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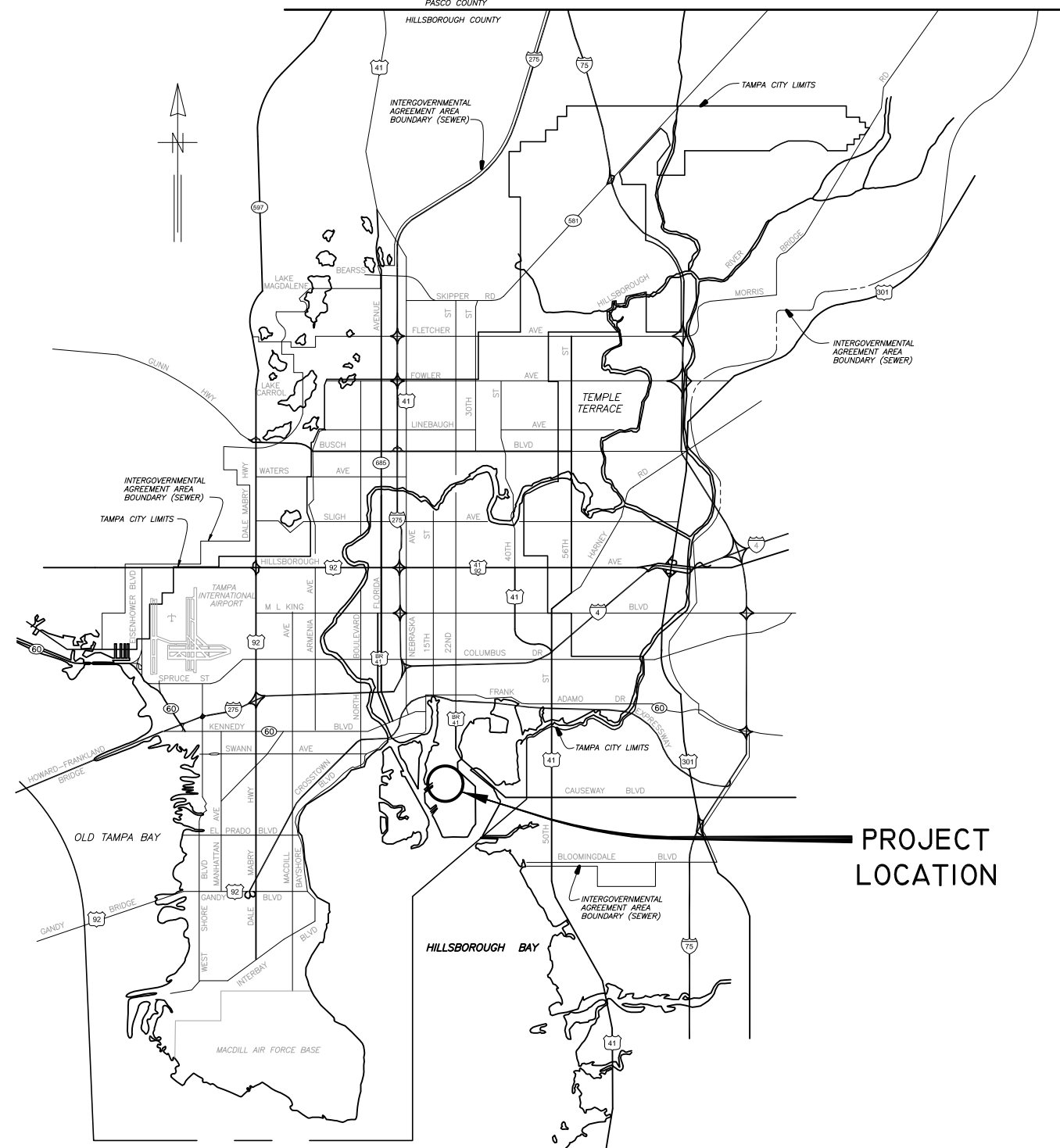
Please Email ALL Questions:

[MailTo:ContractAdministration@TampaGov.net](mailto:ContractAdministration@TampaGov.net)

Please Let Us Know If You Plan To Bid

City of Tampa
Contract Administration Department
306 E. Jackson St. #280A4N
Tampa, FL 33602
(813)274-8456

LOCATION MAP



PROJECT
LOCATION

PLANS

FOR

CITY OF TAMPA FLORIDA
WASTEWATER DEPARTMENT

FOR

THE CONSTRUCTION OF THE

HOWARD F. CURREN AWTP
TRANSFORMER REPLACEMENTS
PHASE I

CONTRACT : 13-C-0036

JULY 2013



777 S. Harbour Island Blvd,
Suite 870
Tampa, FL 33602
813.227.9190
Certificate of Authorization No. 8363

DRAWING INDEX	
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E-10	DUCTBANK SECTIONS AND ELECTRICAL DETAILS

TRANSFORMER REPLACEMENT SCHEDULE				
EQUIPMENT #	MANUFACTURER	KVA	PRIMARY	SECONDARY
T-3A-2	WESTINGHOUSE	1500	13.2 KV	480V
T-3B-2	WESTINGHOUSE	1500	13.2 KV	480V
T-3A-3	WESTINGHOUSE	1500	13.2 KV	480V
T-3B-3	WESTINGHOUSE	1500	13.2 KV	480V
T-2A-3	STANDARD TRANS	500	13.2 KV	480V

EXISTING 15KV DISTRIBUTION FEEDER REPLACEMENT SCHEDULE					
CONDUIT No.	DATE	NUMER OF CONDUCTORS	APPROXIMATE LENGTH (ft)	FROM	TO
1H3A2	1992	3-350 MCM, 1-#2 600V GND	21 (PVC)	TRANSFORMER T-3A-1	TRANSFORMER T-3A-2
1H3B2	1992	3-350 MCM, 1-#2 600V GND	21 (PVC)	TRANSFORMER T-3B-1	TRANSFORMER T-3B-2
1H3A3	1992	3-350 MCM, 1-#2 600V GND	106 (PVC)	TRANSFORMER T-3A-2	TRANSFORMER T-3A-3
1H3B3	1992	3-350 MCM, 1-#2 600V GND	120 (PVC)	TRANSFORMER T-3B-2	TRANSFORMER T-3B-3
1H3BTS	2013	3-350 MCM, 1-#2 600V GND	35 (PVC)	TRANSFORMER T-3B-3	PROPOSED MANUAL TRANSFER SWITCH

GENERAL NOTES	
1.	CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO PURCHASING EQUIPMENT OR COMMENCING CONSTRUCTION.
2.	FIELD VERIFY ALL EQUIPMENT LOCATIONS AND CONNECTIONS PRIOR TO COMMENCING CONSTRUCTION.
3.	ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND ALL LOCAL ORDINANCES.
4.	ALL TRANSFORMERS AND TRANSFER SWITCH SHALL BE LABELED WITH NAMEPLATES. NAMEPLATES SHALL BE STAINLESS STEEL AND SHALL BE FASTENED IN PLACE WITH 316 STAINLESS STEEL SCREWS.
5.	ALL CIRCUITS SHALL HAVE A GROUNDING CONDUCTOR ROUTED INSIDE EACH CONDUIT WITH POWER CONDUCTORS.
6.	ALL CONDUCTOR LENGTHS SHALL BE CONTINUOUS. NO SPLICES OR CONDUCTOR TERMINATIONS SHALL BE PERMITTED UNLESS SPECIFICALLY DESIGNATED IN THE DRAWINGS.
7.	ALL INSTALLATIONS SHALL BE IN ACCORDANCE WITH CITY OF TAMPA CODE 5-111.6.1.5, CITY OF TAMPA CODE CHAPTER 5, AMENDED 5/7/2009.
8.	ALL FASTENING HARDWARE (SCREWS, BOLTS, NUTS, ETC.) SHALL BE 316 STAINLESS STEEL. FASTENING HARDWARE CONSTRUCTED OF FERROUS MATERIAL ARE NOT ACCEPTABLE.
9.	316 STAINLESS STEEL CHANNEL SHALL BE USED TO ELEVATE ALL TRANSFORMERS AND TRANSFER SWITCH OFF OF CONCRETE PADS. USE 316 STAINLESS STEEL ANCHORING HARDWARE.
10.	THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND MAKE ADJUSTMENTS AS NECESSARY TO EXECUTE THE PROPOSED INSTALLATIONS.
11.	ALL EXISTING INSTALLATIONS DENOTED ON THE DRAWINGS ARE FOR THE CONTRACTOR'S REFERENCE ONLY. ALL EXISTING INSTALLATIONS SHALL BE FIELD VERIFIED PRIOR TO SUBMITTING A BID AND PRIOR TO COMMENCING CONSTRUCTION.
12.	CONDUIT ROUTING SHOWN IS DIAGRAMMATICAL UNLESS OTHERWISE NOTED. CONTRACTOR SHALL OPTIMIZE THE CONDUIT ROUTING, TAKING INTO ACCOUNT THE FILED CONDITIONS AND THE FINAL EQUIPMENT SELECTED AND APPROVED IN THE SUBMITTALS.
13.	THE CONTRACTOR SHALL COORDINATE ALL REQUIRED SYSTEM OUTAGES WITH PLANT PERSONNEL. THE CONTRACTOR SHALL NOTIFY PLANT PERSONNEL FIVE (5) WORKING DAYS PRIOR TO ANY PLANNED OUTAGE.
14.	THE EXISTING HOWARD F. CURREN 15KV DISTRIBUTION SYSTEM IS COMPRISED OF REDUNDANT 15KV SYSTEMS 'A' AND 'B'. THE CONTRACTOR SHALL COORDINATE THEIR WORK WITH PLANT PERSONNEL. THE CONTRACTOR SHALL SCHEDULE THE WORK SO THAT ALL THE WORK ON SYSTEM 'A' HAS BEEN COMPLETED AND TESTED PRIOR TO COMMENCING WORK ON SYSTEM 'B'.
15.	ONCE THE TRANSFORMERS HAVE BEEN INSTALLED, THE CONTRACTOR SHALL ADD NITROGEN TO EACH TRANSFORMER. NITROGEN SHALL BE ADDED UNTIL THE TANK PRESSURE REACHES BETWEEN 0.5 AND 1.0 P.S.I.. THE TRANSFORMERS SHALL THEN BE PLACED IN SERVICE AND SHALL BE ALLOWED TO OPERATE FOR ONE (1) HOUR TO ALLOW THE TRANSFORMERS TO HEAT UP AND REACH OPERATING TEMPERATURE. AT THE END OF THE ONE HOUR PERIOD, THE CONTRACTOR SHALL CHECK THE TANK PRESSURE. THE PRESSURE WORKING PRESSURE OF THE TANK SHALL BE BETWEEN 2.0 AND 3.0 P.S.I.. IF PRESSURES ARE RECORDED OUTSIDE OF THIS RANGE THE CONTRACTOR SHALL MAKE THE MODIFICATIONS NECESSARY TO ACHIEVE THE SPECIFIED OPERATING PRESSURE.



