT POSITION.

STEP 4

ADJUST MOUNTING ANGLE TO DESIRED POSITION.

FOR PAD-MOUNTED APPLICATIONS
SEE DWGS. 25.01-03A, 25.01-03B
25.01-10A, 25.01-10B AND 25.01-11.

FOR 600 AMP DEAD BREAK APPLICATIONS
USE CN 11185402
CU FDTHR253WWMT
CN 11186301

STEP 5

TIGHTEN ALL BOLTS SECURELY TO ASSURE NO MOVEMENT DURING OPERATION. GROUND JUNCTION BRACKET TO SYSTEM GROUND USING #4 BC.

REMOVE PROTECTIVE CAPS, CLEAN AND LUBRICATE JUNCTION BUSHING INTERFACE WITH SILICONE GREASE PROVIDED OR CN 30520803. MATE THREE LOADBREAK ELBOWS TO JUNCTION BUSHINGS FOLLOWING APPLICABLE LOADMAKE OPERATING PROCEDURE.

NOTES:

1. IF ELBOW IS CLOSED INTO A FAULT, REPLACE ELBOW AND JUNCTION.
NOTES:

1. TRANSFORMERS ARE DESIGNED FOR THE ENCLOSED ROOM VAULT ENVIRONMENT. SPECIAL FEATURES INCLUDE 304L STAINLESS STEEL TANK, DELTA-WYE SWITCH, TAP CHANGER, INTERNAL CARTRIDGE EXPULSION FUSE, LOW-FLAMMABLE OIL, JACKING AND ROLLING PROVISIONS AND A TOP OIL THERMOMETER.

2. UNITS ARE RATED 55°C RISE AND DESIGNED FOR OPERATION IN ENCLOSED LOCATIONS AT AMBIENT TEMPERATURES OF UP TO 50°C.

3. UNITS SHOULD BE INSTALLED WITH AN EXTERNAL FULL-RANGE CURRENT LIMITING FUSE FOR PROTECTION. SEE SECTION 29.04.

4. THE 3000 KVA UNIT (NO LONGER PURCHASED) IS A STANDARD 65°C RISE UNIT RATED FOR 30° AMBIENT. PER IEEE STD. C57.91, THIS UNIT SHOULD BE DE-RATED 1.5% FOR EACH DEGREE CELCIUS ABOVE 30°C AMBIENT. IN A 50°C AMBIENT ENVIRONMENT, ITS RATING WOULD BE ONLY 2100 KVA.

5. WHILE SOME SPARES ARE STOCKED IN GARNER, ALL UNITS SHOULD BE CONSIDERED AS SPECIAL-ORDER NON-STOCK.

6. SEE DWG 29.09-03 FOR OUTLINE DRAWING AND DIMENSIONS.

7. SEE DWG 29.09-05 FOR SECONDARY BUSHING COVER DETAIL.
THREE-PHASE VAULT TRANSFORMERS

DIMENSIONS

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1. FILL PLUG
2. TAP CHANGER
3. DELTA/WYE SWITCH
4. TANK GROUNDS
5. DRAIN VALVE AND SAMPLER
6. LIQUID LEVEL GAUGE
7. THERMOMETER
8. PRESSURE/VACUUM REGULATOR AND GAUGE
9. SCHRADER VALVE
10. HANDHOLES PER SPECIFICATION
11. NAMEPLATE
12. LIFTING LUGS
13. KVA RATING PLATE
14. NON-PCB DETAIL
15. BOLTS FOR SECONDARY COVER
16. FULLY INSULATED HV NEUTRAL
NOTES:

1. MAXIMUM OF 14-750 KCMIL CU OR AL CONDUCTORS FOR THIS INSTALLATION USING 2-8 HOLE TERMINAL BLOCKS AND USING THE END 2 HOLES FOR BUSHING SUPPORT.
1. INSTALL LIGHT SWITCH AND PLUG AT THE VAULT ENTRANCE.

