CITY OF BARTOW
ODOM SUBSTATION

69kV CIRCUIT BREAKER REPLACEMENTS
ISSUED FOR BID DRAWINGS

DRAWING LIST

DRAWING	TITLE	DRAWING	TITLE
CV	COVER SHEET	011	TRANSFORMER NO 1 AND BREAKER 69141 DC ELEMENTARY DIAGRAM
GN	GENERAL NOTES AND LEGEND	012	69kV BREAKER 69144 DC ELEMENTARY DIAGRAM
001	69kV ELECTRICAL PLAN AND SECTIONS	012R	69kV BREAKER 69144 DC ELEMENTARY DIAGRAM - REMOVALS
001R	69kV ELECTRICAL PLAN AND SECTIONS - REMOVALS	013	TRANSFORMER NO 2 AND BREAKER 69144 DC ELEMENTARY DIAGRAM
002	SECTIONS	014R	REMOTE WIRING DIAGRAM - REMOVALS
002R	SECTIONS - REMOVALS	015	CIRCUIT BREAKER 69141 REMOTE WIRING DIAGRAM
003	FOUNDATION PLAN	016	CIRCUIT BREAKER 69144 REMOTE WIRING DIAGRAM
004	PARTIAL GROUNDING PLAN	017	AC AND DC PANELBOARD DETAILS
005	CABLE AND CONDUIT ROUTING PLAN	017R	AC AND DC PANELBOARD DETAILS - REMOVALS
006a1	CONDUIT SCHEDULE SHEET 1	018	CONTROL PANEL 1 WIRING DIAGRAM
006a2	CONDUIT SCHEDULE SHEET 2	018R	CONTROL PANEL 1 WIRING DIAGRAM - REMOVALS
007	RELAY & METERING ONE LINE DIAGRAM	019	CONTROL PANEL 2 WIRING DIAGRAM
007R	RELAY & METERING ONE LINE DIAGRAM - REMOVALS	019W	CONTROL PANEL 2 WIRING DIAGRAM - REMOVALS
008	THREE LINE AC ELEMENTARY DIAGRAM	020	CONTROL PANEL 2 ELEVATION
008R	THREE LINE AC ELEMENTARY DIAGRAM - REMOVALS	020R	CONTROL PANEL 2 ELEVATION - REMOVALS
009	AC ELEMENTARY DIAGRAMS PANELS 1, 2, & 3	S1	69kV CIRCUIT BREAKER FOUNDATION
009R	AC ELEMENTARY DIAGRAMS PANELS 1, 2, & 3 - REMOVALS		
010	69kV BREAKER 69141 DC ELEMENTARY DIAGRAM		
010R	69kV BREAKER 69141 DC ELEMENTARY DIAGRAM - REMOVALS		

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS

REV NO	REV BY	DATE	DESCRIPTION	REV NO	REV BY	DATE	DESCRIPTION

CHECK

ENGINEERING RECORD	BY	DATE
DRAWN	JPC	JULY 2019
DESIGNED	JPC	JULY 2019
CHECKED		

ENGINEER OF RECORD JOHN P. CHANNAD P.E. # 80868

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ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

COVER SHEET

W.O. #

PROJECT # 0902-26

SCALE: NONE

DWG # CV

SHEET NO.

GENERAL NOTES:

1. UNLESS OTHERWISE INDICATED, PROVIDE SHALL MEAN TO FURNISH AND INSTALL.
2. THE CONTRACTOR SHALL EXERCISE CAUTION WHEN EXCAVATING. UNDERGROUND UTILITIES MAY EXIST WHICH ARE NOT INDICATED ON THE DRAWINGS.
3. THE CONTRACTOR SHALL COORDINATE ANY REQUIRED OUTAGES WITH THE OWNER.
4. CONDUIT ROUTINGS ARE SHOWN DIAGRAMMATIC. ACTUAL LOCATIONS SHALL BE DETERMINED BY CONTRACTOR TO SUIT EXISTING FIELD CONDITIONS.
5. CONTRACTOR SHALL PROVIDE ALL MATERIALS FOR THE PERFORMANCE OF THIS PROJECT EXCEPT SPECIFICALLY LISTED OWNER FURNISHED MATERIALS.
6. CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE TO EXISTING FACILITIES, ABOVE OR BELOW GROUND, THAT MAY OCCUR AS A RESULT OF THE WORK PERFORMED BY THE CONTRACTOR. CONTRACTOR SHALL PROVIDE LABOR, EQUIPMENT, AND MATERIALS TO IMMEDIATELY REPAIR ALL DAMAGE CAUSED TO EQUIPMENT AND SYSTEM GROUNDS AND NOT WAIT UNTIL PROJECT IS COMPLETED. NOTIFY THE OWNER IMMEDIATELY.
7. EQUIPMENT SHALL BE NEMA RATED AND LISTED BY NATIONALLY RECOGNIZED LAB OF MATERIALS SUITABLE FOR THE ENVIRONMENT IN WHICH THEY ARE TO BE INSTALLED.
8. CONTRACTOR SHALL CAP ALL UNUSED CONDUITS WITH OWNER APPROVED MATERIALS AND PLACE 4" ELECTRONIC BALL MARKER, 3M #1402, AT EACH CAPPED CONDUIT.
9. ALL REMOVED MATERIALS AND EQUIPMENT WHICH ARE DEEMED REUSABLE, SALVAGEABLE OR RECYCLABLE BY THE OWNER SHALL REMAIN THE PROPERTY OF THE OWNER UPON REMOVAL AND SHALL BE TURNED OVER TO THE OWNER AND DELIVERED TO DESIGNATED LOCATION. UNUSABLE MATERIALS AND CONSTRUCTION DEBRIS SHALL BE REMOVED AND DISPOSED OF BY CONTRACTOR OFFSITE. MATERIALS CLASSIFIED AS HAZARDOUS, SHALL BE HANDLED AND DISPOSED OF IN ACCORDANCE WITH APPROVED AND ACCEPTED SAFETY PROCEDURES AND THE LAW. WHEN HAZARDOUS MATERIALS ARE DESTROYED, PROVIDE CERTIFICATE OF DESTRUCTION.
10. INFORMATION WAS OBTAINED FROM PREVIOUS STUDIES, DRAWINGS, SCHEMATICS, BES PERSONNEL, AND ABOVE GROUND FIELD INVESTIGATIONS. EVERY EFFORT, (WITHIN THE ALLOWED SCOPE OF THIS DESIGN) WAS MADE TO VERIFY ACCURACY OF THIS INFORMATION, HOWEVER FW&A NEITHER EXPRESSES OR IMPLIES COMPLETE ACCURACY OF SUPPLIED DATA.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXISTING PHASE ROTATION AND PHASING OF THE EXISTING ELECTRICAL SYSTEMS, PRIOR TO REMOVAL OF ANY EQUIPMENT OR CONDUCTORS. PROVIDE QUALIFIED PERSONNEL AND THE APPROPRIATE TESTING EQUIPMENT AS REQUIRED TO SAFELY PERFORM THIS PHASING. THE CONTRACTOR SHALL MATCH THE EXISTING PHASE ROTATION AND PHASING WHEN INSTALLING EQUIPMENT OR CONDUCTORS IN EXISTING ELECTRICAL SYSTEMS.
12. WHERE NEW EQUIPMENT TO BE INSTALLED DOES NOT OCCUPY THE SAME PHYSICAL LOCATION AS THE EXISTING EQUIPMENT TO BE REMOVED, THE CONTRACTOR SHALL HAVE ALL NEW SYSTEMS AND EQUIPMENT INSTALLED, TESTED AND PREPARED FOR ENERGIZING BEFORE REMOVING INDICATED EXISTING EQUIPMENT. WHERE THE NEW EQUIPMENT IS TO OCCUPY THE SAME PHYSICAL LOCATION AS THE EXISTING EQUIPMENT, CONTRACTOR SHALL INSTALL AS MUCH OF THE NEW SYSTEM AS PRACTICAL WITHOUT AN OUTAGE. ALL NEW EQUIPMENT SHALL BE ON SITE AND TESTED PRIOR TO AN OUTAGE ON ANY SYSTEM OR EQUIPMENT. COORDINATE ANY REQUIRED OUTAGES WITH BES PRIOR TO THE REMOVAL OF THE EXISTING EQUIPMENT.
13. ALL CONTACTS ARE SHOWN IN THE DE-ENERGIZED STATE, UNLESS OTHERWISE NOTED.

ABBREVIATIONS

21	-	DISTANCE RELAY
26Q	-	HOT OIL THERMOMETER
25	-	SYNCHRONIZING CHECK RELAY
27	-	UNDERVOLTAGE RELAY
43	-	SELECTOR SWITCH
43RE	-	SELECTION SWITCH REMOTE ENABLE
49T	-	HOT SPOT THERMOMETER
50 RELAY	-	INSTANTANEOUS PHASE OVERCURRENT
50BF	-	BREAKER FAILURE RELAY
50G RELAY	-	INSTANTANEOUS GROUND OVERCURRENT
51	-	TIME PHASE OVERCURRENT RELAY
51G	-	TIME GROUND OVERCURRENT RELAY
52	-	BREAKER AUXILIARY CONTACT
62	-	TIME DELAY RELAY
63	-	PRESSURE RELAY
63P	-	MECHANICAL PRESSURE RELIEF
63X	-	SUDDEN PRESSURE RELIEF
79	-	AC RECLOSING RELAY
86	-	LOCKOUT RELAY
86BF	-	BREAKER FAILURE LOCKOUT
86BU	-	BACKUP LOCKOUT
86CAP/FLR	-	BACKUP CAP BANK FAILURE
86CSF	-	CIRCUIT SWITCHER FAILURE LOCKOUT
86HBD	-	HIGH SIDE BUS DIFF LOCKOUT
86T	-	TRANSFORMER DIFF LOCKOUT
87	-	DIFFERENTIAL RELAY
87B	-	BUS DIFFERENTIAL RELAY
87T	-	TRANSFORMER DIFFERENTIAL RELAY
89	-	DISC. SWITCH CONTACT
96	-	RECLOSE BLOCKING RELAY
201C	-	SCADA RTU CLOSING RELAY
201T	-	SCADA RTU TRIPPING RELAY
421P	-	SEL 421 PRIMARY LINE RELAY
421BU	-	SEL 421 BACK-UP LINE RELAY
2506P (BLOCK CLOSE)	-	SEL 2506 PRIMARY AUX. RELAY

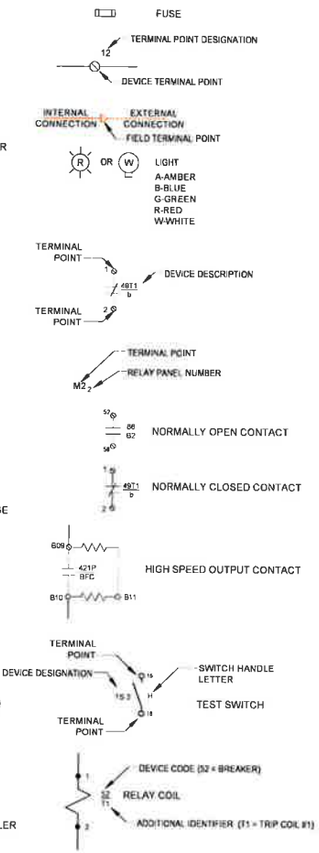
GENERAL LEGEND

- PROVIDE AND INSTALL
- EXISTING
- REMOVE
- EQUIPMENT BOUNDARY

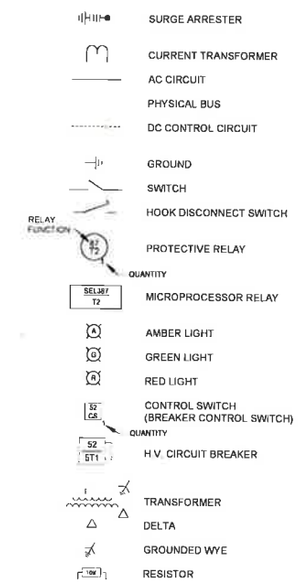
ABBREVIATIONS (CONT.)

ABGO	-	AIR BREAK GANG OPERATED
AIL	-	AMBER INDICATION LAMP
AL,ALUM	-	ALUMINUM
AMP	-	AMPERE
ANN	-	ANNUNCIATOR
ATS	-	AUTOMATIC TRANSFER SWITCH
AWG	-	AMERICAN WIRE GAUGE
BES	-	BEACHES ENERGY SERVICES
BF	-	BREAKER FAILURE
BKR, BRKR	-	BREAKER
BLK	-	BLOCK
C	-	CONDUIT
CCM	-	CLOSE COIL MONITOR
CCVT	-	COUPLING CAPACITOR VOLTAGE XFMR
CS	-	CONTROL SWITCH
CT	-	CURRENT TRANSFORMER
CTRL	-	CONTROL
CH	-	CHANNEL
CKT	-	CIRCUIT
CKT SW	-	CIRCUIT SWITCHER
COMM	-	COMMUNICATION
CU	-	COPPER
CYC	-	CYCLE
DAM	-	DEMAND AMMETER
DIFF	-	DIFFERENTIAL
DTT	-	DIRECT TRANSFER TRIP
EA	-	EACH
FU	-	FUSE
FUT	-	FUTURE
DWG	-	DRAWING
FDR	-	FEEDER
FLR	-	FAILURE
FT	-	FEET
GALV	-	GALVANIZED
GND,GRD	-	GROUND
HBD	-	HIGH BUS DIFFERENTIAL
IND	-	INDICATION
INIT	-	INITIATE
JB	-	JUNCTION BOX
kcmil	-	THOUSAND CIRCULAR MILS
kV	-	KILOVOLT
LTS	-	LIGHTS
LO	-	LOCKOUT
MCOV	-	MAXIMUM CONTINUOUS OVER VOLTAGE
MO	-	MOTOR OPERATOR
MR	-	MAX RATIO
NC	-	NORMALLY CLOSED
NO	-	NORMALLY OPEN
NTS	-	NOT TO SCALE
OCB	-	OIL CIRCUIT BREAKER
PB	-	PUSH BUTTON
PH	-	PHASE
PLC	-	POWER LINE CARRIER
PNL	-	PANEL
POT	-	POTENTIAL
PT	-	POTENTIAL TRANSFORMER
RE	-	REMOTE ENABLE
RGS	-	RIGID GALVANIZED STEEL
RTU	-	REMOTE TERMINAL UNIT
SCADA	-	SUPERVISORY AND DATA ACQUISITION
RMV	-	REMOVE
RS1	-	RELAY SET 1
RS2	-	RELAY SET 2
SA	-	SURGE ARRESTER
SCS	-	SCADA CONTROL SWITCH
SEC	-	SECONDARY
SP	-	SPARE
SR	-	SET RATIO
SS	-	STATION SERVICE
SSC	-	SYNCHRONOUS SWITCHING CONTROLLER
SW	-	SWITCH
SWBD	-	SWITCHBOARD
SYN	-	SYNCHRONOUS
TC	-	TRIP COIL
TCM	-	TRIP COIL MONITOR
TS	-	TEST SWITCH
TYP	-	TYPICAL
TX	-	TRANSFORMER
VARM	-	VARMETER
VM	-	VOLT METER
WM	-	WATT METER
XFMR	-	TRANSFORMER

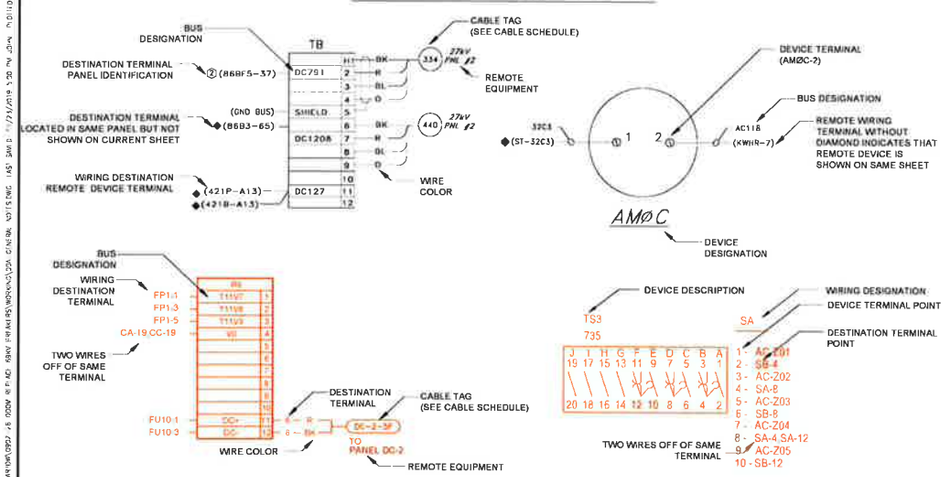
SCHEMATIC LEGEND



SINGLE LINE LEGEND



WIRING DIAGRAM LEGEND



WIRE COLOR ABBREVIATIONS

BK	-	BLACK
BL	-	BLUE
BL-BK	-	BLUE WITH BLACK STRIPE
BK-R	-	BLACK WITH RED STRIPE
G	-	GREEN
G-BK	-	GREEN WITH BLACK STRIPE
GY	-	GRAY
O	-	ORANGE
O-BK	-	ORANGE WITH BLACK STRIPE
R	-	RED
R-BK	-	RED WITH BLACK STRIPE
W	-	WHITE
W-BK	-	WHITE WITH BLACK STRIPE
Y	-	YELLOW
Y-BK	-	YELLOW WITH BLACK STRIPE
BR	-	BROWN
BR-BK	-	BROWN WITH BLACK STRIPE

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS

NO.	BY	DATE	DESCRIPTION	NO.	BY	DATE	DESCRIPTION

CHECK:
INITIALS/DATE RECORD

	BY	DATE
DRAWN	JPC	JUL Y 2016
DESIGNED	JPC	JUL Y 2016
CHECKED		

ENGINEER OF RECORD: JOHN P. CRAWFORD PE # 80668

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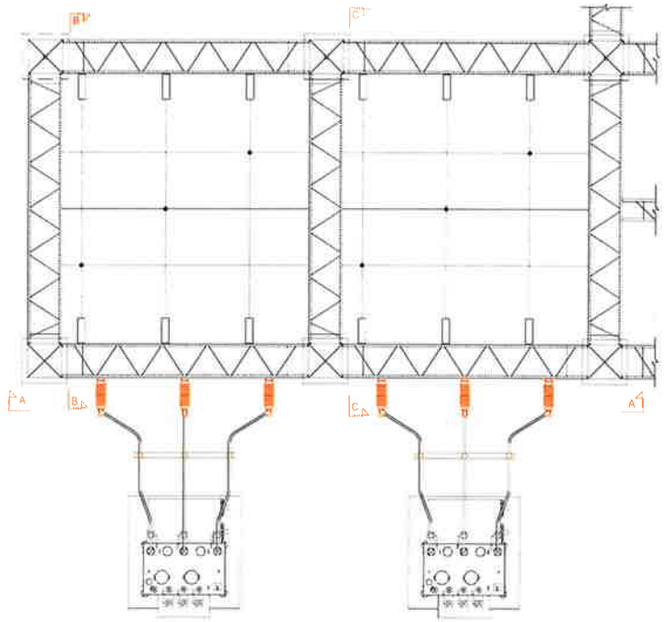
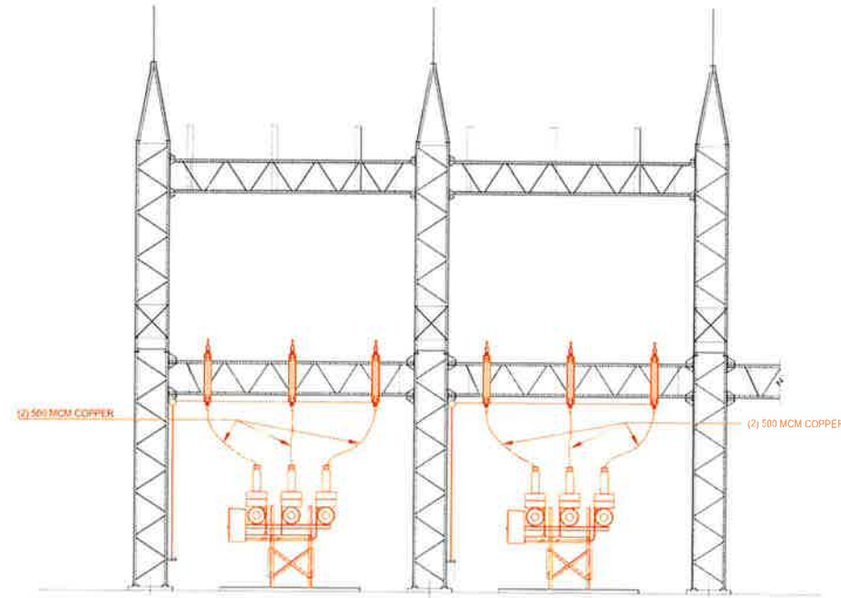
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

GENERAL NOTES AND LEGEND

NO.
PROJECT # C902-26
SCALE: NONE
DWG # GN
SHEET NO.



69 kV PARTIAL PLAN



SECTION A-A

NOTES:
1. DRAWINGS OF STEEL, SWITCHES, BUS AND EQUIPMENT TAKEN FROM LIMITED FIELD MEASUREMENTS. DIMENSIONS NEED TO BE FIELD VERIFIED BY THE CONTRACTOR.

CONTRACTOR NOTES:
1. INSTALL OWNER FURNISHED CIRCUIT BREAKERS ON EXISTING FOUNDATIONS.
2. INSTALL OWNER FURNISHED SWITCHES.
3. PROVIDE NEW CONNECTIONS, BUS, INSULATORS, AND TERMINATIONS AS NEEDED TO RECONNECT TO EXISTING BUSSES.

