

# SUBSTATION TRANSFORMER #4 REPLACEMENT

VETERANS AFFAIRS MEDICAL CENTER  
HUNTINGTON, WEST VIRGINIA

General Notes

No.	Revision/Issue	Date

Firm Name and Address

Project Name and Address  
TRANSFORMER #4 REPLACEMENT  
VAMC  
HUNTINGTON, WEST VIRGINIA  
25704

Project	18-900	Sheet
Date	1/17/2018	
Scale	N.T.S.	

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GENERAL NOTES:

- A. ALL DRAWINGS ARE TO BE WORKED IN CONJUNCTION WITH WRITTEN SPECIFICATIONS. ANY AMBIGUITY OR CONFLICTING INFORMATION, CONTRACTOR WILL CONTACT CONTRACTING OFFICER AND CONTRACTING OFFICER REPRESENTATIVE FOR CLARITY
- B. ALL GENERAL NOTES ON THIS PAGE APPLY TO ALL OTHER DRAWING PAGES UNLESS OTHERWISE NOTED.
- C. ALL DETAILS ON DRAWINGS MAY OR MAY NOT BE SHOWN. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS.
- D. DIMENSIONS PROVIDED ON DRAWINGS ARE FOR REFERENCE ONLY. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS.
- E. CONTRACTOR SHALL FIELD LOCATE AND VERIFY ALL EXISTING ELECTRICAL CONNECTIONS AND WIRING.
- F. CONTRACTOR SHALL HAVE A CONTINUOUS WORKING TIMEFRAME OF THIRTY-SIX (36) HOURS BEGINNING WHEN EXISTING SUBSTATION TRANSFORMER UNIT IS TAKEN OUT OF SERVICE UNTIL PROPOSED NEW SUBSTATION TRANSFORMER IS INSTALLED AND PLACED INTO SERVICE.
- G. CONTRACTOR SHALL VERIFY WORK AREA CONDITIONS AND REQUIREMENTS. PROVIDE SUBMITTALS OF ALL PRODUCTS UNLESS BRAND SPECIFIED HERE-IN.
- H. PROVIDE SUBMITTALS OR SHOP DRAWINGS FOR ALL PRODUCTS AS OUTLINE IN SPECIFICATIONS.
- I. ALL TOOLS USED IN THIS PROJECT SHALL BE PROPERLY SECURED AT ALL TIMES BY THE CONTRACTOR TO PREVENT ANY OF THESE TOOLS BEING A HAZARD.
- J. CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT, SERVICES, PERMITS, AND MATERIALS TO COMPLETE ALL WORK OUTLINED IN THE DRAWINGS AND SPECIFICATIONS. INCLUDING WORK NOT SPECIFICALLY SHOWN BUT REASONABLY IMPLIED.
- K. THE CONTRACTOR AT HIS EXPENSE WILL BE RESPONSIBLE FOR ACQUIRING VA PICTURE I.D. BADGES FOR EACH MEMBER OF HIS WORK FORCE BEFORE ANY MEMBER WILL BE ALLOWED TO PERFORM WORK IN VA PREMISES. PROCESS I.D. APPLICATIONS THROUGH COR.
- L. LABOR RATE & SAFETY INFORMATION SHALL BE POSTED AND MAINTAINED AT WORK SITE AT ALL TIMES.
- M. ABSOLUTELY NO VA TOOLS OR MATERIALS SHALL BE LOANED OR GIVEN BY THE VA TO ANY MEMBER OF THE CONTRACTOR'S WORK FORCE AT ANY TIME.
- N. CONTRACTOR SHALL COORDINATE WORK & SCHEDULES ONLY WITH THE COR.
- O. EACH WORKER WILL BE REQUIRED TO WEAR APPROPRIATE SAFETY EQUIPMENT AT ALL TIMES (I.E. SAFETY SHOES, EAR PLUGS, SAFETY GLASSES, SAFETY HELMET ETC.) AND IS RESPONSIBLE TO ENSURE THAT NON-WORKERS ARE PREVENTED FROM INJURING THEMSELVES IN ANY WORK AREA.
- P. CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING VA FACILITIES, LANDSCAPING, AND PROPERTY. ANY DAMAGED PROPERTY SHALL BE REPLACED BY THE CONTRACTOR AT NO COST TO THE VA.
- Q. DO NOT ALLOW DEMOLITION DEBRIS TO ACCUMULATE ON JOB SITE. DO NOT LEAVE TOOLS UNATTENDED. DEBRIS SHALL BE DAMPENED AND COVERED. DAMP MOP OCCUPIED FLOOR AREAS AS REQUIRED. PROVIDE WALK OFF MATS AS REQUIRED.
- R. EXCESSIVE NOISE TRANSMISSION OF WORK SHALL BE ACCOMPLISHED IN OTHER THAN NORMAL WORKING HOURS (7:00AM TO 4:30PM).
- S. ALL NEW WORK SHALL ALIGN WITH EXISTING WHERE THEY INTERSECT UNLESS OTHERWISE NOTED.
- T. THE CONTRACTOR SHALL PATCH AND REPAIR ALL EXISTING SURFACES WHICH WERE PREVIOUSLY DAMAGED PRIOR TO CONSTRUCTION OPERATIONS IF VISIBLE AFTER NEW WORK IS COMPLETE, REGARDLESS IF THE ITEM WAS SPECIFICALLY NOTED OR NOT.
- U. THE CONTRACTOR SHALL REVIEW ALL CONTRACT DOCUMENTS INCLUDING ALL ELECTRICAL SPECIFICATIONS.
- V. SECURE AN EXTRA SET OF DRAWINGS TO BE KEPT ON SITE AND MARK, DAILY. THE DRAWINGS IN RED AS THE PROJECT PROGRESS IN ORDER TO KEEP AN ACCURATE RECORD OF ALL DEVIATIONS BETWEEN THE WORK SHOWN ON THE DRAWINGS AND THE WORK WHICH IS ACTUALLY INSTALLED. THESE MARKED DRAWINGS SHALL REFLECT ANY AND ALL CHANGES AND REVISIONS TO THE ORIGINAL DESIGN WHICH EXISTS IN THE COMPLETED WORK. DELIVER THE MARKED DRAWINGS TO THE COR AT THE PROJECT CLOSE-OUT.
- W. IF ANY HAZARDOUS MATERIAL IS ENCOUNTERED DURING THE COURSE OF CONSTRUCTION OPERATIONS WHICH IS NOT INDICATED ON THE CONTRACT DOCUMENTS THE CONTRACTOR SHALL NOTIFY THE COR IMMEDIATELY.
- X. REMOVE ALL ELECTRICAL NOT BEING REUSED.
- Y. COORDINATE LOCATION OF ALL EQUIPMENT WITH EXISTING CONDITIONS.
- Z. IT IS THE INTENTIONS OF THESE DRAWINGS TO COVER ALL WORK & MATERIAL FOR A COMPLETE OPERATIONAL INSTALLATION ANY EQUIPMENT, HARDWARE AND/OR DEVICES USUALLY UTILIZED IN THE CLASS OF WORK, THOUGH NOT SPECIFICALLY MENTIONED OR SHOWN ON THE DRAWINGS, BUT WHICH MAY BE NECESSARY FOR THE SATISFACTORY COMPLETION OF THE WORK SHALL BE FURNISHED & INSTALLED BY THE CONTRACTOR TO HAVE A COMPLETE FUNCTIONAL PROJECT.
- AA. ALL ELECTRICAL WORK TO BE PERFORMED PER NEC CODE BY CERTIFIED ELECTRICIAN. PROVIDE WEST VIRGINIA CERTIFICATION PRIOR TO BEGINNING ANY WORK.
- AB. WIRING SHALL BE COPPER.
- AC. ALL CIRCUITS SHALL HAVE A GROUNDING CONDUCTOR INSTALLED IN THE RACEWAY WITH THE PHASE AND NEUTRAL CONDUCTORS, FOR EACH WIRING DEVICE A GROUNDING PIGTAIL JUMPER SHALL BE INSTALLED, TO CONNECT THE DEVICE TO THE BOX.
- AD. ARRANGE ALL NECESSARY INSPECTIONS. DELIVER ALL REQUIRED INSPECTION CERTIFICATES TO THE OWNER.

