Attachment C

NexGear

Advanced Paralleling Switchgear

ARLINGTON WPCP
ARLINGTON VA

SYSTEM DRAWINGS & SCHEMATICS
SYSTEM OVERVIEW

TABLE OF CONTENTS

DRAWING TYPE: SYSTEM OVERVIEW

SECTION NO	NO.	DRAWING NUMBER	TITLE	NUMBER OF PAGES
0	1	NG2766-0-TC	TABLE OF CONTENTS	1
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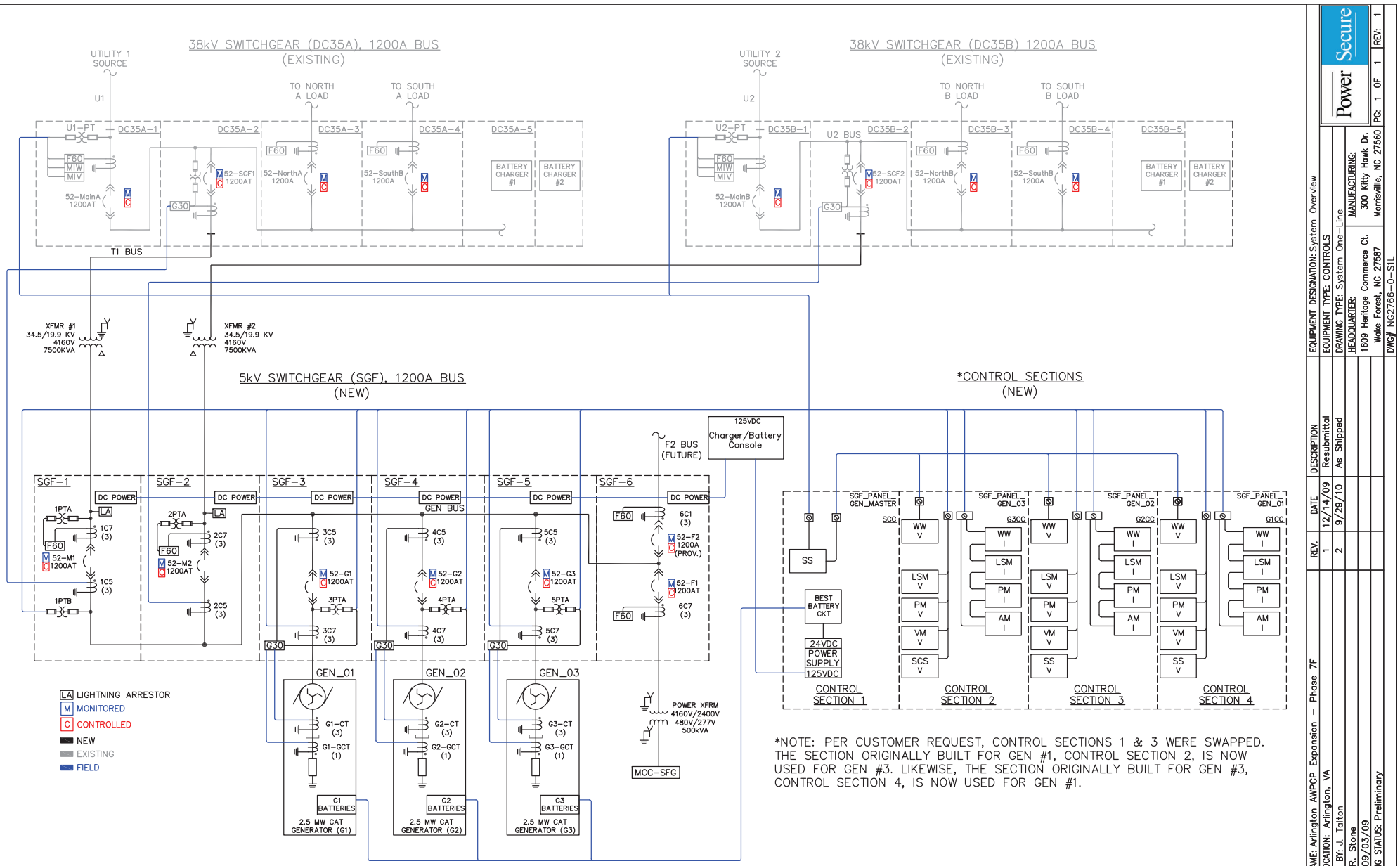
	3	NG2766-0-COMM	COMMUNICATIONS DIAGRAM	1
	4	NG2766-0-SO	SEQUENCE OF OPERATIONS	3
	5	NG2766-0-CR	SYSTEM CONTROL DIAGRAMS - CONDUIT	2

JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Tatton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION: System Overview
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Table of Contents
HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587
MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DWG# NG2766-0-TC
PG: 1 OF 1 REV: 1

Power Secure



*NOTE: PER CUSTOMER REQUEST, CONTROL SECTIONS 1 & 3 WERE SWAPPED. THE SECTION ORIGINALLY BUILT FOR GEN #1, CONTROL SECTION 2, IS NOW USED FOR GEN #3. LIKEWISE, THE SECTION ORIGINALLY BUILT FOR GEN #3, CONTROL SECTION 4, IS NOW USED FOR GEN #1.

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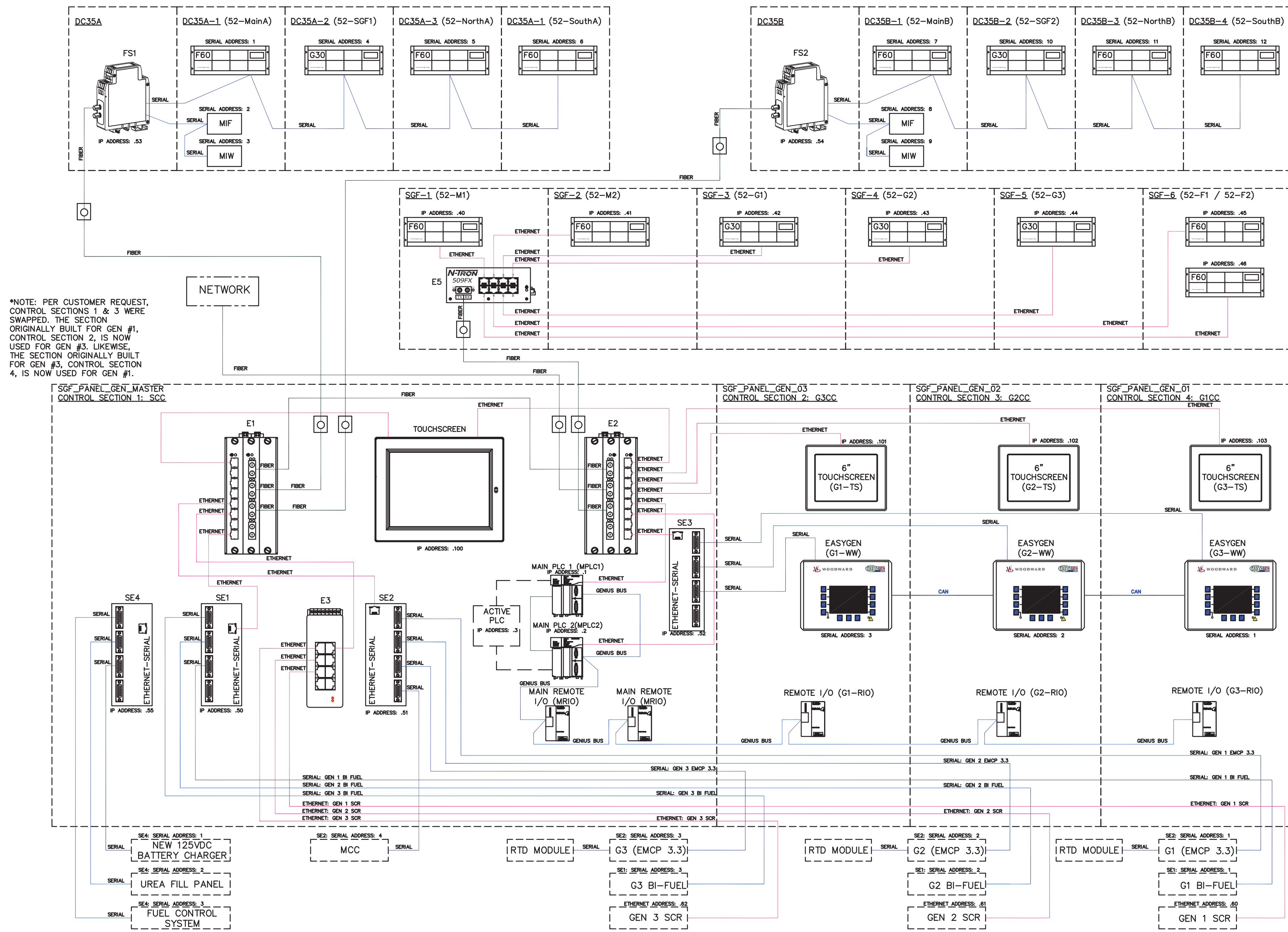
JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: System Overview
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: System One-Line

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560
HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

PG: 1 OF 1 REV: 1
DWG# NG2766-0-S1L

9/29/2010 7:00 PM NG2766 Arlington WPCP – System Drawings & Schematics_AD.dwg



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REV.	DATE	DESCRIPTION
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2	9/29/10	As-Shipped Comments

EQUIPMENT DESIGNATION: System Overview
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Communications Diagram
HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587
MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DWG# NG2766-0-COMM
PG: 1 OF 1 REV: 1

NexGear

Advanced Paralleling Switchgear

ARLINGTON WPCP
ARLINGTON VA

SYSTEM DRAWINGS & SCHEMATICS
MEDIUM VOLTAGE SWITCHGEAR

5kV SWITCHGEAR
2 UTILITY PROTECTIVE RELAYS: GE F60
3 GENERATOR PROTECTIVE RELAYS: GE G30
2 FEEDER PROTECTIVE RELAYS: GE F60

TABLE OF CONTENTS

DRAWING TYPE: SYSTEM SCHEMATICS & DRAWINGS: MEDIUM VOLTAGE SWITCHGEAR

JOB NAME: Arlington AWPCP Expansion - Phase 7F	REV.	DATE	DESCRIPTION
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal
DRAWN BY: J. Talton	2	9/29/10	Vendor Resubmittal Comments
ENGR: R. Stone			
DATE: 09/03/09			
DRAWING STATUS: Preliminary			

EQUIPMENT DESIGNATION: System Overview
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Sequence of Operation

Power Secure

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

PG: 1 OF 3 REV: 1

DWG# NG2766-0-SO

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AUTOMATIC STANDBY MODE - RETURN OF EITHER UTILITY SOURCE

1. Utility Power is restored to DC-35A.

   a. The 52-MainA MPR senses appropriate utility voltage and signal the system PLC, initiating an adjustable stability timer.
   b. Once the stability timer elapses, the system synchronizes the generators to the DC-35A Utility source.
   c. Once the two sources are in sync, the Utility Breaker DC-35A is closed.
   d. The 5kV Tie Breaker 52-M2 is opened.
   e. The generators will unload and the Generator Breakers will open. The generators continue to run in cooldown after their breakers are open for an adjustable period of time.
   f. The generators shut down once their cooldown timers elapse, returning the system to normal operating conditions.
   g. Once power is restored to DC-35B and the adjustable stable timer elapses, the Utility Breaker DC-35B will close. If 52-M2 is selected by the Tie Breaker Selector Switch, the Tie Breaker 52-M1 will open and the Tie Breaker 52-M2 will close.

2. Utility Power is restored to DC-35B but not DC-35A.

   a. The 52-MainB MPR senses appropriate utility voltage and signal the system PLC, initiating an adjustable stability timer.
   b. Once the stability timer elapses, the system synchronizes the generators to the DC-35B Utility source.
   c. Once the two sources are in sync, the Utility Breaker DC-35B is closed.
   d. The 5kV Tie Breaker 52-M1 is opened.
   e. The generators will unload and the Generator Breakers will open. The generators continue to run in cooldown after their breakers are open for an adjustable period of time.
   f. The generators shut down once their cooldown timers elapse, returning the system to normal operating conditions.
   g. Once power is restored to DC-35A and the adjustable stable timer elapses, the Utility Breaker DC-35A will close. If 52-M1 is selected by the Tie Breaker Selector Switch, the Tie Breaker 52-M2 will open and the Tie Breaker 52-M1 will close.

AUTOMATIC LOAD MANAGEMENT MODE

1. Unload first Utility Source

   a. The PLC receives a remote command initiating Load Management Mode from PowerSecure or PCS. Each Generator will start and synchronize to the utility source feeding the 5kV switchgear through selected Tie Breaker.
   b. Once the first Generator breaker is closed, the PLC sends an analog signal to each Generator Controller proportional to the imported power from the paralleled utility source. The first generator will pick up load in an attempt to drive imported power to near zero.
   c. The remaining Generator Controllers will synchronize their generators to the bus before closing their breakers. As each generator parallels to the utility, its Generator Controller will load share with the other connected Controllers.
   d. The PLC opens the paralleled Utility breaker once the imported utility power is near zero.

2. Unload remaining Utility

   a. The Generator Controllers will synchronize their generators to the non-selected utility source.
   b. Once the two sources are in sync, the non-selected Tie Breaker (52-M1 or 52-M2) will close.
   c. All generators will pick up additional load to drive the imported power signal to near zero.
   d. All three generators will run together for an adjustable period of time, after which the Generator Controllers will determine if any generators can be shut down due to low system load. The Controllers will always keep an adjustable amount of reserve power available beyond the current system load, and as the load changes generators may be cycled on and off to keep the appropriate level of reserve power available.

3. Return to Normal Conditions

   a. Once the PLC receives a remote command to end Load Management Mode from PowerSecure or PCS, it opens the non-selected Tie Breaker (52-M1 or 52-M2) which is paralleled to the Utility.
   b. The Generator Controllers will synchronize their generators to the selected utility source.
   c. Once the two sources are in sync, the selected Utility Breaker will be closed.
   d. The PLC commands the Generator Controllers to soft-unload to the utility and open their Generator breakers. The generators continue to run in cooldown after their breakers are open for an adjustable period of time.
   e. The generators shut down once their cooldown timers elapse, returning the system to normal operating conditions.

4. Tie Selector Switch

   If the Tie Selector Switch is turned during Automatic Load Management Mode, the following will occur:

   a. The non-selected Tie Breaker (52-M1 or 52-M2) will open.
   b. The Generator Controllers will synchronize their generators to the selected utility source.
   c. Once the two sources are in sync, the selected Tie Breaker (52-M1 or 52-M2) will close.
   d. All generators will pick up additional load to drive the imported power signal to near zero.

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	Various updates based on Comments

EQUIPMENT DESIGNATION: System Overview
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Sequence of Operation

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

PowerSecure

PG: 2 OF 3 REV: 1

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

DWG# NG2766-0-SO

AUTOMATIC ISOLATE MODE

1. Unload first Utility Source

   a. The PLC receives a remote command initiating Isolate Mode from PowerSecure or PCS. Each Generator will start and synchronize to the utility source feeding the 5kV switchgear through selected Tie Breaker.
   b. Once the first Generator breaker is closed, the PLC sends an analog signal to each Generator Controller proportional to the imported power from the paralleled utility source. The first generator will pick up load in an attempt to drive imported power to near zero.
   c. The remaining Generator Controllers will synchronize their generators to the bus before closing their breakers. As each generator parallels to the utility, its Generator Controller will load share with the other connected Controllers.
   d. The PLC opens the paralleled Utility breaker once the imported utility power is near zero.

2. Unload remaining Utility

   a. The Generator Controllers will synchronize their generators to the non-selected utility source.
   b. Once the two sources are in sync, the non-selected Tie Breaker (M1/M2) will close.
   c. All generators will pick up additional load to drive the imported power signal to near zero.
   d. The non-selected Utility breaker will be opened.
   e. All three generators will run together for an adjustable period of time, after which the Generator Controllers will determine if any generators can be shut down due to low system load. The Controllers will always keep an adjustable amount of reserve power available beyond the current system load, and as the load changes generators may be cycled on and off to keep the appropriate level of reserve power available.
   f. In the event that generator capacity is less than plant load, an alarm will be sent to PCS and PowerSecure.

3. Return to Normal Conditions

   a. Once the PLC receives a remote command to end Isolate Mode from PowerSecure or PCS, it synchronizes the generators to the non-selected utility source.
   b. The system closes the non-selected Utility Breaker (52-MainA or 52-MainB) then opens the non-selected Tie Breaker (52-M1 or 52-M2).
   c. The Generator Controllers will synchronize their generators to the selected utility source.
   d. Once the two sources are in sync, selected Utility breaker will be closed.
   e. The PLC commands the Generator Controllers to soft-unload to the utility and open their Generator breakers. The generators continue to run in cooldown after their breakers are open for an adjustable period of time.
   f. The generators shut down once their cooldown timers elapse, returning the system to normal operating conditions.

MANUAL CONTROL OF GENERATORS

1. Each Generator Control Panel includes a Generator Control Switch and a Breaker Control Switch. Each Generator Control Switch has 4 positions - "Off", "Auto", "Run" and "Run w/Load". The "Auto" position only allows remote operation of its Generator by the PLC, and the "Off" position does not allow its Generator to run. The "Run w/Load" position starts its Generator, begins automatic synchronization of the Generator to the bus and automatically closes its Generator breaker. The "Run" position will only start its Generator; synchronization to the bus and breaker operation must be done manually.

2. Manual Generator Control Sequence - "Run" Mode

   a. Place the System Control Switch in the "Manual" position to allow manual control of the generators and generator breakers.
   b. Place the Generator Control Switch in the "Run" position to manually start the Generator.
   c. Turn the analog Synchroscope on using the Synchroscope Switch (at the Generator Control Panel). This switch must be on in order to manually close the Generator breaker via the Breaker Control Switch.
   d. If closing the Generator into a dead bus, its Generator Protection Relay (GPR) must measure bus voltage below 25% of nominal to allow manual closing of its Generator breaker via a sync check output. Use the analog meters at the Generator Control Panel to determine when Generator output voltage and frequency are acceptable. If necessary, use the Voltage Raise/Lower switch and Speed Potentiometer to adjust engine speed and voltage. Close the Generator breaker via its Breaker Control Switch.
   e. If closing the Generator into an energized bus, its GPR must see both sources synchronized to allow manual closing of the Generator breaker via a sync check output. The analog Synchroscope provides an indication of how closely synchronized the Generator is with the bus. Use the Voltage Raise/Lower switch and Speed Potentiometer to adjust engine speed and voltage until the two power sources are synchronized. Close the Generator breaker via its Breaker Control Switch.

ENGINE SEQUENCING

Sequencing of the generators during Load Management Mode, Isolate Mode and Standby Mode will add and shed generators based on load. After 15 minutes, if each generator load is below 25% the generator with the most run hours will unload and shut down. If the remaining generators exceed 50% load for 10 seconds, a generator will start and share load with the other generators. The time delays and load setpoints are configurable.

TRANSFER TRIP AND FAULT SCENARIOS

1. If breaker M1 trips for an overcurrent fault, it will lockout and breaker SGF1 will trip and lockout.
2. If breaker M2 trips for an overcurrent fault, it will lockout and breaker SGF2 will trip and lockout.
3. If breaker SGF1 trips for an overcurrent fault, it will lockout and breaker M1 will trip and lockout.
4. If breaker SGF2 trips for an overcurrent fault, it will lockout and breaker M2 will trip and lockout.
5. There will be zone interlocking outputs from F1 and F2 to M1, M2, G1, G2 and G3.
6. There will be zone interlocking outputs from M1 and M2 to G1, G2 and G3.

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	Various updates and comments

EQUIPMENT DESIGNATION: System Overview
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Sequence of Operation

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

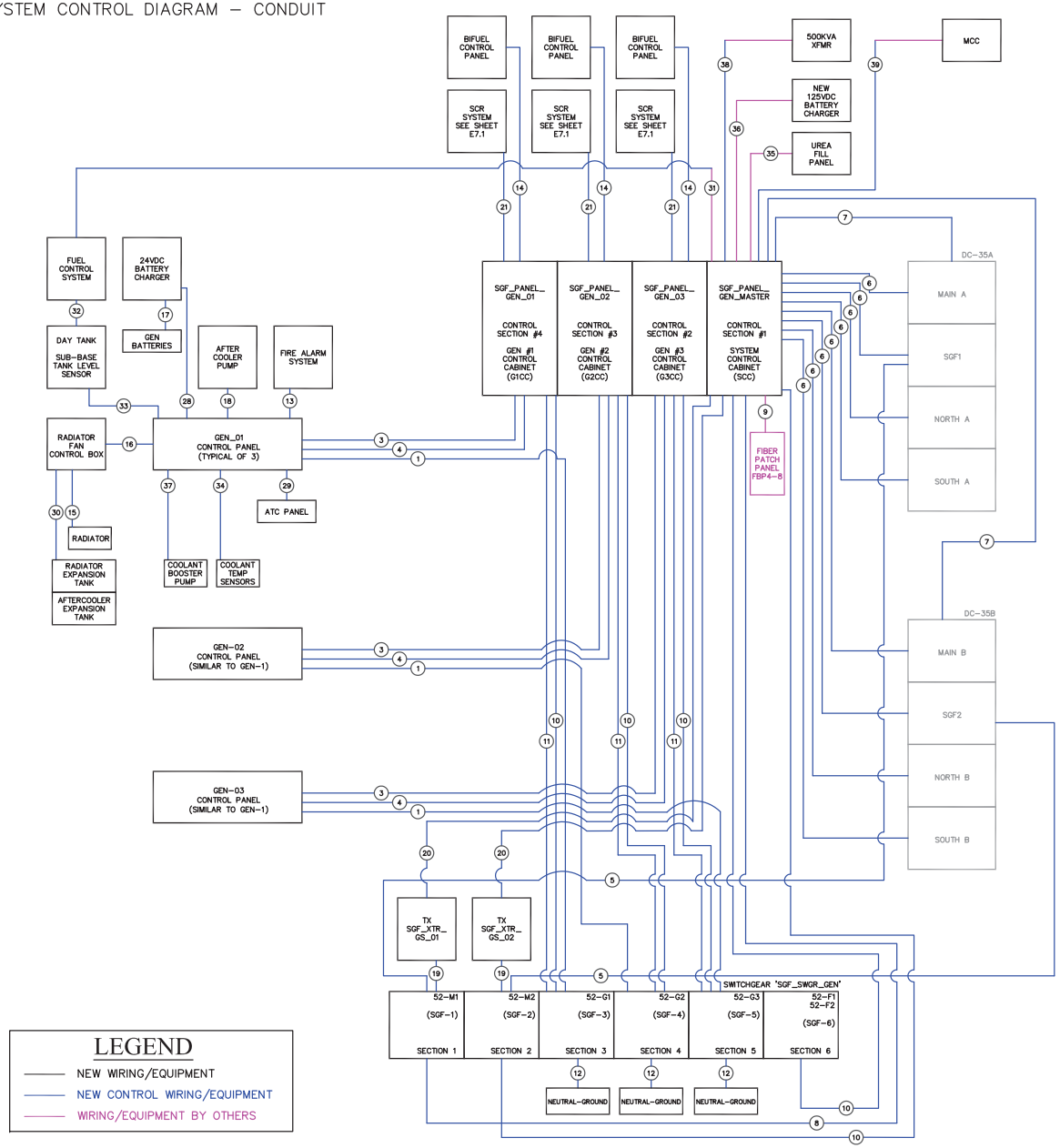
MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 3 OF 3 REV: 1

DWG# NG2766-0-SO

SYSTEM CONTROL DIAGRAM – CONDUIT



IDG® CONTROL SYSTEM LEGEND

No.	CONDUIT	CONDUCTORS	PURPOSE/NOTES
1	1–1" C.	6 #12	DIFFERENTIAL CTS
3	1–2" C.	5#18 STP	ENGINE CONTROL AND MONITORING
4	1–2" C.	20#14, 3#10	DC POWER AND CONTROL
5	1–1" C.	6#12	DIFFERENTIAL CTS
6	1–1" C.	14#14	BREAKER CONTROL AND MONITORING
7	1–1" C.	6#14, 2#18 STP FIBER: 6–strand multimode fiber with ST type barrel connectors	VOLTAGE SENSING, WATT TRANSDUCER AND NETWORK
8	1–1" C.	20#14 FIBER: 6–strand multimode fiber with ST type barrel connectors	VOLTAGE SENSING, BREAKER CONTROL & MONITORING, & NETWORK
9	1–1" C.	1 6PR FIBER (C7F–33): 6–strand multimode fiber with ST type barrel connectors	NETWORK
10	1–1" C.	20#14	BREAKER CONTROL AND MONITORING
11	1–1" C.	6#12, 8#14	CTS AND VOLTAGE SENSING
12	1–1" C.	2#12	NEUTRAL–GROUND CT
13	1–1" C.	2#14	FIRE ALARM SYSTEM
14	1–1" C.	2#18 STP, 6#14, 2 CAT5e	BI–FUEL SYSTEM + GEN AUX
15	1–1" C.	6#14	RADIATOR
16	1–1" C.	10#14	RADIATOR FAN CONTROL BOX
17	1–1" C.	2#10	BATTERY CHARGER
18	1–1" C.	4#14	AFTER COOLER PUMP
19	1–1" C.	4#14	TRANSFORMER 63 AND 49 TRIP
20	1–1" C.	6#14	TRANSFORMER MONITORING
21	1–1" C.	2 CAT5e, 4#14, 2#18 STP	SCR SYSTEM
28	1–1" C.	2#14	BATTERY CHARGER ALARM
29	1–1" C.	4#14	LOUVER AND FAN CONTROL
30	1–1" C.	4#18 STP	RADIATOR/AFTERCOOLER EXP. TANKS
31	1–1" C.	2#18 STP	MODBUS TO FUEL CONTROL SYSTEM
32	1–1" C.	16#14	FUEL TANK FLOATS
33	1–1" C.	4#14	SUB–BASE TANK LEVEL SENSOR TO GEN CONTROL PANEL
34	1–1" C.	2#18 STP PER SENSOR	COOLANT TEMP SENSORS
35	1–1" C.	2#18 STP	UREA FILL PANEL MODBUS
36	1–1" C.	3#10, 2#18 STP	NEW 125VDC BATTERY CHARGER DC POWER & MODBUS
37	1–1" C.	----------	COOLANT BOOSTER PUMP
38	1–1" C.	6#14	500KVA TRANSFORMER MONITORING
39	1–1" C.	2#18 STP	MCC MODBUS

JOB NAME: Arlington AWPCP Expansion – Phase 7F
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2	9/29/10	As Shipped

EQUIPMENT DESIGNATION: System Overview
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: System Control – Conduit

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

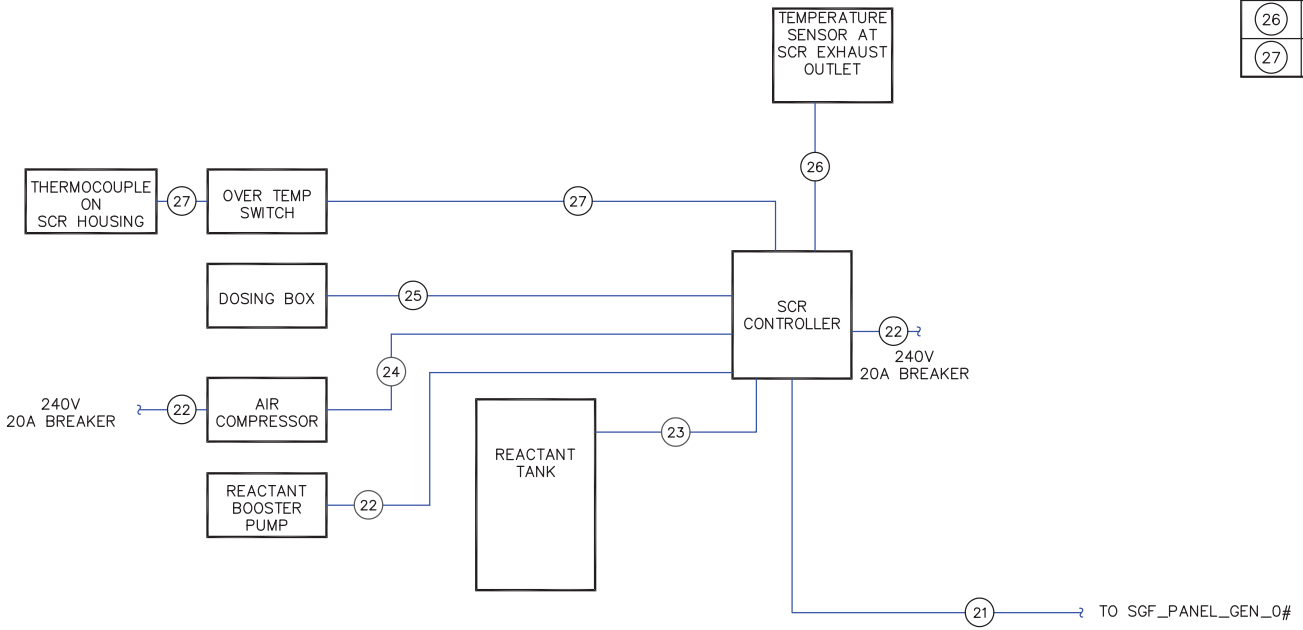
MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 1 OF 2 REV: 1

DWG# NG2766-0-CR

SCR SYSTEM CONTROL DIAGRAM – CONDUIT



LEGEND

- NEW WIRING/EQUIPMENT
- NEW CONTROL WIRING/EQUIPMENT
- WIRING/EQUIPMENT BY OTHERS

SCR CONTROL SYSTEM LEGEND

No.	CONDUIT	CONDUCTORS	PURPOSE/NOTES
22	1–1" C.	3 #14	CONTROL/SIGNAL
23	1–1" C.	3 #18 STP	CONTROL/SIGNAL
24	1–1" C.	2 #14 , 2#18	CONTROL/SIGNAL
25	1–1" C.	4 #14 , 7#18	CONTROL/SIGNAL
26	1–1" C.	2 #18 STP	CONTROL/SIGNAL
27	1–1" C.	4 #18	CONTROL/SIGNAL

REV.	DATE	DESCRIPTION
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2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion – Phase 7F
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ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: System Overview
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: System Control – Conduit

HEADQUARTER:
1609 Heritage Commerce Ct.
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PG: 2 OF 2 REV: 1

DWG# NG2766-0-CR

NexGear

Advanced Paralleling Switchgear

ARLINGTON WPCP
ARLINGTON VA

SYSTEM DRAWINGS & SCHEMATICS
LOW VOLTAGE CONTROLS

GENERATOR GOVERNORS: 3 - EASYGEN 3200
OPERATOR INTERFACES: 1 - 15" TOUCHSCREEN; 3 - 6" TOUCHSCREEN
PROGRAMMABLE LOGIC CONTROLLER (PLC): 2 - GE RX3i + 4 REMOTE I/O UNITS

TABLE OF CONTENTS

DRAWING TYPE: SYSTEM SCHEMATICS & DRAWINGS: LOW VOLTAGE CONTROLS

JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY:
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

REV.	DATE	DESCRIPTION
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PG: 1 OF 1 REV: 1

DWG# NG2766-2-TC

9/29/2010 7:00 PM NG2766 Arlington WPCP - System Drawings & Schematics_AD.dwg

GENERAL LEGEND

52	ANSI STANDARD DEVICE NUMBER: AC CIRCUIT BREAKER
86	ANSI STANDARD DEVICE NUMBER: LOCKOUT RELAY
AM	CURRENT METER
AMS	CURRENT METER SWITCH
AUX 'A'	BREAKER STATE 'A' – OPEN
AUX 'B'	BREAKER STATE 'B' – CLOSED
BB	BEST BATTERY
BC	BATTERY CHARGER
BCS	BREAKER CONTROL SWITCH
BEST BATTERY CIRCUIT	DC CONTROL POWER SELECTION CIRCUIT IN WHICH THE DC SOURCE WITH THE HIGHEST POTENTIAL SUPPLIES DC CONTROL POWER.
CAN	CONTROLLER–AREA NETWORK
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
CT–TB	CURRENT TRANSFORMER SHORTING BLOCK
DB	DIODE BLOCK
DC35A	EXISTING 38kV MEDIUM VOLTAGE SWITCHGEAR
DC35B	EXISTING 38kV MEDIUM VOLTAGE SWITCHGEAR
DCC	DC – VDC CONVERTER; 24VDC, 75W
E1	ETHERNET SWITCH #1
E2	ETHERNET SWITCH #2
E3	ETHERNET SWITCH #3
E4	ETHERNET SWITCH #4
E5	ETHERNET SWITCH #5
ECU	ENGINE CONTROL UNIT
EMCP 3.3	CAT GENERATOR CONTROLLER MODEL 3.3
ER	ENGINE RUN RELAY
ES	EMERGENCY STOP
ETB	ENGINE TERMINAL BLOCK
F1–C	52–F1 BREAKER CLOSE CONTACTOR (CONTROL SECTION 1: SCC)
F1–T	52–F1 BREAKER TRIP CONTACTOR (CONTROL SECTION 1: SCC)
F2–C	52–F2 BREAKER CLOSE CONTACTOR (CONTROL SECTION 1: SCC)
F2–T	52–F2 BREAKER TRIP CONTACTOR (CONTROL SECTION 1: SCC)
F60	GE MULITLIN FEEDER PROTECTIVE RELAY MODEL F60
FH	FUSE HOLDER
FM	FREQUENCY METER
FS1	FIBER TO SERIAL CONVERTER #1 (SWGR DC35A)
FS2	FIBER TO SERIAL CONVERTER #2 (SWGR DC35B)
G	GENERATOR
G1	GENERATOR #1
G2	GENERATOR #2
G3	GENERATOR #3
G1CC	GENERATOR #1 CONTROL CABINET (CONTROL SECTION #2)
G2CC	GENERATOR #2 CONTROL CABINET (CONTROL SECTION #3)
G3CC	GENERATOR #3 CONTROL CABINET (CONTROL SECTION #4)
GCS	GENERATOR CONTROL SWITCH
GCT	GROUND CURRENT TRANSFORMER
ITB	INTERCONNECT TERMINAL BLOCK
G30	GE MULITLIN GENERATOR PROTECTIVE RELAY MODEL G30
GCT	GROUND CURRENT TRANSFORMER
GTB	GROUND TERMINAL BLOCK
GX	GENERATOR BREAKER AUXILIARY SWITCH RELAY
LA	LIGHTNING ARRESTOR
LS	LOAD SHED RELAY
LSM	LOAD SHARE MODULE
M1–C	52–M1 BREAKER CLOSE CONTACTOR (CONTROL SECTION 1: SCC)
M1–T	52–M1 BREAKER TRIP CONTACTOR (CONTROL SECTION 1: SCC)
M1–86	52–M1 BREAKER 86 LOCKOUT CONTACTOR (CONTROL SECTION 1: SCC)
M2–C	52–M2 BREAKER CLOSE CONTACTOR (CONTROL SECTION 1: SCC)
M2–T	52–M2 BREAKER TRIP CONTACTOR (CONTROL SECTION 1: SCC)
M2–86	52–M2 BREAKER 86 LOCKOUT CONTACTOR (CONTROL SECTION 1: SCC)

MainA–C	52–MainA BREAKER CLOSE CONTACTOR (CONTROL SECTION #1: SCC)
MainA–T	52–MainA BREAKER TRIP CONTACTOR (CONTROL SECTION #1: SCC)
MainB–C	52–MainB BREAKER CLOSE CONTACTOR (CONTROL SECTION #1: SCC)
MainB–T	52–MainB BREAKER TRIP CONTACTOR (CONTROL SECTION #1: SCC)
NorthA–C	52–NorthA BREAKER CLOSE CONTACTOR (CONTROL SECTION #1: SCC)
NorthA–T	52–NorthA BREAKER TRIP CONTACTOR (CONTROL SECTION #1: SCC)
NorthB–C	52–NorthB BREAKER CLOSE CONTACTOR (CONTROL SECTION #1: SCC)
NorthB–T	52–NorthB BREAKER TRIP CONTACTOR (CONTROL SECTION #1: SCC)
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MIV	GE MULITLIN VOLTAGE AND/OR FREQUENCY PROTECTION RELAY
MIW	GE MULITLIN DIRECTIONAL POWER AND LOSS OF FIELD PROTECTION RELAY
MMR	MANUAL MODE RELAY (CONTROL SECTION #1: SCC)
MPLC1	MAIN PLC #1 (GE FANUC MODEL RX3i)
MPLC2	MAIN PLC #2 (GE FANUC MODEL RX3i)
MRIO	MAIN REMOTE I/O (GE FANUC MODEL VERSAMAX)
NP	NAMEPLATE
NTB	NEUTRAL TERMINAL BLOCK
PLC	PROGRAMMABLE LOGIC CONTROLLER
PT	POTENTIAL TRANSFORMER
REMOTE I/O	REMOTE INPUT/OUTPUT
RIO	REMOTE INPUT/ OUTPUT
RLY	RELAY
RO	EASYGEN 3200 RELAY OUTPUT
RTD	RESISTANCE TEMPERATURE DETECTOR
RWL	RUN WITH LOAD
SCC	SYSTEM CONTROL CABINET (CONTROL SECTION #1)
SCR	EMISSIONS SYSTEM
SE1	SERIAL TO ETHERNET CONVERTOR MODULE #1
SE2	SERIAL TO ETHERNET CONVERTOR MODULE #2
SGF1–C	52–SGF1 BREAKER CLOSE CONTACTOR (CONTROL SECTION 1: SCC)
SGF1–T	52–SGF1 BREAKER TRIP CONTACTOR (CONTROL SECTION 1: SCC)
SGF1–86	52–SGF1 BREAKER 86 LOCKOUT CONTACTOR (CONTROL SECTION 1: SCC)
SGF2–C	52–SGF2 BREAKER CLOSE CONTACTOR (CONTROL SECTION 1: SCC)
SGF2–T	52–SGF2 BREAKER TRIP CONTACTOR (CONTROL SECTION 1: SCC)
SGF2–86	52–SGF2 BREAKER 86 LOCKOUT CONTACTOR (CONTROL SECTION 1: SCC)
SH	SPACE HEATER
SouthA–C	52–SouthA BREAKER CLOSE CONTACTOR (CONTROL SECTION #1: SCC)
SouthA–T	52–SouthA BREAKER TRIP CONTACTOR (CONTROL SECTION #1: SCC)
SouthB–C	52–SouthB BREAKER CLOSE CONTACTOR (CONTROL SECTION #1: SCC)
SouthB–T	52–SouthB BREAKER TRIP CONTACTOR (CONTROL SECTION #1: SCC)
SS	SOUCE SELECT; RELAYS ARE USED TO SELECT A MAINS INPUT FOR THE GENERATOR GOVERNORS. MAINS INPUTS ARE FROM UTILITY SOURCES.
SS–U1–PT	SOURCE SELECT RELAY– UTIL#1 (LOCATED IN CONTROL SECTION #1)
SS–U2–PT	SOURCE SELECT RELAY – UTIL #2 (LOCATED IN CONTROL SECTION #1)
SW	SWITCH
SWGR	SWITCHGEAR
SYNCS	SYNCHROSCOPE SWITCH
SYNC	SYNCHROSCOPE
TB	TERMINAL BLOCK
TS	TOUCHSCREEN (OPERATOR INTERFACE)
U	UTILITY
U1	UTILITY #1 (SOURCE FOR 52–MainA)
U2	UTILITY #2 (SOURCE FOR 52–MainB)
VM	VOLTAGE METER
VMS	VOLTAGE METER SWITCH
VRL	VOLTAGE RAISE/LOWER
WM	WATTS METER
WT	WATTS TRANSDUCER
WW	WOODWARD EASYGEN 3000 SERIES GENERATOR GOVERNOR

BREAKER LEGEND

52–MainA	EXISTING MV BREAKER; SWITCHGEAR DC35A, SECTION 1 (INCOMING VOLTAGE FROM UTILITY SOURCE #1)
52–SGF1	EXISTING MV BREAKER; SWITCHGEAR DC35A, SECTION 2; TIE BREAKER
52–NorthA	EXISTING MV BREAKER; SWITCHGEAR DC35A, SECTION 3
52–SouthA	EXISTING MV BREAKER; SWITCHGEAR DC35A, SECTION 4
52–MainB	EXISTING MV BREAKER; SWITCHGEAR DC35B, SECTION 1 (INCOMING VOLTAGE FROM UTILITY SOURCE #1)
52–SGF2	EXISTING MV BREAKER; SWITCHGEAR DC35B, SECTION 2; TIE BREAKER
52–NorthB	EXISTING MV BREAKER; SWITCHGEAR DC35B, SECTION 3
52–SouthB	EXISTING MV BREAKER; SWITCHGEAR DC35B, SECTION 4
52–M1	NEW MV BREAKER; SWITCHGEAR SGF, SECTION 1; MAIN #1
52–M2	NEW MV BREAKER; SWITCHGEAR SGF, SECTION 2; MAIN #2
52–G1	NEW MV BREAKER; SWITCHGEAR SGF, SECTION 3; GENERATOR #1
52–G2	NEW MV BREAKER; SWITCHGEAR SGF, SECTION 4; GENERATOR #2
52–G3	NEW MV BREAKER; SWITCHGEAR SGF, SECTION 5; GENERATOR #3
52–F1	NEW MV BREAKER; SWITCHGEAR SGF, SECTION 6; FEEDER #1
52–F2	NEW MV BREAKER; SWITCHGEAR SGF, SECTION 6; FEEDER #2 (FUTURE)

9/29/2010 7:00 PM NG2766 Arlington WPCP – System Drawings & Schematics_AD.dwg

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Taiton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Legend/Abbreviations

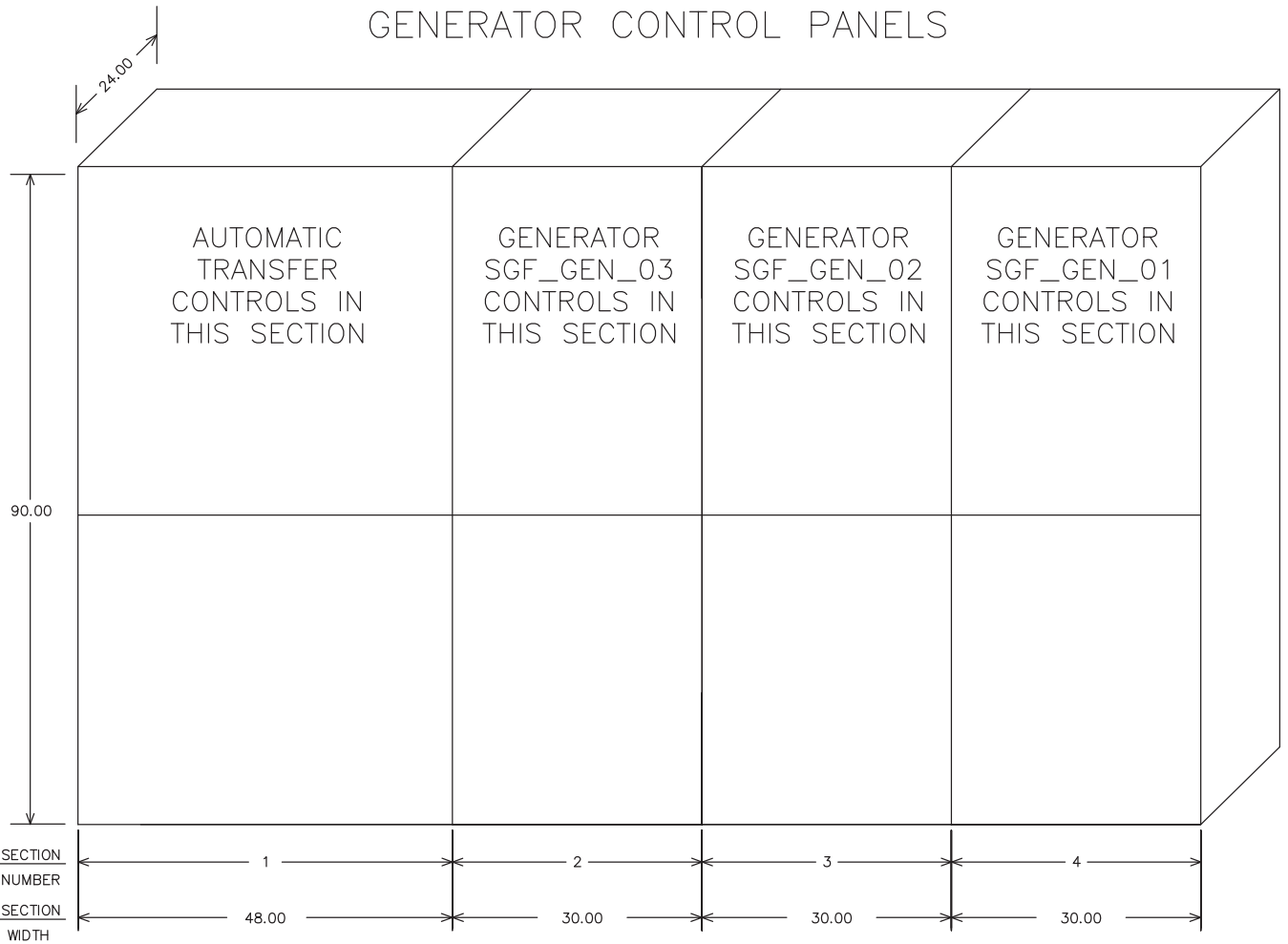
Power Secure

HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587
MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560

PG: 1 OF 1 REV: 1

DWG# NG2766-2-LA

GENERATOR CONTROL PANELS



*NOTE: PER CUSTOMER REQUEST, CONTROL SECTIONS 1 & 3 WERE SWAPPED. THE SECTION ORIGINALLY BUILT FOR GEN #1, CONTROL SECTION 2, IS NOW USED FOR GEN #3. LIKEWISE, THE SECTION ORIGINALLY BUILT FOR GEN #3, CONTROL SECTION 4, IS NOW USED FOR GEN #1.

GENERAL NOTES:

PRODUCT DESCRIPTION AND RATINGS:

ENCLOSURE DATA:

NEMA 1 INDOOR CONSTRUCTION
ANSI #61 FINISH, PROCEDURES: ZINC PHOSPHATE WITH NON-CHROMIC SEAL, RUST INHIBITED TREATMENT WITH BAKED POLYESTER COATING. FRONT ACCESS ONLY BY HALF-HEIGHT HINGED DOORS

HANDLING:

SWITCHGEAR SECTIONS ARE FURNISHED WITH FOUR LIFTING LUGS AND ARE SHIPPED ON SKIDS. ROLLERS SHALL ONLY BE USED WITH SKID IN PLACE.

CODE STANDARDS:

ANSI, NEMA, UL

EQUIPMENT WEIGHTS:

CONTROL CABINET VERTICAL STRUCTURE: 800 LBS

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Elevation Drawings

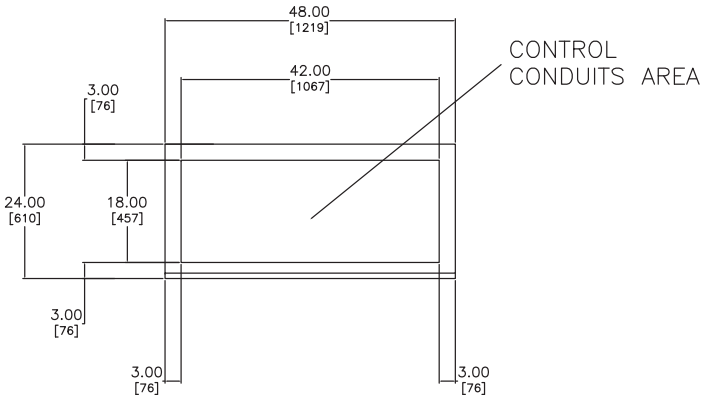
HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

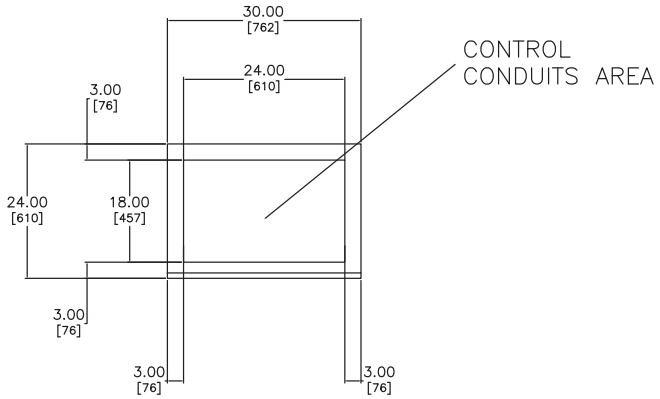
PG: 1 OF 1 REV: 1
DWG# NG2766-2-EL01

9/29/2010 7:00 PM NG2766 Arlington WPCP - System Drawings & Schematics_AD.dwg

BASE PLAN – INDOOR STRUCTURE
48" WIDE CABINET



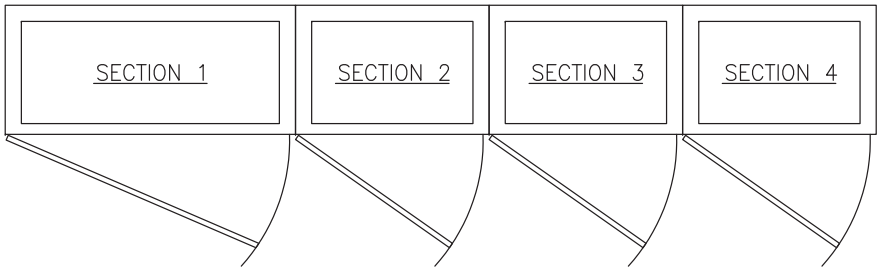
BASE PLAN – INDOOR STRUCTURE
30" WIDE CABINET



INSTALLATION–FOUNDATION REQUIREMENTS

THE SWITCHGEAR MUST BE INSTALLED ON A FLAT, LEVEL SURFACE.
POWERSECURE RECOMMENDS INSTALLING THE SWITCHGEAR ON A CONCRETE PAD LEVELED TO 1/8 [3] IN ANY SQUARE YARD.