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City of Tampa Wastewater Department
**HOWARD F. CURREN AWTP
 TRANSFORMER REPLACEMENTS**

**INDEX, SCHEDULES AND
 GENERAL NOTES**

TIMOTHY THOMAS, P.E. No. 47079

SHEET NUMBER
2
 FILE: 171301342E01

SCHEDULE OF PREVENTATIVE MAINTENANCE AND CORRECTIVE MEASURES TO BE PERFORMED FOR EXISTING EQUIPMENT			
EQUIPMENT TYPE	DESIGNATION OR LOCATION	WORK REQUIRED	REFER TO PLAN SHEETS
15KV TRANSFORMER	T-5A-2	INSPECT, CLEAN AND RETAPE EXPOSED BUS.	SHEETS 4 AND E-6
15KV TRANSFORMER	T-5B-2	INSPECT, CLEAN AND RETAPE EXPOSED BUS.	SHEETS 4 AND E-6
15KV TRANSFORMER	T-5B-1	INSPECT AND CLEAN. REPLACE (3) 600 AMP T-BODIES. CONTRACTOR TO VERIFY O.D. OF CONDUCTORS.	SHEETS 4 AND E-6
15KV SWITCHGEAR	I-52-2B	INSPECT, CLEAN, RETAPE AND TEST.	SHEETS 4 AND E-7
15KV SWITCHGEAR	I-52-4B	INSPECT, CLEAN, RETAPE AND TEST.	SHEETS 4 AND E-7
15KV SWITCHGEAR	I-52-5B	INSPECT, CLEAN, RETAPE AND TEST.	SHEETS 4 AND E-7
15KV SWITCHGEAR	I-52-S2	INSPECT, CLEAN, RETAPE AND TEST.	SHEETS 4 AND E-7
15KV TRANSFORMER	T-2A-1	INSPECT AND CLEAN. REPLACE EXISTING CIRCUIT BREAKER WITH ONE THAT INCLUDES A TRIP. VERIFY RATING OF EXISTING BREAKER. PROVIDE CIRCUIT BREAKER WITH NEW GROUND FAULT PROTECTION.	SHEETS 4 AND E-6
15KV TRANSFORMER	T-2B-1	INSPECT AND CLEAN. REPLACE EXISTING CIRCUIT BREAKER WITH ONE THAT INCLUDES A TRIP. VERIFY RATING OF EXISTING BREAKER. PROVIDE CIRCUIT BREAKER WITH NEW GROUND FAULT PROTECTION.	SHEETS 4 AND E-6
15KV SWITCHGEAR	SG-1	THOROUGHLY CLEAN THE SWITCHGEAR, INCLUDING THE INTERIOR OF EACH CIRCUIT BREAKER CUBICLE. ALL INSULATORS, BUS BARS, RECTIFIERS, CT'S AND PT'S SHALL BE INCLUDED IN THE CLEANING OF EACH CIRCUIT BREAKER CUBICLE. RE-TORQUE ALL ELECTRICAL CONNECTIONS AND CHECK WITH A MICRO-OHM METER. THIS WORK INCLUDES FURNISHING ALL TOOLS, TEST EQUIPMENT, MATERIALS, LABOR AND INSTRUMENTATION TO ACCOMPLISH THE TESTING AND MAINTENANCE SPECIFIED AND REQUIRED.	SHEETS 4 AND E-7
15KV ISOLATION SWITCHES	ADJACENT TO SG-1	THOROUGHLY CLEAN THE SWITCHES, INCLUDING THE INTERIOR OF EACH SWITCH CUBICLE. ALL INSULATORS, BUS BARS, RECTIFIERS, CT'S AND PT'S SHALL BE INCLUDED IN THE CLEANING OF EACH SWITCH CUBICLE. RE-TORQUE ALL ELECTRICAL CONNECTIONS AND CHECK WITH A MICRO-OHM METER. THIS WORK INCLUDES FURNISHING ALL TOOLS, TEST EQUIPMENT, MATERIALS, LABOR AND INSTRUMENTATION TO ACCOMPLISH THE TESTING AND MAINTENANCE SPECIFIED AND REQUIRED.	SHEETS 4 AND E-7
5KV SWITCHGEAR	ADJACENT TO SG-1	THOROUGHLY CLEAN THE SWITCHGEAR, INCLUDING THE INTERIOR OF EACH CIRCUIT BREAKER CUBICLE. ALL INSULATORS, BUS BARS, RECTIFIERS, CT'S AND PT'S SHALL BE INCLUDED IN THE CLEANING OF EACH CIRCUIT BREAKER CUBICLE. RE-TORQUE ALL ELECTRICAL CONNECTIONS AND CHECK WITH A MICRO-OHM METER. THIS WORK INCLUDES FURNISHING ALL TOOLS, TEST EQUIPMENT, MATERIALS, LABOR AND INSTRUMENTATION TO ACCOMPLISH THE TESTING AND MAINTENANCE SPECIFIED AND REQUIRED.	SHEETS 4 AND E-7



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**HOWARD F. CURREN AWTP
TRANSFORMER REPLACEMENTS**

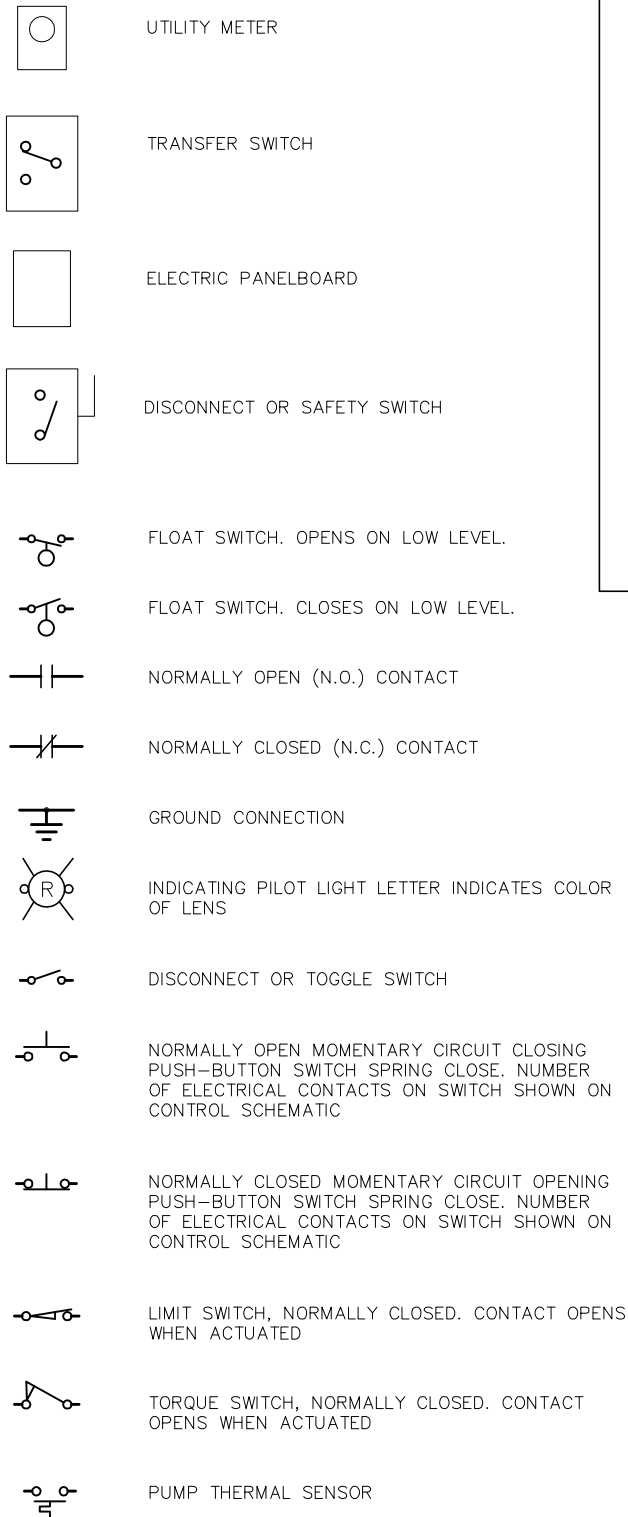
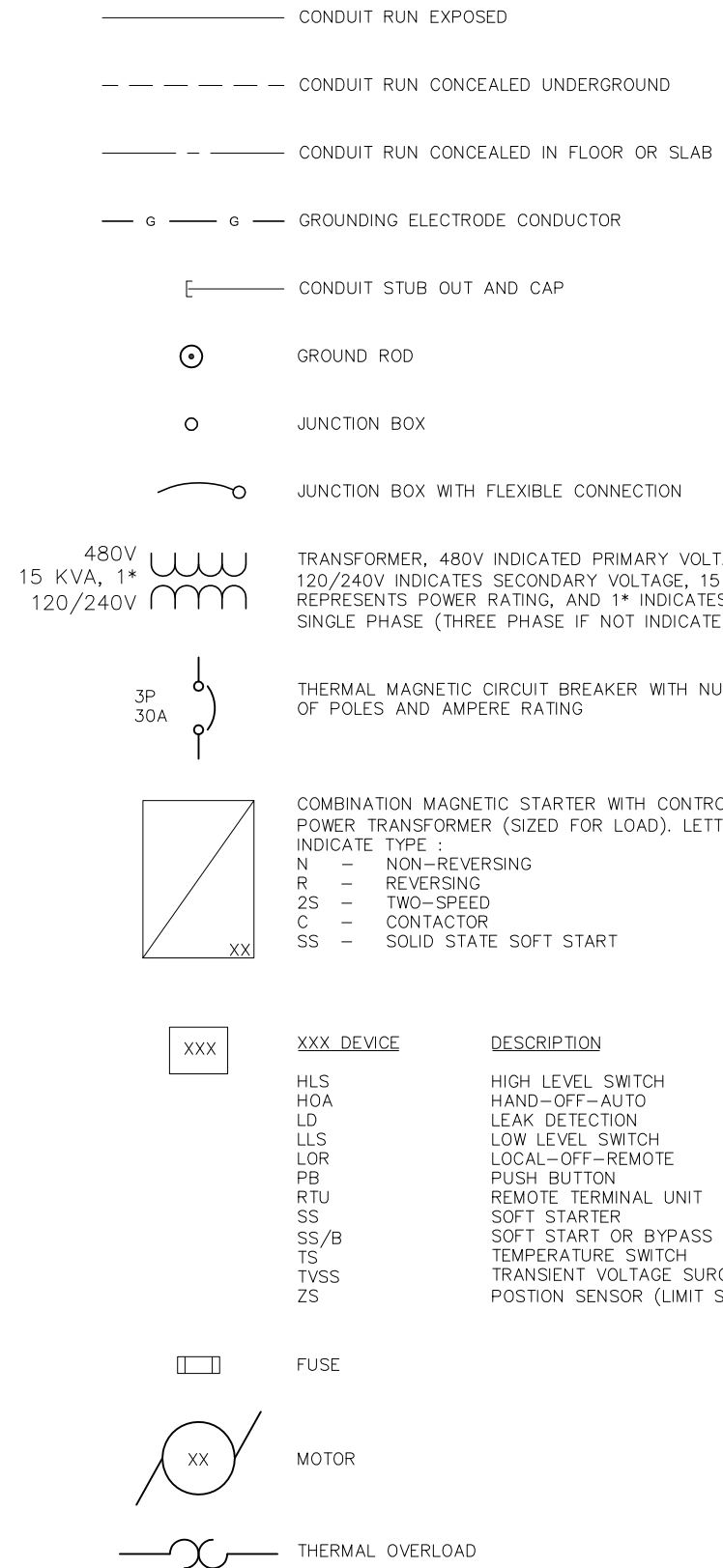
**SCHEDULE OF PREVENTATIVE
MAINTENANCE WORK REQUIRED**

