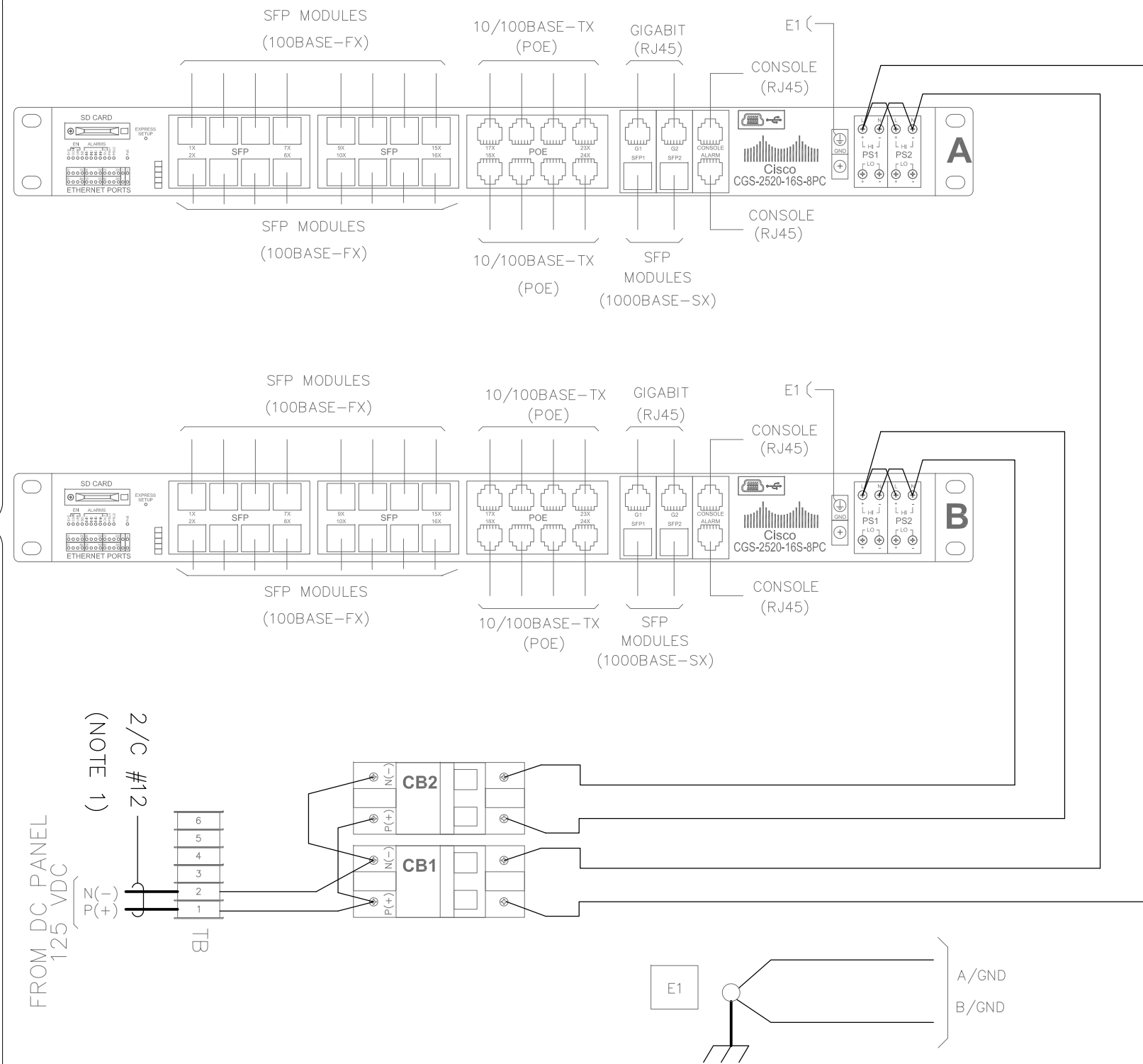


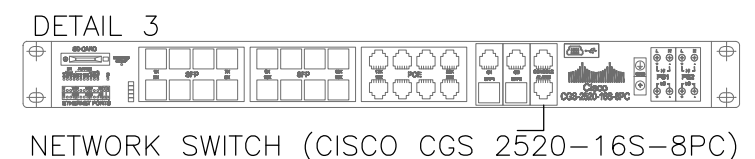
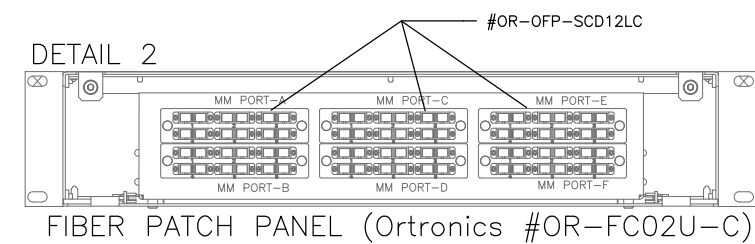
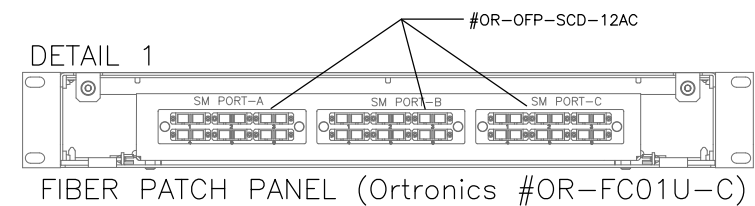
TBS NETWORK SWITCH POWER CONNECTION DIAGRAM



NOTES:

TBS NETWORK SWITCH SYSTEM:

1. NETWORK SWITCHES AND PATCH PANELS ARE MOUNTED IN THE RTU CABINET.
2. PROVIDE AND INSTALL ONE (1) Ortronics #OR-FC01U-C FIBER PATCH PANEL FOR INCOMING SINGLE MODE FIBERS FROM COMMUNICATION ROOM WITH THREE (2) 6 SC DUPLEX SC 50um 10GIG COUPLING PANELS, ORTRONICS #OR-OFP-SCD12AC
3. PROVIDE AND INSTALL ONE (1) ORTRONICS #OR-FC02U-C FIBER PATCH PANEL TO TERMINATE OUTGOING MULTIMODE FIBER TO EQUIPMENT IED WITH SIX (4) 6 SC DUPLEX SC 50um 10GIG COUPLING PANELS, ORTRONICS #OR-OFP-SCD12LC
4. WMATA WILL PROVIDE AND INSTALL TWO (2) CISCO CGS 2520-16S-8PC
5. PROVIDES AND INSTALLS BRANCH CIRCUIT WIRING FROM THE DC PANEL TO THE TERMINAL BLOCK INSIDE THE NETWORK SWITCH AS SHOWN. NETWORK SWITCH SYSTEM IS FED FROM 2P, 15A BREAKER INSTALLED AT THE STATION 125VDC PANEL.
6. PROVIDE AND INSTALL REDUNDANT POWER CONNECTIONS FOR EACH SWITCH AS SHOWN. 5A DIN RAIL CIRCUIT BREAKER TO BE INSTALLED FOR EACH NETWORK SWITCH.