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS

NO.	BY	DATE	DESCRIPTION	NO.	BY	DATE	DESCRIPTION

CHECK

ENGINEERING NOTES	BY	DATE
DRAWN	JJT	JULY 2019
DESIGN	JJT	JULY 2019
CHECKED		

ENGINEER OF RECORD: JOHN P. FRANKS FILE # 36888

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ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

69 kV ELECTRICAL PLAN
AND SECTIONS

JOB # 0902-26
SCALE

DWG # E01
SHEET NO 1 OF 1

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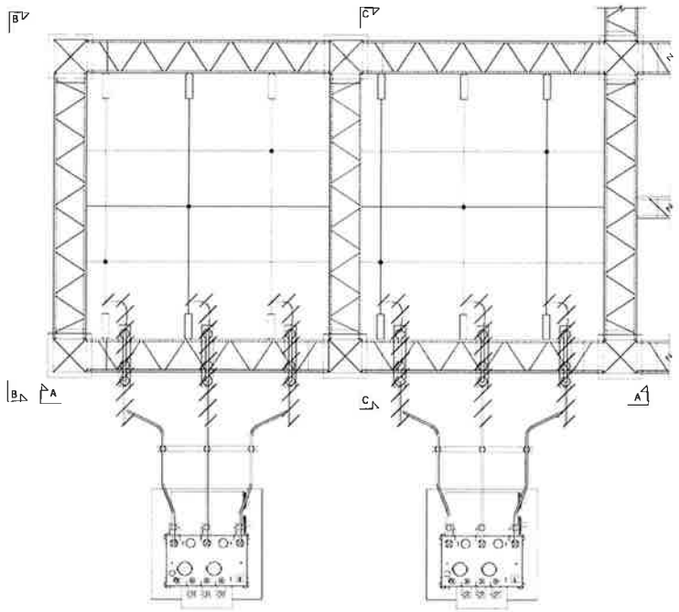
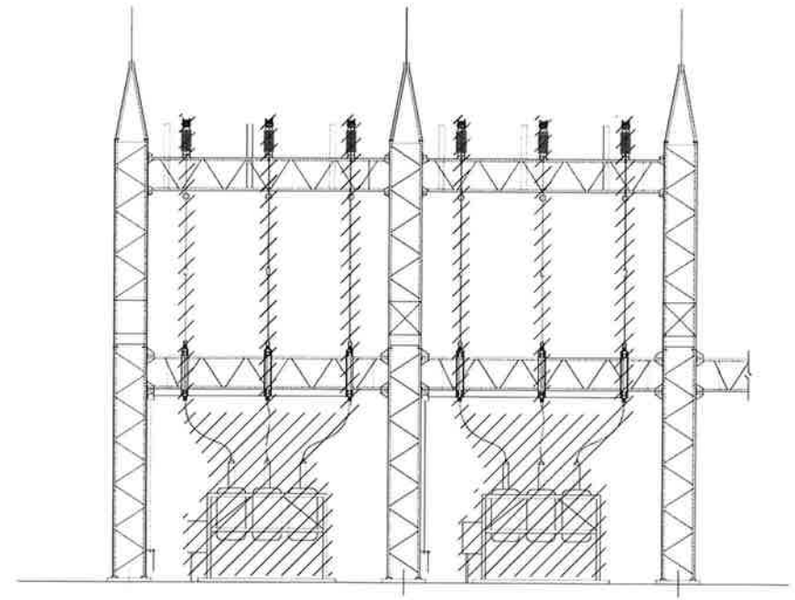


69 kV PARTIAL PLAN



SECTION A-A

NOTES:
1. DRAWINGS OF STEEL, SWITCHES, BUS AND EQUIPMENT TAKEN FROM LIMITED FIELD MEASUREMENTS. DIMENSIONS NEED TO BE FIELD VERIFIED BY THE CONTRACTOR.

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS							
NO.	BY	DATE	DESCRIPTION	NO.	BY	DATE	DESCRIPTION

ENGINEERING RECORD		
	BY	DATE
DRAWN	JDP	JULY 2018
DESIGNED	JDP	JULY 2018
CHECKED		

ENGINEER OF RECORD JOHN P. FRANKE P.E. # 82666

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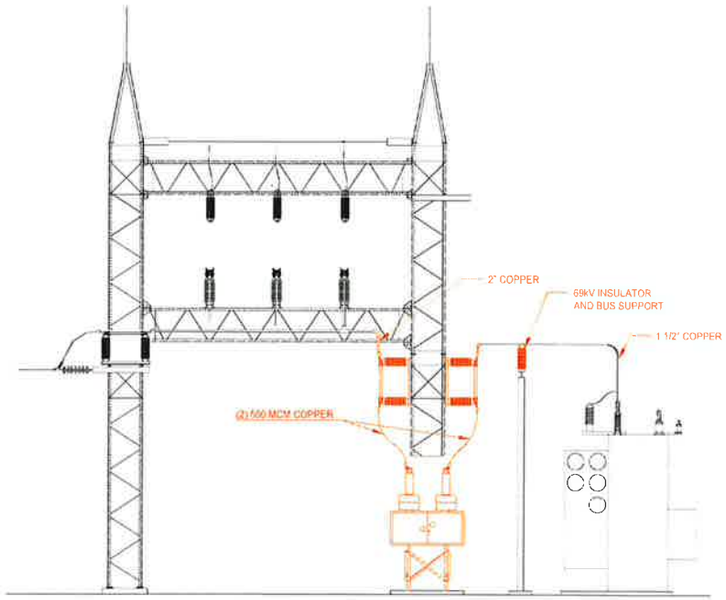
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

69 kV ELECTRICAL PLAN
AND SECTIONS

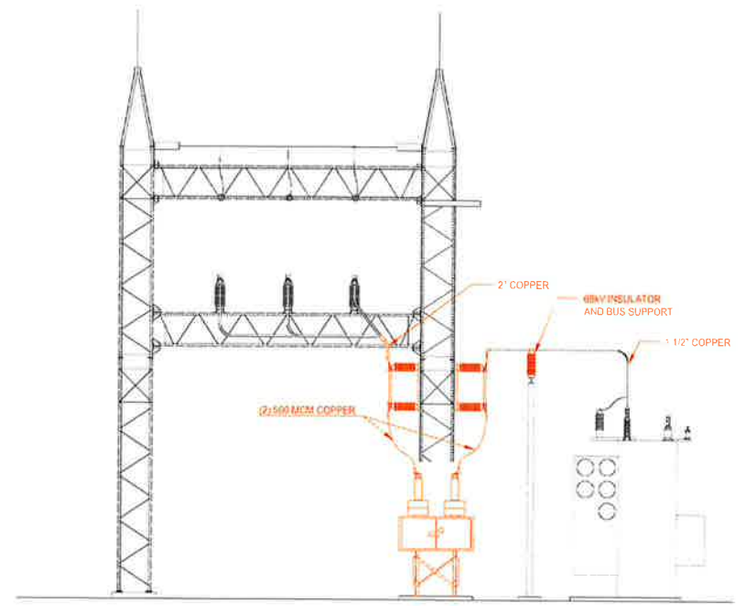
W.O. #
PROJECT # 0902-26
SCALE:

DWG # E01_RMV
SHEET NO 1 OF 1

FILE NAME: F:\CLIENT\0902 SUNTOW\0902-26 ODOM REPLACE 69KV BREAKERS\WORKING\0018 - RMV-PLAN_AND_SECTIONS.DWG LAST SAVED: 11/11/2018 11:00 AM JOHN PLOTTED: 11/23/2018 5:03 PM



SECTION B-B



SECTION C-C

NOTES:
1. DRAWINGS OF STEEL, SWITCHES, BUS AND EQUIPMENT TAKEN FROM LIMITED FIELD MEASUREMENTS. DIMENSIONS NEED TO BE FIELD VERIFIED BY THE CONTRACTOR.

CONTRACTOR NOTES:
1. INSTALL OWNER FURNISHED CIRCUIT BREAKERS ON EXISTING FOUNDATIONS.
2. INSTALL OWNER FURNISHED SWITCHES.
3. PROVIDE NEW CONNECTIONS, BUS, INSULATORS, AND TERMINATIONS AS NEEDED TO RECONNECT TO EXISTING BUSSES.

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS

NO	APP'D	DATE	DESCRIPTION	NO	APP'D	DATE	DESCRIPTION

CHECK

ENGINEERING RECORD

		DATE
DRAWN	JCF	JULY 2019
DESIGNED	JCF	JULY 2019
CHECKED		

ENGINEER OF RECORD JOHN D. FRANKE P.E. # 63688

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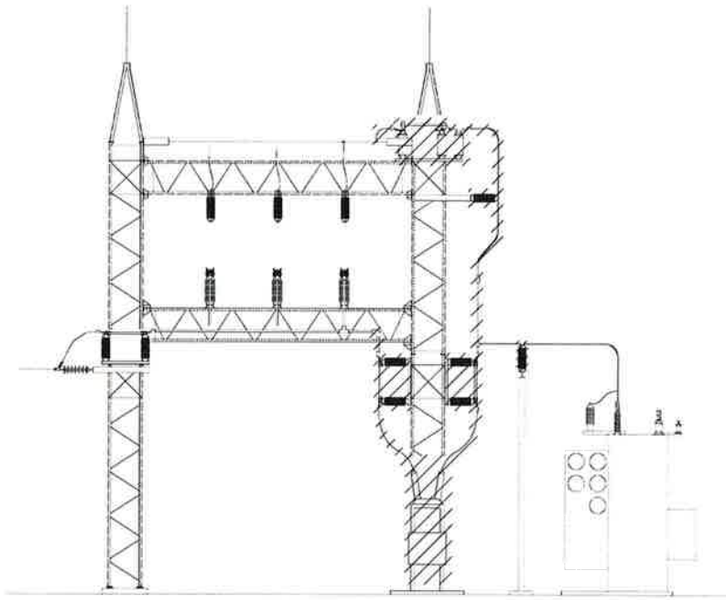
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

SECTIONS

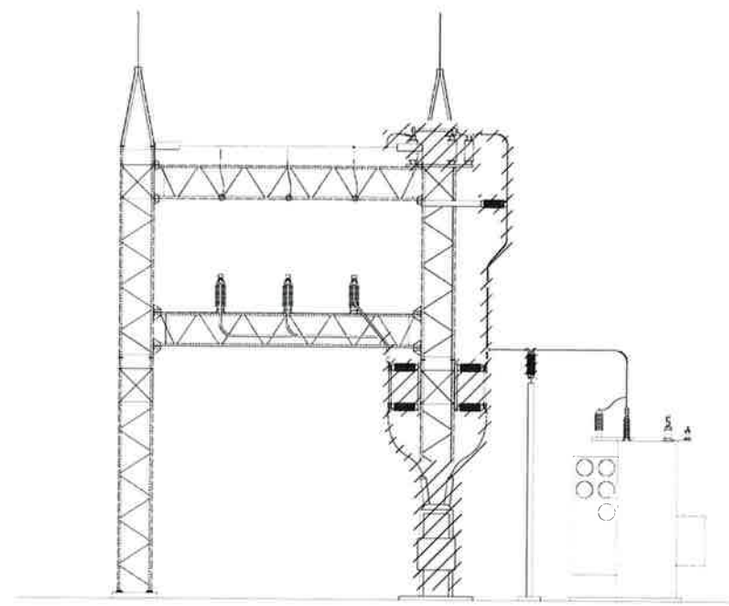
W.O. #
PROJECT # 0902-26
SCALE:

DWG # E02
SHEET NO 1 OF 1

FILE NAME: F:\ELECTURIS\0902-BARTOW\0902-26 ODOM REPLACE 69KV BREAKERS\WORKING\E02 - SECTIONS.DWG LAST SAVED: 11/1/2019 11:00 AM JDHN PLOTTED: 11/23/2019 5:02 PM



SECTION B-B



SECTION C-C

NOTES:
1. DRAWINGS OF STEEL, SWITCHES, BUS AND EQUIPMENT TAKEN FROM LIMITED FIELD MEASUREMENTS. DIMENSIONS NEED TO BE FIELD VERIFIED BY THE CONTRACTOR.

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS

REV NO	BY	DATE	DESCRIPTION	REV NO	BY	DATE	DESCRIPTION

ENGINEERING RECORD

	BY	DATE
DRAWN	JCP	JUL 2018
DESIGNED	JCP	JUL 2018
CHECKED		

ENGINEER OF RECORD JOHN P. FRANKO P.E. # 80686

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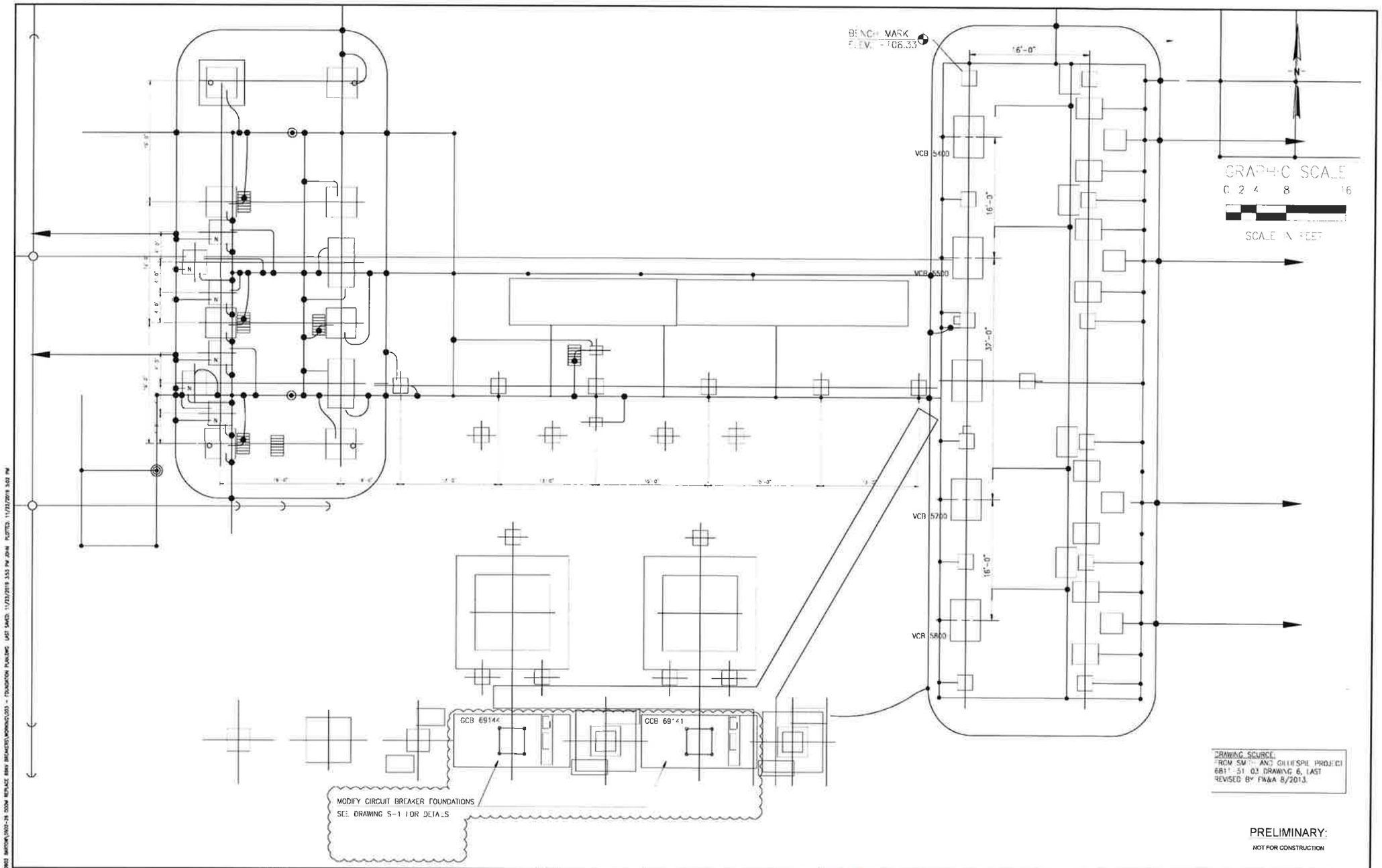
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

SECTIONS

W.O. #
PROJECT # 0902-26
SCALE

DWG # E02_RMV
SHEET NO 1 OF 1

FILE NAME: F:\CLIENT\0902 BAYCOM\0902-26 ODOM REPLACE 69KV BREAKERS\WORKING\0200 - RMV-SECTIONS.DWG LAST SAVED: 11/11/2019 11:00 AM JOHN PLOTTED: 11/23/2019 5:02 PM



REVISIONS							
REV NO	BY	DATE	DESCRIPTION	REV NO	BY	DATE	DESCRIPTION

ENGINEERING RECORDS

	BY	DATE
DRAWN	JW	JULY 2019
DESIGNED	JW	JULY 2019
CHECKED		

ENGINEER OF RECORD: JOHN P. FRANKE P.E. # 63686

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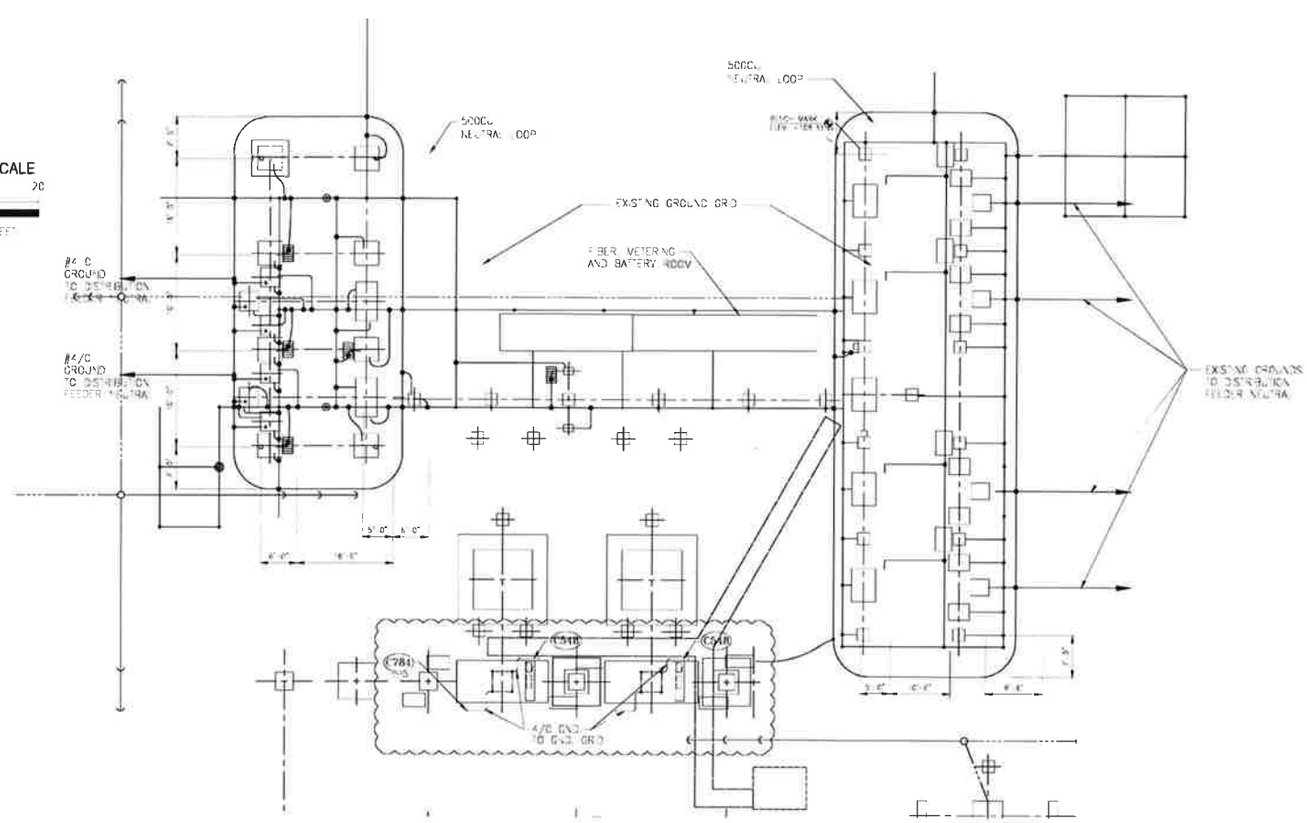
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

FOUNDATION PLAN

W.O. #: –
PROJECT #: 0902-28
SCALE: 3/16"=1'-0"

DWG #: E03
SHEET NO: 1 OF 1

FILE NAME: F:\CLIENTS\0902 BARTOW\0902-28 ODOM REPLACE 69KV BREAKERS\WORKING\03 - FOUNDATION PLAN.DWG LAST SAVED: 11/22/2019 3:53 PM JOHN PLOTTED: 11/22/2019 3:02 PM

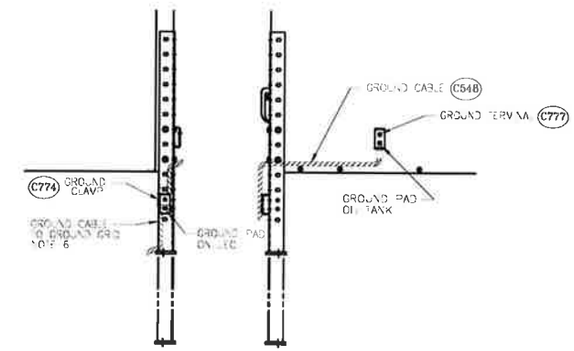


PARTIAL GROUNDING PLAN

GENERAL GROUNDING NOTES:

NOTES:

1. ALL EQUIPMENT IN THE SUBSTATION SHALL BE GROUNDED IN ACCORDANCE WITH N.E.C., IEEE STD. 142, IEEE STD. 837 AND AS SHOWN ON THE DRAWINGS.
2. EXOTHERMIC WELDS SHALL BE USED FOR CONNECTIONS BELOW GRADE. COMPRESSION CONNECTORS SHALL BE USED FOR CONNECTIONS ABOVE GRADE.
3. ALL STRUCTURE GROUND RISERS AND EQUIPMENT GROUND CONNECTIONS SHALL BE #4/0 SOFT DRAWN BARE COPPER UNLESS OTHERWISE INDICATED.
4. NOMINAL GRID DIMENSIONS ARE SHOWN. ADJUST GRID SPACING AS INDICATED TO AVOID CONFLICTS WITH EQUIPMENT AND STRUCTURE FOUNDATIONS.
5. IF EXISTING GROUNDING CONNECTIONS ARE DISTURBED, THE GROUNDING CONNECTIONS SHALL BE REINSTALLED WITH EXOTHERMIC CONNECTIONS.
6. CLEAN EXISTING GROUND RISER PRIOR TO MAKING CONNECTION.



TYPICAL EQUIPMENT GROUNDING
(TWO LOCATIONS, EACH BREAKER)
NTS

GROUNDING MATERIALS

C648 GROUND CONDUCTOR, #4/0 AWG BARE COPPER, SOFT DRAWN.

C783 EXOTHERMIC WELD CONNECTION, TEE, HORIZONTAL, CABLE TO CABLE. CADWELD TYPE TA.

C784 EXOTHERMIC WELD CONNECTION, CROSS, HORIZONTAL, CABLE TO CABLE. CADWELD TYPE XE.

C774 GROUND CLAMP, TWO #4/0 CABLES TO FLAT. BURNDY GC2929

C777 TERMINAL LUG, #4/0 TO NEMA 2-HOLE FLAT. BURNDY QGA-2B 2N

DRAWING SOURCE:
FROM SMITH AND GILLESPIE PROJECT 6811-97-03 DRAWING WAS LAST REVISED BY FW&A 8/2013.