TIMOTHY THOMAS, P.E. No. 47079

SHEET NUMBER

3

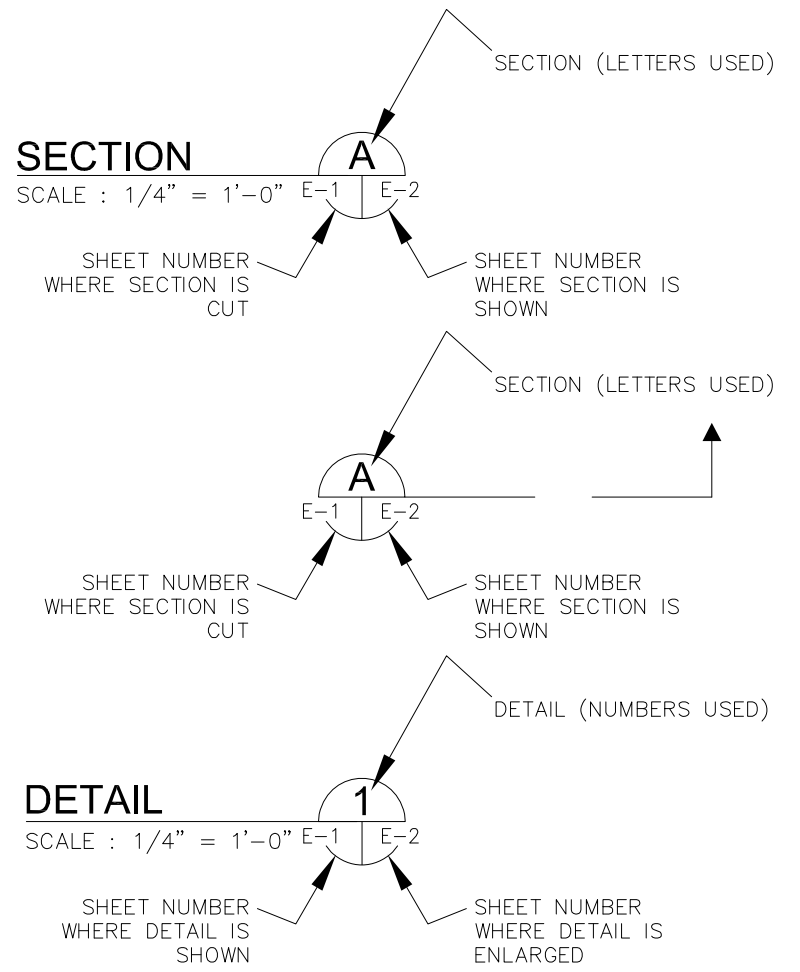
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ABBREVIATIONS:

A	AMPS
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
C	CONDUIT
EX	EXISTING
ELEC	ELECTRICAL
EXP	EXPLOSION PROOF
GFI	GROUND FAULT INTERRUPTER
GND	GROUNDING CONDUCTOR
HP	HORSEPOWER
HZ	HERTZ
IG	ISOLATED GROUND
KVA	KILOVOLT AMPERES
KW	KILOWATTS
MAX	MAXIMUM
MIN	MINIMUM
N/A	NOT APPLICABLE
OA	OIL-IMMERSED, SELF-COOLED
PH	PHASE
RECP	RECEPTACLE
RPM	REVOLUTIONS PER MINUTE
RTU	REMOTE TERMINAL UNIT
SPD	SURGE PROTECTION DEVICE
TYP	TYPICAL
V	VOLTS
WP	WEATHERPROOF

EXAMPLE OF SECTION CUT AND DETAIL



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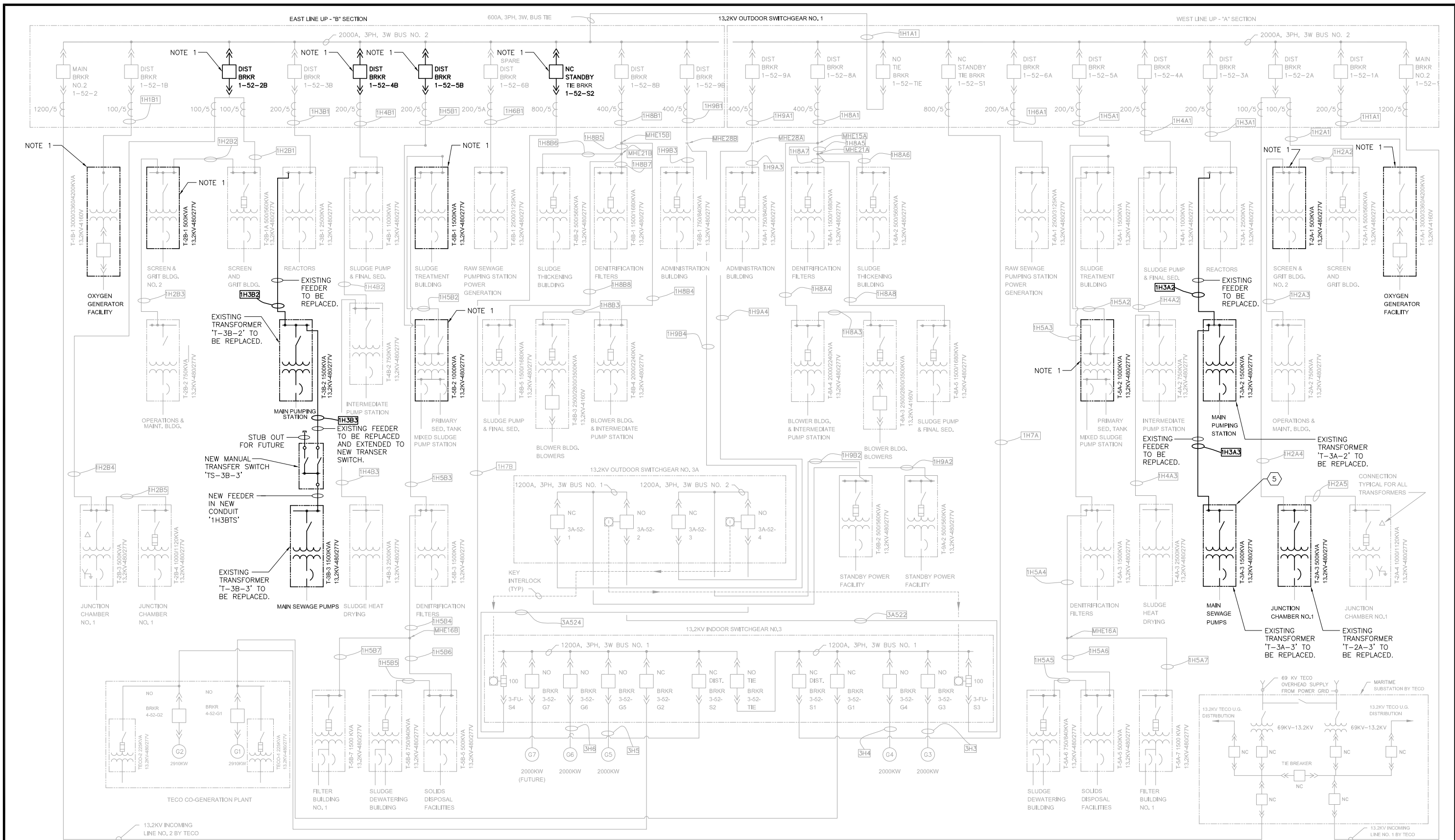
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**HOWARD F. CURREN AWTP
TRANSFORMER REPLACEMENTS**

**ELECTRICAL LEGEND
AND ABBREVIATIONS**

TIMOTHY THOMAS, P.E. No. 47079

SHEET NUMBER
E-1
FILE: 171301342E01



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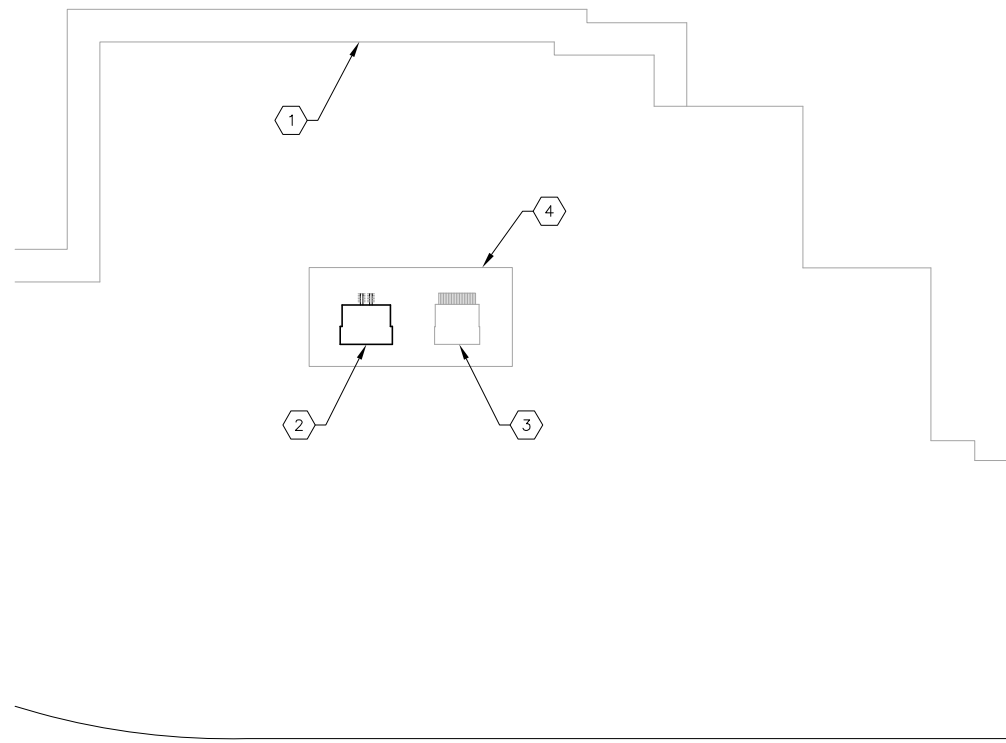
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City of Tampa Wastewater Department
**HOWARD F. CURREN AWTP
TRANSFORMER REPLACEMENTS**

**ONE LINE DIAGRAM :
TRANSFORMER & 15KV CABLE
REPLACEMENTS**

SHEET NUMBER	E-2
TIMOTHY THOMAS, P.E. No. 47079	FILE: 171301342E01

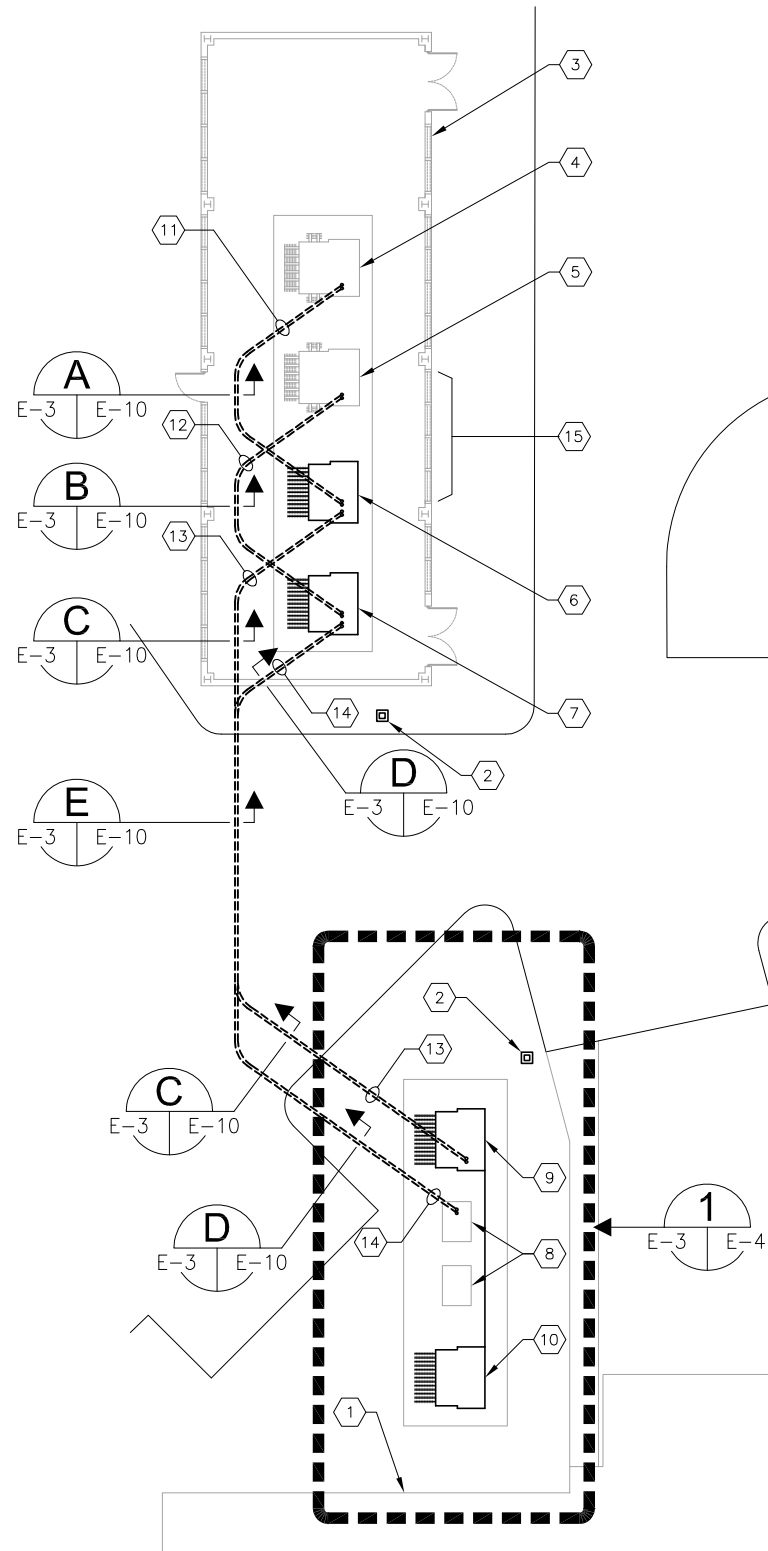


**T-2A-3 REPLACEMENT :
PARTIAL SITE PLAN**

SCALE : N.T.S.