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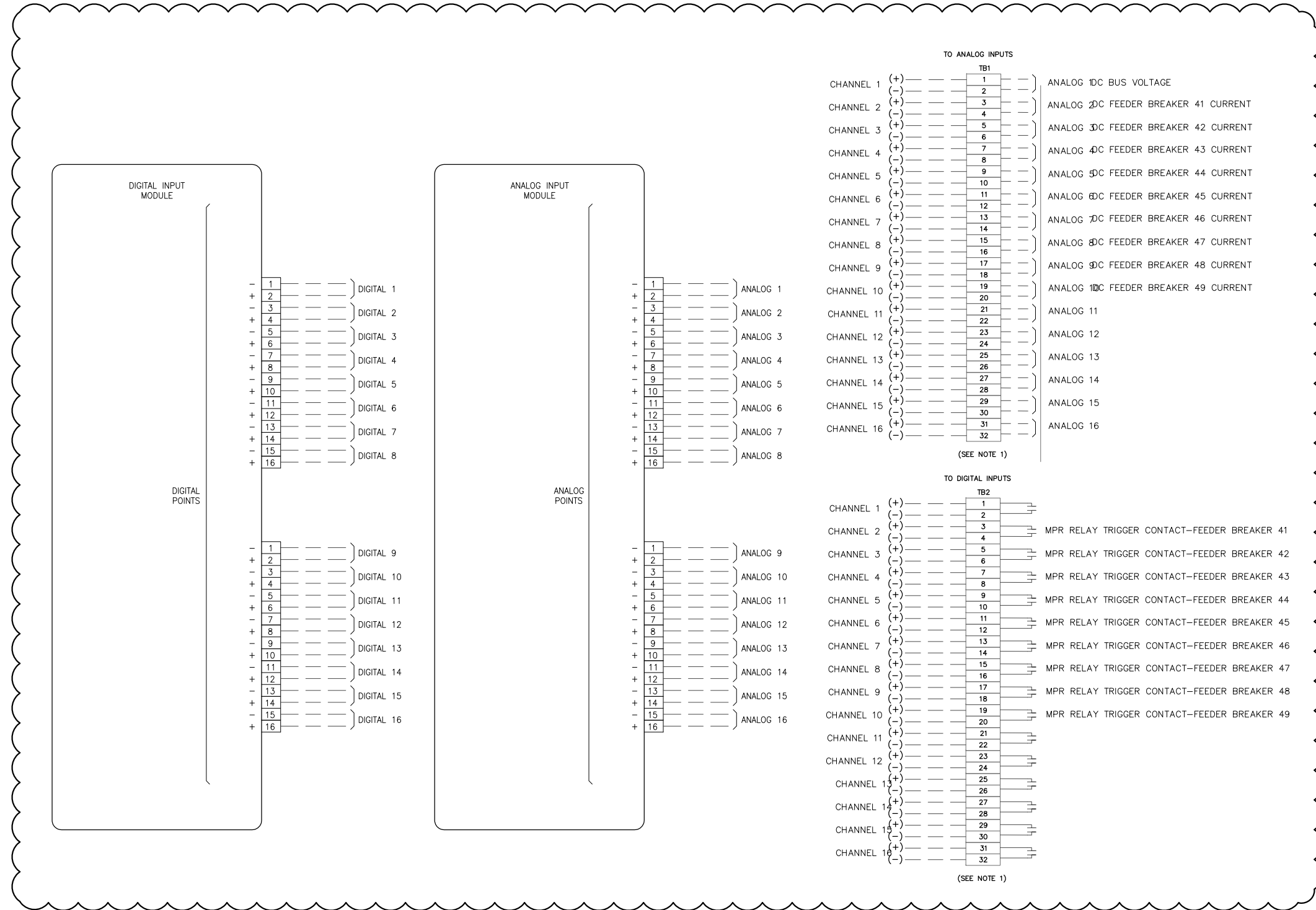
LICENSE No. 39970
EXPIRATION DATE: 1/17/2017

-COMAR 09.23.03.10

DESIGNED	JAJ	4/4/15	REFERENCE DRAWINGS			REVISIONS			WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES CENI - POWER SYSTEMS ENGINEERING	SIX (6) TIE BREAKER STATIONS UPGRADES ORANGE AND BLUE LINES DC, MD AND VA TYPICAL TPSS NETWORK SWITCH CABINET LAYOUT		
	DATE		NUMBER	TITLE	DATE	NUM	DESCRIPTION	CONTRACT NO.				
DRAWN	JAJ	5/20/15			11/2/15	1	ENLARGED NETWORK SWITCHES POWER CONNECTIONS	FQ15237	NONE	ST-SC-G-SSI-003	3 OF 29	
CHECKED	PK	6/1/15										
								REVISION SUBMITTED	11/2/15	DATE		
								MOUSTAPHA OUATTARA	Assistant Chief Engineer			
								APPROVED	ASHTON ROBINSON	DEPUTY CHIEF ENGINEER		

SHEET NOTES:

1. ALL ANALOG AND DIGITAL INPUT SIGNAL WIRES MUST BE TERMINATED ON TERMINAL BLOCKS AS ASSIGNED.
2. DTR MAIN MODULE WITH HARD DRIVE IS LOCATED IN THE DC SWITCHGEAR DTR UNIT
3. WIRING AND TERMINATION TO BE FACTORY PROVIDED BY DC SWITCHGEAR MANUFACTURER.
4. ANALOG AND TRIGGER POINTS ARE SPARES IF BREAKER IS NOT INSTALLED.
5. UNLESS OTHERWISE SHOWN, ALL WIRES TO BE #22 AWG (TWISTED PAIR FOR ANALOG INPUTS).
6. 125VDC CONTROL POWER IS PROVIDED TO THE DTR CABINET, DC TO DC CONVERTER TO BE PROVIDED AS REQUIRED BY THE MANUFACTURER OF THE DTR.
7. DTR SYSTEM IS MOUNTED IN A 24H x20W x10d WALL MOUNT CABINET.
8. DTR SYSTEM MUST BE SHIPPED SEPARATELY TO AVOID DAMAGES.



