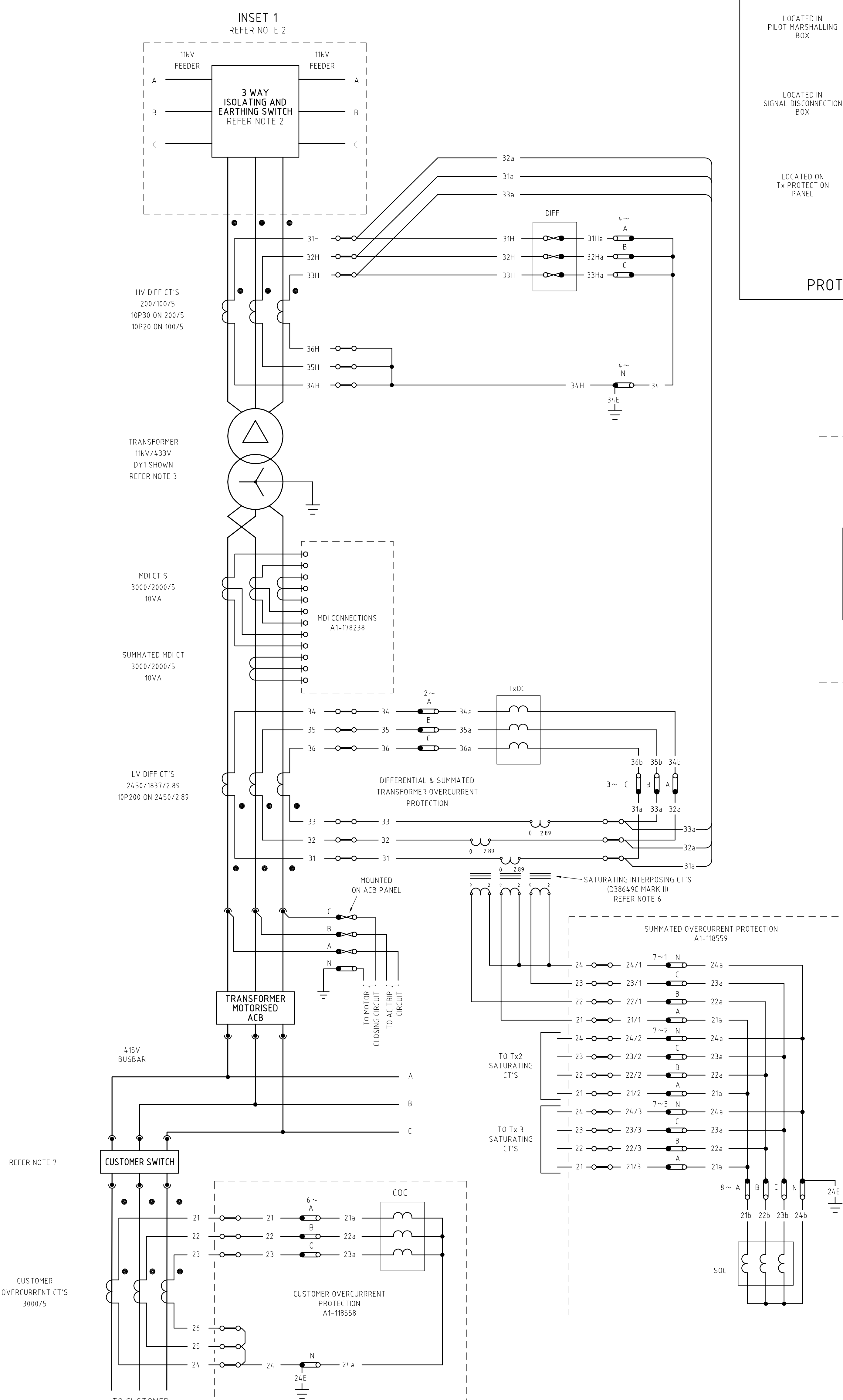
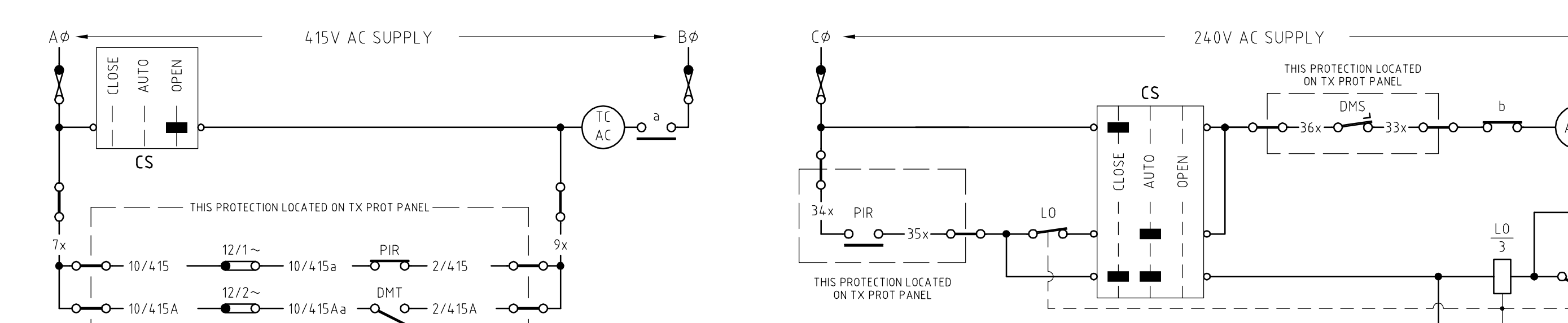