GENERAL DEMOLITION NOTES:

- A. DEMOLITION DRAWINGS ARE BASED ON EXISTING PLANS AND FIELD INVESTIGATION PRIOR TO DEMOLITION. VISIT THE EXISTING BUILDING PRIOR TO BID IN ORDER TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS AND IN ORDER TO AVOID CONFLICTS.
- B. VA RESERVES THE RIGHT TO RETAIN ANY EXISTING ITEMS. THOSE ITEMS SHALL BE REMOVED AND DELIVERED FOR STORAGE ON GROUNDS AS DIRECTED BY COR. ALL OTHER ITEMS BECOME THE PROPERTY OF THE CONTRACTOR, AND SHALL BE REMOVED FROM SITE PROMPTLY UPON REMOVAL.
- C. KEEP AREA CLEAN AND FREE OF DUST BUILD-UP. CLEAN AREA ON A DAILY BASIS.
- D. EXISTING CIRCUITRY TO REMAIN SHALL BE REROUTED OR RECONNECTED, AS REQUIRED, WHERE AFFECTED BY NEW WORK IN ORDER TO MAINTAIN CONTINUITY OF THE CIRCUIT.
- E. PROVIDE CIRCUIT MODIFICATIONS INDICATED OR AS OTHERWISE REQUIRED TO MAINTAIN THE CONTINUITY OF EXISTING CIRCUITS THAT REMAIN.
- F. ALL EXISTING WIRING THAT WILL NOT BE REUSED SHALL BE REMOVED WHERE THEY WILL BE EXPOSED UPON COMPLETION OF NEW WORK.
- G. EXERCISE CARE IN REMOVAL OF DEMOLITION ITEMS. REPAIR, AT NO ADDITIONAL COST TO THE OWNER, ANY DAMAGE CAUSED TO EXISTING CONSTRUCTION AND/OR EQUIPMENT TO REMAIN.
- H. REMOVE ALL APPURTENANCES (DISCONNECTS, STARTERS, WIRING, CONDUIT, GUAGES, ETC) ASSOCIATED WITH EQUIPMENT.
- I. ALL WORK AND ALL POWER OUTAGES IN THE EXISTING BUILDING SHALL BE SCHEDULED AT TIMES CONVENIENT TO VA.
- J. NOTIFY THE COR PRIOR TO TURNING OFF ANY CIRCUITS.

GENERAL ELECTRICAL NOTES:

- A. CONTRACTOR WILL VERIFY CURRENT CONDITIONS, WIRING, TERMINATIONS, ETC. PRIOR TO WORK COMMENCING.
- B. ALL WORK SHALL BE IN ACCORDANCE WITH CURRENT EDITION OF NATIONAL ELECTRIC CODE UNLESS OTHERWISE NOTED AND/OR DETAILED.
- C. PROPOSED NEW SUBSTATION TRANSFORMER UNIT LISTED IN DRAWINGS SHALL BE 2,000kVA NON-PCB, LIQUID-FILLED.
- D. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY AND ENSURE ALL CUSTOM TRANSITION PIECES INCLUDING TO BUT NOT LIMITED TO THOSE THAT COVER PRIMARY HIGH-VOLTAGE AND SECONDARY LOW-VOLTAGE BUSHINGS ARE OF CORRECT PROPER, OPERATIONAL, AND FUNCTIONAL SIZE PRIOR TO ATTACHING AND SECURING TO PROPOSED NEW SUBSTATION TRANSFORMER UNIT.
- E. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY AND ENSURE ALL ELECTRICAL/MECHANICAL CONNECTIONS SUCH AS TERMINALS, FLEX CONNECTORS, TERMINATION TYPES, WIRING SIZE AND TYPES, ETC. ON PROPOSED SUBSTATION TRANSFORMER UNIT ARE CORRECT, FUNCTIONAL, OPERATIONAL, AND PROPERLY ATTACH TO EXISTING SWITCH ASSEMBLY AND SWITCHGEAR.
- F. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE ALL ELECTRICAL/MECHANICAL CONNECTIONS FROM PROPOSED SUBSTATION TRANSFORMER UNIT TO EXISTING SWITCH ASSEMBLY AND SWITCHGEAR ARE PROPERLY ATTACHED AND IN WORKING, OPERATIONAL, AND FUNCTIONAL ORDER.
- G. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REQUEST, COORDINATE, AND SCHEDULE TWO (2) SEPERATE POWER SHUTDOWNS TO EXISTING SUBSTATION TRANSFORMER UNIT #4 IN ORDER TO: 1) HAVE THE OPPORTUNITY TO FIELD LOCATE AND VERIFY ALL TERMINATION TYPES, FUSE ASSEMBLIES, CONNECTION TYPES, WIRING SIZE AND TYPES ALONG WITH ANY OTHER NECESSARY INFORMATION REQUIRED TO COMPLETE PROJECT AND 2) ALLOW FOR REMOVAL AND REPLACEMENT OF EXISTING SUBSTATION TRANSFORMER UNIT WITH PROPOSED NEW SUBSTATION TRANSFORMER UNIT AS WELL AS CONDUCT ANY NECESSARY TEST(S) THAT ARE REQUIRED TO COMPLETE THE PROJECT.
- H. BOTH POWER SHUTDOWNS MUST OCCUR DURING WEEKENDS AND/OR NON-BUSINESS HOURS TO MINIMIZE ANY DISTURBANCE TO VETERANS AFFAIRS MEDICAL CENTER STANDARD OPERATIONS.
- I. THE FIRST POWER SHUTDOWN SHALL BE NO LONGER THAN ONE (1) HOUR.
- J. DUE TO LOCATION OF EXISTING SWITCH ASSEMBLY AND SWITCHGEAR, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE PROPOSED SUBSTATION TRANSFORMER UNIT IS MANUFACTURED, ORIENTED, AND INSTALLED SO THAT BOTH PRIMARY HIGH-VOLTAGE AND SECONDARY LOW-VOLTAGE BUSHINGS PROPERLY AND CORRECTLY ALIGN AND ATTACH TO EXISTING SWITCH ASSEMBLY, SWITCHGEAR, AND ANY OTHER NECESSARY ELECTRICAL EQUIPMENT (SEE SHT. E003 FOR EXISTING ORIENTATION TO MATCH).
- K. EXISTING SWITCH ASSEMBLY AND SWITCHGEAR SHALL REMAIN.
- L. THERE SHALL BE CONTINUOUS WORKING SHIFT OF THIRTY-SIX (36) HOURS BEGINNING WHEN THE EXISTING SUBSTATION TRANSFORMER UNIT IS TAKEN OUT OF SERVICE UNTIL PROPOSED NEW SUBSTATION TRANSFORMER UNIT IS PLACED INTO SERVICE.
- M. CONFIRM ALL CIRCUIT PANELS ARE CORRECTLY AND COMPLETELY LABELED AND SPARES CIRCUITS ARE IDENTIFIED
- N. CONTRACTOR WILL SUBMIT SHOP DRAWINGS FOR ALL EQUIPMENT BEFORE INSTALLATION.
- O. ALL CONDUIT RUNS BETWEEN ELECTRICAL PANELS AND THE EQUIPMENT REQUIRE SPARE WIRES.
- P. NO CABLES SHALL BE DRAPED OVER OR SUPPORT BY ANY ITEMS.
- Q. LABEL ALL JUNCTION BOXES IDENTIFYING CIRCUIT NUMBER AND PANEL BOARD OF CIRCUITS WITHIN. USE SELF-ADHESIVE LABELS.
- R. ALL WORK AND ALL POWER OUTRAGES IN THE EXISTING BUILDING SHALL BE SCHEDULED AT TIMES CONVENIENT TO OWNER. NOTIFY COR PRIOR TO TURNING OFF ANY CIRCUITS.
- S. ALL ELECTRICAL WORK IS TO BE PERFORMED BY A WEST VIRGINIA CERTIFIED ELECTRICIAN. PROVIDE LICENSE PRIOR TO BEGINNING WORK.
- T. TEST ALL WIRING FOR CONTINUITY AND GROUNDS BEFORE CONNECTING TO ANY EQUIPMENT. PERFORM INSULATION RESISTANCE TESTS ON ALL WIRING TO INSURE THAT ALL PORTIONS ARE FREE FROM SHORT-CIRCUITS AND GROUNDS.
- U. PROVIDE GROUNDINGS IN ACCORDANCE WITH THE NEC FOR THE ENTIRE ELECTRICAL SYSTEM INCLUDING EQUIPMENT FRAMES CONDUITS, SWITCHES, CONTROLLERS, WIRE-WAYS, NEUTRAL CONDUCTORS, AND OTHER EQUIPMENT. PROVIDE A GROUNDING CONDUCTOR IN ALL POWER CONDUITS.
- V. ALL EQUIPMENT WITH MOTORS SHALL HAVE MANUAL DISCONNECTS.
- W. ON PROJECT CLOSE-OUT, CLEAN ALL ELECTRICAL DEVICES, AND REMOVE ALL PAINT SPLATTERS ON DEVICES, FIXTURES AND PLATES.
- X. ALL CONTRACTOR SUPPLIED MATERIALS SHALL BE NEW AND UL APPROVED.
- Y. ALL WORK WILL BE RECORDED BY CONTRACTOR ON AS-BUILT DRAWINGS AND TWO CLEAN SETS OF DRAWINGS WILL BE GIVEN: (.) TO THE COR AND 2.) TO BE LEFT IN ELECTRICAL ROOM IN PROTECTIVE SLEEVE ATTACHED TO THE WALL.