FLOOR PLAN



JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal
DRAWN BY: J. Talton	2	9/29/10	As Shipped
ENGR: R. Stone			
DATE: 09/03/09			
DRAWING STATUS: Preliminary			

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Floor Plan
HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587
MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

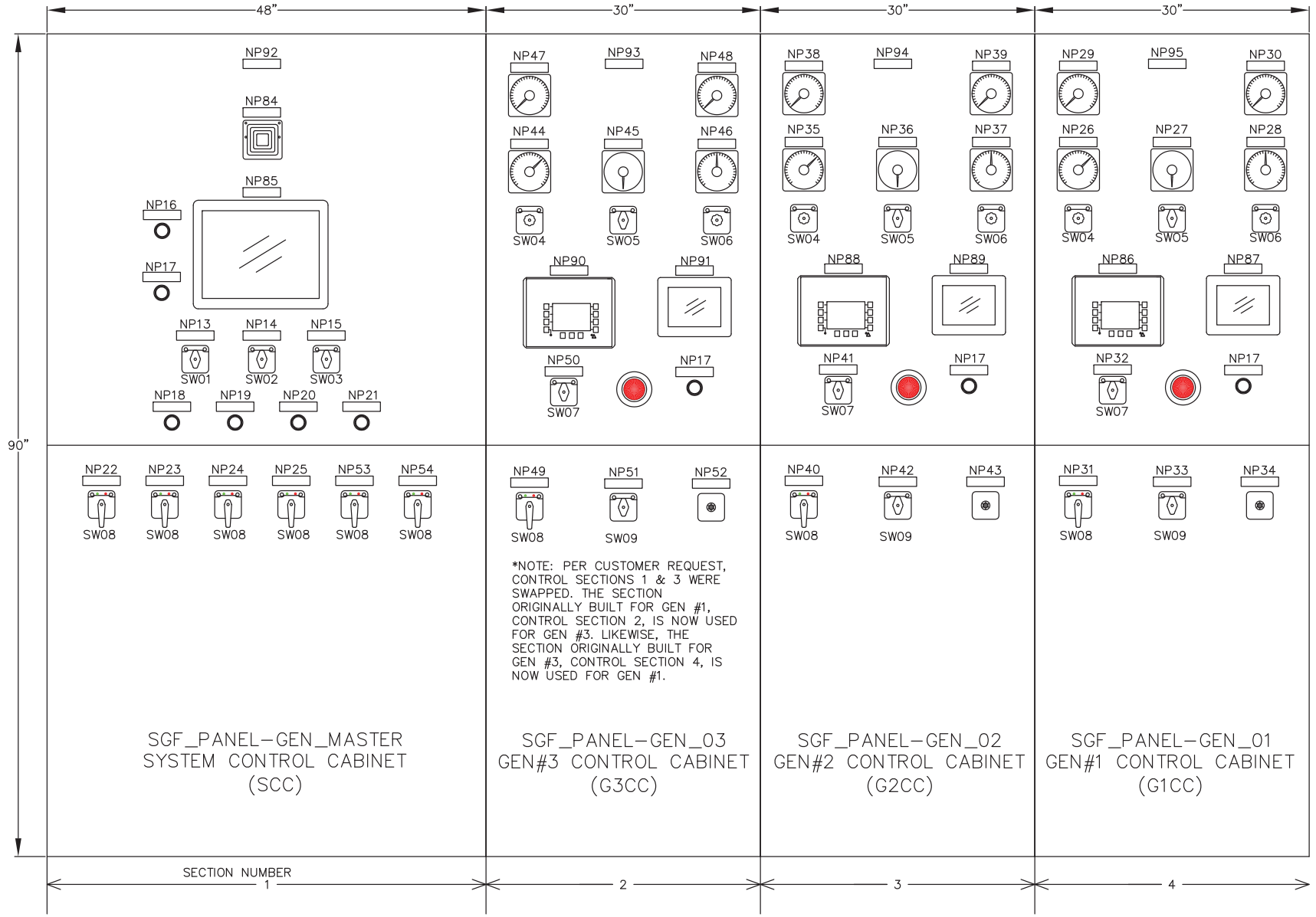
PowerSecure

PG: 1 OF 1 REV: 1

DWG# NG2766-2-FP01

9/29/2010 7:00 PM NG2766 Arlington WPCP – System Drawings & Schematics_AD.dwg

CONTROL SECTIONS 1–4: CABINET LAYOUTS



REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Control Panel Layouts

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 1 OF 1 REV: 1

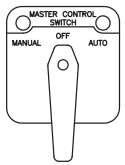
DWG# NG2766-2-CPL

9/29/2010 7:00 PM NG2766 Arlington WPCP – System Drawings & Schematics_AD.dwg

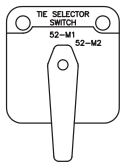
9/29/2010 7:00 PM NG2766 Arlington WPCP – System Drawings & Schematics_AD.dwg

SWITCH SCHEDULE: CONTROL SECTIONS 1, 2, 3 & 4

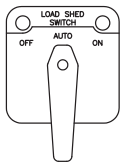
LOCATION	DESIGNATION	ABBREVIATIONS	DESCRIPTION	POSITION – 1	POSITION – 2	POSITION – 3	POSITION – 4
CONTROL SECTION 1: SCC	SW01	MCS	MASTER CONTROL SWITCH	MANUAL	OFF	AUTO	
CONTROL SECTION 1: SCC	SW02	TSS	TIE SELECTOR SWITCH	M1	M2		
CONTROL SECTION 1: SCC	SW03	LSCS	LOAD SHED CONTROL SWITCH	OFF	AUTO	ON	
CONTROL SECTION 1: SCC	SW08	M1–BCS	BREAKER CONTROL SWITCH	TRIP	CLOSE		
CONTROL SECTION 1: SCC	SW08	M2–BCS	BREAKER CONTROL SWITCH	TRIP	CLOSE		
CONTROL SECTION 1: SCC	SW08	MainA–BCS	BREAKER CONTROL SWITCH	TRIP	CLOSE		
CONTROL SECTION 1: SCC	SW08	MainA–BCS	BREAKER CONTROL SWITCH	TRIP	CLOSE		
CONTROL SECTION 1: SCC	SW08	F1–BCS	BREAKER CONTROL SWITCH	TRIP	CLOSE		
CONTROL SECTION 1: SCC	SW08	F2–BCS	BREAKER CONTROL SWITCH	TRIP	CLOSE		
CONTROL SECTION 2: G3CC	SW04	G3–VMS	VOLTAGE METER SWITCH	OFF	1	2	3
CONTROL SECTION 2: G3CC	SW05	G3–SYNCS	SYNCROSCOPE SWITCH	OFF	ON		
CONTROL SECTION 2: G3CC	SW06	G3–AMS	CURRENT METER SWITCH	OFF	1	2	3
CONTROL SECTION 2: G3CC	SW07	G3–GCS	GENERATOR CONTROL SWITCH	OFF	AUTO	RUN	RUN W LOAD
CONTROL SECTION 2: G3CC	SW08	G3–BCS	BREAKER CONTROL SWITCH	TRIP	CLOSE		
CONTROL SECTION 2: G3CC	SW09	G3–VRL	VOLTAGE	RAISE	LOWER		
CONTROL SECTION 2: G3CC	SW04	G2–VMS	VOLTAGE METER SWITCH	OFF	1	2	3
CONTROL SECTION 3: G2CC	SW05	G2–SYNCS	SYNCROSCOPE SWITCH	OFF	ON		
CONTROL SECTION 3: G2CC	SW06	G2–AMS	CURRENT METER SWITCH	OFF	1	2	3
CONTROL SECTION 3: G2CC	SW07	G2–GCS	GENERATOR CONTROL SWITCH	OFF	AUTO	RUN	RUN W LOAD
CONTROL SECTION 3: G2CC	SW08	G2–BCS	BREAKER CONTROL SWITCH	TRIP	CLOSE		
CONTROL SECTION 3: G2CC	SW09	G2–VRL	VOLTAGE	RAISE	LOWER		
CONTROL SECTION 4: G1CC	SW04	G1–VMS	VOLTAGE METER SWITCH	OFF	1	2	3
CONTROL SECTION 4: G1CC	SW05	G1–SYNCS	SYNCROSCOPE SWITCH	OFF	ON		
CONTROL SECTION 4: G1CC	SW06	G1–AMS	CURRENT METER SWITCH	OFF	1	2	3
CONTROL SECTION 4: G1CC	SW07	G1–GCS	GENERATOR CONTROL SWITCH	OFF	AUTO	RUN	RUN W LOAD
CONTROL SECTION 4: G1CC	SW08	G1–BCS	BREAKER CONTROL SWITCH	TRIP	CLOSE		
CONTROL SECTION 4: G1CC	SW09	G1–VRL	VOLTAGE	RAISE	LOWER		



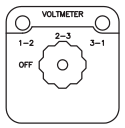
SW01



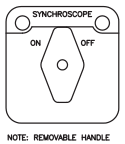
SW02



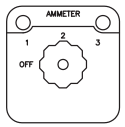
SW03



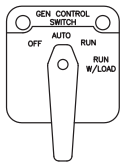
SW04



NOTE: REMOVABLE HANDLE
SW05

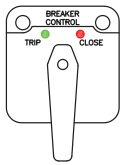


SW06



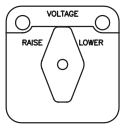
SW07

NOTE: SPRING RETURN



SW08

NOTE: SPRING RETURN



SW09

JOB NAME: Arlington AMPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal
DRAWN BY: J. Talton	2	9/29/10	As Shipped
ENGR: R. Stone			
DATE: 09/03/09			
DRAWING STATUS: Preliminary			

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Control Switch Closeups

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 1 OF 1 REV: 1

DWG# NG2766-2-SC

NAMEPLATE SCHEDULE: CONTROL SECTIONS 1 & 2

LOCATION	PLATE DESIGNATION	ABBREVIATIONS	FIRST LINE	SECOND LINE	LETTER SIZE	NAMEPLATE SIZE
CONTROL SECTION 1: SCC	NP13	MCS	MASTER	CONTROL SWITCH	3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP14	TSS	TIE	SELECTOR SWITCH	3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP15	LSCS	LOAD SHED	CONTROL SWITCH	3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP16	HSPB	HORN SILENCE	PUSH BUTTON	3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP17	M-LTPB	LAMP TEST	PUSH BUTTON	3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP18	LMPB	LOAD MANAGE. START	PUSH BUTTON	3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP19	ISPB	ISOLATE START	PUSH BUTTON	3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP20	SPB	LM/ISOLATE STOP	PUSH BUTTON	3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP21	LSRPB	LOAD SHED RESET	PUSH BUTTON	3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP22	M1-BCS	52-M1 BREAKER	CONTROL SWITCH	3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP23	M2-BCS	52-M2 BREAKER	CONTROL SWITCH	3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP24	MainA-BCS	52-MainA BREAKER	CONTROL SWITCH	3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP25	Mainb-BCS	52-MainB BREAKER	CONTROL SWITCH	3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP53	F1-BCS	52-F1 BREAKER	CONTROL SWITCH	3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP54	F2-BCS	52-F2 BREAKER	CONTROL SWITCH	3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP84	AHR	HORN		3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP85	M-TS	MASTER	TOUCHSCREEN	3 / 16 "	3/4" X 4"
CONTROL SECTION 1: SCC	NP92		SGF_PANEL_GEN_MASTER		3 / 16 "	3/4" X 4"
CONTROL SECTION 2: G3CC	NP17	G3-LTPB	LAMP TEST	PUSH BUTTON	3 / 16 "	3/4" X 4"
CONTROL SECTION 2: G3CC	NP44	G3-VM	GENERATOR #3	VOLTAGE	3 / 16 "	3/4" X 4"
CONTROL SECTION 2: G3CC	NP45	G3-SYNC	GENERATOR #3	SYNCHROSCOPE	3 / 16 "	3/4" X 4"
CONTROL SECTION 2: G3CC	NP46	G3-AM	GENERATOR #3	CURRENT	3 / 16 "	3/4" X 4"
CONTROL SECTION 2: G3CC	NP47	GM-FM	GENERATOR #3	FREQUENCY	3 / 16 "	3/4" X 4"
CONTROL SECTION 2: G3CC	NP48	G3-WM	GENERATOR #3	POWER OUTPUT	3 / 16 "	3/4" X 4"
CONTROL SECTION 2: G3CC	NP49	G3-BCS	52-G3 BREAKER	CONTROL SWITCH	3 / 16 "	3/4" X 4"
CONTROL SECTION 2: G3CC	NP50	G3-GCS	GENERATOR #3	CONTROL SWITCH	3 / 16 "	3/4" X 4"
CONTROL SECTION 2: G3CC	NP51	G3-VRL	GEN #3 VOLTAGE		3 / 16 "	3/4" X 4"
CONTROL SECTION 2: G3CC	NP52	G3-SP	GEN #3 SPEED	POTENTIOMETER	3 / 16 "	3/4" X 4"
CONTROL SECTION 2: G3CC	NP90	G3-WW	GEN #3	GOVERNOR	3 / 16 "	3/4" X 4"
CONTROL SECTION 2: G3CC	NP91	G3-TS	GEN #3	TOUCHSCREEN	3 / 16 "	3/4" X 4"

*NOTE: PER CUSTOMER REQUEST, CONTROL SECTIONS 1 & 3 WERE SWAPPED. THE SECTION ORIGINALLY BUILT FOR GEN #1, CONTROL SECTION 2, IS NOW USED FOR GEN #3. LIKEWISE, THE SECTION ORIGINALLY BUILT FOR GEN #3, CONTROL SECTION 4, IS NOW USED FOR GEN #1.

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Nameplate Schedule : SCC/G1CC

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 1 OF 2 REV: 1

DWG# NG2766-2-NP

9/29/2010 7:00 PM NG2766 Arlington WPCP - System Drawings & Schematics_AD.dwg

NAMEPLATE SCHEDULE: CONTROL SECTIONS 3 & 4

LOCATION	PLATE DESIGNATION	ABBERVIATIONS	FIRST LINE	SECOND LINE	LETTER SIZE	NAMEPLATE SIZE
CONTROL SECTION 3: G2CC	NP17	G2-LTPB	LAMP TEST	PUSH BUTTON	3 / 16 "	3/4" X 4"
CONTROL SECTION 3: G2CC	NP35	G2-VM	GENERATOR #2	VOLTAGE	3 / 16 "	3/4" X 4"
CONTROL SECTION 3: G2CC	NP36	G2-SYNC	GENERATOR #2	SYNCHROSCOPE	3 / 16 "	3/4" X 4"
CONTROL SECTION 3: G2CC	NP37	G2-AM	GENERATOR #2	CURRENT	3 / 16 "	3/4" X 4"
CONTROL SECTION 3: G2CC	NP38	G2-FM	GENERATOR #2	FREQUENCY	3 / 16 "	3/4" X 4"
CONTROL SECTION 3: G2CC	NP39	G2-WM	GENERATOR #2	POWER OUTPUT	3 / 16 "	3/4" X 4"
CONTROL SECTION 3: G2CC	NP40	G2-BCS	52-G2 BREAKER	CONTROL SWITCH	3 / 16 "	3/4" X 4"
CONTROL SECTION 3: G2CC	NP41	G2-GCS	GENERATOR #2	CONTROL SWITCH	3 / 16 "	3/4" X 4"
CONTROL SECTION 3: G2CC	NP42	G2-VRL	GEN #2 VOLTAGE		3 / 16 "	3/4" X 4"
CONTROL SECTION 3: G2CC	NP43	G2-SP	GEN #2 SPEED	POTENTIOMETER	3 / 16 "	3/4" X 4"
CONTROL SECTION 3: G2CC	NP88	G2-WW	GEN #2	GOVERNOR	3 / 16 "	3/4" X 4"
CONTROL SECTION 3: G2CC	NP89	G2-TS	GEN #2	TOUCHSCREEN	3 / 16 "	3/4" X 4"
CONTROL SECTION 3: G2CC	NP94		SGF_PANEL_GEN_02		3 / 16 "	3/4" X 4"
CONTROL SECTION 4: G1CC	NP17	G1-LTPB	LAMP TEST	PUSH BUTTON	3 / 16 "	3/4" X 4"
CONTROL SECTION 4: G1CC	NP26	G1-VM	GENERATOR #1	VOLTAGE	3 / 16 "	3/4" X 4"
CONTROL SECTION 4: G1CC	NP27	G1-SYNC	GENERATOR #1	SYNCHROSCOPE	3 / 16 "	3/4" X 4"
CONTROL SECTION 4: G1CC	NP28	G1-AM	GENERATOR #1	CURRENT	3 / 16 "	3/4" X 4"
CONTROL SECTION 4: G1CC	NP29	G1-FM	GENERATOR #1	FREQUENCY	3 / 16 "	3/4" X 4"
CONTROL SECTION 4: G1CC	NP30	G1-WM	GENERATOR #1	REAL POWER	3 / 16 "	3/4" X 4"
CONTROL SECTION 4: G1CC	NP31	G1-BCS	52-G1 BREAKER	CONTROL SWITCH	3 / 16 "	3/4" X 4"
CONTROL SECTION 4: G1CC	NP32	G1-GCS	GENERATOR #1	CONTROL SWITCH	3 / 16 "	3/4" X 4"
CONTROL SECTION 4: G1CC	NP33	G1-VRL	GEN #1 VOLTAGE		3 / 16 "	3/4" X 4"
CONTROL SECTION 4: G1CC	NP34	G1-SP	GEN #1 SPEED	POTENTIOMETER	3 / 16 "	3/4" X 4"
CONTROL SECTION 4: G1CC	NP86	G1-WW	GEN #1	GOVERNOR	3 / 16 "	3/4" X 4"
CONTROL SECTION 4: G1CC	NP87	G1-TS	GEN #1	TOUCHSCREEN	3 / 16 "	3/4" X 4"
CONTROL SECTION 4: G1CC	NP95		SGF PANEL GEN 01		3 / 16 "	3/4" X 4"

*NOTE: PER CUSTOMER REQUEST, CONTROL SECTIONS 1 & 3 WERE SWAPPED. THE SECTION ORIGINALLY BUILT FOR GEN #1, CONTROL SECTION 2, IS NOW USED FOR GEN #3. LIKEWISE, THE SECTION ORIGINALLY BUILT FOR GEN #3, CONTROL SECTION 4, IS NOW USED FOR GEN #1.

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Nameplate Schedule : G2CC/G3CC

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 2 OF 2 REV: 1

DWG# NG2766-2-NP

CONTROL SECTION #1: INTERCONNECT TERMINAL BLOCKS

SCC-ITB

U1 PT (IN)	1	UTILITY #1 VOLTAGE INPUTS TO SCC
	2	
	3	
	4	
U2 PT (IN)	5	UTILITY #2 VOLTAGE INPUTS TO SCC
	6	
	7	
	8	
RESERVED	9	
	10	
	11	
	12	
SYNC SOURCE DISTRIBUTION TO GENS	13	MAINS VOLTAGE OUTPUT TO G1CC, G2CC & G3CC
	14	
	15	
	16	
RESERVED	17	
	18	
	19	
	20	
	21	
	22	
	23	
	24	
	25	
125 VDC FROM BATTERY CHARGE CONSOLE	26	DC SUPPLY FOR BEST BATTERY CKT
	27	
	28	
24VDC FROM G1	29	
	30	
24VDC FROM G2	31	
	32	
24VDC FROM G3	33	
	34	
SPARE	35	
	36	
24VDC TO G1CC	37	DC SUPPLY TO G1CC, G2CC, G3CC
	38	
24VDC TO G2CC	39	
	40	
24VDC TO G3CC	41	
	42	
MAN MODE G1CC	43	MMR RELAY OUTPUT – MANUAL MODE TO G1CC, G2CC & G3CC
	44	
MAN MODE G2CC	45	
	46	
MAN MODE G3CC	47	
	48	
SPARE	49	
	50	

SCC-ITB

MainA RESERVED	51	
	52	
MainA CLOSE	53	OUTPUTS TO DC35A–1
	54	
MainA TRIP	55	
	56	
MainA MOC	57	INPUTS TO SCC FROM DC35A–1
	58	
MainA TOC	59	
	60	
MainA 86 LOCKOUT	61	
	62	
MainA RELAY FAIL	63	
	64	
MainA SOURCE OK	65	
	66	
MainA WATTS TRANSDUCER (4–20 Ma)	67	
	68	
	69	
DC35A – AUTO	70	
	71	
MainA RESERVED	72	
	73	
SGF1 CLOSE	74	OUTPUTS TO DC35A–2
	75	
SGF1 TRIP	76	
	77	
SGF1 86 LOCKOUT	78	
	79	
SGF1 MOC	80	INPUTS TO SCC FROM DC35A–2
	81	
SGF1 TOC	82	
	83	
SGF1 BRK LOCKOUT (86)	84	
	85	
SGF1 UPR RELAY FAIL	86	
	87	
SGF1 RESERVED	88	
	89	
SGF1 RESERVED	90	
	91	
NORTH A RESERVED	92	
	93	
NORTH A CLOSE	94	OUTPUTS TO DC35A–3
	95	
NORTH A TRIP	96	
	97	
NORTH A MOC	98	INPUTS TO SCC FROM DC35A–3
	99	
NORTH A TOC	100	
	101	
NORTH A 86 LOCKOUT	102	
	103	
NORTH A RELAY FAIL	104	
	105	

SCC-ITB

NORTH A RESERVED	106	
	107	
NORTH A RESERVED	108	
	109	
SOUTH A RESERVED	110	
	111	
SOUTH A CLOSE	112	OUTPUTS TO DC35A–4
	113	
SOUTH A TRIP	114	
	115	
SOUTH A MOC	116	INPUTS TO SCC FROM DC35A–4
	117	
SOUTH A TOC	118	
	119	
SOUTH A 86 LOCKOUT	120	
	121	
SOUTH A RELAY FAIL	122	
	123	
SOUTH A RESERVED	124	
	125	
SOUTH A RESERVED	126	
	127	
MainB RESERVED	128	
	129	
MainB CLOSE	130	OUTPUTS TO DC35B–1
	131	
MainB TRIP	132	
	133	
MainB MOC	134	INPUTS TO SCC FROM DC35B–1
	135	
MainB TOC	136	
	137	
MainB 86 LOCKOUT	138	
	139	
MainB RELAY FAIL	140	
	141	
MainB SOURCE OK	142	
	143	
MainB WATTS TRANSDUCER (4–20 Ma)	144	
	145	
	146	
DC35B – AUTO	147	
	148	
MainB RESERVED	149	
	150	
SGF2 CLOSE	151	OUTPUTS TO DC35B–2
	152	
SGF2 TRIP	153	
	154	
SGF2 86 LOCKOUT	155	
	156	
SGF2 MOC	157	INPUTS TO SCC FROM DC35B–2
	158	
SGF2 TOC	159	
	160	

SCC-ITB

SGF2 86 LOCKOUT	161	INPUTS TO SCC FROM DC35B–2
	162	
SGF2 RELAY FAIL	163	
	164	
SGF2 RESERVED	165	
	166	
SGF2 RESERVED	167	
	168	
NORTH B RESERVED	169	
	170	
NORTH B CLOSE	171	OUTPUTS TO DC35B–3
	172	
NORTH B TRIP	173	
	174	
NORTH B MOC	175	INPUTS TO SCC FROM DC35B–3
	176	
NORTH B TOC	177	
	178	
NORTH B 86 LOCKOUT	179	
	180	
NORTH B RELAY FAIL	181	
	182	
NORTH B RESERVED	183	
	184	
NORTH B RESERVED	185	
	186	
SOUTH B RESERVED	187	
	188	
SOUTH B CLOSE	189	OUTPUTS TO DC35B–4
	190	
SOUTH B TRIP	191	
	192	
SOUTH B MOC	193	INPUTS TO SCC FROM DC35B–4
	194	
SOUTH B TOC	195	
	196	
SOUTH B 86 LOCKOUT	197	
	198	
SOUTH B RELAY FAIL	199	
	200	
SOUTH B RESERVED	201	
	202	
SOUTH B RESERVED	203	
	204	
M1 RESERVED	205	
	206	
M1 CLOSE	207	OUTPUTS TO SGF–1
	208	
M1 TRIP	209	
	210	

SCC-ITB

M1 86 LOCKOUT	211	INPUTS TO SCC FROM SGF–1
	212	
M1 MOC	213	
	214	
M1 TOC	215	
	216	
M1 86 LOCKOUT	217	
	218	
M1 RELAY FAIL	219	
	220	
UV SIGNAL	221	
	222	
M1 RESERVED	223	
	224	
M1 RESERVED	225	
	226	
M2 RESERVED	227	
	228	
M2 CLOSE	229	OUTPUTS TO SGF–2
	230	
M2 TRIP	231	
	232	
M2 86 LOCKOUT	233	INPUTS TO SCC FROM SGF–2
	234	
M2 MOC	235	
	236	
M2 TOC	237	
	238	
M2 86 LOCKOUT	239	
	240	
M2 RELAY FAIL	241	
	242	
M2 UV SIGNAL	243	
	244	
M2 RESERVED	245	
	246	
M2 RESERVED	247	
	248	
F1 RESERVED	249	
	250	
F1 CLOSE	251	OUTPUTS TO SGF–6
	252	
F1 TRIP	253	
	254	
F1 MOC	255	INPUTS TO SCC FROM SGF–6
	256	
F1 TOC	257	
	258	
F1 86 LOCKOUT	259	
	260	
F1 RELAY FAIL	261	
	262	

SCC-ITB

F1 RESERVED	263	
	264	
F1 RESERVED	265	
	266	
F2 RESERVED	267	
	268	
F2 CLOSE	269	OUTPUTS TO SGF–6
	270	
F2 TRIP	271	
	272	
F2 MOC	273	INPUTS TO SCC FROM SGF–6
	274	
F2 TOC	275	
	276	
F2 86 LOCKOUT	277	
	278	
F2 RELAY FAIL	279	
	280	
F2 RESERVED	281	
	282	
F2 RESERVED	283	
	284	
7500KVA TX#1 HI OIL TEMP	285	INPUTS TO SCC
	286	
7500KVA TX#1 LOW OIL LEVEL	287	
	288	
7500KVA TX#2 HI OIL TEMP	289	
	290	
7500KVA TX#2 LOW OIL LEVEL	291	
	292	
SPARE	293	
	294	
SPARE	295	
	296	
SPARE	297	
	298	
SPARE	299	
LOAD SHED (CUSTOMER USE)	300	OUTPUT TO CUSTOMER
	301	
SPARE	302	iNPUTS TO SCC
	303	
SPARE	304	
	305	
SPARE	306	
	307	
FIRE ALARM	308	
	309	
500KVA TX HI OIL TEMP	310	
	311	
500KVA TX LOW OIL LEVEL	312	
	313	
SPARE	314	
SPARE	315	
SPARE	316	
SPARE	317	
SPARE	318	
SPARE	319	
SPARE	320	

JOB NAME: Arlington AWPCP Expansion – Phase 7F	
JOB LOCATION: Arlington, VA	
DRAWN BY: J. Talton	
ENGR: R. Stone	
DATE: 09/03/09	
DRAWING STATUS: Preliminary	

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Interconn. Term. Blks: SCC

MANUFACTURING:
HEADQUARTERS:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 1 OF 2 REV: 1

DWG# NG2766-2-TB

CONTROL SECTION #2: G3CC INTERCONNECT TERMINAL BLOCKS

G1-ITB

MAINS VOLTAGE INPUT (FROM SOURCE SELECT RELAY IN SCC)	1	MAIN VOLTAGE INPUT TO GEN GOVERNOR
	2	
	3	
	4	
GEN#1 VOLT SENSING	5	GEN VOLTAGE INPUT TO GEN GOVERNOR
	6	
	7	
	8	
GEN BUS VOLT SENSING	9	GEN BUS VOLTAGE INPUT TO GEN GOVERNOR
	10	
	11	
	12	
SPARE	13	
	14	
	15	
	16	
DC SUPPLY	17	+24VDC FOR DC CONTROL POWER (FROM SCC)
	18	
RESERVED	19	
	20	
MAN MODE RELAY OUTPUT FROM SCC	21	MANUAL MODE INPUT (FROM SCC)
	22	
LSM LOOP (DOUBLE)	23	LOAD SHARE MODULE: UNIT SHARE
	24	
	25	
LSM LOOP (DOUBLE)	26	
	27	
	28	
SPARE	29	
	30	
G1 RESERVED	31	
	32	
G1 CLOSE	33	OUTPUTS TO SGF-3
	34	
G1 TRIP	35	
	36	
G1 MOC	37	INPUTS TO G1CC FROM SGF-3
	38	
G1 TOC	39	
	40	
G1 86 LOCKOUT	41	
	42	
G1 GPR RELAY FAIL	43	
	44	
G1 MOC 'a'	45	
	46	
G1 MOC 'b'	47	
	48	
SPARE	49	
	50	
SPARE	51	
	52	
SPARE	53	
	54	
SPARE	55	
	56	
SPARE	57	
	58	
SPARE	59	
	60	

G1-ETB

G1 RESERVED	1	
	2	
	3	
	4	
FUEL TANK LEVEL SENSING	5	
	6	
	7	
	8	
SPARE	9	
	10	
G1 ENGINE FAULT	11	
	12	
G1 RUPTURE BASIN	13	
	14	
G1 BATT CHARGE FAILURE	15	
	16	
SPARE	17	
CAN COMMS	18	G1-WW INTERFACE #3 CAN #1
	19	
	20	
G1 REMOTE START/STOP	21	
	22	
G1 REMOTE ESTOP	23	
	24	
G1 VOLTAGE RAISE/LOWER	25	
	26	
	27	
SPARE	28	
	29	
	30	
G1 VOLTAGE BIAS	31	
	32	
	33	
G1 SPEED BIAS	34	
	35	
	36	
SPARE	37	
	38	
SPARE	39	
	40	
SPARE	41	
	42	
G1 MODBUS COMMUNICATION	43	
	44	
	45	
	46	
SPARE	47	
	48	
SPARE	49	
	50	

CONTROL SECTION #3: G2CC INTERCONNECT TERMINAL BLOCKS

G2-ITB

MAINS VOLTAGE INPUT (FROM SOURCE SELECT RELAY IN SCC)	1	MAIN VOLTAGE INPUT TO GEN GOVERNOR
	2	
	3	
	4	
GEN#2 VOLT SENSING	5	GEN VOLTAGE INPUT TO GEN GOVERNOR
	6	
	7	
	8	
GEN BUS VOLT SENSING	9	GEN BUS VOLTAGE INPUT TO GEN GOVERNOR
	10	
	11	
	12	
SPARE	13	
	14	
	15	
	16	
DC SUPPLY	17	+24VDC FOR DC CONTROL POWER (FROM SCC)
	18	
RESERVED	19	
	20	
MAN MODE RELAY OUTPUT FROM SCC	21	MANUAL MODE INPUT (FROM SCC)
	22	
LSM LOOP (DOUBLE)	23	LOAD SHARE MODULE: UNIT SHARE
	24	
	25	
LSM LOOP (DOUBLE)	26	
	27	
	28	
SPARE	29	
	30	
G2 RESERVED	31	
	32	
G2 CLOSE	33	OUTPUTS TO SGF-4
	34	
G2 TRIP	35	
	36	
G2 MOC	37	INPUTS TO G1CC FROM SGF-4
	38	
G2 TOC	39	
	40	
G2 86 LOCKOUT	41	
	42	
G2 GPR RELAY FAIL	43	
	44	
G2 MOC 'a'	45	
	46	
G2 MOC 'b'	47	
	48	
SPARE	49	
	50	
SPARE	51	
	52	
SPARE	53	
	54	
SPARE	55	
	56	
SPARE	57	
	58	
SPARE	59	
	60	

G2-ETB

G2 RESERVED	1	
	2	
	3	
	4	
FUEL TANK LEVEL SENSING	5	
	6	
	7	
	8	
SPARE	9	
	10	
G2 ENGINE FAULT	11	
	12	
G2 RUPTURE BASIN	13	
	14	
G2 BATT CHARGE FAILURE	15	
	16	
SPARE	17	
CAN COMMS	18	G2-WW INTERFACE #3 CAN #1
	19	
	20	
G2 REMOTE START/STOP	21	
	22	
G2 REMOTE ESTOP	23	
	24	
G2 VOLTAGE RAISE/LOWER	25	
	26	
	27	
SPARE	28	
	29	
	30	
G2 VOLTAGE BIAS	31	
	32	
	33	
G2 SPEED BIAS	34	
	35	
	36	
SPARE	37	
	38	
SPARE	39	
	40	
SPARE	41	
	42	
G2 MODBUS COMMUNICATION	43	
	44	
	45	
	46	
SPARE	47	
	48	
SPARE	49	
	50	

CONTROL SECTION #4: G1CC INTERCONNECT TERMINAL BLOCKS

G3-ITB

MAINS VOLTAGE INPUT (FROM SOURCE SELECT RELAY IN SCC)	1	MAIN VOLTAGE INPUT TO GEN GOVERNOR
	2	
	3	
	4	
GEN#3 VOLT SENSING	5	GEN VOLTAGE INPUT TO GEN GOVERNOR
	6	
	7	
	8	
GEN BUS VOLT SENSING	9	GEN BUS VOLTAGE INPUT TO GEN GOVERNOR
	10	
	11	
	12	
SPARE	13	
	14	
	15	
	16	
DC SUPPLY	17	+24VDC FOR DC CONTROL POWER (FROM SCC)
	18	
RESERVED	19	
	20	
MAN MODE RELAY OUTPUT FROM SCC	21	MANUAL MODE INPUT (FROM SCC)
	22	
LSM LOOP (DOUBLE)	23	
	24	
	25	
LSM LOOP (DOUBLE)	26	
	27	
	28	
SPARE	29	
	30	
G2 RESERVED	31	
	32	
G2 CLOSE	33	LOAD SHARE MODULE: UNIT SHARE
	34	
G2 TRIP	35	
	36	
G2 MOC	37	
	38	
G2 TOC	39	
	40	
G2 86 LOCKOUT	41	
	42	
G2 GPR RELAY FAIL	43	OUTPUTS TO SGF-5
	44	
G2 MOC 'a'	45	
	46	
G2 MOC 'b'	47	INPUTS TO G1CC FROM SGF-5
	48	
SPARE	49	
	50	
SPARE	51	
	52	
SPARE	53	
	54	
SPARE	55	
	56	
SPARE	57	
	58	
SPARE	59	
	60	

G3-ETB

G3 RESERVED	1	
	2	
	3	
	4	
FUEL TANK LEVEL SENSING	5	
	6	
	7	
	8	
SPARE	9	
	10	
G3 ENGINE FAULT	11	
	12	
G3 RUPTURE BASIN	13	
	14	
G3 BATT CHARGE FAILURE	15	
	16	
SPARE	17	
CAN COMMS	18	G3-WW INTERFACE #3 CAN #1
	19	
	20	
G3 REMOTE START/STOP	21	
	22	
G3 REMOTE ESTOP	23	
	24	
G3 VOLTAGE RAISE/LOWER	25	
	26	
	27	
SPARE	28	
	29	
	30	
G3 VOLTAGE BIAS	31	
	32	
	33	
G3 SPEED BIAS	34	
	35	
	36	
SPARE	37	
	38	
SPARE	39	
	40	
SPARE	41	
	42	
G3 MODBUS COMMUNICATION	43	
	44	
	45	
	46	
SPARE	47	
	48	
SPARE	49	
	50	

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REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Interconn. Term. Blks: SCC

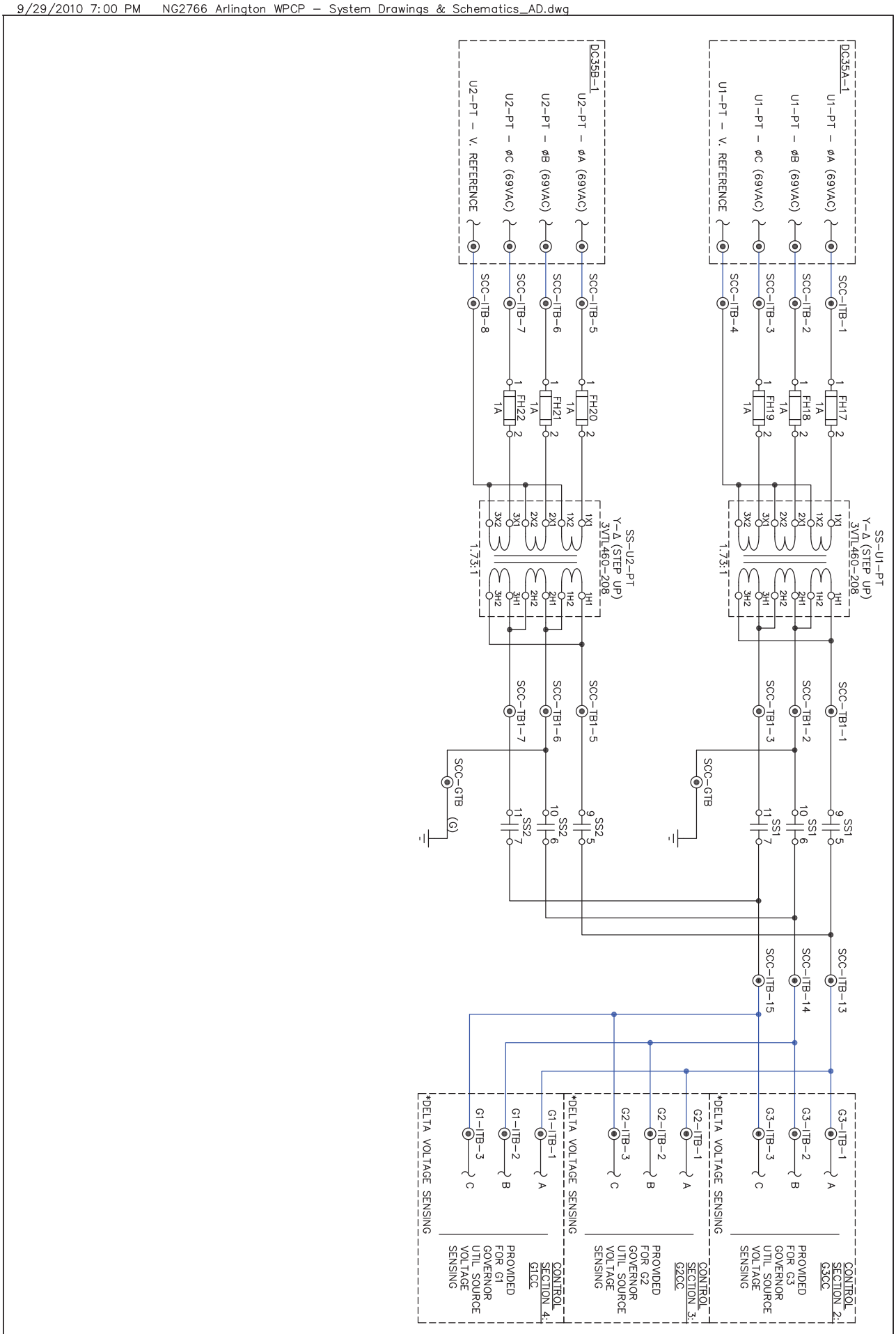
MANUFACTURING:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

HEADQUARTERS:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 2 OF 2 REV: 1

DWG# NG2766-2-TB



JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: Switchgear Controls	
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS	
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: SCC: Source Select Ckt	
ENGR: R. Stone				HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587	MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DATE: 09/03/09					
DRAWING STATUS: Preliminary					
				DWG# NG2766-2-WD01	

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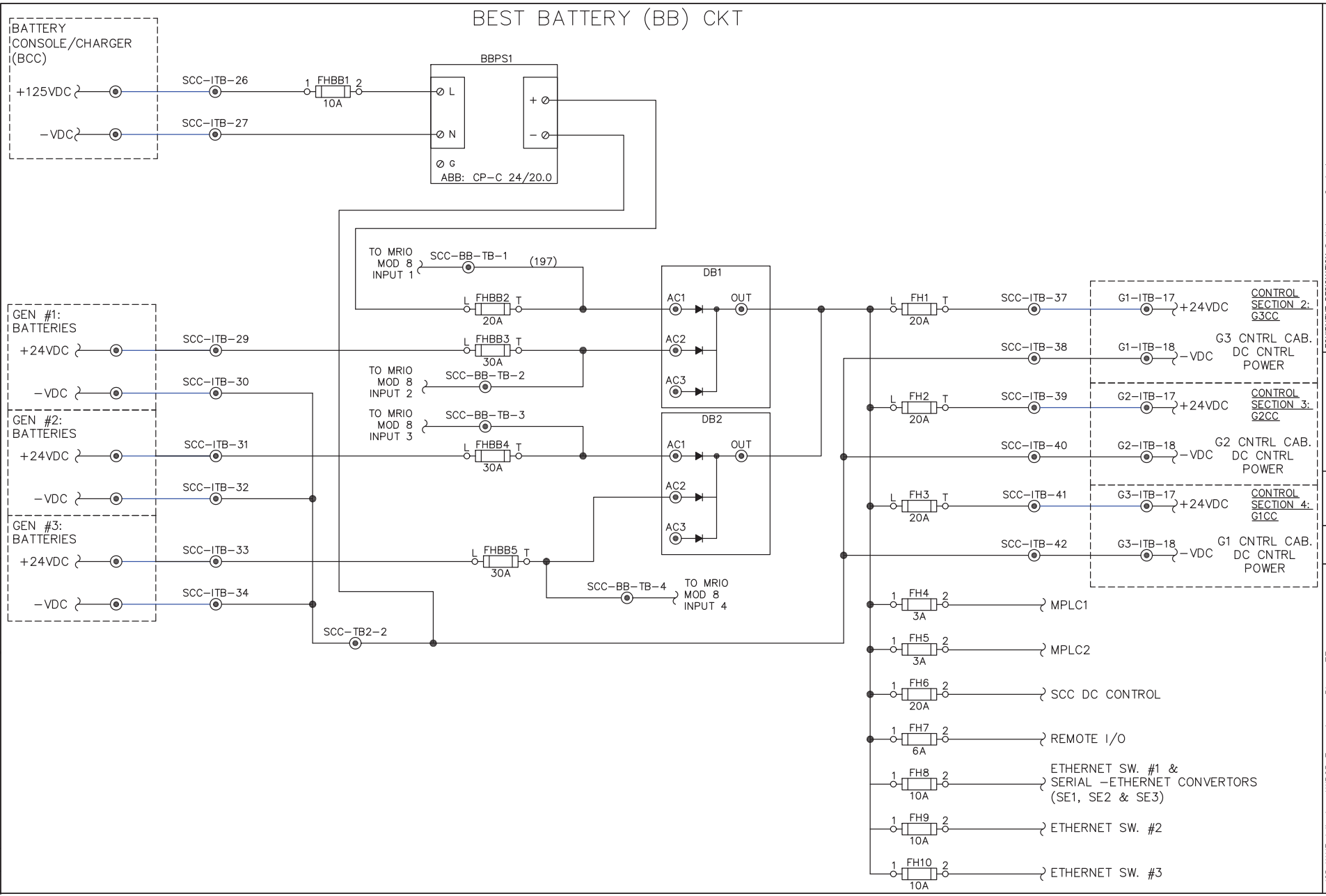
PG: 1 OF 13 REV: 1

BEST BATTERY (BB) CKT



REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: SCC: Best Battery Ckt

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 2 OF 13 REV: 1

DWG# NG2766–2–WD01

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

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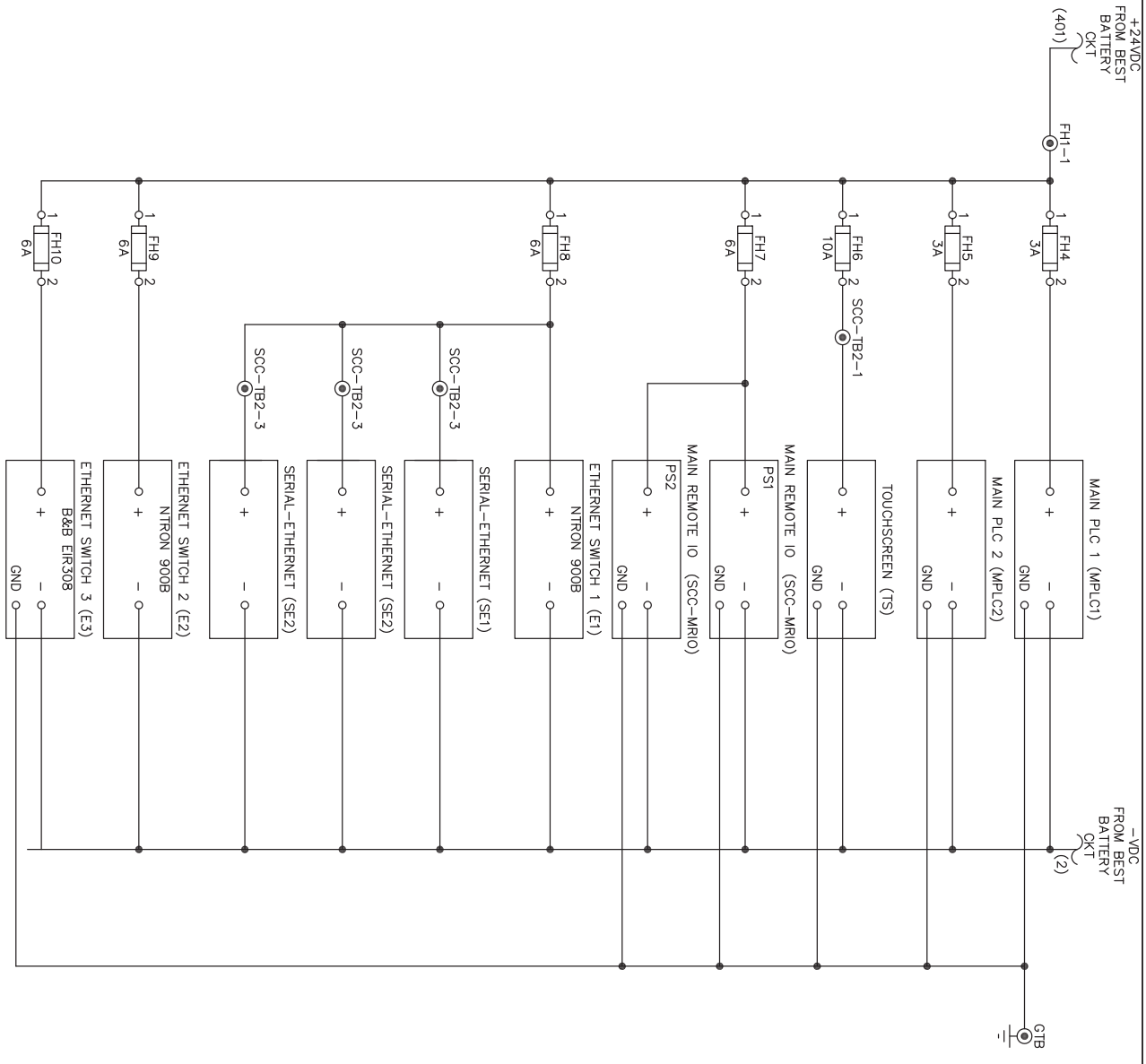

JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: Switchgear Controls	
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS	
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: SCC: DC Control Power	
ENGR: R. Stone				HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587	MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DATE: 09/03/09					
DRAWING STATUS: Preliminary					
				DWG# NG2766-2-WD01	

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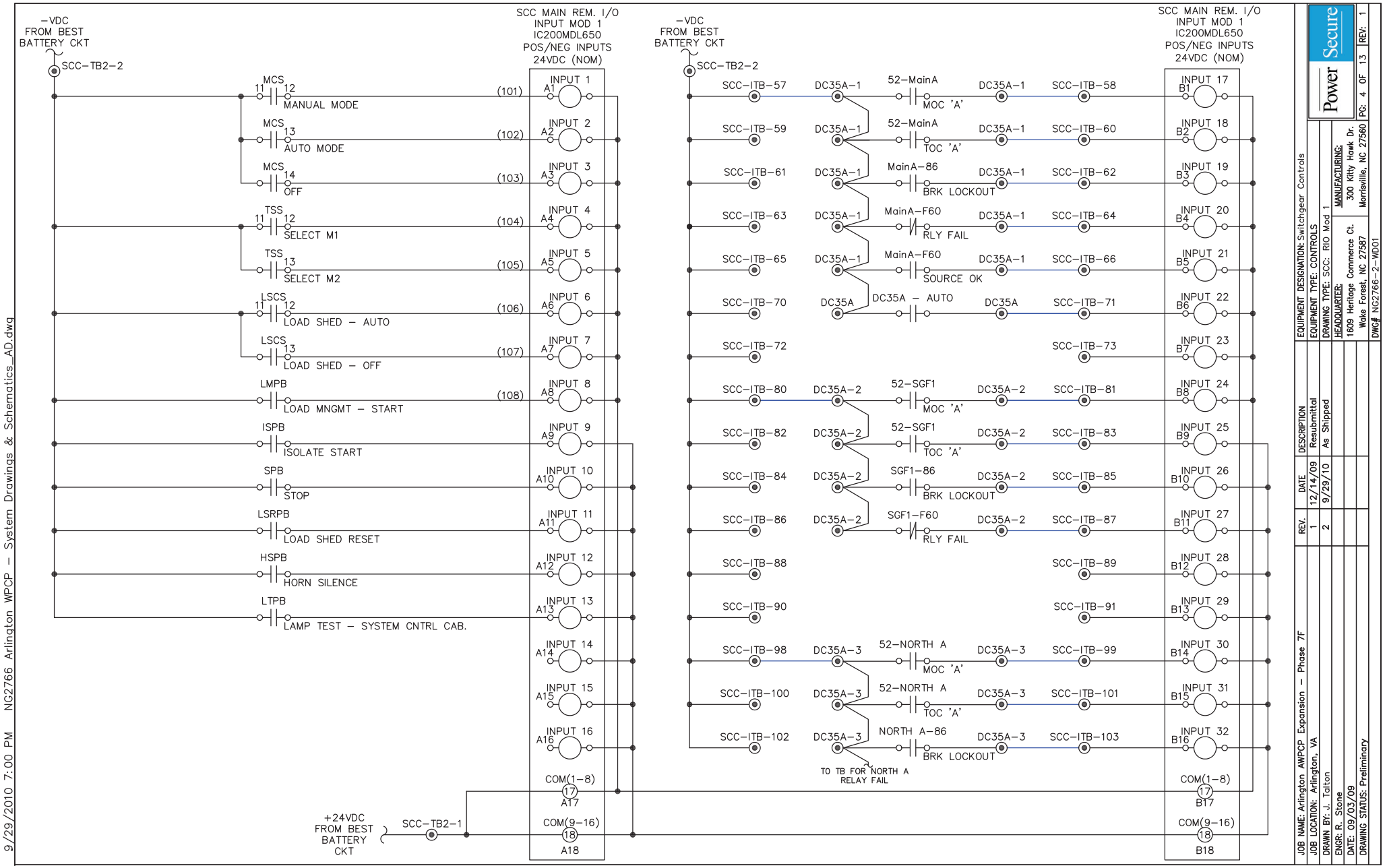
PG: 3 OF 13 REV: 1



REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

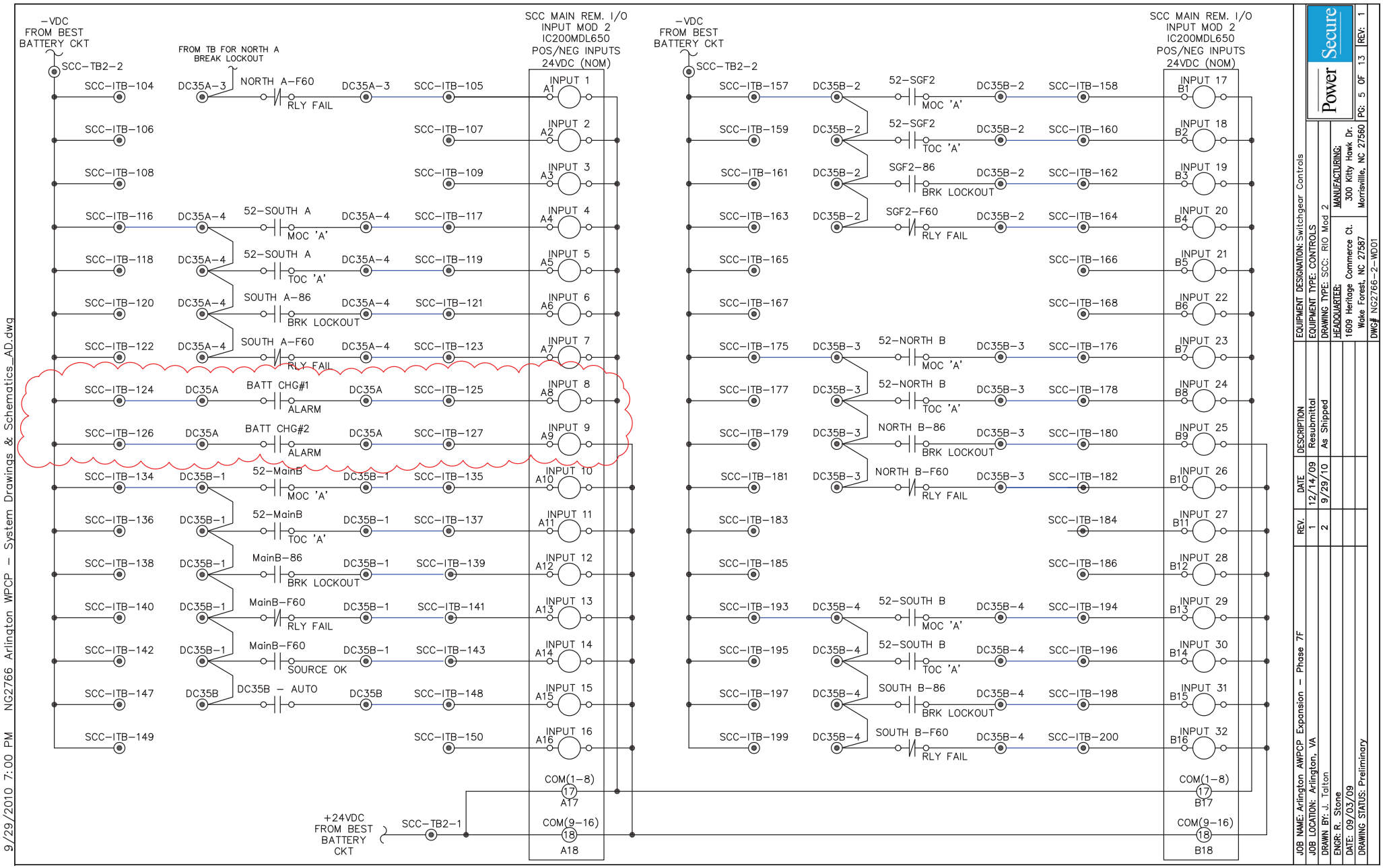
EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: SCC: RIO Mod 1

Power Secure

HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587
MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560

PG: 4 OF 13 REV: 1
DWG# NG2766-2-WD01

9/29/2010 7:00 PM NG2766 Arlington WPCP - System Drawings & Schematics_AD.dwg



9/29/2010 7:00 PM NG2766 Arlington WPCP - System Drawings & Schematics_AD.dwg

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

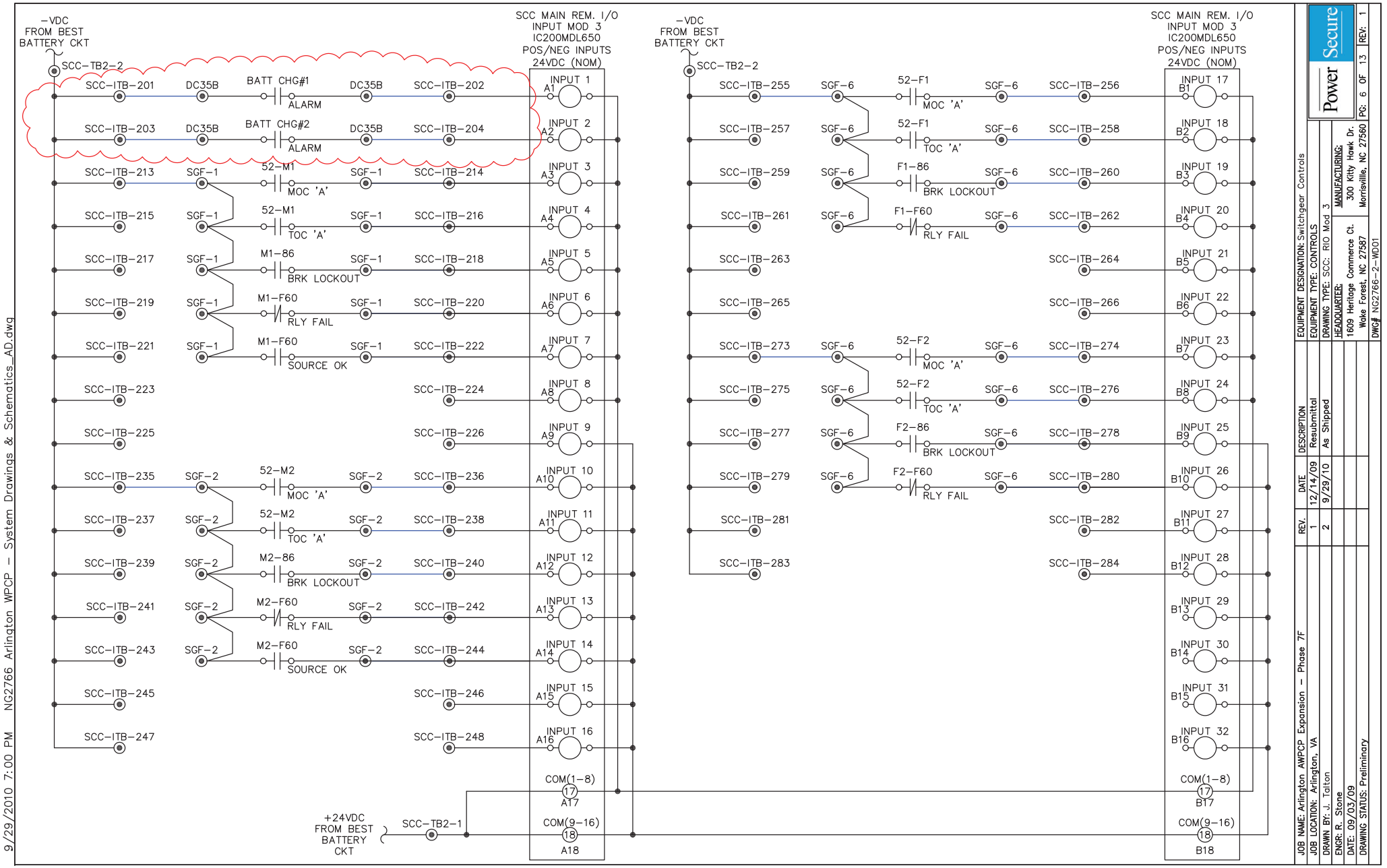
EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: SCC: RIO Mod 2

MANUFACTURER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

HEADQUARTER:
300 Kitty Hawk Dr.
Morrisville, NC 27560

PG: 5 OF 13 REV: 1

DWG# NG2766-2-WD01



9/29/2010 7:00 PM NG2766 Arlington WPCP – System Drawings & Schematics_AD.dwg

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: SCC: RIO Mod 3

MANUFACTURING:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

HEADQUARTER:
300 Kitty Hawk Dr.
Morrisville, NC 27560

PG: 6 OF 13 REV: 1

DWG# NG2766-2-WD01

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Tatton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: SCC: RIO Mod 4