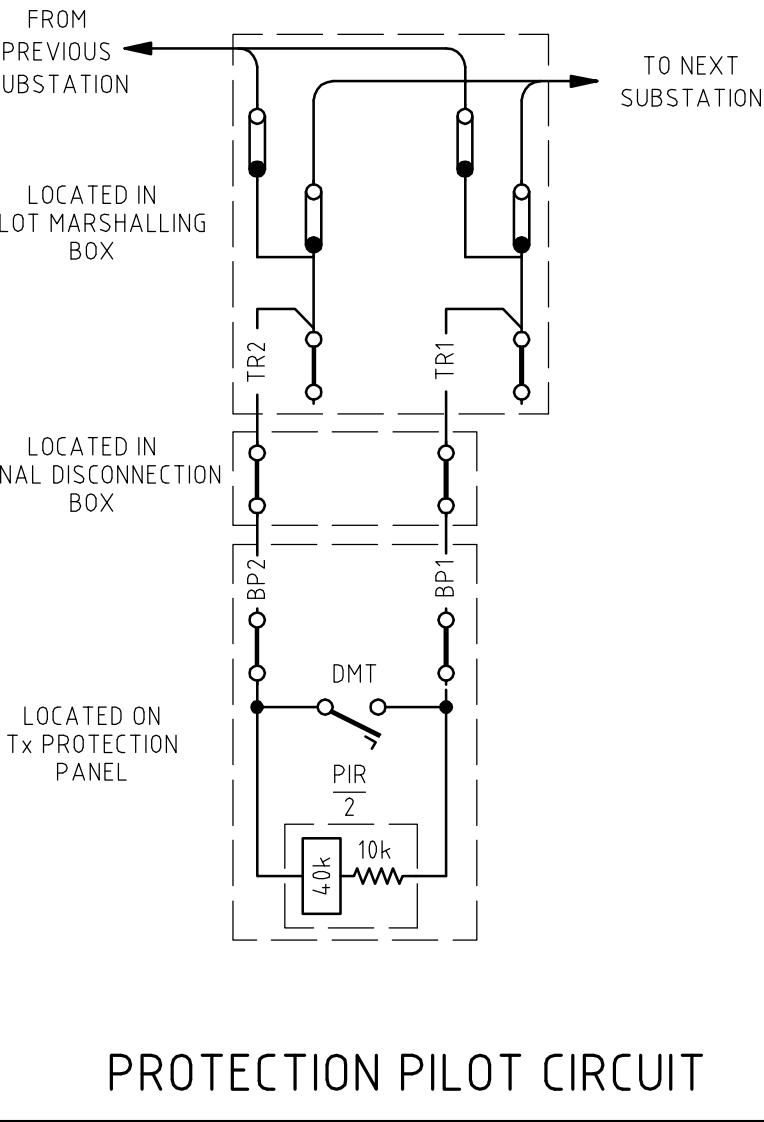
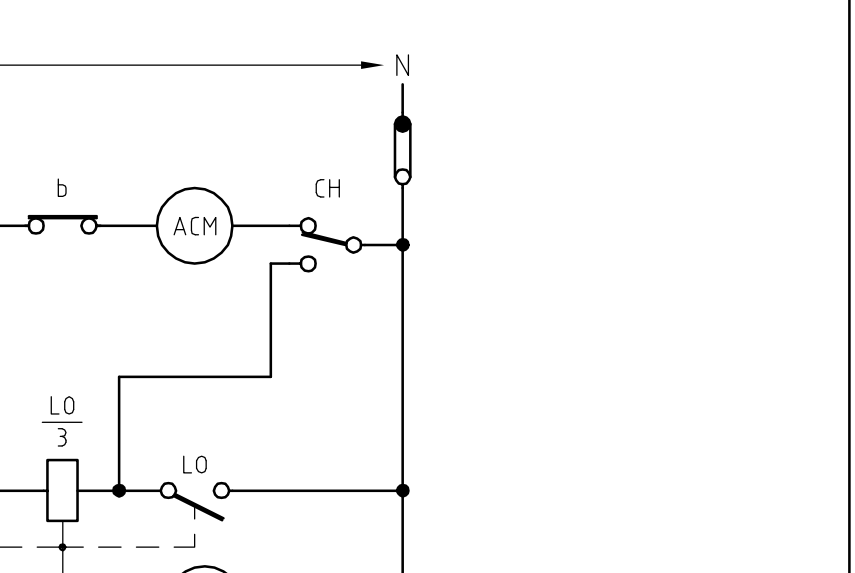
AC SCHEMATIC