GENERAL ELECTRICAL DEMOLITION NOTES:

- A. EXERCISE CARE IN REMOVAL OF DEMOLITION ITEMS. REPAIR, AT NO ADDITIONAL COST TO THE OWNER, ANY DAMAGE CAUSED TO EXISTING STRUCTURE AND/OR EQUIPMENT TO REMAIN.
- B. REMOVE ALL ELECTRICAL APPURTENANCES (DISCONNECTS, STARTERS, WIRING, CONDUIT) ASSOCIATED WITH EQUIPMENT.
- C. ALL REMOVED ITEMS SHALL BE REMOVED IN THEIR ENTIRETY.
- D. PROVIDE BLANK COVER PLATES FOR ALL OPENED OUTLET BOXES CREATED BY THE REMOVAL OF EQUIPMENT AND/OR DEVICES.
- E. ALL MATERIALS REMOVED UNDER DEMOLITION, NOT TO BE RELOCATED OR DESIGNATED TO BE TURNED OVER TO THE OWNER, SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED COMPLETELY FROM THE SITE.
- F. REMOVE ALL ACCESSIBLE ABANDONED WIRING OF ALL TYPES, OR CAP AND LABEL IN JUNCTION BOX FOR RE-USE, IN COMPLIANCE WITH NEC.
- G. REMOVE OUTLETS, J-BOXES, AND PANEL BOXES THAT ARE NOT BEING USED ON SITE.

General Notes

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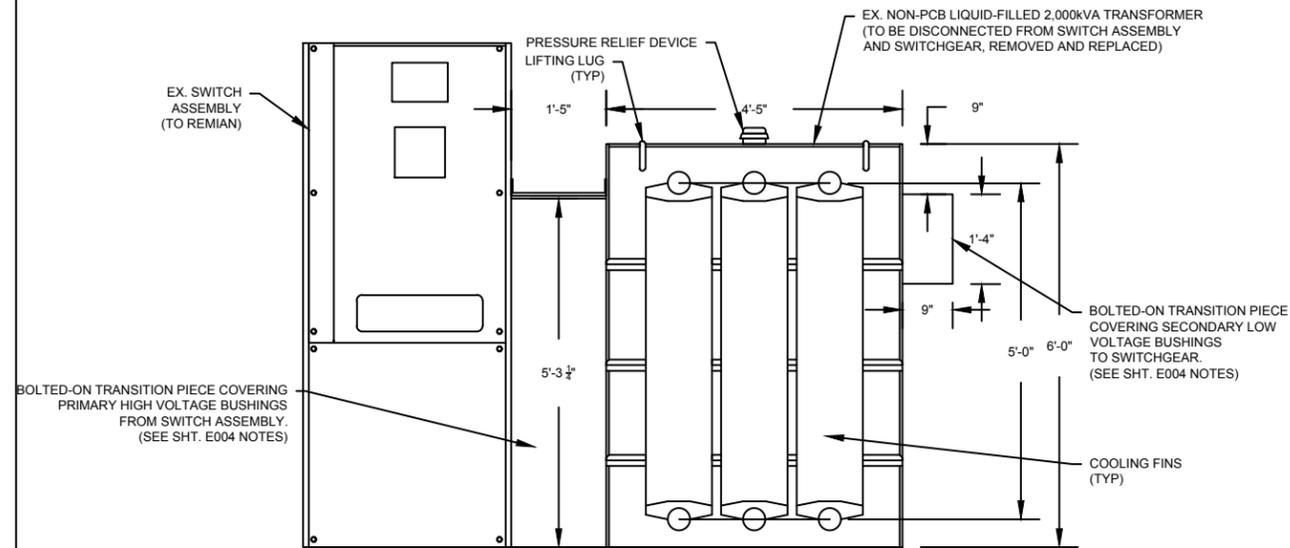
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**VAMC**  
**HUNTINGTON, WEST VIRGINIA**  
**25704**

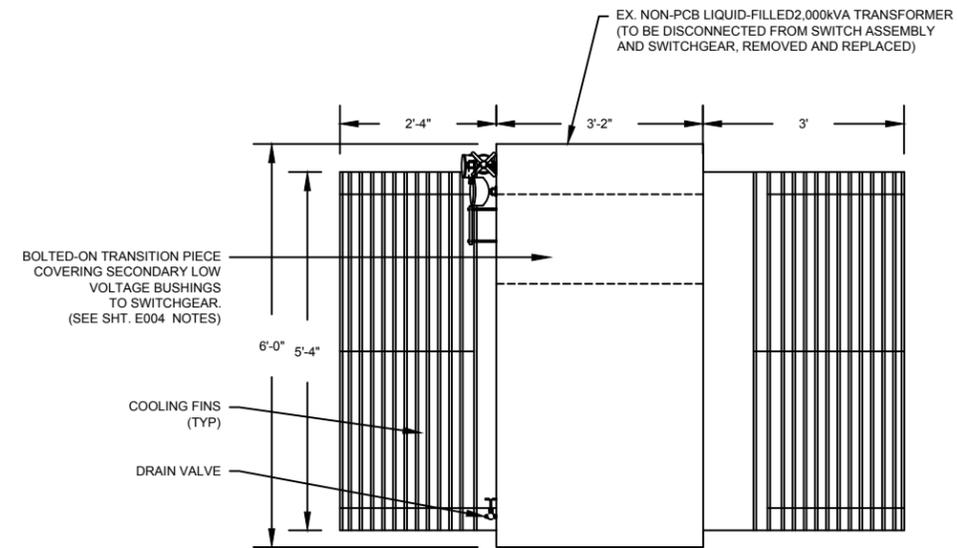
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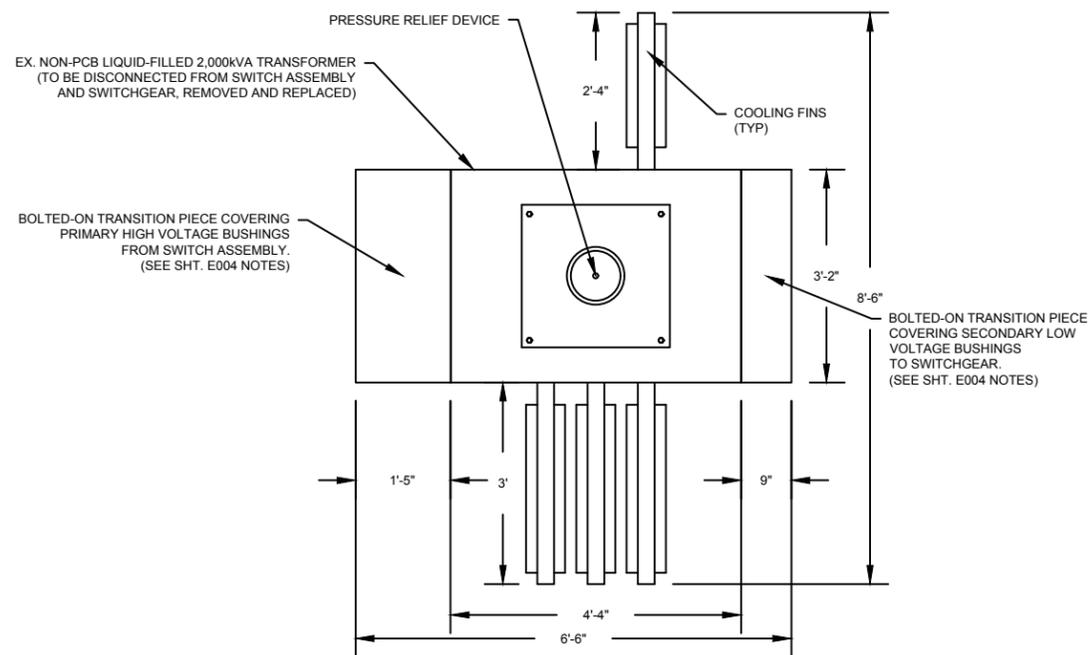