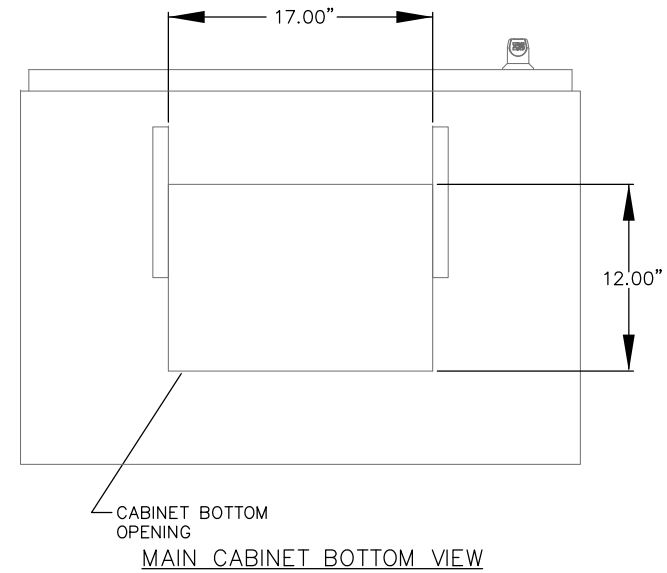
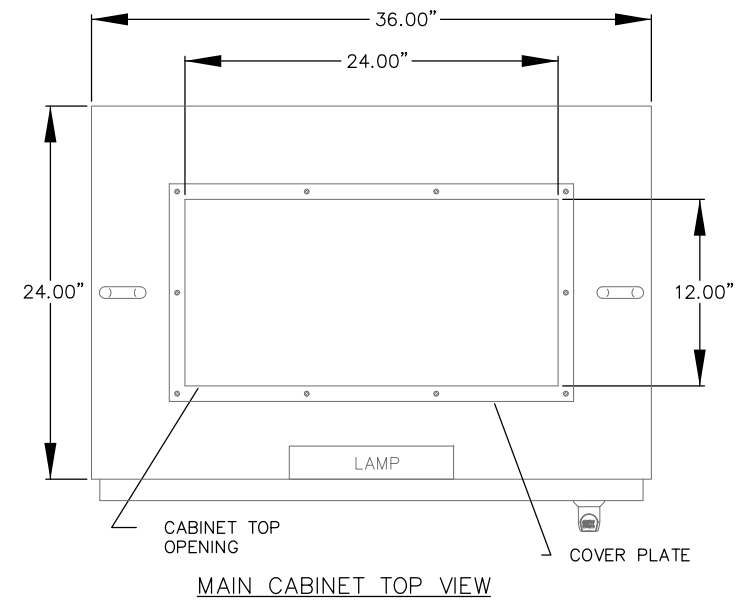
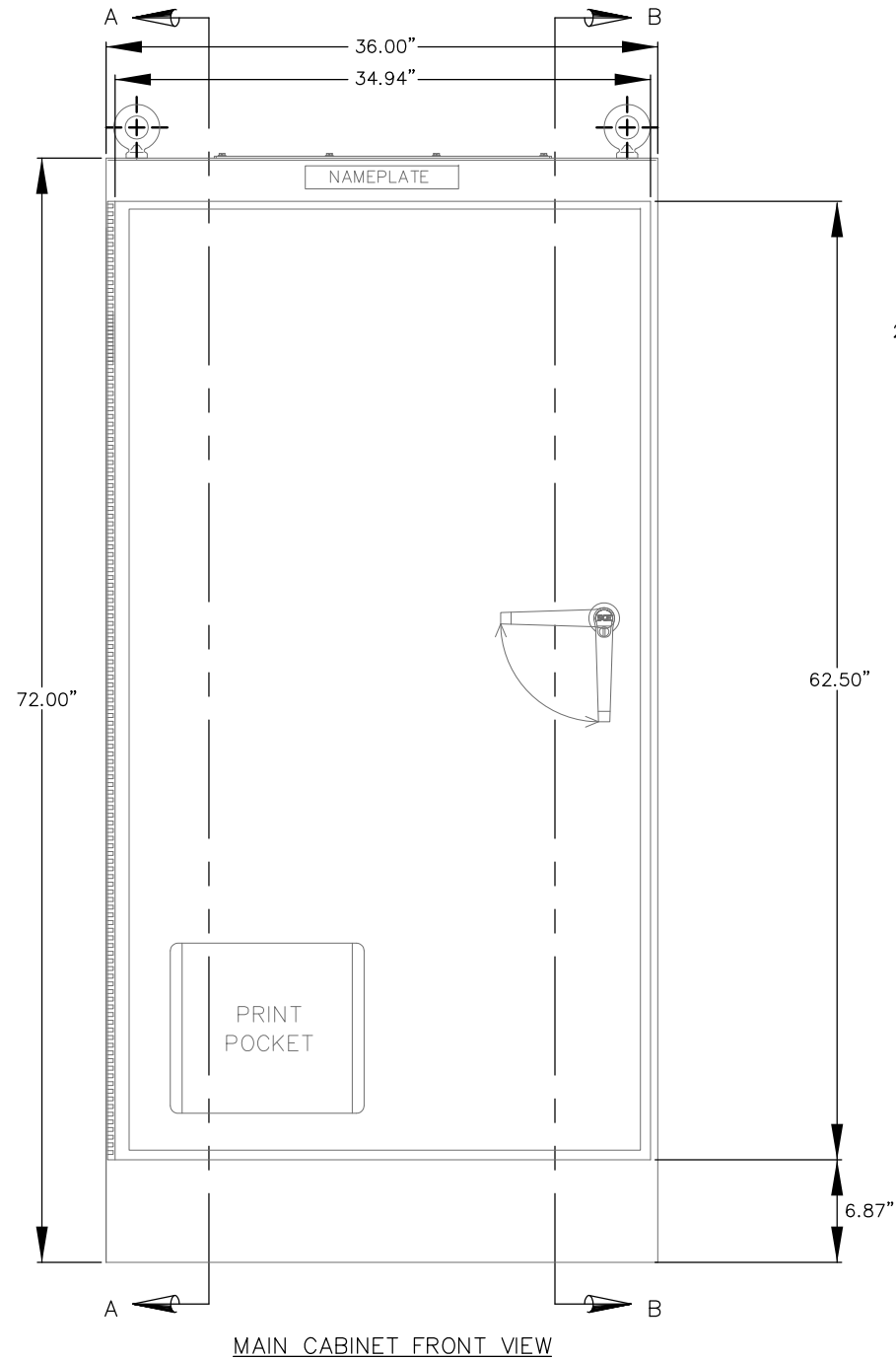
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DESIGNED JAJ 4/4/15 DATE DRAWN JAJ 5/20/15 DATE CHECKED PK 6/1/15 DATE	REFERENCE DRAWINGS <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>NUMBER</th> <th>TITLE</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	NUMBER	TITLE			REVISIONS <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>DATE</th> <th>NUM</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>11/3/15</td> <td>Δ</td> <td>NEW DTR SYSTEM LAYOUT</td> </tr> </tbody> </table>	DATE	NUM	DESCRIPTION	11/3/15	Δ	NEW DTR SYSTEM LAYOUT	WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES CENI - POWER SYSTEMS ENGINEERING	SIX (6) TIE BREAKER STATIONS UPGRADES ORANGE AND BLUE LINES DC, MD AND VA TBS DTR-DC SWITCHGEAR INTERCONNECTION
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REVISION SUBMITTED 11/3/15 MOUSTAPHA OUATTARA Assistant Chief Engineer	APPROVED 11/3/15 ASHTON ROBINSON DEPUTY CHIEF ENGINEER	CONTRACT NO. FQ15237	SCALE NONE											
DRAWING NO. ST-SC-G-SSI-008	SHEET NO. 8 OF 29													