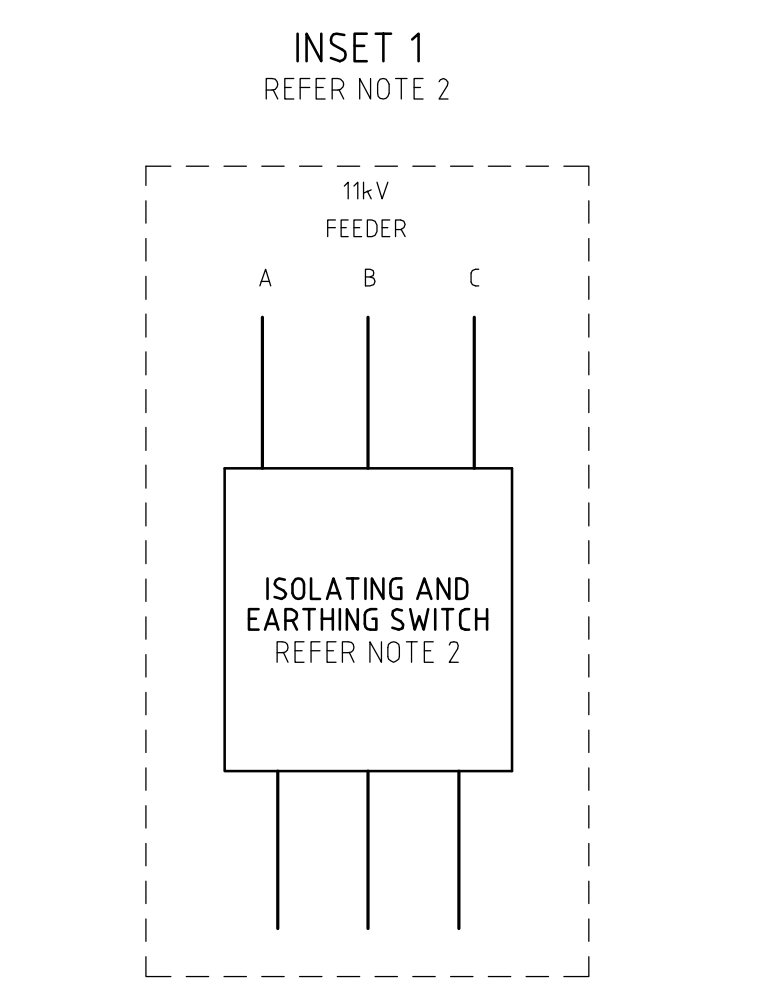
AC TRIP CIRCUIT



MOTOR CLOSING CIRCUIT

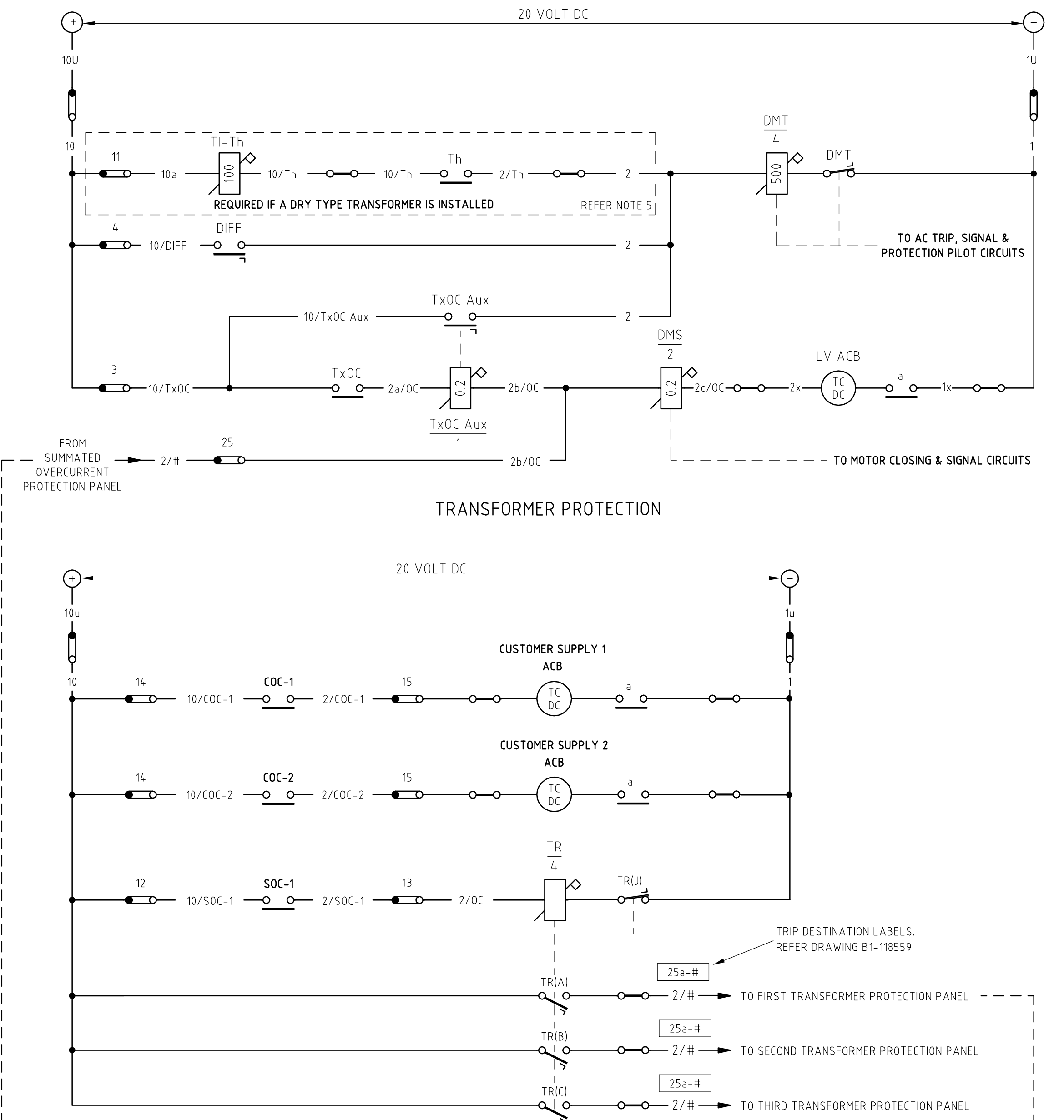


PROTECTION PILOT CIRCUIT

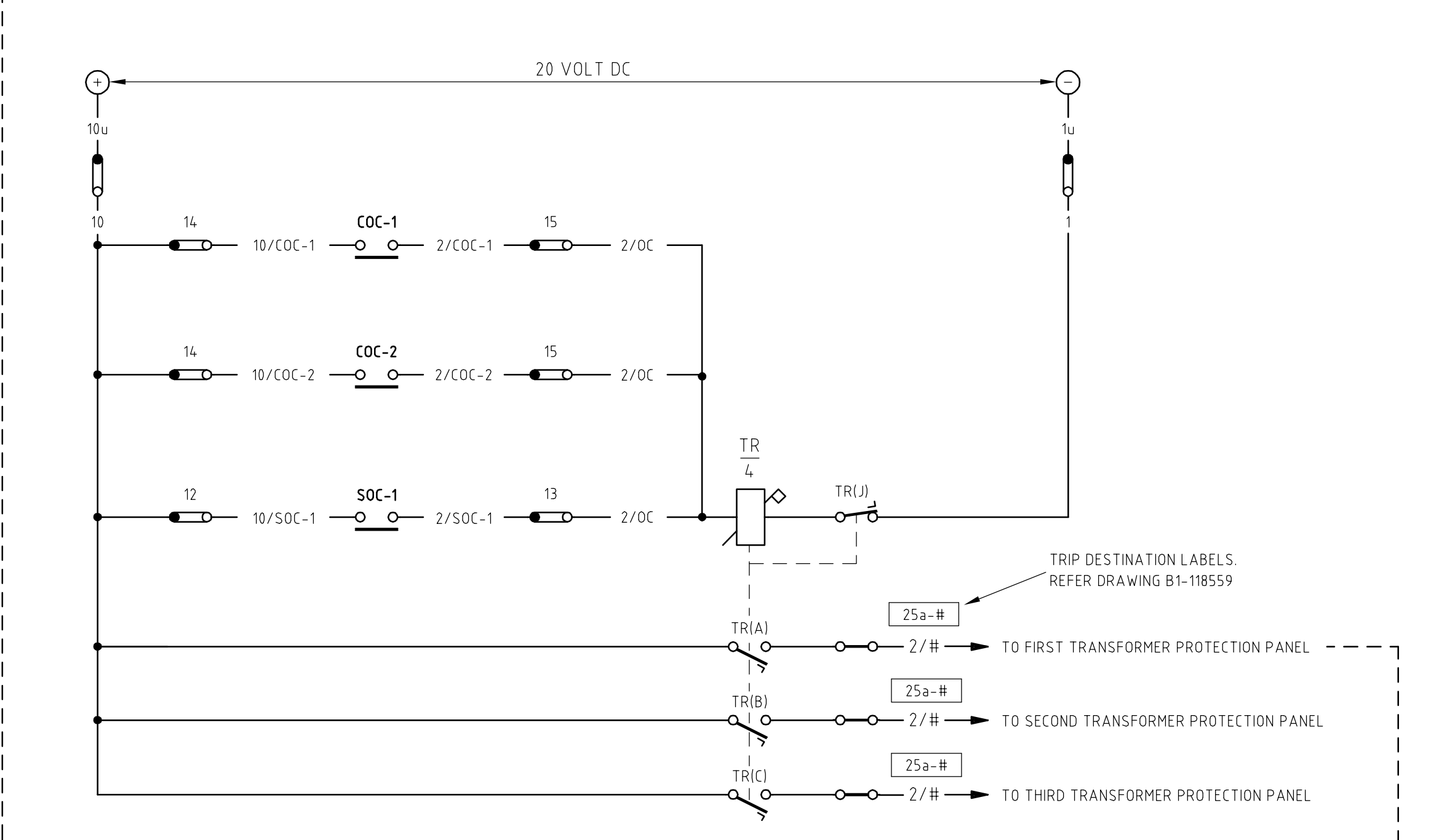


INSET 1 REFER NOTE 2

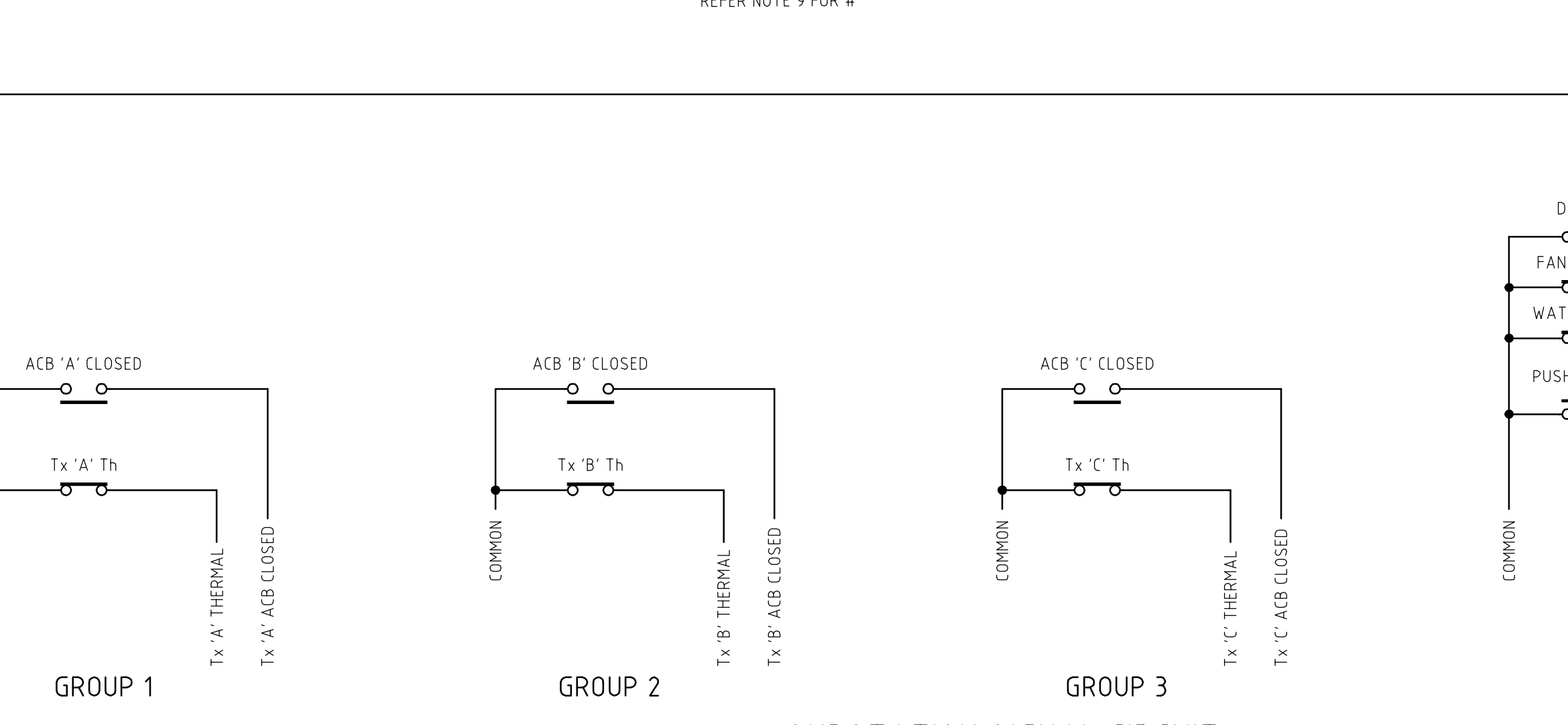
DC SCHEMATICS



SUMMATED OVERCURRENT AND CUSTOMER OVERCURRENT PROTECTION WITH CUSTOMER ACB