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS							
REV NO	REVISED BY	DATE	DESCRIPTION	REV NO	REVISED BY	DATE	DESCRIPTION

ENGINEERING RECORD

	BY	DATE
DRAWN	JDR	JULY 2018
DESIGNED	JDR	JULY 2018
CHECKED		

ENGINEER OF RECORD: JOHN D. FRANKO P.E. # 83686

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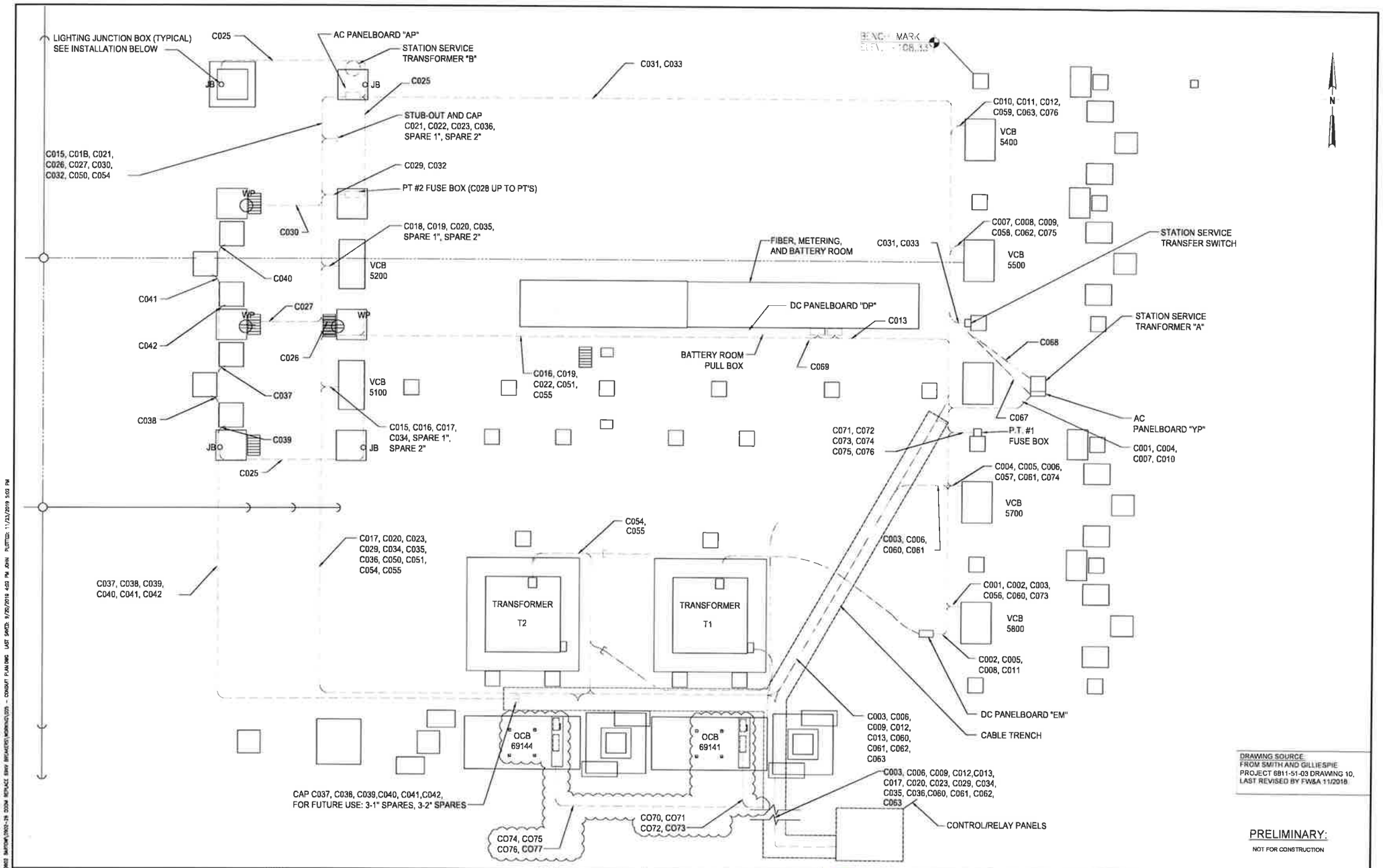
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

PARTIAL GROUNDING PLAN

W.O. #
PROJECT # 09C2-26
SCALE: 1"=10'-0"

DWG # E04
SHEET NO 1 OF 1

FILE NAME: F:\CLIENTS\0902 SMITHVILLE\09C2-26 ODOM REPLACE 69KV BREAKERS\WORKING\04 - GROUNDING PLAN.DWG LAST SAVED: 8/20/2018 4:00 PM JOHN PLOTTED: 11/21/2018 9:02 PM



DRAWING SOURCE
FROM SMITH AND GILLIESPIE
PROJECT 6811-51-03 DRAWING 10, LAST REVISED BY FW&A 11/2018.

PRELIMINARY:
NOT FOR CONSTRUCTION

REV NO	APPR BY	DATE	DESCRIPTION	REV NO	APPR BY	DATE	DESCRIPTION
			REVISIONS				

ENGINEER OF RECORD JOHN P. FRANKE P.E. # 63688

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ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

CABLE AND CONDUIT ROUTING PLAN

PROJECT # 0902-26
SCALE: 3/16"=1'-0"
DWG # E05
SHEET NO 1 OF 1

FILE NAME: F:\CLIENT\0902 BARTOW\0902-26 SUBA REPLACE 69KV BREAKERS\WORKING\025 - CONDUIT PLAN.DWG LAST SAVED: 9/20/2018 4:02 PM JOHN PLOTTED: 11/23/2019 5:03 PM

CONDUIT AND CABLE SCHEDULE

WIRE NO.	FUNCTION	TERMINATION FROM	TERMINATION TO	CABLE TYPE	CABLE SIZE	CABLE LENGTH	CONDUIT RUN NO.	CONDUIT SIZE	CONDUIT LENGTH
101	VCB 5800 120/240 VAC HEATER/MOTOR	AC PANELBOARD "YP"	VCB 5800 CONTROL CABINET	RHW	4-1/C#12		C001	1"	
102	VCB 5800 125 VDC SUPPLY	DC PANELBOARD "EM"	VCB 5800 CONTROL CABINET	RHW	2-1/C#10		C002	1"	
103	VCB 5800 CONTROLS	CONTROL/RELAY PANEL NO. 1	VCB 5800 CONTROL CABINET	THWN	12/C#10		C003	2"	
104	VCB 5700 120/240 VAC HEATER/MOTOR	AC PANELBOARD "YP"	VCB 5700 CONTROL CABINET	RHW	4-1/C#12		C004	1"	
105	VCB 5700 125 VDC SUPPLY	DC PANELBOARD "EM"	VCB 5700 CONTROL CABINET	RHW	2-1/C#10		C005	1"	
106	VCB 5700 CONTROLS	CONTROL/RELAY PANEL NO. 1	VCB 5700 CONTROL CABINET	THWN	12/C#10		C006	2"	
107	VCB 5500 120/240 VAC HEATER/MOTOR	AC PANELBOARD "YP"	VCB 5500 CONTROL CABINET	RHW	4-1/C#12		C007	1"	
108	VCB 5500 125 VDC SUPPLY	DC PANELBOARD "EM"	VCB 5500 CONTROL CABINET	RHW	2-1/C#10		C008	1"	
109	VCB 5500 CONTROLS	CONTROL/RELAY PANEL NO. 1	VCB 5500 CONTROL CABINET	THWN	12/C#10		C009	2"	
110	VCB 5400 120/240 VAC HEATER/MOTOR	AC PANELBOARD "YP"	VCB 5400 CONTROL CABINET	RHW	4-1/C#12		C010	1"	
111	VCB 5400 125 VDC SUPPLY	DC PANELBOARD "EM"	VCB 5400 CONTROL CABINET	RHW	2-1/C#10		C011	1"	
112	VCB 5400 CONTROLS	CONTROL/RELAY PANEL NO. 1	VCB 5400 CONTROL CABINET	THWN	12/C#10		C012	2"	
113	CONTROL/RELAY PANEL 125 VDC SUPPLY	DC PANELBOARD "DP"	CONTROL/RELAY PANEL NO. 1	RHW	2-1/C#10		C013	2"	
	CITY RTU 125 VDC SUPPLY	DC PANELBOARD "DP"	C.O.B. RTU	THWN	4/C#12		C014	1"	
	SPARE	BATT ROOM PULL BOX	VCB 5800 CONTROL CABINET				C056	2"	
	SPARE	BATT ROOM PULL BOX	VCB 5700 CONTROL CABINET				C057	2"	
	SPARE	BATT ROOM PULL BOX	VCB 5500 CONTROL CABINET				C058	2"	
	SPARE	BATT ROOM PULL BOX	VCB 5400 CONTROL CABINET				C059	2"	
114	VCB 5800 METERING C.T.	CONTROL/RELAY PANEL NO.3	VCB 5800 CONTROL CABINET	THWN	4/C#10		C060	1"	
115	VCB 5700 METERING C.T.	CONTROL/RELAY PANEL NO.3	VCB 5700 CONTROL CABINET	THWN	4/C#10		C061	1"	
116	VCB 5500 METERING C.T.	CONTROL/RELAY PANEL NO 3	VCB 5500 CONTROL CABINET	THWN	4/C#10		C062	1"	
117	VCB 5400 METERING C.T.	CONTROL/RELAY PANEL NO 3	VCB 5400 CONTROL CABINET	THWN	4/C#10		C063	1"	
118	P.T. FUSE BOX HEATER	A.C. PANELBOARD "YP"	P.T. #1 FUSE BOX				C070	1"	
PT1	12kV EAST BUS POTENTIAL	P.T. #1 120/208+	P.T. #1 FUSE BOX	RHW	4-1/C#10		C071	1"	
PT1	12kV EAST BUS POTENTIAL	P.T. #1 FUSE BOX	CONTROL/RELAY PANEL NO. 1	THWN	4/C#10		C072	1"	
121	VCB 5800 RELAY POTENTIAL	P.T. #1 FUSE BOX	VCB 5800 CONTROL CABINET	THWN	4/C#12		C073	1"	40'
122	VCB 5700 RELAY POTENTIAL	P.T. #1 FUSE BOX	VCB 5700 CONTROL CABINET	THWN	4/C#12		C074	1"	20'
123	VCB 5500 RELAY POTENTIAL	P.T. #1 FUSE BOX	VCB 5500 CONTROL CABINET	THWN	4/C#12		C075	1"	40'
124	VCB 5400 RELAY POTENTIAL	P.T. #1 FUSE BOX	VCB 5400 CONTROL CABINET	THWN	4/C#12		C076	1"	50'
201	VCB 5100 120/240 VAC HEATER/MOTOR	AC PANELBOARD "AP"	OCB 5100 CONTROL CABINET	RHW	4-1/C#12		C015	1"	
202	VCB 5100 125 VDC SUPPLY	DC PANELBOARD "DP"	OCB 5100 CONTROL CABINET	RHW	2-1/C#10		C016	1"	
203	VCB 5100 CONTROLS	CONTROL/RELAY PANEL NO. 3	OCB 5100 CONTROL CABINET	THWN	12/C#10		C017	2"	
204	VCB 5200 120/240 VAC HEATER/MOTOR	AC PANELBOARD "AP"	OCB 5200 CONTROL CABINET	RHW	4-1/C#12		C018	1"	
205	VCB 5200 125 VDC SUPPLY	DC PANELBOARD "DP"	OCB 5200 CONTROL CABINET	RHW	2-1/C#10		C019	1"	
206	VCB 5200 CONTROLS	CONTROL/RELAY PANEL NO. 3	OCB 5200 CONTROL CABINET	THWN	12/C#10		C020	2"	
207	-	AC PANELBOARD "AP"	STUB-OUT (FUTURE VCB 5300)	-	-		C021	1"	
208	-	DC PANELBOARD "DP"	STUB OUT (FUTURE VCB 5300)	-	-		C022	1"	
209	-	CONTROL/RELAY PANEL NO. 3	STUB OUT (FUTURE VCB 5300)	-	-		C023	2"	

CONDUIT AND CABLE SCHEDULE

WIRE NO.	FUNCTION	TERMINATION FROM	TERMINATION TO	CABLE TYPE	CABLE SIZE	CABLE LENGTH	CONDUIT RUN NO.	CONDUIT SIZE	CONDUIT LENGTH
	SPARE	DC PANELBOARD "DP"	BATT ROOM PULL BOX				C024	1"	
211	SUBSTATION LIGHTS	AC PANELBOARD "AP"	JUNCTION BOXES	RHW	3-1/C#10		C025	1"	
212	CONVENIENCE OUTLET-EAST	AC PANELBOARD "AP"	120 VAC RECEPTACLE	RHW	3-1/C#10		C026	1"	
213	CONVENIENCE OUTLET-WEST	AC PANELBOARD "AP"	120 VAC RECEPTACLE	RHW	3-1/C#10		C027	1"	
214	BUS POTENTIAL 120/208 VAC	P.T. #2 TRANSFORMER SEC	P.T. #2 FUSE BOX	RHW	6-1/C#10		C028	1"	
215	BUS POTENTIAL 120/208 VAC	P.T. #2 FUSE BOX	CONTROL/RELAY PANEL NO. 1	THWN	4/C#10		C029	1"	
216	230 VAC OUTLET	AC PANELBOARD "AP"	230 VAC RECEPTACLE	RHW	4-1/C#12		C030	1"	
217	STATION POWER SUPPLY "B"	S.S. TRANSFER SWITCH	AC PANELBOARD "AP"	RHW	3-1/C#4/0		C031	2"	
218	P.T. FUSE BOX HEATER	AC PANELBOARD "AP"	P.T. #2 FUSE BOX	RHW	3-1/C#12		C032	1"	
219	STATION POWER SUPPLY "B"	STATION SERVICE TRANSFORMER "B"	S.S. TRANSFER SWITCH	RHW	3-1/C#4/0		C033	2"	
220	VCB 5100 RELAYING C.T.	VCB 5100 CONTROL CABINET	CONTROL/RELAY PANEL NO. 3	THWN	4/C#10		C034	1"	
221	VCB 5200 RELAYING C.T.	VCB 5200 CONTROL CABINET	CONTROL/RELAY PANEL NO. 3	THWN	4/C#10		C035	1"	
222	-	STUB-OUT (FUTURE VCB 5300)	CONTROL/RELAY PANEL NO. 3	-	-		C036	1"	
223	-	CABLE TRENCH	REGULATOR 5100 A	-	-		C037	1"	
224	-	CABLE TRENCH	REGULATOR 5100 B	-	-		C038	1"	
225	-	CABLE TRENCH	REGULATOR 5100-C	-	-		C039	1"	
226	-	CABLE TRENCH	REGULATOR 5200 A	-	-		C040	1"	
227	-	CABLE TRENCH	REGULATOR 5200 B	-	-		C041	1"	
228	-	CABLE TRENCH	REGULATOR 5200-C	-	-		C042	1"	
	SPARE	DC PANELBOARD "DP"	BATT ROOM PULL BOX				C043	1"	
	SPARE	DC PANELBOARD "DP"	BATT ROOM PULL BOX				C044	1"	
	SPARE	VCB 5100	CABLE TRENCH - WEST					1"	
	SPARE	VCB 5100	CABLE TRENCH - WEST					2"	
	SPARE	VCB 5200	CABLE TRENCH - WEST					1"	
	SPARE	VCB 5200	CABLE TRENCH - WEST					2"	
	SPARE	(FUTURE) VCB 5300	CABLE TRENCH - WEST					1"	
	SPARE	(FUTURE) VCB 5300	CABLE TRENCH - WEST					2"	

DRAWING SOURCE:
FROM SMITH AND GILLIESPIE
PROJECT 6811-51-03 DRAWING 11,
LAST REVISED BY FW&A 11/2018

PRELIMINARY:
NOT FOR CONSTRUCTION

REV NO.	REV BY	DATE	DESCRIPTION	REV NO.	REV BY	DATE	DESCRIPTION

REVISIONS

CIRCUIT

INITIATING RECORD	BY	DATE
DRAWN	JP	JULY 2018
DESIGNED	JP	JULY 2018
CHECKED		

ENGINEER OF RECORD: JOHN P. FRANCE P.E. # 63588

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ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

CONDUIT AND CABLE SCHEDULE
SHEET 1

W.O. #

PROJECT # 0902-26

SCALE: NONE

DWG # E06

SHEET NO 1 OF 2

FILE NAME: F:\ELECTV\0902 SMITHVIL\0902-26 ODOM REPLACE 69KV BREAKERS\WORKING\0911 - CONDUIT_SCH.DWG LAST SAVED: 11/20/2018 4:03 PM JOHN PLOTTED: 11/21/2018 5:02 PM

CONDUIT AND CABLE SCHEDULE

WIRE NO.	FUNCTION	TERMINATION FROM	TERMINATION TO	CABLE TYPE	CABLE SIZE	CABLE LENGTH	CONDUIT RUN NO.	CONDUIT SIZE	CONDUIT LENGTH
301	OCB 69144 120/240 VAC HEATER/MOTOR	AC PANELBOARD "AP"	OCB 69144 CONTROL CABINET	RHW	3/C #10 + G		C050	3/4"	
302	OCB 69144 125 VDC SUPPLY	DC PANELBOARD "DP"	OCB 69144 CONTROL CABINET	RHW	2-1/C#10		C051	3/4"	
401	TRANSFORMER "T2" 120/240 VAC	AC PANELBOARD "AP"	TRANSFORMER "T2" CONTROL CABINET	RHW	4-1/C#8		C054	1"	
402	TRANSFORMER "T2" 125 VDC	DC PANELBOARD "DP"	TRANSFORMER "T2" CONTROL CABINET	RHW	2-1/C#10		C055	3/4"	
501	CONTROL/RELAY PANEL 125 VDC SUPPLY	CONTROL/RELAY PANEL NO. 1	CONTROL/RELAY PANEL NO. 3	RHW	2-1/C#10		-	-	
502	L.O. RELAY TRANSFER CONTACT	CONTROL/RELAY PANEL NO. 1	CONTROL/RELAY PANEL NO. 3	THWN	12/C#10		-	-	
503	BUS NO. 1 POTENTIAL TRANSFER	CONTROL/RELAY PANEL NO. 1	CONTROL/RELAY PANEL NO. 3	THWN	4/C#10		-	-	
504	BUS NO. 2 POTENTIAL TRANSFER	CONTROL/RELAY PANEL NO. 1	CONTROL/RELAY PANEL NO. 3	THWN	4/C#10		-	-	
505	TRANSFORMER "T2" NEUTRAL METERING C.T.s	CONTROL/RELAY PANEL NO. 1	CONTROL/RELAY PANEL NO. 2	THWN	4/C#10		-	-	
506	TRANSFORMER "T1" NEUTRAL METERING C.T.s	CONTROL/RELAY PANEL NO. 1	CONTROL/RELAY PANEL NO. 2	THWN	4/C#10		-	-	
657	STATION POWER SUPPLY "A"	S.S. TRANSFER SWITCH	AC PANELBOARD "YP"	RHW	3-1/C#4/0		C067	2"	
658	STATION POWER SUPPLY "A"	STATION SERVICE TRANSFORMER "A"	S.S. TRANSFER SWITCH	RHW	3-1/C#4/0		C068	2"	
	SPARE	CABLE TRENCH - NORTH	BATT ROOM PULL BOX					1"	
	SPARE	CABLE TRENCH - NORTH	BATT ROOM PULL BOX					1"	
	SPARE	CABLE TRENCH - NORTH	BATT ROOM PULL BOX					1"	
	SPARE	CABLE TRENCH - NORTH	BATT ROOM PULL BOX					1"	
	SPARE	CABLE TRENCH - NORTH	BATT ROOM PULL BOX					1"	
	SPARE	CABLE TRENCH - NORTH	BATT ROOM PULL BOX					1"	
COM-1	SOLAR PV RECLOSER COMMUNICATIONS	FIBER RACK	CONTROL/RELAY PANEL NO. 1	FIBER OPTIC	2 PR S.M.		C069	2"	
EM#	OCB 69141 DC POWER	OCB 69141 CONTROL CABINET	DC PANEL EM	THWN 2	1-#12 #16		C071	2" SCH40 PVC	
DC-1	OCB 69141 DC CONTROLS	OCB 69141 CONTROL CABINET	RELAY PANEL 1	THWN 2 SHIELDED	1-#12 #16		C071	2" SCH40 PVC	
DC-11	OCB 69141 DC CONTROLS	OCB 69141 CONTROL CABINET	RELAY PANEL 1	THWN 2 SHIELDED	1-#12 #16		C071	2" SCH40 PVC	
DC-12	OCB 69141 DC CONTROLS	OCB 69141 CONTROL CABINET	RELAY PANEL 2	THWN 2 SHIELDED	1-#12 #16		C076	2" SCH40 PVC	
CT-A	OCB 69141 CT CIRCUIT	OCB 69141 CONTROL CABINET	RELAY PANEL 2	THWN 2 SHIELDED	1-#12 #16		C072	2" SCH40 PVC	
CT-A	OCB 69141 CT CIRCUIT	OCB 69141 CONTROL CABINET	RELAY PANEL 2	THWN 2 SHIELDED	1-#12 #16		C072	2" SCH40 PVC	
YP-22	OCB 69141 240/120 V AC POWER	OCB 69141 CONTROL CABINET	AC PANEL YP	THWN 2	1-3 C#10 G		C072	2" SCH40 PVC	
	SPARE	OCB 69141 CONTROL CABINET	CABLE TRENCH				C072	2" SCH40 PVC	
S10	TRANSFORMER RELAY DC POWER	RELAY PANEL 1	RELAY PANEL 2	THWN 2	1-#12 #16				
SV1	BUS 1 LOCKOUT STATUS	RELAY PANEL 1	RELAY PANEL 2	THWN 2	1-#12 #16				
SV2	BUS 2 LOCKOUT STATUS	RELAY PANEL 1	RELAY PANEL 2	THWN 2	1-#12 #16				

CONDUIT AND CABLE SCHEDULE

WIRE NO.	FUNCTION	TERMINATION FROM	TERMINATION TO	CABLE TYPE	CABLE SIZE	CABLE LENGTH	CONDUIT RUN NO.	CONDUIT SIZE	CONDUIT LENGTH
DP-1	OCB 69144 DC POWER	OCB 69144 CONTROL CABINET	DC PANEL DP	THWN 2	1-#12 #16		C074	2" SCH40 PVC	
DC-2	OCB 69144 DC CONTROLS	OCB 69144 CONTROL CABINET	RELAY PANEL 1	THWN 2 SHIELDED	1-#12 #16		C075	2" SCH40 PVC	
DC-13	OCB 69144 DC CONTROLS	OCB 69144 CONTROL CABINET	RELAY PANEL 1	THWN 2 SHIELDED	1-#12 #16		C075	2" SCH40 PVC	
DC-14	OCB 69144 DC CONTROLS	OCB 69144 CONTROL CABINET	RELAY PANEL 2	THWN 2 SHIELDED	1-#12 #16		C074	2" SCH40 PVC	
312	OCB 69144 CT CIRCUIT	OCB 69144 CONTROL CABINET	RELAY PANEL 2	THWN 2 SHIELDED	1-#12 #16		C076	2" SCH40 PVC	
313	OCB 69144 CT CIRCUIT	OCB 69144 CONTROL CABINET	RELAY PANEL 2	THWN 2 SHIELDED	1-#12 #16		C076	2" SCH40 PVC	
YP-10	OCB 69144 240/120V AC POWER	OCB 69144 CONTROL CABINET	AC PANEL YP	THWN 2	4-3 C#10 G		C076	2" SCH40 PVC	
	SPARE	OCB 69144 CONTROL CABINET	CABLE TRENCH				C077	2" SCH40 PVC	

DRAWING SOURCE:
FROM SMITH AND GILLIESPIE
PROJECT 6811-51-03 DRAWING 11,
LAST REVISED BY FW&A 11/2018

PRELIMINARY:
NOT FOR CONSTRUCTION

REV NO.	REV BY	DATE	DESCRIPTION	REV NO.	REV BY	DATE	DESCRIPTION

ENGINEERING RECORD

	BY	DATE
DRAWN	JDR	JULY 2018
DESIGNED	JDR	JULY 2018
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ENGINEER OF RECORD: JOHN R. FRANKE P.E. # 63585