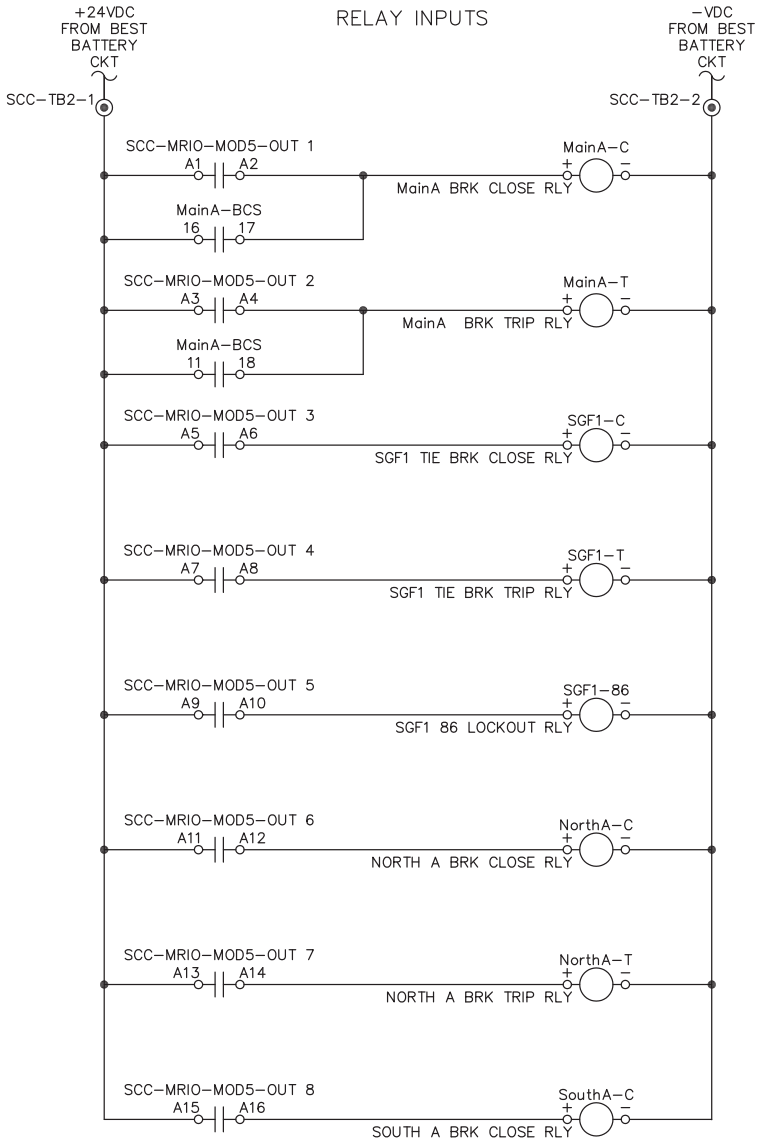
MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

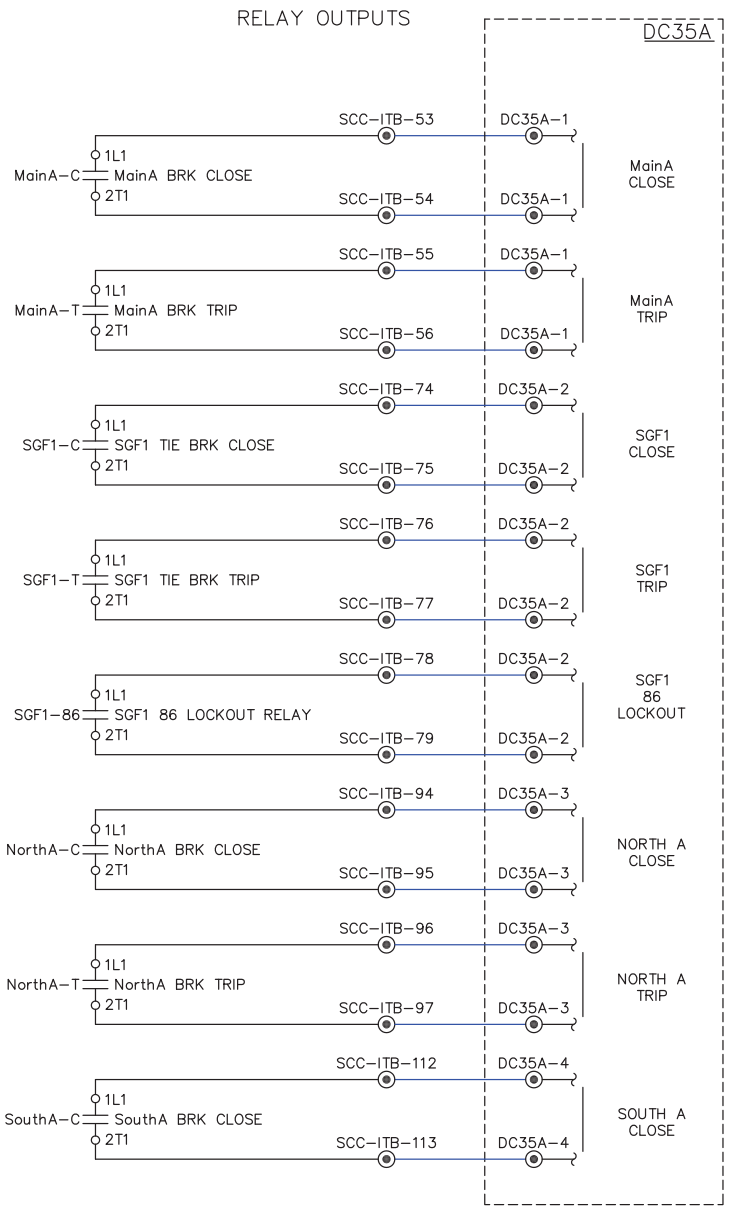
HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

DWG# NG2766–2–WD01

Power Secure

PG: 7 OF 13 REV: 1

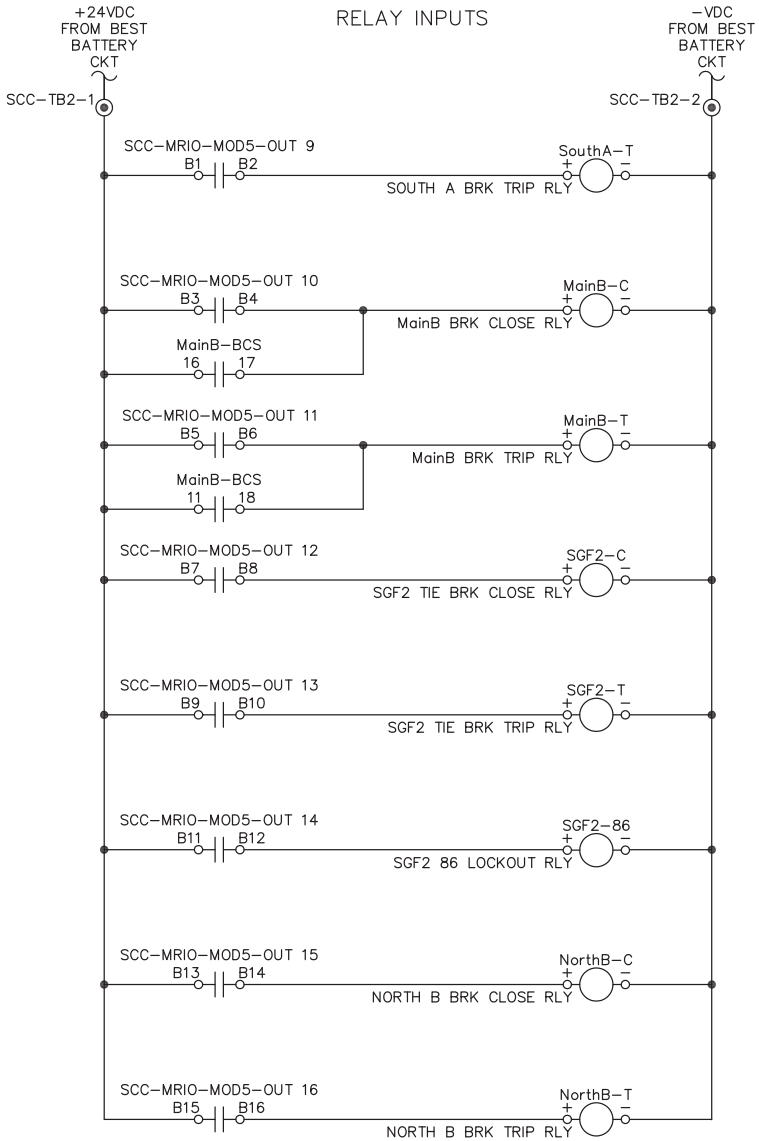


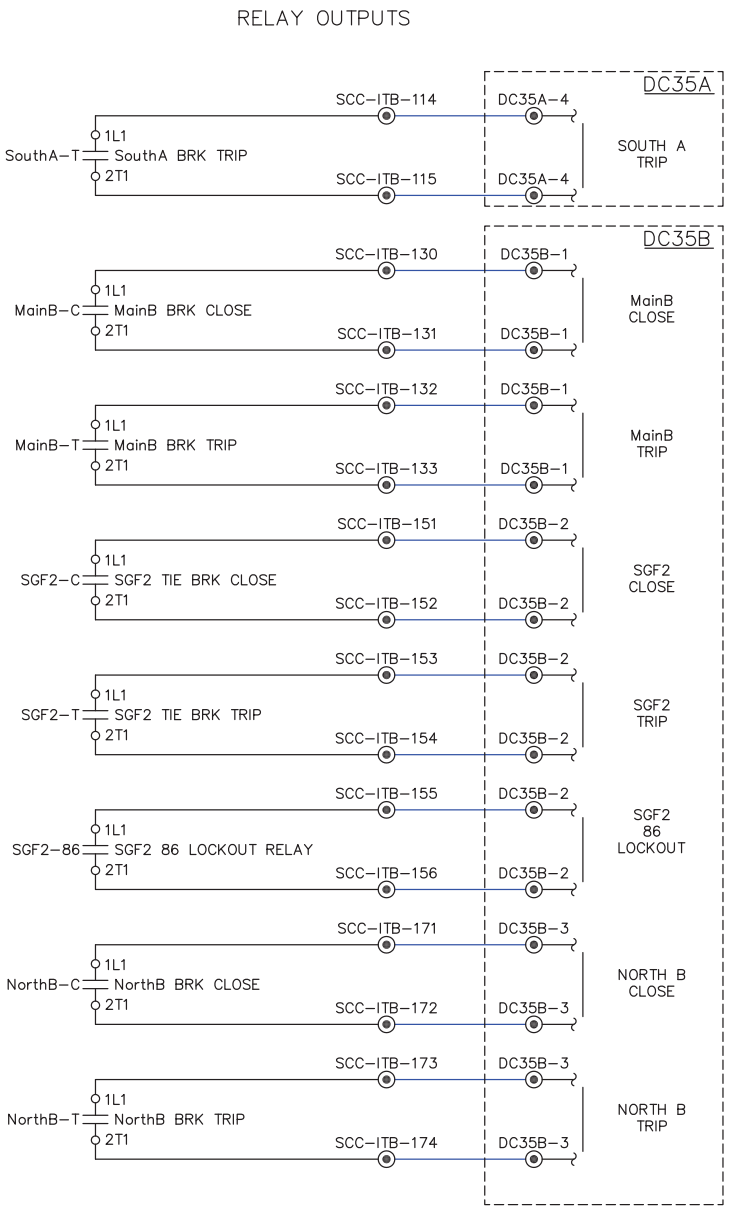


JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: Switchgear Controls
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: SCC: Relay Inputs/Outputs 1
ENGR: R. Stone				HEADQUARTER: MANUFACTURING:
DATE: 09/03/09				1609 Heritage Commerce Ct. Wake Forest, NC 27587 / 300 Kitty Hawk Dr. Morrisville, NC 27560
DRAWING STATUS: Preliminary				PG: 8 OF 13 REV: 1
				DWG# NG2766-2-WD01

Power Secure

9/29/2010 7:00 PM NG2766 Arlington WPCP – System Drawings & Schematics_AD.dwg





REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

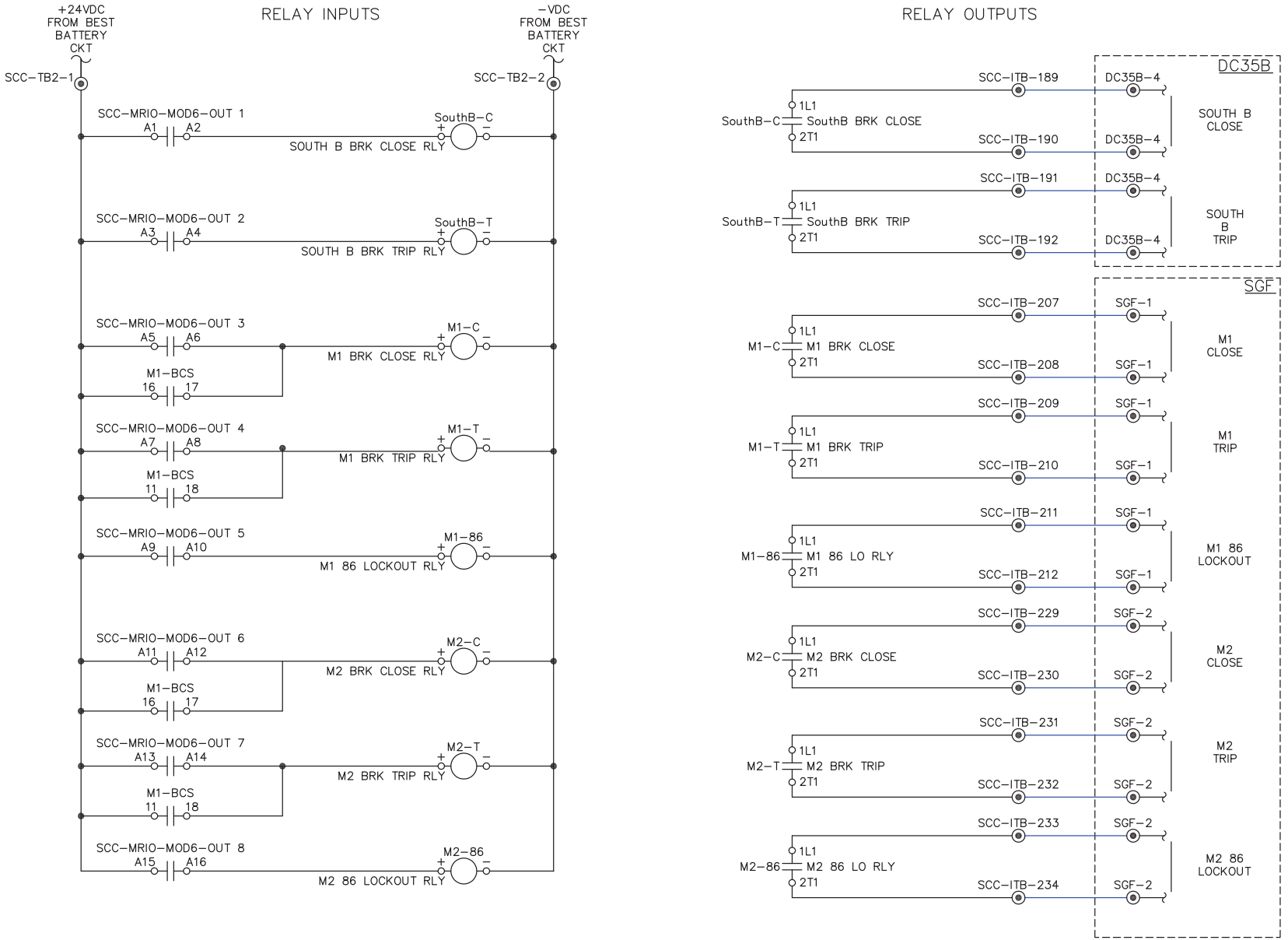
JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: SCC: Relay Inputs/Outputs 2

MANUFACTURING:
HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587
300 Kitty Hawk Dr.
Morrisville, NC 27560

PG: 9 OF 13 REV: 1
DWG# NG2766-2-WD01

9/29/2010 7:00 PM NG2766 Arlington WPCP – System Drawings & Schematics_AD.dwg



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JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal
DRAWN BY: J. Talton	2	9/29/10	As Shipped
ENGR: R. Stone			
DATE: 09/03/09			
DRAWING STATUS: Preliminary			

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: SCC: Relay Inputs/Outputs 3

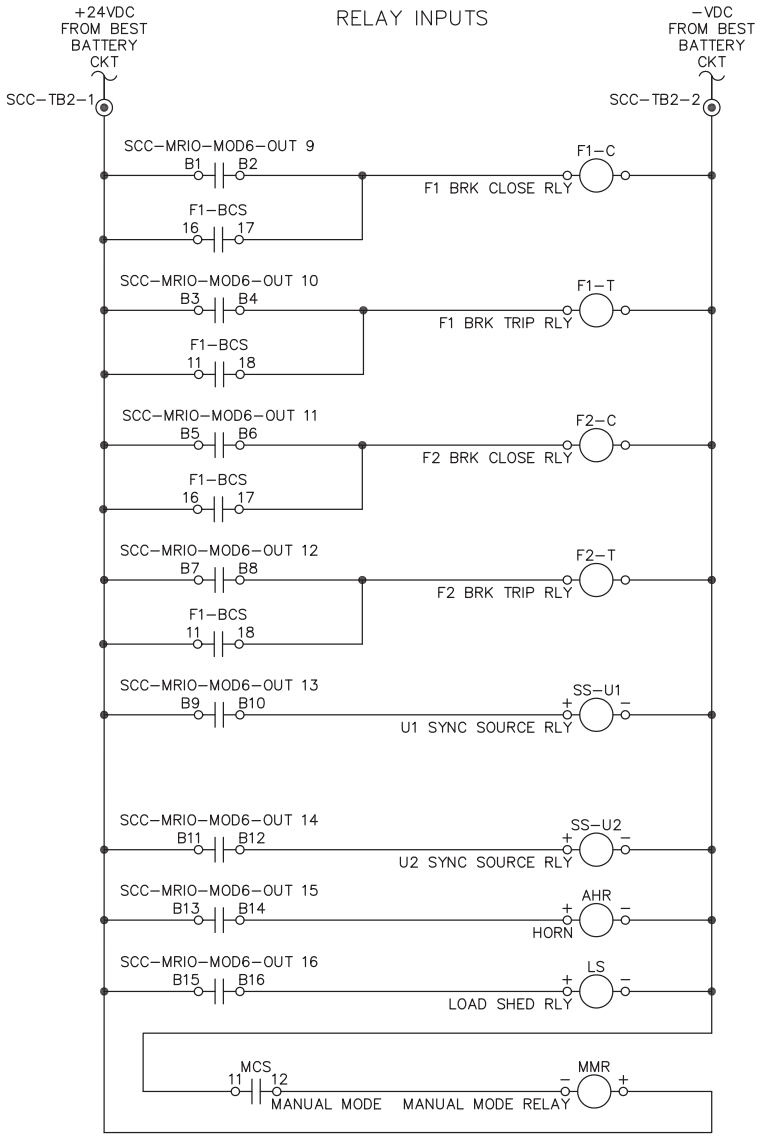
HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

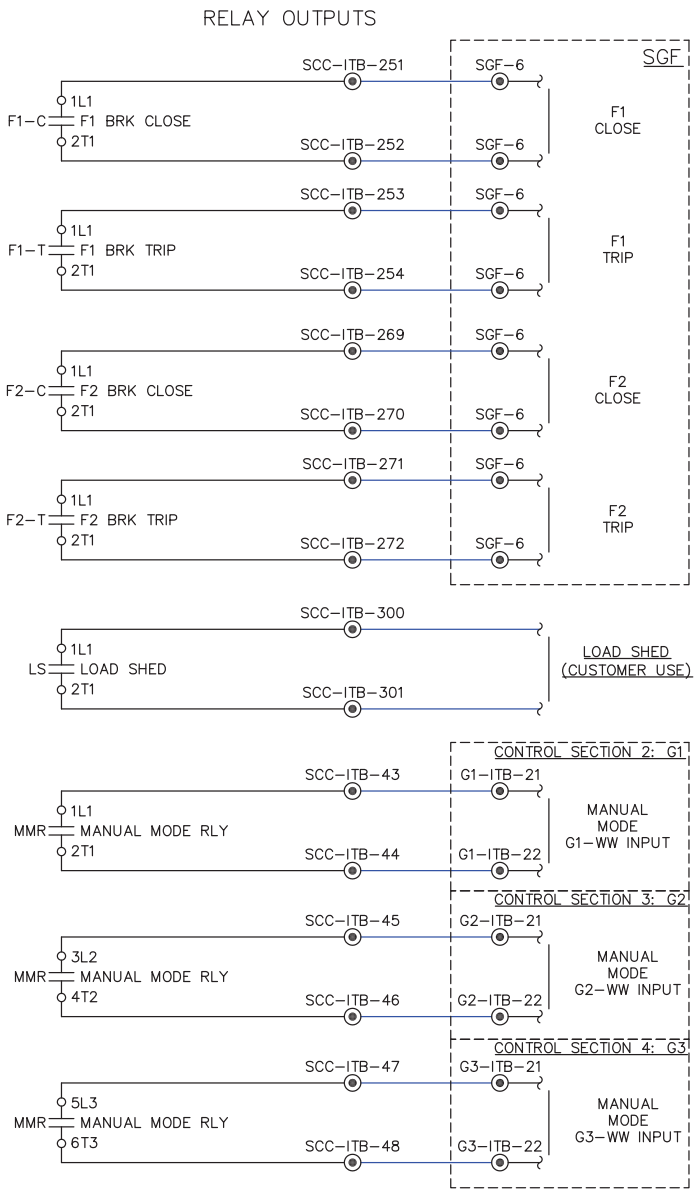
MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 10 OF 13 REV: 1

DWG# NG2766-2-WD01





REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: SCC: Relay Inputs/Outputs 4

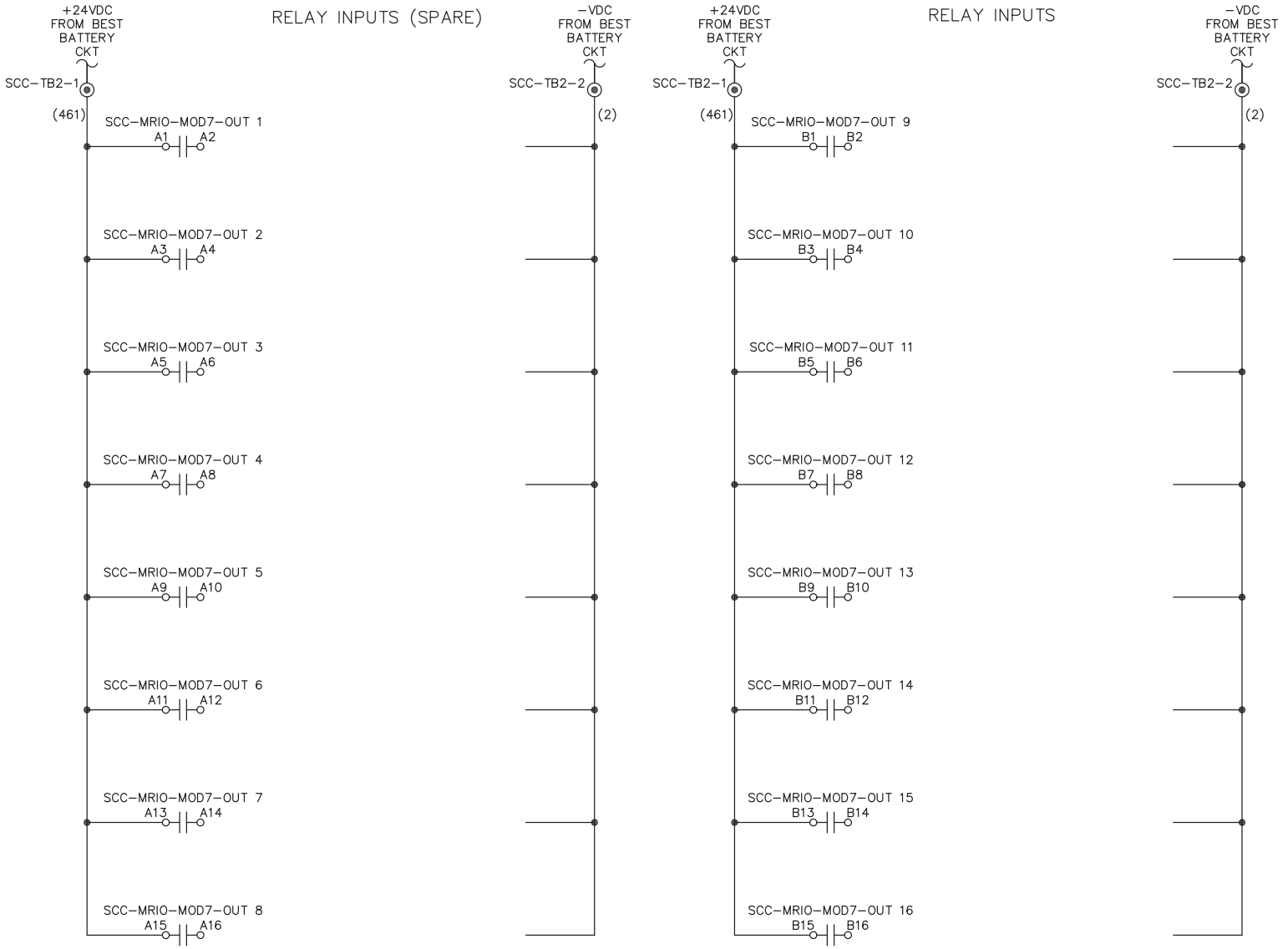
Power Secure

MANUFACTURING:
HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587
300 Kitty Hawk Dr.
Morrisville, NC 27560

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

PG: 11 OF 13 REV: 1
DWG# NG2766-2-WD01

9/29/2010 7:00 PM NG2766 Arlington WPCP – System Drawings & Schematics_AD.dwg



JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal
DRAWN BY: J. Talton	2	9/29/10	As Shipped
ENGR: R. Stone			
DATE: 09/03/09			
DRAWING STATUS: Preliminary			

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: SCC: Spare Relay Inputs 1

Power Secure

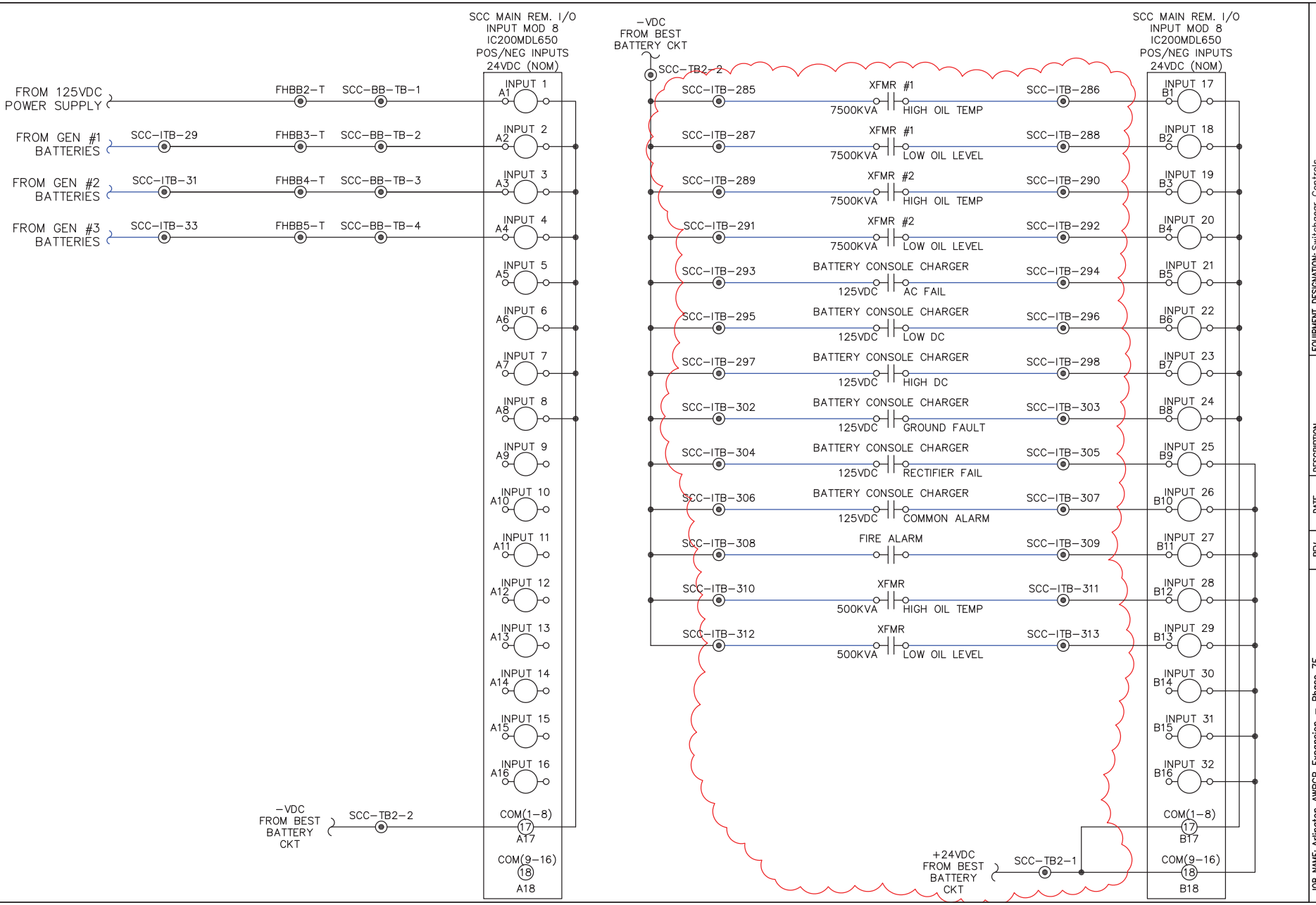
HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

PG: 12 OF 13 REV: 1

DWG# NG2766-2-WD01

9/29/2010 7:00 PM NG2766 Arlington WPCP – System Drawings & Schematics_AD.dwg



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REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: SCC: Spare Relay Inputs 2

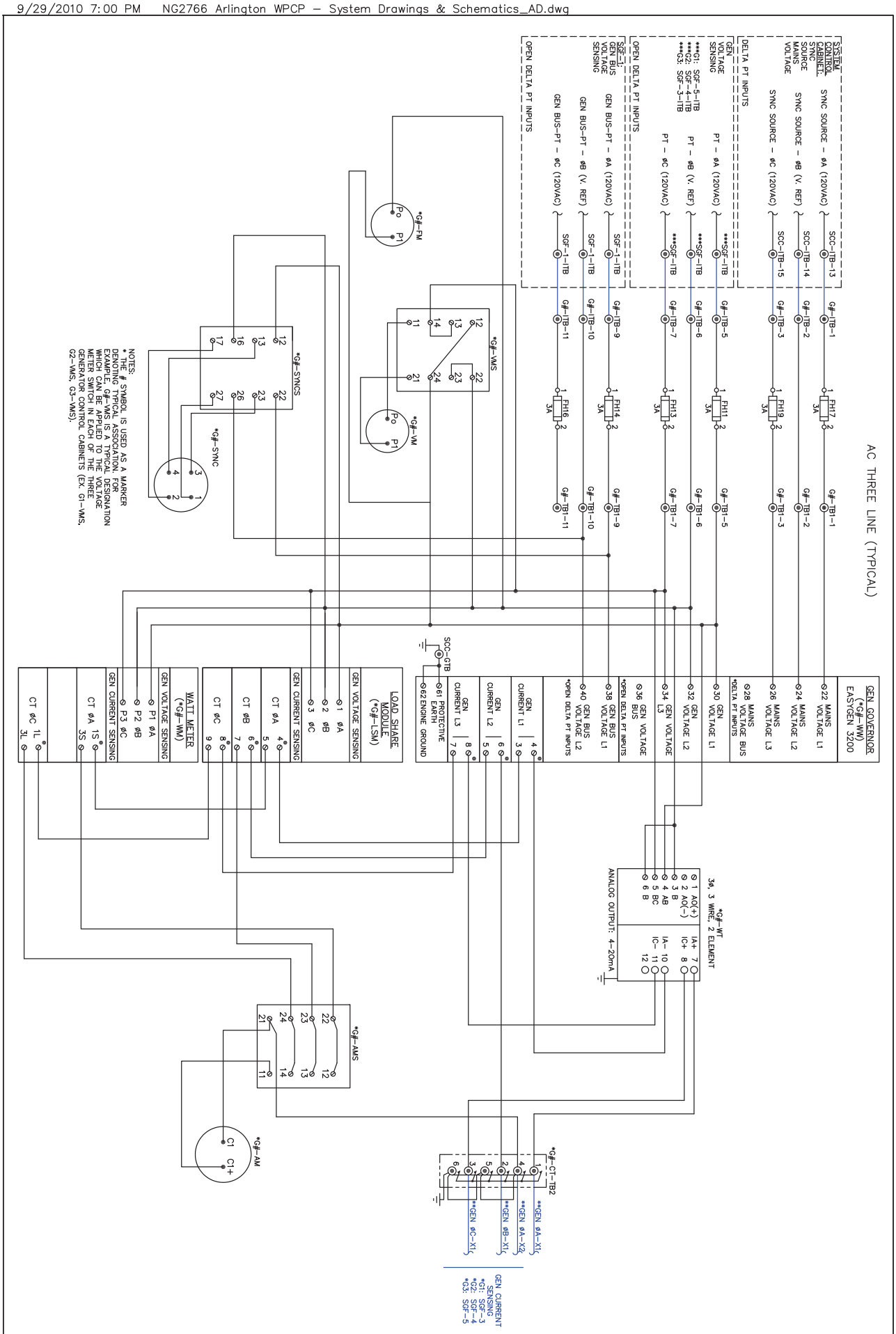
HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

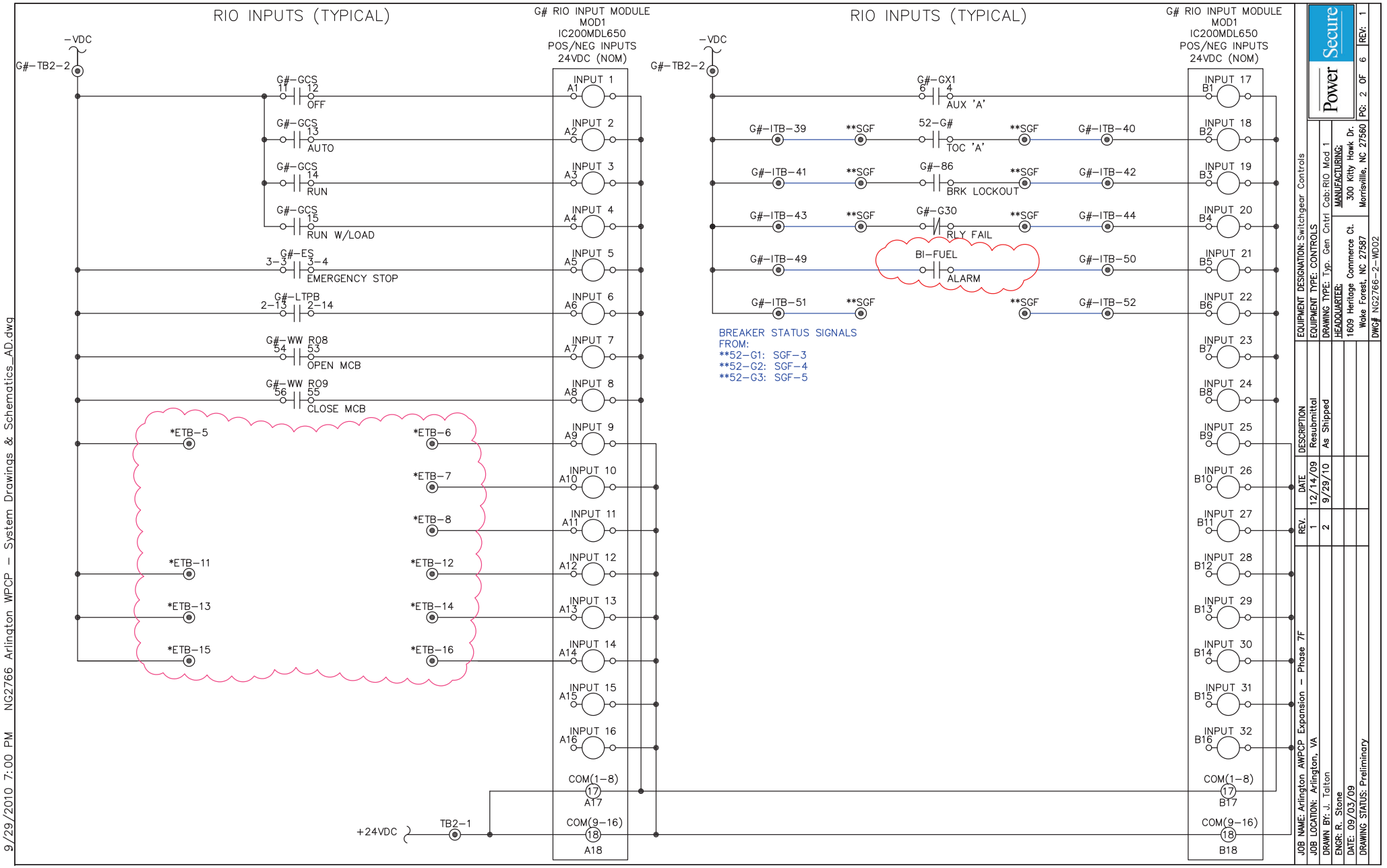
PG: 13 OF 13 REV: 1

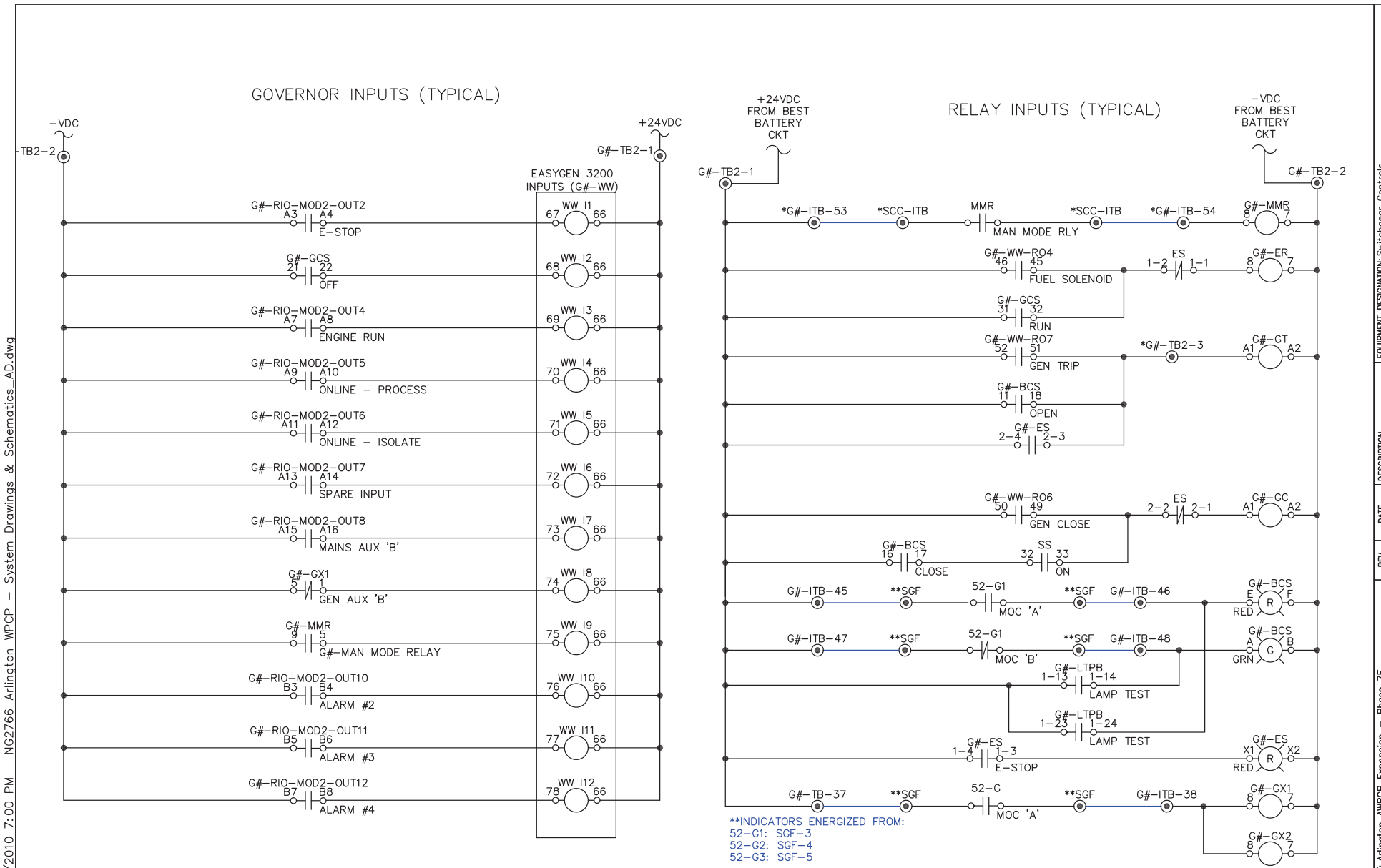
DWG# NG2766-2-WD01



JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: Switchgear Controls	
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS	
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: Typ. Gen Cntrl Cab: AC Three-Line	
ENGR: R. Stone				HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587	MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DATE: 09/03/09				PG: 1 OF 6	REV: 1
DRAWING STATUS: Preliminary				DWG# NG2766-2-WD02	

PowerSecure


RIO INPUTS (TYPICAL)
G# RIO INPUT MODULE
MOD1
IC200MDL650
POS/NEG INPUTS
24VDC (NOM)
-VDC
G#-TB2-2
G#-GCS 11 12 OFF
G#-GCS 13 AUTO
G#-GCS 14 RUN
G#-GCS 15 RUN W/LOAD
G#-ES 3-3 3-4 EMERGENCY STOP
G#-LTPB 2-13 2-14
G#-WW R08 54 53 OPEN MCB
G#-WW R09 56 55 CLOSE MCB
*ETB-5
*ETB-6
*ETB-7
*ETB-8
*ETB-11
*ETB-12
*ETB-13
*ETB-14
*ETB-15
*ETB-16
INPUT 1 A1
INPUT 2 A2
INPUT 3 A3
INPUT 4 A4
INPUT 5 A5
INPUT 6 A6
INPUT 7 A7
INPUT 8 A8
INPUT 9 A9
INPUT 10 A10
INPUT 11 A11
INPUT 12 A12
INPUT 13 A13
INPUT 14 A14
INPUT 15 A15
INPUT 16 A16
COM(1-8) 17 A17
COM(9-16) 18 A18
+24VDC
TB2-1
RIO INPUTS (TYPICAL)
G# RIO INPUT MODULE
MOD1
IC200MDL650
POS/NEG INPUTS
24VDC (NOM)
-VDC
G#-TB2-2
G#-GX1 6 4 AUX 'A'
G#-ITB-39 **SGF 52-G# **SGF G#-ITB-40 TOC 'A'
G#-ITB-41 **SGF G#-86 **SGF G#-ITB-42 BRK LOCKOUT
G#-ITB-43 **SGF G#-G30 **SGF G#-ITB-44 RLY FAIL
G#-ITB-49 BI-FUEL G#-ITB-50 ALARM
G#-ITB-51 **SGF **SGF G#-ITB-52
BREAKER STATUS SIGNALS
FROM:
**52-G1: SGF-3
**52-G2: SGF-4
**52-G3: SGF-5
INPUT 17 B1
INPUT 18 B2
INPUT 19 B3
INPUT 20 B4
INPUT 21 B5
INPUT 22 B6
INPUT 23 B7
INPUT 24 B8
INPUT 25 B9
INPUT 26 B10
INPUT 27 B11
INPUT 28 B12
INPUT 29 B13
INPUT 30 B14
INPUT 31 B15
INPUT 32 B16
COM(1-8) 17 B17
COM(9-16) 18 B18
Power Secure
EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Typ. Gen Cntrl Cab: RIO Mod 1
MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560
HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587
REV: 1
PG: 2 OF 6
DWG# NG2766-2-WD02
REV. DATE DESCRIPTION
1 12/14/09 Resubmittal
2 9/29/10 As Shipped
JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary
9/29/2010 7:00 PM NG2766 Arlington WPCP - System Drawings & Schematics_AD.dwg



REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Typ. Gen Cntrl Cab: Rly Inputs

MANUFACTURER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

HEADQUARTER:
300 Kitty Hawk Dr.
Morrisville, NC 27560

PG: 3 OF 6 REV: 1

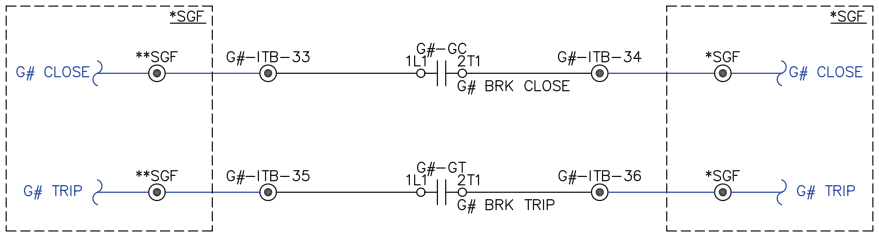
DWG# NG2766-2-WD02

JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

9/29/2010 7:00 PM NG2766 Arlington WPCP - System Drawings & Schematics_AD.dwg

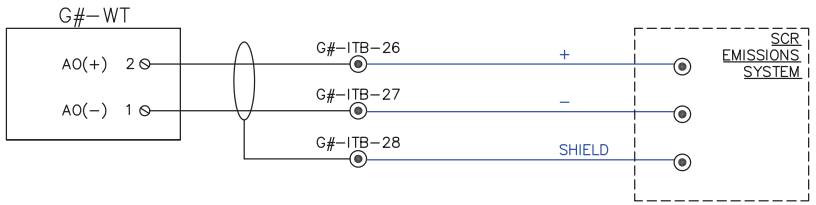
9/29/2010 7:00 PM NG2766 Arlington WPCP – System Drawings & Schematics_AD.dwg

RELAY OUTPUTS (TYPICAL)



*BRK TRIP/CLOSE TO:
52-G1: SGF-3
52-G2: SGF-4
52-G3: SGF-5

WATTS TRANSDUCER OUTPUT (TYPICAL)
(4-20mA)



JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Typ. Gen Cntrl Cab: Rly Output/WT

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

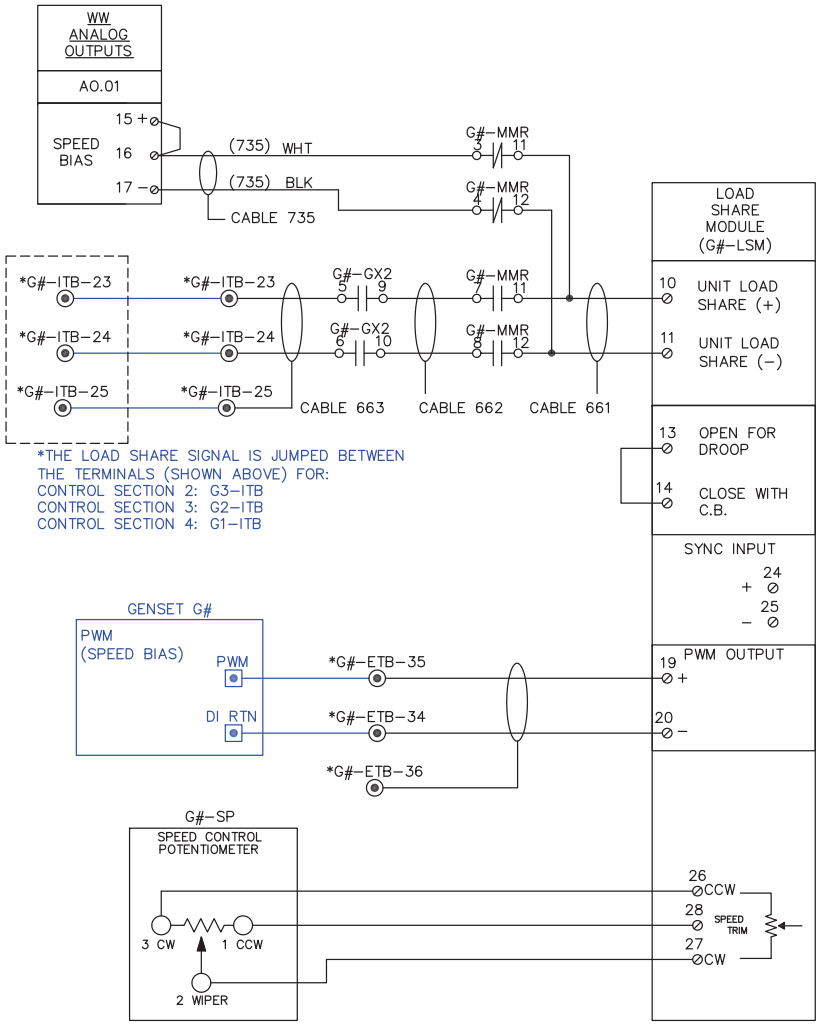
MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

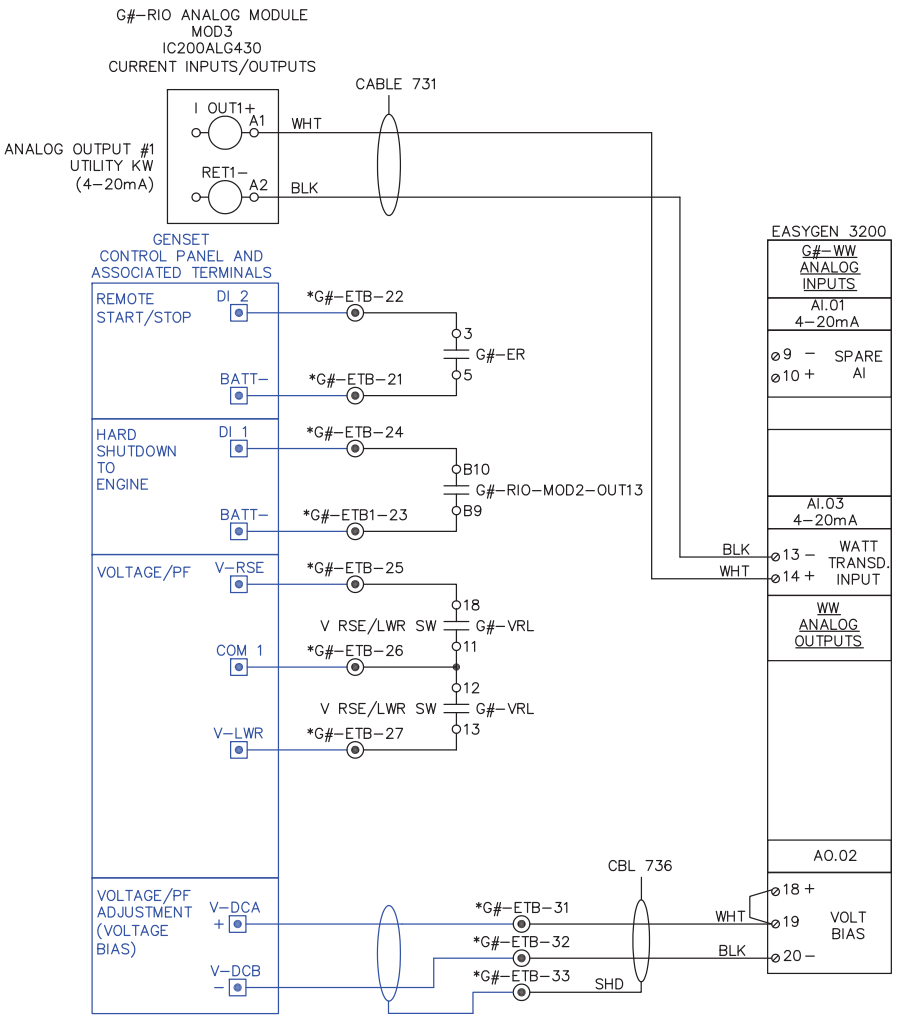
PG: 4 OF 6 REV: 1

DWG# NG2766-2-WD02

LOAD SHARE MODULE (TYPICAL)



GEN CONTROLS (TYPICAL)



REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Typ. Gen Cntrl Cab: LSM/Gen Wrng

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

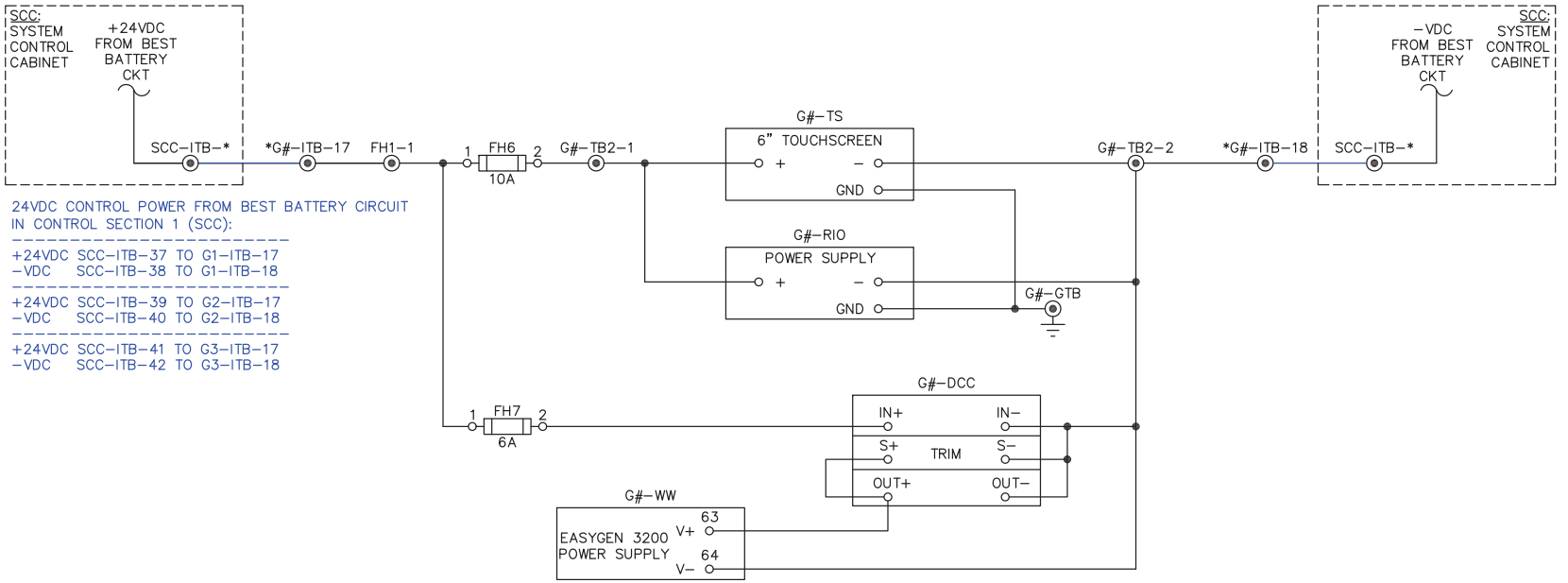
HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