**EXISTING SUBSTATION TRANSFORMER #4 - SOUTH LINE  
FRONT ELEVATION VIEW**



**EXISTING SUBSTATION TRANSFORMER #4 - SOUTH LINE  
SIDE ELEVATION VIEW**



**EXISTING SUBSTATION TRANSFORMER #4 - SOUTH LINE  
PLAN VIEW**

General Notes

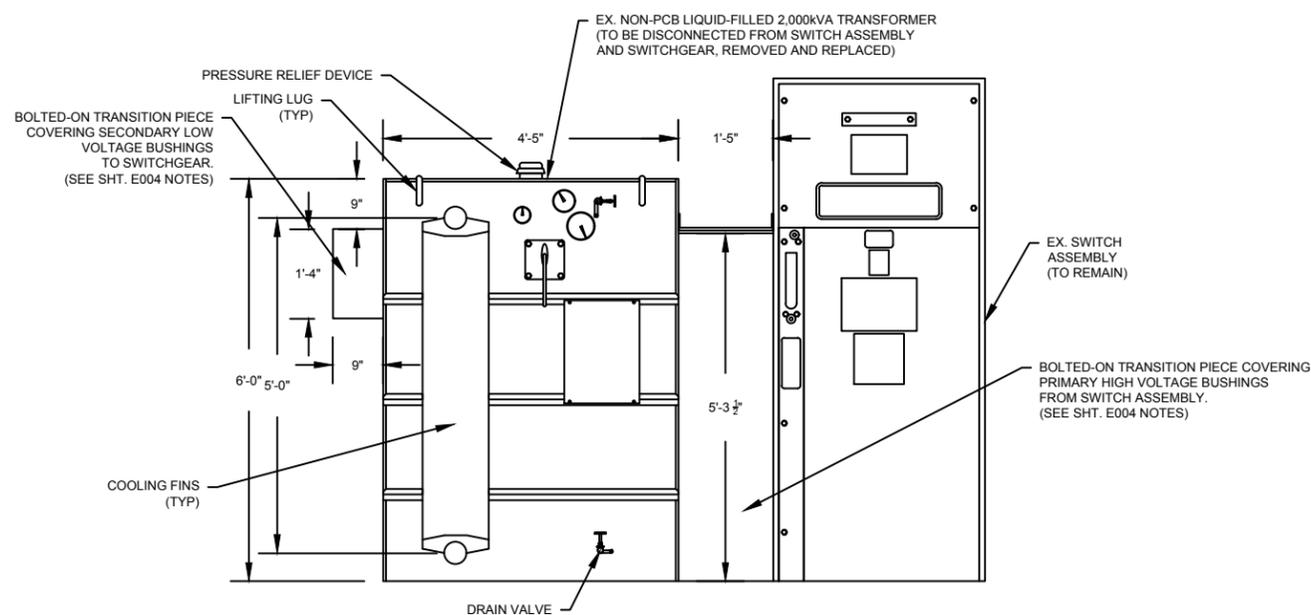
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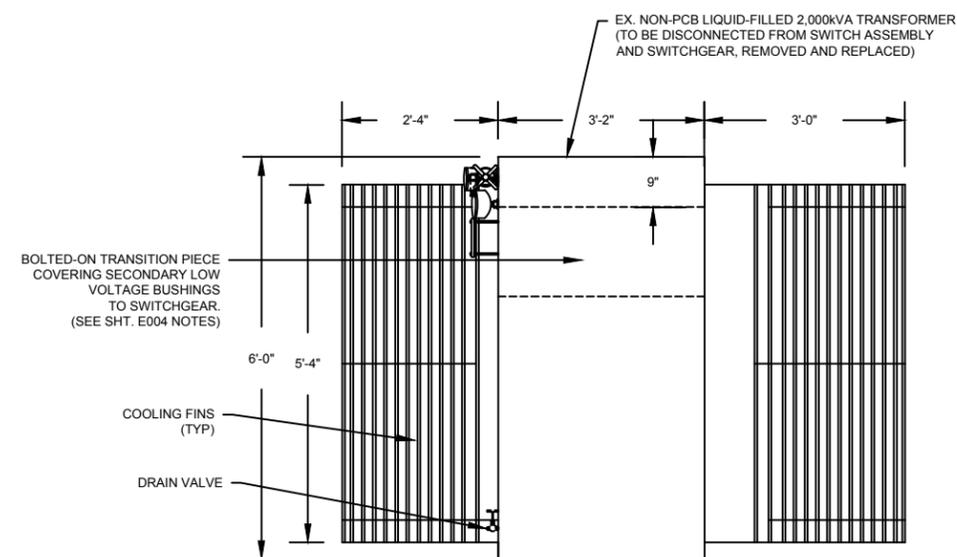
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Date	1/17/2018	Scale	
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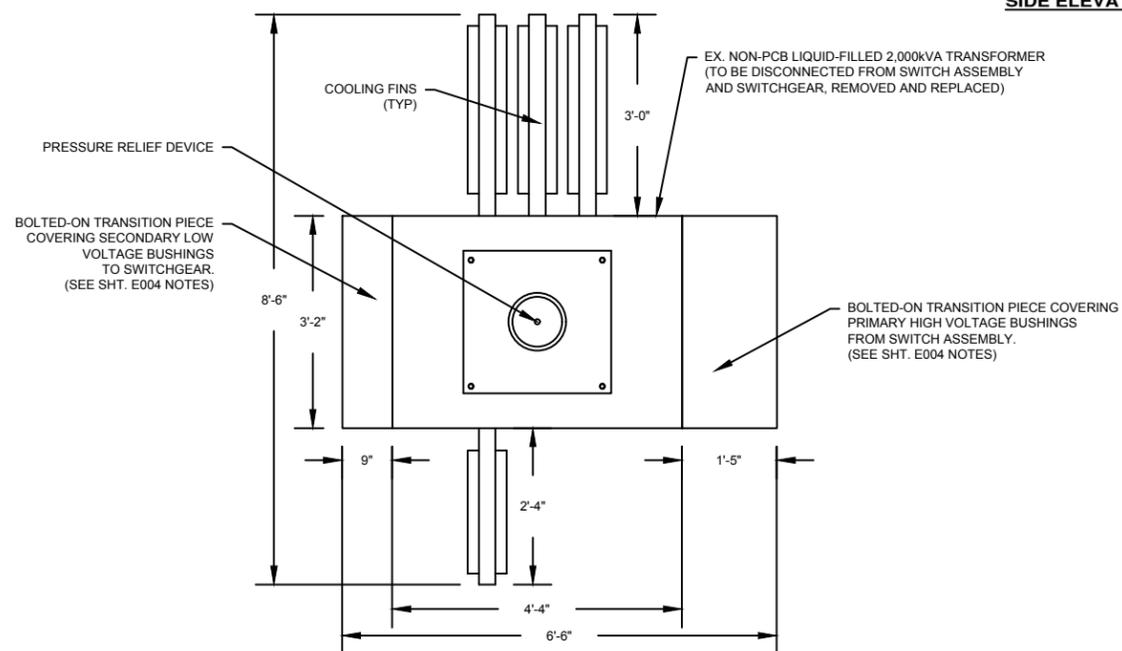
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**EXISTING SUBSTATION TRANSFORMER #4  
FRONT ELEVATION VIEW**