SUMMATED OVERCURRENT AND CUSTOMER OVERCURRENT PROTECTION WITH CUSTOMER DISCONNECTOR OR LINK CONNECTED BUSBAR SUPPLY



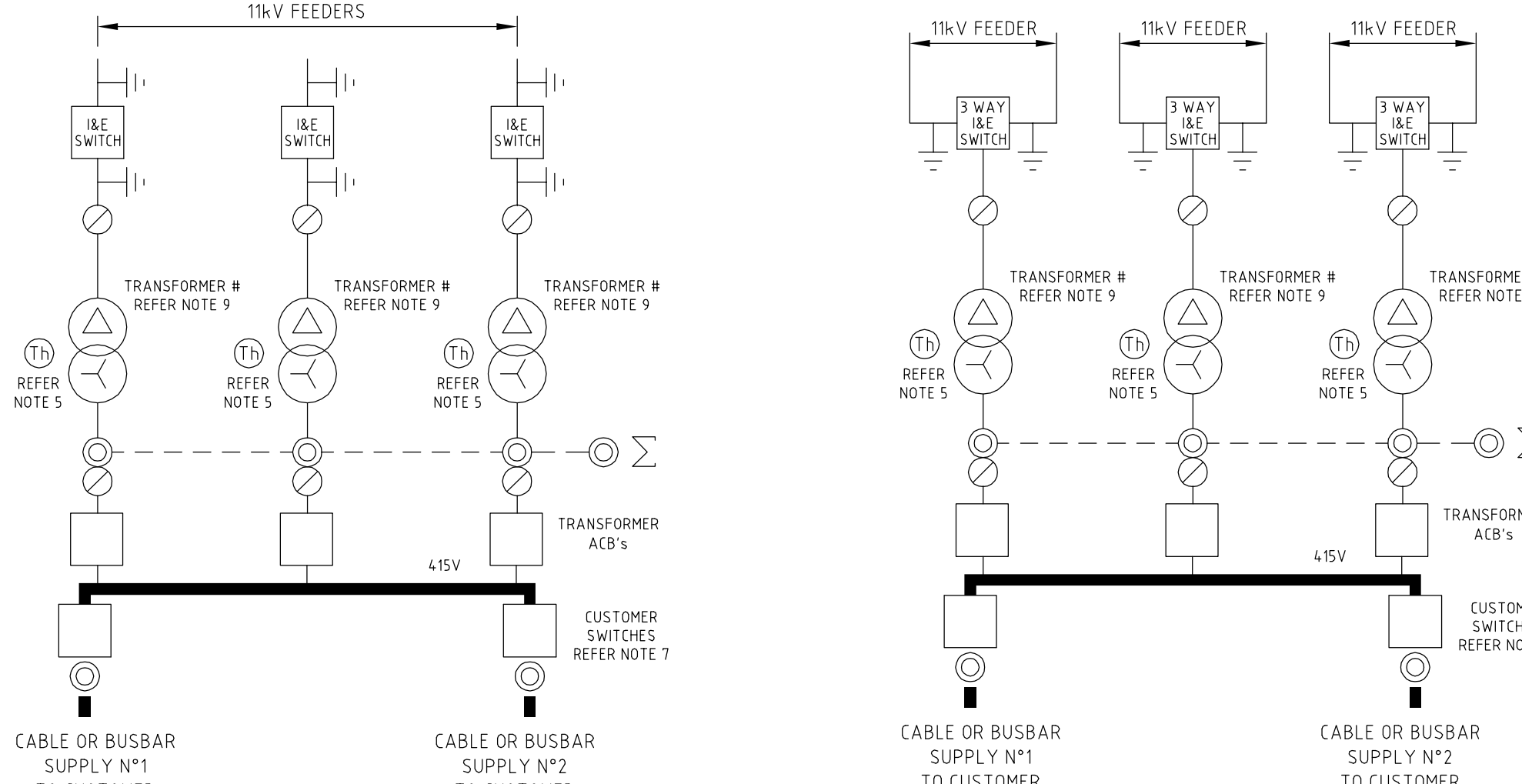
REFERENCE DRAWINGS

| | |
|--|-----------|
| CITY BASEMENT, SURFACE & ELEVATED SUBSTATIONS WITH E TYPE LV BOARD CABLING | A0-178233 |