DWG# NG2766–2–WD02

9/29/2010 7:00 PM NG2766 Arlington WPCP – System Drawings & Schematics_AD.dwg

DC CONTROL POWER (TYPICAL)



24VDC CONTROL POWER FROM BEST BATTERY CIRCUIT IN CONTROL SECTION 1 (SCC):

+24VDC	SCC–ITB–37 TO G1–ITB–17
–VDC	SCC–ITB–38 TO G1–ITB–18
+24VDC	SCC–ITB–39 TO G2–ITB–17
–VDC	SCC–ITB–40 TO G2–ITB–18
+24VDC	SCC–ITB–41 TO G3–ITB–17
–VDC	SCC–ITB–42 TO G3–ITB–18

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Typ. Gen Cntrl Cab: DC Cntrl Pwr

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

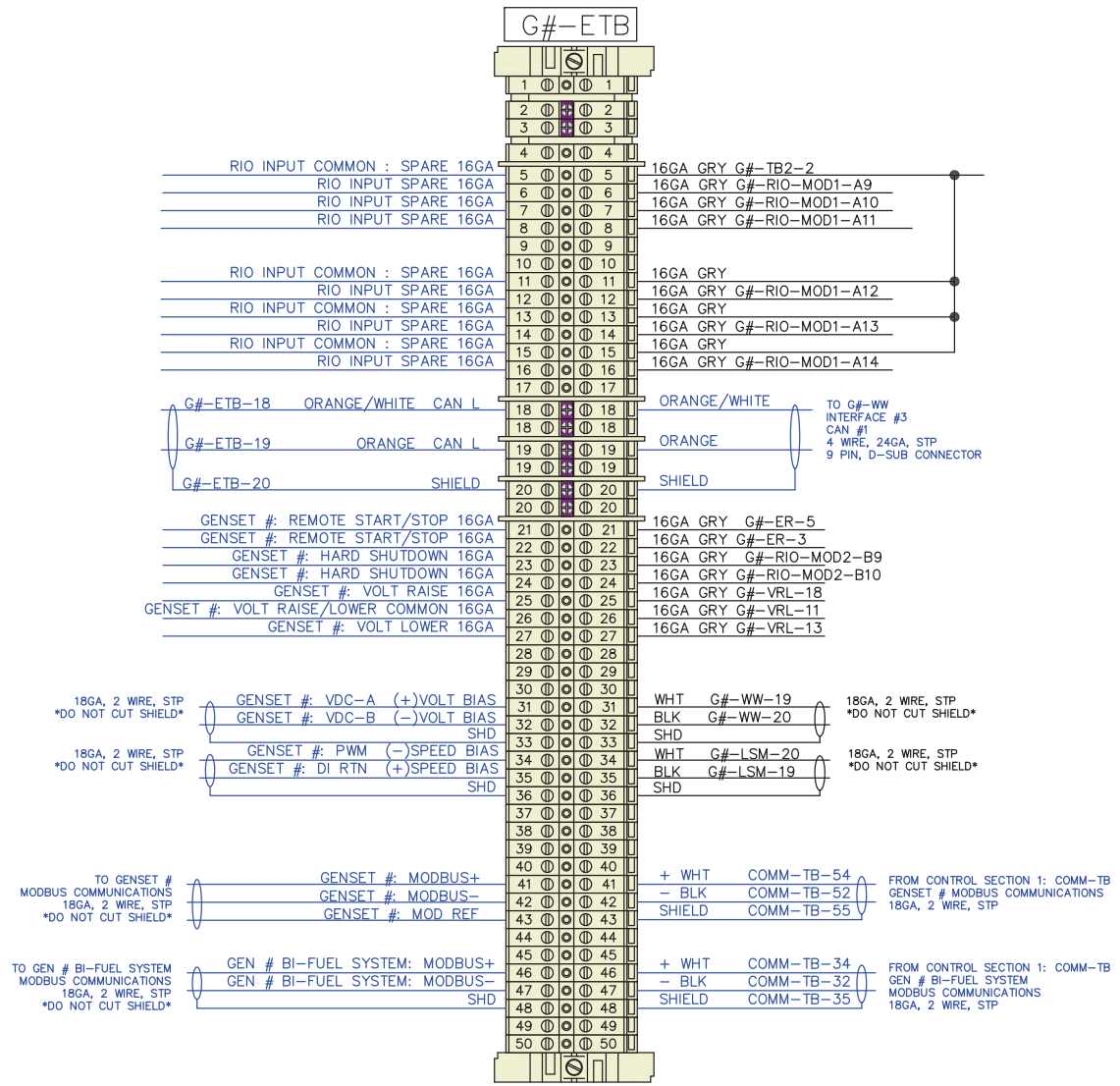
MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

PG: 6 OF 6 REV: 1

DWG# NG2766-2-WD02

9/29/2010 7:00 PM NG2766 Arlington WPCP – System Drawings & Schematics_AD.dwg

TYPICAL ENGINE TERMINAL BLOCK



REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Typical Engine Terminal Blk (ETB)

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

PG: 1 OF 1 REV: 1
DWG# NG2766-2-ETB

Power Secure

Parts List				
Project Name: Arlington County SGF – Control				
NexGear Order Number: NG2766				
Description of Part	Manufacturer	Part Number	Expanded Description	Quantity
RX3i 12–Slot Chassis	GE Fanuc	IC695CHS012		2
RX3i Controller	GE Fanuc	IC695CRU320	Master PLC	2
RX3i Power Supply	GE Fanuc	IC695PSD040	24VDC	2
RX3i E–Net Module	GE Fanuc	IC695ETM001		2
RX3i Redundancy Module	GE Fanuc	IC695RMX128		2
RX3i High–Capacity Battery Pack	GE Fanuc	IC693ACC302		2
RX3i Blank Filler Module	GE Fanuc	IC694ACC310		14
Genius Network Interface Unit	GE Fanuc	IC200GBI001		5
VersaMax Power Supply	GE Fanuc	IC200PWR002	24VDC	5
VersaMax Power Booster Carrier	GE Fanuc	IC200PWB001		1
VersaMax Digital Input Module	GE Fanuc	IC200MDL650		7
VersaMax Digital Output Module	GE Fanuc	IC200MDL940		6
VersaMax Analog Input Module	GE Fanuc	IC200ALG230		1
VersaMax Analog Mixed Module	GE Fanuc	IC200ALG430		3
VersaMax I/O Module Carrier	GE Fanuc	IC200CHS002		15
15" QuickPanel Control	GE Fanuc	IC754CSF15CTD	Master Touchscreen	1
6" QuickPanel View	GE Fanuc	IC754VSI06STD	Generator Touchscreen	3
Load Shed Control Switch	Shallco	26302D		1
Master Control Switch	Shallco	26303D		1
Tie Selector Switch	Shallco	26302D		1
Voltmeter Selector Switch	Shallco	2604C		3
Synchroscope Switch	Shallco	26203E	Removable Handle	3
Ammeter Selector Switch	Shallco	2610C		3
Gen Control Switch	Shallco	26303D		3
Breaker Control Switch	Shallco	2638D24VDCABC		7
Voltage Raise/Lower Switch	Shallco	76201B		3
EasyGen 3200	Woodward	8440–1876		3
Load Share Module	Woodward	9907–838		3

Parts List				
Project Name: Arlington County SGF – Control				
NexGear Order Number: NG2766				
Description of Part	Manufacturer	Part Number	Expanded Description	Quantity
Kilowatt Meter	PC&S	LS110KW33	4000kW Scale	3
Analog Ammeter	PC&S	LS1105A500A	500A Scale	3
Analog Voltage Meter	PC&S	LS110150V5000V	5000V L–L Scale	3
Analog Frequency Meter	PC&S	LS110HZ55651	55–65 Hz Scale	3
Synchroscope	PC&S	LS110SYNC12A		3
Alarm Horn	Federal Signal	450–024–31	24VDC	1
Load Shed Reset Pushbutton	Eaton	10250T102–2	Red	1
Alarm Horn Reset Pushbutton	Eaton	10250T102–2	Red	1
E–Stop Illuminated Pushbutton	Eaton	10250T597LED24–1X		3
E–Stop Shroud				3
Lamp Test Pushbutton	Eaton	10250T103–2	Green	4
LM Start Pushbutton	Eaton	10250T103–2	Green	1
Isolate Start Pushbutton	Eaton	10250T103–2	Green	1
LM/Isolate Stop Pushbutton	Eaton	10250T101–2	Red	1
Speed Potentiometer	Eaton	10250T33336		3
24VDC Power Supply	ABB	1SVR427026R0000		1
Power Supply Messaging Module	ABB	1SVR427081R0000		1
Bridge Rectifier	Crydom	M5060THC600		2
K–Line Contactors	Telemecanique	LP4K0610BW3		24
Plug–In Miniature Relay	Square D	RXM2AB3BD		40
Plug–In Relay Base	Square D	RXZE2M114		40
Plug–In Relay Diode	Square D	RXM040W		40
900B Ethernet Switch Chassis	N–Tron	900B	Master Ethernet Switch	2
900B 8–port Ethernet Module	N–Tron	908TX		2
900B 4–port Fiber Module	N–Tron	904FX–ST		2
900B Filler Plate	N–Tron	900B–FP		2
EIR308 Ethernet Switch	B&B Elec	EIR308	8 Ethernet	2
ILinx Serial–to–Fiber Converter	B&B Elec	FOSTCDRI	DC35–A/B Fiber Converter	2
PortServer TS MEI	Digi	PortServer TS 4 MEI		4
Fuse Blocks	ABB	1SNA400731R0200		192
Panel–Mount Terminal Blocks	GE / ITI	IKU12		40
Panel–Mount Terminal Blocks	GE / ITI	IKU6SC		20
Terminal Blocks	ABB	1SNA115116R0700	Control Panel Terminal Blocks	1023
Watt Transducer	Yokogawa	246953–540–AHD–0		3
Potential Transformer	ITI	3VTL460–208		2

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Taiton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION: Switchgear Controls
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: Parts List

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

PG: 1 OF 1 REV: 1

DWG# NG2766–2–PL

NexGear

Advanced Paralleling Switchgear

ARLINGTON WPCP
ARLINGTON, VA

SGF_PANEL_GEN_MASTER
CONTROL SECTION 1
SYSTEM CONTROL CABINET (SCC)

TABLE OF CONTENTS

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: SYSTEM CONTROL CABINET
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: TABLE OF CONTENTS

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 1 OF 1 REV: 1

DWG# NG2766-2-TC01

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SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: ABBREVIATIONS

GENERAL LEGEND	
AHR	HORN
BBPS1	BEST BATTERY POWER SOURCE 1
BB-TB	BEST BATTERY TERMINAL BLOCK
DB1	DIODE BLOCK 1
DB2	DIODE BLOCK 2
E1	ETHERNET SWITCH (1)
E2	ETHERNET SWITCH
E3	ETHERNET SWITCH (3)
F1-BCS	F1 BREAKER CONTROL SWITCH
F1-C	F1 CLOSE CONTACTOR
F1-T	F1 TRIP CONTACTOR
F2-BCS	F2 BREAKER CONTROL SWITCH
F2-T	F2 TRIP CONTACTOR
FH#	FUSE HOLDER #
FHBB#	FUSE HOLDER BEST BATTERY #
GTB	GROUND TERMINAL BLOCK
HSPB	ALARM HORN RESET PUSHBUTTON
ISPB	ISOLATE START PUSHBUTTON
ITB	INTERCONNECT TERMINAL BLOCK
LMPB	LM START PUSHBUTTON
LS	LOAD SHED CONTACTOR
LSCS	LOAD SHED CONTROL SWITCH
LSRPB	LOAD SHED RESET PUSHBUTTON
LTPB	LAMP TEST PUSHBUTTON
M1-86	M1 86 LOCKOUT CONTACTOR
M1-BCS	M1 BREAKER CONTROL SWITCH
M1-C	M1 CLOSE CONTACTOR

M1-T	M1 TRIP CONTACTOR
M2-86	M2 86 LOCKOUT CONTACTOR
M2-BCS	M2 BREAKER CONTROL SWITCH
M2-C	M2 CLOSE CONTACTOR
M2-T	M2 TRIP CONTACTOR
MainA-BCS	MAIN A BREAKER CONTROL SWITCH
MainA-C	MAIN A CLOSE CONTACTOR
MainA-T	MAIN A TRIP CONTACTOR
MainB-BCS	MAIN B BREAKER CONTROL SWITCH
MainB-C	MAIN B CLOSE CONTACTOR
MainB-T	MAIN B TRIP CONTACTOR
MCC	MOTOR CONTROL CENTER
MCS	MASTER CONTROL SWITCH
MMR	MANUAL MODE RELAY CONTACTOR
MPLC1	MAIN PLC 1
MPLC2	MAIN PLC 2
MRIO	MAIN REMOTE I/O
NorthA-C	NORTH A CLOSE CONTACTOR
NorthA-T	NORTH A TRIP CONTACTOR
NorthB-C	NORTH B CLOSE CONTACTOR
NorthB-T	NORTH B TRIP CONTACTOR
SE1	SERIAL TO ETHERNET 1
SE2	SERIAL TO ETHERNET 2
SE3	SERIAL TO ETHERNET 3
SGF1-86	SGF1 86 LOCKOUT CONTACTOR
SGF1-C	SGF1 CLOSE CONTACTOR
SGF1-T	SGF1 TRIP CONTACTOR
SGF2-86	SGF2 86 LOCKOUT CONTACTOR

SGF2-C	SGF2 CLOSE CONTACTOR
SGF2-T	SGF2 TRIP CONTACTOR
SouthA-C	SOUTH A CLOSE CONTACTOR
SouthA-T	SOUTH A TRIP CONTACTOR
SouthB-C	SOUTH B CLOSE CONTACTOR
SouthB-T	SOUTH B TRIP CONTACTOR
SPB	LM/ISOLATE STOP PUSHBUTTON
SS-U1	SYNC SOURCE UTILITY 1 RELAY
SS-U2	SYNC SOURCE UTILITY 2 RELAY
STP	SHIELDED, TWISTED PAIR
TB1	TERMINAL BLOCK 1; AC VOLTAGE SENSING DISTRIBUTION
TB2	TERMINAL BLOCK 2; DC CONTROL POWER DISTRIBUTION
TS	15" TOUCHSCREEN
TSS	TIE SELECTOR SWITCH
U1-SS-PT	UTILITY 1 SOURCE SELECT PT
U2-SS-PT	UTILITY 2 SOURCE SELECT PT

JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: ABBREVIATIONS

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

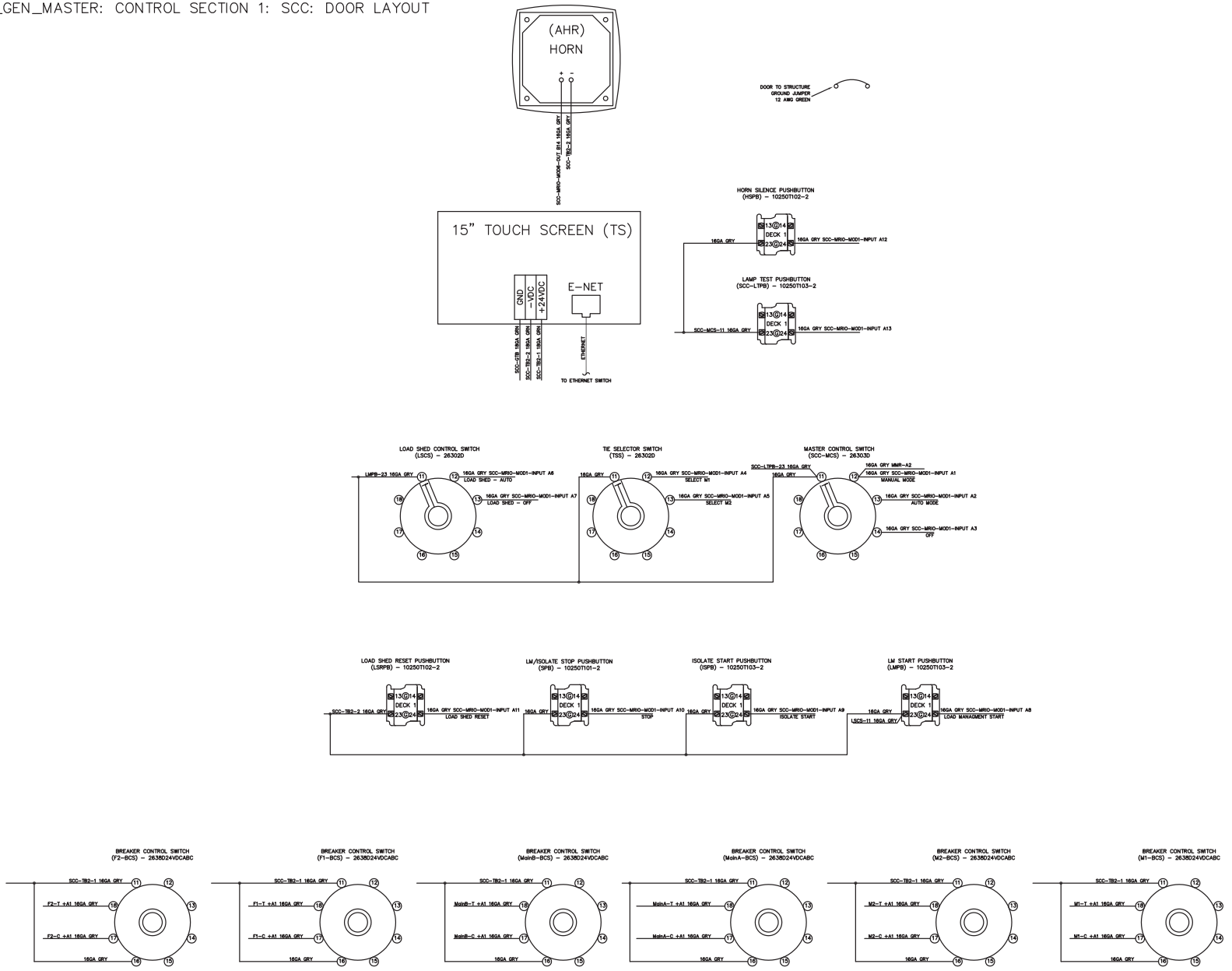
Power Secure

PG: 1 OF 1 REV: 1

DWG# NG2766-2-LA01

9/29/2010 8:40 PM NG2766 - Arlington_LV Controls_WD_R.dwg

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: DOOR LAYOUT



JOB NAME: Arlington AWPCP Expansion - Phase 7F	REV.	DATE	DESCRIPTION
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal
DRAWN BY: J. Talton	2	9/29/10	As Shipped
ENGR: R. Stone			
DATE: 09/03/09			
DRAWING STATUS: Preliminary			

EQUIPMENT DESIGNATION:SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: DOOR LAYOUT

Power Secure

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

PG: 1 OF 31 REV: 1

DWG# NG2766-2-WD01

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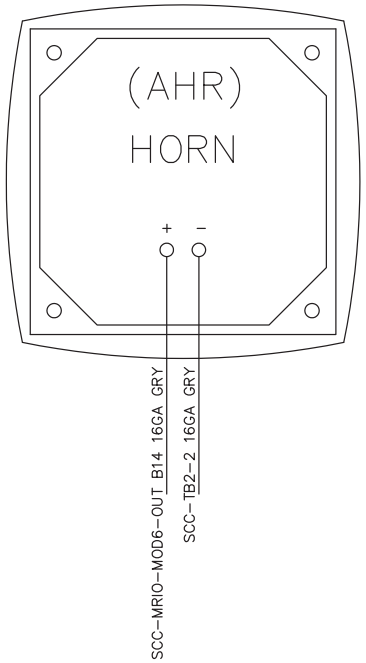
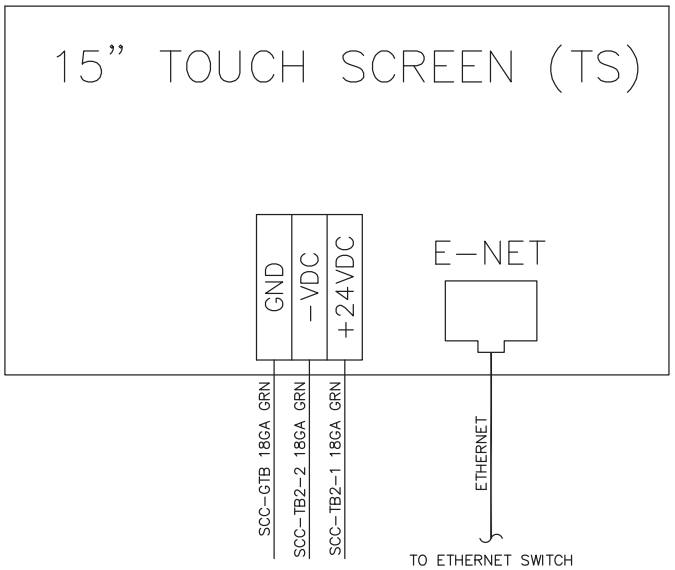
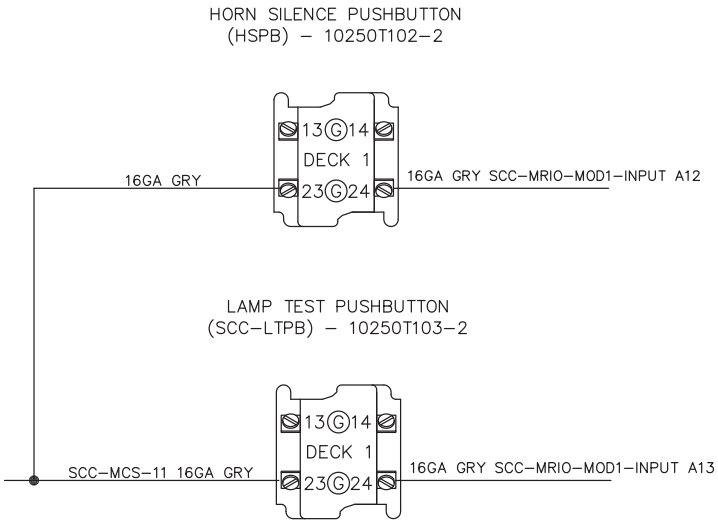
SGF_PANEL_GEN_MASTER: CONTROL SECTION 1:
SCC: DOOR WIRING (1 OF 3)







REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION:SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: DOOR WIRING

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 2 OF 31 REV: 1
DWG# NG2766-2-WD01

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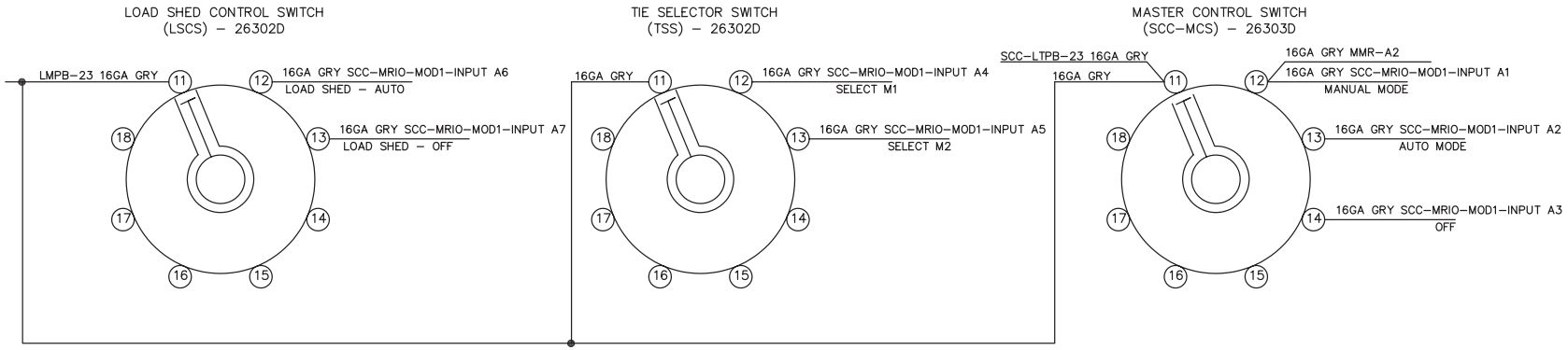
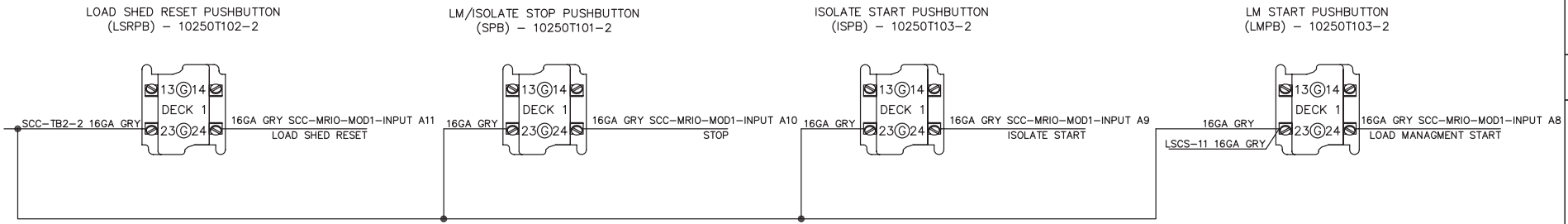
SGF_PANEL_GEN_MASTER: CONTROL SECTION 1:
SCC: DOOR WIRING (2 OF 3)





REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: DOOR WIRING

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 3 OF 31 REV: 1

DWG# NG2766–2–WD01

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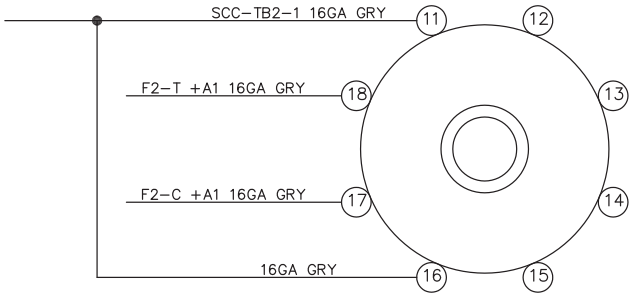
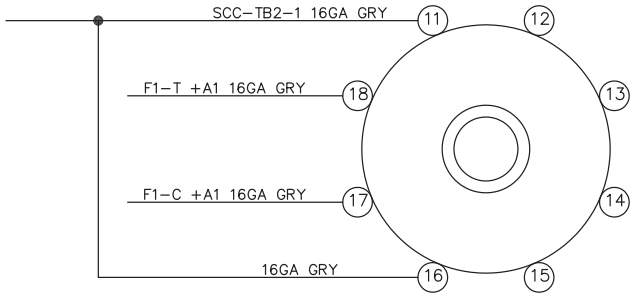
SGF_PANEL_GEN_MASTER: CONTROL SECTION 1:
SCC: DOOR WIRING (3 OF 3)

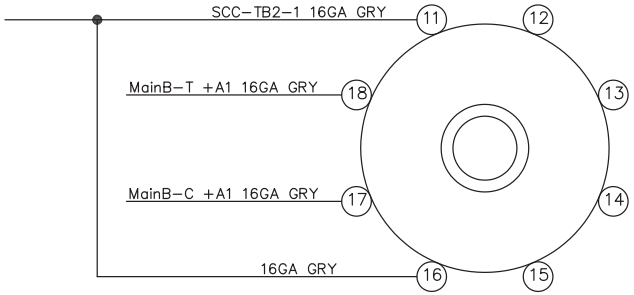
BREAKER CONTROL SWITCH
(F2-BCS) - 2638D24VDCABC



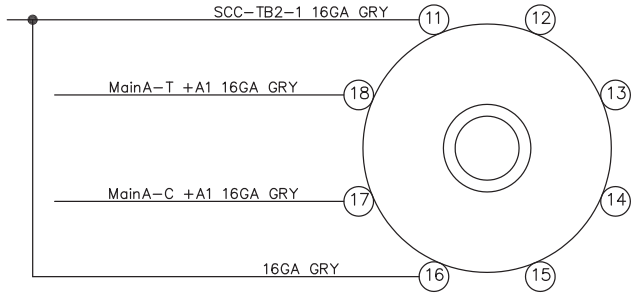
BREAKER CONTROL SWITCH
(F1-BCS) - 2638D24VDCABC



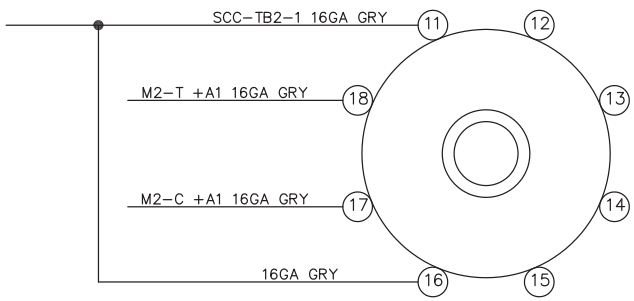
BREAKER CONTROL SWITCH
(MainB-BCS) - 2638D24VDCABC



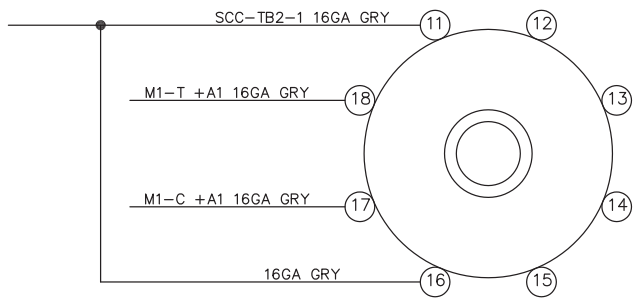
BREAKER CONTROL SWITCH
(MainA-BCS) - 2638D24VDCABC



BREAKER CONTROL SWITCH
(M2-BCS) - 2638D24VDCABC



BREAKER CONTROL SWITCH
(M1-BCS) - 2638D24VDCABC



9/29/2010 8:40 PM NG2766 - Arlington_LV Controls_WD_R.dwg

JOB NAME: Arlington AWPCP Expansion - Phase 7F	REV.	DATE	DESCRIPTION
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal
DRAWN BY: J. Talton	2	9/29/10	As Shipped
ENGR: R. Stone			
DATE: 09/03/09			
DRAWING STATUS: Preliminary			

EQUIPMENT DESIGNATION:SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: DOOR WIRING

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

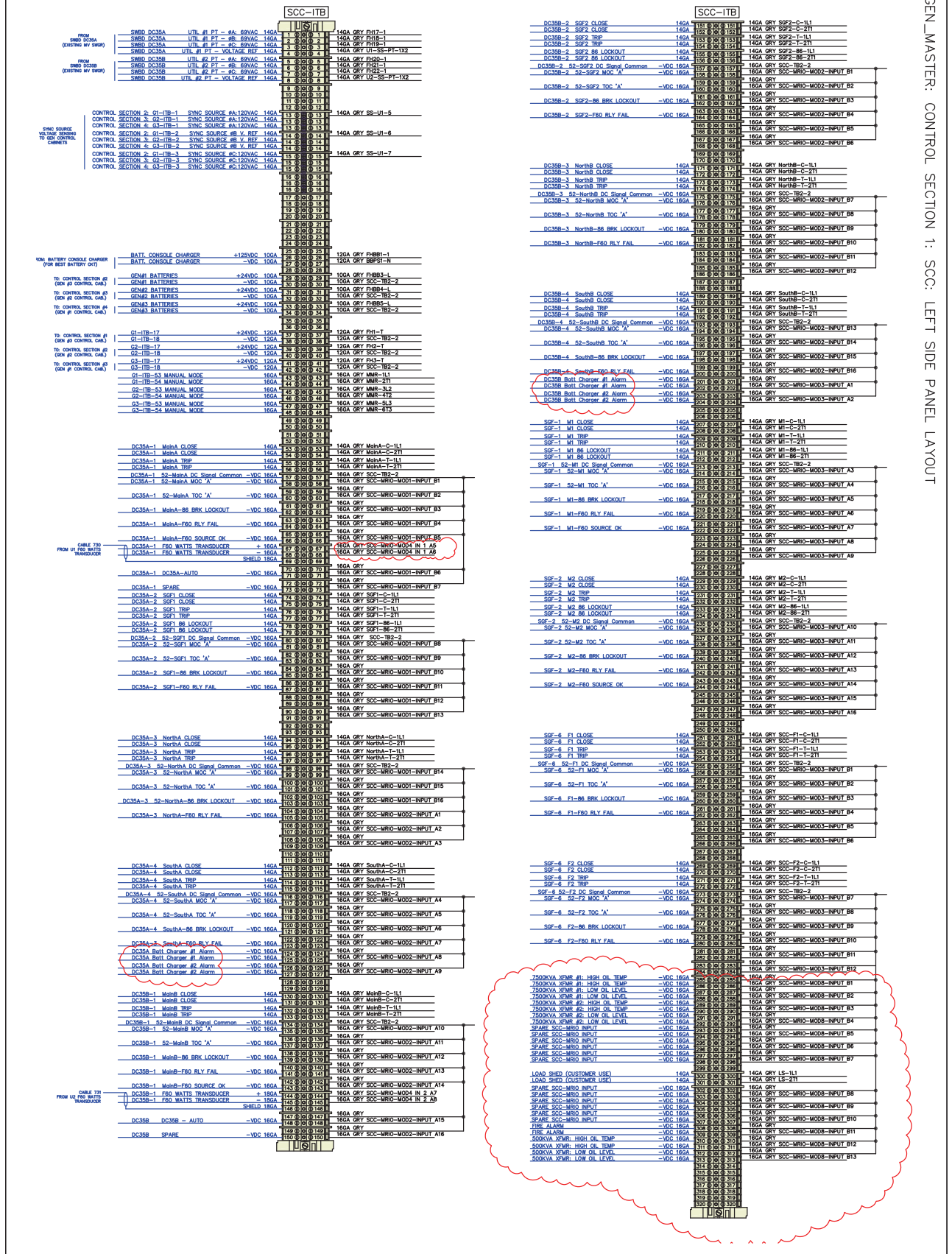
MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 4 OF 31 REV: 1

DWG# NG2766-2-WD01

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: LEFT SIDE PANEL LAYOUT



JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: SCC CONTROLS	
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS	
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: LEFT PAN LAYOUT	
ENGR: R. Stone				HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587	MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DATE: 09/03/09					PG: 5 OF 31 REV: 1
DRAWING STATUS: Preliminary				DWG# NG2766-2-WD01	

SCC–ITB

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: LEFT SIDE PANEL: SCC–ITB (1 OF 4)

FROM SWBD DC35A (EXISTING MV SWGR)	SWBD DC35A	UTIL #1 PT – øA: 69VAC	14GA	1	1	14GA GRY FH17–1
	SWBD DC35A	UTIL #1 PT – øB: 69VAC	14GA	2	2	14GA GRY FH18–1
	SWBD DC35A	UTIL #1 PT – øC: 69VAC	14GA	3	3	14GA GRY FH19–1
	SWBD DC35A	UTIL #1 PT – VOLTAGE REF	14GA	4	4	14GA GRY U1–SS–PT–1X2
FROM SWBD DC35B (EXISTING MV SWGR)	SWBD DC35B	UTIL #2 PT – øA: 69VAC	14GA	5	5	14GA GRY FH20–1
	SWBD DC35B	UTIL #2 PT – øB: 69VAC	14GA	6	6	14GA GRY FH21–1
	SWBD DC35B	UTIL #2 PT – øC: 69VAC	14GA	7	7	14GA GRY FH22–1
	SWBD DC35B	UTIL #2 PT – VOLTAGE REF	14GA	8	8	14GA GRY U2–SS–PT–1X2
				9	9	
				10	10	
				11	11	
				12	12	
SYNC SOURCE VOLTAGE SENSING TO GEN CONTROL CABINETS	CONTROL SECTION 2: G1–ITB–1	SYNC SOURCE øA:120VAC	14GA	13	13	14GA GRY SS–U1–5
	CONTROL SECTION 3: G2–ITB–1	SYNC SOURCE øA:120VAC	14GA	13	13	
	CONTROL SECTION 4: G3–ITB–1	SYNC SOURCE øA:120VAC	14GA	13	13	
	CONTROL SECTION 2: G1–ITB–2	SYNC SOURCE øB V. REF	14GA	14	14	14GA GRY SS–U1–6
	CONTROL SECTION 3: G2–ITB–2	SYNC SOURCE øB V. REF	14GA	14	14	
	CONTROL SECTION 4: G3–ITB–2	SYNC SOURCE øB V. REF	14GA	14	14	
	CONTROL SECTION 2: G1–ITB–3	SYNC SOURCE øC:120VAC	14GA	15	15	14GA GRY SS–U1–7
	CONTROL SECTION 3: G2–ITB–3	SYNC SOURCE øC:120VAC	14GA	15	15	
	CONTROL SECTION 4: G3–ITB–3	SYNC SOURCE øC:120VAC	14GA	15	15	
				16	16	
				16	16	
				16	16	
				17	17	
				18	18	
				19	19	
				20	20	
				21	21	
				22	22	
				23	23	
				24	24	
FROM: BATTERY CONSOLE CHARGER (FOR BEST BATTERY CKT)	BATT. CONSOLE CHARGER	+125VDC	10GA	25	25	12GA GRY FHBB1–1
	BATT. CONSOLE CHARGER	–VDC	10GA	26	26	12GA GRY BBPS1–N
				27	27	
				28	28	
TO: CONTROL SECTION #2 (GEN #3 CONTROL CAB.)	GEN#1 BATTERIES	+24VDC	10GA	29	29	10GA GRY FHBB3–L
	GEN#1 BATTERIES	–VDC	10GA	30	30	10GA GRY SCC–TB2–2
TO: CONTROL SECTION #3 (GEN #2 CONTROL CAB.)	GEN#2 BATTERIES	+24VDC	10GA	31	31	10GA GRY FHBB4–L
	GEN#2 BATTERIES	–VDC	10GA	32	32	10GA GRY SCC–TB2–2
TO: CONTROL SECTION #4 (GEN #1 CONTROL CAB.)	GEN#3 BATTERIES	+24VDC	10GA	33	33	10GA GRY FHBB5–L
	GEN#3 BATTERIES	–VDC	10GA	34	34	10GA GRY SCC–TB2–2
				35	35	
				36	36	
TO: CONTROL SECTION #1 (GEN #3 CONTROL CAB.)	G1–ITB–17	+24VDC	12GA	37	37	12GA GRY FH1–T
	G1–ITB–18	–VDC	12GA	38	38	12GA GRY SCC–TB2–2
TO: CONTROL SECTION #2 (GEN #2 CONTROL CAB.)	G2–ITB–17	+24VDC	12GA	39	39	12GA GRY FH2–T
	G2–ITB–18	–VDC	12GA	40	40	12GA GRY SCC–TB2–2
TO: CONTROL SECTION #3 (GEN #1 CONTROL CAB.)	G3–ITB–17	+24VDC	12GA	41	41	12GA GRY FH3–T
	G3–ITB–18	–VDC	12GA	42	42	12GA GRY SCC–TB2–2
	G1–ITB–53 MANUAL MODE		16GA	43	43	16GA GRY MMR–1L1
	G1–ITB–54 MANUAL MODE		16GA	44	44	16GA GRY MMR–2T1
	G2–ITB–53 MANUAL MODE		16GA	45	45	16GA GRY MMR–3L2
	G2–ITB–54 MANUAL MODE		16GA	46	46	16GA GRY MMR–4T2
	G3–ITB–53 MANUAL MODE		16GA	47	47	16GA GRY MMR–5L3
	G3–ITB–54 MANUAL MODE		16GA	48	48	16GA GRY MMR–6T3
				49	49	
				50	50	
				51	51	
				52	52	
	DC35A–1 MainA CLOSE		14GA	53	53	14GA GRY MainA–C–1L1
	DC35A–1 MainA CLOSE		14GA	54	54	14GA GRY MainA–C–2T1
	DC35A–1 MainA TRIP		14GA	55	55	14GA GRY MainA–T–1L1
	DC35A–1 MainA TRIP		14GA	56	56	14GA GRY MainA–T–2T1
	DC35A–1 52–MainA DC Signal Common	–VDC	16GA	57	57	16GA GRY SCC–TB2–2
	DC35A–1 52–MainA MOC 'A'	–VDC	16GA	58	58	16GA GRY SCC–MRIO–MOD1–INPUT B1
				59	59	16GA GRY
	DC35A–1 52–MainA TOC 'A'	–VDC	16GA	60	60	16GA GRY SCC–MRIO–MOD1–INPUT B2
				61	61	16GA GRY
	DC35A–1 MainA–86 BRK LOCKOUT	–VDC	16GA	62	62	16GA GRY SCC–MRIO–MOD1–INPUT B3
				63	63	16GA GRY
	DC35A–1 MainA–F60 RLY FAIL	–VDC	16GA	64	64	16GA GRY SCC–MRIO–MOD1–INPUT B4
				65	65	16GA GRY
	DC35A–1 MainA–F60 SOURCE OK	–VDC	16GA	66	66	16GA GRY SCC–MRIO–MOD1–INPUT B5
CABLE 730 FROM U1 F60 WATTS TRANSDUCER	DC35A–1 F60 WATTS TRANSDUCER	+	16GA	67	67	16GA GRY SCC–MRIO–MOD4 IN 1 A5
	DC35A–1 F60 WATTS TRANSDUCER	–	16GA	68	68	16GA GRY SCC–MRIO–MOD4 IN 1 A6
		SHIELD	18GA	69	69	
				70	70	16GA GRY
	DC35A–1 DC35A–AUTO	–VDC	16GA	71	71	16GA GRY SCC–MRIO–MOD1–INPUT B6
				72	72	16GA GRY
	DC35A–1 SPARE	–VDC	16GA	73	73	16GA GRY SCC–MRIO–MOD1–INPUT B7
	DC35A–2 SGF1 CLOSE		14GA	74	74	14GA GRY SGF1–C–1L1
	DC35A–2 SGF1 CLOSE		14GA	75	75	14GA GRY SGF1–C–2T1
	DC35A–2 SGF1 TRIP		14GA	76	76	14GA GRY SGF1–T–1L1
	DC35A–2 SGF1 TRIP		14GA	77	77	14GA GRY SGF1–T–2T1
	DC35A–2 SGF1 86 LOCKOUT		14GA	78	78	14GA GRY SGF1–86–1L1
	DC35A–2 SGF1 86 LOCKOUT		14GA	79	79	14GA GRY SGF1–86–2T1
	DC35A–2 52–SGF1 DC Signal Common	–VDC	16GA	80	80	16GA GRY SCC–TB2–2
	DC35A–2 52–SGF1 MOC 'A'	–VDC	16GA	81	81	16GA GRY SCC–MRIO–MOD1–INPUT B8
				82	82	16GA GRY
	DC35A–2 52–SGF1 TOC 'A'	–VDC	16GA	83	83	16GA GRY SCC–MRIO–MOD1–INPUT B9
						16GA GRY

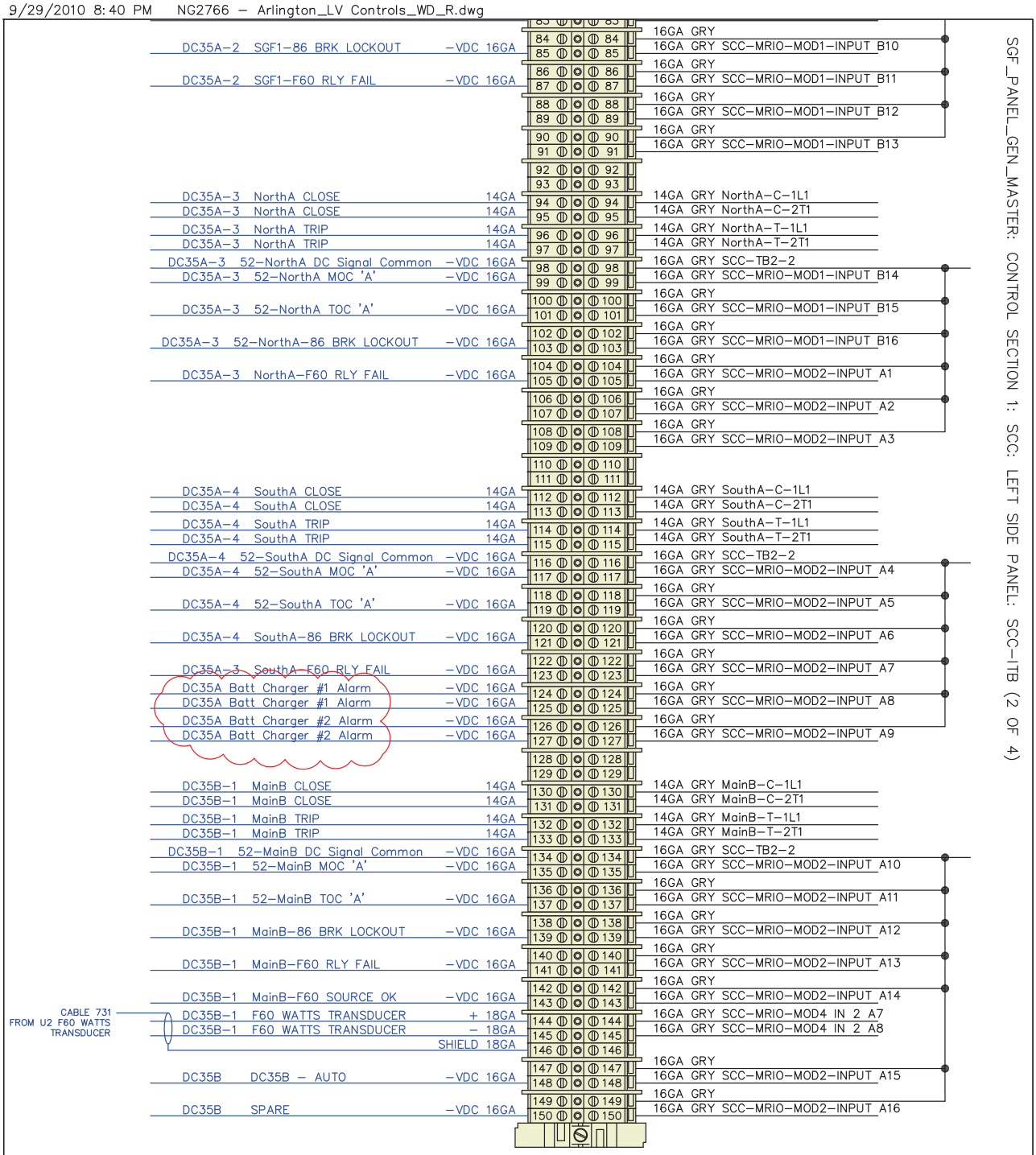
JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal
DRAWN BY: J. Talton	2	9/29/10	As Shipped
ENGR: R. Stone			
DATE: 09/03/09			
DRAWING STATUS: Preliminary			

EQUIPMENT DESIGNATION: SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: LEFT PAN WIRING

HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587
MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560

Power Secure

DWG# NG2766–2–WD01



SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: LEFT SIDE PANEL: SCC–ITB (2 OF 4)

JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: SCC CONTROLS	
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS	
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: LEFT PAN WIRING	
ENGR: R. Stone				HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587	MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DATE: 09/03/09					
DRAWING STATUS: Preliminary				DWG# NG2766–2–WD01	PG: 7 OF 31 REV: 1

Power Secure

SCC–ITB

DC35B–2 SGF2 CLOSE	14GA	151	151	14GA GRY SGF2–C–1L1
DC35B–2 SGF2 CLOSE	14GA	152	152	14GA GRY SGF2–C–2T1
DC35B–2 SGF2 TRIP	14GA	153	153	14GA GRY SGF2–T–1L1
DC35B–2 SGF2 TRIP	14GA	154	154	14GA GRY SGF2–T–2T1
DC35B–2 SGF2 86 LOCKOUT	14GA	155	155	14GA GRY SGF2–86–1L1
DC35B–2 SGF2 86 LOCKOUT	14GA	156	156	14GA GRY SGF2–86–2T1
DC35B–2 52–SGF2 DC Signal Common	–VDC 16GA	157	157	16GA GRY SCC–TB2–2
DC35B–2 52–SGF2 MOC 'A'	–VDC 16GA	158	158	16GA GRY SCC–MRIO–MOD2–INPUT B1
		159	159	16GA GRY
DC35B–2 52–SGF2 TOC 'A'	–VDC 16GA	160	160	16GA GRY SCC–MRIO–MOD2–INPUT B2
		161	161	16GA GRY
DC35B–2 SGF2–86 BRK LOCKOUT	–VDC 16GA	162	162	16GA GRY SCC–MRIO–MOD2–INPUT B3
		163	163	16GA GRY
DC35B–2 SGF2–F60 RLY FAIL	–VDC 16GA	164	164	16GA GRY SCC–MRIO–MOD2–INPUT B4
		165	165	16GA GRY
		166	166	16GA GRY SCC–MRIO–MOD2–INPUT B5
		167	167	16GA GRY
		168	168	16GA GRY SCC–MRIO–MOD2–INPUT B6
		169	169	
		170	170	
DC35B–3 NorthB CLOSE	14GA	171	171	14GA GRY NorthB–C–1L1
DC35B–3 NorthB CLOSE	14GA	172	172	14GA GRY NorthB–C–2T1
DC35B–3 NorthB TRIP	14GA	173	173	14GA GRY NorthB–T–1L1
DC35B–3 NorthB TRIP	14GA	174	174	14GA GRY NorthB–T–2T1
DC35B–3 52–NorthB DC Signal Common	–VDC 16GA	175	175	16GA GRY SCC–TB2–2
DC35B–3 52–NorthB MOC 'A'	–VDC 16GA	176	176	16GA GRY SCC–MRIO–MOD2–INPUT B7
		177	177	16GA GRY
DC35B–3 52–NorthB TOC 'A'	–VDC 16GA	178	178	16GA GRY SCC–MRIO–MOD2–INPUT B8
		179	179	16GA GRY
DC35B–3 NorthB–86 BRK LOCKOUT	–VDC 16GA	180	180	16GA GRY SCC–MRIO–MOD2–INPUT B9
		181	181	16GA GRY
DC35B–3 NorthB–F60 RLY FAIL	–VDC 16GA	182	182	16GA GRY SCC–MRIO–MOD2–INPUT B10
		183	183	16GA GRY
		184	184	16GA GRY SCC–MRIO–MOD2–INPUT B11
		185	185	16GA GRY
		186	186	16GA GRY SCC–MRIO–MOD2–INPUT B12
		187	187	
		188	188	
DC35B–4 SouthB CLOSE	14GA	189	189	14GA GRY SouthB–C–1L1
DC35B–4 SouthB CLOSE	14GA	190	190	14GA GRY SouthB–C–2T1
DC35B–4 SouthB TRIP	14GA	191	191	14GA GRY SouthB–T–1L1
DC35B–4 SouthB TRIP	14GA	192	192	14GA GRY SouthB–T–2T1
DC35B–4 52–SouthB DC Signal Common	–VDC 16GA	193	193	16GA GRY SCC–TB2–2
DC35B–4 52–SouthB MOC 'A'	–VDC 16GA	194	194	16GA GRY SCC–MRIO–MOD2–INPUT B13
		195	195	16GA GRY
DC35B–4 52–SouthB TOC 'A'	–VDC 16GA	196	196	16GA GRY SCC–MRIO–MOD2–INPUT B14
		197	197	16GA GRY
DC35B–4 SouthB–86 BRK LOCKOUT	–VDC 16GA	198	198	16GA GRY SCC–MRIO–MOD2–INPUT B15
		199	199	16GA GRY
DC35B–4 SouthB–F60 RLY FAIL	–VDC 16GA	200	200	16GA GRY SCC–MRIO–MOD2–INPUT B16
DC35B Batt Charger #1 Alarm	–VDC 16GA	201	201	16GA GRY
DC35B Batt Charger #1 Alarm	–VDC 16GA	202	202	16GA GRY SCC–MRIO–MOD3–INPUT A1
DC35B Batt Charger #2 Alarm	–VDC 16GA	203	203	16GA GRY
DC35B Batt Charger #2 Alarm	–VDC 16GA	204	204	16GA GRY SCC–MRIO–MOD3–INPUT A2
		205	205	
		206	206	
SGF–1 M1 CLOSE	14GA	207	207	14GA GRY M1–C–1L1
SGF–1 M1 CLOSE	14GA	208	208	14GA GRY M1–C–2T1
SGF–1 M1 TRIP	14GA	209	209	14GA GRY M1–T–1L1
SGF–1 M1 TRIP	14GA	210	210	14GA GRY M1–T–2T1
SGF–1 M1 86 LOCKOUT	14GA	211	211	14GA GRY M1–86–1L1
SGF–1 M1 86 LOCKOUT	14GA	212	212	14GA GRY M1–86–2T1
SGF–1 52–M1 DC Signal Common	–VDC 16GA	213	213	16GA GRY SCC–TB2–2
SGF–1 52–M1 MOC 'A'	–VDC 16GA	214	214	16GA GRY SCC–MRIO–MOD3–INPUT A3
		215	215	16GA GRY
SGF–1 52–M1 TOC 'A'	–VDC 16GA	216	216	16GA GRY SCC–MRIO–MOD3–INPUT A4
		217	217	16GA GRY
SGF–1 M1–86 BRK LOCKOUT	–VDC 16GA	218	218	16GA GRY SCC–MRIO–MOD3–INPUT A5
		219	219	16GA GRY
SGF–1 M1–F60 RLY FAIL	–VDC 16GA	220	220	16GA GRY SCC–MRIO–MOD3–INPUT A6
		221	221	16GA GRY
SGF–1 M1–F60 SOURCE OK	–VDC 16GA	222	222	16GA GRY SCC–MRIO–MOD3–INPUT A7
		223	223	16GA GRY
		224	224	16GA GRY SCC–MRIO–MOD3–INPUT A8
		225	225	16GA GRY
		226	226	16GA GRY SCC–MRIO–MOD3–INPUT A9
		227	227	
		228	228	
SGF–2 M2 CLOSE	14GA	229	229	14GA GRY M2–C–1L1
SGF–2 M2 CLOSE	14GA	230	230	14GA GRY M2–C–2T1
SGF–2 M2 TRIP	14GA	231	231	14GA GRY M2–T–1L1
SGF–2 M2 TRIP	14GA	232	232	14GA GRY M2–T–2T1
SGF–2 M2 86 LOCKOUT	14GA	233	233	14GA GRY M2–86–1L1
SGF–2 M2 86 LOCKOUT	14GA	234	234	14GA GRY M2–86–2T1
SGF–2 52–M2 DC Signal Common	–VDC 16GA	235	235	16GA GRY SCC–TB2–2
SGF–2 52–M2 MOC 'A'	–VDC 16GA	236	236	16GA GRY SCC–MRIO–MOD3–INPUT A10
		237	237	16GA GRY
SGF–2 52–M2 TOC 'A'	–VDC 16GA	238	238	16GA GRY SCC–MRIO–MOD3–INPUT A11
		239	239	16GA GRY
SGF–2 M2–86 BRK LOCKOUT	–VDC 16GA	240	240	16GA GRY SCC–MRIO–MOD3–INPUT A12
		241	241	16GA GRY