Typical Bill of Materials (BOM)				
REF	Description	Function	Purpose	Qty
TB1 1-2-3	DIN-Rail Terminal Blocks M 6/8 (8 mm)	120 VAC Input Power	Connection points for 120 VAC input power	3
TB1 4-5-6	DIN-Rail Terminal Blocks M 6/8 (8 mm)	125 VDC Input Power	Connection points for 125 VDC input power	3
TB1 7-18	DIN-Rail Terminal Blocks M 6/8 (8 mm)	24 VDC Power Distribution	Connection points for 24 VDC power for cabinet	12
TB1 19-23	Phoenix (PT 5-HF-12DC-ST)	RS-485 Surge Suppression	Used to provide 3-wire surge suppression for all RS-485 wiring harness. Ground connected via DIN-Rail	5
TB2/TB3	Phoenix Terminal Blocks	Hardwire Connections - Status	Provides hardwire connection points for all 24 VDC status inputs (minimum Qty=32)	32
TB3 1-32	Phoenix Terminal Blocks	Hardwire Connections - Analogs (0-1ma)	Provides hardwire connection points for all 0-1ma analog inputs (minimum Qty=32)	32
TB4	Phoenix Terminal Blocks	Hardwire Connections - Controls	Provides hardwire connection points for all Control outputs (minimum Qty=16)	16
L/R	SPST Switch w/ Cover	Local/Remote Switch	Provides local control for 30 VDC control relay power is required	1
AC1	GFI Receptacle	AC Power	Distribution point for AC power for maintenance use	1
CB1	15 Amp Thermal Circuit Breaker	AC Power Control (AC)	Provides protection and control of 120 VAC input power	1
CB2	5 Amp Thermal Circuit Breaker	Main Power Control (DC)	Provides fusing, protection and control of 125 VDC input power	1
CB3	5 Amp Thermal Circuit Breaker	NS#1 Power Control (DC)	Provides fprotection and control of 125 VDC input power	1
CB4	5 Amp Thermal Circuit Breaker	NS#2 Power Control (DC)	Provides fprotection and control of 125 VDC input power	1
F1/F2	1 Amp Fuses	Keying Voltage	Provides fusing, of 125 VDC Status Keying Voltage as required	2
F3/F4	5 Amp Fuses	For Future HMI	Provides fusing, of 125 VDC Status Keying Voltage as required	2
G1/CB	Ground Block	Main Ground Connection	Provides anchor point for all grounding requirements	1
LAMP	Fluorescent Lamp	Main Illumination	Provides cabinet interior illumination for maintenance use	1
DO	Latching Relay Panel	Digital Control Outputs (16)	Provides Control Outputs rated for 10 Amps @ 240 VAC	1
DI	Module	Digital Status Inputs (24)	Accepts Status & Indication Inputs rated for 24 or 125VDC keying (minimum Qty=24)	1
AN	0-1ma or higher	Analog Inputs (16)	Accepts Analog Inputs rated as specified	1
PS1	Power Supply	DC-to-DC Converter	125 VDC Input to 24 VDC converter for cabinet electronics	1
PS2	Power Supply	AC-to-DC Converter	120 VAC Input to 24 VDC converter for cabinet electronics	1
F/O	F/O Box (SPH-OIP)	Patch Panel	Allow F/O cable terminations	1
IED-1	SCADA RTU	DATA CONCENTRATOR	Rack Mount Real-Time Automation Controller with Integrated HMI	1
IED-2	RTU I/O Module	I/O MODULE	Rack Mount Integrated, modular input/output (I/O) system	1