KEYED NOTES:

- ① EXISTING No. 1 JUNCTION CHAMBER AND METER VAULT (BUILDING 002).
- ② EXISTING TRANSFORMER 'T-2A-3' TO BE REPLACED. 500 KVA/OA, 13.2KV-277/480V DELTA-WYE WITH 600 AMPERE, 600V SECONDARY CIRCUIT BREAKER. REFER TO SHEET E-9 FOR TYPICAL LOOP FEEDER TRANSFORMER DETAILS.
- ③ EXISTING TRANSFORMER 'T-2B-3' TO REMAIN. NO WORK REQUIRED.
- ④ EXISTING CONCRETE PAD TO REMAIN. NO WORK REQUIRED. PERATIONS BUILDING.



**T-3A-2, T-3B-2, T-3A-3 &
T-3B-3 REPLACEMENTS :
PARTIAL SITE PLAN**

SCALE : N.T.S.

KEYED NOTES:

- ① EXISTING OPERATIONS OFFICE (BUILDING 010).
- ② EXISTING AREA LIGHT POLE.
- ③ EXISTING TRANSFORMER BUILDING.
- ④ EXISTING TRANSFORMER 'T-3A-1' TO REMAIN.
- ⑤ EXISTING TRANSFORMER 'T-3B-1' TO REMAIN.
- ⑥ EXISTING TRANSFORMER 'T-3A-2' TO BE REPLACED. 1,500 KVA/OA, 13.2KV-277/480V DELTA-WYE WITH 2,000 AMPERE, 600V SECONDARY CIRCUIT BREAKER. REFER TO SHEET E-9 FOR TYPICAL LOOP FEED TRANSFORMER DETAILS.
- ⑦ EXISTING TRANSFORMER 'T-3B-2' TO BE REPLACED. 1,500 KVA/OA, 13.2KV-277/480V DELTA-WYE WITH 2,000 AMPERE, 600V SECONDARY CIRCUIT BREAKER. REFER TO SHEET E-9 FOR TYPICAL LOOP FEED TRANSFORMER DETAILS.
- ⑧ EXISTING JUNCTION BOXES AND CONDUITS FOR EXISTING TRANSFORMER T-3B-3 15KV FEEDER. CONTRACTOR TO REMOVE JUNCTION BOXES AND CONDUIT, PROVIDE AND INSTALL NEW ELECTRICALLY OPERATED MANUAL TRANSFER SWITCH 'TS-3B-3' AND PROVIDE NEW 15KV FEEDER. REFER TO SHEETS E-4 AND E-5 FOR DETAILS.
- ⑨ EXISTING TRANSFORMER 'T-3A-3' TO BE REPLACED. 1,500 KVA/OA, 13.2KV-277/480V DELTA-WYE WITH 2,000 AMPERE, 600V SECONDARY CIRCUIT BREAKER. REFER TO SHEET E-8 FOR TYPICAL END OF LINE TRANSFORMER DETAILS.
- ⑩ EXISTING TRANSFORMER 'T-3B-3' TO BE REPLACED. 1,500 KVA/OA, 13.2KV-277/480V DELTA-WYE WITH 2,000 AMPERE, 600V SECONDARY CIRCUIT BREAKER. REFER TO SHEET E-8 FOR TYPICAL END OF LINE TRANSFORMER DETAILS.
- ⑪ EXISTING CONDUIT '1H3A2' (IN DUCTBANK WITH 4" SPARE). CONTRACTOR TO REMOVE EXISTING CONDUCTORS AND REPLACE WITH NEW 15KV, 3-#350 MCM PLUS 1-#2 600V GND. CIRCUIT RUNS FROM TRANSFORMER T-3A-1 TO TRANSFORMER T-3A-2.
- ⑫ EXISTING CONDUIT '1H3B2' (IN DUCTBANK WITH 4" SPARE). CONTRACTOR TO REMOVE EXISTING CONDUCTORS AND REPLACE WITH NEW 15KV, 3-#350 MCM PLUS 1-#2 600V GND. CIRCUIT RUNS FROM TRANSFORMER T-3B-1 TO TRANSFORMER T-3B-2.
- ⑬ EXISTING CONDUIT '1H3A3' (IN DUCTBANK WITH 4" SPARE). CONTRACTOR TO REMOVE EXISTING CONDUCTORS AND REPLACE WITH NEW 15KV, 3-#350 MCM PLUS 1-#2 600V GND. CIRCUIT RUNS FROM TRANSFORMER T-3A-2 TO TRANSFORMER T-3A-3.
- ⑭ EXISTING CONDUIT '1H3B3' (IN DUCTBANK WITH 4" SPARE). REFER TO SHEETS E-4 AND E-5 FOR MODIFICATIONS REQUIRED.
- ⑮ THE REMOVAL OF EXISTING TRANSFORMER T-3A-2 AND T-3B-2 (AND THE INSTALLATION OF THEIR REPLACEMENTS) SHALL REQUIRE THE CONTRACTOR TO REMOVE AN EXISTING LOUVER. THE CONTRACTOR SHALL REMOVE THE LOUVER AND REPLACE AFTER ALL WORK IS COMPLETE. THE CONTRACTOR SHALL REINSTALL THE LOUVER TO EXISTING CONDITIONS AND RECAULK AS REQUIRED.



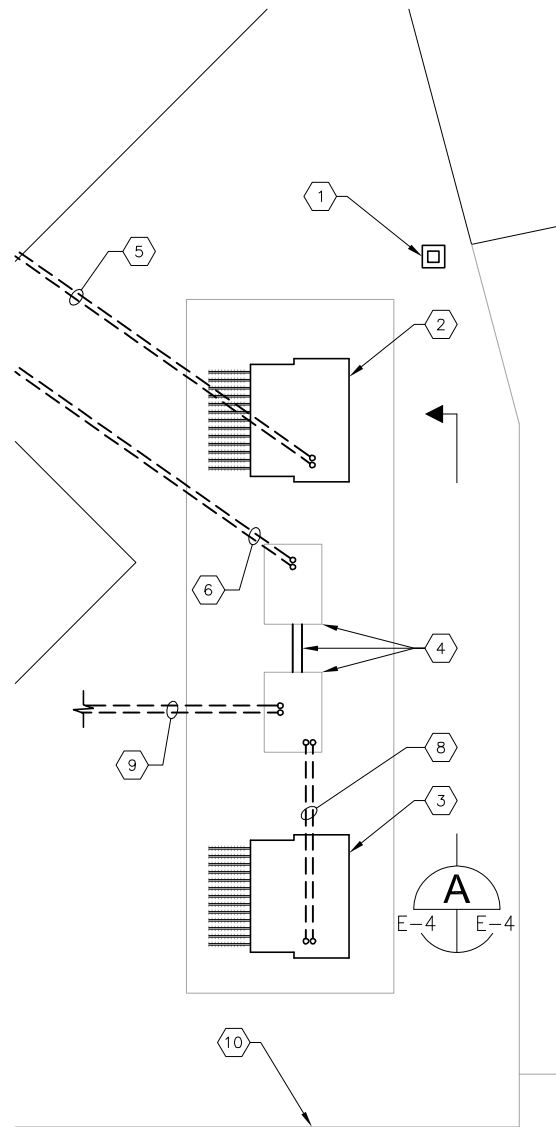
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HOWARD F. CURREN AWTP
TRANSFORMER REPLACEMENTS

TRANSFORMER REPLACEMENTS
PARTIAL SITE PLANS

TIMOTHY THOMAS, P.E. No. 47079	FILE: 171301342E01
SHEET NUMBER	
E-3	



**TRANSFORMER PAD DETAIL
EXISTING CONDITIONS :**

SCALE : N.T.S.

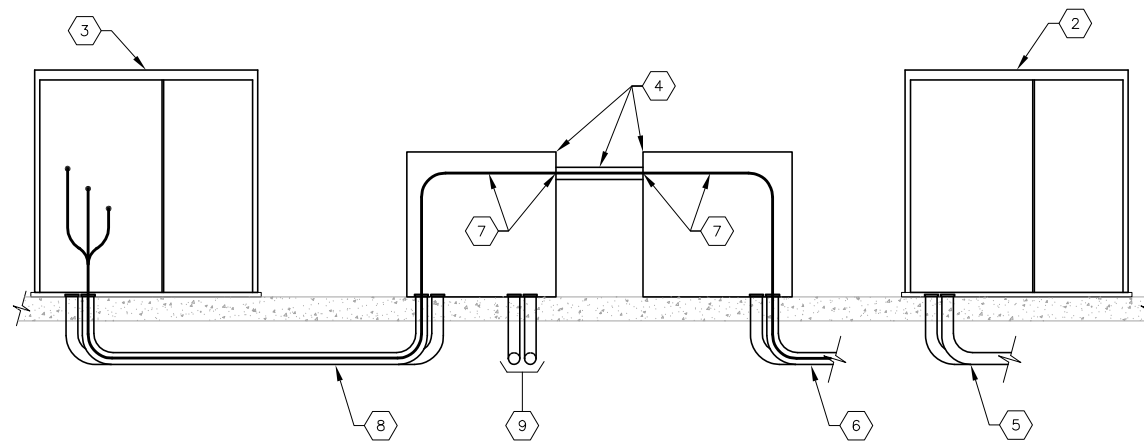
1
E-3 | E-4



EXISTING JUNCTION BOX DETAIL

SCALE : N.T.S.

A
E-4 | E-4



**EXISTING TRANSFORMER T-3B-3
15KV FEEDER ROUTING**

SCALE : N.T.S.