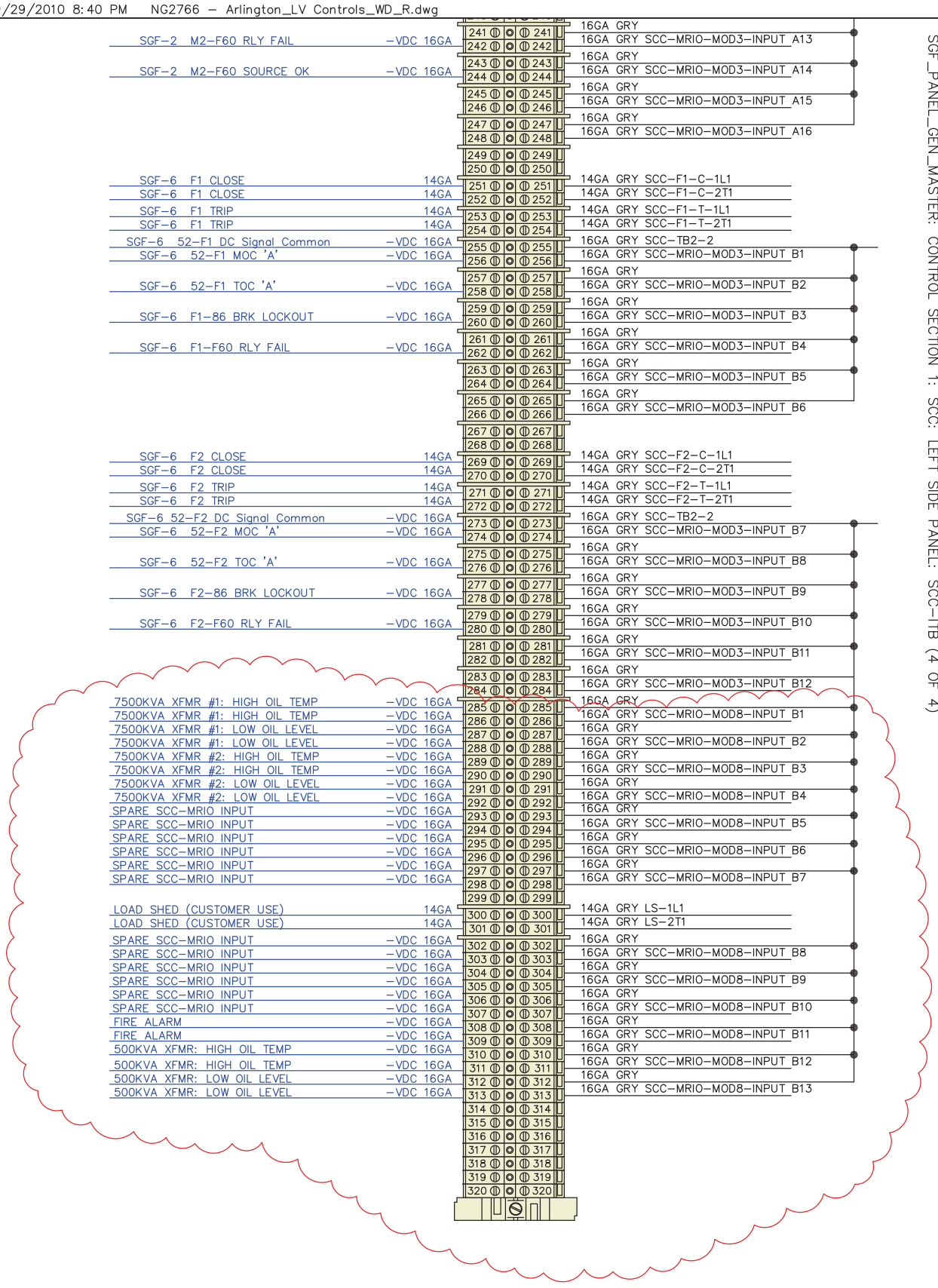
SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: LEFT SIDE PANEL: SCC–ITB (3 OF 4)

JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal
DRAWN BY: J. Talton	2	9/29/10	As Shipped
ENGR: R. Stone			
DATE: 09/03/09			
DRAWING STATUS: Preliminary			

EQUIPMENT DESIGNATION:SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: LEFT PAN WIRING
HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587
MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DWG# NG2766–2–WD01

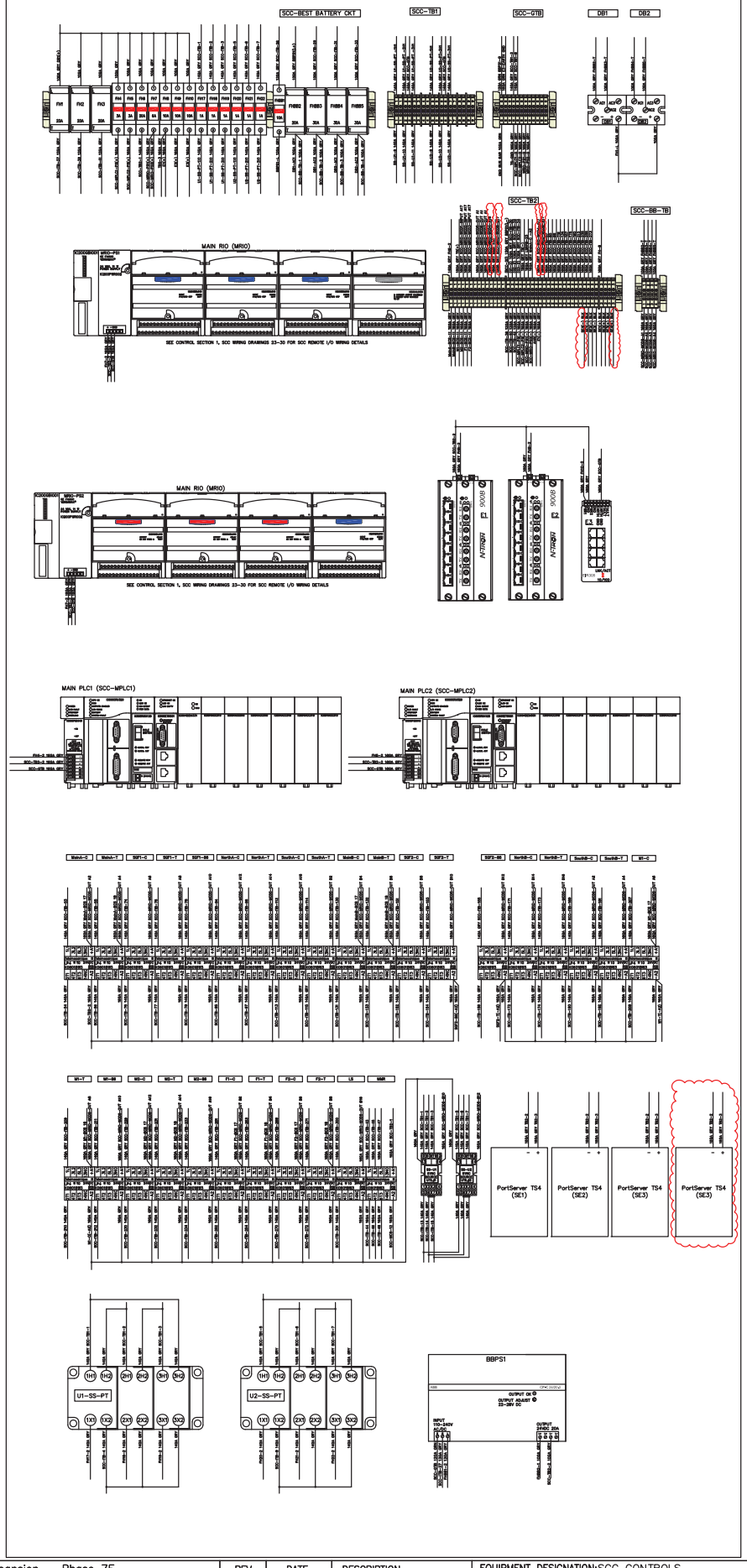
Power Secure

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: LEFT SIDE PANEL: SCC-ITB (4 OF 4)



JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: SCC CONTROLS	
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS	
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: LEFT PAN WIRING	
ENGR: R. Stone				HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587	MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DATE: 09/03/09					
DRAWING STATUS: Preliminary				DWG# NG2766-2-WD01	PG: 9 OF 31 REV: 1

PowerSecure

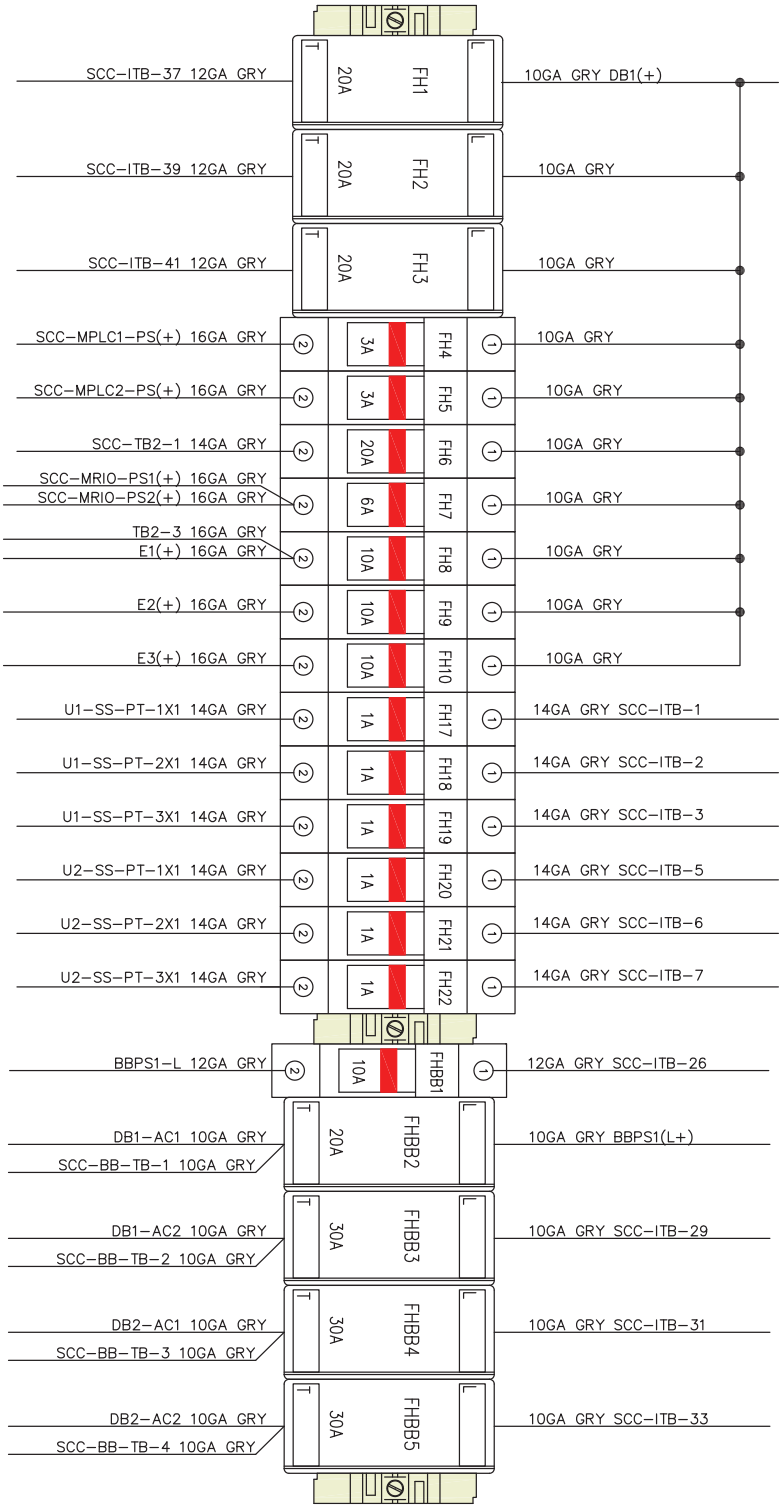


SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN LAYOUT

JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: SCC CONTROLS	
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS	
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: BACK PAN LAYOUT	
ENGR: R. Stone				HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587	MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DATE: 09/03/09					
DRAWING STATUS: Preliminary				DWG# NG2766-2-WD01	PG: 10 OF 31 REV: 1

Power Secure

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: 1ST ROW: FUSING

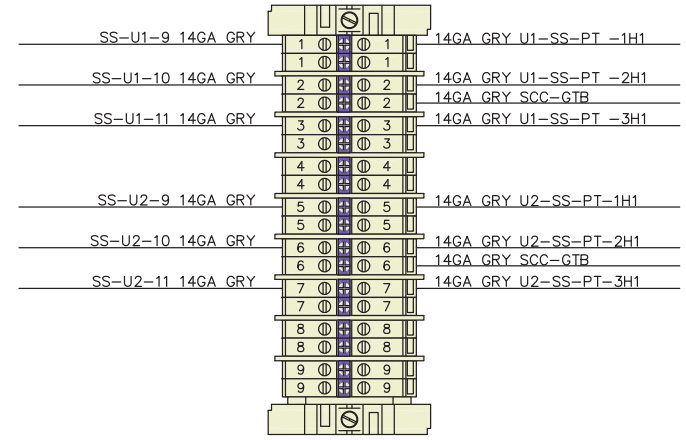


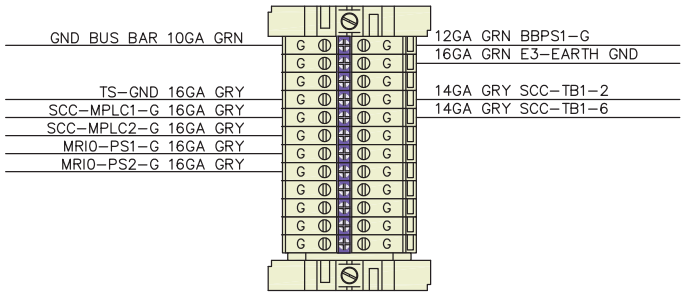
SCC–BEST BATTERY CKT

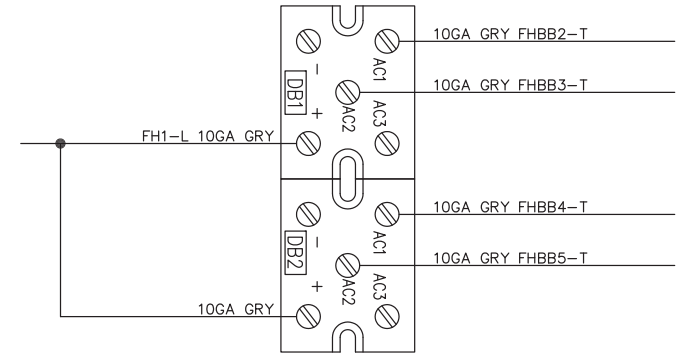
JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: SCC CONTROLS	
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS	
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: BACK PAN WIRING	
ENGR: R. Stone				HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587	MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DATE: 09/03/09					
DRAWING STATUS: Preliminary				DWG# NG2766–2–WD01	PG: 11 OF 31 REV: 1

Power Secure

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: 1ST ROW: TB1 (AC VOLTAGE SENSING DISTRIBUTION), GROUND TERMINAL BLOCK & DIODE BLOCKS



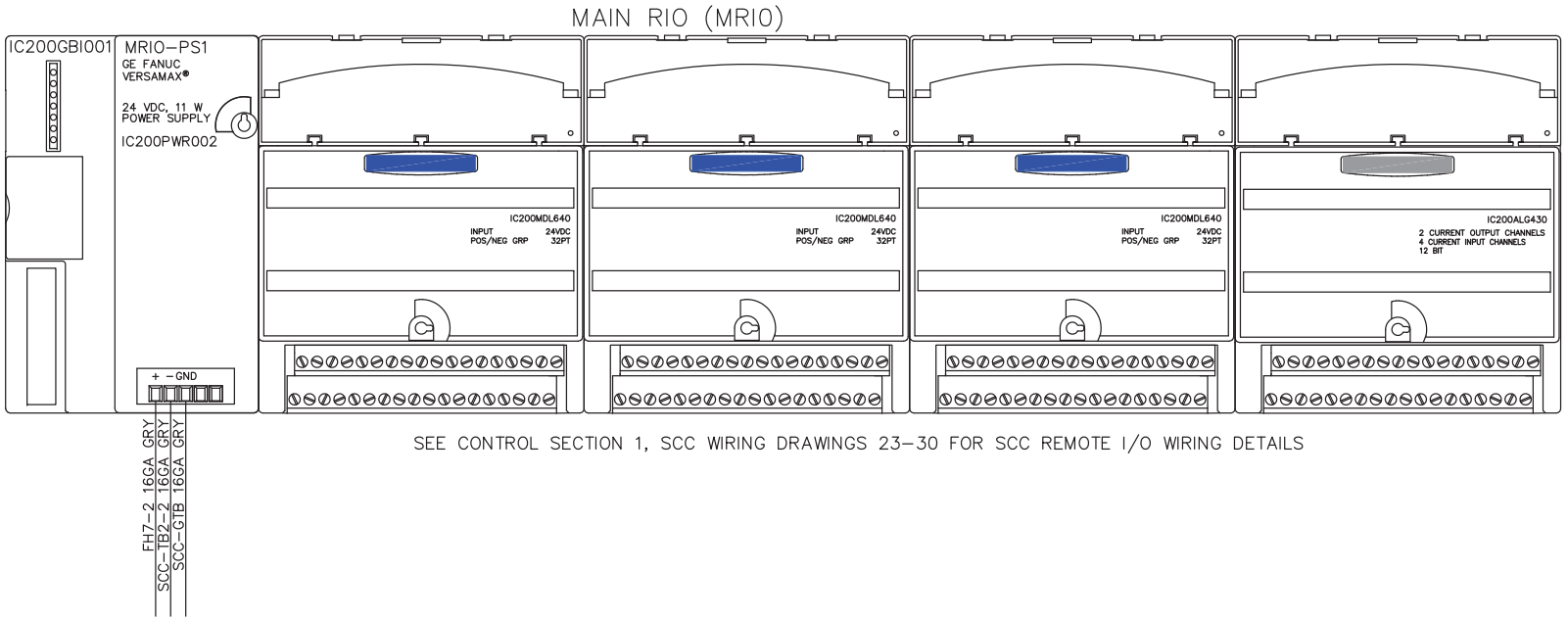




JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: SCC CONTROLS		
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS		
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: BACK PAN WIRING		
ENGR: R. Stone				HEADQUARTER:	MANUFACTURING:	
DATE: 09/03/09				1609 Heritage Commerce Ct.	300 Kitty Hawk Dr.	
DRAWING STATUS: Preliminary				Wake Forest, NC 27587	Morrisville, NC 27560	PG: 12 OF 31 REV: 1
				DWG# NG2766–2–WD01		

Power Secure

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: 2ND ROW: MAIN REMOTE I/O



SEE CONTROL SECTION 1, SCC WIRING DRAWINGS 23-30 FOR SCC REMOTE I/O WIRING DETAILS

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: BACK PAN WIRING

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

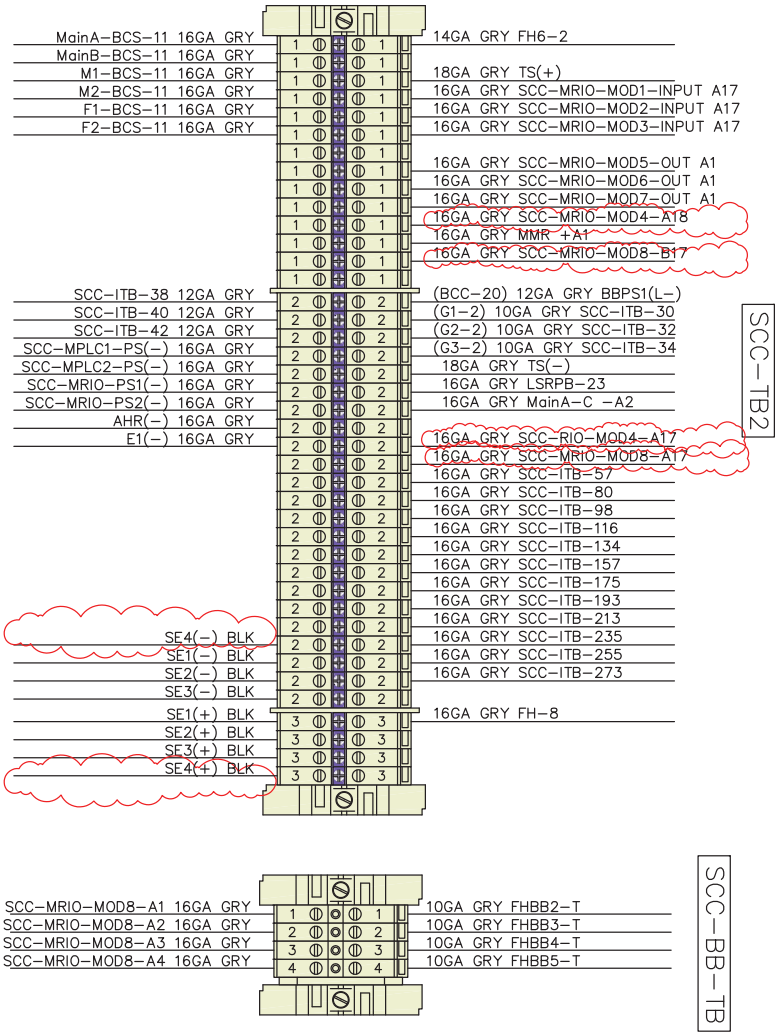
Power Secure

JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

PG: 13 OF 31 REV: 1
DWG# NG2766-2-WD01

9/29/2010 8:40 PM NG2766 - Arlington_LV Controls_WD_R.dwg

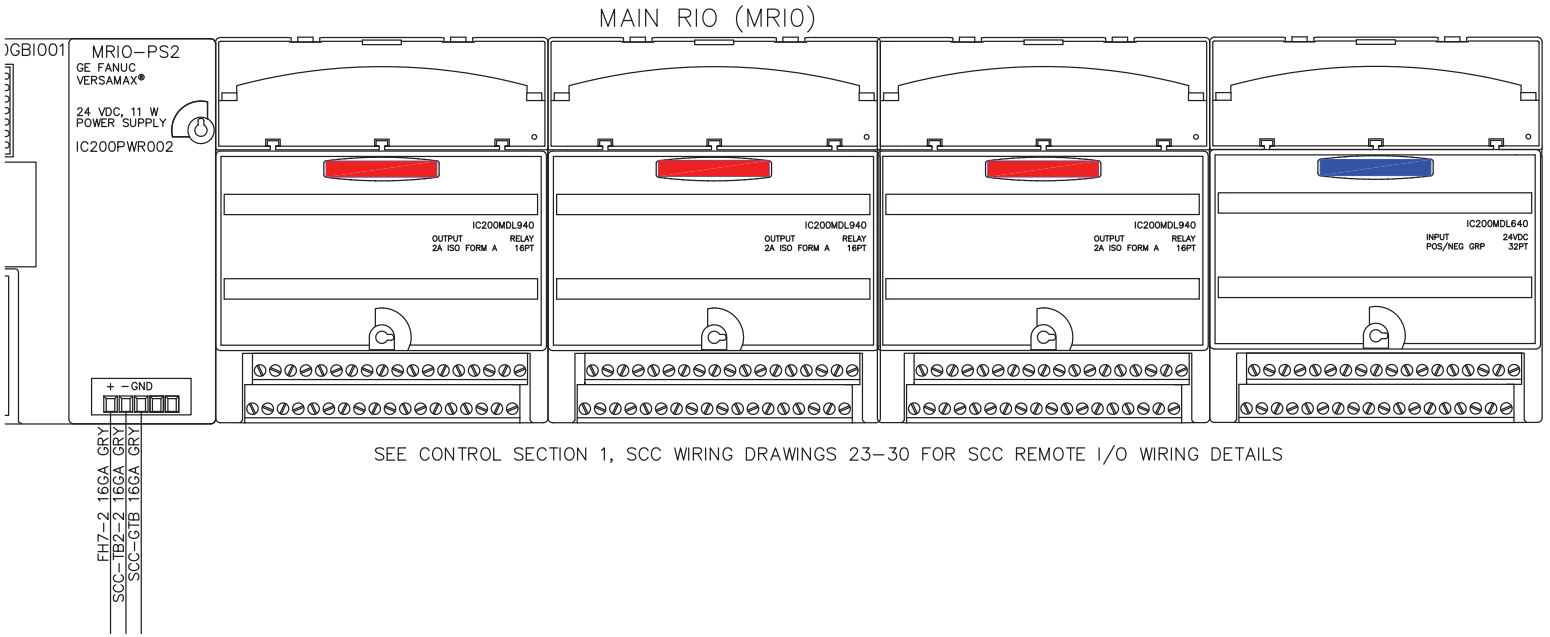
SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: 2ND ROW: TB2 (DC POWER DISTRIBUTION) AND BEST BATTERY VOLTAGE SENSING TERMINAL BLOCK



JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: SCC CONTROLS	
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS	
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: BACK PAN WIRING	
ENGR: R. Stone				HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587	MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DATE: 09/03/09					
DRAWING STATUS: Preliminary				DWG# NG2766–2–WD01	PG: 14 OF 31 REV: 1

Power Secure

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: 3RD ROW: MAIN REMOTE I/O



SEE CONTROL SECTION 1, SCC WIRING DRAWINGS 23-30 FOR SCC REMOTE I/O WIRING DETAILS

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION:SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: BACK PAN WIRING

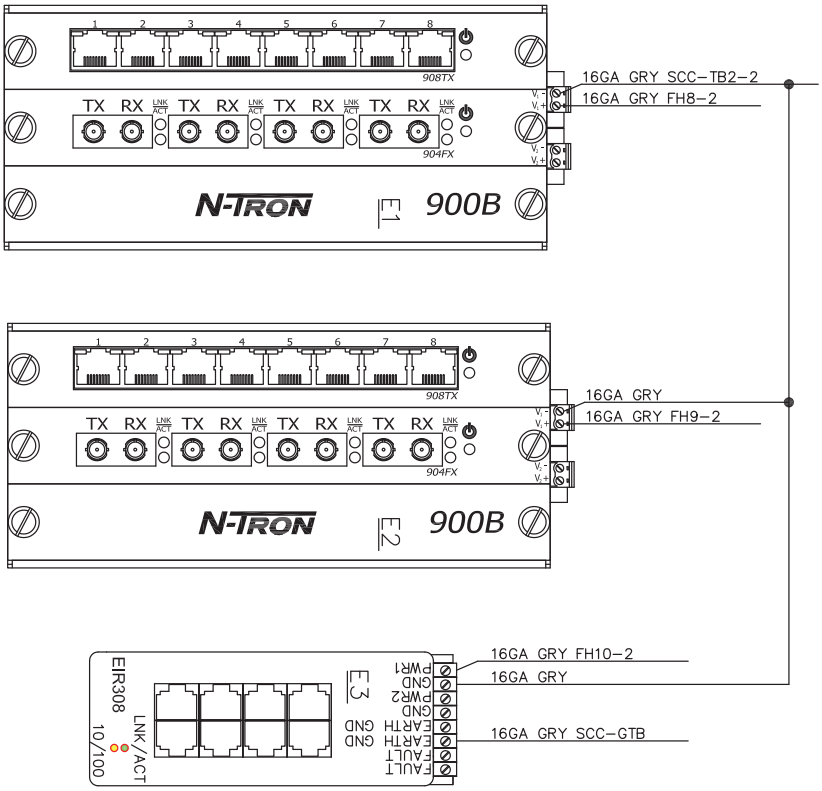
HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

DWG# NG2766-2-WD01

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: 3RD ROW: ETHERNET SWITCHES



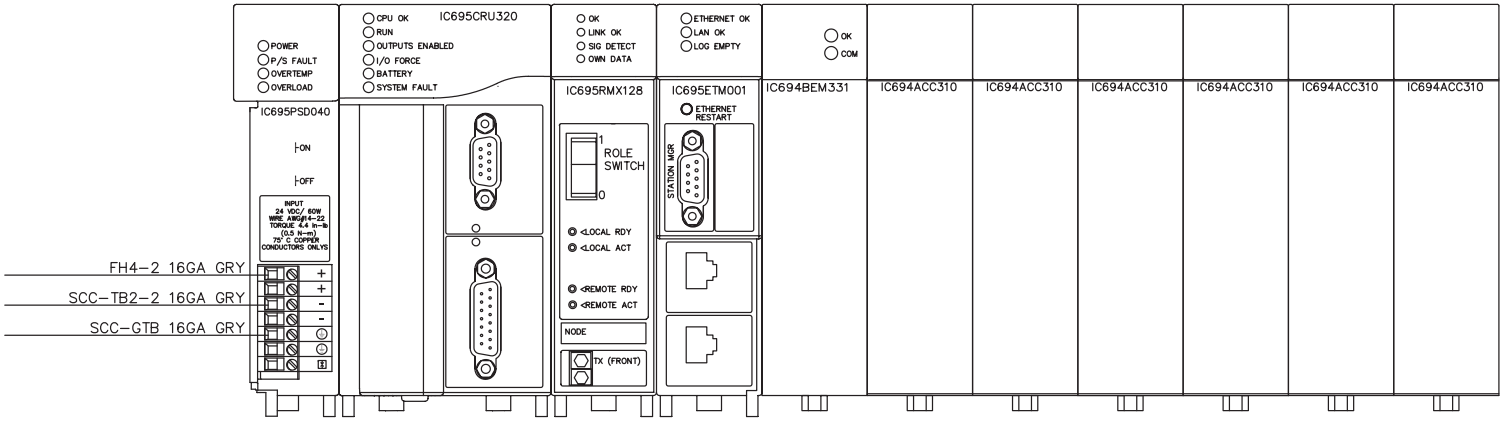
JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: SCC CONTROLS	
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS	
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: BACK PAN WIRING	
ENGR: R. Stone				HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587	MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DATE: 09/03/09					
DRAWING STATUS: Preliminary					
				DWG# NG2766–2–WD01	

Power Secure

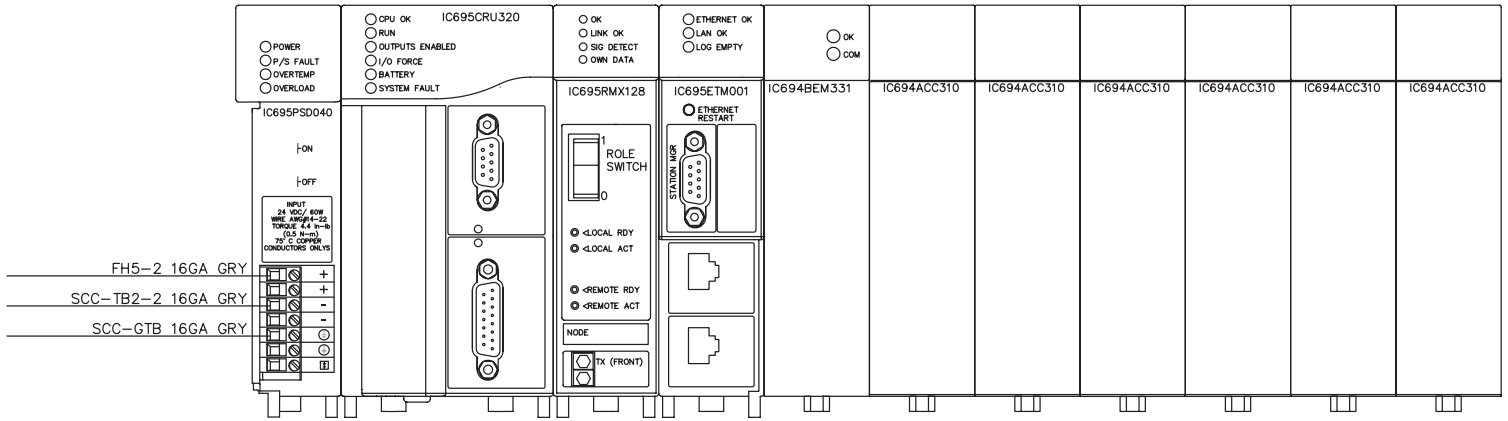
PG: 16 OF 31 REV: 1

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: 4TH ROW: REDUNDANT PROGRAMMABLE LOGIC CONTROLLERS

MAIN PLC1 (SCC-MPLC1)



MAIN PLC2 (SCC-MPLC2)



JOB NAME: Arlington AWPCP Expansion - Phase 7F	REV.	DATE	DESCRIPTION
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal
DRAWN BY: J. Talton	2	9/29/10	As Shipped
ENGR: R. Stone			
DATE: 09/03/09			
DRAWING STATUS: Preliminary			

EQUIPMENT DESIGNATION:SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: BACK PAN WIRING

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

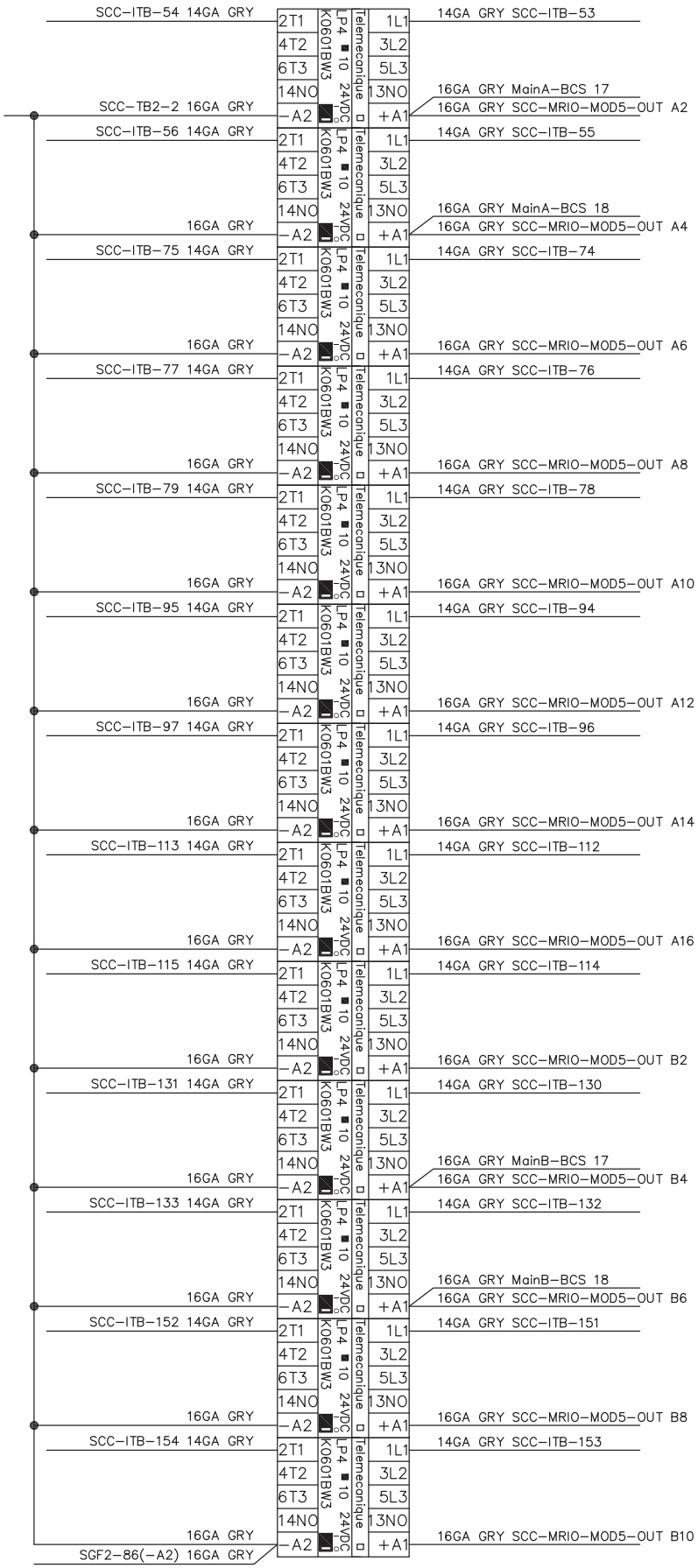
Power Secure

PG: 17 OF 31 | REV: 1

DWG# NG2766-2-WD01

9/29/2010 8:40 PM NG2766 - Arlington_LV Controls_WD_R.dwg

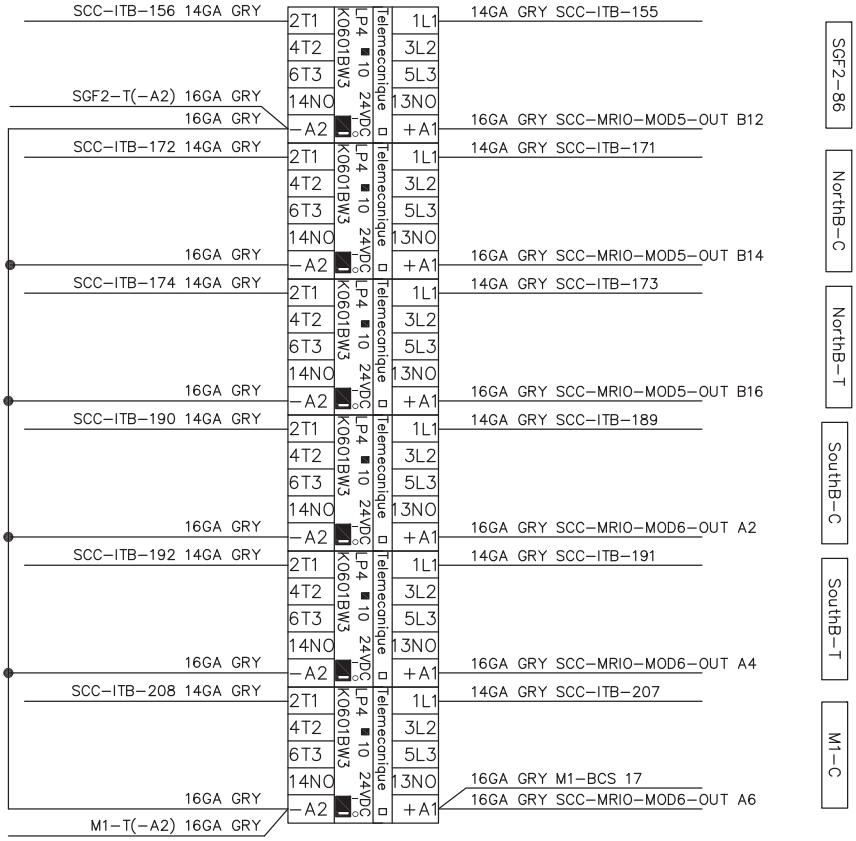
SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: 5TH ROW: BREAKER CONTROL CONTACTORS



JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: SCC CONTROLS	
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS	
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: BACK PAN WIRING	
ENGR: R. Stone				HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587	MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DATE: 09/03/09					
DRAWING STATUS: Preliminary				DWG# NG2766–2–WD01	PG: 18 OF 31 REV: 1

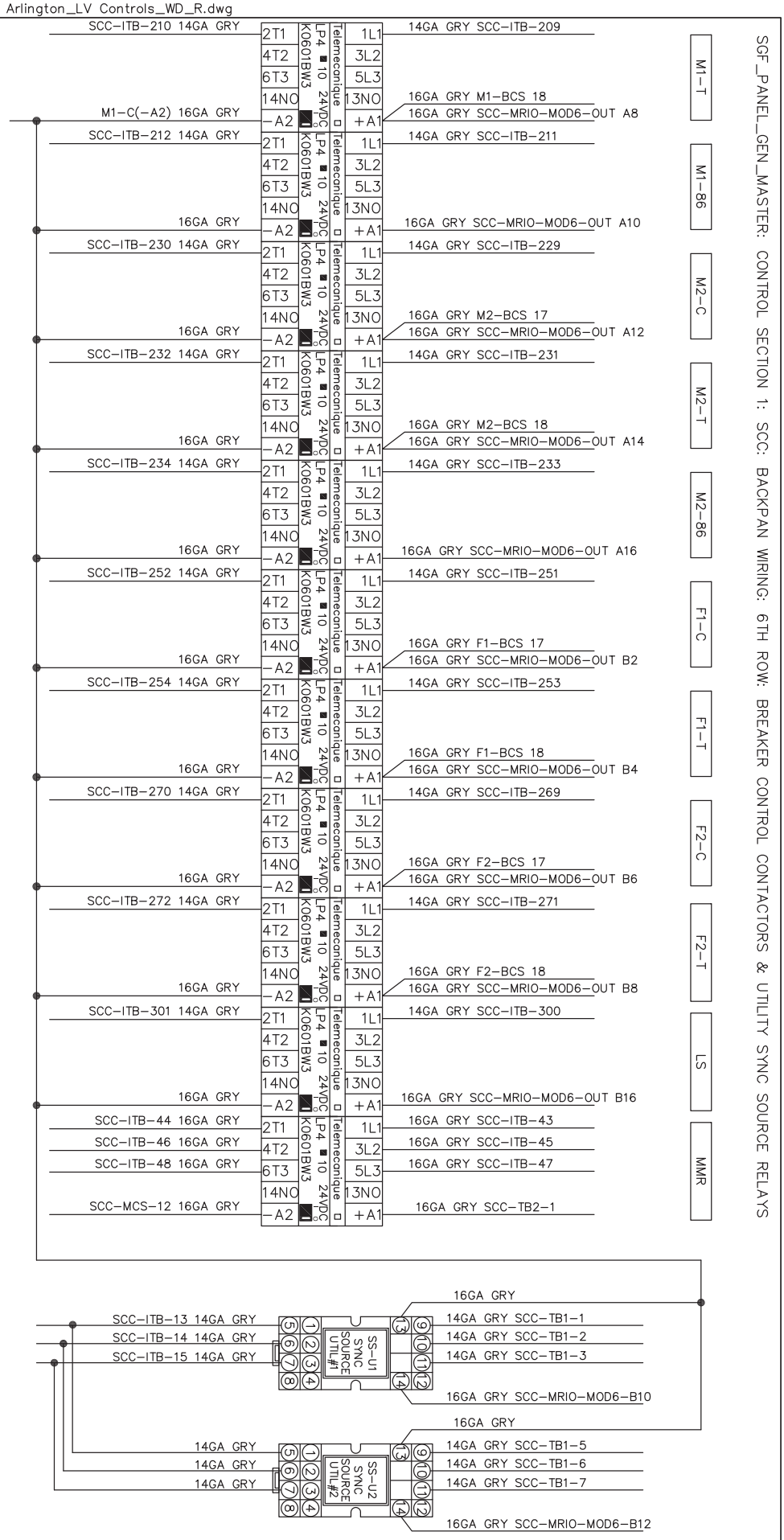
Power Secure

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: 5TH ROW: BREAKER CONTROL CONTACTORS



JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: SCC CONTROLS	
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS	
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: BACK PAN WIRING	
ENGR: R. Stone				HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587	MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DATE: 09/03/09					
DRAWING STATUS: Preliminary				DWG# NG2766–2–WD01	PG: 19 OF 31 REV: 1

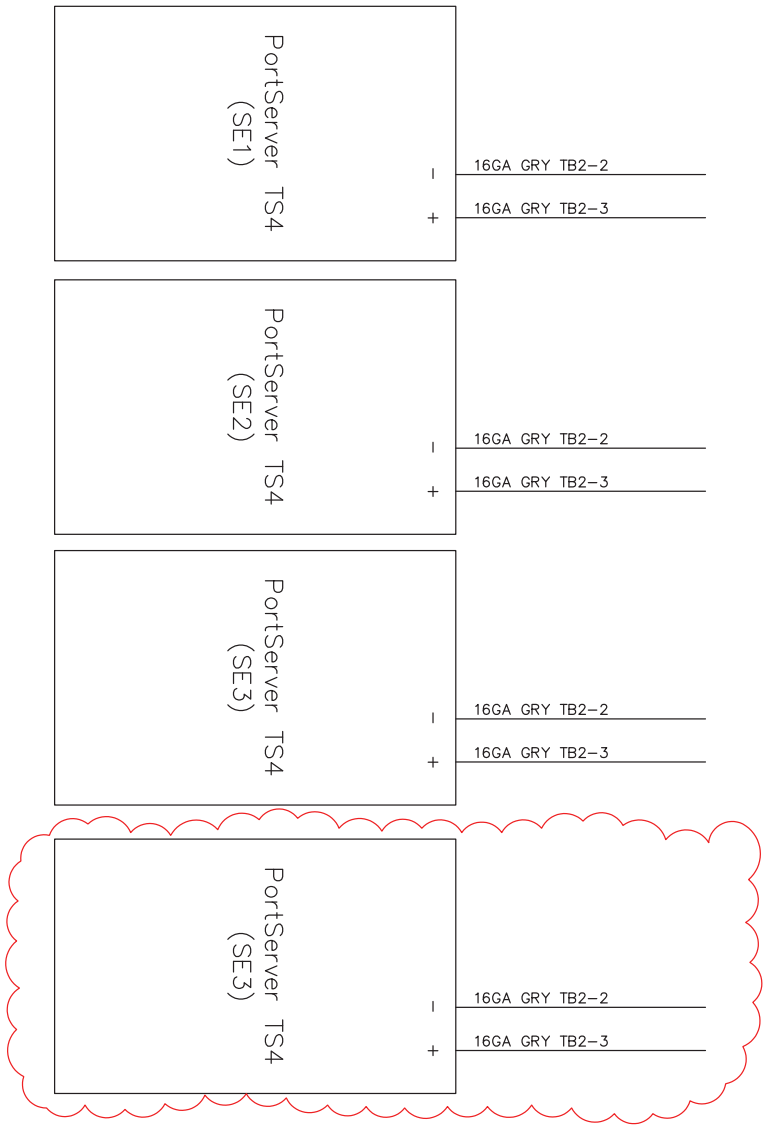
Power Secure



JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: SCC CONTROLS	
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS	
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: BACK PAN WIRING	
ENGR: R. Stone				HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587	MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DATE: 09/03/09					
DRAWING STATUS: Preliminary				DWG# NG2766-2-WD01	PG: 20 OF 31 REV: 1

Power Secure

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: 6TH ROW: SERIAL TO ETHERNET CONVERTORS



JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: SCC CONTROLS		
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS		
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: BACK PAN WIRING		
ENGR: R. Stone				HEADQUARTER:	MANUFACTURING:	
DATE: 09/03/09				1609 Heritage Commerce Ct.	300 Kitty Hawk Dr.	
DRAWING STATUS: Preliminary				Wake Forest, NC 27587	Morrisville, NC 27560	PG: 21 OF 31 REV: 1
				DWG# NG2766–2–WD01		

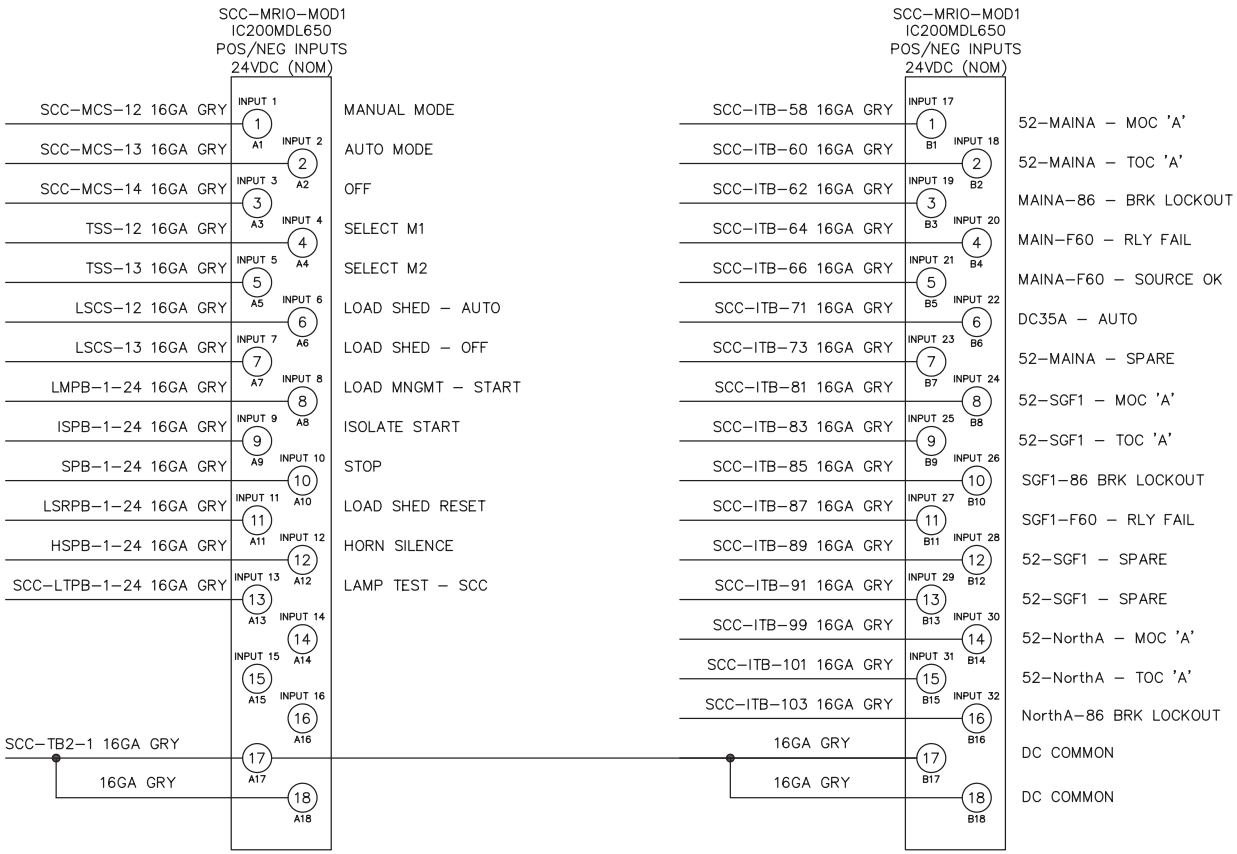
Power Secure

JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION:SCC CONTROLS		
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS		
DRAWN BY: J. Tatton	2	9/29/10	As Shipped	DRAWING TYPE: BACK PAN WIRING		
ENGR: R. Stone				HEADQUARTER:	MANUFACTURING:	
DATE: 09/03/09				1609 Heritage Commerce Ct. Wake Forest, NC 27587	300 Kitty Hawk Dr. Morrisville, NC 27560	
DRAWING STATUS: Preliminary				DWG# NG2766-2-WD01	PG: 22 OF 31	REV: 1

Power Secure

9/29/2010 8:40 PM NG2766 – Arlington_LV Controls_WD_R.dwg

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: SCC REMOTE I/O MOD1 WIRING: 24VDC INPUT MODULE (NEGATIVE INPUTS)



REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: BACK PAN WIRING

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

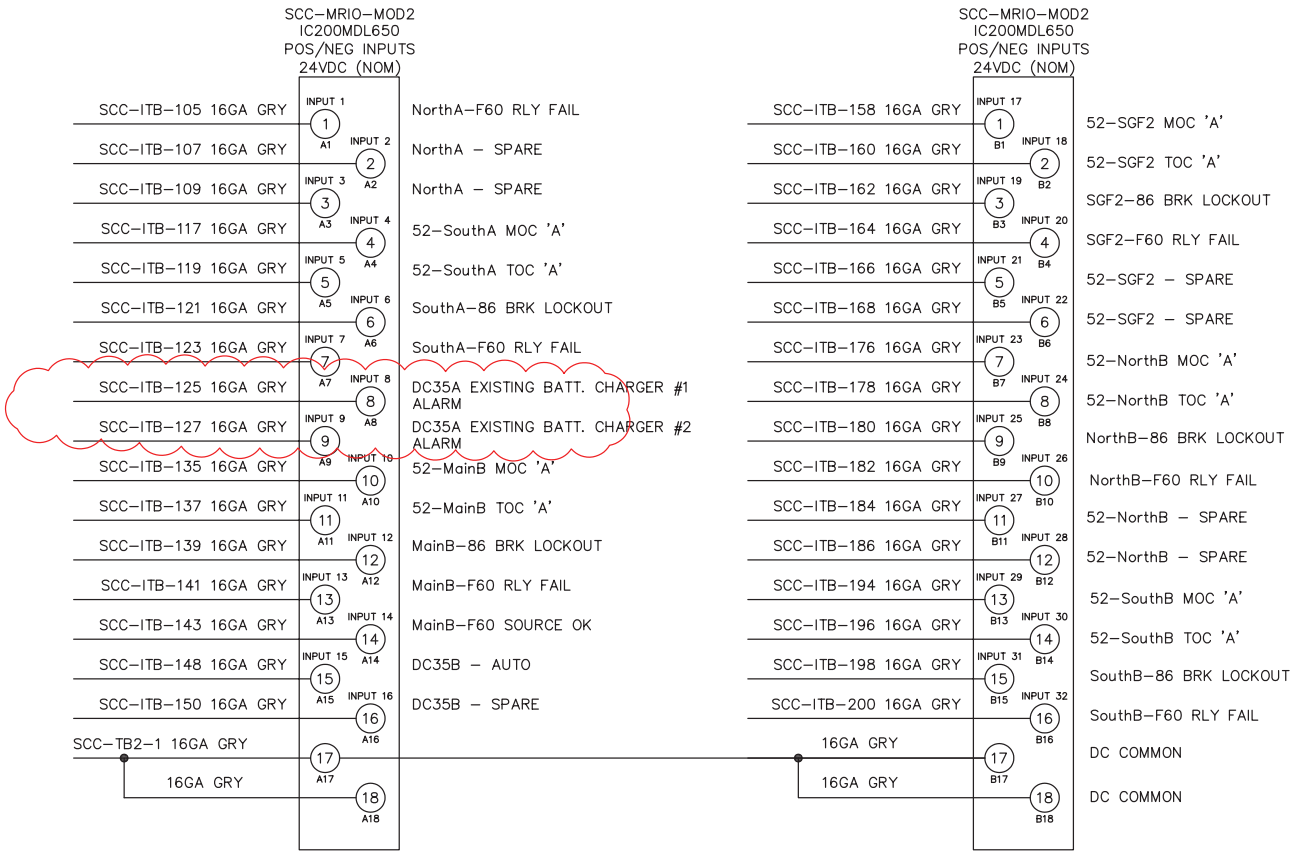
Power Secure

PG: 23 OF 31 REV: 1

DWG# NG2766–2–WD01

9/29/2010 8:40 PM NG2766 – Arlington_LV Controls_WD_R.dwg

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: SCC REMOTE I/O MOD2 WIRING: 24VDC INPUT MODULE (NEGATIVE INPUTS)



REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION:SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: BACK PAN WIRING