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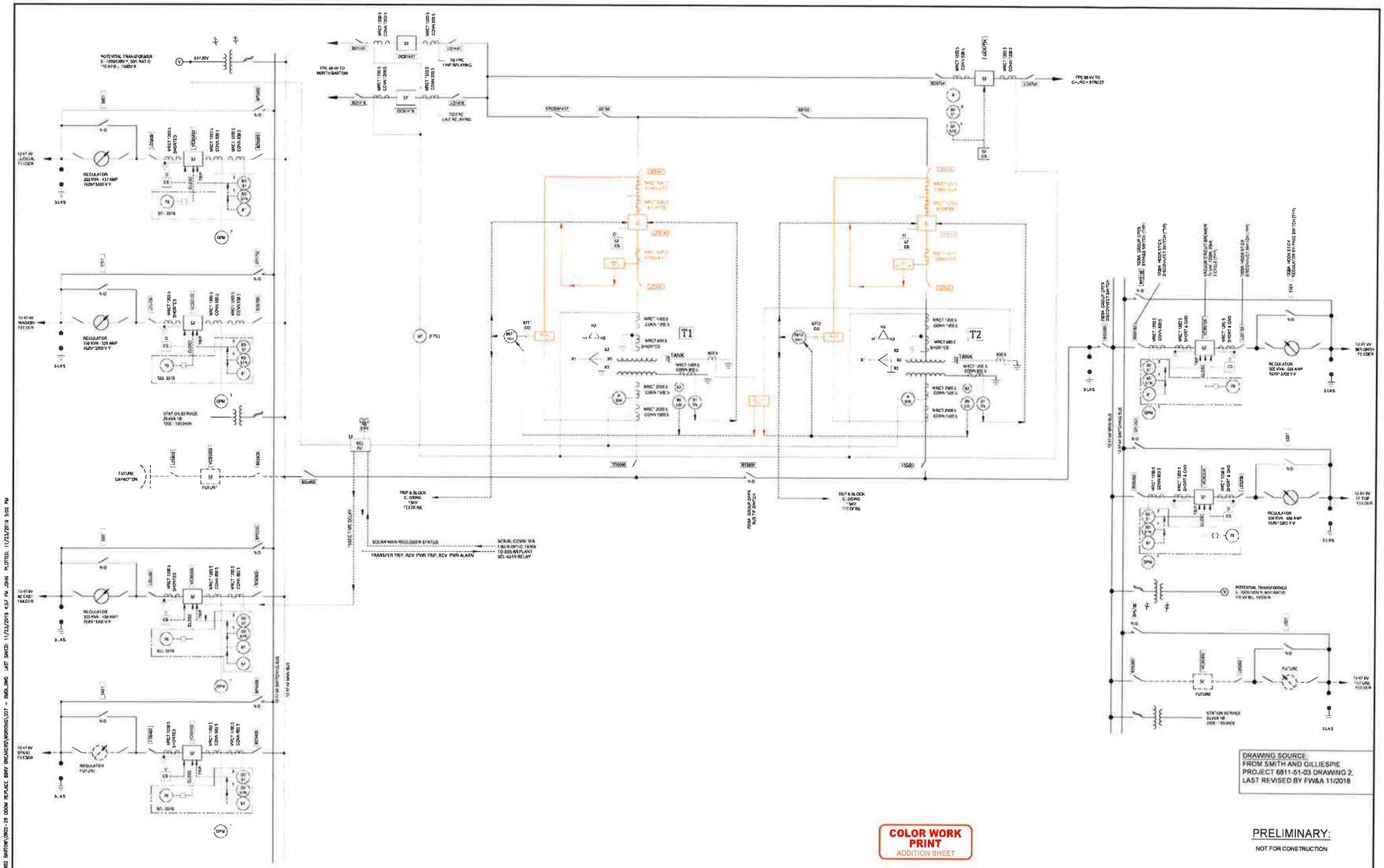
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

CONDUIT AND CABLE SCHEDULE
SHEET 2

W.O. #
PROJECT # 0902-26
SCALE: NONE

DWG # E06_RMV
SHEET NO. 2 OF 2

FILE NAME: F:\CLIENT\0902 BARTOW\0902-26 ODOM REPLACE 69KV BREAKERS\WORKING\06E03 - CONDUIT_SCHEDULE LAST SAVED: 9/20/2019 4:02 PM JOHN PLOTTED: 11/23/2019 9:02 PM



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FROM SMITH AND GILLIESPIE
PROJECT 6811-51-03 DRAWING 2.
LAST REVISED BY FW&A 11/2018

COLOR WORK PRINT
ADDITION SHEET

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS							
REV NO	REV BY	DATE	DESCRIPTION	REV NO	REV BY	DATE	DESCRIPTION

ENGINEERING RECORD	BY	DATE
DRAWN	JDF	JULY 2018
DESIGNED	JDF	JULY 2018
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ENGINEER OF RECORD: JOHN D. FRANCO FILE #: 80888

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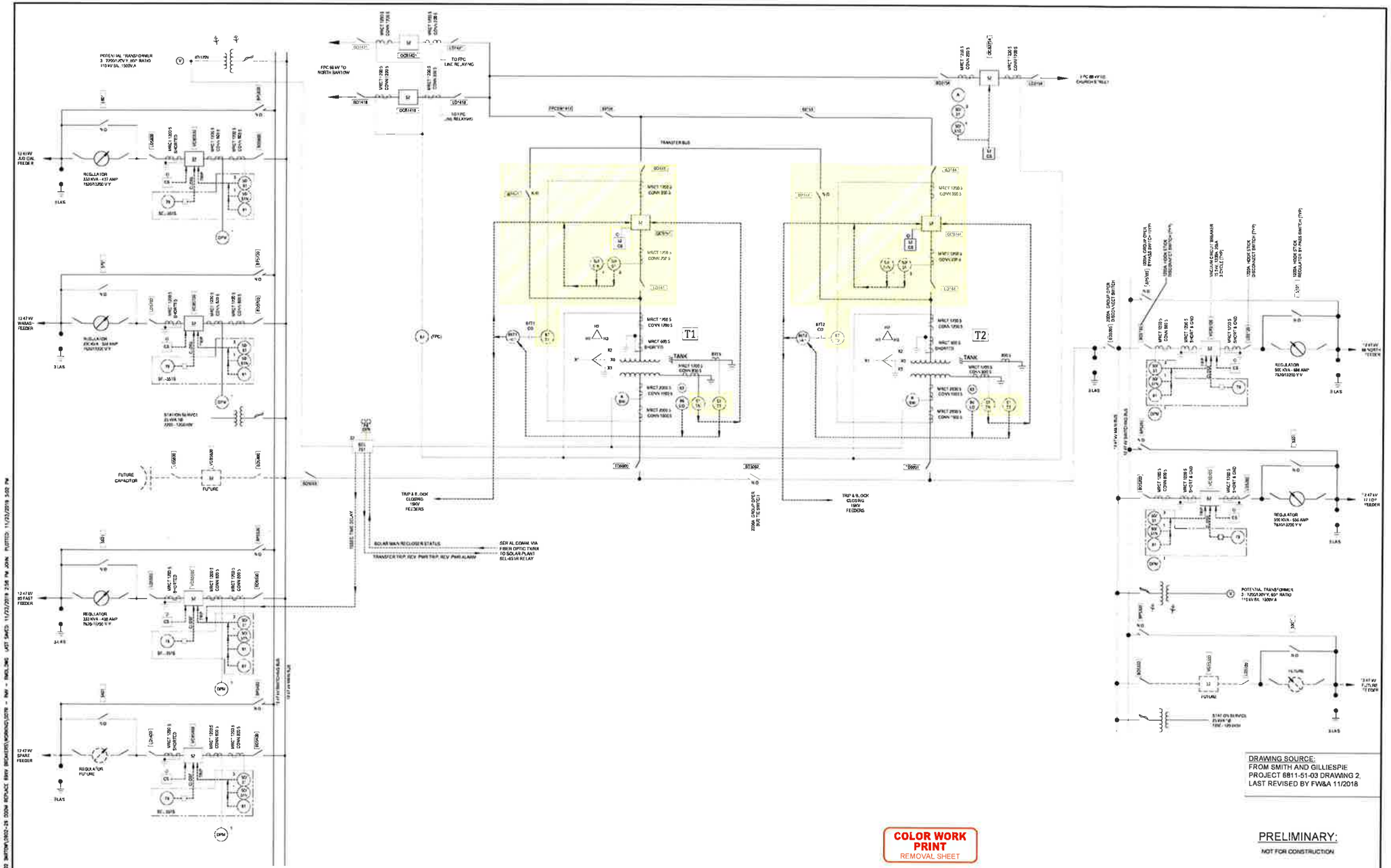
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

RELAY & METERING
ONE LINE DIAGRAM

W.O.#
PROJECT # 0502-26
SCALE NONE

DWG # E07
SHEET NO 1 OF 1

FILE NAME: F:\CLIENT\0502 BARTOW\0502-28 ODOM REPLACE 69KV BREAKERS\WORKING\107 - RWDL.DWG LAST SAVED: 11/23/2018 4:37 PM JOHN PLOTTED: 11/23/2018 5:02 PM



DRAWING SOURCE:
FROM SMITH AND GILLIESPIE
PROJECT 6811-51-03 DRAWING 2
LAST REVISED BY FW&A 11/2018

COLOR WORK PRINT
REMOVAL SHEET

PRELIMINARY:
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REVISIONS							
REV NO	APPR	DATE	DESCRIPTION	REV NO	APPR	DATE	DESCRIPTION

ENGINEERING RECORD		
	BY	DATE
DRAWN	JCP	JULY 2018
DESIGNED	JCP	JULY 2018
CHECKED		

ENGINEER OF RECORD: JOHN P. FRANKE P.E. # 63658

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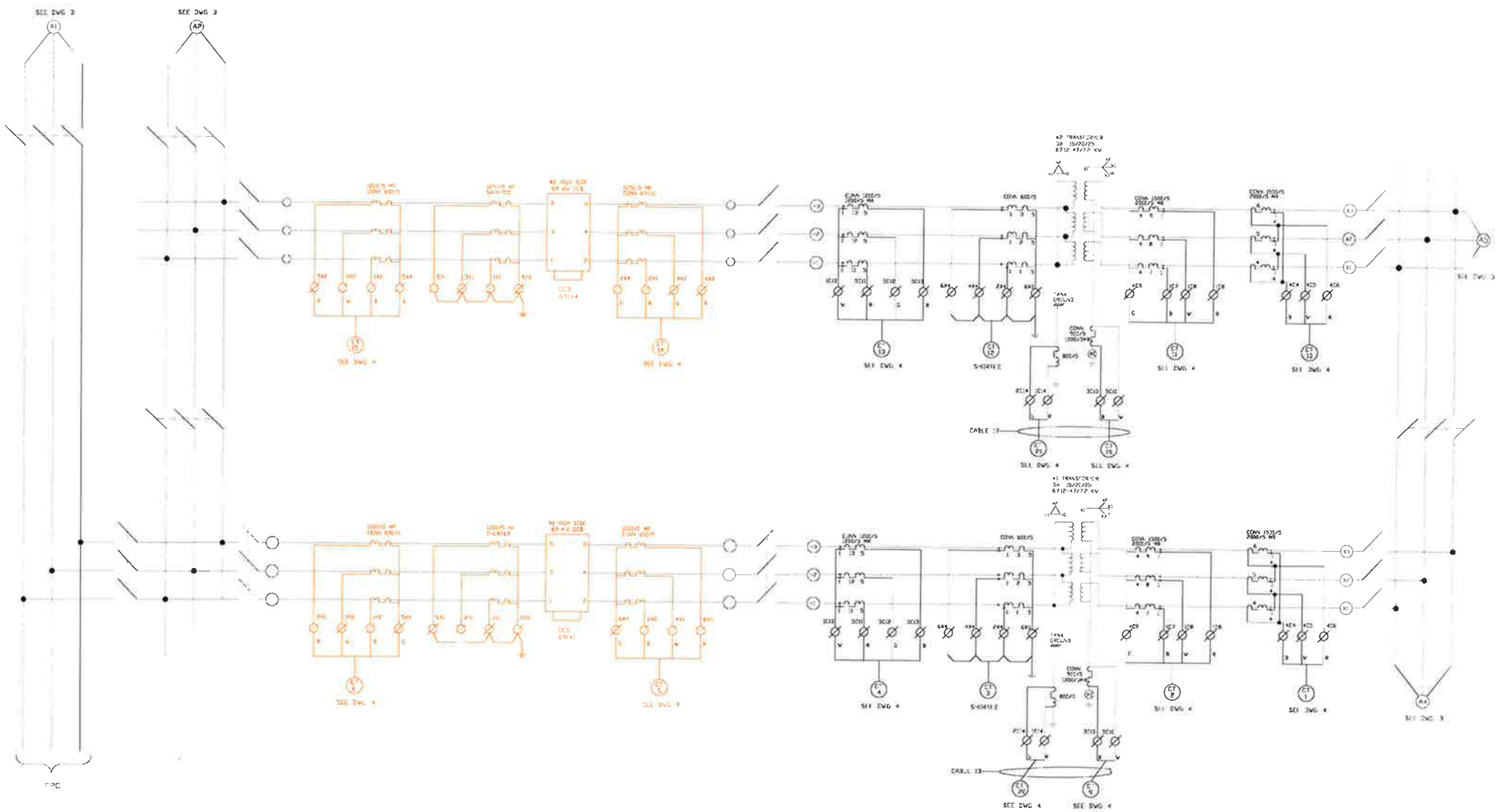
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

RELAY & METERING
ONE LINE DIAGRAM

W.O. #
PROJECT # 0902 26
SCALE: NONE

DWG # E07_RMV
SHEET NO 1 OF 1


SEE DWG 3
SEE DWG 3
SEE DWG 4
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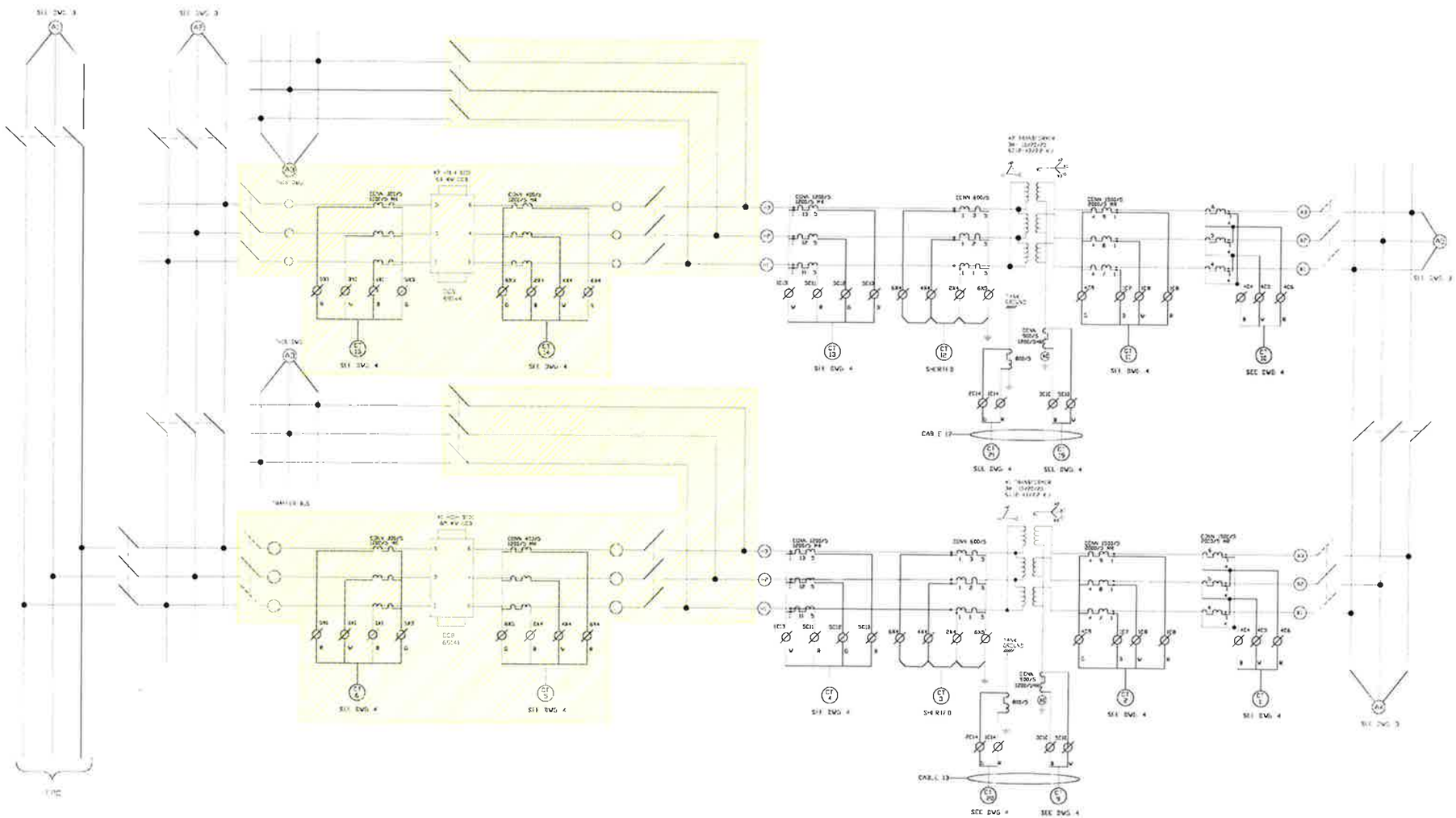

THREE LINE

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FROM LEEDY ELECTRIC CORP.
PROJECT 5047230 DRAWING 2,
LAST REVISED BY LEEDY
ELECTRIC CORP. 06/04/1996

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ENGINEER OF RECORD
JOHN P. FRANKO
PE License No. 80686

REVISIONS							
REV NO	REV BY	DATE	DESCRIPTION	REV NO	REV BY	DATE	DESCRIPTION

DRAFT		
ENGINEERING RECORD		
	BY	DATE
DRAWN	JPF	JULY 2018
DESIGNED	JPF	JULY 2018
CHECKED		

ENGINEER OF RECORD JOHN P. FRANKO PE # 80686

FW&A Fred Wilson & Associates, Inc. Consulting Engineers CA NO 7188 3970 Hendricks Avenue • Jacksonville • Florida • 32207 904.398.8636

ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

THREE LINE
AC ELEMENTARY DIAGRAM

W.O. #

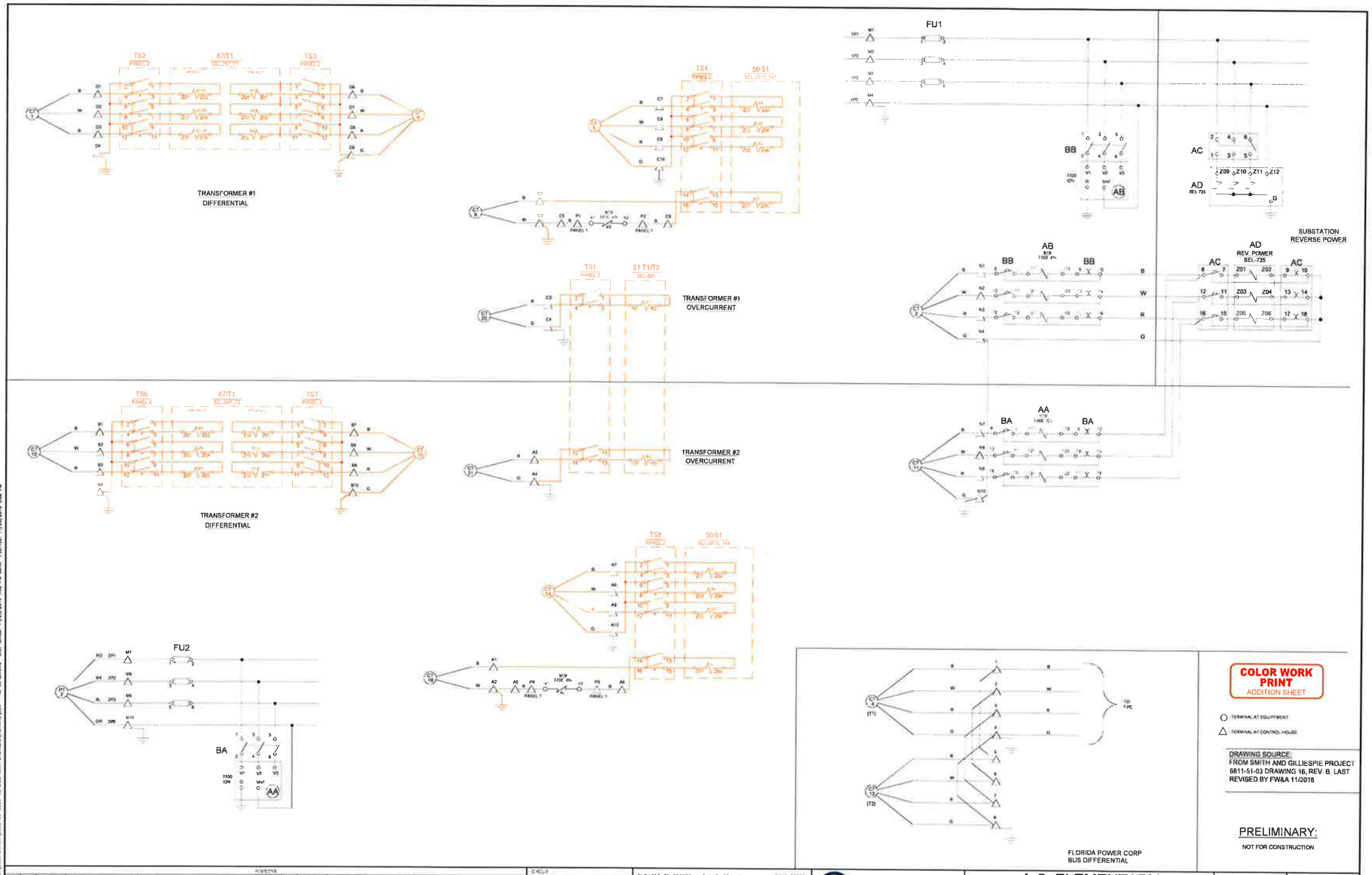
PROJECT # 0902-26

DRAFT:

DWG # E08_RMV

SHEET NO 1 OF 1

FILE NAME: F:\ELECT\0902 BARTON\0902-26 ODOM REPLACE 69KV BREAKERS\WORKING\0908 - RMV-THREE LINE.DWG LAST SAVED: 9/20/2019 4:08 PM JPFRN PLOTTED: 11/22/2019 5:02 PM



COLOR WORK PRINT
ADDITION SHEET

○ TERMINAL AT EQUIPMENT
△ TERMINAL AT CONTROL HOUSE

DRAWING SOURCE:
FROM SMITH AND GILLIESPIE PROJECT 6811-51-03 DRAWING 16, REV. B LAST REVISED BY FW&A 11/2018

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS							
REV	APP'D	DATE	DESCRIPTION	REV	APP'D	DATE	DESCRIPTION

ENGINEERING RECORD

		DATE
DRAWN		NOV 2018
DESIGNED		NOV 2018
CHECKED		

ENGINEER OF RECORD: JOHN D. FRANKE P.E. # 63688

FW&A Fred Wilson & Associates, Inc.
Consulting Engineers
CA NO. 7188 904.398.8636
3970 Hendricks Avenue • Jacksonville • Florida • 32207