KEYED NOTES:

- 1 EXISTING AREA LIGHT POLE.
- 2 EXISTING TRANSFORMER 'T-3A-3' TO BE REPLACED.
- 3 EXISTING TRANSFORMER 'T-3B-3' TO BE REPLACED.
- 4 EXISTING JUNCTION BOXES AND EXPOSED CONDUIT TO BE REMOVED.
- 5 EXISTING CONDUIT '1H3A3' (IN DUCTBANK WITH 4" SPARE). CONTRACTOR TO REMOVE EXISTING CONDUCTORS AND REPLACE WITH NEW 15KV, 3-#350 MCM PLUS 1-#2 600V GND. CIRCUIT RUNS FROM TRANSFORMER T-3A-2 TO TRANSFORMER T-3A-3.
- 6 EXISTING CONDUIT '1H3B3' (IN DUCTBANK WITH 4" SPARE). CIRCUIT RUNS FROM TRANSFORMER T-3B-2 TO EXISTING JUNCTION BOX. FEEDER CONTINUES FROM JUNCTION BOX TO TRANSFORMER T-3B-3. REFER TO EXISTING TRANSFORMER T-3B-3 15KV FEEDER ROUTING DETAIL ON THIS SHEET. CONDUIT TO BE REWORKED AND 15 KV FEEDER TO BE REPLACED. REFER TO DETAILS ON SHEET E-5.
- 7 CONTINUATION OF EXISTING 15KV FEEDER TO TRANSFORMER T-3B-3 THROUGH EXISTING JUNCTION BOXES. 15 KV FEEDER TO BE REPLACED. REFER TO DETAILS ON SHEET E-5.
- 8 EXISTING CONDUIT '1H3B3S' (IN DUCTBANK WITH 4" SPARE). 15KV FEEDER FOR TRANSFORMER T-3B-3 CONTINUES FROM JUNCTION BOX TO TRANSFORMER T-3B-3. CONDUIT TO BE REWORKED AND 15 KV FEEDER TO BE REPLACED. REFER TO DETAILS ON SHEET E-5.
- 9 EXISTING DUCTBANK CONTAINING TWO (2) SPARE 4" CONDUITS. CONDUITS TRAVEL WEST BEFORE JOINING EXISTING DUCTBANK SYSTEM TRAVELING NORTH TO EXISTING MANHOLE 'MH-E1'. MANHOLE 'MH-E1' IS LOCATED DIRECTLY WEST OF PLANT SWITCHGEAR BUILDING (044).
- 10 EXISTING OPERATIONS OFFICE (BUILDING 010).

GENERAL NOTES:

- 1. ALL INFORMATION PRESENTED IS BASED ON EXISTING RECORD DRAWING INFORMATION AND IS FOR REFERENCE ONLY. CONDUIT LOCATIONS, CONDUIT STUB-UPS, ETC., ARE APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY ALL INFORMATION PRIOR TO COMMENCING WORK.
- 2. THE INFORMATION PRESENTED REPRESENTS EXISTING CONDITIONS ONLY. REFER TO SHEET E-5 FOR OTHER MODIFICATIONS REQUIRED.



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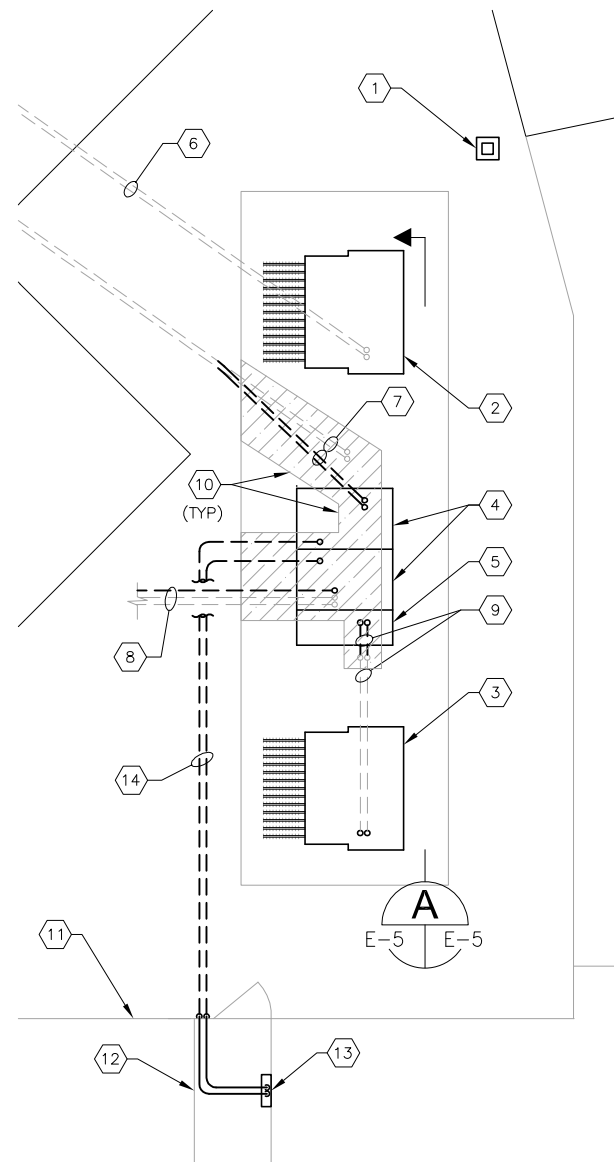
**TRANSFORMER REPLACEMENTS
TRANSFER T-3A-3 & T-3B-3
EXISTING SITE CONDITIONS**

TIMOTHY THOMAS, P.E. No. 47079

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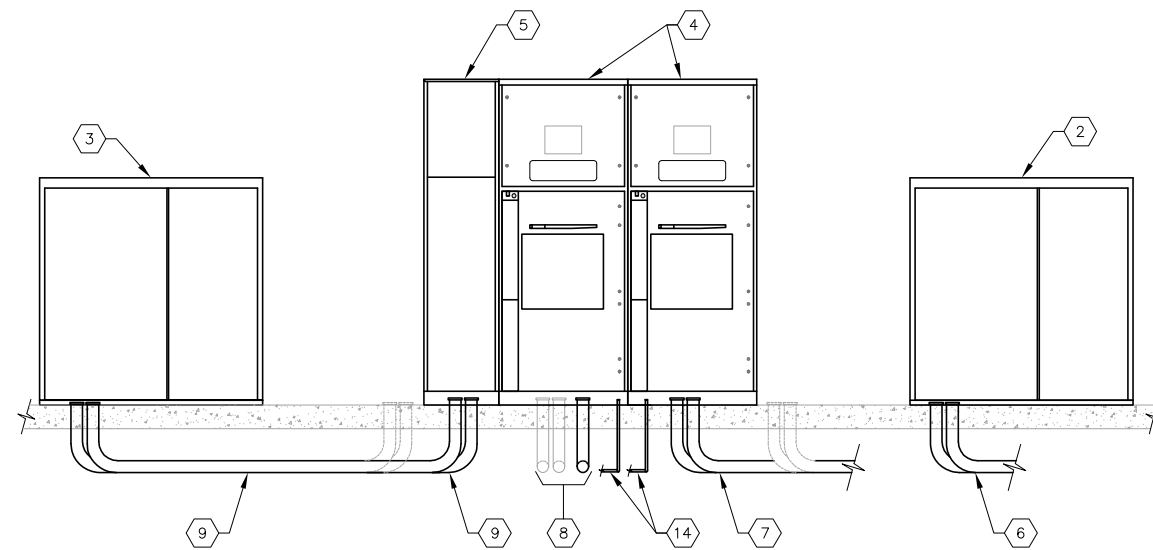
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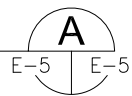
**TRANSFORMER PAD DETAIL
MODIFICATIONS REQUIRED :**

SCALE : N.T.S.



TRANSFORMER / TRANSFER SWITCH ELEVATION

SCALE : N.T.S.



GENERAL NOTES:

1. ALL INFORMATION PRESENTED IS BASED ON EXISTING RECORD DRAWING INFORMATION AND IS FOR REFERENCE ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL INFORMATION PRIOR TO COMMENCING WORK.
2. TRANSFER SWITCH DIMENSIONS, REQUIRED CONDUIT STUB-UP LOCATIONS, ETC. ARE MANUFACTURER DEPENDENT. THE INFORMATION PRESENTED IS PROVIDED ONLY TO CONVEY THE INTENT OF THE WORK TO BE EXECUTED. ACTUAL TRANSFER SWITCH DIMENSIONS, CONDUIT STUB-UP LOCATIONS, ETC. SHALL BE PER THE TRANSFER SWITCH PROVIDED.
3. FOR TS-3B-3 SWITCH CONFIGURATION REFER TO SPECIFICATIONS AND ONE LINE DIAGRAM ON SHEET E-2.
4. THE CONTRACTOR SHALL BOND THE NEW TRANSFER SWITCH TO THE EXISTING 500 MCM BARE CU GROUND LOOP (LOCATED AROUND THE PERIMETER OF THE TRANSFORMER PAD) FROM THE TRANSFER SWITCH GROUND BUS TO THE GROUND LOOP WITH A #2 SOLID BARE CU CONDUCTOR.

KEYED NOTES:

- 1 EXISTING AREA LIGHT POLE.
- 2 EXISTING TRANSFORMER 'T-3A-3' TO BE REPLACED.
- 3 EXISTING TRANSFORMER 'T-3B-3' TO BE REPLACED.
- 4 CONTRACTOR TO PROVIDE AND INSTALL NEW 600A, 15KV ELECTRICALLY OPERATED MANUAL TRANSFER SWITCH 'TS-3B-3'. REFER TO SPECIFICATIONS.
- 5 22" OUTGOING CABLE TERMINAL COMPARTMENT.
- 6 EXISTING DUCTBANK CONTAINING '1H3A3' (AND 1- 4" SPARE). REPLACE EXISTING CONDUCTORS IN CONDUIT '1H3A3' WITH NEW 15KV, 3-#350 MCM PLUS 1-#2 600V GND. CIRCUIT RUNS FROM TRANSFORMER T-3A-2 TO TRANSFORMER T-3A-3.
- 7 EXISTING DUCTBANK CONTAINING '1H3B3' (AND 1- 4" SPARE). CONTRACTOR SHALL REWORK DUCTBANK AS REQUIRED SO THAT 1H3B3 AND 4" SPARE TERMINATE IN TERMINAL COMPARTMENT OF NEW TRANSFER SWITCH TS-3B-3. REPLACE EXISTING CONDUCTORS IN CONDUIT '1H3A3' WITH NEW 15KV, 3-#350 MCM PLUS 1-#2 600V GND. NEW FEED SHALL RUN FROM TRANSFORMER T-3A-2 TO TRANSFER SWITCH TS-3B-3.
- 8 EXISTING DUCTBANK CONTAINING TWO (2) SPARE 4" CONDUITS. CONDUITS TRAVEL WEST BEFORE JOINING EXISTING DUCTBANK SYSTEM TRAVELING NORTH TO EXISTING MANHOLE 'MH-E1'. CONTRACTOR SHALL REWORK DUCTBANK (IF REQUIRED) SO THAT CONDUITS TERMINATE IN TERMINAL COMPARTMENT OF NEW TRANSFER SWITCH TS-3B-3. IN ADDITION, CONTRACTOR SHALL INSTALL AN ADDITIONAL 4" SPARE PVC CONDUIT. NEW SPARE CONDUIT SHALL EXTEND 4 FEET OFF EXISTING TRANSFORMER PAD. CAP CONDUIT FOR FUTURE USE.
- 9 EXISTING CONDUIT '1H3BTS' (IN DUCTBANK WITH 4" SPARE). CONTRACTOR SHALL REWORK DUCTBANK AS REQUIRED SO THAT 1H3BTS AND 4" SPARE TERMINATE IN TERMINAL COMPARTMENT OF NEW TRANSFER SWITCH TS-3B-3. REPLACE EXISTING CONDUCTORS IN CONDUIT '1H3BTS' WITH NEW 15KV, 3-#350 MCM PLUS 1-#2 600V GND. NEW FEED SHALL RUN FROM TRANSFORMER T-3B-3 TO TRANSFER SWITCH TS-3B-3.
- 10 CONTRACTOR SHALL CUT AND REPAIR EXISTING TRANSFORMER PAD AS REQUIRED TO MAKE MODIFICATIONS TO EXISTING DUCTBANKS REQUIRED TO ACCOMMODATE THE FOOTPRINT OF THE NEW TRANSFER SWITCH TS-3B-3.
- 11 EXISTING OPERATIONS OFFICE (BUILDING 010).
- 12 EXISTING ELECTRICAL ROOM.
- 13 EXISTING 120/208V, 3-PHASE, 4-WIRE PANELBOARD 'L1'. CONTRACTOR TO UTILIZE TWO (2) EXISTING SINGLE-POLE, 20 AMPERE CIRCUIT BREAKERS (CIRCUITS 35 AND 37) FOR MANUAL TRANSFER SWITCH 120V POWER CIRCUITS. PROVIDE ONE 120V CIRCUIT PER SWITCH.
- 14 CONTRACTOR SHALL PROVIDE AND INSTALL TWO (2) 3/4" CONDUITS, EACH CONTAINING 2-#12 THWN CU + 1-#12 THWN CU GND. INSTALL CONDUIT AND CONDUCTORS FROM OPERATIONS OFFICE ELECTRICAL ROOM PANEL 'L1' TO ASSOCIATED SWITCH FOR 120V POWER.