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

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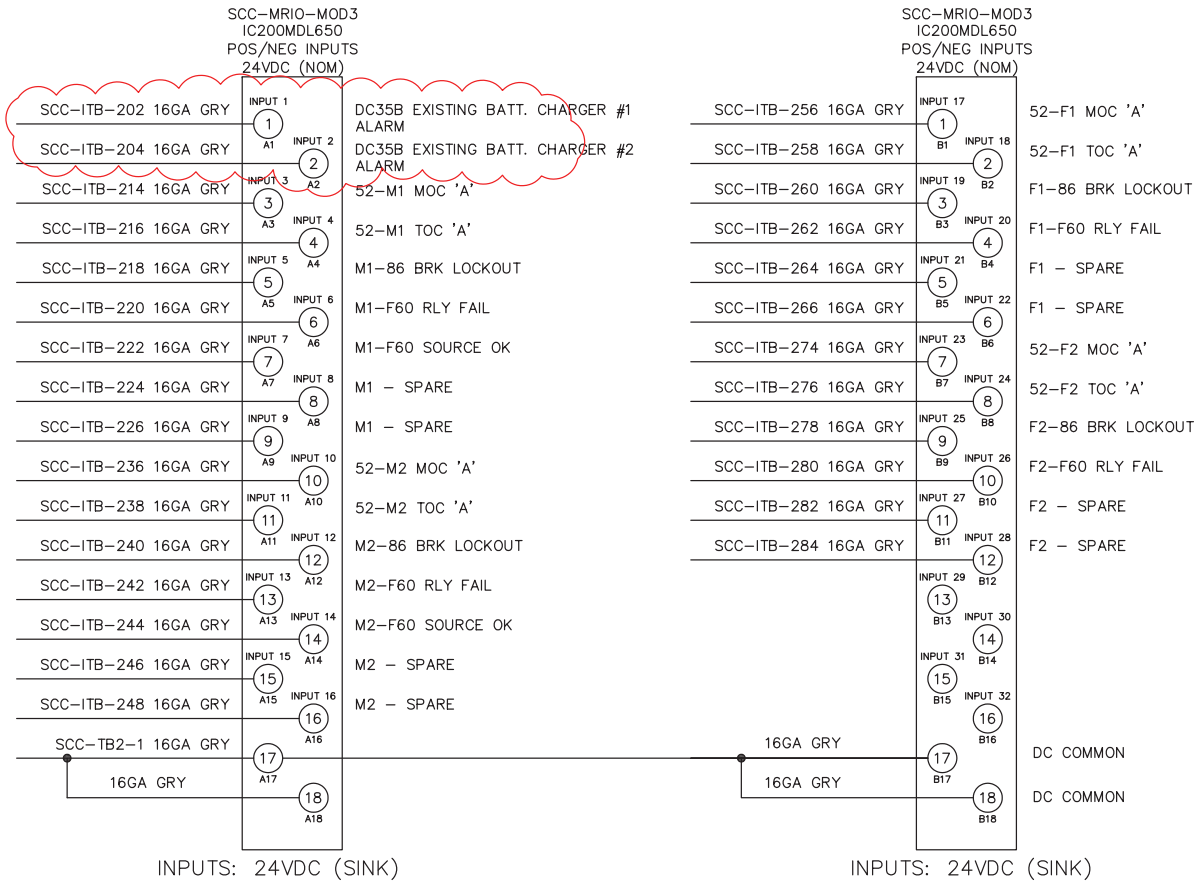
PG: 24 OF 31 REV: 1

DWG# NG2766-2-WD01

9/29/2010 8:40 PM NG2766 - Arlington_LV Controls_WD_R.dwg

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: SCC REMOTE I/O MOD3 WIRING: 24VDC INPUT MODULE (NEGATIVE INPUTS)



JOB NAME: Arlington AWPCP Expansion - Phase 7F	REV.	DATE	DESCRIPTION
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal
DRAWN BY: J. Talton	2	9/29/10	As Shipped
ENGR: R. Stone			
DATE: 09/03/09			
DRAWING STATUS: Preliminary			

EQUIPMENT DESIGNATION:SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: BACK PAN WIRING

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HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

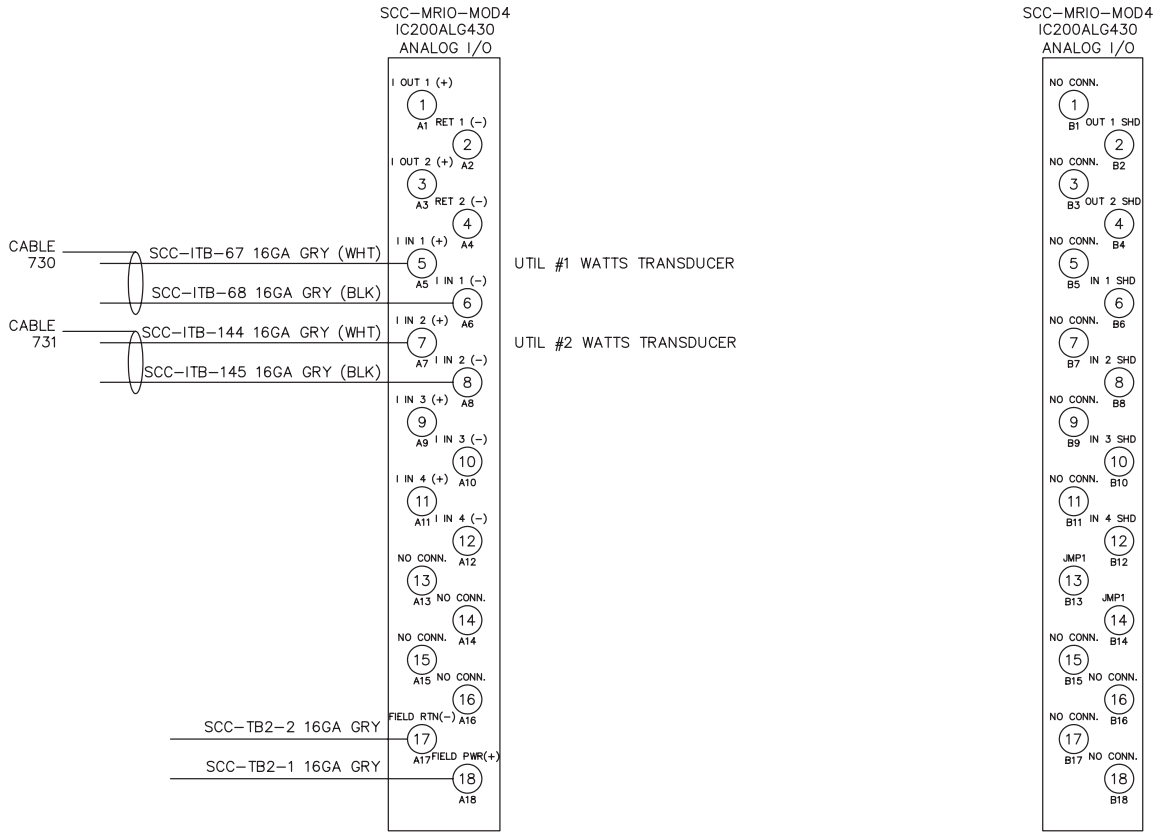
MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

PG: 25 OF 31 REV: 1

DWG# NG2766-2-WD01

9/29/2010 8:40 PM NG2766 - Arlington_LV Controls_WD_R.dwg

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: SCC REMOTE I/O MOD4 WIRING: ANALOG I/O MODULE



JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal
DRAWN BY: J. Talton	2	9/29/10	As Shipped
ENGR: R. Stone			
DATE: 09/03/09			
DRAWING STATUS: Preliminary			

EQUIPMENT DESIGNATION:SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: BACK PAN WIRING

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

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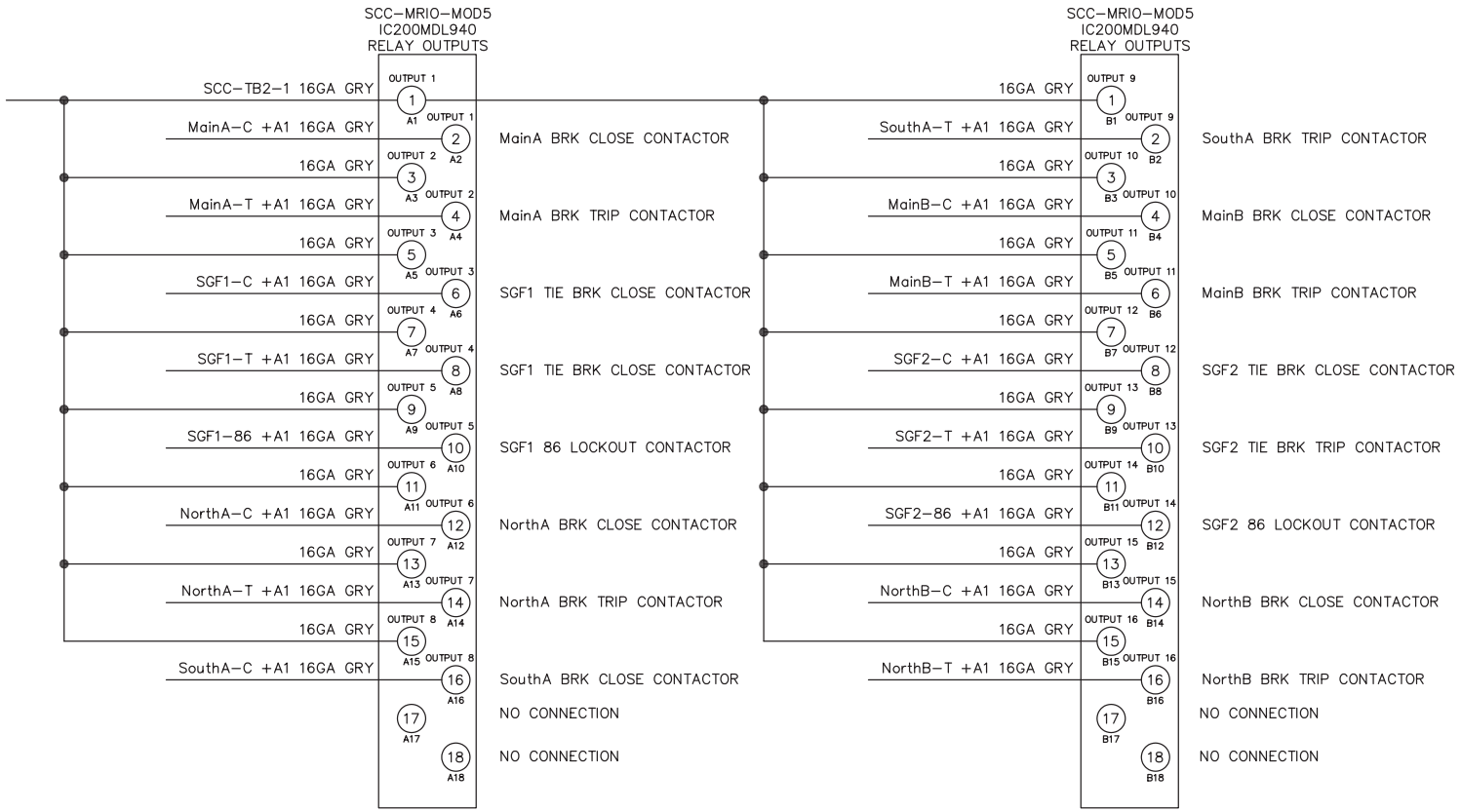
PG: 26 OF 31 REV: 1

DWG# NG2766-2-WD01

9/29/2010 8:40 PM NG2766 - Arlington_LV Controls_WD_R.dwg

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: SCC REMOTE I/O MOD5 WIRING: RELAY OUTPUT MODULE



REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION:SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: BACK PAN WIRING

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

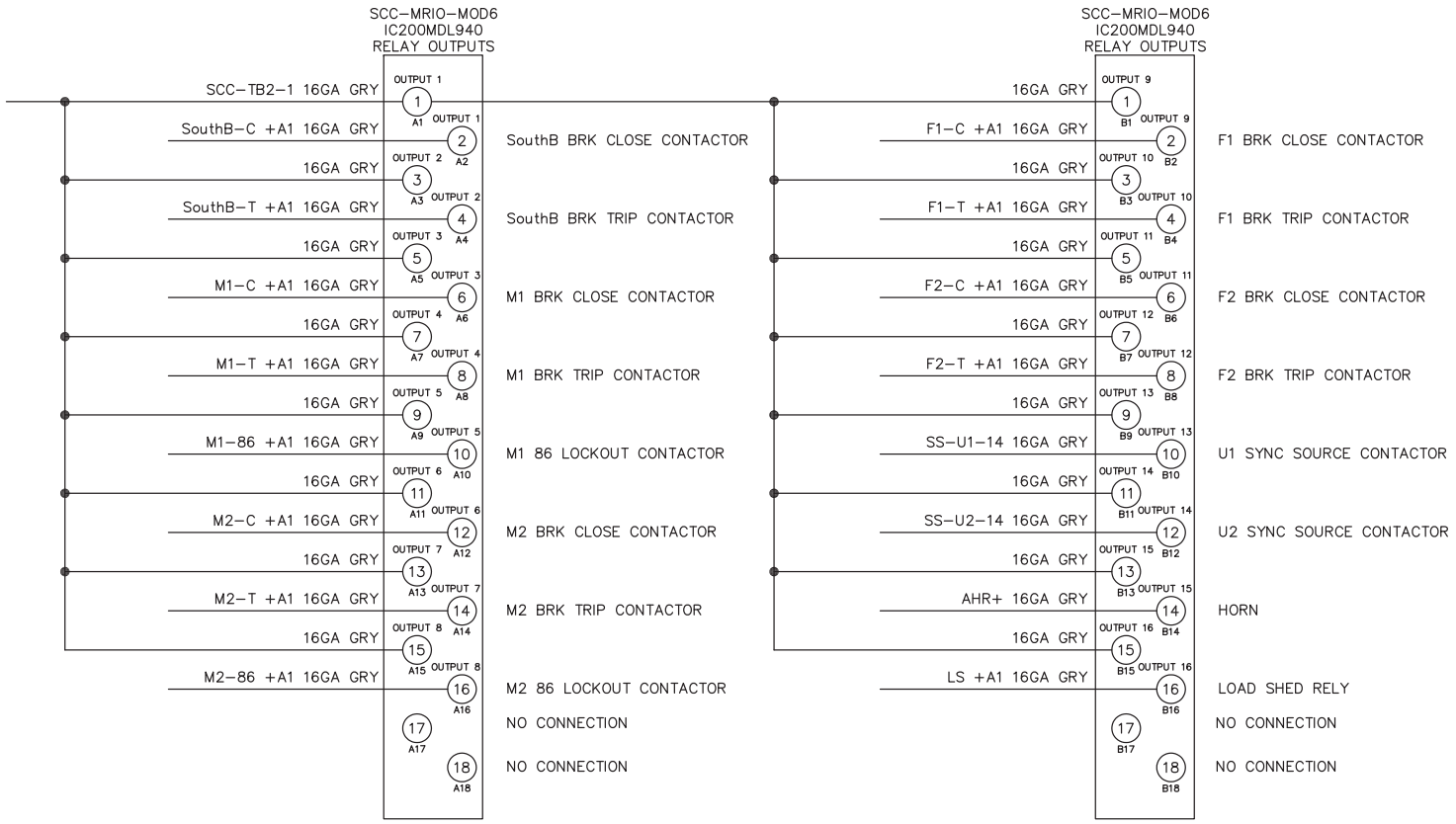
Power Secure

PG: 27 OF 31 REV: 1

DWG# NG2766-2-WD01

9/29/2010 8:40 PM NG2766 - Arlington_LV Controls_WD_R.dwg

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: SCC REMOTE I/O MOD6 WIRING: RELAY OUTPUT MODULE



JOB NAME: Arlington AWPCP Expansion - Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: BACK PAN WIRING

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

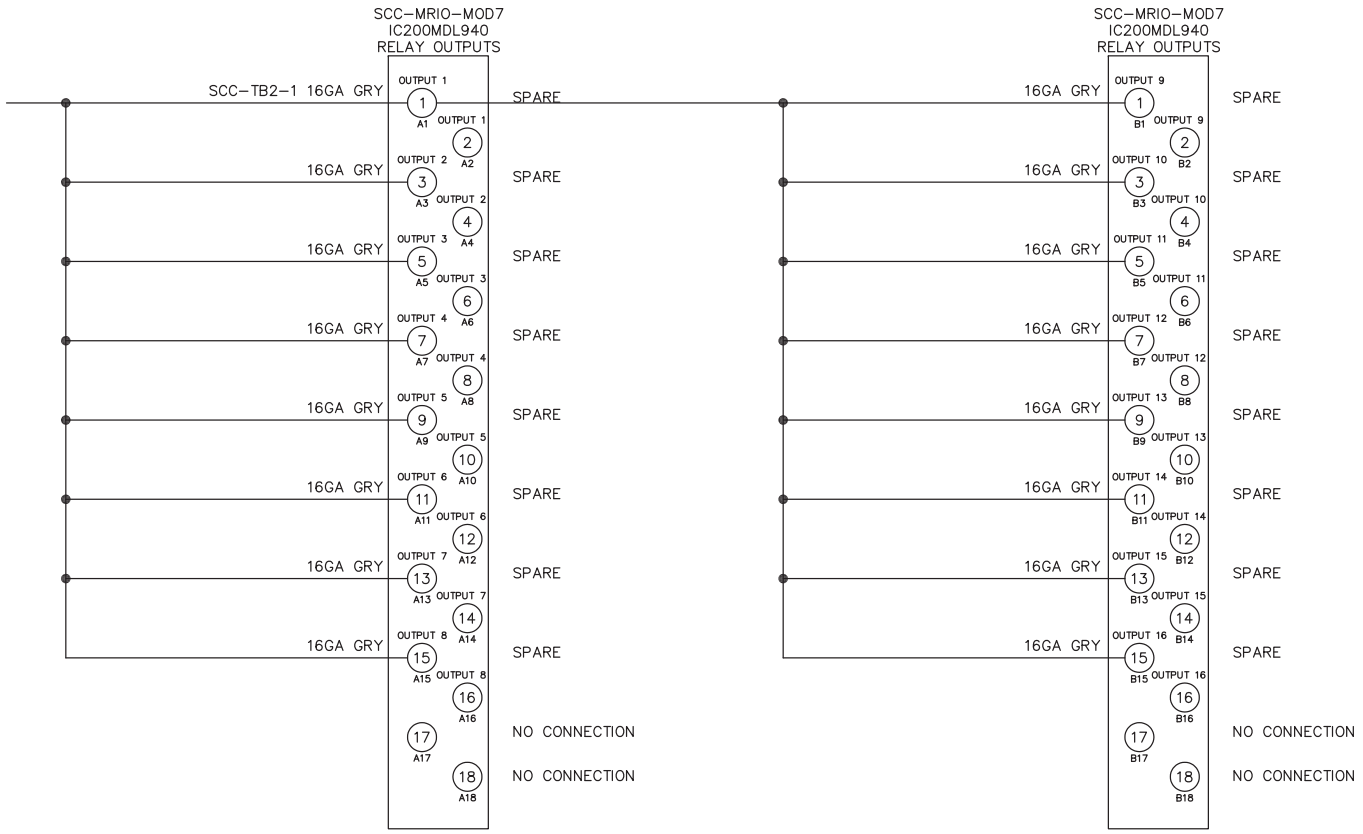
Power Secure

PG: 28 OF 31 REV: 1

DWG# NG2766-2-WD01

9/29/2010 8:40 PM NG2766 - Arlington_LV Controls_WD_R.dwg

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: SCC REMOTE I/O MOD7 WIRING: RELAY OUTPUT MODULE



JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal
DRAWN BY: J. Talton	2	9/29/10	As Shipped
ENGR: R. Stone			
DATE: 09/03/09			
DRAWING STATUS: Preliminary			

EQUIPMENT DESIGNATION:SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: BACK PAN WIRING

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

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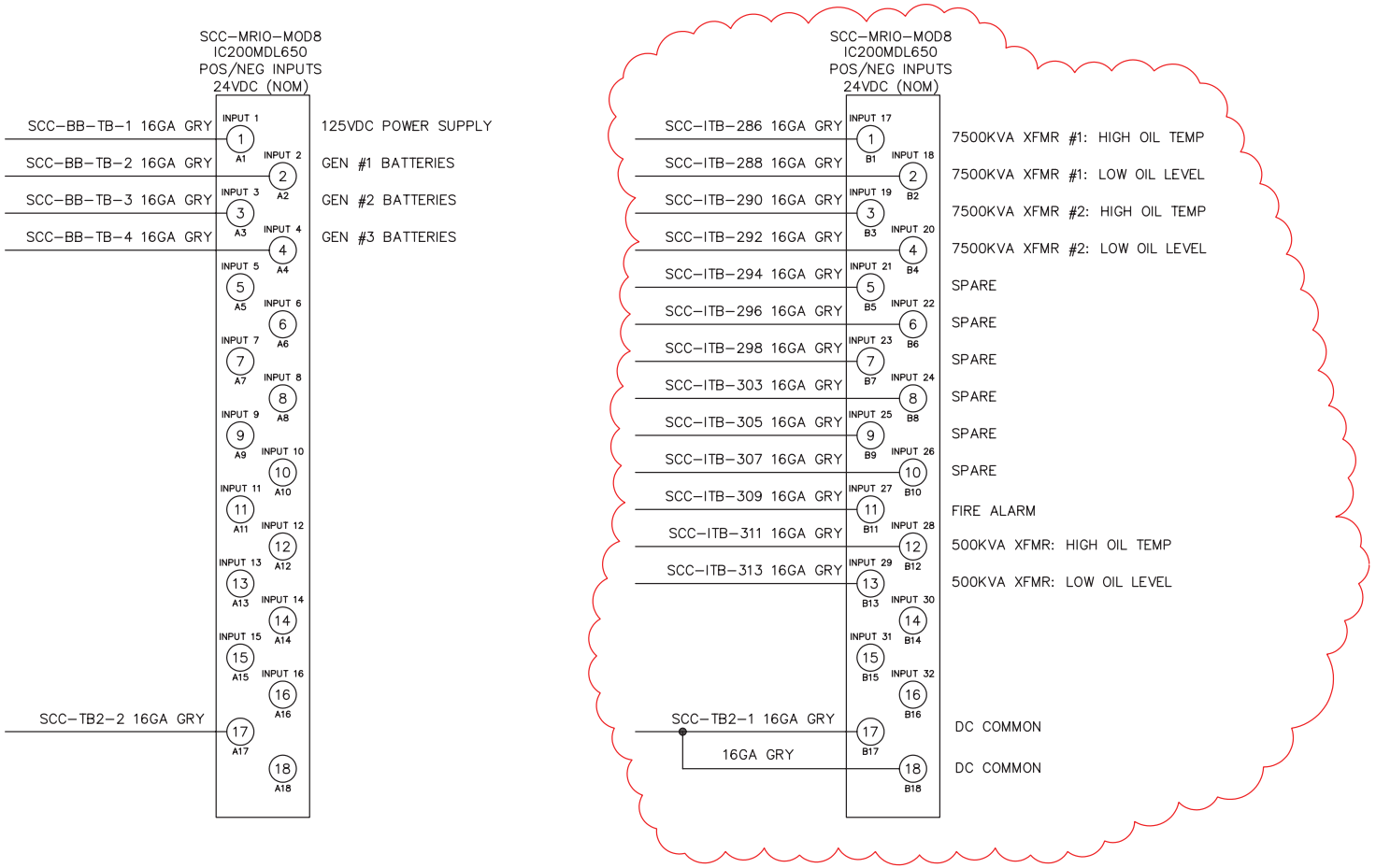
PG: 29 OF 31 REV: 1

DWG# NG2766-2-WD01

9/29/2010 8:40 PM NG2766 – Arlington_LV Controls_WD_R.dwg

SGF_PANEL_GEN_MASTER: CONTROL SECTION 1: SCC: BACKPAN WIRING: SCC REMOTE I/O MOD8 WIRING: 24VDC INPUT MODULE (POSITIVE INPUTS: A1–A16; NEGATIVE INPUTS: B1–B16)



REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS: Preliminary

EQUIPMENT DESIGNATION: SCC CONTROLS
EQUIPMENT TYPE: CONTROLS
DRAWING TYPE: BACK PAN WIRING

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

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PG: 30 OF 31 REV: 1

DWG# NG2766–2–WD01

9/29/2010 8:40 PM NG2766 – Arlington_LV Controls_WD_R.dwg

SERIAL CABLE PINOUTS
BLACK – 1
BROWN – 2
ORANGE – 5
YELLOW – 6
GREEN – 7

SGF_PANEL_GEN_MASTER:
CONTROL SECTION 1: SCC: RIGHT SIDE PANEL: COMM–TB

SCC – BACKPAN TO RIGHT SIDE PANEL

COMM–TB

INTERCONNECTIONS TO GEN CONTROL CABINETS

SE3

GEN #1 G3–WW	SERIAL ADDRESS :1	CABLE 711	1–5	WHITE/ORANGE, ORANGE, WHITE/BLU, BLU, SHIELD → TO CONTROL SECTION #4 (G1CC) MODBUS COMMUNICATIONS G3–WW CONTROL UNIT CABLE 711. 24GA, STP W/ 9 PIN D–SUB CONNECTOR
GEN #2 G2–WW	SERIAL ADDRESS :2	CABLE 712	6–10	WHITE/ORANGE, ORANGE, WHITE/BLU, BLU, SHIELD → TO CONTROL SECTION #3 (G2CC) MODBUS COMMUNICATIONS G2–WW CONTROL UNIT CABLE 712, 24GA, STP W/ 9 PIN D–SUB CONNECTOR
GEN #3 G1–WW	SERIAL ADDRESS :3	CABLE 713	11–15	WHITE/ORANGE, ORANGE, WHITE/BLU, BLU, SHIELD → TO CONTROL SECTION #2 (G3CC) MODBUS COMMUNICATIONS G1–WW CONTROL UNIT CABLE 713, 24GA, STP W/ 9 PIN D–SUB CONNECTOR
SPARE	SERIAL ADDRESS :4	CABLE 714	16–20	

SE1

GEN #1 BI–FUEL SYSTEM	SERIAL ADDRESS :1	CABLE 715	21–25	18GA GRY: – BLK G3–ETB–47, + WHT G3–ETB–46, SHIELD G3–ETB–48 → TO GEN #1 BI–FUEL SYSTEM MODBUS COMMUNICATIONS VIA CONTROL SECTION #4 (G1CC) CABLE 715, 18GA, 2 WIRE, STP
GEN #2 BI–FUEL SYSTEM	SERIAL ADDRESS :2	CABLE 716	26–30	18GA GRY: – BLK G2–ETB–47, + WHT G2–ETB–46, SHIELD G2–ETB–48 → TO GEN #2 BI–FUEL SYSTEM MODBUS COMMUNICATIONS VIA CONTROL SECTION 3 (G2CC) CABLE 716, 18GA, 2 WIRE, STP
GEN #3 BI–FUEL SYSTEM	SERIAL ADDRESS :3	CABLE 717	31–35	18GA GRY: – BLK G1–ETB–47, + WHT G1–ETB–46, SHIELD G1–ETB–48 → TO GEN #3 BI–FUEL SYSTEM MODBUS COMMUNICATIONS VIA CONTROL SECTION #2 (G3CC) CABLE 717, 18GA, 2 WIRE, STP
SPARE	SERIAL ADDRESS :4	CABLE 718	36–40	

SE2

GEN #1 EMCP 3.3	SERIAL ADDRESS :1	CABLE 719	41–45	18GA GRY: – BLK G3–ETB–42, + WHT G3–ETB–41, SHIELD G3–ETB–43 → TO GEN #1 EMCP 3.3 MODBUS COMMUNICATIONS VIA CONTROL SECTION #4 (G1CC) CABLE 719, 18GA, 2 WIRE, STP
GEN #2 EMCP 3.3	SERIAL ADDRESS :2	CABLE 720	46–50	18GA GRY: – BLK G2–ETB–42, + WHT G2–ETB–41, SHIELD G2–ETB–43 → TO GEN #2 EMCP 3.3 MODBUS COMMUNICATIONS VIA CONTROL SECTION 3 (G2CC) CABLE 720, 18GA, 2 WIRE, STP
GEN #3 EMCP 3.3	SERIAL ADDRESS :3	CABLE 721	51–55	18GA GRY: – BLK G1–ETB–42, + WHT G1–ETB–41, SHIELD G1–ETB–43 → TO GEN #3 EMCP 3.3 MODBUS COMMUNICATIONS VIA CONTROL SECTION #2 (G3CC) CABLE 721, 18GA, 2 WIRE, STP
MCC	SERIAL ADDRESS :4	CABLE 722	56–60	18GA GRY: – BLK, + WHT, SHIELD → TO MCC MODBUS COMMUNICATIONS CABLE 722, 18GA, 2 WIRE, STP

SE4

NEW 125VDC BATTERY CHARGER	SERIAL ADDRESS :1	CABLE 723	61–65	18GA GRY: – BLK, + WHT, SHIELD → TO NEW 125VDC BATTERY CHARGE MODBUS COMMUNICATIONS CABLE 723, 18GA, 2 WIRE, STP
UREA FILL PANEL	SERIAL ADDRESS :2	CABLE 724	66–70	18GA GRY: – BLK, + WHT, SHIELD → TO UREA FILL PANEL MODBUS COMMUNICATIONS CABLE 724, 18GA, 2 WIRE, STP
FUEL CONTROL SYSTEM	SERIAL ADDRESS :3	CABLE 725	71–75	18GA GRY: – BLK, + WHT, SHIELD → TO FUEL CONTROL SYSTEM MODBUS COMMUNICATIONS CABLE 725, 18GA, 2 WIRE, STP
SPARE	SERIAL ADDRESS :4	CABLE 726	76–80	

JOB NAME: Arlington AWPCP Expansion – Phase 7F	REV.	DATE	DESCRIPTION	EQUIPMENT DESIGNATION: SCC CONTROLS	
JOB LOCATION: Arlington, VA	1	12/14/09	Resubmittal	EQUIPMENT TYPE: CONTROLS	
DRAWN BY: J. Talton	2	9/29/10	As Shipped	DRAWING TYPE: RIGHT SIDE PAN WIRING	
ENGR: R. Stone				HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587	MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560
DATE: 09/03/09					
DRAWING STATUS: Preliminary				DWG# NG2766–2–WD01	PG: 31 OF 31 REV: 1

Power Secure

NexGear

Advanced Paralleling Switchgear

ARLINGTON WPCP
ARLINGTON, VA

INTERCONNECT CHARTS

TABLE OF CONTENTS

DRAWING TYPE: INTERCONNECTION CHARTS

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

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PG: 1 OF 22 REV: 1

DWG# NG2766-3-IC

FIELD INTERCONNECT CHART #1
SGF_PANEL_GEN_MASTER
CONTROL SECTION 1 (SCC)

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
SCC	SCC-ITB-1	14GA	AC	7		DC35A -1	1A-ELR-1	UTIL #1 PT ØA: 69VAC
	SCC-ITB-2	14GA	AC				1A-ELR-2	UTIL #1 PT ØB: 69VAC
	SCC-ITB-3	14GA	AC				1A-ELR-3	UTIL #1 PT ØC: 69VAC
	SCC-ITB-4	14GA	AC				1A-ELR-4	UTIL #1 PT- VOLTAGE REF
	SCC-ITB-67	2 WIRE, 18GA STP					TBD	F60 WATTS TRANSDUCER +
	SCC-ITB-68						TBD	F60 WATTS TRANSDUCER -
	SCC-ITB-69						TBD	F60 WATTS TRANSDUCER SHIELD
	E1	FIBER OPTIC CABLE					FS1	COMMUNICATIONS TO DC35A
	SCC-ITB-53	14GA	AC	6			1A-ERR-1	MainA CLOSE
	SCC-ITB-54	14GA	AC				1A-ERR-2	MainA CLOSE
	SCC-ITB-55	14GA	AC				1A-ERR-5	MainA TRIP
	SCC-ITB-56	14GA	AC				1A-ERR-6	MainA TRIP
	SCC-ITB-57	16GA	DC				1A-SPARE MOC: 67 1A-SPARE TOC: 205 1A-ERH-7 1A-ELD-1	52-MainA DC SIGNAL COMMON
	SCC-ITB-58	16GA	DC				1A-SPARE MOC: 68	52-MainA MOC 'A'
	SCC-ITB-60	16GA	DC				1A-SPARE TOC: 206	52-MainA TOC 'A'
	SCC-ITB-62	16GA	DC				1A-ERH-8	MainA-86 BRK LOCKOUT STATUS
	SCC-ITB-64	16GA	DC				1A-ELD-2	MainA-F60 RLY FAIL
	SCC-ITB-66	16GA	DC				TBD	MainA-F60 SOURCE OK
	SCC-ITB-71	16GA	DC				TBD	DC35A-AUTO
	SCC-ITB-74	14GA	AC	6		DC35A-2	2A-ERR-2	SGF1 CLOSE
	SCC-ITB-75	14GA	AC				2A-ERR-3	SGF1 CLOSE
	SCC-ITB-76	14GA	AC				2A-ERR-6	SGF1 TRIP
	SCC-ITB-77	14GA	AC				2A-ERR-7	SGF1 TRIP
	SCC-ITB-78	14GA	AC				TBD	SGF1 86 LOCKOUT
	SCC-ITB-79	14GA	AC				TBD	SGF1 86 LOCKOUT
	SCC-ITB-80	16GA	DC				2A-SPARE MOC: 67 2A-SPARE TOC: 205 2A-ERH-7 2A-ELD-1	52-SGF1 DC Signal Common
	SCC-ITB-81	16GA	DC				2A-SPARE MOC: 68	52-SGF1 MOC 'A'
	SCC-ITB-83	16GA	DC				2A-SPARE TOC: 206	52SGF1 TOC 'A'
	SCC-ITB-85	16GA	DC				2A-ERH-8	SGF1-86 BRK LOCKOUT STATUS
	SCC-ITB-87	16GA	DC				2A-ELD-2	SGF1-F60 RLY FAIL
	SCC-ITB-94	14GA	AC	6		DC35A-3	3A-ERR-3	NorthA CLOSE
	SCC-ITB-95	14GA	AC				3A-ERR-4	NorthA CLOSE
	SCC-ITB-96	14GA	AC				3A-ERR-7	NorthA TRIP
	SCC-ITB-97	14GA	AC				3A-ERR-8	NorthA TRIP
	SCC-ITB-98	16GA	DC				3A-SPARE MOC: 67 3A-SPARE TOC: 205 3A-ERH-7 3A-ELD-1	52-NorthA DC Signal Common
	SCC-ITB-99	16GA	DC				3A-SPARE MOC: 68	52-NorthA MOC 'A'
	SCC-ITB-101	16GA	DC				3A-SPARE TOC: 206	52-North TOC 'A'
	SCC-ITB-103	16GA	DC				3A-ERH-8	52-NorthA-86 BRK LOCKOUT STATUS
	SCC-ITB-105	16GA	DC				3A-ELD-2	NorthA-F60 RLY FAIL
	SCC-ITB-112	14GA	AC	6		DC35A-4	4A-ERR-3	SouthA CLOSE
	SCC-ITB-113	14GA	AC				4A-ERR-4	SouthA CLOSE
	SCC-ITB-114	14GA	AC				4A-ERR-7	SouthA TRIP
	SCC-ITB-115	14GA	AC				4A-ERR-8	SouthA TRIP
	SCC-ITB-116	16GA	DC				4A-SPARE MOC: 67 4A-SPARE TOC: 205 4A-ERH-7 4A-ELD-1	52-SouthA DC Signal Common
	SCC-ITB-117	16GA	DC				4A-SPARE MOC: 68	52-SouthA MOC 'A'
	SCC-ITB-119	16GA	DC				4A-SPARE TOC: 206	52-SouthA TOC 'A'
	SCC-ITB-121	16GA	DC				4A-ERH-8	STATUSSouthA-86 BRK LOCKOUT
	SCC-ITB-123	16GA	DC				4A-ELD-2	SouthA-F60 RLY FAIL
	SCC-ITB-124	16GA	DC	6		DC35A-5	5A-ELH-2	DC35A Batt Charger #1 Alarm
	SCC-ITB-125	16GA	DC				5A-ELH-3	DC35A Batt Charger #1 Alarm
	SCC-ITB-126	16GA	DC	6		DC35A-6	5A-ELF-6	DC35A Batt Charger #2 Alarm
	SCC-ITB-127	16GA	DC				5A-ELF-7	DC35A Batt Charger #2 Alarm

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Tolton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER:
MANUFACTURING:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 2 OF 22 REV: 1

DWG# NG2766-3-4C

FIELD INTERCONNECT CHART #2
SGF_PANEL_GEN_MASTER
CONTROL SECTION 1 (SCC)

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
SCC	SCC-ITB-5	14GA	AC	7		DC35B-1	1A-ELR-1	UTIL #2 PT ØA: 69VAC
	SCC-ITB-6	14GA	AC				1A-ELR-2	UTIL #2 PT ØB: 69VAC
	SCC-ITB-7	14GA	AC				1A-ELR-3	UTIL #2 PT ØC: 69VAC
	SCC-ITB-8	14GA	AC				1A-ELR-4	UTIL #2 PT- VOLTAGE REF
	SCC-ITB-144	2 WIRE, 18GA STP					TBD	F60 WATTS TRANSDUCER +
	SCC-ITB-145						TBD	F60 WATTS TRANSDUCER -
	SCC-ITB-146						TBD	F60 WATTS TRANSDUCER SHIELD
	E1	FIBER OPTIC CABLE					FS1	COMMUNICATIONS TO DC35A
	SCC-ITB-130	14GA	AC	6			1A-ERR-1	MainB CLOSE
	SCC-ITB-131	14GA	AC				1A-ERR-2	MainB CLOSE
	SCC-ITB-132	14GA	AC				1A-ERR-5	MainB TRIP
	SCC-ITB-133	14GA	AC				1A-ERR-6	MainB TRIP
	SCC-ITB-134	16GA	DC				1A-SPARE MOC: 67 1A-SPARE TOC: 205 1A-ERH-7 1A-ELD-1	52-MainB DC Signal Common
	SCC-ITB-135	16GA	DC				1A-SPARE MOC: 68	52-MainB MOC 'A'
	SCC-ITB-137	16GA	DC				1A-SPARE TOC: 206	52-MainB TOC 'A'
	SCC-ITB-139	16GA	DC				1A-ERH-8	MainB-86 BRK LOCKOUT STATUS
	SCC-ITB-141	16GA	DC				1A-ELD-2	MainB-F60 RLY FAIL
	SCC-ITB-143	16GA	DC				TBD	MainB-F60 SOURCE OK
	SCC-ITB-148	16GA	DC				TBD	DC35B - AUTO
	SCC-ITB-151	14GA	AC	6		DC35B-2	2A-ERR-2	SGF2 CLOSE
	SCC-ITB-152	14GA	AC				2A-ERR-3	SGF2 CLOSE
	SCC-ITB-153	14GA	AC				2A-ERR-6	SGF2 TRIP
	SCC-ITB-154	14GA	AC				2A-ERR-7	SGF2 TRIP
	SCC-ITB-155	14GA	AC				TBD	SGF2 86 LOCKOUT
	SCC-ITB-156	14GA	AC				TBD	SGF2 86 LOCKOUT
	SCC-ITB-157	16GA	DC				2A-SPARE MOC: 67 2A-SPARE TOC: 205 2A-ERH-7 2A-ELD-1	52-SGF2 DC Signal Common
	SCC-ITB-158	16GA	DC				2A-SPARE TOC: 68	52-SGF2 MOC 'A'
	SCC-ITB-160	16GA	DC				2A-SPARE MOC: 206	52-SGF2 TOC 'A'
	SCC-ITB-162	16GA	DC				2A-ERH-8	SGF2-86 BRK LOCKOUT STATUS
	SCC-ITB-164	16GA	DC				2A-ELD-2	SGF2-F60 RLY FAIL
	SCC-ITB-171	14GA	AC	6		DC35B-3	3A-ERR-3	NorthB CLOSE
	SCC-ITB-172	14GA	AC				3A-ERR-4	NorthB CLOSE
	SCC-ITB-173	14GA	AC				3A-ERR-7	NorthB TRIP
	SCC-ITB-174	14GA	AC				3A-ERR-8	NorthB TRIP
	SCC-ITB-175	16GA	DC				3A-SPARE MOC: 67 3A-SPARE TOC: 205 3A-ERH-7 3A-ELD-1	52-NorthB DC Signal Common
	SCC-ITB-176	16GA	DC				3A-SPARE MOC: 68	52-NorthB MOC 'A'
	SCC-ITB-178	16GA	DC				3A-SPARE TOC: 206	52-NorthB TOC 'A'
	SCC-ITB-180	16GA	DC				3A-ERH-8	NorthB-86 BRK LOCKOUT STATUS
	SCC-ITB-182	16GA	DC				3A-ELD-2	NorthB-F60 RLY FAIL
	SCC-ITB-189	14GA	AC	6		DC35B-4	4A-ERR-3	SouthB CLOSE
	SCC-ITB-190	14GA	AC				4A-ERR-4	SouthB CLOSE
	SCC-ITB-191	14GA	AC				4A-ERR-7	SouthB TRIP
	SCC-ITB-192	14GA	AC				4A-ERR-8	SouthB TRIP
	SCC-ITB-193	16GA	DC				4A-SPARE MOC: 67 4A-SPARE TOC: 205 4A-ERH-7 4A-ELD-1	52-SouthB DC Signal Common
	SCC-ITB-194	16GA	DC				4A-SPARE MOC: 68	52-SouthB MOC 'A'
	SCC-ITB-196	16GA	DC				4A-SPARE MOC: 206	52-SouthB TOC 'A'
	SCC-ITB-198	16GA	DC				4A-ERH-8	SouthB-86 BRK LOCKOUT STATUS
	SCC-ITB-200	16GA	DC				4A-ELD-2	SouthB-F60 RLY FAIL
	SCC-ITB-201	16GA	DC	6		DC35B-5	5A-ELH-2	DC35B Batt Charger #1 Alarm
	SCC-ITB-202	16GA	DC				5A-ELH-3	DC35B Batt Charger #1 Alarm
	SCC-ITB-203	16GA	DC	6		DC35B-6	5A-ELF-6	DC35B Batt Charger #2 Alarm
	SCC-ITB-204	16GA	DC				5A-ELF-7	DC35B Batt Charger #2 Alarm

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 3 OF 22 REV: 1

DWG# NG2766-3-4C

FIELD INTERCONNECT CHART #3
SGF_PANEL_GEN_MASTER
CONTROL SECTION 1 (SCC)

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
SCC	PASS-THRU	14GA	AC	8		SGF-1 52-M1	1LTN-4	1PTB - GEN BUS ØA (120VAC)
	PASS-THRU	14GA	AC				1LTN-5	1PTB - GEN BUS ØB (VOLT. REF)
	PASS-THRU	14GA	AC				1LTN-6	1PTB - GEN BUS ØC (120VAC)
	SCC-ITB-207	14GA	AC				1LTN-11	M1 CLOSE
	SCC-ITB-208	14GA	AC				1LTN-12	M1 CLOSE
	SCC-ITB-209	14GA	AC				1LTP-1	M1 TRIP
	SCC-ITB-210	14GA	AC				1LTP-2	M1 TRIP
	SCC-ITB-211	14GA	AC				1LTP-7	M1 86 LOCKOUT
	SCC-ITB-212	14GA	AC				1LTP-8	M1 86 LOCKOUT
	SCC-ITB-213	16GA	DC				1LTP-3,5,9,11 1LTN-9	52-M1 DC SIgnal Common
	SCC-ITB-214	16GA	DC				1LTP-4	52-M1 MOC 'A'
	SCC-ITB-216	16GA	DC				1LTP-6	52-M1 TOC 'A'
	SCC-ITB-218	16GA	DC				1LTN-10	M1-86 BRK LOCKOUT STATUS
	SCC-ITB-220	16GA	DC				1LTP-10	M1-F60 RLY FAIL
	SCC-ITB-222	16GA	DC				1LTP-12	M1-F60 SOURCE OK
	E2	FIBER OPTIC CABLE					E5	COMMUNICATIONS TO MV PROTECTIVE RLEAYS
	SCC-ITB-229	14GA	AC	10		SGF-2 52-M2	2LTN-11	M2 CLOSE
	SCC-ITB-230	14GA	AC				2LTN-12	M2 CLOSE
	SCC-ITB-231	14GA	AC				2LTP-1	M2 TRIP
	SCC-ITB-232	14GA	AC				2LTP-2	M2 TRIP
	SCC-ITB-233	14GA	AC				2LTP-7	M2 86 LOCKOUT
	SCC-ITB-234	14GA	AC				2LTP-8	M2 86 LOCKOUT
	SCC-ITB-235	16GA	DC				2LTP-3,5,9,11 2LTN-9	52-M2 DC SIgnal Common
	SCC-ITB-236	16GA	DC				2LTP-4	52-M2 MOC 'A'
	SCC-ITB-238	16GA	DC				2LTP-6	52-M2 TOC 'A'
	SCC-ITB-240	16GA	DC				2LTN-10	M2-86 BRK LOCKOUT STATUS
	SCC-ITB-242	16GA	DC				2LTP-10	M2-F60 RLY FAIL
	SCC-ITB-244	16GA	DC				2LTP-12	M2-F60 SOURCE OK
	SCC-ITB-251	14GA	AC	10		SGF-6 52-F1 52-F2	6LTN-11	F1 CLOSE
	SCC-ITB-252	14GA	AC				6LTN-12	F1 CLOSE
	SCC-ITB-253	14GA	AC				6LTP-1	F1 TRIP
	SCC-ITB-254	14GA	AC				6LTP-2	F1 TRIP
	SCC-ITB-255	16GA	DC				6LTP-3,5,9 6LTN-9	52-F1 DC SIgnal Common
	SCC-ITB-256	16GA	DC				6LTP-4	52-F1 MOC 'A'
	SCC-ITB-258	16GA	DC				6LTP-6	52-F1 TOC 'A'
	SCC-ITB-260	16GA	DC				6LTN-10	F1-86 BRK LOCKOUT STATUS
	SCC-ITB-262	16GA	DC				6LTP-10	F1-F60 RLY FAIL
	SCC-ITB-269	14GA	AC				6LTA-11	F2 CLOSE
	SCC-ITB-270	14GA	AC				6LTA-12	F2 CLOSE
	SCC-ITB-271	14GA	AC				6LTC-1	F2 TRIP
	SCC-ITB-272	14GA	AC				6LTC-2	F2 TRIP
	SCC-ITB-273	16GA	DC				6LTC-3,5,9 6LTA-9	52-F2 DC SIgnal Common
	SCC-ITB-274	16GA	DC				6LTC-4	52-F2 MOC 'A'
	SCC-ITB-276	16GA	DC				6LTC-6	52-F2 TOC 'A'
	SCC-ITB-278	16GA	DC				6LTA-10	F2-86 BRK LOCKOUT STATUS
	SCC-ITB-280	16GA	DC				6LTC-10	F2-F60 RLY FAIL

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 4 OF 22 REV: 1

DWG# NG2766-3-IC

FIELD INTERCONNECT CHART #4
SGF_PANEL_GEN_MASTER
CONTROL SECTION 1 (SCC)

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
SCC	SCC-ITB-26	10GA	DC	36		NEW 125VDC BATTERY CHARGER	TBD	+125VDC
	SCC-ITB-27	10GA	DC				TBD	-VDC
	SCC-ITB-28	10GA	DC				TBD	SPARE
	COMM-TB-62	2 WIRE, 18GA STP					TBD	BATTERY CHARGER MODBUS -
	COMM-TB-64						TBD	BATTERY CHARGER MODBUS +
	COMM-TB-65						TBD	BATTERY CHARGER MODBUS SHIELD
	SCC-ITB-285	16GA	DC	20		7500KVA XFMR #1	TBD	HIGH OIL TEMPERATURE
	SCC-ITB-286	16GA	DC				TBD	HIGH OIL TEMPERATURE
	SCC-ITB-287	16GA	DC				TBD	LOW OIL LEVEL
	SCC-ITB-288	16GA	DC				TBD	LOW OIL LEVEL
	SCC-ITB-289	16GA	DC	20		7500KVA XFMR #2	TBD	HIGH OIL TEMPERATURE
	SCC-ITB-290	16GA	DC				TBD	HIGH OIL TEMPERATURE
	SCC-ITB-291	16GA	DC				TBD	LOW OIL LEVEL
	SCC-ITB-292	16GA	DC				TBD	LOW OIL LEVEL
	SCC-ITB-310	16GA	DC	38		500KVA XFMR	TBD	HIGH OIL TEMPERATURE
	SCC-ITB-311	16GA	DC				TBD	HIGH OIL TEMPERATURE
	SCC-ITB-312	16GA	DC				TBD	LOW OIL LEVEL
	SCC-ITB-313	16GA	DC				TBD	LOW OIL LEVEL
	COMM-TB-57	2 WIRE, 18GA STP		39		MCC	TBD	MCC MODBUS -
	COMM-TB-59						TBD	MCC MODBUS +
	COMM-TB-60						TBD	MCC MODBUS SHIELD
	COMM-TB-67	2 WIRE, 18GA STP		35		UREA FILL PANEL	TBD	UREA MODBUS -
	COMM-TB-69						TBD	UREA MODBUS +
	COMM-TB-70						TBD	UREA MODBUS SHIELD
	COMM-TB-72	2 WIRE, 18GA STP		31		FUEL CONTROL SYSTEM	TBD	FUEL CONTROL SYSTEM MODBUS -
	COMM-TB-74						TBD	FUEL CONTROL SYSTEM MODBUS +
	COMM-TB-75						TBD	FUEL CONTROL SYSTEM MODBUS SHIELD
	E2	FIBER OPTIC CABLE		9		FIBER PATCH PANEL	TBD	NETWORK

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 5 OF 22 REV: 1

DWG# NG2766-34C

9/29/2010 8:57 PM NG2766 Arlington WPCP_Interconnection Charts_D.dwg

FIELD INTERCONNECT CHART #5
SGF_PANEL_GEN_03
CONTROL SECTION 2 (G3CC)

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
G3CC	G1-GCT-TB2-1	12GA	AC	11		SGF-5 52-G3	5LTR-9	5C7 - GEN #3 CT-ØA-X1
	G1-GCT-TB2-2	12GA	AC				5LTR-10	5C7 - GEN #3 CT-ØB-X1
	G1-GCT-TB2-3	12GA	AC				5LTR-11	5C7 - GEN #3 CT-ØC-X1
	G1-GCT-TB2-4	12GA	AC				5LTR-12	5C7 - GEN #3 CT-ØA-X2
	G1-ITB-5	14GA	AC				5LTN-1	5PTA - GEN #3 ØA (120VAC)
	G1-ITB-6	14GA	AC				5LTN-2	5PTA - GEN #3 ØB (VOLT REF.)
	G1-ITB-7	14GA	AC				5LTN-3	5PTA - GEN #3 ØC (120VAC)
	G1-ITB-33	14GA	DC	10			5LTN-11	G3 CLOSE
	G1-ITB-34	14GA	DC				5LTN-12	G3 CLOSE
	G1-ITB-35	14GA	DC				5LTP-1	G3 TRIP
	G1-ITB-36	14GA	DC				5LTP-2	G3 TRIP
	G1-ITB-37	16GA	DC				5LTP-3	G3 MOC 'A'
	G1-ITB-38	16GA	DC				5LTP-4	G3 MOC 'A'
	G1-ITB-39	16GA	DC				5LTP-5	G3 TOC 'A'
	G1-ITB-40	16GA	DC				5LTP-6	G3 TOC 'A'
	G1-ITB-41	16GA	DC				5LTN-9	G3 BREAKER LOCKOUT STATUS
	G1-ITB-42	16GA	DC				5LTN-10	G3 BREAKER LOCKOUT STATUS
	G1-ITB-43	16GA	DC				5LTP-9	G3 RELAY FAIL
	G1-ITB-44	16GA	DC				5LTP-10	G3 RELAY FAIL
	G1-ITB-45	16GA	DC				5LTR-1	G3 MOC 'A'
	G1-ITB-46	16GA	DC				5LTR-2	G3 MOC 'A'
	G1-ITB-47	16GA	DC				5LTP-11	G3 MOC 'B'
	G1-ITB-48	16GA	DC				5LTP-12	G3 MOC 'B'
	G1-ITB-9	14GA	AC	N/A		SGF_PANEL_GEN_ MASTER CONTROL SECTION 1 (SCC)	PASS-THRU	1PTB - GEN BUS ØA (120VAC)
	G1-ITB-10	14GA	AC				PASS-THRU	1PTB - GEN BUS ØB (VOLT. REF)
	G1-ITB-11	14GA	AC				PASS-THRU	1PTB - GEN BUS ØC (120VAC)
	G1-ITB-1	14GA	AC				SCC-ITB-13	SYNC SOURCE ØA
	G1-ITB-2	14GA	AC				SCC-ITB-14	SYNC SOURCE ØB
	G1-ITB-3	14GA	AC				SCC-ITB-15	SYNC SOURCE ØC
	PASS-THRU	10GA	DC				SCC-ITB-33	+24VDC (FROM GEN #3 BATTERIES)
	PASS-THRU	10GA	DC				SCC-ITB-34	-VDC (FROM GEN #3 BATTERIES)
	G1-ITB-17	12GA	DC				SCC-ITB-37	+24VDC FROM BEST BATTERY CKT
	G1-ITB-18	12GA	DC				SCC-ITB-38	-VDC FROM BEST BATTERY CKT
	G1-ITB-53	16GA	DC				SCC-ITB-43	MANUAL MODE
	G1-ITB-54	16GA	DC				SCC-ITB-44	MANUAL MODE
	G1-ITB-41	2 WIRE, 18GA STP					COMM-TB-54	GENSET #3 EMCP 3.3 MODBUS +
	G1-ITB-42						COMM-TB-52	GENSET #3 EMCP 3.3 MODBUS -
	G1-ITB-43						COMM-TB-55	GENSET #3 EMCP 3.3 MODBUS SHIELD
	G1-ITB-46	2 WIRE, 18GA STP					COMM-TB-34	GEN#3 BI-FUEL SYSTEM MODBUS +
	G1-ITB-47						COMM-TB-32	GEN#3 BI-FUEL SYSTEM MODBUS -
	G1-ITB-48						COMM-TB-35	GEN#3 BI-FUEL SYSTEM SHIELD
	G1-WW INTERFACE #2 RS-485	9 PIN D-SUB CONNECTOR 4 WIRE, 24GA STP					COMM-TB-11	WHT/ORG
							COMM-TB-12	ORG
							COMM-TB-13	WHT/BLU
							COMM-TB-14	BLU
							COMM-TB-15	SHIELD
	G1-TS	ETHERNET CABLE					E2	ETHERNET COMMS TO GEN #3 TS (G1-TS)
	PASS-THRU	ETHERNET CABLE					E3	ETHERNET COMMS TO GEN#3 SCR SYSTEM

FIELD NOTES

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REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

PG: 6 OF 22 REV: 1

DWG# NG2766-3-IC

FIELD INTERCONNECT CHART #6
SGF_PANEL_GEN_03
CONTROL SECTION 2 (G3CC)