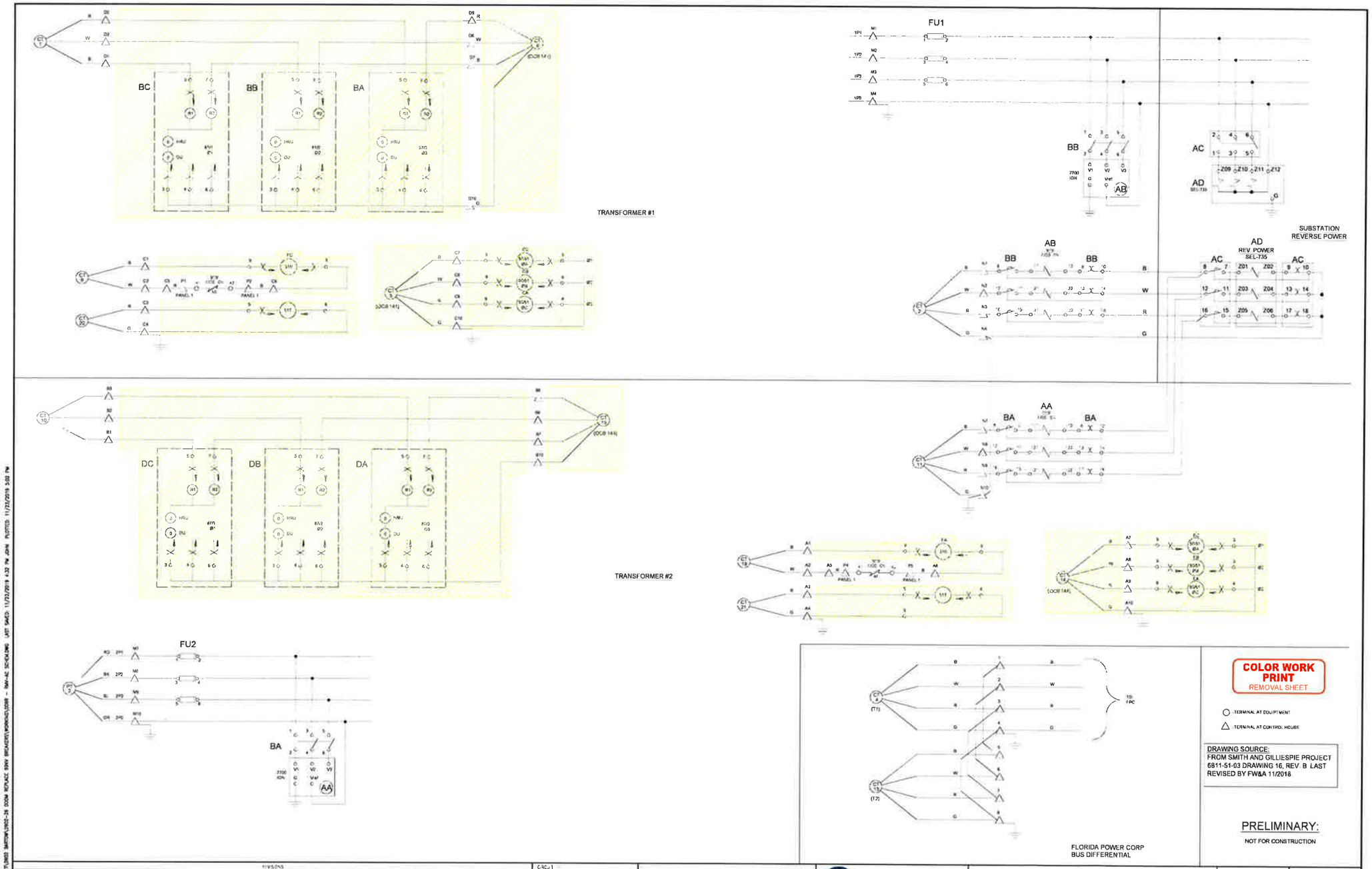
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

A.C. ELEMENTARY DIAGRAMS PANELS 1, 2, & 3

JOB #
PROJECT # 0902-26
SCALE: NONE

DWG # E09
SHEET NO 1 OF 1

FILE NAME: F:\ELECTURIS\0902 SMITHVILLE\0902-26 ODOM REPLACE 69KV BREAKERS\WORKING\ODOM - AC SCHEMATIC LAST SAVED: 11/23/2018 4:32 PM JOHN PLOTTED: 11/23/2018 5:02 PM



COLOR WORK PRINT
REMOVAL SHEET

○ TERMINAL AT EQUIPMENT
△ TERMINAL AT CONTROL HOUSE

DRAWING SOURCE:
FROM SMITH AND GILLIESPIE PROJECT 6811-51-03 DRAWING 16, REV. B LAST REVISED BY FW&A 11/2018

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS							
REV NO	REVISED BY	DATE	DESCRIPTION	REV NO	REVISED BY	DATE	DESCRIPTION

CIRCUIT		
ENGINEERING RECORD		
	BY	DATE
DRAWN	JP	NOV 2018
DESIGNED	JP	NOV 2018
CHECKED		

ENGINEER OF RECORD: JOHN D. FRANKE — PE # 63585

FW&A Fred Wilson & Associates, Inc.
Consulting Engineers
CA NO 7188 — 904.398.8636
3970 Hendricks Avenue • Jacksonville • Florida • 32207

ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

A.C. ELEMENTARY DIAGRAMS PANELS 1, 2, & 3

N.O.F.

PROJECT #: 0902 26

SCALE: NONE

DWG #: E09_RMV

SHEET NO: 1 OF 1

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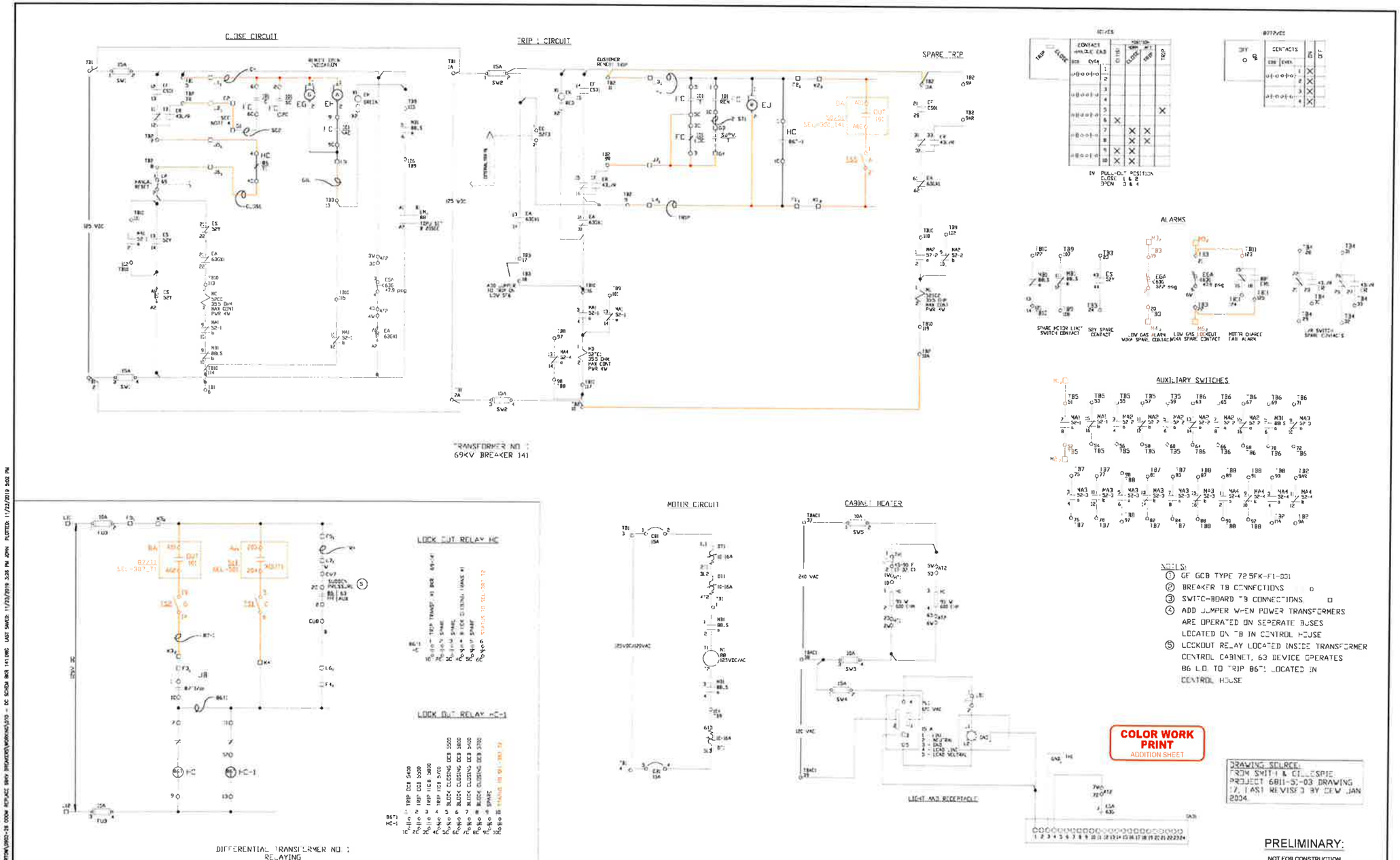
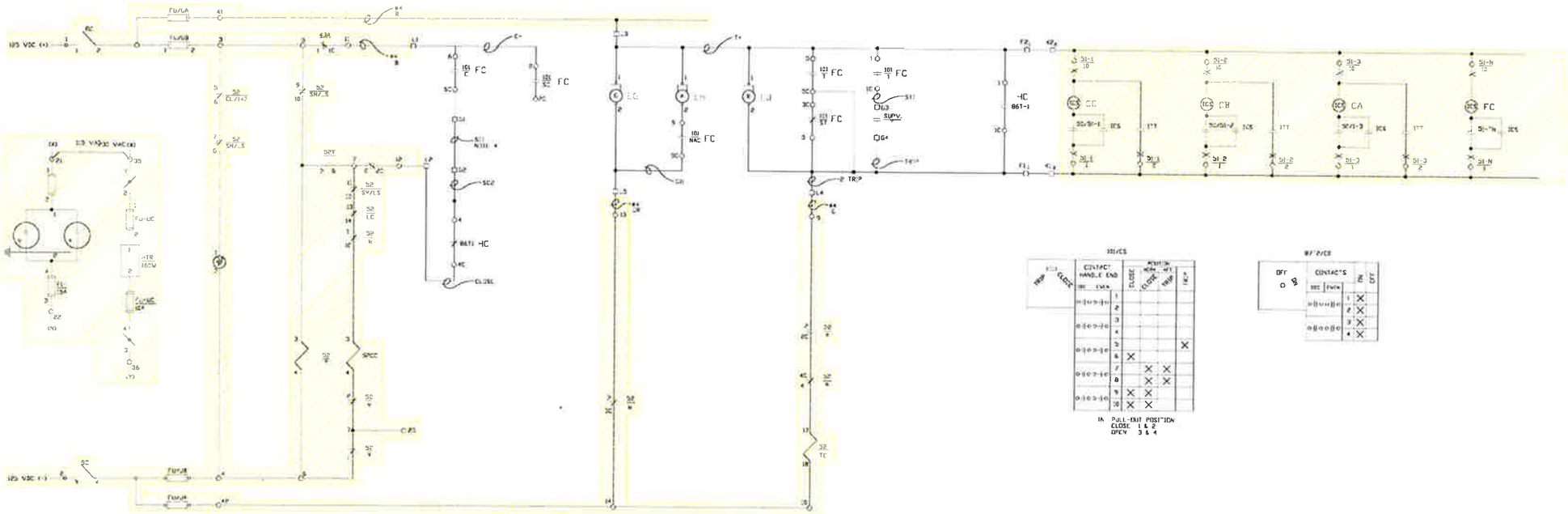
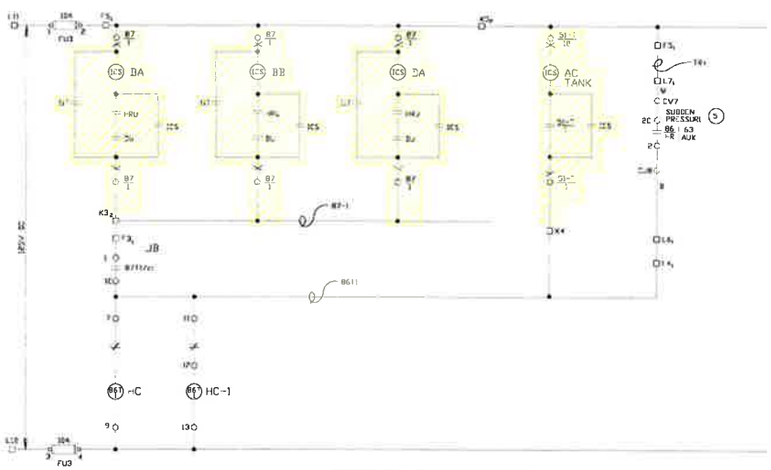

CLOSE CIRCUIT
TRIP 1 CIRCUIT
SPARE TRIP
TRANSFORMER NO 1
69KV BREAKER 141
DIFFERENTIAL TRANSFORMER NO 1
RELAYING
LOCK OUT RELAY HC
LOCK OUT RELAY HC-1
MOTOR CIRCUIT
CABINET HEATER
LIGHT AND RECEPTACLE
ALARMS
AUXILIARY SWITCHES
NOTES:
① GE GCB TYPE 72.5FK-F1-001
② BREAKER TB CONNECTIONS
③ SWITCHBOARD TB CONNECTIONS
④ ADD JUMPER WHEN POWER TRANSFORMERS ARE OPERATED ON SEPERATE BUSES LOCATED ON TB IN CONTROL HOUSE
⑤ LOCKOUT RELAY LOCATED INSIDE TRANSFORMER CONTROL CABINET, 63 DEVICE OPERATES 86 LO TO TRIP 86T LOCATED IN CONTROL HOUSE
COLOR WORK PRINT
ADDITION SHEET
DRAWING SOURCE:
FROM SMITH & GILLESPIE
PROJECT 6811-S1-03 DRAWING
17, LAST REVISED BY CEW JAN
2004
PRELIMINARY:
NOT FOR CONSTRUCTION
ENGINEER OF RECORD: JOHN C. FRANKO
P.E. # 65686
Fred Wilson & Associates, Inc.
Consulting Engineers
CA NO 7169
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS
69kV BREAKER 69141
DC ELEMENTARY DIAGRAM
E10
1 OF 1



TRANSFORMER NO. 1
69KV BREAKER CONTROL



DIFFERENTIAL TRANSFORMER NO 1
RELAYING

NOTES

1. GE DCB TYPE FK-72.5-27000-10
2. BREAKER TB CONNECTIONS
3. SWITCHBOARD TB CONNECTIONS
4. ADD JUMPER WHEN POWER TRANSFORMERS ARE OPERATED ON SEPERATE BUSES LOCATED ON TB IN CONTROL HOUSE
5. LOCKOUT RELAY LOCATED INSIDE TRANSFORMER CONTROL CABINET. 63 DEVICE OPERATES 86 LC TO TRIP 86T1 LOCATED IN CONTROL HOUSE

DRAWING SOURCE:
FROM SMITH & GILLESPIE PROJECT 6811-SI-03 DRAWING 17, LAST REVISED BY DEW JAN 2004.

COLOR WORK PRINT
REMOVAL SHEET

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS							
REV NO	APPR BY	DATE	DESCRIPTION	REV NO	APPR BY	DATE	DESCRIPTION

ENGINEERING RECORD

	BY	DATE
DRAWN	JP	JULY 2019
DESIGNED	JP	JULY 2019
CHECKED		

ENGINEER OF RECORD JOHN P. FRANKO P.E. # 20588

FWA Fred Wilson & Associates, Inc.
Consulting Engineers
CA NO 7188 904 398 8626
3970 Hendricks Avenue • Jacksonville • Florida • 32207

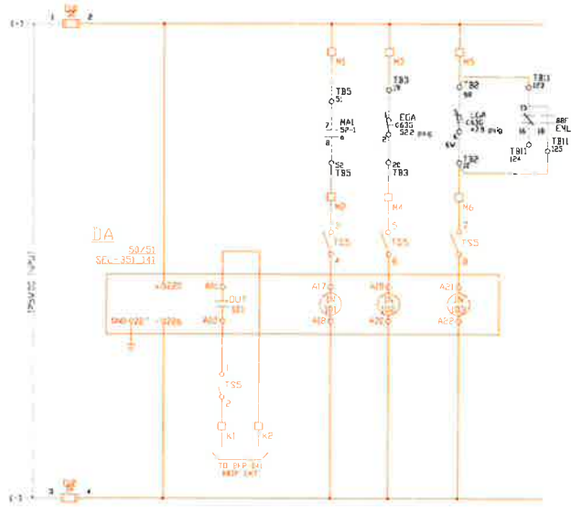
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

69kV BREAKER 69141
DC ELEMENTARY DIAGRAM

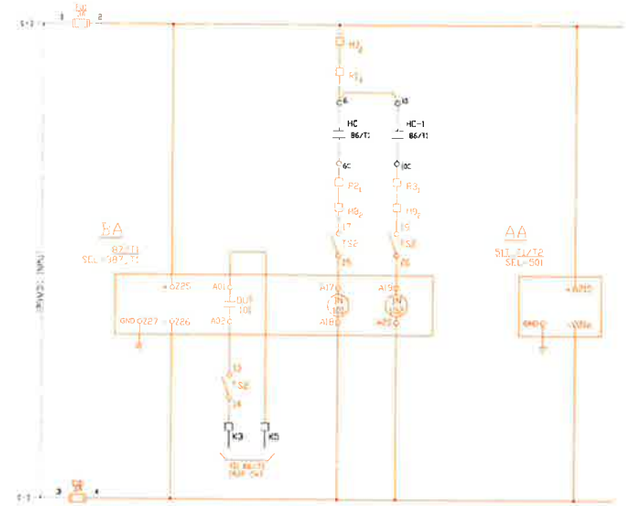
W.O. #
PROJECT # 0902-26
SCALE

DWG # E10_RMV
SHEET NO 1 OF 1

FILE NAME: F:\CLIENTS\0902 SMITH\0902-26 ODOM REPLACE 69KV BREAKERS\WORKING\E10R - 69KV-DC SCHEM.DWG 141.DWG LAST SAVED: 11/22/2019 3:01 PM JOHN PLOTTED: 11/22/2019 3:02 PM



BREAKER 141
OVERCURRENT RELAY



TRANSFORMER NO1
DIFFERENTIAL RELAY

TRANSFORMER NO1
TRANSFORMER NO.2
TANK GROUND RELAY

NOTES

① BREAKER TB CONNECTIONS

② SWITCHBOARD TB CONNECTIONS

COLOR WORK PRINT
ADDITION SHEET

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS			
REV. NO.	APPR. BY	DATE	DESCRIPTION

INDUSTRY RECORD	BY	DATE
DRAWN	JBI	JULY 2019
DESIGNED	JBI	JULY 2019
REVIEWED		

ENGINEER OF RECORD: JOHN B. FRANKS P.E. # 60588

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Consulting Engineers
CA NO 7180 904.398.8636
3970 Hendricks Avenue • Jacksonville • Florida • 32207

ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

TRANSFORMER NO.1
AND BREAKER 69141
DC ELEMENTARY DIAGRAM

W.O. #

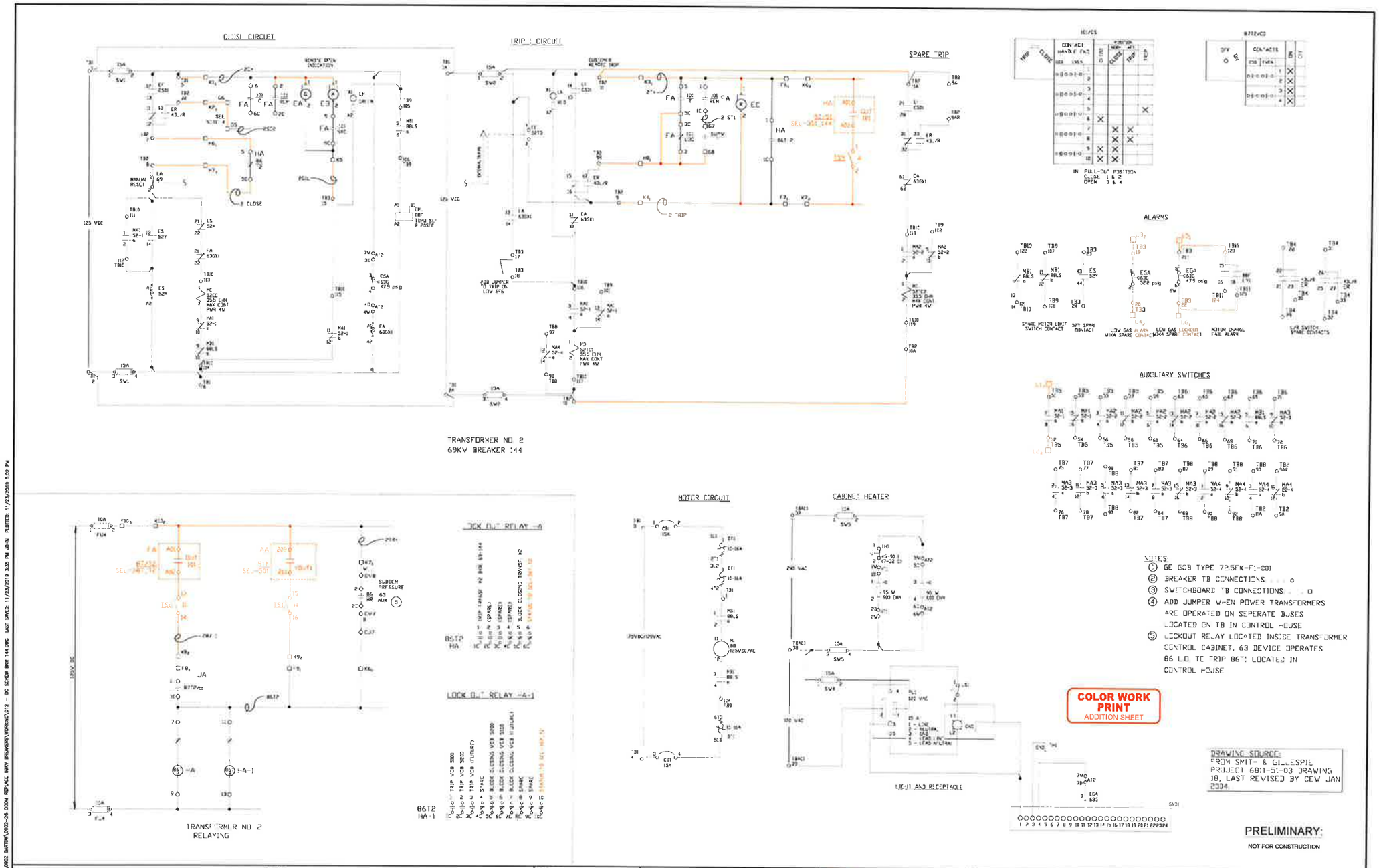
PROJECT # 0902-26

SCALE

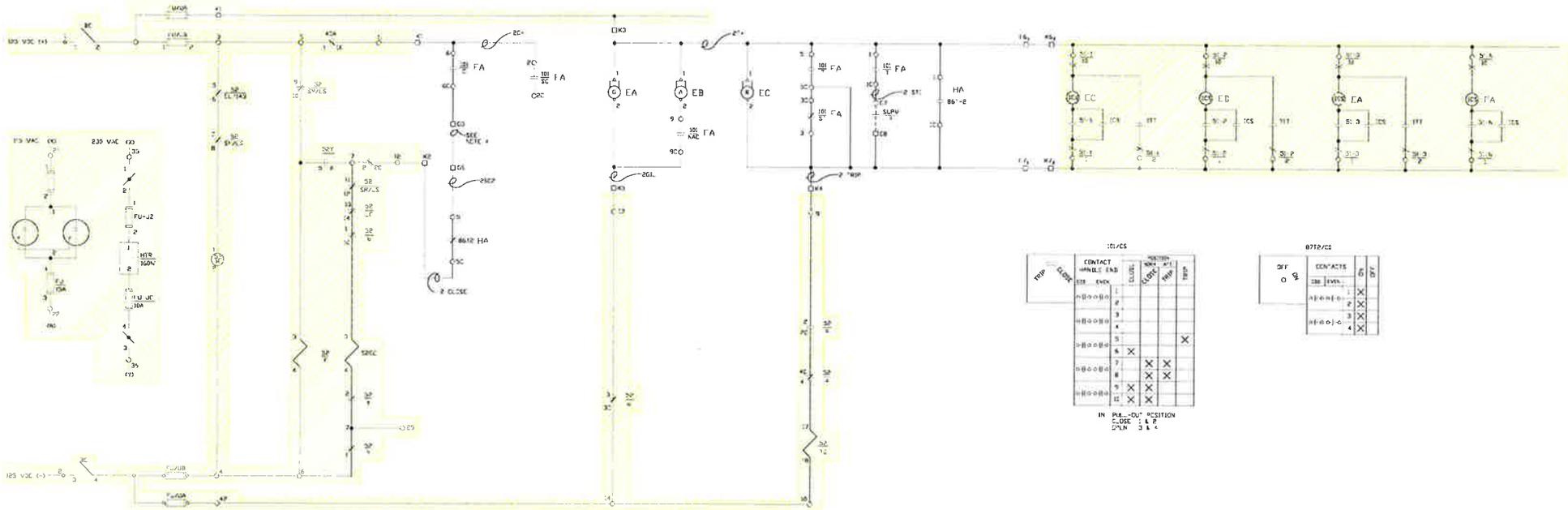
DWG # E11

SHEET NO 1 OF 1

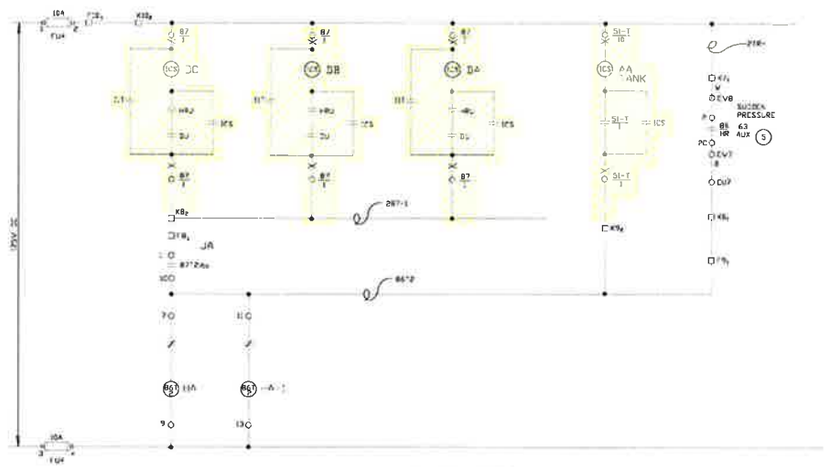
FILE NAME: F:\CLIENT\0902 BARTOW\0902-26 ODOM REPLACE 69KV BREAKERS\WORKING\011 - DC SCHEM T1 RELAYING.DWG LAST SAVED: 11/23/2019 3:37 PM JOHN PLOTTED: 11/23/2019 3:02 PM



Fred Wilson & Associates, Inc. Consulting Engineers	ODOM SUBSTATION REPLACE 69KV CIRCUIT BREAKERS
69kV BREAKER 69144 DC ELEMENTARY DIAGRAM	PROJECT # 0902-26
DWG # E12	SHEET NO 1 OF 1



TRANSFORMER NO 2
69KV BREAKER



TRANSFORMER NO 2
RELAYING

LOCK OUT RELAY HA

86T2 HA	1	2	3	4	5	6	7	8
	TRIP TRANSF #2 BKR 69-144	FUTURE1	SPARE1	FUTURE1	BLOCK CLOSING TRANSF #2	SPARE1		

LOCK OUT RELAY HA-1

86T2 HA-1	1	2	3	4	5	6	7	8	9	10
	TRIP VCB 3100	TRIP VCB 3200	TRIP VCB 3000	TRIP VCB FUTURE1	TRANSF	BLOCK CLOSING VCB 3000	BLOCK CLOSING VCB 3200	BLOCK CLOSING VCB FUTURE1	SPARE	SPARE

NOTES:

1. GE HCB TYPE FK-72.5 27000-10
2. BREAKER TB CONNECTIONS
3. SWITCHBOARD TB CONNECTIONS
4. ADD JUMPER WHEN POWER TRANSFORMERS ARE OPERATED ON SEPERATE BUSES LOCATED ON TB IN CONTROL HOUSE
5. LOCKOUT RELAY LOCATED INSIDE TRANSFORMER CONTROL CABINET, 63 DEVICE OPERATES 86 LO TO TRIP 86T1 LOCATED IN CONTROL HOUSE

DRAWING SOURCE:
FROM SMITH & GILLESPIE PROJECT 6811-51-03 DRAWING 18, LAST REVISED BY CEW JAN 2004.

COLOR WORK PRINT
REMOVAL SHEET

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS							
REV NO	APPR BY	DATE	DESCRIPTION	REV NO	APPR BY	DATE	DESCRIPTION

CIRCUIT

ENGINEERING RECORD	BY	DATE
DRAWN	JR	NOV 2016
DESIGNED	JR	NOV 2016
CHECKED		

ENGINEER OF RECORD JOHN D. FRANKO P.E.# 60088

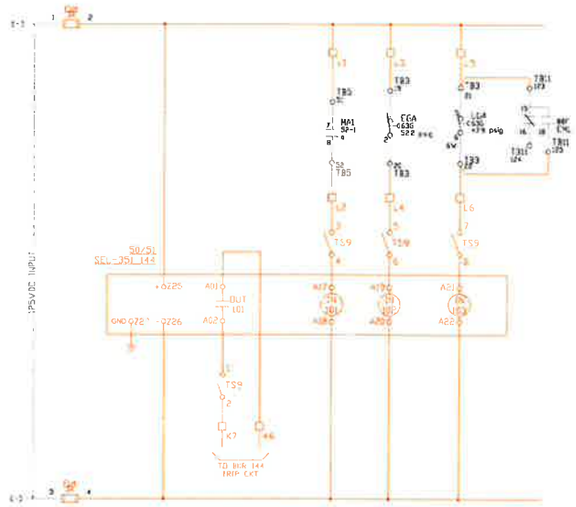
FWA Fred Wilson & Associates, Inc.
Consulting Engineers
CA NO 7189 904.398.8636
2970 Hendricks Avenue • Jacksonville • Florida • 32207

ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

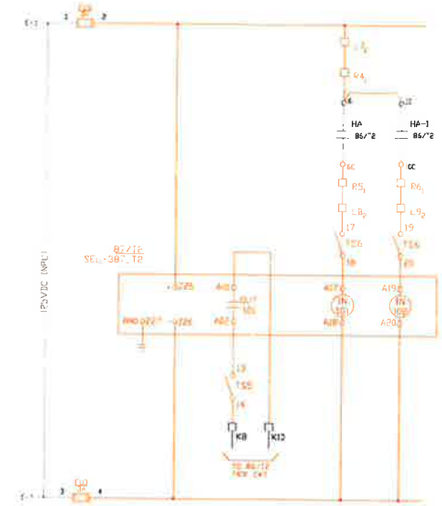
69kV BREAKER 69144
DC ELEMENTARY DIAGRAM

W.O.#
PROJECT # 0902 26
SCALE
DWG # E12_RMV
SHEET NO 1 OF 1

FILE NAME: F:\CLIENT\0902_BARTOW\0902-26 ODOM REPLACE 69KV BREAKERS\WORKING\0120 - RMV-DC SCHEM BKR 144.DWG LAST SAVED: 11/23/2019 3:34 PM JOHN PLOTTED: 11/23/2019 5:02 PM



BREAKER 144
OVERCURRENT RELAY



TRANSFORMER NO.2
DIFFERENTIAL RELAY

NOTES

1. BREAKER TB CONNECTIONS
2. SWITCHBOARD TB CONNECTIONS

COLOR WORK PRINT
ADDITION SHEET

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS							
NO	BY	DATE	DESCRIPTION	NO	BY	DATE	DESCRIPTION

ENGINEERING RECORD	BY	DATE
DRAWN	JRI	JULY 2019
DESIGNED	JRI	JULY 2019
CHECKED		

ENGINEER OF RECORD: JOHN R. HANSEN P.E. # 60685

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Consulting Engineers
CA NO 7188
1970 Hendricks Avenue • Jacksonville • Florida • 32207

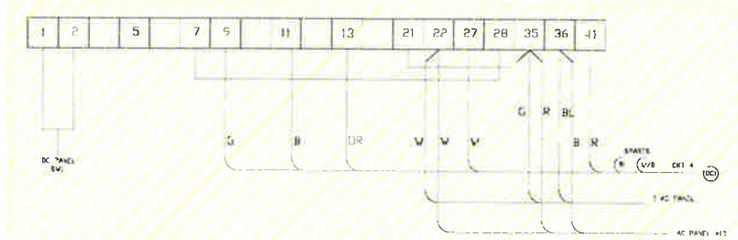
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

TRANSFORMER NO.2
AND BREAKER 69144
DC ELEMENTARY DIAGRAM

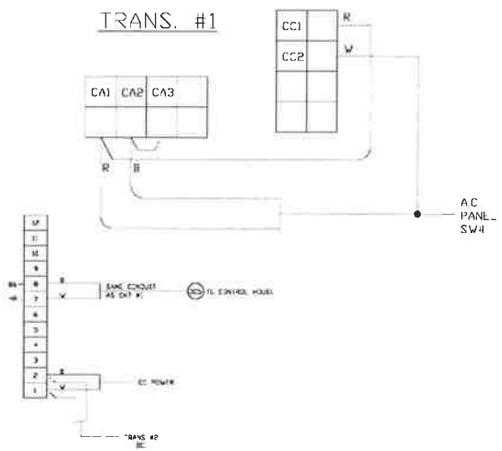
W.O. #:
PROJECT #: 0802-78
SCALE:

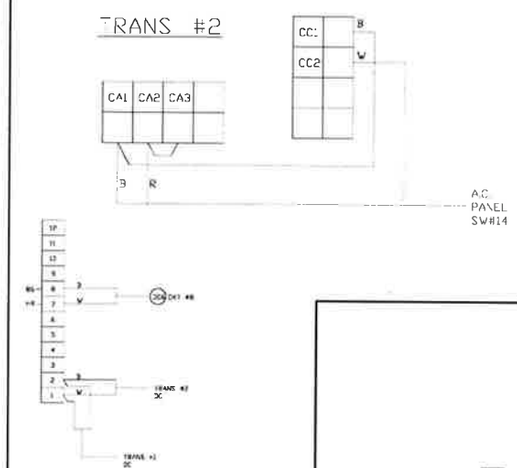
DWG #: E13
SHEET NO: 1 OF 1

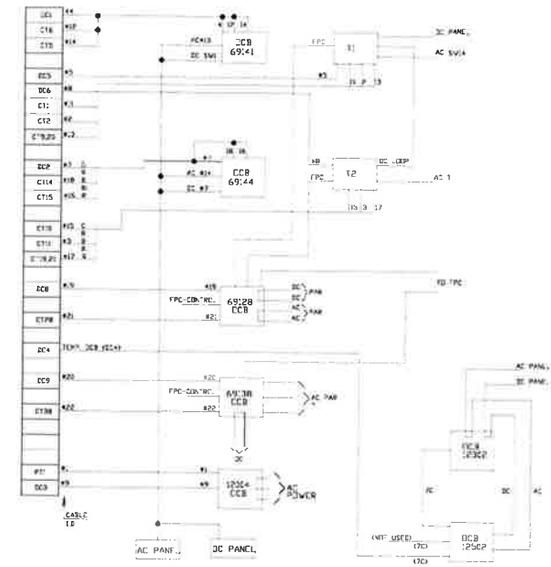
FILE NAME: F:\ELECTURD\802 BARTOW\0802-28 ODOM RETROFIT SWYD BREAKERS\WORKING\013 - DC SCHEM T2 REPLACING.DWG LAST SAVED: 11/23/2018 3:34 PM JOHN PLOTTED: 11/23/2018 3:03 PM

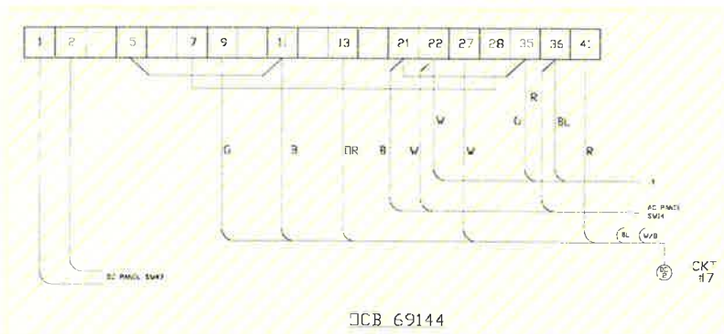


DCB 69141

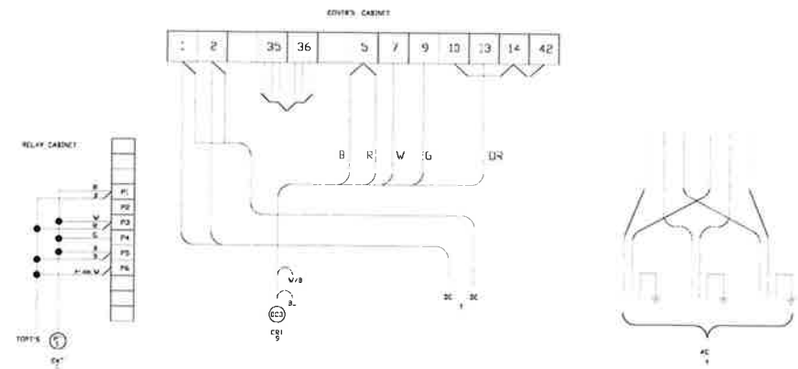








DCB 69144



DCB 12004

DRAWING SOURCE:
FROM LEE BY [illegible] RIC CORP.
PROJECT 5047200 DRAWING 6,
LAST REVISED BY LEEDY
ELECTRIC CORP. 3/04/1996

COLOR WORK PRINT
REMOVAL SHEET

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

Fred Wilson & Associates, Inc.
Consulting Engineers
CA NO 7188
3970 Hendricks Avenue • Jacksonville • Florida • 32207
904 398 8636

ENGINEER OF RECORD JOHN P. FRANKO
PE # 80588

REVISIONS							
REV.	APP.	DATE	DESCRIPTION	REV.	APP.	DATE	DESCRIPTION

ENGINEERING RECORD		
	BY	DATE
DRAWN	JDR	JULY 2018
DESIGNED	JDR	JULY 2018
CHECKED		

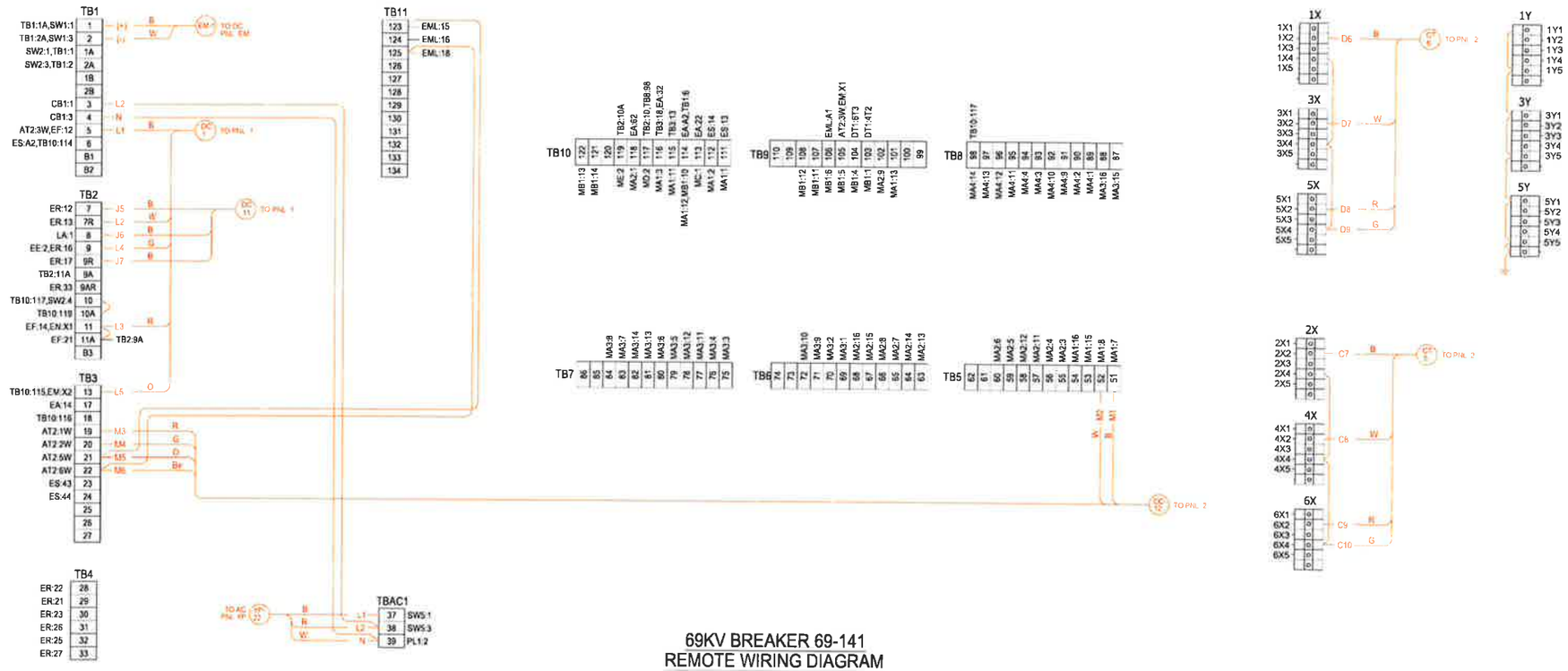
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

REMOTE WIRING DIAGRAM

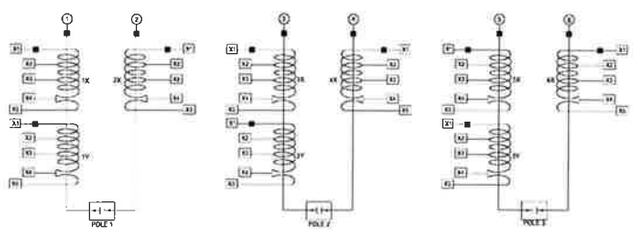
W.O. #
PROJECT # ONG7-26
SEAL:

DWG # E14_RMV
SHEET NO. 1 OF 1

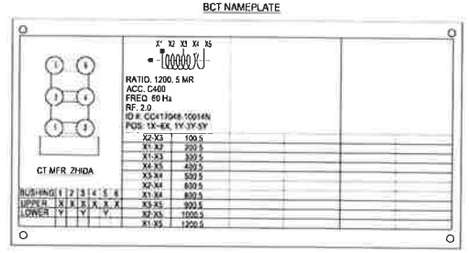
FILE NAME: F:\CLIENTS\ORED BARTOW\ONG7-26 ODOM REPLACE 69KV BREAKERS\WORKING\D140 – RMV–REMOTE WIRING.DWG LAST SAVED: 11/23/2019 3:24 PM JOHN PLOTTED: 11/23/2019 5:02 PM



69KV BREAKER 69-141
REMOTE WIRING DIAGRAM



BCT NAMEPLATE



COLOR WORK PRINT
ADDITION SHEET

PRELIMINARY

REVISIONS							
REV. NO.	BY	DATE	DESCRIPTION	REV. NO.	BY	DATE	DESCRIPTION

ENGINEERING RECORD	BY	DATE
DRAWN	JR	JULY 2019
DESIGNED	JR	JULY 2019

ENGINEER OF RECORD: JOHN R. HAMMER P.E.# 60588

Fred Wilson & Associates, Inc.
Consulting Engineers
CA NO 7188 904.398.8636
3970 Hendricks Avenue • Jacksonville • Florida • 32207

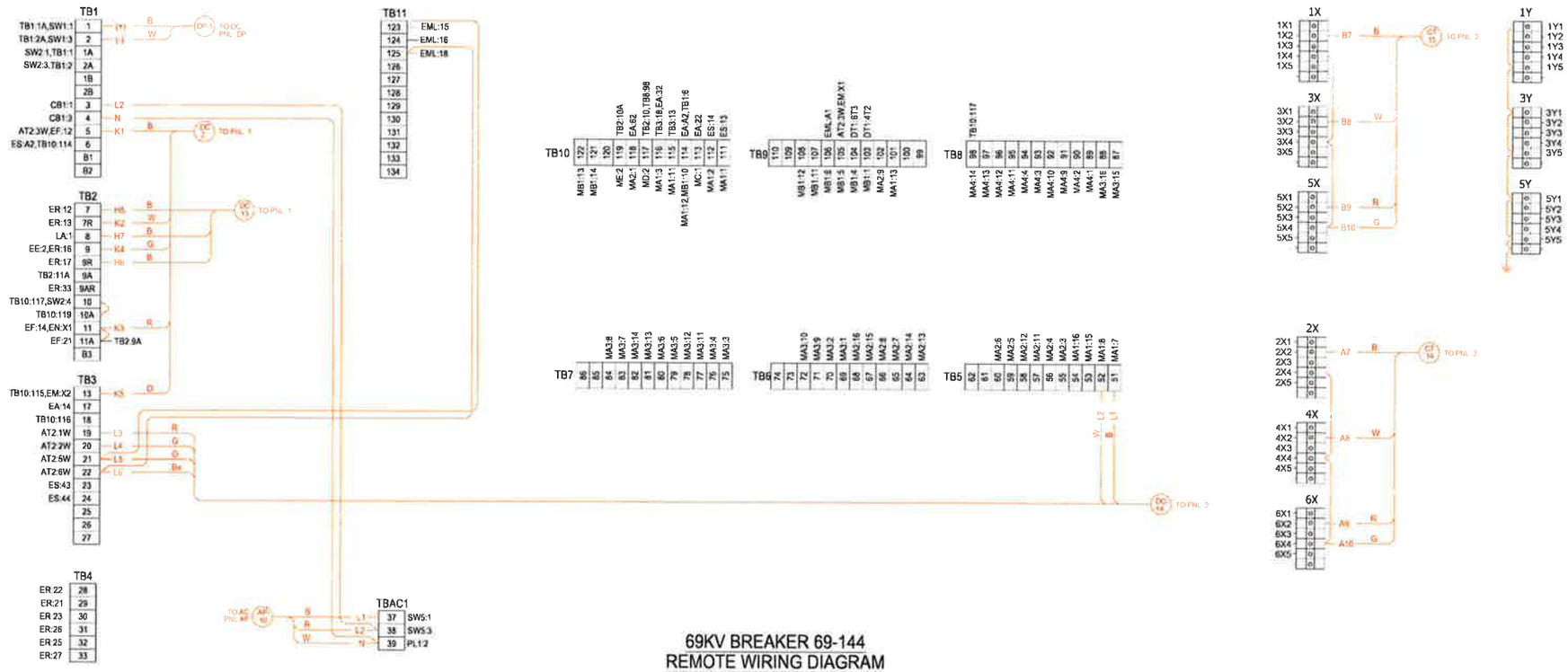
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

CIRCUIT BREAKER 69141
REMOTE WIRING DIAGRAM

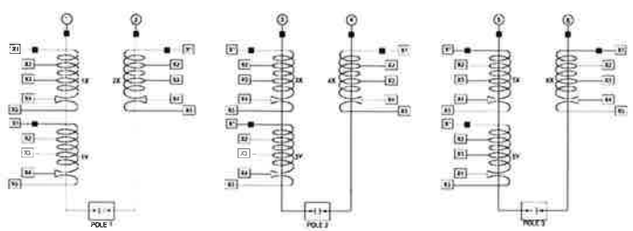
W.O. #
PROJECT # 0902-26
SHEET NO.