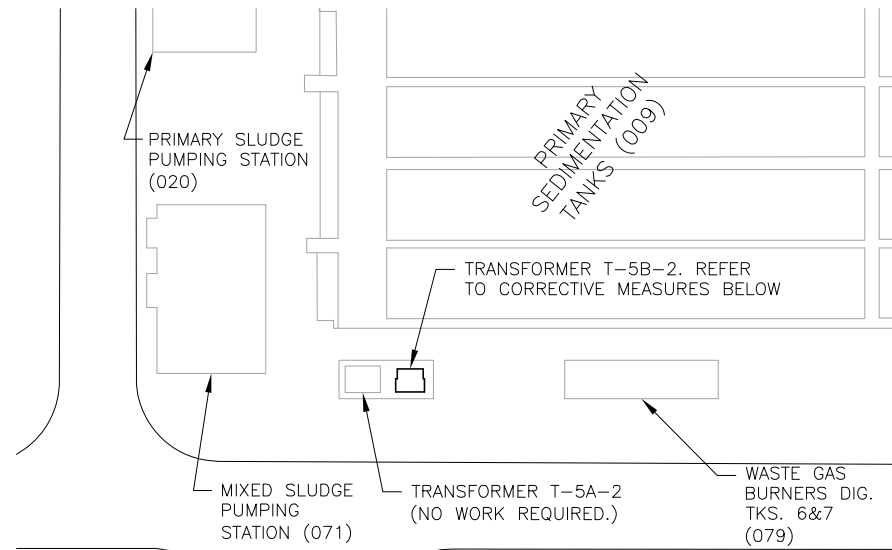
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SCALE	
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TRANSFORMER REPLACEMENTS**

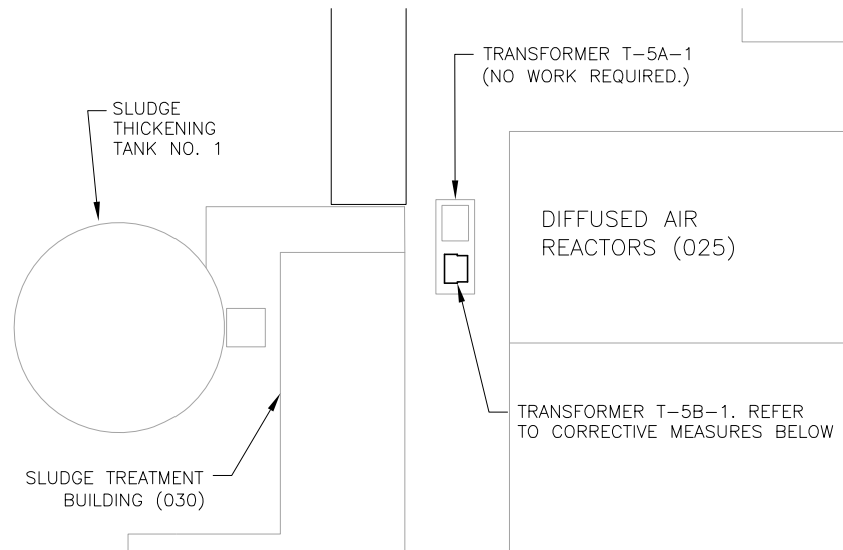
**TRANSFER SWITCH TS-3B-3
INSTALLATION DETAILS**

SHEET NUMBER	E-5
TIMOTHY THOMAS, P.E. No. 47079	FILE: 17130134E01



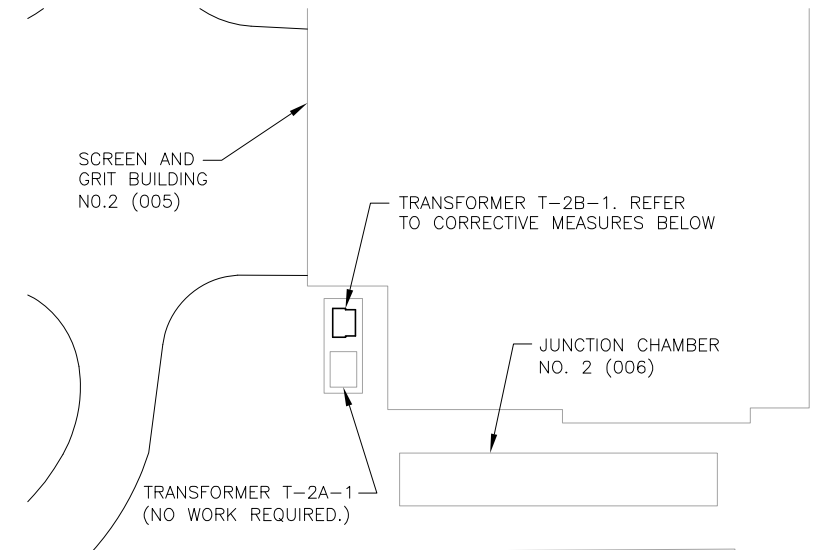
T-5B-2 PARTIAL SITE PLAN

SCALE : N.T.S.



T-5B-1 PARTIAL SITE PLAN

SCALE : N.T.S.



T-2B-1 PARTIAL SITE PLAN

SCALE : N.T.S.

CLEAN AND RE-TAPE EXPOSED BUS



T-5B-2 CORRECTIVE MEASURES

SCALE : N.T.S.

NOTE : SIMILAR CORRECTIVE MEASURES TO BE PERFORMED FOR 'T-5A-2'

A CLOSE-UP OF THE H2A BUSHING SHOWS DEFORMATION AND MISALIGNMENT OF THE CONNECTOR



H2A BUSHING SHOWING DEFORMATION

T-5B-1 CORRECTIVE MEASURES

SCALE : N.T.S.

REPLACE EXISTING BREAKER WITH ONE THAT INCLUDES A TRIP WHICH MATCHES THE EXISTING CIRCUIT BREAKER. FIELD VERIFY RATING OF EXISTING BREAKER. PROVIDE CIRCUIT BREAKER WITH NEW GROUND FAULT PROTECTION



T-2B-1 CORRECTIVE MEASURES

SCALE : N.T.S.

NOTE : SIMILAR CORRECTIVE MEASURES TO BE PERFORMED FOR 'T-2A-1'



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TRANSFORMER REPLACEMENTS**

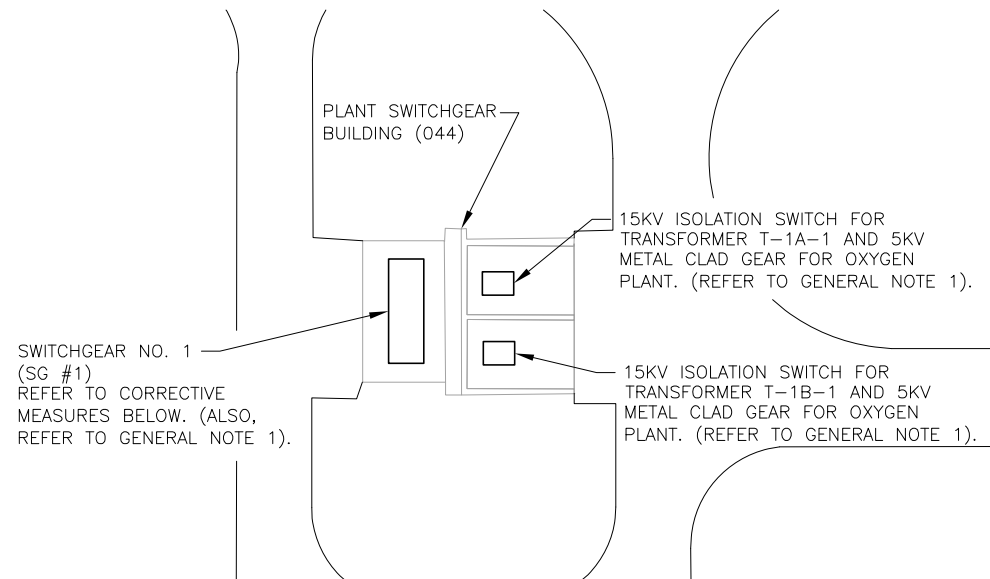
**CORRECTIVE MEASURES :
TRANSFORMERS T-5A-2, T-5B-2,
T-5B-1, T-2A-1, AND T-2B-1**

TIMOTHY THOMAS, P.E. No. 47079

SHEET NUMBER

E-6

FILE: 171301342E01



T-5B-2 SG-1 AND OXYGEN PLANT EQUIPMENT PARTIAL SITE PLAN

SCALE : N.T.S.

GENERAL NOTE:

1. REFER TO SPECIFICATION FOR OTHER PREVENTATIVE MAINTENANCE REQUIRED FOR SWITCHGEAR SG-1, 15KV ISOLATION SWITCHES FOR OXYGEN PLANT AND 5KV METAL CLAD GEAR AT TRANSFORMERS FOR OXYGEN PLANT.

POA 20B : CABLE SEALANT Oozing FROM TERMINATION PROVIDE PREVENTATIVE MAINTENANCE – CLEAN, TEST, INSPECT AND RETAPE.



1-52-2B CORRECTIVE MEASURES

SCALE : N.T.S.

POA 18 : PROVIDE PREVENTATIVE MAINTENANCE – CLEAN, TEST, INSPECT AND RETAPE.



1-52-4B CORRECTIVE MEASURES

SCALE : N.T.S.

POA 17 : PROVIDE PREVENTATIVE MAINTENANCE – CLEAN, TEST, INSPECT AND RETAPE.



1-52-5B CORRECTIVE MEASURES

SCALE : N.T.S.

POA 15B : PROVIDE PREVENTATIVE MAINTENANCE – CLEAN, TEST, INSPECT AND RETAPE.