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
G3CC	PASS-THRU	10GA	DC	4		GENSET #3	BATT+	+24VDC (GEN #3 BATTERIES)
	PASS-THRU	10GA	DC				BATT-	-VDC (GEN #3 BATTERIES)
	G1-ETB-21	16GA	DC				BATT-	GEN #3 REMOTE START/STOP
	G1-ETB-22	16GA	DC				DI2	GEN #3 REMOTE START/STOP
	G1-ETB-23	16GA	DC				BATT-	GEN #3 HARD SHUTDOWN
	G1-ETB-24	16GA	DC				DI8	GEN #3 HARD SHUTDOWN
	G1-ETB-25	16GA	DC				V-RSE	GEN #3 VOLTAGE RAISE
	G1-ETB-26	16GA	DC				COM 1	GEN #3 VOLTAGE RAISE/LOWER COMMON
	G1-ETB-27	16GA	DC				V-LWR	GEN #3 VOLTAGE LOWER
	G1-ETB-31	2 WIRE, 18GA STP		3			VDC-A	GEN #3 VOLTAGE BIAS +
	G1-ETB-32						VDC-B	GEN #3 VOLTAGE BIAS -
	G1-ETB-33						NO CONNECTION	GEN #3 VOLTAGE BIAS SHIELD
	G1-ETB-34	2 WIRE, 18GA STP					DI-RTN	GEN #3 SPEED BIAS -
	G1-ETB-35						PWM	GEN #3 SPEED BIAS +
	G1-ETB-36						NO CONNECTION	GEN #3 SPEED BIAS SHIELD
	G1-ETB-41	2 WIRE, 18GA STP					MODBUS+	GENSET #3 EMCP 3.3 MODBUS +
	G1-ETB-42						MODBUS-	GENSET #3 EMCP 3.3 MODBUS -
	G1-ETB-43						NO CONNECTION	GENSET #3 EMCP 3.3 MODBUS REF.
	G1-ITB-49	16GA	DC	14		GEN #3 BI-FUEL SYSTEM	TBD	GEN #3 BI-FUEL SYSTEM ALARM
	G1-ITB-50	16GA	DC				TBD	GEN #3 BI-FUEL SYSTEM ALARM
	G1-ETB-46	2 WIRE, 18GA STP					TBD	GEN #3 BI-FUEL SYSTEM MODBUS +
	G1-ETB-47						TBD	GEN #3 BI-FUEL SYSTEM MODBUS -
	G1-ETB-48						TBD	GEN #3 BI-FUEL SYSTEM MODBUS SHIELD
	G1-ITB-26	2 WIRE, 18GA STP		21		GEN #3 SCR SYSTEM	TBD	GEN #3 WATTS TRANSDUCER +
	G1-ITB-27						TBD	GEN #3 WATTS TRANSDUCER -
	G1-ITB-28						TBD	GEN #3 WATTS TRANSDUCER SHIELD
	PASS-THRU	ETHERNET CABLE					TBD	GEN #3 SCR ETHERNET COMMUNICATIONS
	G1-ITB-23	2 WIRE, 18GA STP		N/A		SGF_PANEL_GEN_02 CONTROL SECTION 3 (G2CC)	G2-ITB-23	LOAD SHARE SIGNAL
	G1-ITB-24						G2-ITB-24	LOAD SHARE SIGNAL
	G1-ITB-25						G2-ITB-25	LOAD SHARE SIGNAL
	G1-ITB-9	14GA	AC				G2-ITB-9	1PTB - GEN BUS ØA (120VAC)
	G1-ITB-10	14GA	AC				G2-ITB-10	1PTB - GEN BUS ØB (VOLT. REF)
	G1-ITB-11	14GA	AC				G2-ITB-11	1PTB - GEN BUS ØC (120VAC)

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Tolton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 7 OF 22 REV: 1

DWG# NG2766-3-IC

FIELD INTERCONNECT CHART #7
SGF_PANEL_GEN_02
CONTROL SECTION 3 (G2CC)

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
G2CC	G2-GCT-TB2-1	12GA	AC	11		SGF-4 52-G2	4LTR-9	4C7 - GEN #2 CT-ØA-X1
	G2-GCT-TB2-2	12GA	AC				4LTR-10	4C7 - GEN #2 CT-ØB-X1
	G2-GCT-TB2-3	12GA	AC				4LTR-11	4C7 - GEN #2 CT-ØC-X1
	G2-GCT-TB2-4	12GA	AC				4LTR-12	4C7 - GEN #2 CT-ØA-X2
	G2-ITB-5	14GA	AC				4LTN-1	4PTA - GEN #2 ØA (120VAC)
	G2-ITB-6	14GA	AC				4LTN-2	4PTA - GEN #2 ØB (VOLT REF.)
	G2-ITB-7	14GA	AC				4LTN-3	4PTA - GEN #2 ØC (120VAC)
	G2-ITB-33	14GA	DC	10			4LTN-11	G2 CLOSE
	G2-ITB-34	14GA	DC				4LTN-12	G2 CLOSE
	G1-ITB-35	14GA	DC				4LTP-1	G2 TRIP
	G2-ITB-36	14GA	DC				4LTP-2	G2 TRIP
	G2-ITB-37	16GA	DC				4LTP-3	G2 MOC 'A'
	G2-ITB-38	16GA	DC				4LTP-4	G2 MOC 'A'
	G2-ITB-39	16GA	DC				4LTP-5	G2 TOC 'A'
	G2-ITB-40	16GA	DC				4LTP-6	G2 TOC 'A'
	G2-ITB-41	16GA	DC				4LTN-9	G2 BREAKER LOCKOUT STATUS
	G2-ITB-42	16GA	DC				4LTN-10	G2 BREAKER LOCKOUT STATUS
	G2-ITB-43	16GA	DC				4LTP-9	G2 RELAY FAIL
	G2-ITB-44	16GA	DC				4LTP-10	G2 RELAY FAIL
	G2-ITB-45	16GA	DC				4LTR-1	G2 MOC 'A'
	G2-ITB-46	16GA	DC				4LTR-2	G2 MOC 'A'
	G2-ITB-47	16GA	DC				4LTP-11	G2 MOC 'B'
	G2-ITB-48	16GA	DC				4LTP-12	G2 MOC 'B'
	G2-ITB-1	14GA	AC	N/A		SGF_PANEL_GEN_ MASTER CONTROL SECTION 1 (SCC)	SCC-ITB-13	SYNC SOURCE ØA
	G2-ITB-2	14GA	AC				SCC-ITB-14	SYNC SOURCE ØB
	G2-ITB-3	14GA	AC				SCC-ITB-15	SYNC SOURCE ØC
	PASS-THRU	10GA	DC				SCC-ITB-31	+24VDC (FROM GEN #2 BATTERIES)
	PASS-THRU	10GA	DC				SCC-ITB-32	-VDC (FROM GEN #2 BATTERIES)
	G2-ITB-17	12GA	DC				SCC-ITB-39	+24VDC FROM BEST BATTERY CKT
	G2-ITB-18	12GA	DC				SCC-ITB-40	-VDC FROM BEST BATTERY CKT
	G2-ITB-53	16GA	DC				SCC-ITB-45	MANUAL MODE
	G2-ITB-54	16GA	DC				SCC-ITB-46	MANUAL MODE
	G2-ITB-41	2 WIRE, 18GA STP					COMM-TB-49	GENSET #2 EMCP 3.3 MODBUS +
	G2-ITB-42						COMM-TB-47	GENSET #2 EMCP 3.3 MODBUS -
	G2-ITB-43						COMM-TB-50	GENSET #2 EMCP 3.3 MODBUS SHIELD
	G2-ITB-46	2 WIRE, 18GA STP					COMM-TB-29	GEN#2 BI-FUEL SYSTEM MODBUS +
	G2-ITB-47						COMM-TB-27	GEN#2 BI-FUEL SYSTEM MODBUS -
	G2-ITB-48						COMM-TB-30	GEN#2 BI-FUEL SYSTEM SHIELD
	G2-WW INTERFACE #2 RS-485	9 PIN D-SUB CONNECTOR 4 WIRE, 24GA STP					COMM-TB-6	WHT/ORG
							COMM-TB-7	ORG
							COMM-TB-8	WHT/BLU
							COMM-TB-9	BLU
							COMM-TB-10	SHIELD
	G2-TS	ETHERNET CABLE					E2	ETHERNET COMMS TO GEN#2 TS (G2-TS)
	PASS-THRU	ETHERNET CABLE					E3	ETHERNET COMMS TO GEN#2 SCR SYSTEM

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 8 OF 22 REV: 1

DWG# NG2766-3-IC

FIELD INTERCONNECT CHART #8
SGF_PANEL_GEN_02
CONTROL SECTION 3 (G2CC)

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
G2CC	PASS-THRU	10GA	DC	4		GENSET #2	BATT+	+24VDC (GEN #2 BATTERIES)
	PASS-THRU	10GA	DC				BATT-	-VDC (GEN #2 BATTERIES)
	G2-ETB-21	16GA	DC				BATT-	GEN #2 REMOTE START/STOP
	G2-ETB-22	16GA	DC				DI2	GEN #2 REMOTE START/STOP
	G2-ETB-23	16GA	DC				BATT-	GEN #2 HARD SHUTDOWN
	G2-ETB-24	16GA	DC				DI8	GEN #2 HARD SHUTDOWN
	G2-ETB-25	16GA	DC				V-RSE	GEN #2 VOLTAGE RAISE
	G2-ETB-26	16GA	DC				COM 1	GEN #2 VOLTAGE RAISE/LOWER COMMON
	G2-ETB-27	16GA	DC				V-LWR	GEN #2 VOLTAGE LOWER
	G2-ETB-31	2 WIRE, 18GA STP		3			VDC-A	GEN #2 VOLTAGE BIAS +
	G2-ETB-32						VDC-B	GEN #2 VOLTAGE BIAS -
	G2-ETB-33						NO CONNECTION	GEN #2 VOLTAGE BIAS SHIELD
	G2-ETB-34	2 WIRE, 18GA STP					DI-RTN	GEN #2 SPEED BIAS -
	G2-ETB-35						PWM	GEN #2 SPEED BIAS +
	G2-ETB-36						NO CONNECTION	GEN #2 SPEED BIAS SHIELD
	G2-ETB-41	2 WIRE, 18GA STP					MODBUS+	GENSET #2 EMCP 3.3 MODBUS +
	G2-ETB-42						MODBUS-	GENSET #2 EMCP 3.3 MODBUS -
	G2-ETB-43						NO CONNECTION	GENSET #2 EMCP 3.3 MODBUS REF.
	G2-ITB-49	16GA	DC	14		GEN #2 BI-FUEL SYSTEM	TBD	GEN #2 BI-FUEL SYSTEM ALARM
	G2-ITB-50	16GA	DC				TBD	GEN #2 BI-FUEL SYSTEM ALARM
	G2-ETB-46	2 WIRE, 18GA STP					TBD	GEN #2 BI-FUEL SYSTEM MODBUS +
	G2-ETB-47						TBD	GEN #2 BI-FUEL SYSTEM MODBUS -
	G2-ETB-48						TBD	GEN #2 BI-FUEL SYSTEM MODBUS SHIELD
	G2-ITB-26	2 WIRE, 18GA STP		21		GEN #2 SCR SYSTEM	TBD	GEN #2 WATTS TRANSDUCER +
	G2-ITB-27						TBD	GEN #2 WATTS TRANSDUCER -
	G2-ITB-28						TBD	GEN #2 WATTS TRANSDUCER SHIELD
	PASS-THRU	ETHERNET CABLE					TBD	GEN #2 SCR ETHERNET COMMUNICATIONS
	G2-ITB-23	2 WIRE, 18GA STP		N/A		SGF_PANEL_GEN_01 CONTROL SECTION 4 (G1CC)	G3-ITB-23	LOAD SHARE SIGNAL
	G2-ITB-24						G3-ITB-24	LOAD SHARE SIGNAL
	G2-ITB-25						G3-ITB-25	LOAD SHARE SIGNAL
	G2-ITB-9	14GA	AC				G3-ITB-9	1PTB - GEN BUS ØA (120VAC)
	G2-ITB-10	14GA	AC				G3-ITB-10	1PTB - GEN BUS ØB (VOLT. REF)
	G2-ITB-11	14GA	AC				G3-ITB-11	1PTB - GEN BUS ØC (120VAC)

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 9 OF 22 REV: 1

DWG# NG2766-3-IC

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FIELD INTERCONNECT CHART #9
SGF_PANEL_GEN_01
CONTROL SECTION 4 (G1CC)

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
	G3-GCT-TB2-1	12GA	AC	11		SGF-3 52-G1	3LTR-9	3C7 - GEN #1 CT-ØA-X1
	G3-GCT-TB2-2	12GA	AC				3LTR-10	3C7 - GEN #1 CT-ØB-X1
	G3-GCT-TB2-3	12GA	AC				3LTR-11	3C7 - GEN #1 CT-ØC-X1
	G3-GCT-TB2-4	12GA	AC				3LTR-12	3C7 - GEN #1 CT-ØA-X2
	G3-ITB-5	14GA	AC				3LTN-1	3PTA - GEN #1 ØA (120VAC)
	G3-ITB-6	14GA	AC				3LTN-2	3PTA - GEN #1 ØB (VOLT REF.)
	G3-ITB-7	14GA	AC				3LTN-3	3PTA - GEN #1 ØC (120VAC)
	G3-ITB-33	14GA	DC	10			3LTN-11	G1 CLOSE
	G3-ITB-34	14GA	DC				3LTN-12	G1 CLOSE
	G3-ITB-35	14GA	DC				3LTP-1	G1 TRIP
	G3-ITB-36	14GA	DC				3LTP-2	G1 TRIP
	G3-ITB-37	16GA	DC				3LTP-3	G1 MOC 'A'
	G3-ITB-38	16GA	DC				3LTP-4	G1 MOC 'A'
	G3-ITB-39	16GA	DC				3LTP-5	G1 TOC 'A'
	G3-ITB-40	16GA	DC				3LTP-6	G1 TOC 'A'
	G3-ITB-41	16GA	DC				3LTN-9	G1 BREAKER LOCKOUT STATUS
	G3-ITB-42	16GA	DC				3LTN-10	G1 BREAKER LOCKOUT STATUS
	G3-ITB-43	16GA	DC				3LTP-9	G1 RELAY FAIL
	G3-ITB-44	16GA	DC				3LTP-10	G1 RELAY FAIL
	G3-ITB-45	16GA	DC				3LTR-1	G1 MOC 'A'
	G3-ITB-46	16GA	DC				3LTR-2	G1 MOC 'A'
	G3-ITB-47	16GA	DC				3LTP-11	G1 MOC 'B'
	G3-ITB-48	16GA	DC				3LTP-12	G1 MOC 'B'
	G3-ITB-1	14GA	AC	N/A		SGF_PANEL_ GEN MASTER - CONTROL SECTION 1 - (SCC)	SCC-ITB-13	SYNC SOURCE ØA
	G3-ITB-2	14GA	AC				SCC-ITB-14	SYNC SOURCE ØB
	G3-ITB-3	14GA	AC				SCC-ITB-15	SYNC SOURCE ØC
	PASS-THRU	10GA	DC				SCC-ITB-29	+24VDC (FROM GEN #1 BATTERIES)
	PASS-THRU	10GA	DC				SCC-ITB-30	-VDC (FROM GEN #1 BATTERIES)
	G3-ITB-17	12GA	DC				SCC-ITB-41	+24VDC FROM BEST BATTERY CKT
	G3-ITB-18	12GA	DC				SCC-ITB-42	-VDC FROM BEST BATTERY CKT
	G3-ITB-53	16GA	DC				SCC-ITB-47	MANUAL MODE
	G3-ITB-54	16GA	DC				SCC-ITB-48	MANUAL MODE
	G3-ITB-41	2 WIRE, 18GA STP					COMM-TB-44	GENSET #1 EMCP 3.3 MODBUS +
	G3-ITB-42						COMM-TB-42	GENSET #1 EMCP 3.3 MODBUS -
	G3-ITB-43						COMM-TB-45	GENSET #1 EMCP 3.3 MODBUS SHIELD
	G3-ITB-46	2 WIRE, 18GA STP					COMM-TB-24	GEN#1 BI-FUEL SYSTEM MODBUS +
	G3-ITB-47						COMM-TB-22	GEN#1 BI-FUEL SYSTEM MODBUS -
	G3-ITB-48						COMM-TB-25	GEN#1 BI-FUEL SYSTEM SHIELD
	G3-WW INTERFACE #2 RS-485	9 PIN D-SUB CONNECTOR 4 WIRE, 24GA STP					COMM-TB-1	WHT/ORG
							COMM-TB-2	ORG
							COMM-TB-3	WHT/BLU
							COMM-TB-4	BLU
							COMM-TB-5	SHIELD
	G3-TS	ETHERNET CABLE					E2	ETHERNET COMMS TO GEN #1 TS (G3-TS)
	PASS-THRU	ETHERNET CABLE					E3	ETHERNET COMMS TO GEN#1 SCR SYSTEM

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 10 OF 22 REV: 1

DWG# NG2766-3-IC

FIELD INTERCONNECT CHART #10
SGF_PANEL_GEN_01
CONTROL SECTION 4 (G1CC)

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
G1CC	PASS-THRU	10GA	DC	4		GENSET #1	BATT+	+24VDC (GEN #1 BATTERIES)
	PASS-THRU	10GA	DC				BATT-	-VDC (GEN #1 BATTERIES)
	G3-ETB-21	16GA	DC				BATT-	GEN #1 REMOTE START/STOP
	G3-ETB-22	16GA	DC				DI2	GEN #1 REMOTE START/STOP
	G3-ETB-23	16GA	DC				BATT-	GEN #1 HARD SHUTDOWN
	G3-ETB-24	16GA	DC				DI8	GEN #1 HARD SHUTDOWN
	G3-ETB-25	16GA	DC				V-RSE	GEN #1 VOLTAGE RAISE
	G3-ETB-26	16GA	DC				COM 1	GEN #1 VOLTAGE RAISE/LOWER COMMON
	G3-ETB-27	16GA	DC				V-LWR	GEN #1 VOLTAGE LOWER
	G3-ETB-31	2 WIRE, 18GA STP		3			VDC-A	GEN #1 VOLTAGE BIAS +
	G3-ETB-32						VDC-B	GEN #1 VOLTAGE BIAS -
	G3-ETB-33						NO CONNECTION	GEN #1 VOLTAGE BIAS SHIELD
	G3-ETB-34	2 WIRE, 18GA STP					DI-RTN	GEN #1 SPEED BIAS -
	G3-ETB-35						PWM	GEN #1 SPEED BIAS +
	G3-ETB-36						NO CONNECTION	GEN #1 SPEED BIAS SHIELD
	G3-ETB-41	2 WIRE, 18GA STP					MODBUS+	GENSET #1 EMCP 3.3 MODBUS +
	G3-ETB-42						MODBUS-	GENSET #1 EMCP 3.3 MODBUS -
	G3-ETB-43						NO CONNECTION	GENSET #1 EMCP 3.3 MODBUS REF.
	G3-ITB-49	16GA	DC	14		GEN #1 BI-FUEL SYSTEM	TBD	GEN #1 BI-FUEL SYSTEM ALARM
	G3-ITB-50	16GA	DC				TBD	GEN #1 BI-FUEL SYSTEM ALARM
	G3-ETB-46	2 WIRE, 18GA STP					TBD	GEN #1 BI-FUEL SYSTEM MODBUS +
	G3-ETB-47						TBD	GEN #1 BI-FUEL SYSTEM MODBUS -
	G3-ETB-48						TBD	GEN #1 BI-FUEL SYSTEM MODBUS SHIELD
	G3-ITB-26	2 WIRE, 18GA STP		21		GEN #1 SCR SYSTEM	TBD	GEN #1 WATTS TRANSDUCER +
	G3-ITB-27						TBD	GEN #1 WATTS TRANSDUCER -
	G3-ITB-28						TBD	GEN #1 WATTS TRANSDUCER SHIELD
	PASS-THRU	ETHERNET CABLE					TBD	GEN #1 SCR ETHERNET COMMUNICATIONS

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 11 OF 22 REV: 1

DWG# NG2766-3-IC

FIELD INTERCONNECT CHART #11
SGF-1
52-M1

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
SGF-1 52-M1	1LTR-9	12GA	AC	5		DC35A-2	TBD	1C5 - DIFFERENTIAL CT-ØA-X1
	1LTR-10	12GA	AC				TBD	1C5 - DIFFERENTIAL CT-ØB-X1
	1LTR-11	12GA	AC				TBD	1C5 - DIFFERENTIAL CT-ØC-X1
	1LTR-12	12GA	AC				TBD	1C5 - DIFFERENTIAL CT-ØA-X2
	TBD	12GA	DC			7500KVA XFMR #1	TBD	TRANSFORMER 63 & 49 TRIP
	TBD	12GA	DC				TBD	TRANSFORMER 63 & 49 TRIP

FIELD INTERCONNECT CHART #12
SGF-2
52-M2

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
SGF-2 52-M2	2LTR-9	12GA	AC	5		DC35B-2	TBD	2C5 - DIFFERENTIAL CT-ØA-X1
	2LTR-10	12GA	AC				TBD	2C5 - DIFFERENTIAL CT-ØB-X1
	2LTR-11	12GA	AC				TBD	2C5 - DIFFERENTIAL CT-ØC-X1
	2LTR-12	12GA	AC				TBD	2C5 - DIFFERENTIAL CT-ØA-X2
	TBD	14GA	DC			7500KVA XFMR #2	TBD	TRANSFORMER 63 & 49 TRIP
	TBD	14GA	DC				TBD	TRANSFORMER 63 & 49 TRIP

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
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2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587
MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560

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PG: 12 OF 22 REV: 1

DWG# NG2766-3-IC

FIELD INTERCONNECT CHART #13
SGF-3
52-G1

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
SGF-3	3SBG-7	12GA	AC	12		GEN #1 NEUTRAL CT	TBD	G1 - NEUTRAL TO GROUND CT-X1
52-G1	3SBG-8	12GA	AC				TBD	G1 - NEUTRAL TO GROUND CT-X2

FIELD INTERCONNECT CHART #14
SGF-4
52-G2

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
SGF-4	4SBG-7	12GA	AC	12			TBD	G2 - NEUTRAL TO GROUND CT-X1
52-G2	4SBG-8	12GA	AC				TBD	G2 - NEUTRAL TO GROUND CT-X2

FIELD INTERCONNECT CHART #15
SGF-5
52-G3

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
SGF-5	5SBG-7	12GA	AC	12			TBD	G3 - NEUTRAL TO GROUND CT-X1
52-G3	5SBG-8	12GA	AC				TBD	G3 - NEUTRAL TO GROUND CT-X2

FIELD NOTES

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REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

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PG: 13 OF 22 REV: 1

DWG# NG2766-3-IC

FIELD INTERCONNECT CHART #16
GEN_01
CONTROL PANEL

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
GEN_01 CONTROL PANEL	TBD	12GA	AC	1		SGF-3 52-G1	3SBG-1	GEN #1 DIFFERENTIAL CT-ØA-X1
	TBD	12GA	AC				3SBG-2	GEN #1 DIFFERENTIAL CT-ØB-X1
	TBD	12GA	AC				3SBG-3	GEN #1 DIFFERENTIAL CT-ØC-X1
	TBD	12GA	AC				3SBG-4	GEN #1 DIFFERENTIAL CT-ØA-X2
	TBD	12GA	AC				3SBG-5	GEN #1 DIFFERENTIAL CT-ØB-X2
	TBD	12GA	AC				3SBG-6	GEN #1 DIFFERENTIAL CT-ØC-X2
	TBD	14GA	DC	13		GEN_01 FIRE ALARM	TBD	FIRE ALARM SYSTEM
	TBD	14GA	DC				TBD	FIRE ALARM SYSTEM
	G1 R05 C	14GA		16		GEN_01 RADIATOR FAN CONTROL BOX	TERMINAL 113	FAN START SIGNAL
	G1 R05-NO	14GA					TERMINAL 121	FAN START SIGNAL
	G1 BATT-	14GA	DC				TBD	FAN CONTACTOR AUX
	G1 DI 6	14GA	DC				TBD	FAN CONTACTOR AUX
	G1 RTD EXP MOD 2, CH1	2 WIRE, 18GA STP					PASS-THRU	RTD, RADIATOR INLET PIPE
							PASS-THRU	RTD, RADIATOR INLET PIPE
	G1 RTD EXP MOD 2, CH1	2 WIRE, 18GA STP					PASS-THRU	RTD, RADIATOR OUTLET PIPE
							PASS-THRU	RTD, RADIATOR OUTLET PIPE
	G1 BATT-	14GA	DC				PASS-THRU	RADIATOR LOW COOLANT SWITCH
	G1 DI 7	14GA	DC				PASS-THRU	RADIATOR LOW COOLANT SWITCH
	G1 BATT-	14GA	DC				PASS-THRU	AFTERCOOLER LOW COOLANT SWITCH
	G1 DI 8	14GA	DC				PASS-THRU	AFTERCOOLER LOW COOLANT SWITCH
				18		GEN_01 AFTERCOOLER PUMP		
	G1 RTD EXP MOD 2, CH2	2 WIRE, 18GA STP					TBD	RTD, AFTERCOOLER INLET PIPE
							TBD	RTD, AFTERCOOLER INLET PIPE
	G1 RTD EXP MOD 2, CH2	2 WIRE, 18GA STP					TBD	RTD, AFTERCOOLER OUTLET PIPE
							TBD	RTD, AFTERCOOLER OUTLET PIPE
	G1 CAT BAT-	14GA	DC	28		GEN_01 BATTERY CHARGER	3	BATT CHGR #1 ALARM COMMON
							6	
							C	
	G1 DI 3	14GA	DC				4	BATT CHGR #1 LO DC VOLTAGE
	G1 DI 4	14GA	DC				7	BATT CHGR #1 HI DC VOLTAGE
	G1 DI 5	14GA	DC				A	BATT CHGR #1 AC INPUT FAILURE
	G1 RO6 C	14GA		29		GEN_01 ATC PANEL	TBD	LOUVER/EXHAUST FAN CONTROL
	G1 RO6 NO	14GA					TBD	LOUVER/EXHAUST FAN CONTROL
				33		GEN_01 DAY TANK		TANK LEVEL SENSOR
								TANK LEVEL SENSOR
								TANK LEVEL SENSOR
								TANK LEVEL SENSOR
				34		GEN_01 COOLANT TEMP SENSORS		COOLANT TEMP SENSOR
								COOLANT TEMP SENSOR
								COOLANT TEMP SENSOR
								COOLANT TEMP SENSOR
				37		GEN_01 COOLANT BOOSTER PUMP		

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
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2	9/29/10	As Shipped

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HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 14 OF 22 REV: 1

DWG# NG2766-3-IC

FIELD INTERCONNECT CHART #17
GEN_01
RADIATOR FAN CONTROL BOX

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
GEN_01 RADIATOR FAN CONTROL BOX	PASS-THRU	14GA	DC	15		GEN_01 RADIATOR	TBD	RTD, RADIATOR INLET PIPE
	PASS-THRU	14GA	DC				TBD	RTD, RADIATOR INLET PIPE
	PASS-THRU	14GA	DC				TBD	RTD, RADIATOR OUTLET PIPE
	PASS-THRU	14GA	DC				TBD	RTD, RADIATOR OUTLET PIPE
	PASS-THRU	2 WIRE, 18GA STP		30		GEN_01 RADIATOR & AFTERCOOLER EXPAN. TANKS	TBD	RADIATOR LOW COOLANT SWITCH
	PASS-THRU						TBD	RADIATOR LOW COOLANT SWITCH
	PASS-THRU	2 WIRE, 18GA STP					TBD	AFTERCOOLER LOW COOLANT SWITCH
	PASS-THRU						TBD	AFTERCOOLER LOW COOLANT SWITCH

FIELD INTERCONNECT CHART #18
GEN_01
FUEL CONTROL SYSTEM

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
GEN_01 FUEL CONTROL SYSTEM	DI.1.10 (SLOT 1, TERM 13)	14GA		32		GEN_01 DAY TANK	TBD	PUMP ON/OFF/HIGH COMMON
	DI.1.11 (SLOT 1, TERM 14)	14GA					TBD	DAY TANK HIGH LEVEL SWITCH
	DI.1.13 (SLOT 1, TERM 17)	14GA					TBD	DAY TANK PUMP ON
	DI.1.12 (SLOT 1, TERM 15)	14GA					TBD	DAY TANK PUMP OFF
	DI.1.14 (SLOT 1, TERM 18)	14GA					TBD	DAY TANK LOW LEVEL SWITCH
	F1 (TERM 21)	14GA					TBD	DAY TANK LOW LEVEL SWITCH
	DI.1.10 (SLOT 1, TERM 13)	14GA					TBD	DAY TANK LEAK DETECTION SWITCH
	DI.1.9 (SLOT 1, TERM 11)	14GA					TBD	DAY TANK LEAK DETECTION SWITCH
	DI.1.9 (SLOT 1, TERM 11)	14GA					TBD	DAY TANK VENT LEAK SWITCH
	F1 (TERM 22)	14GA					TBD	DAY TANK VENT LEAK SWITCH

FIELD INTERCONNECT CHART #19
GEN_01
24VDC BATTERY CHARGER

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
GEN_01 24VDC BATTERY CHARGER	TBD	10GA	DC	17		GEN_01 BATTERIES	TBD	GEN #1 BATT+
	TBD	10GA	DC				TBD	GEN #1 BATT-

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
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HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

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PG: 15 OF 22 REV: 1

DWG# NG2766-3-IC

FIELD INTERCONNECT CHART #20
GEN_02
CONTROL PANEL

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
GEN_02 CONTROL PANEL	TBD	12GA	AC	1		SGF-4 52-G2	4SBG-1	GEN #2 DIFFERENTIAL CT-ØA-X1
	TBD	12GA	AC				4SBG-2	GEN #2 DIFFERENTIAL CT-ØB-X1
	TBD	12GA	AC				4SBG-3	GEN #2 DIFFERENTIAL CT-ØC-X1
	TBD	12GA	AC				4SBG-4	GEN #2 DIFFERENTIAL CT-ØA-X2
	TBD	12GA	AC				4SBG-5	GEN #2 DIFFERENTIAL CT-ØB-X2
	TBD	12GA	AC				4SBG-6	GEN #2 DIFFERENTIAL CT-ØC-X2
	TBD	14GA	DC	13		GEN_02 FIRE ALARM	TBD	FIRE ALARM SYSTEM
	TBD	14GA	DC				TBD	FIRE ALARM SYSTEM
	G2 R05 C	14GA		16		GEN_02 RADIATOR FAN CONTROL BOX	TERMINAL 113	FAN START SIGNAL
	G2 R05-NO	14GA					TERMINAL 121	FAN START SIGNAL
	G2 BATT-	14GA	DC				TBD	FAN CONTACTOR AUX
	G2 DI 6	14GA	DC				TBD	FAN CONTACTOR AUX
	G2 RTD EXP MOD 2, CH1	2 WIRE, 18GA STP					PASS-THRU	RTD, RADIATOR INLET PIPE
							PASS-THRU	RTD, RADIATOR INLET PIPE
	G2 RTD EXP MOD 2, CH1	2 WIRE, 18GA STP					PASS-THRU	RTD, RADIATOR OUTLET PIPE
							PASS-THRU	RTD, RADIATOR OUTLET PIPE
	G2 BATT-	2 WIRE, 18GA STP					PASS-THRU	RADIATOR LOW COOLANT SWITCH
	G2 DI 7						PASS-THRU	RADIATOR LOW COOLANT SWITCH
	G2 BATT-	2 WIRE, 18GA STP					PASS-THRU	AFTERCOOLER LOW COOLANT SWITCH
	G2 DI 8						PASS-THRU	AFTERCOOLER LOW COOLANT SWITCH
				18		GEN_02 AFTERCOOLER PUMP		
	G2 RTD EXP MOD 2, CH2	2 WIRE, 18GA STP					TBD	RTD, AFTERCOOLER INLET PIPE
							TBD	RTD, AFTERCOOLER INLET PIPE
	G2 RTD EXP MOD 2, CH2	2 WIRE, 18GA STP					TBD	RTD, AFTERCOOLER OUTLET PIPE
							TBD	RTD, AFTERCOOLER OUTLET PIPE
	G2 CAT BAT-	14GA	DC	28		GEN_02 BATTERY CHARGER	3	BATT CHGR #2 ALARM COMMON
							6	
							C	
	G2 DI 3	14GA	DC				4	BATT CHGR #2 LO DC VOLTAGE
	G2 D1 4	14GA	DC				7	BATT CHGR #2 HI DC VOLTAGE
	G2 DI 5	14GA	DC				A	BATT CHGR #2 AC INPUT FAILURE
	G2 RO6 C	14GA		29		GEN_02 ATC PANEL	TBD	LOUVER/EXHAUST FAN CONTROL
	G2 RO6 NO	14GA					TBD	LOUVER/EXHAUST FAN CONTROL
				33		GEN_02 DAY TANK		TANK LEVEL SENSOR
								TANK LEVEL SENSOR
								TANK LEVEL SENSOR
								TANK LEVEL SENSOR
				34		GEN_02 COOLANT TEMP SENSORS		COOLANT TEMP SENSOR
								COOLANT TEMP SENSOR
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				37		GEN_02 COOLANT BOOSTER PUMP		

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

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HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

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PG: 16 OF 22 REV: 1

DWG# NG2766-3-IC

FIELD INTERCONNECT CHART #21
GEN_02
RADIATOR FAN CONTROL BOX

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
GEN_02 RADIATOR FAN CONTROL BOX	PASS-THRU	14GA	DC	15		GEN_02 RADIATOR	TBD	RTD, RADIATOR INLET PIPE
	PASS-THRU	14GA	DC				TBD	RTD, RADIATOR INLET PIPE
	PASS-THRU	14GA	DC				TBD	RTD, RADIATOR OUTLET PIPE
	PASS-THRU	14GA	DC				TBD	RTD, RADIATOR OUTLET PIPE
	PASS-THRU	2 WIRE, 18GA STP		30		GEN_02 RADIATOR & AFTERCOOLER EXPAN. TANKS	TBD	RADIATOR LOW COOLANT SWITCH
	PASS-THRU						TBD	RADIATOR LOW COOLANT SWITCH
	PASS-THRU	2 WIRE, 18GA STP					TBD	AFTERCOOLER LOW COOLANT SWITCH
	PASS-THRU						TBD	AFTERCOOLER LOW COOLANT SWITCH

FIELD INTERCONNECT CHART #22
GEN_02
FUEL CONTROL SYSTEM

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
GEN_02 FUEL CONTROL SYSTEM	DI.4.10 (SLOT 1, TERM 13)	14GA		32		GEN_02 DAY TANK	TBD	PUMP ON/OFF/HIGH COMMON
	DI.4.11 (SLOT 1, TERM 14)	14GA					TBD	DAY TANK HIGH LEVEL SWITCH
	DI.4.13 (SLOT 1, TERM 17)	14GA					TBD	DAY TANK PUMP ON
	DI.4.12 (SLOT 1, TERM 15)	14GA					TBD	DAY TANK PUMP OFF
	DI.4.14 (SLOT 1, TERM 18)	14GA					TBD	DAY TANK LOW LEVEL SWITCH
	F1 (TERM 21)	14GA					TBD	DAY TANK LOW LEVEL SWITCH
	DI.4.10 (SLOT 1, TERM 13)	14GA					TBD	DAY TANK LEAK DETECTION SWITCH
	DI.4.9 (SLOT 1, TERM 11)	14GA					TBD	DAY TANK LEAK DETECTION SWITCH
	DI.4.9 (SLOT 1, TERM 11)	14GA					TBD	DAY TANK VENT LEAK SWITCH
	F1 (TERM 22)	14GA					TBD	DAY TANK VENT LEAK SWITCH

FIELD INTERCONNECT CHART #23
GEN_02
24VDC BATTERY CHARGER

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
GEN_02 24VDC BATTERY CHARGER	TBD	10GA	DC	17		GEN_02 BATTERIES	TBD	GEN #2 BATT+
	TBD	10GA	DC				TBD	GEN #2 BATT-

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

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HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587
MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560

Power Secure

PG: 17 OF 22 REV: 1

DWG# NG2766-3-IC

FIELD INTERCONNECT CHART #24
GEN_03
CONTROL PANEL

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
GEN_03 CONTROL PANEL	TBD	12GA	AC	1		SGF-5 52-G3	5SBG-1	GEN #3 DIFFERENTIAL CT-ØA-X1
	TBD	12GA	AC				5SBG-2	GEN #3 DIFFERENTIAL CT-ØB-X1
	TBD	12GA	AC				5SBG-3	GEN #3 DIFFERENTIAL CT-ØC-X1
	TBD	12GA	AC				5SBG-4	GEN #3 DIFFERENTIAL CT-ØA-X2
	TBD	12GA	AC				5SBG-5	GEN #3 DIFFERENTIAL CT-ØB-X2
	TBD	12GA	AC				5SBG-6	GEN #3 DIFFERENTIAL CT-ØC-X2
	TBD	14GA	DC	13		GEN_03 FIRE ALARM	TBD	FIRE ALARM SYSTEM
	TBD	14GA	DC				TBD	FIRE ALARM SYSTEM
	G3 R05 C	14GA		16		GEN_03 RADIATOR FAN CONTROL BOX	TERMINAL 113	FAN START SIGNAL
	G3 R05-NO	14GA					TERMINAL 121	FAN START SIGNAL
	G3 BATT-	14GA	DC				TBD	FAN CONTACTOR AUX
	G3 DI 6	14GA	DC				TBD	FAN CONTACTOR AUX
	G3 RTD EXP MOD 2, CH1	2 WIRE, 18GA STP					PASS-THRU	RTD, RADIATOR INLET PIPE
							PASS-THRU	RTD, RADIATOR INLET PIPE
	G3 RTD EXP MOD 2, CH1	2 WIRE, 18GA STP					PASS-THRU	RTD, RADIATOR OUTLET PIPE
							PASS-THRU	RTD, RADIATOR OUTLET PIPE
	G3 BATT-	2 WIRE, 18GA STP					PASS-THRU	RADIATOR LOW COOLANT SWITCH
	G3 DI 7						PASS-THRU	RADIATOR LOW COOLANT SWITCH
	G3 BATT-	2 WIRE, 18GA STP					PASS-THRU	AFTERCOOLER LOW COOLANT SWITCH
	G3 DI 8						PASS-THRU	AFTERCOOLER LOW COOLANT SWITCH
				18		GEN_03 AFTERCOOLER PUMP		
	G3 RTD EXP MOD 2, CH2	2 WIRE, 18GA STP					TBD	RTD, AFTERCOOLER INLET PIPE
							TBD	RTD, AFTERCOOLER INLET PIPE
	G3 RTD EXP MOD 2, CH2	2 WIRE, 18GA STP					TBD	RTD, AFTERCOOLER OUTLET PIPE
							TBD	RTD, AFTERCOOLER OUTLET PIPE
	G3 CAT BAT-	14GA	DC	28		GEN_03 BATTERY CHARGER	3	BATT CHGR #3 ALARM COMMON
							6	
							C	
	G3 DI 3	14GA	DC				4	BATT CHGR #3 LO DC VOLTAGE
	G3 D1 4	14GA	DC				7	BATT CHGR #3 HI DC VOLTAGE
	G3 DI 5	14GA	DC				A	BATT CHGR #3 AC INPUT FAILURE
	G3 RO6 C	14GA		29		GEN_03 ATC PANEL	TBD	LOUVER/EXHAUST FAN CONTROL
	G3 RO6 NO	14GA					TBD	LOUVER/EXHAUST FAN CONTROL
				33		GEN_03 DAY TANK		TANK LEVEL SENSOR
								TANK LEVEL SENSOR
								TANK LEVEL SENSOR
								TANK LEVEL SENSOR
				34		GEN_03 COOLANT TEMP SENSORS		COOLANT TEMP SENSOR
								COOLANT TEMP SENSOR
								COOLANT TEMP SENSOR
								COOLANT TEMP SENSOR
				37		GEN_03 COOLANT BOOSTER PUMP		

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 18 OF 22 REV: 1

DWG# NG2766-3-4C

FIELD INTERCONNECT CHART #25
GEN_03
RADIATOR FAN CONTROL BOX

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
GEN_03 RADIATOR FAN CONTROL BOX	PASS-THRU	14GA	DC	15		GEN_03 RADIATOR	TBD	RTD, RADIATOR INLET PIPE
	PASS-THRU	14GA	DC				TBD	RTD, RADIATOR INLET PIPE
	PASS-THRU	14GA	DC				TBD	RTD, RADIATOR OUTLET PIPE
	PASS-THRU	14GA	DC				TBD	RTD, RADIATOR OUTLET PIPE
	PASS-THRU	2 WIRE, 18GA STP		30		GEN_03 RADIATOR & AFTERCOOLER EXPAN. TANKS	TBD	RADIATOR LOW COOLANT SWITCH
	PASS-THRU						TBD	RADIATOR LOW COOLANT SWITCH
	PASS-THRU	2 WIRE, 18GA STP					TBD	AFTERCOOLER LOW COOLANT SWITCH
	PASS-THRU						TBD	AFTERCOOLER LOW COOLANT SWITCH

FIELD INTERCONNECT CHART #26
GEN_03
FUEL CONTROL SYSTEM

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
GEN_03 FUEL CONTROL SYSTEM	DI.5.10 (SLOT 1, TERM 13)	14GA		32		GEN_03 DAY TANK	TBD	PUMP ON/OFF/HIGH COMMON
	DI.5.11 (SLOT 1, TERM 14)	14GA					TBD	DAY TANK HIGH LEVEL SWITCH
	DI.5.13 (SLOT 1, TERM 17)	14GA					TBD	DAY TANK PUMP ON
	DI.5.12 (SLOT 1, TERM 15)	14GA					TBD	DAY TANK PUMP OFF
	DI.5.14 (SLOT 1, TERM 18)	14GA					TBD	DAY TANK LOW LEVEL SWITCH
	F1 (TERM 21)	14GA					TBD	DAY TANK LOW LEVEL SWITCH
	DI.5.10 (SLOT 1, TERM 13)	14GA					TBD	DAY TANK LEAK DETECTION SWITCH
	DI.5.9 (SLOT 1, TERM 11)	14GA					TBD	DAY TANK LEAK DETECTION SWITCH
	DI.5.9 (SLOT 1, TERM 11)	14GA					TBD	DAY TANK VENT LEAK SWITCH
	F1 (TERM 22)	14GA					TBD	DAY TANK VENT LEAK SWITCH

FIELD INTERCONNECT CHART #27
GEN_03
24VDC BATTERY CHARGER

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
GEN_03 24VDC BATTERY CHARGER	TBD	10GA	DC	17	TBD	GEN_03 BATTERIES	TBD	GEN #3 BATT+
	TBD	10GA	DC		TBD		TBD	GEN #3 BATT-

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587
MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560

Power Secure

PG: 19 OF 22 REV: 1

DWG# NG2766-3-IC

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FIELD INTERCONNECT CHART #28
GEN_01
SCR SYSTEM

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
GEN_01 SCR SYSTEM	TBD	14GA		22		240V, 20A BREAKER	TBD	
	TBD	14GA					TBD	
	TBD	14GA					TBD	
	TBD	2 WIRE, 18GA STP		23		GEN_01 SCR REACTANT TANK	TBD	
	TBD						TBD	
	TBD	2 WIRE, 18GA STP					TBD	
	TBD						TBD	
	TBD	2 WIRE, 18GA STP					TBD	
	TBD						TBD	
	TBD	14GA		24		GEN_01 SCR AIR COMPRESSOR	TBD	
	TBD	14GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	14GA		25		GEN_01 SCR DOSING BOX	TBD	
	TBD	14GA					TBD	
	TBD	14GA					TBD	
	TBD	14GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	2 WIRE, 18GA STP		26		GEN_01 SCR EXHAUST OUTLET	TBD	
	TBD						TBD	
	TBD	2 WIRE, 18GA STP					TBD	
	TBD						TBD	
	TBD	18GA		27		GEN_01 SCR TEMP	TBD	OVER TEMP SWITCH
	TBD	18GA					TBD	OVER TEMP SWITCH
	TBD	18GA					TBD	THEROMOCOUPLE ON SCR HOUSING
	TBD	18GA					TBD	THEROMOCOUPLE ON SCR HOUSING

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER: 1609 Heritage Commerce Ct. Wake Forest, NC 27587
MANUFACTURING: 300 Kitty Hawk Dr. Morrisville, NC 27560

Power Secure

PG: 20 OF 22 REV: 1
DWG# NG2766-34C

FIELD INTERCONNECT CHART #29
GEN_02
SCR SYSTEM

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
GEN_02 SCR SYSTEM	TBD	14GA		22		240V, 20A BREAKER	TBD	
	TBD	14GA					TBD	
	TBD	14GA					TBD	
	TBD	2 WIRE, 18GA STP		23		GEN_02 SCR REACTANT TANK	TBD	
	TBD						TBD	
	TBD	2 WIRE, 18GA STP					TBD	
	TBD						TBD	
	TBD	2 WIRE, 18GA STP					TBD	
	TBD						TBD	
	TBD	14GA		24		GEN_02 SCR AIR COMPRESSOR	TBD	
	TBD	14GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	14GA		25		GEN_02 SCR DOSING BOX	TBD	
	TBD	14GA					TBD	
	TBD	14GA					TBD	
	TBD	14GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	2 WIRE, 18GA STP		26		GEN_02 SCR EXHAUST OUTLET	TBD	
	TBD						TBD	
	TBD	2 WIRE, 18GA STP					TBD	
	TBD						TBD	
	TBD	18GA		27		GEN_02 SCR TEMP	TBD	OVER TEMP SWITCH
	TBD	18GA					TBD	OVER TEMP SWITCH
	TBD	18GA					TBD	THEROMOCOUPLE ON SCR HOUSING
	TBD	18GA					TBD	THEROMOCOUPLE ON SCR HOUSING

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 21 OF 22 REV: 1

DWG# NG2766-3-IC

FIELD INTERCONNECT CHART #30
GEN_03
SCR SYSTEM

ORIGIN	ORIGIN TERMINAL BLOCK	MINIMUM WIRE GAUGE	AC/DC	CONDUIT	FIELD WIRE DESCRIPTION	DESTINATION	DESTINATION TERMINAL BLOCK	FUNCTIONAL DESCRIPTION
GEN_03 SCR SYSTEM	TBD	14GA		22		240V, 20A BREAKER	TBD	
	TBD	14GA					TBD	
	TBD	14GA					TBD	
	TBD	2 WIRE, 18GA STP		23		GEN_03 SCR REACTANT TANK	TBD	
	TBD						TBD	
	TBD	2 WIRE, 18GA STP					TBD	
	TBD						TBD	
	TBD	2 WIRE, 18GA STP					TBD	
	TBD						TBD	
	TBD	14GA		24		GEN_03 SCR AIR COMPRESSOR	TBD	
	TBD	14GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	14GA		25		GEN_03 SCR DOSING BOX	TBD	
	TBD	14GA					TBD	
	TBD	14GA					TBD	
	TBD	14GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	18GA					TBD	
	TBD	2 WIRE, 18GA STP		26		GEN_03 SCR EXHAUST OUTLET	TBD	
	TBD						TBD	
	TBD	2 WIRE, 18GA STP					TBD	
	TBD						TBD	
	TBD	18GA		27		GEN_03 SCR TEMP	TBD	OVER TEMP SWITCH
	TBD	18GA					TBD	OVER TEMP SWITCH
	TBD	18GA					TBD	THEROMOCOUPLE ON SCR HOUSING
	TBD	18GA					TBD	THEROMOCOUPLE ON SCR HOUSING

FIELD NOTES

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JOB NAME: Arlington AWPCP Expansion – Phase 7F
JOB LOCATION: Arlington, VA
DRAWN BY: J. Talton
ENGR: R. Stone
DATE: 09/03/09
DRAWING STATUS:

REV.	DATE	DESCRIPTION
1	12/14/09	Resubmittal
2	9/29/10	As Shipped

EQUIPMENT DESIGNATION:
EQUIPMENT TYPE:
DRAWING TYPE: Interconnect Chart

HEADQUARTER:
1609 Heritage Commerce Ct.
Wake Forest, NC 27587

MANUFACTURING:
300 Kitty Hawk Dr.
Morrisville, NC 27560

Power Secure

PG: 22 OF 22 REV: 1

DWG# NG2766-3-IC

Attachment D

Quote # 08-0741-c-A-A

DATA SHEET

Date Sent: 7/28/2009

9037 Sheridan Road Kenosha, WI 53143
Phone: (262) 942-1414 Fax: (262) 942-1410

Title
Stacked dual circuit

Prepared for: Gregory Poole Power Systems
701 Blue Ridge Road
Raleigh, NC. 27606
Attn: Jeff Johnson

Job Reference
Arlington WTP

Engine Data

Engine Manufacturer: Caterpillar
Engine Model: D3516C
Rating: Standby
HP: KW: 2500 HZ: 60 RPM: 1800
Manifold Type: Dry Coolant: 50 % E.G.
Data Supllied By: Customer

JW Heat Load:	51,923	Btu/Min
JW Flow:	353	GPM
JW Outlet Temp:	220	Deg. F
AC Heat Load:	45,562	Btu/Min
AC Flow:	300	GPM
AC Inlet Temp:	134	Deg. F

Site Data

Ambient:	115	Deg. F	Environment	Site Location:	Open Area
Deg. Air Rise:	0	Deg. F	Normal	Total External Static:	0.25 Inches H2O
Elevation:	500	Ft		Data Supplied By:	Customer

Radiator Data

Radiator Model: EC119F stkd, galvanized

CFM:	137,999		Fan Drive Type:	V-Belt			
Fan Speed:	470	RPM	Horse Power:	75		JW	AC
Fan Diameter:	108	Inches	Motor RPM:	1760	Pressure Drop:	0	0 PSI
Fan Tip Speed:	13,289	FPM	Phase:	3	Number of Passes:	0	0
Fan Type:	Blower		HZ:	60			
Fan Part #:	Moore 108 in 8 bl 29.7		Volts:	230/460			
Number of Blades:	8						
Blade Material:	Alum Adj Pitch, Airfoil		Radiator SPL:	@ 25 FT			

To be provided with

10/6/09: Revision 01 adds this correct data sheet.

Available Optional Equipment

RCC1502-3516C Remote CAC package
100 gal remote mtd split surge tank
300 gpm pump for RCC circuit(50` of head)
Circuit Setter for pump
75 hp motor starter, w CB disconnect
galvanized & seal weld structure, included
solder coated cores, included

Special Notes:

Prepared By: Todd Sorensen **Representative:** Lawing

QMSR # 137	Orig. Date: 08/20/1996	Rev. B	Rev. Date: 09/29/2003	Approved By: Todd Sorensen

HC119S02
Construction Design & Materials

The materials and the construction design for the HC119S02 are as follows:

- Back section and cooling section frame work is of bolted construction

- Metal thicknesses run from 14ga. to 3/4”

- Back section includes built in fork pockets on all for sides for lifting

- Drive components include: belts, sheaves, motor, plastic grease lines, dual bearings and aluminum constructed fan (108” diameter)

- Cores are constructed of solder coated copper fins, brass tubes, brass headers, brass header reinforcements and soldered joints

- Connection hook ups are standard ANSI flanges

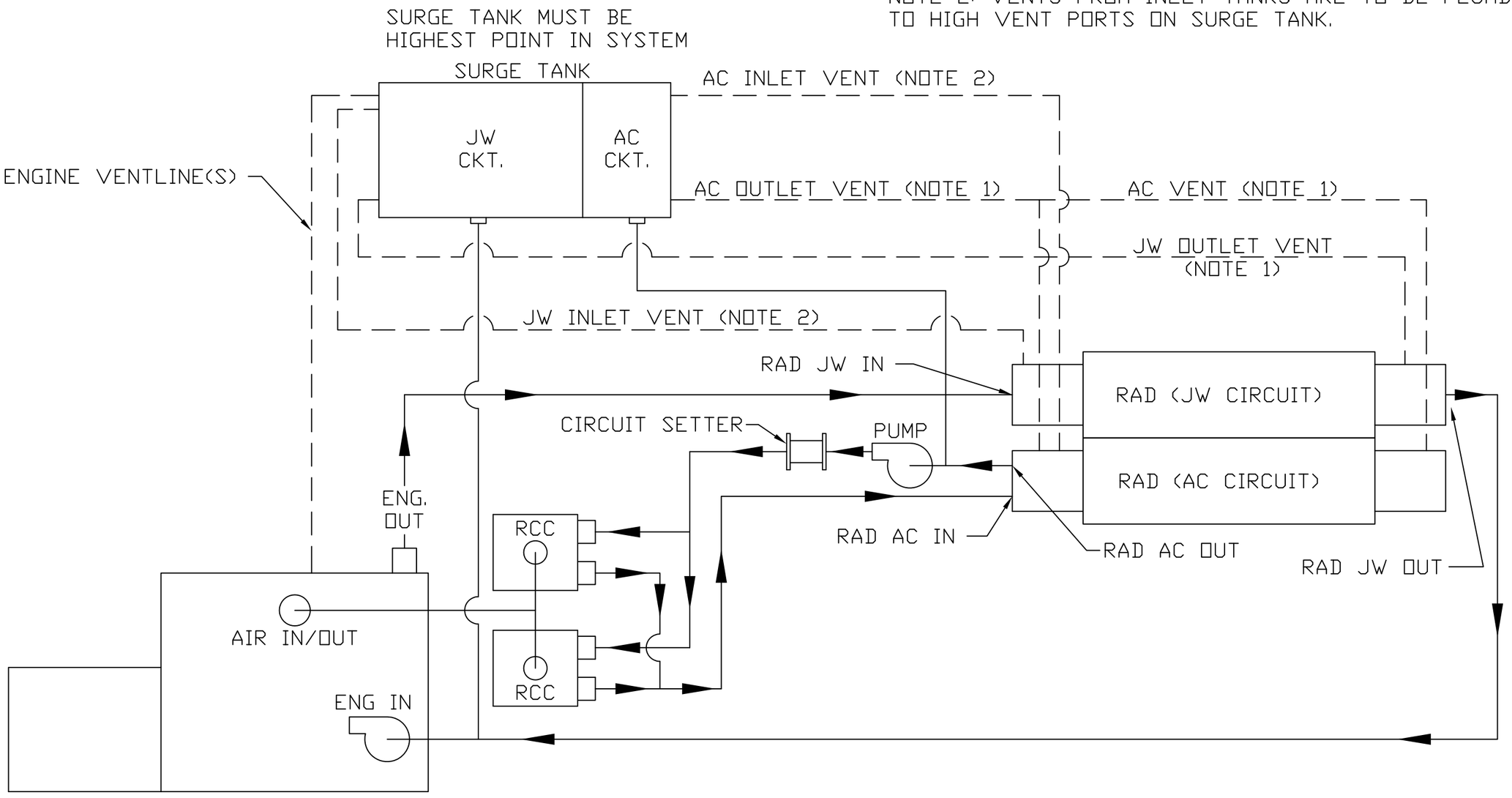
- Core guards are 6ga. wire

- Cooling section gaskets are made from Hypalon

- All guarding and main frame work are coated in galvanize

NOTE 1: VENTS FROM OUTLET TANKS MUST BE PLUMBED TO LOW VENT PORTS ON THE SURGE TANK DUE TO SUCTION IN THESE TANKS

NOTE 2: VENTS FROM INLET TANKS ARE TO BE PLUMBED TO HIGH VENT PORTS ON SURGE TANK.