DWG. # E15

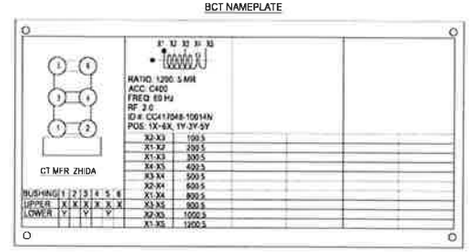
1 OF 1



69KV BREAKER 69-144
REMOTE WIRING DIAGRAM



BCT NAMEPLATE



COLOR WORK PRINT
ADDITION SHEET

PRELIMINARY

REVISIONS							
REV	APPR	DATE	DESCRIPTION	REV	APPR	DATE	DESCRIPTION

CHECKING RECORD		
	BY	DATE
DRAWN	JJR	JULY 2018
DESIGNED	JJR	JULY 2018
CHECKED		

ENGINEER OF RECORD: JOHN R. FRANKS — P.E. # 35686

FWSA Fred Wilson & Associates, Inc. Consulting Engineers — CA NO. 1188 — 2616 Hendricks Avenue • Jacksonville • Florida • 32207

ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

CIRCUIT BREAKER 69144
REMOTE WIRING DIAGRAM

W.O. #

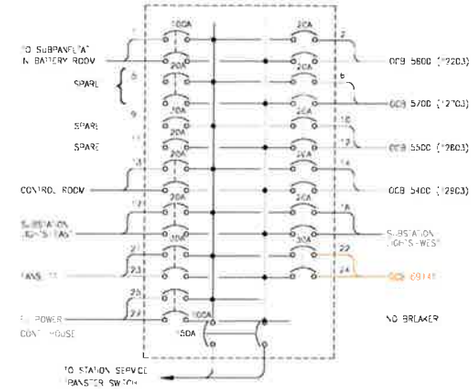
PROJECT # 0902 26

SCALE:

DWG # E16

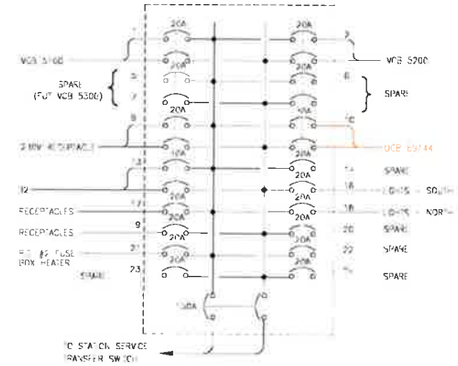
SHEET NO 1 OF 1

FILE NAME: F:\CLIENT\0902 BARTON\0902-26 ODOM REPLACE 69KV BREAKERS\WORKING\016 - BRS_144_REMOTE_WIRING.DWG LAST SAVED: 9/20/2019 4:21 PM JOHN PLOTTED: 11/23/2019 5:02 PM



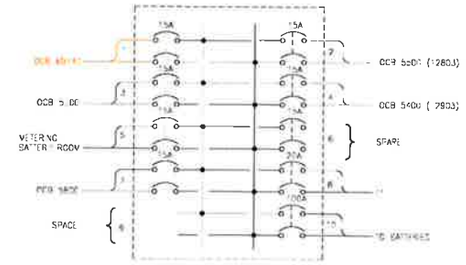
AC PANELBOARD "YP" – SWITCH YARD

OUTDOOR NEMA 3R ENCLOSURE, SURFACE MOUNTED, 1 PHASE, 3 WIRE
150A TRIP MAIN, 24 BRANCH CIRCUIT POLES



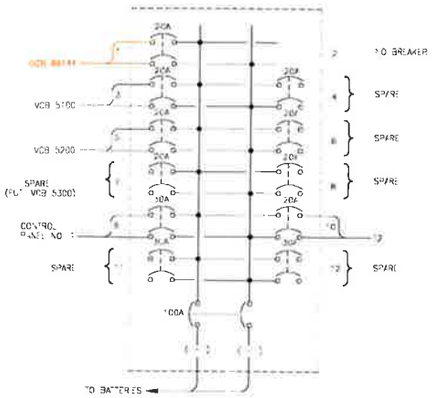
AC PANELBOARD "AP" – SWITCH YARD

OUTDOOR NEMA 3R ENCLOSURE, SURFACE MOUNTED, 1 PHASE, 3 WIRE
225A FRAME, 150A TRIP MAIN, 42 BRANCH CIRCUIT POLES AND
TYPE QOB BREAKERS AS INDICATED, SQUARE D NQOD OR APPROVED
EQUAL



EXISTING DC PANELBOARD "EM" – STATION BATTERIES

OUTDOOR NEMA 3R ENCLOSURE, SURFACE MOUNTED, 225A
TRIP MAIN, 36 BRANCH CIRCUIT POLES

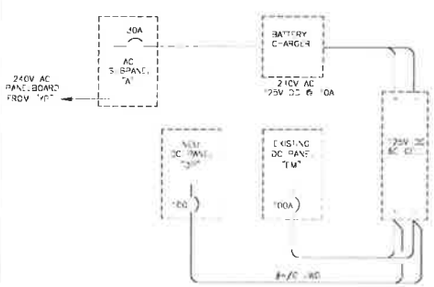


DC PANELBOARD "DP"

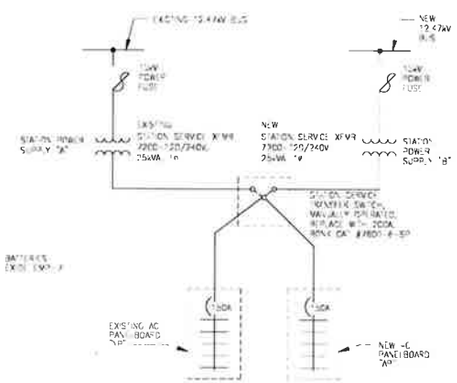
OUTDOOR NEMA 3R ENCLOSURE, SURFACE MOUNTED, 225A FRAME, 100A
TRIP MAIN, 24 BRANCH CIRCUIT POLES AND TYPE FA (DC RATED)
2 POLE BRANCH BREAKERS AS INDICATED, SQUARE D [illegible] OR
OR APPROVED EQUAL

NOTES

1. DISCONNECT AND REPLACE AC AND DC CIRCUITS TO BREAKER 69-[illegible] AND 69-1-4

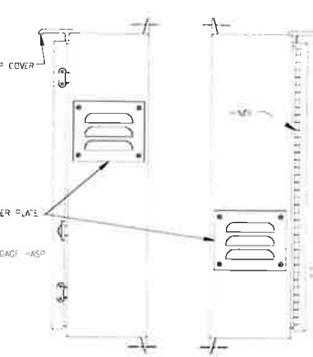


DC POWER SUPPLY DIAGRAM



A.C. POWER SUPPLY DIAGRAM

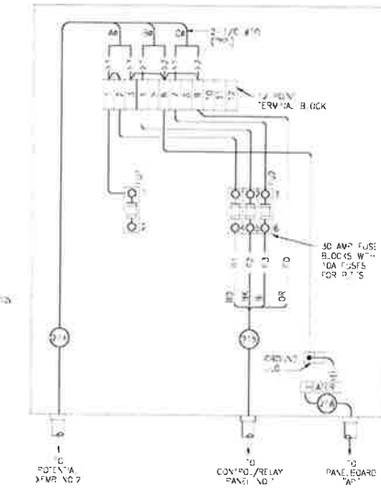
FRONT VIEW



SIDE VIEWS

ROBROY INDUSTRIES RAINTIGHT NEMA 3 FIBERGLASS CONTROL ENCLOSURE

69kV FUSE BOX DETAIL



12.47 kV BUS POTENTIAL TRANSFORMER NO. 2 FUSE BOX WIRING DIAGRAM

COLOR WORK PRINT
ADDITION SHEET

DRAWING SOURCE:
FROM SMITH AND GILLESPIE
PROJECT 6811-5-03 DRAWING
12, REV. A, DATED JAN 2004

PRELIMINARY:
NOT FOR CONSTRUCTION

REV	BY	DATE	DESCRIPTION	REV	BY	DATE	DESCRIPTION

CHECK

ENGINEERING RECORD	BY	DATE
DRAWN	JP	JULY 2018
DESIGNED	JP	JULY 2018
CHECKED		

ENGINEER OF RECORD: JOHN P. FARRAR — REG # 63888

FWA Fred Wilson & Associates, Inc.
Consulting Engineers
CA NO 7188 904.398.8636
3870 Hendricks Avenue • Jacksonville • Florida • 32207

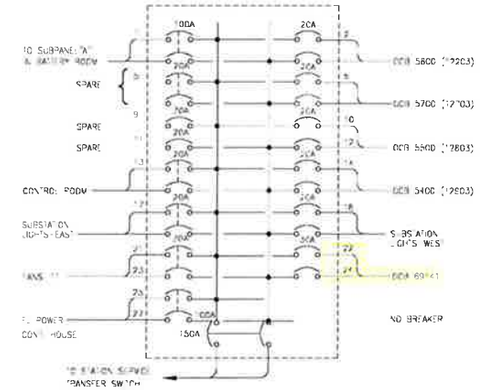
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

AC AND DC PANELBOARD DETAILS

W.O. #
PROJECT # 0902-26
SCALE

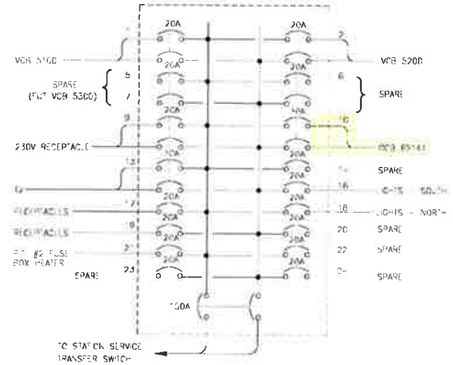
DWG # E17
SHEET NO 1 OF 1

FILE NAME: F:\CLIENTS\0902 SNTOW\0902-26 ODOM REPLACE 69KV BREAKERS\WORKING\E17 - AC_DC-DETAILS.DWG LAST SAVED: 11/21/2019 3:25 PM JOHN PLOTTED: 11/21/2019 3:53 PM



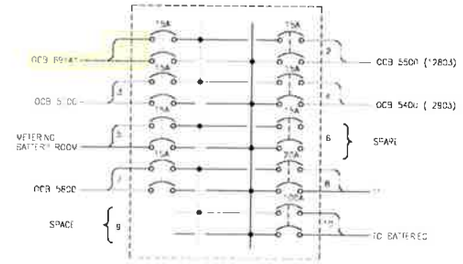
AC PANELBOARD "YP" - SWITCH YARD

OUTDOOR NEMA 3R ENCLOSURE, SURFACE MOUNTED, 1 PHASE 3 WIRE
150A TRIP MAIN 24 BRANCH CIRCUIT POLES



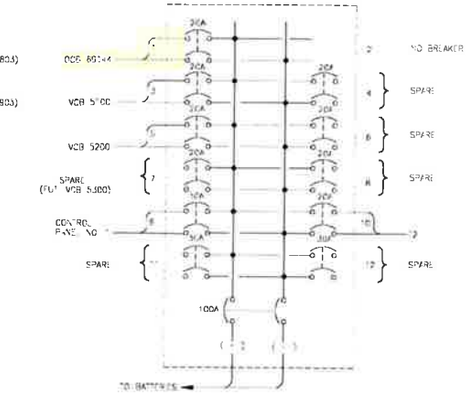
AC PANELBOARD "AP" - SWITCH YARD

OUTDOOR NEMA 3R ENCLOSURE, SURFACE MOUNTED, 1 PHASE, 3 WIRE,
225A FRAME, 150A TRIP MAIN 42 BRANCH CIRCUIT POLES AND
TYPE QOB BREAKERS AS INDICATED. SQUARE D NQOD OR APPROVED
EQUAL.



EXISTING DC PANELBOARD "LV" - STATION BATTERIES

OUTDOOR NEMA 3R ENCLOSURE, SURFACE MOUNTED, 225A
TRIP MAIN, 36 BRANCH CIRCUIT POLES

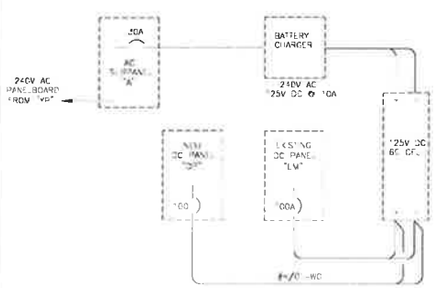


DC PANELBOARD "DP"

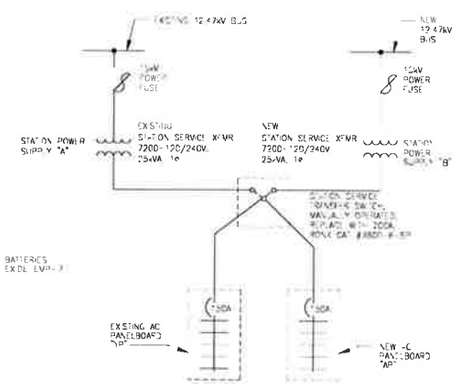
OUTDOOR NEMA 3R ENCLOSURE, SURFACE MOUNTED, 225A FRAME, 100A
TRIP MAIN, 24 BRANCH CIRCUIT POLES AND TURNTA (DC SWITCH)
2 POLE BRANCH BREAKERS AS INDICATED. SQUARE D NQOD OR
OR APPROVED EQUAL.

NOTES

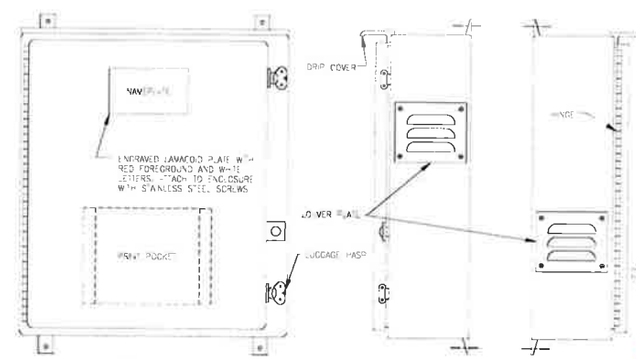
1. DISCONNECT AND REPLACE AC AND DC CIRCUITS TO BREAKER 69-141 AND 69-144



DC POWER SUPPLY DIAGRAM

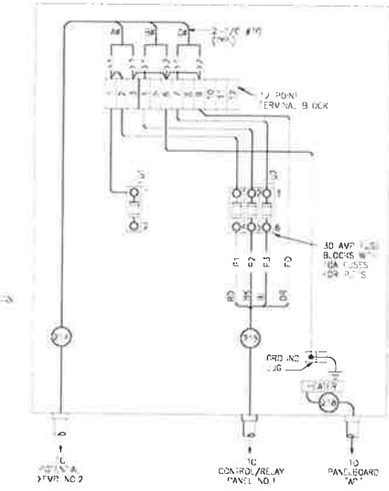


A.C. POWER SUPPLY DIAGRAM



ROBROY INDUSTRIES RAINTIGHT NEMA 3 FIBERGLASS CONTROL ENCLOSURE

P.T. FUSE BOX DETAIL



12.47 kV BUS POTENTIAL TRANSFORMER NO. 2 FUSE BOX WIRING DIAGRAM

COLOR WORK PRINT
REMOVAL SHEET

DRAWING SOURCE:
FROM SMITH AND GILLESPIE
PROJECT 6811-51-03 DRAWING
12, REV. A, DATED JAN 2004

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS							
NO	BY	DATE	DESCRIPTION	NO	BY	DATE	DESCRIPTION

CIRCUIT

SIGNATURE RECORD		
	BY	DATE
DRAWN	JCP	JULY 2019
DESIGNED	JCP	JULY 2019
CHECKED		

ENGINEER OF RECORD JOHN P. FRANCE P.E. # 63588

FWA Fred Wilson & Associates, Inc. Consulting Engineers
CA NO 7188 904.398.8636
3870 Hendricks Avenue • Jacksonville • Florida • 32207

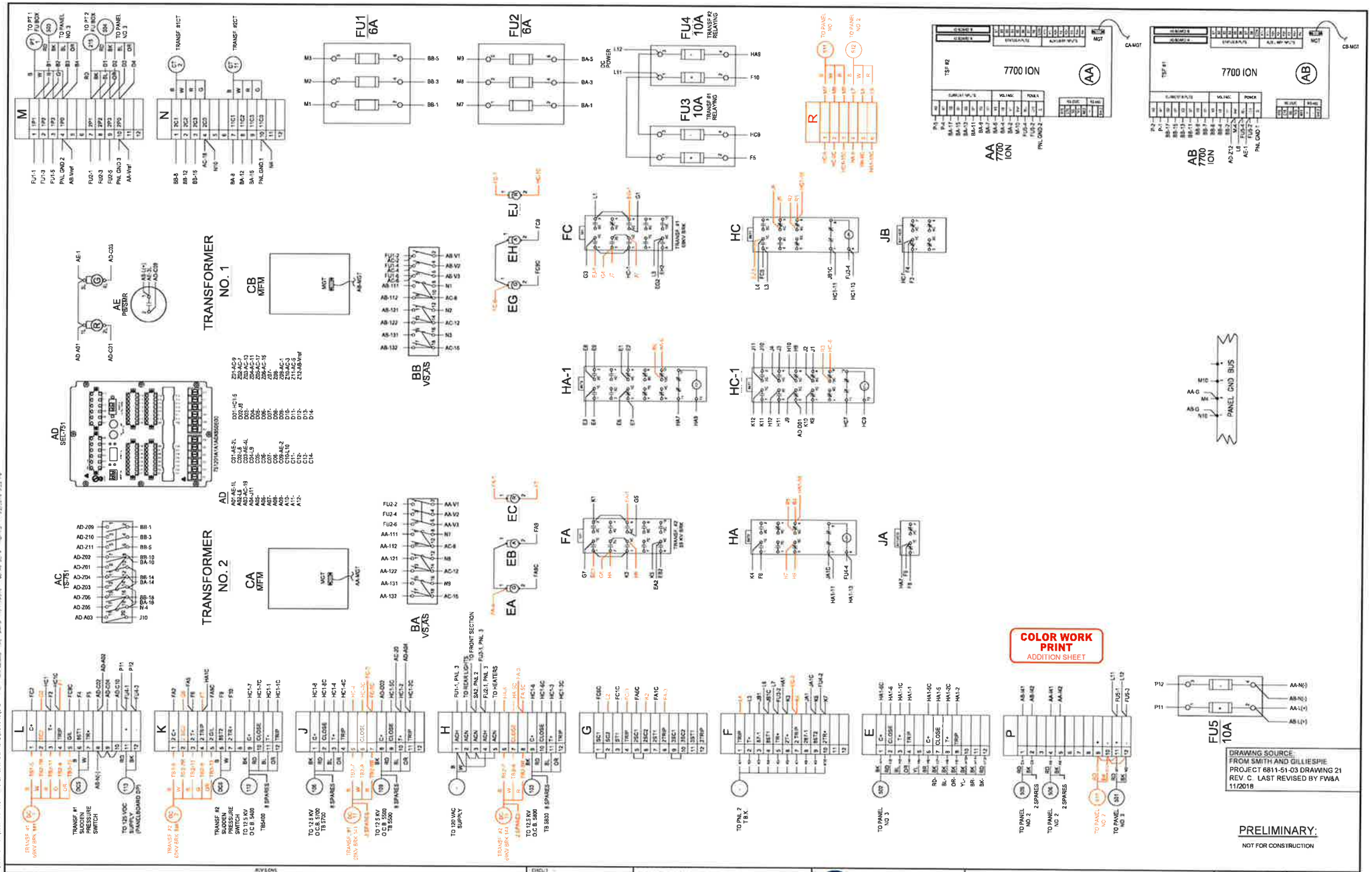
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

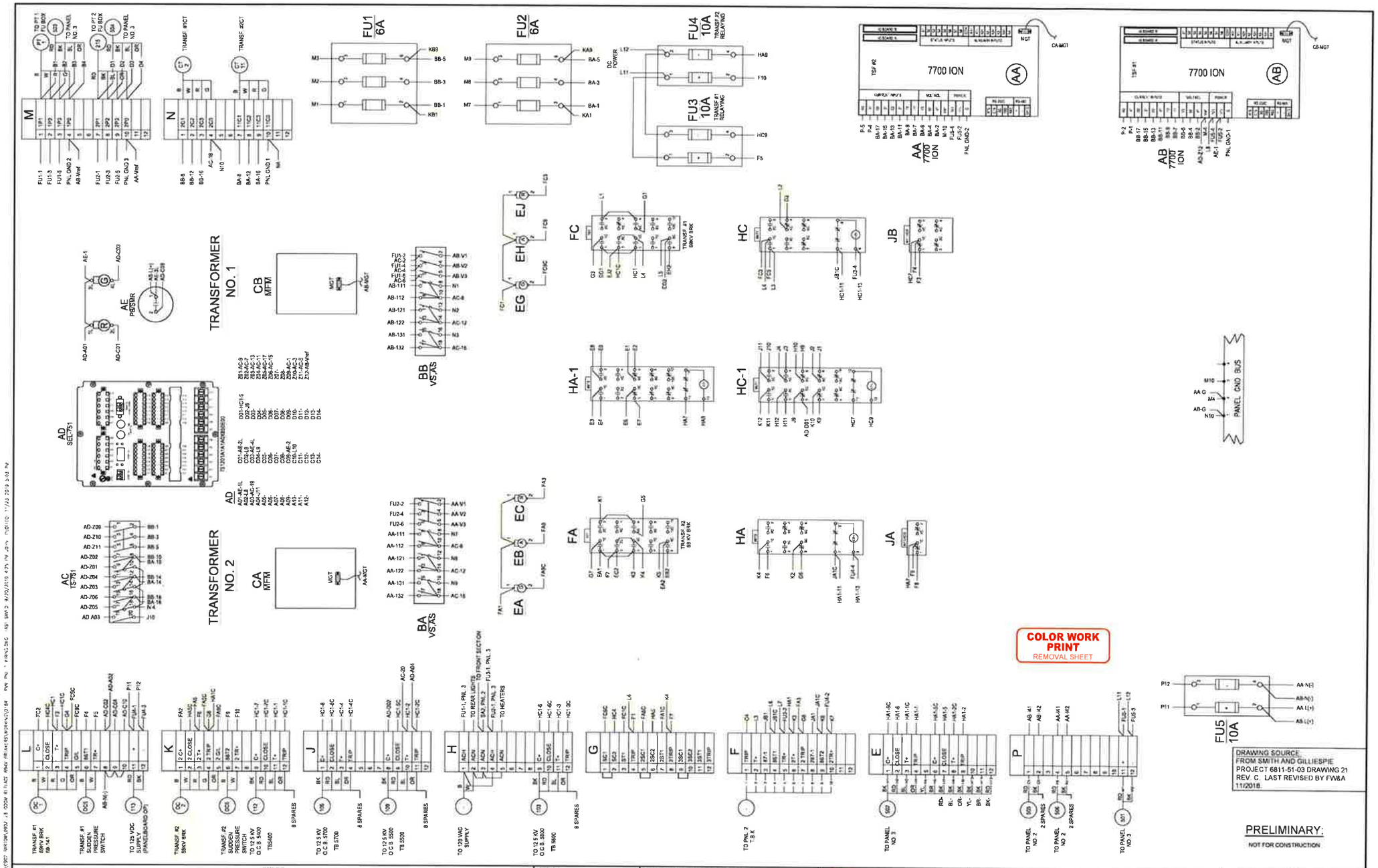
AC & DC PANELBOARD DETAILS

W.O. #
PROJECT # 0902-26
SCALE:

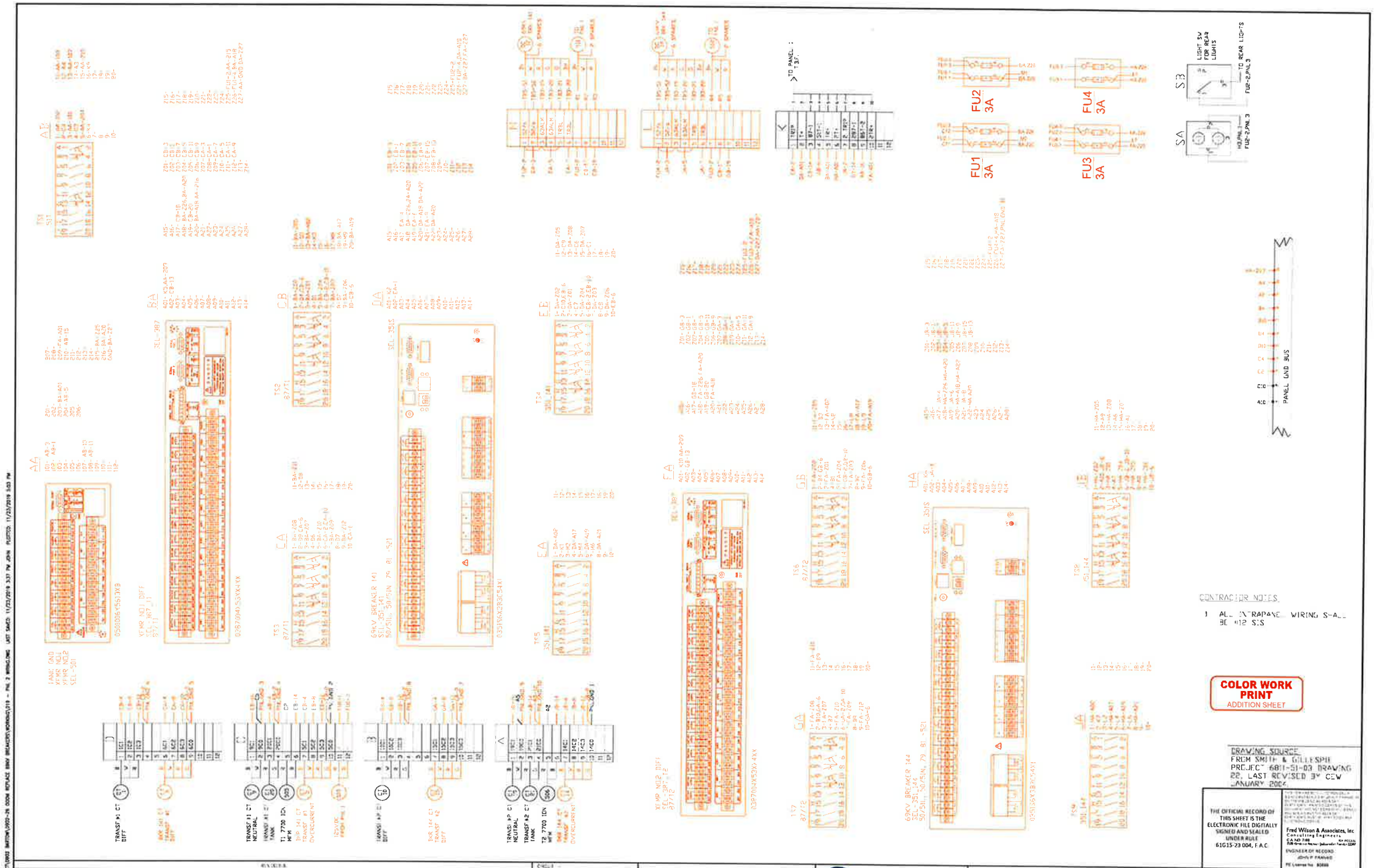
DWG # E17_RMV
SHEET NO 1 OF 1

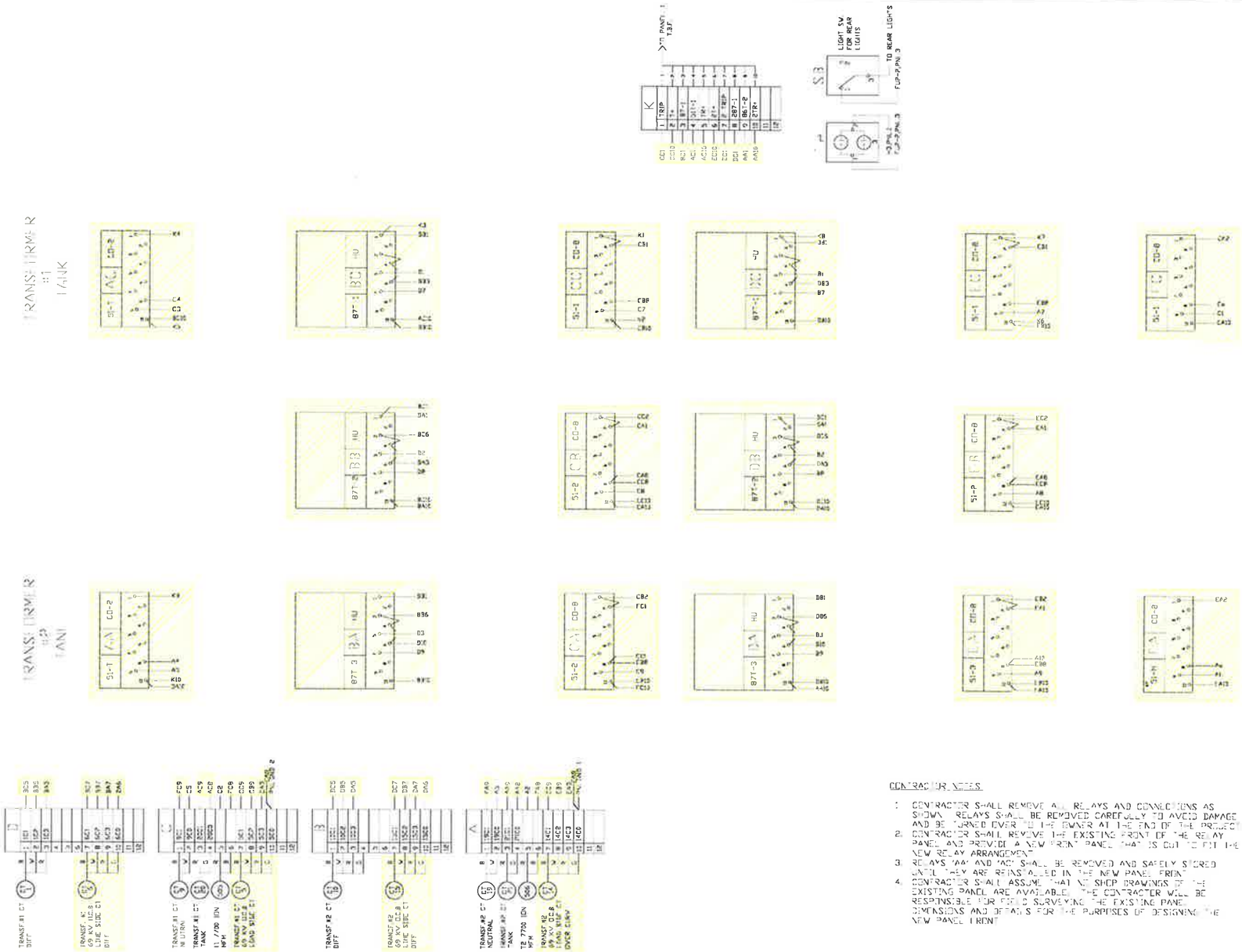
FILE NAME: F:\CLIENT\0902_BARTON\0902-26 ODOM REPLACE 69KV BREAKERS\WORKING\0170 - RMV-AC_DC-DETAILS.DWG LAST SAVED: 9/26/2019 4:25 PM JOHN PLOTTED: 11/22/2019 5:03 PM


TRANSFORMER NO. 1
TRANSFORMER NO. 2
FU1 6A
FU2 6A
FU3 10A
FU4 10A
FU5 10A
7700 ION
AA 7700 ION
AB 7700 ION
COLOR WORK PRINT
ADDITION SHEET
DRAWING SOURCE:
FROM SMITH AND GILLIESPIE
PROJECT 6811-51-03 DRAWING 21
REV. C LAST REVISED BY FW&A
11/2018
PRELIMINARY:
NOT FOR CONSTRUCTION
Fred Wilson & Associates, Inc.
Consulting Engineers
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS
CONTROL PANEL 1
WIRING DIAGRAM
E18
C902-26
NONE
1 OF 1



Fred Wilson & Associates, Inc. Consulting Engineers	ODOM SUBSTATION REPLACE 69KV CIRCUIT BREAKERS
CONTROL PANEL 1 WIRING DIAGRAM	
DWG #	E18_RMV
PROJECT #	0902-26
SCALE:	NONE
SHEET NO.	1 OF 1


FU1 3A
FU2 3A
FU3 3A
FU4 3A
S3
S4
PANEL GND BUS
TRANSF #1 CT DIFF
TRANSF #1 CT NEUTRAL
TRANSF #1 CT TANK
T1 7700 IDX
TRANSF #1 CT OVERCURRENT
TRANSF #2 CT DIFF
TRANSF #2 CT NEUTRAL
TRANSF #2 CT TANK
T2 7700 IDX
TRANSF #2 CT OVERCURRENT
69KV BREAKER 141
69KV BREAKER 144
CONTRACTOR NOTES:
1. ALL INTRAPANEL WIRING SHALL BE #12 STS
COLOR WORK PRINT
ADDITION SHEET
DRAWING SOURCE:
FROM SMITH & GILLESPIE
PROJECT 6811-91-03 DRAWING
22, LAST REVISED BY CEW
JANUARY 2004
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.
Fred Wilson & Associates, Inc.
Consulting Engineers
CA NO 7188
ENGINEER OF RECORD
JOHN P. FRANKE
PE License No. 50666
ENGINEERING RECORD
DRAWN JP JULY 2018
DESIGNED JP JULY 2018
CHECKED
ENGINEER OF RECORD JOHN P. FRANKE PE # 50666
Fred Wilson & Associates, Inc.
Consulting Engineers
CA NO 7188
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS
CONTROL PANEL 2
WIRING DIAGRAM
W.O.#
PROJECT # 0902-26
SCALE:
DWG # E19
1 OF 1



CONTRACTOR NOTES

1. CONTRACTOR SHALL REMOVE ALL RELAYS AND CONNECTIONS AS SHOWN. RELAYS SHALL BE REMOVED CAREFULLY TO AVOID DAMAGE AND BE TURNED OVER TO THE OWNER AT THE END OF THE PROJECT.
2. CONTRACTOR SHALL REMOVE THE EXISTING FRONT OF THE RELAY PANEL AND PROVIDE A NEW FRONT PANEL THAT IS CUT TO FIT THE NEW RELAY ARRANGEMENT.
3. RELAYS (AA) AND (AC) SHALL BE REMOVED AND SAFELY STORED UNTIL THEY ARE REINSTALLED IN THE NEW PANEL FRONT.
4. CONTRACTOR SHALL ASSUME THAT NO SHOP DRAWINGS OF THE EXISTING PANEL ARE AVAILABLE. THE CONTRACTOR WILL BE RESPONSIBLE FOR FIELD SURVEYING THE EXISTING PANEL DIMENSIONS AND DETAILS FOR THE PURPOSES OF DESIGNING THE NEW PANEL FRONT.

COLOR WORK PRINT
REMOVAL SHEET

DRAWING SOURCE
FROM SMITH & GILLESPIE PROJECT 68:1-51-03 DRAWING 22, LAST REVISED BY CEW JANUARY 2004.

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

Fred Wilson & Associates, Inc
Consulting Engineers
CA NO 7188
9047986616
8875 Hendricks Avenue • Jacksonville • Florida • 32220

ENGINEER OF RECORD
JOHN P FRANKO
PE License No 60888

REV	DATE	DESCRIPTION	REV	DATE	DESCRIPTION

ENGINEER OF RECORD JOHN P FRANKO PE # 60888

TRANSFORM RECORD		DATE
DRAWN	JCK	JULY 2018
DESIGNED	JPF	JULY 2018
CHECKED		

FWSA Fred Wilson & Associates, Inc. Consulting Engineers

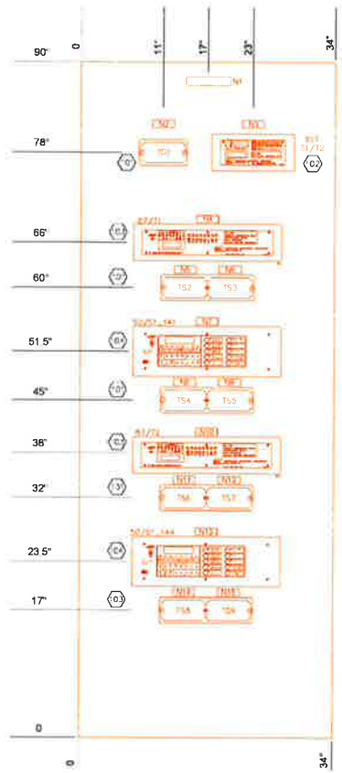
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

CONTROL PANEL 2
WIRING DIAGRAM

W.O. #
PROJECT # 0902-26
SCALE:

DWG # E19_RMV
SHEET NO 1 OF 1

FILE NAME: F:\CLIENT\0902_SMITH\0902-26 ODOM REPLACE 69KV BREAKERS\WORKING\01SR - MAIN-PNL 2 WIRING.DWG LAST SAVED: 11/23/2018 2:15 PM JOHN PLOTTED: 11/23/2018 5:53 PM



RELAY PANEL NO. 2
FRONT LAYOUT

MATERIAL LIST

ITEM	DEVICE	STYLE NUMBER	QTY	MFR	DESCRIPTION
101	TS1, TS2, TS3, TS4, TS5, TS6, TS7, TS8, TS9	[illegible]	9	ABB	FLEXTEST TEST SWITCHES
102	51/N, 51/TF	[illegible]	[illegible]	SEL	OVERCURRENT RELAY TRANSFORMER TANK GROUND
103	87/T1, 87/T2	387	2	SEL	TRANSFORMER DIFFERENTIAL RELAY
104	50/51, 50/51	351S	2	SEL	PHASE AND NEUTRAL OVERCURRENT RELAYS

NAMEPLATE LIST

ITEM	FIRST LINE	SECOND LINE	THIRD LINE
N1	PANEL NO 2		
N2	TEST SWITCH 1		
N3	TANK GROUND	TRANS NO 1 (X)	TRANS NO 2 (Y)
N4	TRANSFORMER NO 1	DIFFERENTIAL RELAY	SEL 387 T1
N5	TEST SWITCH 2		
N6	TEST SWITCH 3		
N7	PHASE 51/50	OVERCURRENT RELAY	SEL 351 T51
N8	TEST SWITCH 4		
N9	TEST SWITCH 5		
N10	TRANSFORMER NO 2	DIFFERENTIAL RELAY	SEL 387 T2
N11	TEST SWITCH 6		
N12	TEST SWITCH 7		
N13	PHASE 51/50	OVERCURRENT RELAY	SEL 351 T44
N14	TEST SWITCH 8		
N15	TEST SWITCH 9		

CONTRACTOR NOTES:

1. CONTRACTOR SHALL PROVIDE A NEW FRONT PANEL WITH ALL NEW RELAYS INSTALLED.
2. DRAWING CREATED FROM LIMITED SITE VISITS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD SURVEYING THE EXISTING PANEL DIMENSIONS AND DETAILS FOR THE PURPOSES OF DESIGNING THE NEW PANEL FRONT.
3. CONTRACTOR SHALL ASSUME THAT NO SHOP DRAWINGS OF THE EXISTING PANEL ARE AVAILABLE

COLOR WORK PRINT
REMOVAL & ADDITION SHEET

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS							
REV NO	REV BY	DATE	DESCRIPTION	REV NO	REV BY	DATE	DESCRIPTION

CIRCUIT

ENGINEERING RECORD	BY	DATE
DRAWN	JM	JULY 2016
DESIGNED	JM	JULY 2016
CHECKED		

ENGINEER OF RECORD JOHN P. FRANKE PE # 43686

FWSA Fred Wilson & Associates, Inc.
Consulting Engineers
CA NO 7188 904.399.8636
3970 Hendricks Avenue • Jacksonville • Florida • 32207

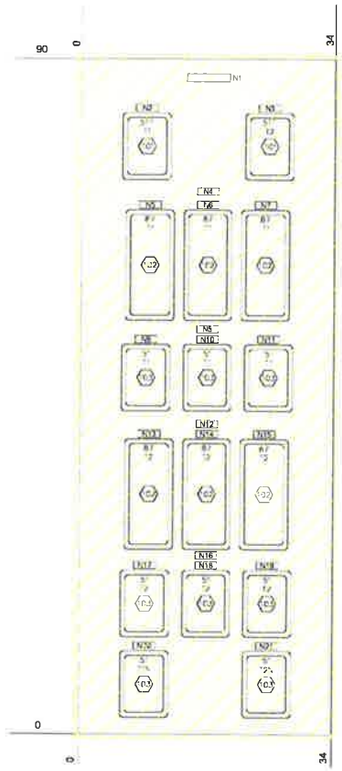
ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

CONTROL PANEL 2
ELEVATION

W.O. #
PROJECT # 0N02-2b
SCALE: NONE

DWG # E20
SHEET NO 1 OF 1

FILE NAME: F:\DJECTLANDS (MATRIX)\0N02-29 ODOM REPLACE 69KV BREAKERS\WORKING\E20 – CONTROL_PNL_2_ELEV.DWG LAST SAVED: 11/22/2019 3:37 PM JOHN PLOTTED: 11/22/2019 5:43 PM



RELAY PANEL NO. 2
FRONT LAYOUT

MATERIAL LIST

ITEM	DEVICE	STYLE NUMBER	QTY	MFR	DESCRIPTION
101	51/[illegible] 51/12	CO-7	2	WESTINGHOUSE	TEST SWITCH, TYPE KYS, ASSEMBLY OF 1 CANCEL THREE POLE POTENTIAL AND THREE SHORT CIRCUITING CURRENT SWITCHES, BACK CONNECTED WITH CLEAR COVER (OWNER FURNISHED)
102	87/[illegible] 87/12	[illegible]	6	WESTINGHOUSE / ABB	TRANSFORMER DIFFERENTIAL RELAY
103	51/[illegible] 51/2 51N/[illegible]51N/[illegible]2	CO-8	8	SEL	PHASE AND NEUTRAL OVERCURRENT RELAYS

NAMEPLATE LIST

ITEM	FIRST LINE	SECOND LINE	THIRD LINE
N1	PANEL NO 2		
N2	TRANSFORMER TRANS NO 1		
N3	TRANSFORMER TRANS NO 2		
N4	51N TRANS NO 1		
N5	A PHASE		
N6	B PHASE		
N7	C PHASE		
N8	OVERCURRENT TRANS NO 1		
N9	A PHASE		
N10	B PHASE		
N11	C PHASE		
N12	OVERCURRENT TRANS NO 2		
N13	A PHASE		
N14	B PHASE		
N15	C PHASE		
N16	OVERCURRENT TRANS NO 2		
N17	A PHASE		
N18	B PHASE		
N19	C PHASE		
N20	TRANS NO 1 NEUTRAL		
N21	TRANS NO 2 NEUTRAL		

CONTRACTOR NOTES:

1. CONTRACTOR SHALL REMOVE ALL RELAYS AND CONNECTIONS AS SHOWN. RELAYS SHALL BE REMOVED CAREFULLY TO AVOID DAMAGE AND BE TURNED OVER TO THE OWNER AT THE END OF THE PROJECT.
2. DRAWING CREATED FROM LIMITED SITE VISITS. THE CONTRACTOR IS RESPONSIBLE FOR FIELD SURVEYING THE EXISTING PANEL DIMENSIONS AND DETAILS FOR THE PURPOSES OF DESIGNING THE NEW PANEL FRONT.
3. CONTRACTOR SHALL REMOVE THE EXISTING FRONT OF THE RELAY PANEL AND PROVIDE A NEW FRONT PANEL THAT IS CUT TO FIT THE NEW RELAY ARRANGEMENT.
4. CONTRACTOR SHALL ASSUME THAT NO SHOP DRAWINGS OF THE EXISTING PANEL ARE AVAILABLE.

COLOR WORK PRINT
REMOVAL & ADDITION SHEET

PRELIMINARY:
NOT FOR CONSTRUCTION

REVISIONS							
REV NO	REV #	DATE	DESCRIPTION	REV NO	REV #	DATE	DESCRIPTION

ENGINEERING RECORD

	BY	DATE
DRAWN	[illegible]	JULY 2018
DESIGNED	[illegible]	JULY 2018
CHECKED		

ENGINEER OF RECORD: JOHN P. FRANKE — FL# 63566

Fred Wilson & Associates, Inc.
Consulting Engineers
CA NO 2188
3970 Hendricks Avenue • Jacksonville • Florida • 32207
904.398.8616

ODOM SUBSTATION
REPLACE 69KV
CIRCUIT BREAKERS

CONTROL PANEL 2
ELEVATION

W.O.#
PROJECT # 0902-26
SCALE: NONE

DWG # E20_RMV
SHEET NO 1 OF 1

FILE NAME: F:\CLIENT\0902 BARTOW\0902-26 ODOM REPLACE 69KV BREAKERS\WORKING\0226 - RMV_CONTROL_PNL_2_ELEV.DWG LAST SAVED: 11/23/2018 1:43 PM JOHN PLOTTED: 11/23/2018 5:03 PM