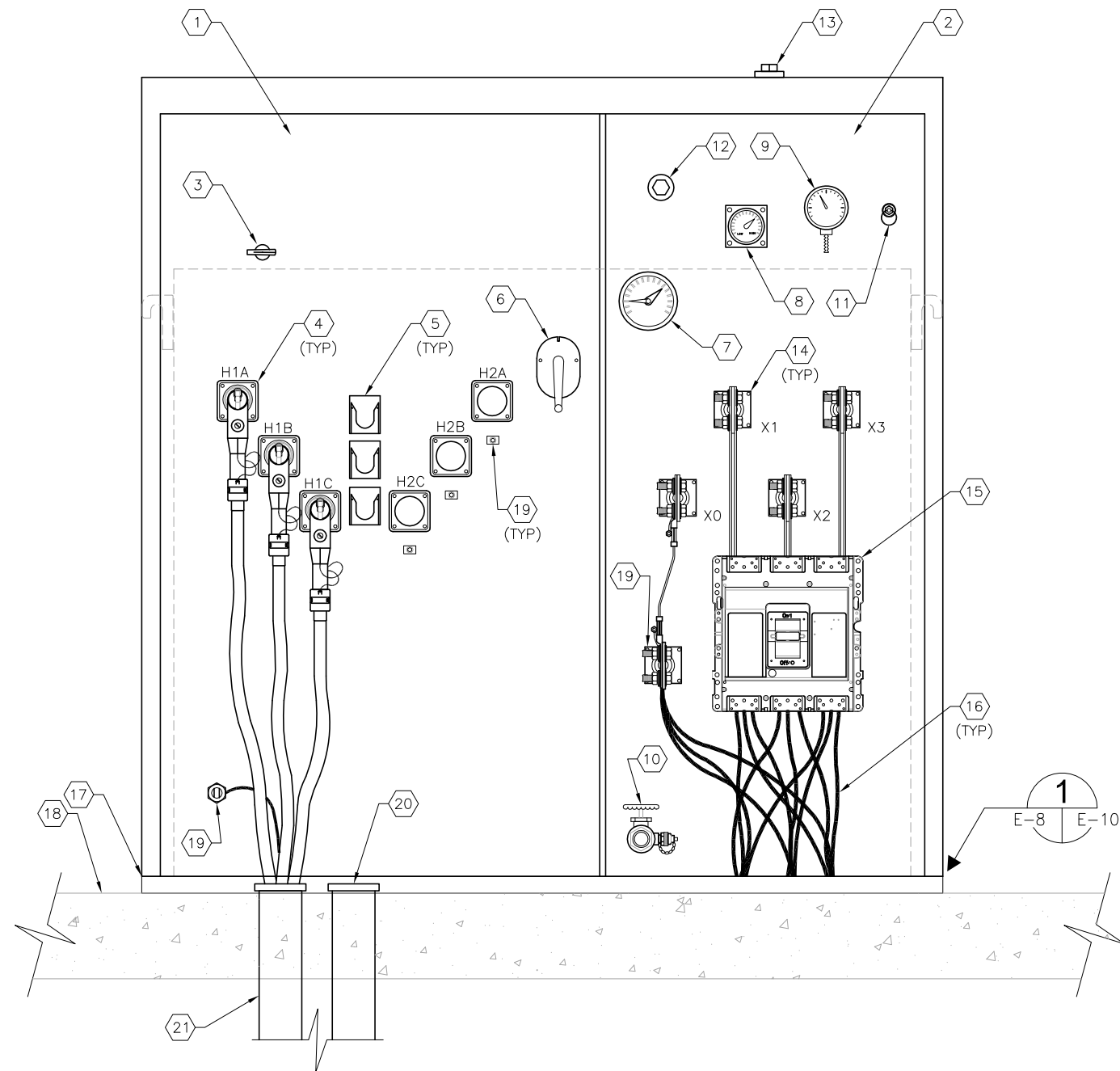


1-52-S2 CORRECTIVE MEASURES

SCALE : N.T.S.

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TYPICAL END OF LINE TRANSFORMER DETAIL

SCALE : N.T.S.

TYPICAL FOR TRANSFORMERS T-2A-3, T-3A-3 AND T-3B-3

KEYED NOTES:

- 1 TRANSFORMER PRIMARY COMPARTMENT, FABRICATED FROM STAINLESS STEEL.
- 2 TRANSFORMER SECONDARY COMPARTMENT, FABRICATED FROM STAINLESS STEEL.
- 3 TWO POSITION 'ON-OFF' SWITCH FOR LOAD BREAK, GANG OPERATED TRANSFORMER PRIMARY LOOP-ISOLATION SWITCH.
- 4 HIGH VOLTAGE BUSHING (TYP).
- 5 PARKING STAND (TYP).
- 6 TAP CHANGER.
- 7 DIAL TYPE THERMOMETER.
- 8 MAGNETIC LIQUID LEVEL GAUGE.
- 9 PRESSURE-VACUUM GAUGE.
- 10 ONE-INCH SCREW AND GLOBE TYPE DRAIN VALVE WITH SAMPLE PORT.
- 11 AUTOMATIC PRESSURE RELIEF VALVE.
- 12 ONE-INCH MALE PIPE FITTING FOR FILLING AND FILTER CONNECTION.
- 13 NITROGEN PORT
- 14 LOW VOLTAGE BUSHING (TYP).
- 15 LOW VOLTAGE CIRCUIT BREAKER. REFER TO SPECIFICATIONS. BREAKER RATINGS DEPENDENT ON TRANSFORMER KVA.
- 16 EXISTING LOW VOLTAGE DISTRIBUTION FEEDERS TO BE RECONNECTED TO CIRCUIT BREAKER. QUANTITY VARIES BASED ON TRANSFORMER KVA RATING.
- 17 PROVIDE AND INSTALL STAINLESS STEEL C-CHANNELS UNDER TRANSFORMER TANK TO ELIMINATE TRANSFORMER CONTACT WITH CONCRETE PAD. SECURE WITH STAINLESS STEEL ANCHOR SCREWS AND STAINLESS STEEL WASHERS. CONTRACTOR SHALL INSTALL 1/4-INCH NEOPRENE GASKET BETWEEN STAINLESS STEEL C-CHANNEL AND TRANSFORMER TANK BASE. PROVIDE A MINIMUM OF THREE (3) STAINLESS STEEL C-CHANNELS EVENLY SPACED BELOW TRANSFORMER TANK. CONTRACTOR SHALL ALSO PROVIDE STAINLESS STEEL C-CHANNEL UNDER THE FRAME OF THE PRIMARY AND SECONDARY TRANSFORMER COMPARTMENTS TO PREVENT RODENT INTRUSION. PROVIDE 1/4-INCH NEOPRENE GASKET BETWEEN C-CHANNEL AND PRIMARY/SECONDARY COMPARTMENT FRAME. ANCHORING OF C-CHANNEL FOR FRAME IS NOT REQUIRED. REFER ALSO TO DETAIL ON SHEET E-10.
- 18 EXISTING CONCRETE PAD. NO WORK REQUIRED.
- 19 GROUND LUG (TYP).
- 20 SPARE 4" CONDUIT. TYPICAL FOR ALL INSTALLATIONS. NO WORK REQUIRED.
- 21 EXISTING 4" CONDUIT TO BE REUSED. EXISTING CONDUCTORS SHALL BE REMOVED. CONTRACTOR SHALL INSTALL NEW 15KV, 3-#350 MCM PLUS 1-#2 600V GND.

GENERAL NOTES:

1. THE CONTRACTOR SHALL RECONNECT THE EXISTING BOND FROM THE EXISTING 500 MCM BARE CU GROUND LOOP (LOCATED AROUND THE PERIMETER OF THE TRANSFORMER PAD) TO THE GROUND LUG OF THE NEW TRANSFORMER.
2. EXISTING CONDUITS SHOWN IN HIGH VOLTAGE COMPARTMENT ARE FOR REFERENCE ONLY. QUANTITIES AND LOCATIONS MAY VARY PER TRANSFORMER. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS.
3. EXISTING CONDUITS IN LOW VOLTAGE COMPARTMENT NOT SHOWN FOR CLARITY. NO WORK REQUIRED FOR THESE CONDUITS.
4. TRANSFORMER COMPONENT LAYOUT IS MANUFACTURER DEPENDENT. COMPONENT LOCATIONS ARE FOR REFERENCE ONLY.



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TRANSFORMER REPLACEMENTS

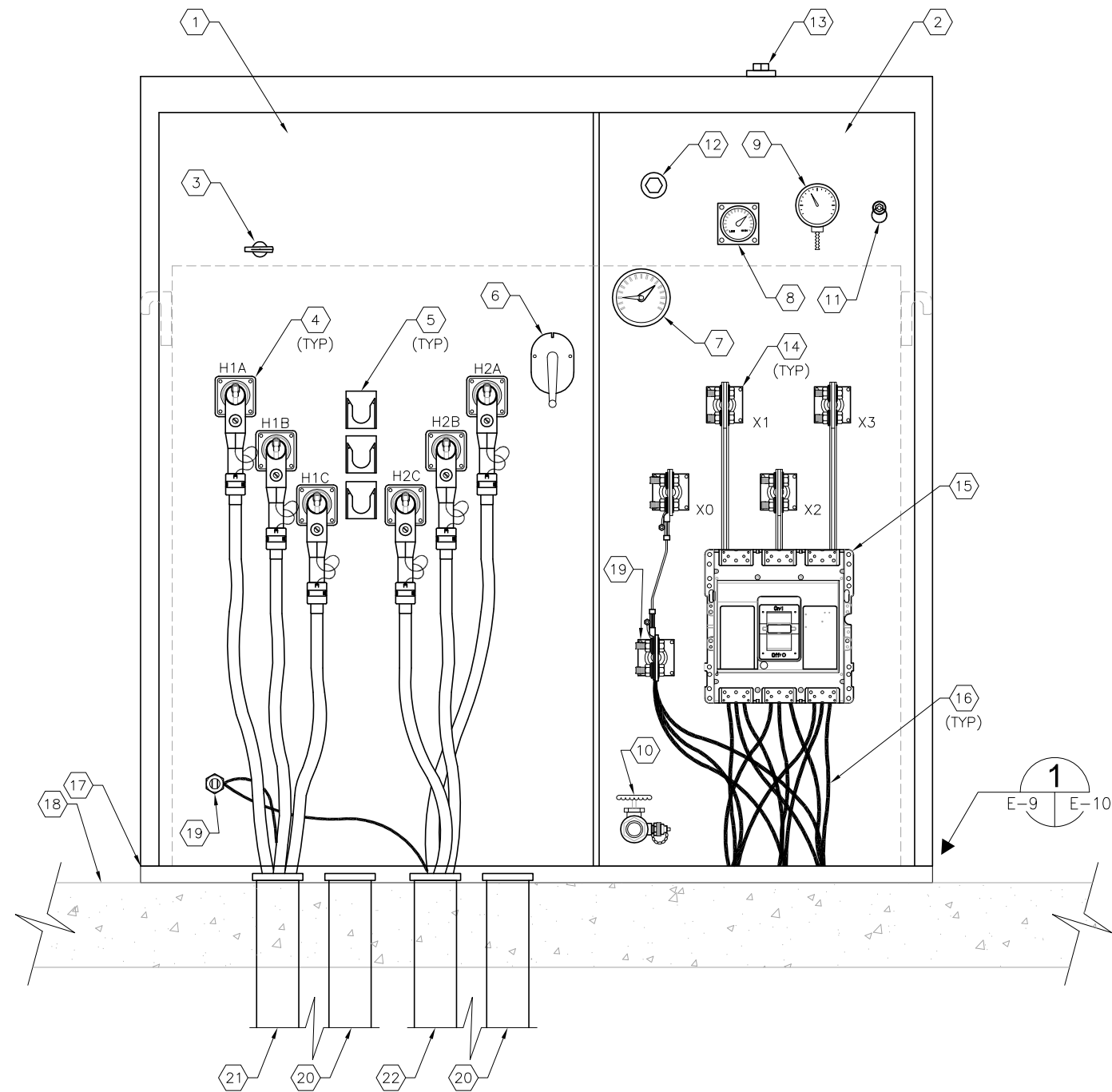
TYPICAL END OF LINE
TRANSFORMER DETAILS

SHEET NUMBER

E-8

TIMOTHY THOMAS, P.E. No. 47079

FILE: 171301342E01



TYPICAL LOOP FEEDER TRANSFORMER DETAIL

SCALE : N.T.S.