| CITY CONTROL POINT & UPPER LEVEL SUBSTATIONS WITH E TYPE LV BOARD CABLING | A0-178234 |
| CITY SUBSTATIONS WITH E TYPE LV BOARD CABLE SCHEDULES | A1-178235 |
| CITY SUBSTATIONS WALL MOUNTED TRANSFORMER PROTECTION PANEL DRILLING | A1-15247 |
| CITY SUBSTATIONS WALL MOUNTED TRANSFORMER PROTECTION PANEL WIRING & CABLING | B1-15148 |
| CITY & SUBURBAN DISTRIBUTION SUBSTATIONS WALL MOUNTED CUSTOMER OVERCURRENT PROTECTION PANEL DRILLING, WIRING & CABLING | A1-118558 |
| CITY & SUBURBAN DISTRIBUTION SUBSTATIONS WALL MOUNTED SUMMATED OVERCURRENT PROTECTION PANEL DRILLING, WIRING & CABLING | A1-118559 |
| DISTRIBUTION SUBSTATIONS LABEL & MOULDED LINK DETAILS | B1-178241 |
| E TYPE LV BOARD WITH MERLIN GERIN MASTERPAC TP AIR CIRCUIT BREAKERS EXTERNAL CONNECTIONS | A2-178237 |
| E TYPE LV BOARD SUMMATED MDI CONNECTIONS DIAGRAM | A1-178238 |
| PILOT ISOLATION BOX CONNECTIONS | A1-116004 |
| SIGNAL DISCONNECTION BOX CONNECTIONS | A1-113432 |