**EXISTING SUBSTATION TRANSFORMER #4  
SIDE ELEVATION VIEW**



**EXISTING SUBSTATION TRANSFORMER #4  
PLAN VIEW**

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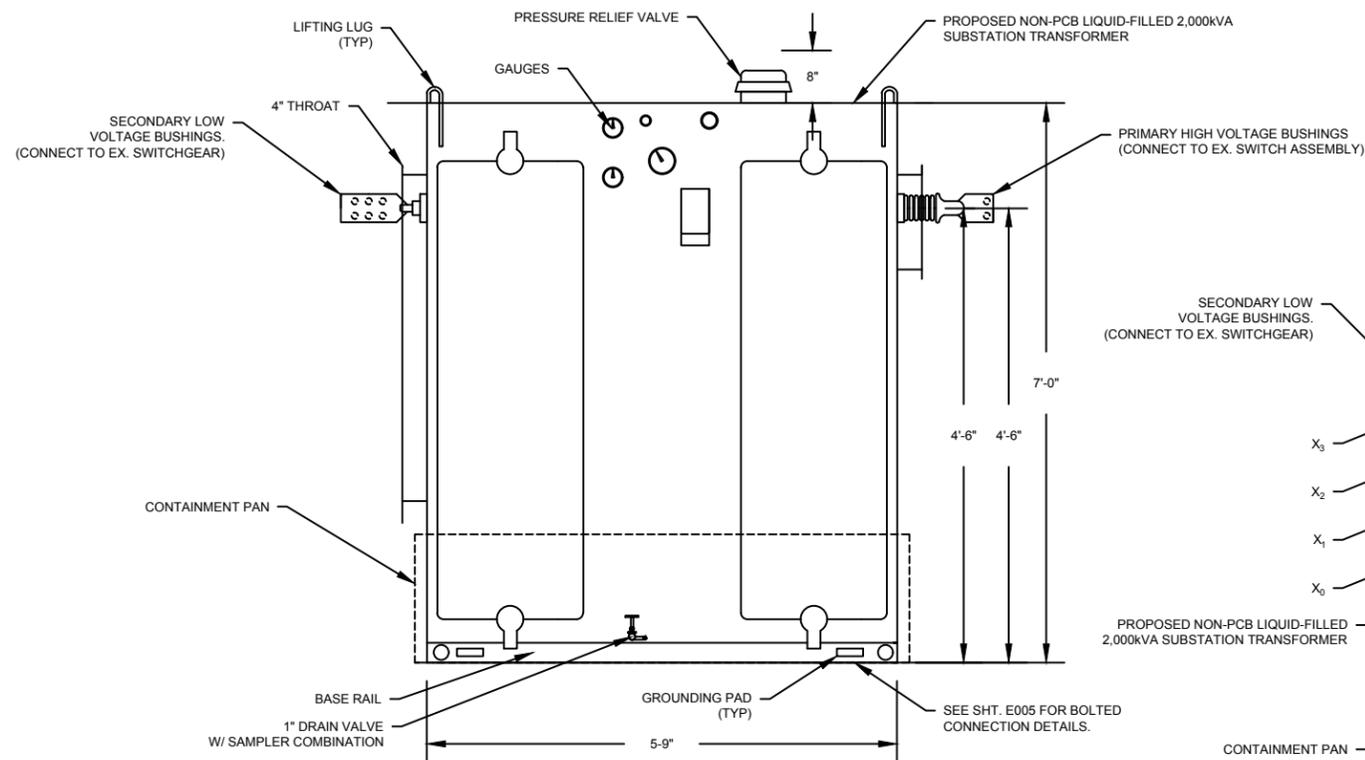
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 VAMC  
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Project	18-900	Sheet	E003
Date	1/17/2018	Scale	
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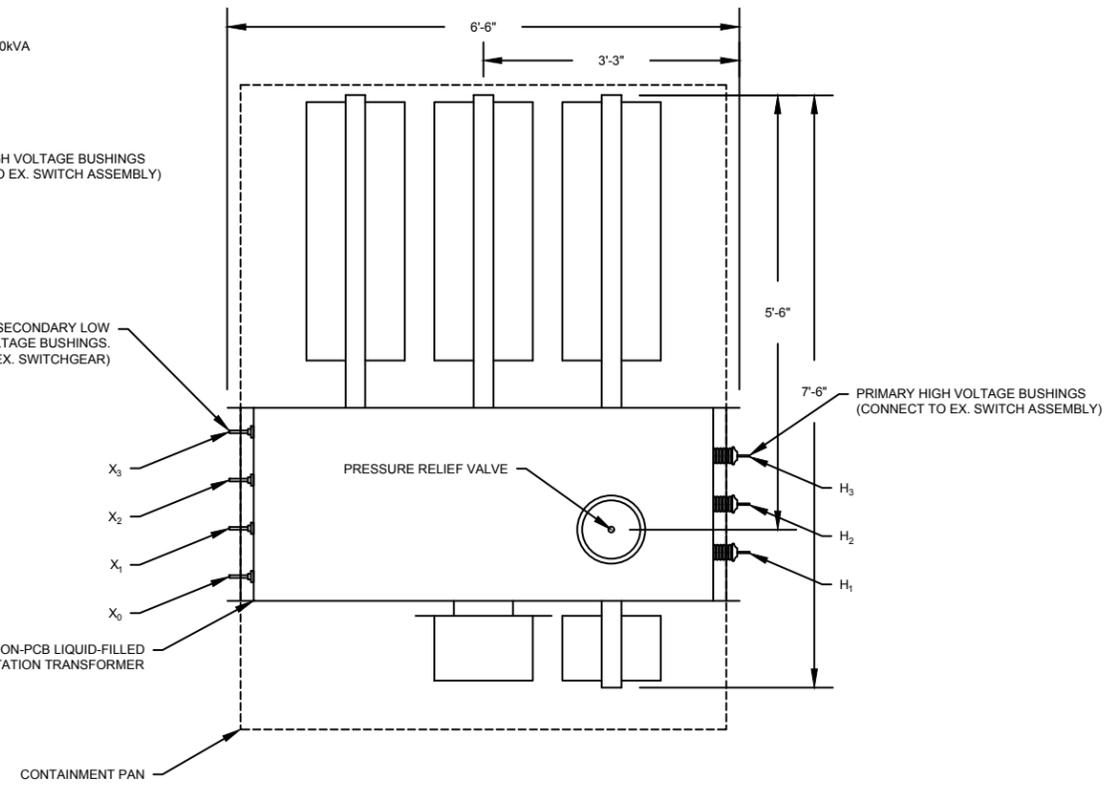
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General Notes



**PROPOSED NON-PCB LIQUID-FILLED SUBSTATION TRANSFORMER  
FRONT ELEVATION VIEW**



**PROPOSED NON-PCB LIQUID-FILLED SUBSTATION TRANSFORMER  
PLAN VIEW**

**NOTES:**

1. It is the responsibility of the contractor to verify and ensure all custom transition pieces including but not limited to those that cover both primary high-voltage and secondary low-voltage bushings are of correct, proper, operational, and functional size prior to attaching and securing to proposed new substation transformer unit.
2. It is the responsibility of the contractor to verify and ensure all electrical/mechanical connections such as lugs, terminals, terminations, flex connectors, wiring, etc. on proposed new transformer are operational, functional and properly attach to existing Switch Assembly and SwitchGear.
3. It is the responsibility of the contractor to ensure all electrical/mechanical connections from proposed new transformer to existing Switch Assembly and SwitchGear are properly attached and are working, operational and functional.
4. It is the responsibility of the contractor to request, coordinate, and schedule two (2) separate power shutdowns to existing substation transformer unit #4 in order to: a) have the opportunity to field locate and verify all termination types, fuse assemblies, connection types, wiring sizes and types along with any other information deemed necessary to complete the project and b) allow for removal and replacement of existing substation transformer with proposed new substation transformer unit as well as conduct any necessary test(s) that are required to complete the project.
5. The first power shutdown shall last no longer than one (1) hour.
6. Due to location of existing Switch Assembly and SwitchGear, it is the responsibility of the contractor to ensure proposed substation transformer unit is manufactured, oriented, and installed so that both primary high-voltage and secondary low-voltage bushings properly and correctly align and attach to existing Switch Assembly, SwitchGear, and any other electrical necessary equipment. (See sht. E003 for existing orientation to match)