NOTES:

- CABINET MAXIMUM DIMENSIONS ARE 72"H x 36"W x 24" DEEP, NEMA 12, WITH HINGED AND LOCKABLE DOOR.
- CABINET MATERIAL: GALVANNEALED STEEL, 11 GA.
- CABINET FINISH: WHITE EPOXY POLYESTER POWDER COATED INSIDE AND ANSI-61 HIGH SOLIDS RE-COATABLE GRAY FINISH OUTSIDE OVER PHOSPHATIZED SURFACES.
- ENTRY FOR FIELD CABLING IS THROUGH THE TOP.
- TBS TYPE RTU CABINET



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REFERENCE DRAWINGS	
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REVISIONS		
DATE	NUM	DESCRIPTION
11/3/15	Δ	DIMENSIONS CORRECTED

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
DEPARTMENT OF TRANSIT INFRASTRUCTURE AND ENGINEERING SERVICES
CENI - POWER SYSTEMS ENGINEERING

REVISION SUBMITTED: 11/3/15 DATE: MOUSTAPHA OUATTARA Assistant Chief Engineer
 APPROVED: 11/3/15 DATE: ASHTON ROBINSON DEPUTY CHIEF ENGINEER

SIX (6) TIE BREAKER STATIONS UPGRADES
ORANGE AND BLUE LINES DC, MD AND VA

TYPICAL TBS RTU CABINET LAYOUT - SHEET 1 OF 2

CONTRACT NO. FQ15237	SCALE NONE	DRAWING NO. ST-SC-G-SSI-010	SHEET NO. 10 OF 29
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