NOTES

- THIS DRAWING SHOWS THE PROTECTION SCHEMATICS WHICH ARE TO BE USED IN CONJUNCTION WITH CITY CHAMBER TYPE SUBSTATIONS AND SHOULD BE READ IN CONJUNCTION WITH NETWORKS STANDARDS AND THE SUBSTATION DESIGN INFORMATION PACKAGE
- THE HV SWITCHES CAN EITHER BE ISOLATING AND EARTHING OR 3 WAY ISOLATING AND EARTHING AS SHOWN IN INSET. FOR AN UPPER LEVEL SUBSTATION THE HV SWITCHES ARE LOCATED IN A CONTROL POINT WHICH IS REMOTE FROM THE SUBSTATION.
- CITY SUBSTATIONS HAVE AN A-B CROSS IN THE LV PRIMARY CONNECTIONS. THE SECONDARY CIRCUITS ON THIS DRAWING HAVE BEEN ADJUST ACCORDINGLY.
- A DOT ON A LINK (●) INDICATES BOTTOM TERMINAL.
- WHEN A DRY TYPE TRANSFORMER IS USED, THE THERMAL RELAY (Th) AND A TRIP INDICATOR ARE TO BE CONNECTED. THE THERMAL RELAY IS LOCATED & SUPPLIED BY THE TRANSFORMER MANUFACTURER. THE TRIP INDICATOR IS LOCATED ON THE TRANSFORMER PROTECTION PANEL & IS SUPPLIED BY ENERGY AUSTRALIA.
- THE SATURATING INTERPOSING CT'S ARE LOCATED IN THE TRANSFORMER PROTECTION PANEL. THE RATIOS INDICATED ON THIS DRAWING SHOULD BE CONNECTED BUT MAY BE ADJUST BY ENERGY AUSTRALIA BEFORE SUBSTATION COMMISSIONING.
- FOR A CUSTOMER CABLE SUPPLY, THE CUSTOMER SWITCH CAN BE AN AIR CIRCUIT BREAKER OR A DISCONNECTOR. FOR A CUSTOMER BUSBAR SUPPLY, THE CUSTOMER SWITCH CAN BE AN AIR CIRCUIT BREAKER, A DISCONNECTOR OR A LINK. IN ALL OF THESE INSTALLATIONS, AN OVERCURRENT CT IS INSTALLED AS SHOWN ON THE AC SCHEMATIC. IN THE CASE OF AN AIR CIRCUIT BREAKER CONTROLLED CUSTOMER SUPPLY, A PROTECTION INITIATION WILL TRIP THAT AIR CIRCUIT BREAKER ONLY. IN THE CASE OF A DISCONNECTOR CONTROLLED OR LINKED BUSBAR CUSTOMER SUPPLY, A PROTECTION INITIATION WILL TRIP ALL THE TRANSFORMER LV AIR CIRCUIT BREAKERS.
- REPLACE THE TRANSFORMER NUMBER WHERE A B C OR # IS SHOWN, ie D E F, G H J OR K L M etc.

LINE DIAGRAMS



LEGEND

| SYMBOL | DESCRIPTION | TYPE | DRILLING | WIRING |
|----------|--|-----------|------------|------------|
| DIFF | DIFFERENTIAL RELAY | K3M | A3-11324-3 | A3-11324-3 |
| TxOC | TRANSFORMER OVERCURRENT RELAY | CDG 33 | D23807 | D23807 |
| TxOC Aux | TRANSFORMER OVERCURRENT AUXILIARY TRIP INDICATOR | T13 CITY | A2-123399 | A2-123399 |
| Tn-Th | THERMAL TRIP INDICATOR | T13 CITY | A2-123399 | A2-123399 |
| SDC | SUMMATED OVERCURRENT RELAY | CDG 33 | D23807 | D23807 |
| COC | CUSTOMER OVERCURRENT RELAY | CDG 33 | D23807 | D23807 |
| TR | MULTITRIPPING RELAY | ZHS52K10 | A3-169211 | A3-169211 |
| DMS | LOCKOUT & SIGNAL RELAY | T13 (0.2) | A2-123399 | A2-123399 |
| DMT | TRIP & SIGNAL RELAY | XXXX | A3-113476 | A1-53829 |
| PIR | PILOT INTERLOCK RELAY | XXXX | A3-113476 | A1-53829 |

CAD DRAWING
 DATE: 20/11/2019
 DRAWN BY: P.JARVIS
 CHECKED BY: P.EASTON
 APPROVED BY: O.ZINCHENKO
 DATE: 23/07/20
 PROJECT: 209-1-55-2

EnergyAustralia
 DESIGN & ENGINEERING
 24 CAMPBELL ST SYDNEY, NSW 2000

SCALE: AS SHOWN
 DESIGNED: -
 DRAWN: P.JARVIS
 CHECKED: P.EASTON
 APPROVED: O.ZINCHENKO
 DATE: 23/07/20
 PROJECT No: -
 PROJECT NUMBER: 209/1/55/1

CITY SUBSTATIONS WITH E TYPE LV BOARD AC AND DC SCHEMATICS
 DRAWING No: 178236
 SHEET 1
 AMD 1
 SIZE A0