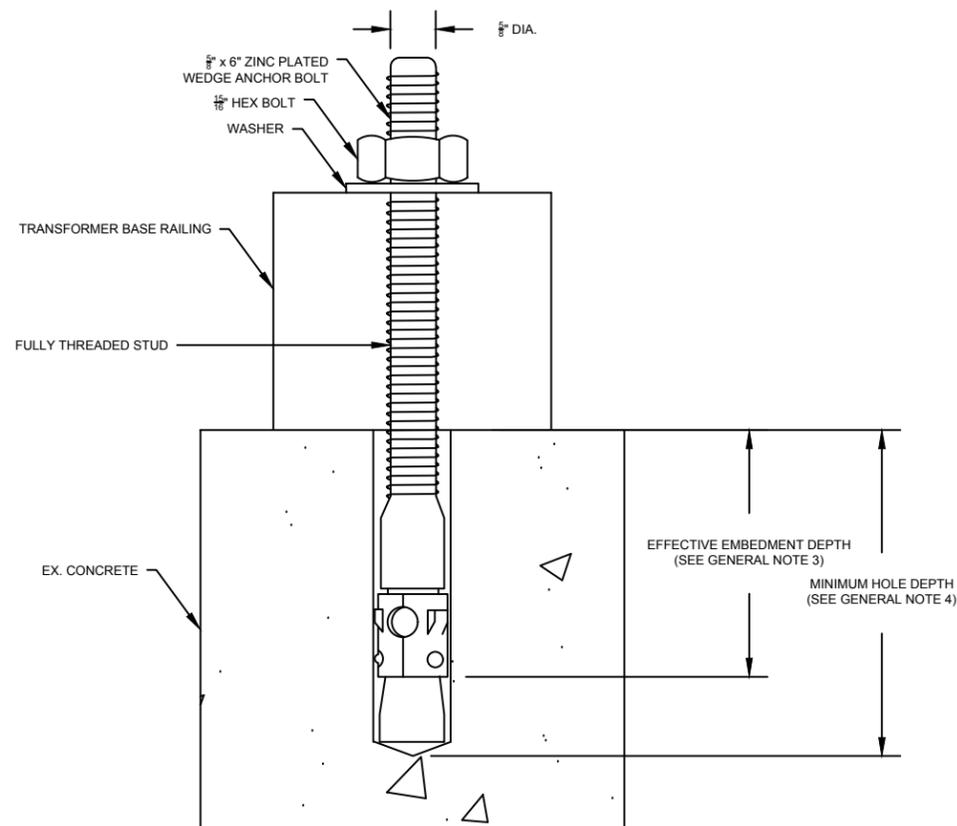
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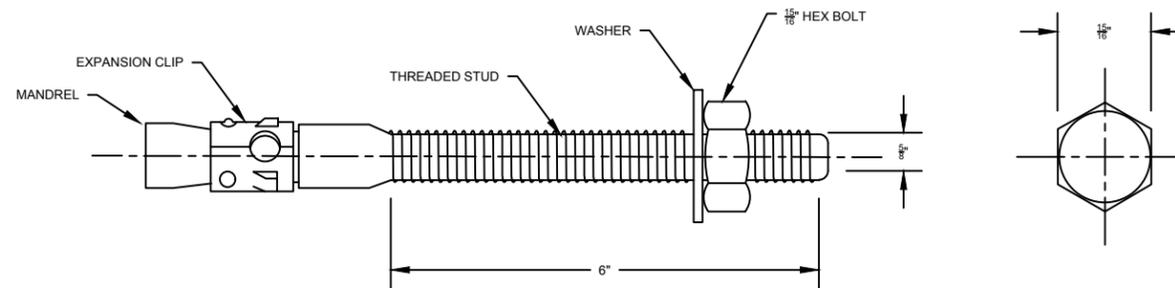
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**BOLTED CONNECTION DETAIL  
PROFILE VIEW**



**PROFILE VIEW**

**PLAN VIEW**

**WEDGE ANCHOR BOLT DETAIL**

**INSTALLATION NOTES:**

1. Proposed new substation transformer unit shall be secured to existing concrete using  $\frac{5}{8}$ "x6" wedge anchor bolts installed in holes in base railing of unit.
2. Wedge anchor bolts shall be zinc plated.
3. Effective bolt embedment depth shall be between  $2\frac{1}{2}$ " and 4".
4. Minimum drilled hole depth shall be between  $3\frac{3}{4}$ " and  $5\frac{1}{4}$ ".
5. Installation nut torque shall be 90 ft./lbs.
6. Using a carbid-tipped bit with a  $\frac{5}{8}$ " dia., drill hole into existing concrete keeping minimum hole depth between  $3\frac{3}{4}$ " -  $5\frac{1}{4}$ ".
7. Using a wire brush, vacuum, or blow-out bulb, remove debris from hole.
8. Assemble washer and nut leaving top of the stud exposed thru nut.
9. Drive anchor thru substation transformer units' base railing until washer is flush to railing surface.
10. Expand anchor by tightening nut to torque of 90 ft./lbs.

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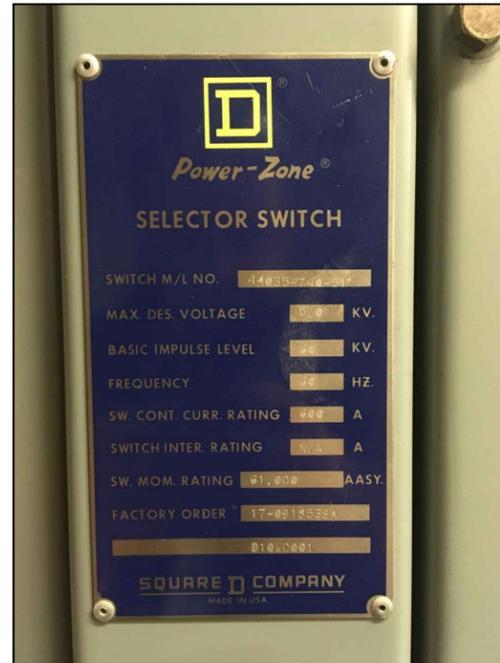
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EXISTING SUBSTATION TRANSFORMER SWITCH ASSEMBLY



EXISTING SUBSTATION TRANSFORMER SOUTH LINE SWITCH ASSEMBLY



EXISTING SUBSTATION TRANSFORMER



EXISTING SUBSTATION TRANSFORMER



EXISTING SUBSTATION TRANSFORMER LOW VOLTAGE BUSHINGS TRANSITION PIECE



EXISTING SUBSTATION TRANSFORMER HIGH VOLTAGE BUSHINGS TRANSITION PIECE

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Project 18-900	Sheet E006
Date 1/17/2018	Scale N.T.S.

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