TYPICAL FOR TRANSFORMERS T-3A-2 AND T-3B-2

KEYED NOTES:

- ① TRANSFORMER PRIMARY COMPARTMENT, FABRICATED FROM STAINLESS STEEL.
- ② TRANSFORMER SECONDARY COMPARTMENT, FABRICATED FROM STAINLESS STEEL.
- ③ TWO POSITION 'ON-OFF' SWITCH FOR LOAD BREAK, GANG OPERATED TRANSFORMER PRIMARY LOOP-ISOLATION SWITCH.
- ④ HIGH VOLTAGE BUSHING (TYP).
- ⑤ PARKING STAND (TYP).
- ⑥ TAP CHANGER.
- ⑦ DIAL TYPE THERMOMETER.
- ⑧ MAGNETIC LIQUID LEVEL GAUGE.
- ⑨ PRESSURE-VACUUM GAUGE.
- ⑩ ONE-INCH SCREW AND GLOBE TYPE DRAIN VALVE WITH SAMPLE PORT.
- ⑪ AUTOMATIC PRESSURE RELIEF VALVE.
- ⑫ ONE-INCH MALE PIPE FITTING FOR FILLING AND FILTER CONNECTION.
- ⑬ NITROGEN PORT
- ⑭ LOW VOLTAGE BUSHING (TYP).
- ⑮ LOW VOLTAGE CIRCUIT BREAKER. REFER TO SPECIFICATIONS. BREAKER RATINGS DEPENDENT ON TRANSFORMER KVA.
- ⑯ EXISTING LOW VOLTAGE DISTRIBUTION FEEDERS TO BE RECONNECTED TO CIRCUIT BREAKER. QUANTITY VARIES BASED ON TRANSFORMER KVA RATING.
- ⑰ PROVIDE AND INSTALL STAINLESS STEEL C-CHANNELS UNDER TRANSFORMER TANK TO ELIMINATE TRANSFORMER CONTACT WITH CONCRETE PAD. SECURE WITH STAINLESS STEEL ANCHOR SCREWS AND STAINLESS STEEL WASHERS. CONTRACTOR SHALL INSTALL 1/4-INCH NEOPRENE GASKET BETWEEN STAINLESS STEEL C-CHANNEL AND TRANSFORMER TANK BASE. PROVIDE A MINIMUM OF THREE (3) STAINLESS STEEL C-CHANNELS EVENLY SPACED BELOW TRANSFORMER TANK. CONTRACTOR SHALL ALSO PROVIDE STAINLESS STEEL C-CHANNEL UNDER THE FRAME OF THE PRIMARY AND SECONDARY TRANSFORMER COMPARTMENTS TO PREVENT RODENT INTRUSION. PROVIDE 1/4-INCH NEOPRENE GASKET BETWEEN C-CHANNEL AND PRIMARY/SECONDARY COMPARTMENT FRAME. ANCHORING OF C-CHANNEL FOR FRAME IS NOT REQUIRED. REFER ALSO TO DETAIL ON SHEET E-10.
- ⑱ EXISTING CONCRETE PAD. NO WORK REQUIRED.
- ⑲ GROUND LUG (TYP).
- ⑳ SPARE 4" CONDUIT. TYPICAL FOR ALL INSTALLATIONS. NO WORK REQUIRED.
- ㉑ EXISTING 4" CONDUIT TO BE REUSED. EXISTING CONDUCTORS SHALL BE REMOVED. CONTRACTOR SHALL INSTALL NEW 15KV, 3-#350 MCM PLUS 1-#2 600V GND.
- ㉒ EXISTING 4" CONDUIT AND EXISTING CONDUCTORS TO REMAIN.

GENERAL NOTES:

- 1. THE CONTRACTOR SHALL RECONNECT THE EXISTING BOND FROM THE EXISTING 500 MCM BARE CU GROUND LOOP (LOCATED AROUND THE PERIMETER OF THE TRANSFORMER PAD) TO THE GROUND LUG OF THE NEW TRANSFORMER.
- 2. EXISTING CONDUITS SHOWN IN HIGH VOLTAGE COMPARTMENT ARE FOR REFERENCE ONLY. QUANTITIES AND LOCATIONS MAY VARY PER TRANSFORMER. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS.
- 3. EXISTING CONDUITS IN LOW VOLTAGE COMPARTMENT NOT SHOWN FOR CLARITY. NO WORK REQUIRED FOR THESE CONDUITS.
- 4. TRANSFORMER COMPONENT LAYOUT IS MANUFACTURER DEPENDENT. COMPONENT LOCATIONS ARE FOR REFERENCE ONLY.



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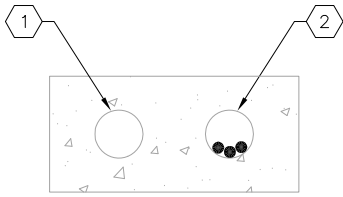
TYPICAL LOOP FEEDER
TRANSFORMER DETAILS

TIMOTHY THOMAS, P.E. No. 47079

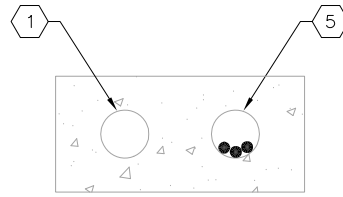
SHEET NUMBER

E-9

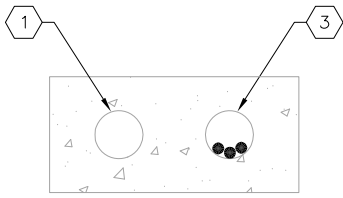
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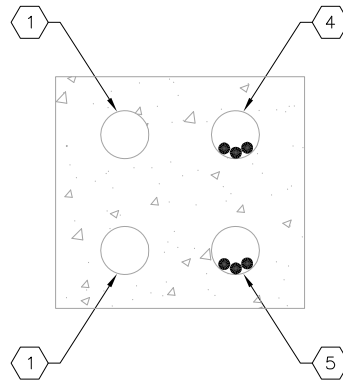
DUCTBANK SECTION A
SCALE : N.T.S. E-3 | E-10



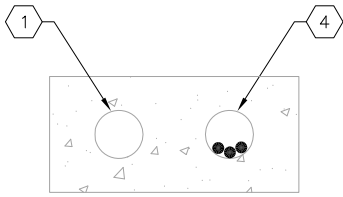
DUCTBANK SECTION D
SCALE : N.T.S. E-3 | E-10



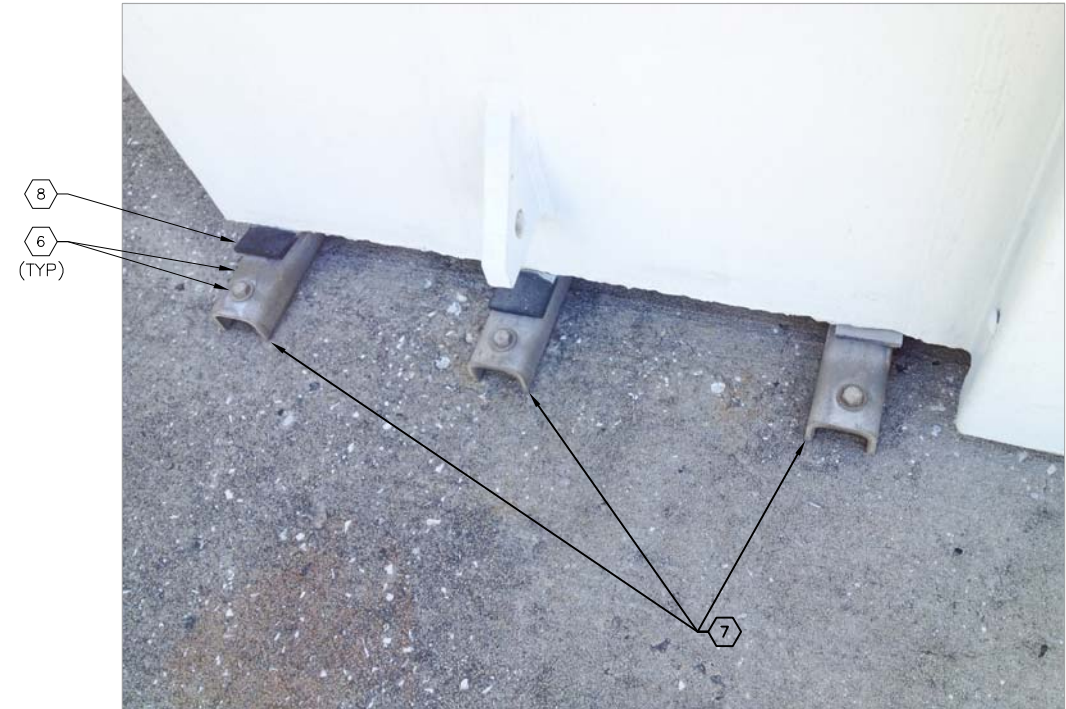
DUCTBANK SECTION B
SCALE : N.T.S. E-3 | E-10



DUCTBANK SECTION E
SCALE : N.T.S. E-3 | E-10



DUCTBANK SECTION C
SCALE : N.T.S. E-3 | E-10



UNISTRUT SUPPORT DETAIL 1
SCALE : N.T.S. E-8 | E-10
E-9

KEYED NOTES:

- ① 4" SPARE PVC CONDUIT.
- ② EXISTING CONDUIT '1H3A2'. CONTRACTOR TO REPLACE EXISTING FEEDER WITH NEW 15KV, 3-#350 MCM PLUS 1-#2 600V GND. CIRCUIT RUNS FROM TRANSFORMER T-3A-1 TO TRANSFORMER T-3A-2.
- ③ EXISTING CONDUIT '1H3B2'. CONTRACTOR TO REPLACE EXISTING FEEDER WITH NEW 15KV, 3-#350 MCM PLUS 1-#2 600V GND. CIRCUIT RUNS FROM TRANSFORMER T-3B-1 TO TRANSFORMER T-3B-2.
- ④ EXISTING CONDUIT '1H3A3'. CONTRACTOR TO REPLACE EXISTING FEEDER WITH NEW 15KV, 3-#350 MCM PLUS 1-#2 600V GND. CIRCUIT RUNS FROM TRANSFORMER T-3A-2 TO TRANSFORMER T-3A-3.
- ⑤ EXISTING CONDUIT '1H3B3'. CONDUIT SHALL BE MODIFIED (IF REQUIRED) TO RUN FROM TRANSFORMER T-3B-2 TO TRANSFER SWITCH TS-3B-3. CONTRACTOR TO REPLACE EXISTING FEEDER WITH NEW 15KV, 3-#350 MCM PLUS 1-#2 600V GND. CIRCUIT SHALL RUN FROM TRANSFORMER T-3B-2 TO NEW TRANSFER SWITCH TS-3B-3.
- ⑥ PROVIDE AND INSTALL STAINLESS STEEL UNISTRUT UNDER TRANSFORMER TANK TO ELIMINATE TRANSFORMER CONTACT WITH CONCRETE PAD. SECURE WITH STAINLESS STEEL ANCHOR SCREWS AND STAINLESS STEEL WASHERS.
- ⑦ PROVIDE A MINIMUM OF THREE (3) - 2" WIDE X 1-1/4" TALL X 1/4" THICK STAINLESS STEEL, ROUNDED C-CHANNELS EVENLY SPACED BELOW TRANSFORMER TANK. CONTRACTOR SHALL ALSO PROVIDE AND INSTALL STAINLESS STEEL C-CHANNELS UNDER THE OUTER FRAME OF THE PRIMARY AND SECONDARY COMPARTMENTS OF THE TRANSFORMER TO PREVENT RODENT INTRUSION. ANCHORING OF C-CHANNELS FOR PRIMARY AND SECONDARY COMPARTMENTS WILL NOT BE REQUIRED.
- ⑧ CONTRACTOR SHALL INSTALL 1/4-INCH NEOPRENE GASKET BETWEEN STAINLESS STEEL UNISTRUT AND TRANSFORMER TANK BASE.

GENERAL NOTES:

- 1. ALL INFORMATION PRESENTED IS BASED ON EXISTING RECORD DRAWING INFORMATION AND IS FOR REFERENCE ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL INFORMATION PRIOR TO COMMENCING WORK.

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