2. PLUG IS TO ALLOW LIGHTING CIRCUIT TO BE ENERGIZED FROM A GENERATOR DURING VAULT SOURCE OUTAGES.

3. THE SWITCH AND FIXTURE ARE WATERTIGHT BUT NOT SUBMERSIBLE.

4. THE PACKAGE TO ADD AN ADDITIONAL LIGHT IS CONNECTED TO THE FIRST LIGHT FIXTURE. AS MANY AS TEN ADDITIONAL LIGHTS CAN BE ADDED TO THE ORIGINAL PACKAGE.

5. CABLE CLAMPS AND LEAD INSERTS ARE INCLUDED IN THE PACKAGE. USE 1/2" BIT FOR INSERTS AND 1/4" SS OR BRONZE BOLTS IN THE INSERTS.

6. USE 150 WATT BULB MAXIMUM.

7. CUSTOMER TO SUPPLY VAULT LIGHTING IN NEW VAULT INSTALLATIONS. DRAWING IS FOR MAINTENANCE ONLY.

NOTES:

- CUT 25' CORD AS NEEDED
- SEAL END OF THE CABLE INSULATION
- GREEN WIRE TO VAULT GROUND
- WHITE WIRE TO SYSTEM NEUTRAL
- BLACK WIRE TO FUSE
- CONNECT TO 120 VOLT SOURCE ONLY
- LOAD SIDE

NOTE: FUSE HOLDER AND 30 AMP FUSE ARE NOT INCLUDED IN COMPATIBLE UNIT

CU LTVLTADDC
CN 13082607

CU LTVLKITC
CN 13082208

VAULT LIGHTING KITS (FMO)
NOTES:
1. FUSE CABINET IS RAIN TIGHT AND WHEN REQUIRED MAY BE USED IN ALL ABOVE OR BELOW GROUND VAULTS.
2. USE 200 AMPERE LOADBREAK ELBOWS FOR PRIMARY CABLE TERMINATIONS.
3. FUSE CABINETS ARE SHIPPED WITH FUSEHOLDER MOUNTINGS BUT WITHOUT FUSEHOLDERS AND FUSES. TYPE SML-4Z FUSEHOLDERS ARE REQUIRED. THESE FUSEHOLDERS ARE LOADBREAK, AND GIVE A VISIBLE INDICATION OF A BLOWN FUSE.
4. THE ABOVE FUSES ARE AVAILABLE AT THE GENERAL WAREHOUSE. OTHERS ARE AVAILABLE BY SPECIAL ORDER.
5. FUSE CABINET HAS AN INTERNAL SAFETY BARRIER BETWEEN THE DOOR AND THE FUSEHOLDERS THAT MUST BE REMOVED FOR ACCESS TO THE FUSEHOLDERS. THE FUSEHOLDERS CAN BE SEEN THROUGH THE CLEAR SAFETY BARRIER.
6. FUSE CABINET IS TO BE GROUNDED WITH #4 BC GROUND WIRE.
7. THE MINIMUM MOUNTING HEIGHT TO THE BOTTOM OF THE FUSE CABINET IS 3'.
8. WEIGHT: APPROXIMATELY 400 LBS.
#304 STAINLESS STEEL MOUNTING BRACKET. REMOVABLE STRAPS ALLOW FUSE REPLACEMENT WHILE BRACKET IS MOUNTED TO WALL.

200A BUSHING WELL W/ REMOVABLE STUD

FRONT VIEW

TOP VIEW

SIDE VIEW

LOAD SIDE IS ENGRAVED

MECHANICALLY REINFORCED EPOXY INSULATION WITH EXTERNAL SEMICON

NOTES:

1. SEE DWG. 29.04-12D FOR APPLICATIONS.

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NOTES:
1. THESE FUSES TO BE USED FOR MAINTENANCE REPLACEMENTS. SEE DWGS. 29.04-12A AND 29.04-12B FOR NEW INSTALLATIONS.
2. FUSES ARE FULL RANGE CURRENT LIMITING.
3. LOAD SIDE IS ENGRAVED.
4. SEE DWG. 29.04-12C FOR DIMENSIONS.
5. NO DERATING OF THE FUSE IS REQUIRED.
6. FUSE CAN BE MOUNTED HORIZONTAL OR VERTICAL.