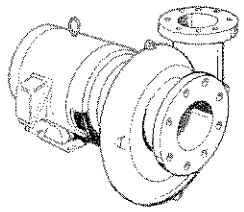
COOLING SYSTEM SCHEMATIC
PB (10/7/09)

ITT

SUBMITTAL

B-336F

JOB:	**REPRESENTATIVE:** Edward D. Nugent Co.	
UNIT TAG: 213JM Motor Frame	**ORDER NO.**	**DATE:** 3/10/2010
ENGINEER:	**SUBMITTED BY:** IEA	**DATE:**
CONTRACTOR:	**APPROVED BY:**	**DATE:**



3BC
Series 1531
Close-Coupled Centrifugal Pumps

SPECIFICATIONS

FLOW	300	HEAD	50
HP	7.50	RPM	1750
VOLTS	480		
CYCLE	60	PHASE	3
TEFC			
APPROX. WEIGHT			
SPECIALS:			

MATERIALS OF CONSTRUCTION

☐ BRONZE FITTED ☐ ALL IRON

MAXIMUM WORKING PRESSURE

☒ 175 psi (12 bar) W.P.
with 125# ANSI flange drilling

TYPE OF SEAL

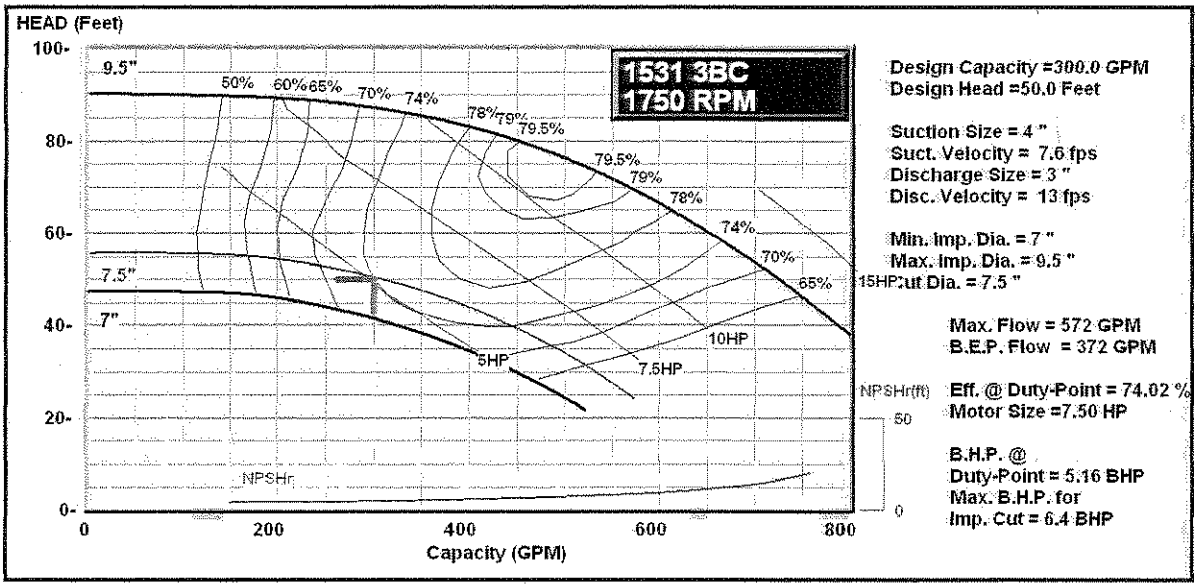
☐ 1531 Standard Seal
(Buna-Carbon/Ceramic)

☐ 1531 -F Standard Seal w/ Flush Line
(Buna-Carbon/Ceramic)

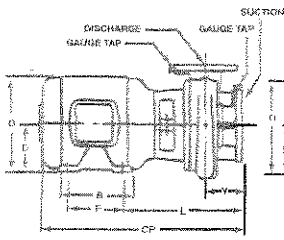
☐ 1531 -S Stuffing Box construction w/ Flushed Mechanical Single Seal
(EPR-Tungsten Carbide/Carbon)

☐ 1531 -D Stuffing Box construction w/ Flushed Double Mechanical Seal
(EPR-Carbon/Ceramic)
Requires external water source

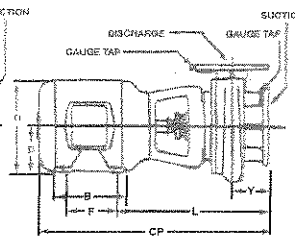
☐ 1531 -PF Stuffing Box Construction
w/ Flushed Packing
(Graphite Impregnated Teflon)



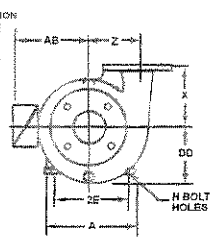
Bell & Gossett



STANDARD MECH. SEAL



STUFFING BOX TYPE



SIZE OF PUMP AND DISCHARGE	SUCTION	PUMP DIMENSIONS IN INCHES (MM)			
		DD	X	Y	Z
3BC	4	7 (178)	7-1/2 (191)	4-3/4 (121)	6-1/8 (156)

PIPE SIZE OF FLANGE	O.D. OF FLANGE	DIA. OF BOLT CIRCLE	NO. OF BOLTS	SIZE OF BOLTS
3	7-1/2 (190)	6 (152)	4	5/8
4	9 (229)	7-1/2 (190)	8	5/8

DIMENSIONS – Inches (mm)

STANDARD SEAL 1531, 1531-F

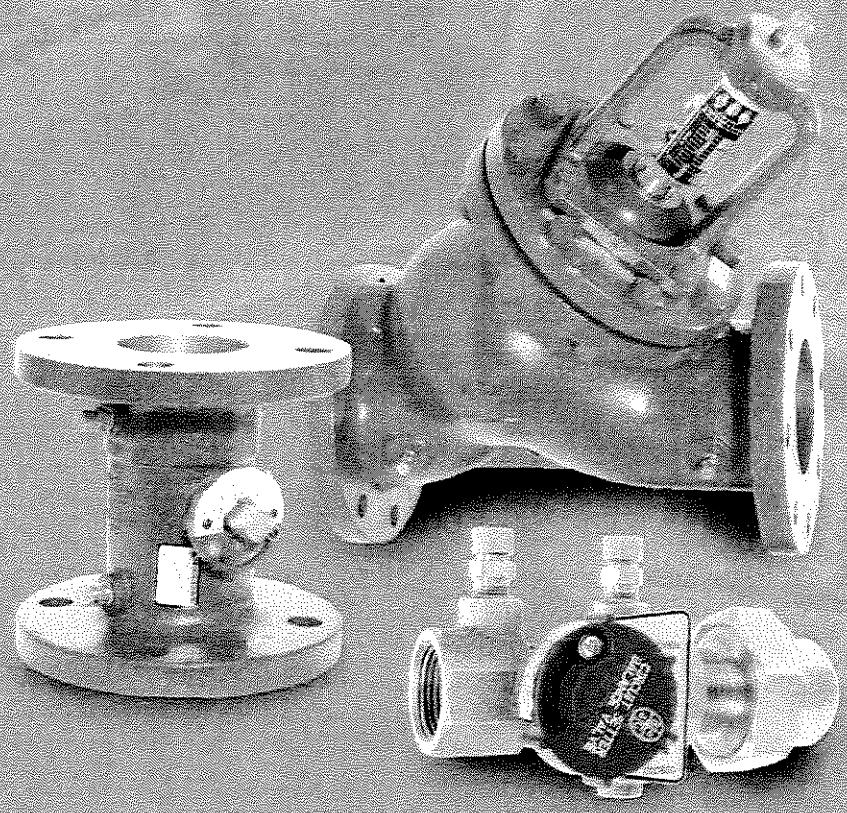
MOTOR FRAME	A (Max)	AB (Max)	B (Max)	CP (Max)	D	2E	F	H	L	O (Max)
182JM	9 (229)	8-1/2 (216)	6-1/2 (165)	23-7/8 (606)	4-1/2 (114)	7-1/2 (190)	4-1/2 (114)	13/32 (10)	13-7/16 (341)	9-3/8 (238)
184JM	9 (229)	8-1/2 (216)	7-1/2 (190)	23-7/8 (606)	4-1/2 (114)	7-1/2 (190)	5-1/2 (140)	13/32 (10)	13-7/16 (341)	9-3/8 (238)
213JM	10-3/4 (273)	10-3/4 (273)	7-1/2 (190)	26 (660)	5-1/4 (133)	8-1/2 (216)	5-1/2 (140)	13/32 (10)	14-5/16 (364)	11-1/8 (283)
215JM	10-3/4 (273)	10-3/4 (273)	9 (229)	27-1/2 (698)	5-1/4 (133)	8-1/2 (216)	7 (178)	13/32 (10)	14-5/16 (364)	11-1/8 (283)
254JP	12-1/2 (318)	10-3/4 (273)	10-3/4 (273)	34-3/8 (873)	6-1/4 (159)	10 (254)	8-1/4 (210)	17/32 (13)	18-11/16 (475)	13-1/8 (333)
284JP	14 (356)	12-5/8 (321)	12-1/2 (318)	35-5/8 (905)	7 (178)	11 (279)	9-1/2 (241)	17/32 (13)	18-11/16 (475)	15 (381)
286JP	14 (356)	12-5/8 (321)	14 (356)	37-1/8 (943)	7 (178)	11 (279)	11 (279)	17/32 (13)	18-11/16 (475)	15 (381)
324JP	16 (406)	15-1/8 (384)	14 (356)	38-1/2 (978)	8 (203)	12-1/2 (318)	10-1/2 (267)	21/32 (17)	19-3/16 (487)	17 (432)
326JP	16 (406)	15-1/8 (384)	15-1/2 (394)	40 (1016)	8 (203)	12-1/2 (318)	12 (305)	21/32 (17)	19-3/16 (487)	17 (432)

STUFFING BOX 1531-PF, 1531-S, 1531-D

MOTOR FRAME	A (Max)	AB (Max)	B (Max)	CP (Max)	D	2E	F	H	L	O (Max)
182JP	9 (229)	8-1/2 (216)	6-1/2 (165)	27 (686)	4-1/2 (114)	7-1/2 (190)	4-1/2 (114)	13/32 (10)	16-9/16 (421)	9-3/8 (238)
184JP	9 (229)	8-1/2 (216)	7-1/2 (190)	27 (686)	4-1/2 (114)	7-1/2 (190)	5-1/2 (140)	13/32 (10)	16-9/16 (421)	9-3/8 (238)
213JP	10-3/4 (273)	10-3/4 (273)	7-1/2 (190)	29-7/8 (759)	5-1/4 (133)	8-1/2 (216)	5-1/2 (140)	13/32 (10)	18-3/16 (462)	11-1/8 (283)
215JP	10-3/4 (273)	10-3/4 (273)	9 (229)	31-3/8 (797)	5-1/4 (133)	8-1/2 (216)	7 (178)	13/32 (10)	18-3/16 (462)	11-1/8 (283)
254JP	12-1/2 (318)	10-3/4 (273)	10-3/4 (273)	34-3/8 (873)	6-1/4 (159)	10 (254)	8-1/4 (210)	17/32 (13)	18-11/16 (475)	13-1/8 (333)
284JP	14 (356)	12-5/8 (321)	12-1/2 (318)	35-5/8 (905)	7 (178)	11 (279)	9-1/2 (241)	17/32 (13)	18-11/16 (475)	15 (381)
286JP	14 (356)	12-5/8 (321)	14 (356)	37-1/8 (943)	7 (178)	11 (279)	11 (279)	17/32 (13)	18-11/16 (475)	15 (381)
324JP	16 (406)	15-1/8 (384)	14 (356)	38-1/2 (978)	8 (203)	12-1/2 (318)	10-1/2 (267)	21/32 (17)	19-3/16 (487)	17 (432)
326JP	16 (406)	15-1/8 (384)	15-1/2 (394)	40 (1016)	8 (203)	12-1/2 (318)	12 (305)	21/32 (17)	19-3/16 (487)	17 (432)

Dimensions are subject to change. Not to be used for construction purposes unless certified.

Circuit Setter Plus® Calibrated Balance Valves



Accurate Flow Control

- Pre-balance design capability
- Proportional balance capability
- Positive shut off
- Memory stop indicator
- Integral valved readout ports

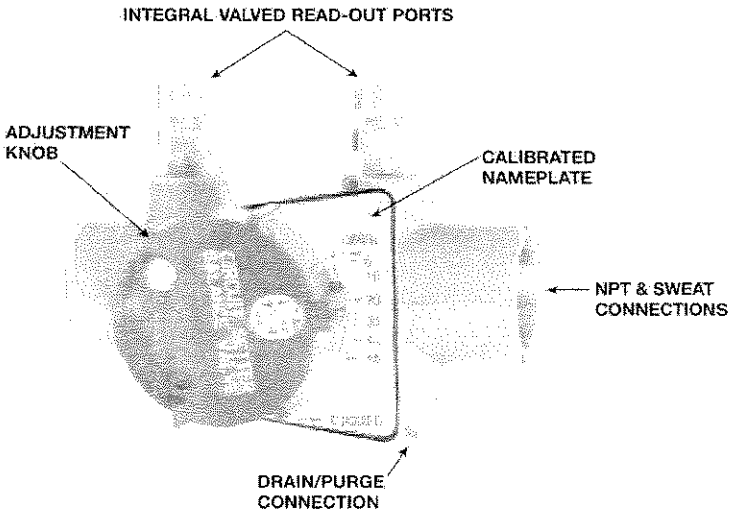
Bell & Gossett®

ITT Industries
Engineered for life

CIRCUIT SETTER CALIBF

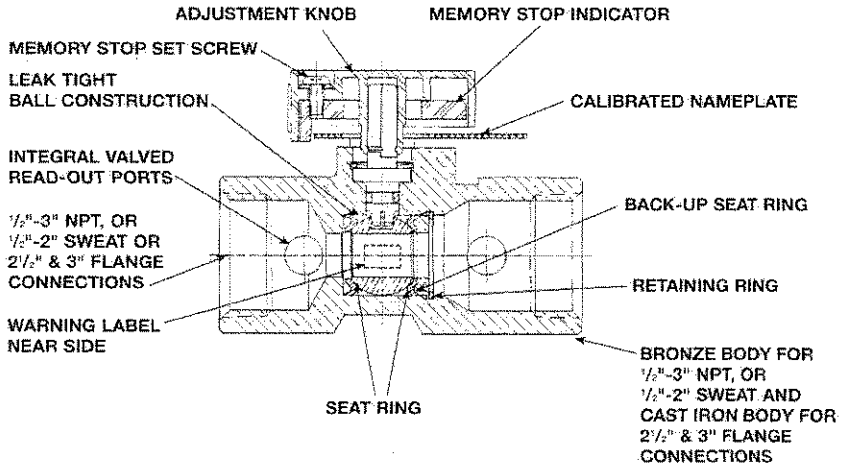
The CIRCUIT SETTER calibrated balance valve is designed specifically for pre-set proportional system balance. This system balance method, developed by B&G, assures optimum system flow balance at minimum operating horsepower. Balance valves can be simply pre-set using the B&G Circuit Setter Calculator or

CIRCUIT SETTER PLUS NPT AND SWEAT MODELS



½" – 3" NPT ½" – 2" SWEAT

- PROPORTIONAL BALANCE
  Permits rapid accurate system balance
- POSITIVE SHUT-OFF
  For isolation and service
- MEMORY STOP
  Allows complete shut-off and return to set position without readjustment
- READOUT VALVES
  To facilitate differential pressure readings
- DRAIN CONNECTION
  Circuit Setter Plus models only: Permits draining of terminal units without draining circuit piping

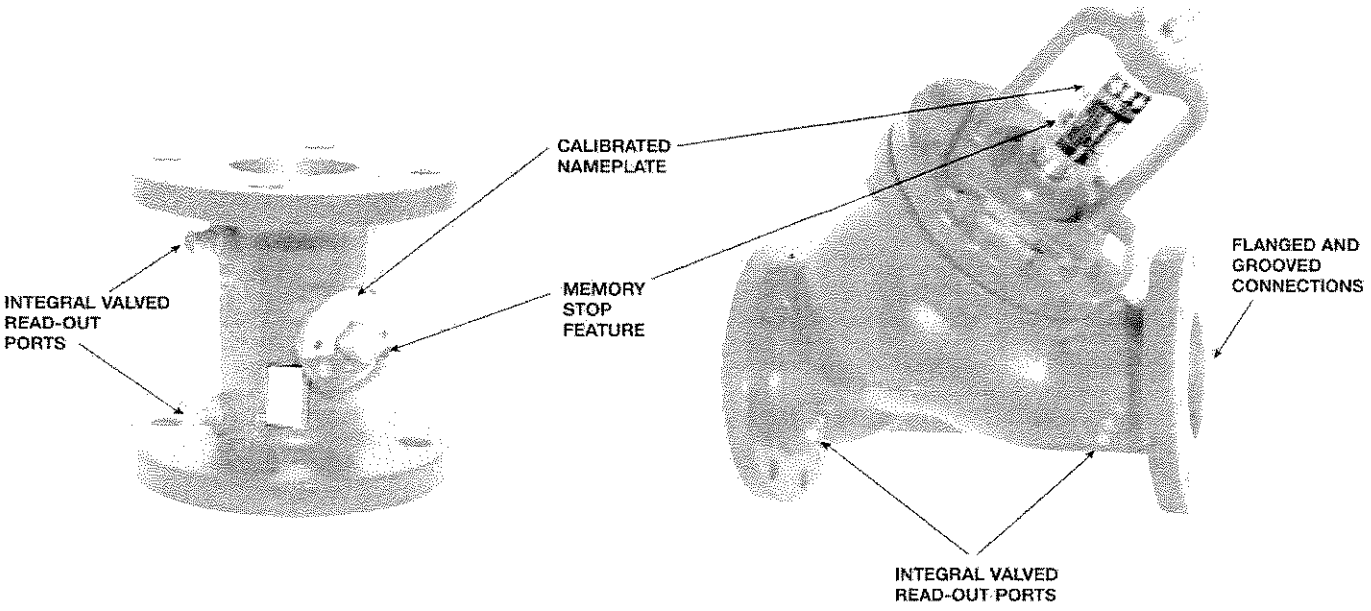


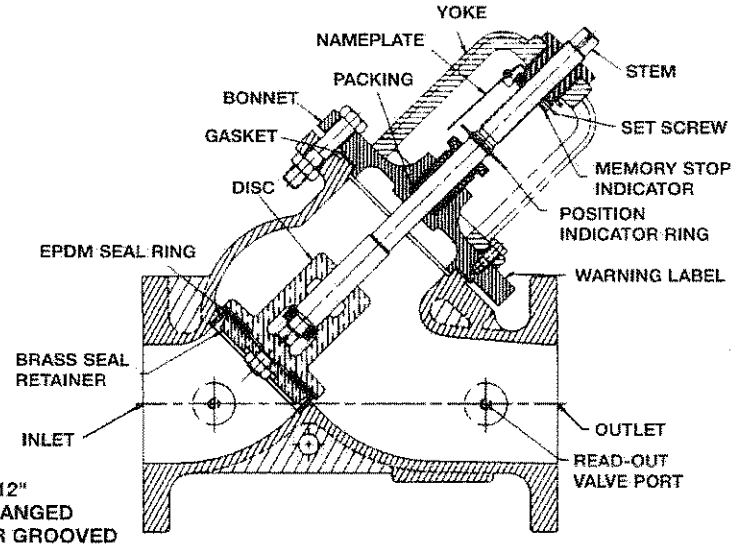
Quality manufacturing and materials provide leak-tight construction and repeatable performance in every valve. The precision machined brass ball is backed up with 20% glass and carbon filled TFE seat rings. Valve seats do not distort with extended use. Permanent valve accuracy is assured.

RATED BALANCE VALVES

Curve Booklet A560 and the system piping plan. With this procedure, system balance and start-up time is reduced dramatically. Pump impeller trim after system balance will reduce system horsepower and operating costs to minimum levels.

FLANGED AND GROOVED MODELS





The globe style valve incorporates a contoured brass plug which enhances the precision balancing capabilities of the valve. The durable EPDM seal ring allows for drop tight shut off even through extended use. A positive metal to metal lock is ensured by the memory stop indicator.

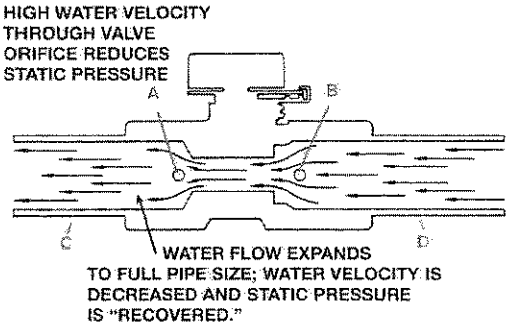
A balance valve, a flow meter, a drip tight service valve

CIRCUIT SETTER ASSURES OPTIMUM SYSTEM FLOW BALANCE WITH MINIMUM HORSEPOWER

The B&G CIRCUIT SETTER PLUS calibrated balance valve has been designed, manufactured and tested to provide the cost saving advantages of pre-set proportional balance. Each valve is a three function precision instrument providing flow balance, flow metering and shut-off.

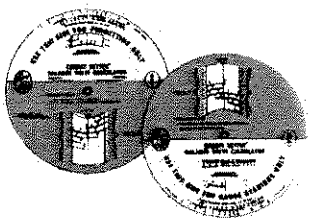
VELOCITY HEAD RECOVERY

Changes in fluid velocity through the valve orifice are as illustrated. Actual pressure drop imposed against the pump (ΔP from C to D) is on the order .7 to .9 of the value as read across the read-out ports A-B. These differences are significant enough to require two different sets of ΔP data to be shown on the Circuit Setter Balance Valve Calculator.



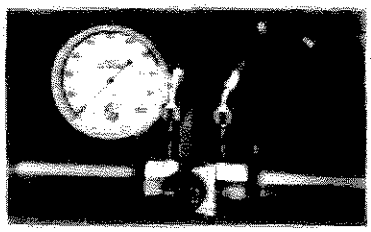
CIRCUIT SETTER BALANCE VALVE CALCULATOR

The Circuit Setter Calculator is the result of rigorous laboratory tests. Side 1 plots actual system imposed head loss versus flow for various valve settings. This scale is used for pre-set balance determination. Side 2 is used when taking gauge readings across the Circuit Setter balance valve – using the valve as a flow meter.



VARIABLE ORIFICE FLOW METER

Circuit Setter balance valves can be used as a variable orifice flow meter. A ΔP meter is applied directly across the valved read-out ports. Determine flow rate by using Side 2 of the Circuit Setter Calculator.



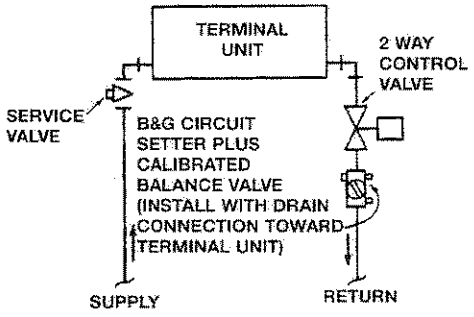


FIGURE 1
PIPING ARRANGEMENT
WITH 2 WAY CONTROL VALVE

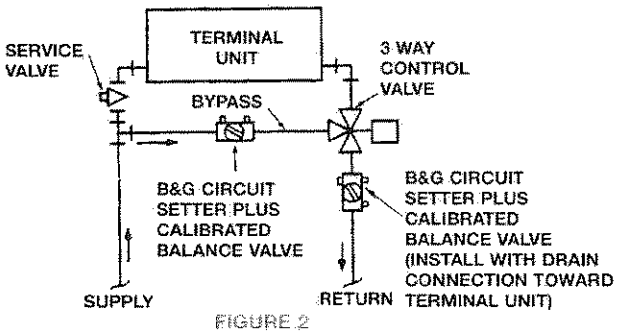


FIGURE 2
PIPING ARRANGEMENT
WITH 3 WAY CONTROL VALVE

For hydronic applications

When terminal equipment and control valves are piped as illustrated (Figures 1 and 2) the combined use of a service valve and the Circuit Setter Plus calibrated balance valve permits complete isolation of the terminal unit and control valve. Drain connection on Circuit Setter balance valve should be toward terminal unit.

A typical piping arrangement for installing Circuit Setters to balance branches and terminal units is shown in Figure 3.

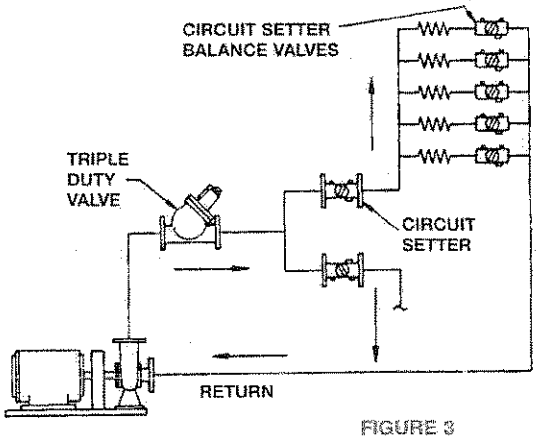
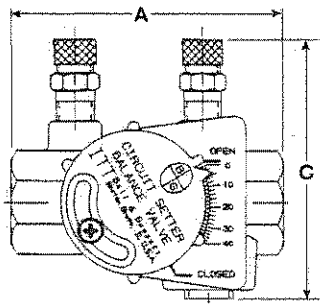
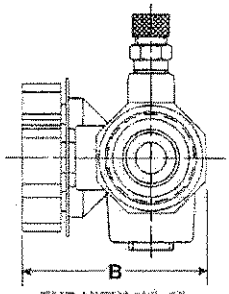


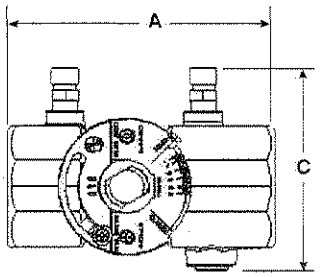
FIGURE 3



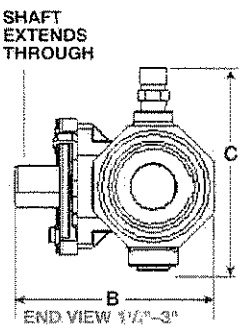
TOP VIEW ½"–1"



END VIEW ½"–1"



TOP VIEW 1¼"–3"

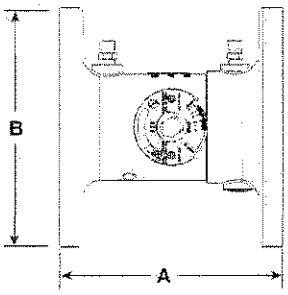


END VIEW 1¼"–3"

NOTE:

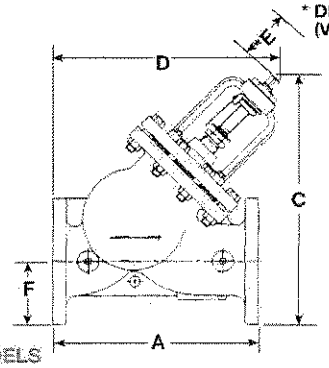
Bell & Gossett Circuit Setter Balance Valves are not recommended for use with read-out connections pointing down.

All models are designed for positive shut-off and service.

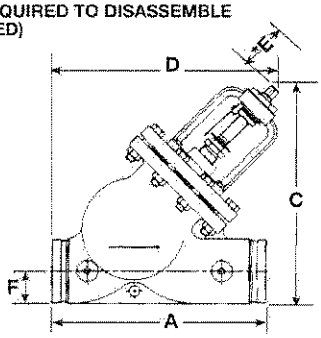


SIZES 2½"–4"

FLANGED MODELS



SIZES 4"–12"



GROOVED MODELS

SIZES 4"–12"

DIMENSIONS AND WEIGHTS

DIMENSIONS IN INCHES* (MM)																	
MODEL NO.	PART NO.	SIZE	CONNS.	A		B		C		D			E	F	MAX. WIDTH OF VALVE	WEIGHT IN LBS.(KG)
				NORMAL	INSUL.	NORMAL	INSUL.	NORMAL	INSUL.	OPEN	CLOSED	OPEN	CLOSED				
CB-½S	117412	½	Sweat	2¹⁵⁄₁₆(74.6)	4¹³⁄₁₆(123.8)	2¹⁵⁄₁₆(54.0)	3¹⁵⁄₁₆(96.4)	2⁹⁄₁₆(65.1)	6½(165.1)	—	—	—	—	—	—	—	1(.5)
CB-¾S	117413	¾		3⅜(86.9)		2¼(57.2)		2¾(69.9)		—	—	—	—	—	—	—	1¼(.6)
CB-1S	117491	1		4¼(108.7)	—	2⅜(60.3)	—	3⅛(84.9)	—	—	—	—	—	—	—	—	2(.9)
CB-1¼S	117402	1¼		4¹⁵⁄₁₆(124.6)	—	3⅞(98.1)	—	3½(88.7)	—	—	—	—	—	—	—	—	3(1.4)
CB-1½S	117402	1½		5³⁄₁₆(132.6)	—	3⅜(83.3)	—	4(101.6)	—	—	—	—	—	—	—	—	3½(1.6)
CB-2S	117404	2		6¼(160.3)	—	3⅞(99.2)	—	4⅜(113.5)	—	—	—	—	—	—	—	—	5½(2.5)
CB-½	117414	½	NPT	2¹⁵⁄₁₆(74.6)	4¹³⁄₁₆(123.8)	2⁹⁄₁₆(65.8)	3¹⁵⁄₁₆(98.4)	2⁹⁄₁₆(69.9)	6½(165.1)	—	—	—	—	—	—	—	1¼(.6)
CB-¾	117415	¾		3⅛(77.8)		2⅜(60.3)		2¾(74.6)		—	—	—	—	—	—	—	1½(.7)
CB-1	117416	1		3½(86.8)		2¹⁵⁄₁₆(65.3)		3¼(81.0)		—	—	—	—	—	—	—	2(.9)
CB-1¼	117103	1¼		4⅜(111.1)	5⅝(142.9)	3⅝(83.3)	5(127.0)	3½(88.9)	7⅜(187.3)	—	—	—	—	—	—	—	3¼(1.5)
CB-1½	117104	1½		4⅜(112.7)		3⅝(88.1)		3¹⁵⁄₁₆(96.8)		—	—	—	—	—	—	—	3¾(1.7)
CB-2	117105	2		5¼(130.2)	6¼(158.8)	4¼(102.4)	5⅝(141.3)	4⅞(108.0)	7¾(196.9)	—	—	—	—	—	—	—	5½(2.5)
CB-2½	117106	2½		6(152.4)	7⅝(193.7)	4⅝(115.1)	6¾(171.5)	4¹³⁄₁₆(119.1)	8⅝(219.0)	—	—	—	—	—	—	—	8¾(4.0)
CB-2½F	117116		Flgd.	6¾(166.7)	—	7(127.8)	—	—	—	—	—	—	—	—	—	—	23(10.5)
CB-3	117107	3	NPT	6¼(165.1)	7⅝(193.7)	5³⁄₁₆(132.6)	6¾(171.5)	5⅜(134.9)	8⅝(219.0)	—	—	—	—	—	—	—	12¾(5.8)
CB-3F	117117		Flgd.	6¹³⁄₁₆(173.0)	—	7¹⁄₁₆(180.5)	—	—	—	—	—	—	—	—	—	—	29(13.2)
CB-4	117035	4		8(203.2)	—	9(228.6)	—	—	—	—	—	—	—	—	—	—	41(18.5)
CB-4F	117112			14 ½(368.3)	—	—	—	—	—	18⅞(479.4)	17⅜(452.4)	17⅛(435.0)	16(406.4)	7⅝(193.7)	4½(114.3)	9(228.6)	100(45.5)
CB-4G	117118		Grvd.	15 ½(394.2)	—	—	—	—	—	16⅝(422.3)	15⅞(385.3)	17⅛(435.0)	16(406.4)		2½(57.2)		76(34.5)
CB-5F	117113	5	Flgd.	16(406.4)	—	—	—	—	—	20⅞(519.1)	19¾(487.4)	18⅜(466.7)	17½(435.0)	8⅝(212.7)	5(127.0)	16(254.0)	120(54.6)
CB-5G	117119		Grvd.	17½(435.0)	—	—	—	—	—	18⅝(462.6)	18⅛(431.0)	18½(394.4)	17½(447.7)		2½(76.6)		92(41.8)
CB-6F	117114	6	Flgd.	18(457.2)	—	—	—	—	—	22⅝(574.7)	21⅞(539.0)	20½(517.5)	19(482.6)	9⅝(247.7)	5½(139.7)	11(279.4)	197(89.6)
CB-6G	117120		Grvd.	19(482.6)	—	—	—	—	—	20⅜(519.1)	19⅞(483.4)	20½(530.2)	19½(495.3)		3½(84.1)		171(77.7)
CB-8F	117115	8	Flgd.	21¾(546.1)	—	—	—	—	—	26⅜(670.7)	24½(630.2)	23½(600.1)	22¾(562.0)	12½(314.3)	6½(171.5)	14¼(362.0)	327(148.6
CB-8G	117121		Grvd.	22½(571.5)	—	—	—	—	—	23⅞(608.8)	22½(568.5)	23½(600.1)	22(558.8)		4½(109.5)		281(127.7,
CB-10F	117420	10	Flgd.	25½(647.7)	—	—	—	—	—	31⅛(866.5)	29½(748.3)	28½(723.9)	26½(666.8)	14½(368.3)	8(203.2)	17(431.8)	455(206.8)
CB-10G	117422		Grvd.	26½(673.1)	—	—	—	—	—	29¾(739.8)	26½(682.6)	28½(723.9)	26½(679.5)		5½(136.5)		302(137.3)
CB-12F	117421	12	Flgd.	30(762)	—	—	—	—	—	35½(911.2)	35½(850.9)	31⅛(796.9)	29(736.6)	17½(498.2)	9½(241.3)	20(508)	695(315.9)
CB-12G	117423		Grvd.	31(784.4)	—	—	—	—	—	32⅝(831.9)	30⅜(771.5)	31⅛(809.6)	29½(749.3)		6½(161.9)		470(213.6)

* Do not use for construction. Dimensions are approximate and subject to change. Contact factory for certified dimensions.

Typical Specifications

Furnish and install as shown on plans and with manufacturer's recommendations Model CB calibrated balance valves.

PRE-SET BALANCE FEATURE

Valves to be designed to allow installing contractor to pre-set balance points for proportional system balance prior to system start-up in accordance with pre-set balance schedule.

SELECT PARAGRAPHS A or B

A. Valves ½" to 2" Pipe Size, NPT or Sweat
Valves 2½" and 3" Pipe Size, NPT

VALVE DESIGN AND CONSTRUCTION

All valves to be of bronze body/brass ball construction with glass and carbon filled TFE seat rings. Valves to have differential pressure read-out ports across valve seat area. Read-out ports to be fitted with internal EPT insert and check valve. Valve bodies to have ¼" NPT tapped drain/purge port. Valves to have memory stop feature to allow valve to be closed for service and then reopened to set point without disturbing balance position. All valves to have calibrated nameplate to assure specific valve setting. Valves to be leak-tight at full rated working pressure.

DESIGN PRESSURE/TEMPERATURE

½"-3" NPT connections:
300 psig (2069 kPa) at 250°F (121°C)
½"-2" Sweat connections:
200 psig (1379 kPa) at 250°F (121°C)*

*Based on 95-5 Tin-Antimony

B. Valves 2½" to 4" Pipe Size, Flanged
Valves 4" to 12" Pipe Size, Flanged or Grooved

VALVE DESIGN AND CONSTRUCTION

Valve shall be of heavy-duty (select one: cast iron [flanged models only] or ductile iron [grooved models only]) _____ construction with (select one: 125 psi [862 kPa] ANSI flanged or standard cut groove) _____ connections suitable up to 175 psi (1207 kPa) working pressure. Valves 2½"-3" pipe shall have a brass ball with glass and carbon filled TFE seat rings. Valves 4"-12" shall be fitted with a bronze seat, replaceable bronze disc with EPDM seal insert, and stainless steel stem. Valves to have memory stop feature to allow valve to be closed for service and then reopened to set point without disturbing balance position. All valves to have calibrated nameplate to assure specific valve setting. Valves to be leak-tight at full rated working pressure.

DESIGN PRESSURE/TEMPERATURE

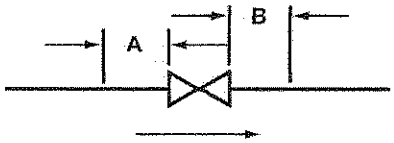
175 psig (1207 kPa) at 250°F (121°C)

IMPORTANT

When monitoring system flow, care must be exercised to avoid direct skin or eye contact with liquids that may escape. Liquids with temperatures in excess of 120°F (49°C) may cause burns.

To retain calibrated accuracy, a minimum lenth of unrestricted straight pipe adjacent to the valve should be maintained as follows:

SIZE	UPSTREAM"A" (In Pipe Diameters)	DOWNSTREAM "B" (In Pipe Diameters)
½"-3"	3	1
4"-12"	5	2



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ISO 9001 Certified

INTL.
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Phone: (847) 966-3700
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www.bellgossett.com

CANADA
Fluid Products Canada
55 Royal Road
Guelph, Ontario,
N1H 1T1, Canada
Phone: (519) 821-1900
www.ittfpc.ca

ITT

Bulletin B-305F

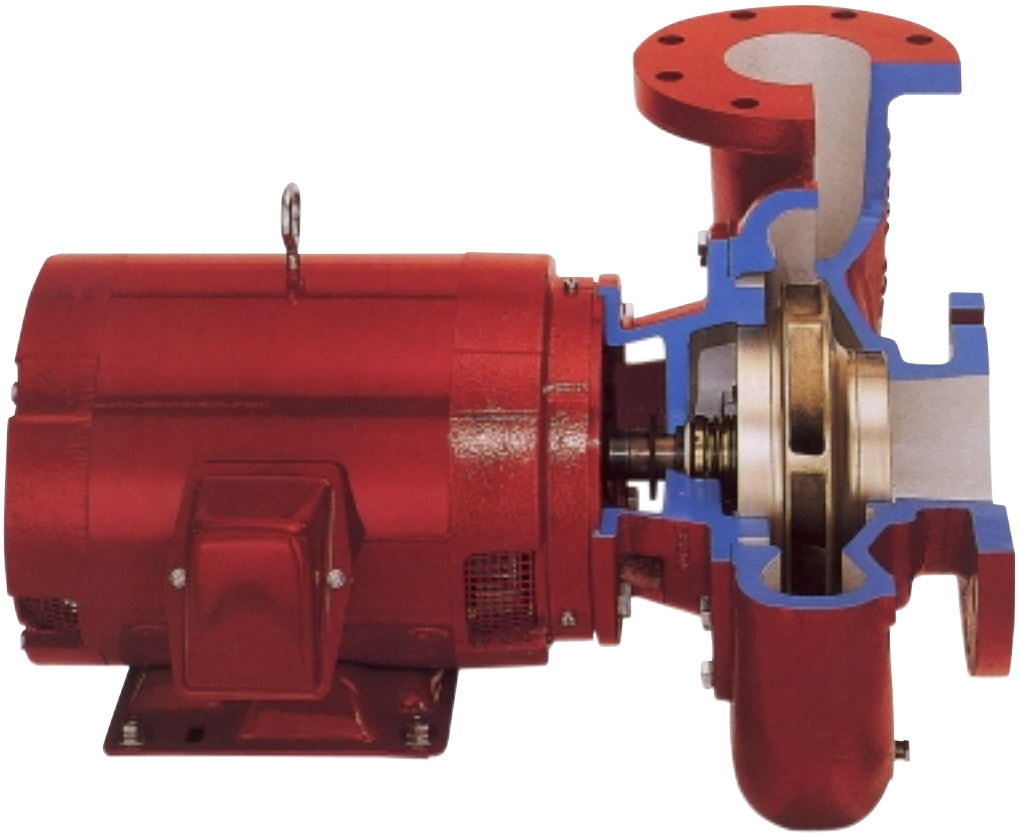
Bell & Gossett®

Series 1531 Pumps
The Industry Standard In End Suction Pump Design

Engineered for life

Part of the ESP PLUS Equipment Selection Program

SERIES 1531 CLOSE-COUPLED PUMPS



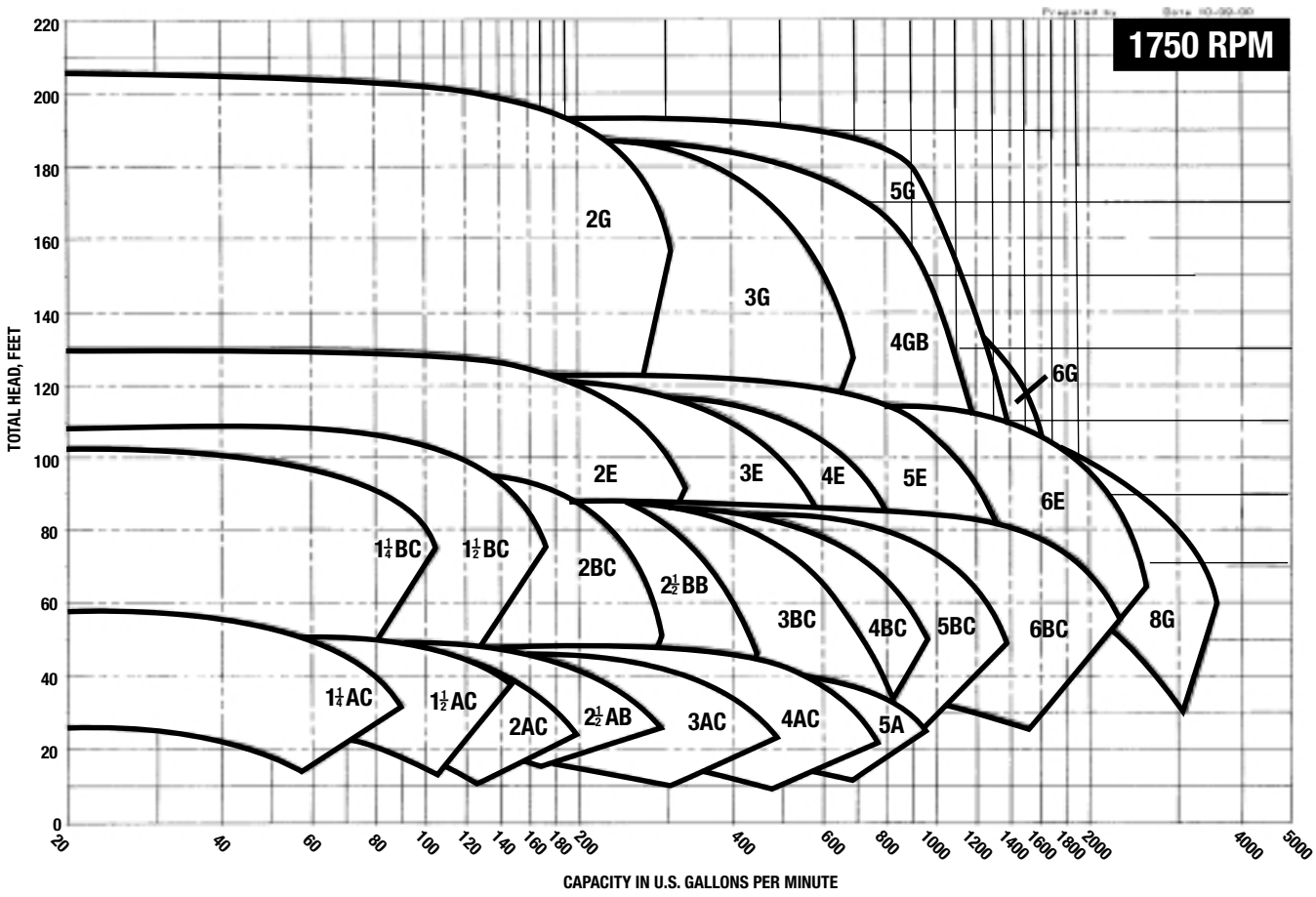
STANDARD DESIGN FEATURES

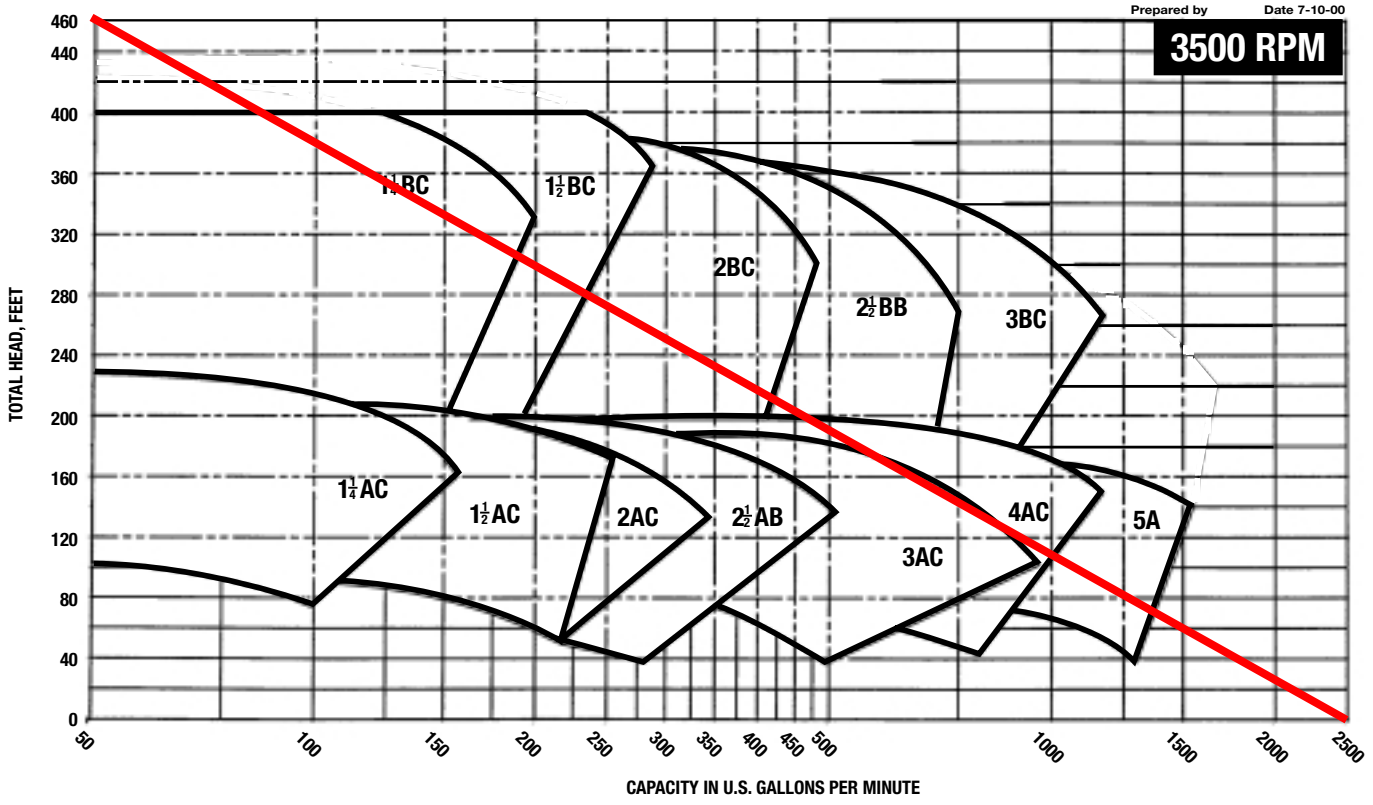
1. **Self-flushing mechanical seals** ensure maximum seal face lubrication, heat dissipation and debris removal without vulnerable, external flush tubing. As much as 25 percent of the total pump flow continuously flushes the seal faces.
2. **Back pull-out** design allows one service tech ease of maintenance.
3. **Aluminum bronze shaft sleeve** construction is standard. Special sealing between the sleeve and shaft prevents corrosion of the shaft by the pumped fluid.
4. **Enclosed, balanced impeller** for quiet, vibration free performance. Impellers are precision fitted to the shaft and positively locked with a shaft key.
5. **Heavy duty cast iron volute** construction for 175 PSI working pressure.
6. **Jacking bolts** provide ease of volute disassembly.
7. **Gauge tappings** on the suction and discharge flanges along with volute vent and drain tappings are standard.
8. **Hydrostatic testing** of each pump is standard.

OPTIONAL EQUIPMENT

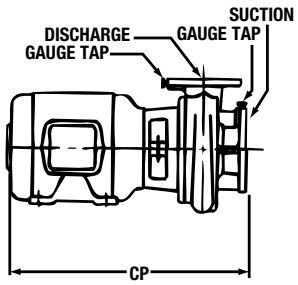
- All iron construction
- All bronze construction
- Bronze casing wear ring
- Vertical mounting
- Footed volute
- Mechanical seal construction

SERIES 1531 PERFORMANCE CURVES





SERIES 1531 DIMENSIONS



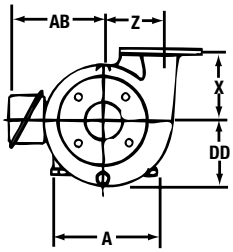
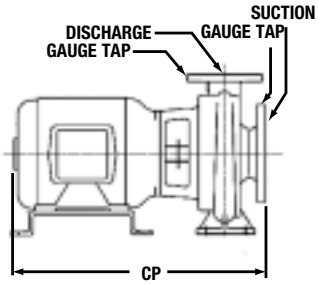


FIGURE 1



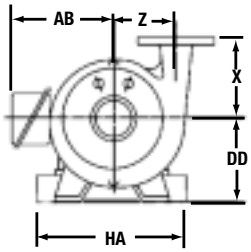


FIGURE 2

Standard working pressure 175 PSI (12 BAR). Flanges drilled and faced per 125# ANSI Standards*.

SIZE OF PUMP AND DISCHARGE	SUCTION	PUMP DIMENSIONS FIGURE 1 – INCHES (MM)					
		DD	X	Z	AB (MAX)[1]	A (MAX)[1]	CP (MAX)[1]
1 1/4 AC (NPT)	1 1/2 NPT	4 3/4 (121)	5 (127)	4 1/2 (114)	10 3/4 (273)	10 1/2 (267)	25 1/2 (648)
1 1/2 AC (NPT)	2 NPT	5 (127)	6 (152)	4 5/8 (117)	10 3/4 (273)	12 1/2 (318)	32 1/4 (819)
2 AC	2 1/2	5 1/2 (140)	6 1/2 (165)	4 3/4 (121)	10 3/4 (273)	12 1/2 (318)	34 1/2 (876)
2 1/2 AB	3	5 13/16 (148)	6 (152)	4 11/16 (119)	10 3/4 (273)	12 1/2 (318)	35 1/4 (895)
3 AC	4	6 1/4 (159)	6 (152)	5 (127)	12 5/8 (321)	14 (356)	36 1/8 (918)
4 AC	5	6 7/8 (175)	7 1/2 (191)	5 3/4 (146)	15 1/8 (384)	16 (406)	40 5/8 (1032)
5 A	6	7 7/8 (200)	8 1/2 (216)	6 1/4 (159)	15 1/8 (384)	16 (406)	42 (1067)
1 1/4 BC (NPT)	1 1/2 NPT	6 1/8 (156)	8 (203)	5 1/2 (140)	12 5/8 (321)	14 (356)	35 1/8 (892)
1 1/2 BC (NPT)	2 NPT	6 1/4 (159)	6 1/2 (165)	5 3/4 (146)	15 1/8 (384)	16 (406)	36 3/8 (924)
2 BC	2 1/2	6 1/8 (156)	7 (178)	5 7/8 (149)	15 1/8 (384)	16 (406)	39 (991)
2 1/2 BB	3	7 1/4 (184)	6 3/4 (171)	6 (152)	15 1/8 (384)	16 (406)	39 1/8 (994)
3 BC	4	7 (178)	7 1/2 (191)	6 1/8 (156)	15 1/8 (384)	16 (406)	40 (1016)
4 BC	5	8 5/8 (219)	8 (203)	7 (178)	10 3/4 (273)	12 1/2 (318)	36 3/8 (924)
5 BC	6	9 1/2 (241)	10 (254)	7 1/2 (191)	12 5/8 (321)	14 (356)	37 1/8 (943)
6 BC	8	10 3/8 (264)	10 1/2 (267)	8 1/4 (210)	15 1/8 (384)	16 (406)	43 1/2 (1105)
2 E	3	7 5/8 (194)	8 (203)	6 1/2 (165)	10 3/4 (273)	12 1/2 (318)	39 1/4 (997)
3 E	4	8 1/2 (216)	9 1/2 (241)	7 3/8 (187)	10 3/4 (273)	12 1/2 (318)	35 1/2 (902)
4 E	5	9 1/4 (235)	9 3/4 (248)	7 1/4 (184)	12 5/8 (321)	14 (356)	35 (889)
5 E	6	9 5/8 (244)	10 1/2 (267)	7 15/16 (202)	15 1/8 (384)	16 (406)	38 (965)
6 E	8	10 7/8 (276)	11 (279)	8 15/32 (215)	15 1/8 (384)	16 (406)	40 5/8 (1032)

Dimensions are subject to change. Not to be used for construction purposes unless certified.
[1]Varies with motor manufacturer.

SIZE OF PUMP AND DISCHARGE	SUCTION	PUMP DIMENSIONS FIGURE 2 – INCHES (MM)					
		DD	X	Z	AB (MAX)[1]	HA (MAX)[1]	CP (MAX)[1]
2G	3	10 (254)	9 (229)	7 1/4 (184)	11 1/2 (292)	14 (356)	31 7/8 (810)
3G	4	10 (254)	9 1/2 (241)	8 (203)	14 5/8 (371)	15 3/4 (400)	34 1/16 (865)
4GB	5	11 (279)	10 (254)	8 9/16 (217)	14 5/8 (371)	15 3/4 (400)	36 1/16 (916)
5G	6	12 (305)	13 (330)	9 (229)	14 5/8 (371)	22 1/2 (571)	36 5/16 (922)
6G	8	12 (305)	14 (357)	9 5/16 (236)	14 5/8 (371)	22 1/2 (571)	37 1/16 (941)
8G**	10*	14 3/8 (365)	17 5/16 (440)	0	15 7/8 (403)	27 1/2 (698)	40 27/64 (1026)

Dimensions are subject to change. Not to be used for construction purposes unless certified.
[1]Varies with motor manufacturer.
*8G suction flange drilled and tapped per ANSI B16.1 standard.
**8G is Stuffing Box Configuration only.

Consult Publication B-360 “Performance Curves” for required horsepower.

SERIES 1531 CONSTRUCTION FEATURES AND OPTIONS

STANDARD	OPTIONAL
Cast Iron Volute	All Iron Construction
Bronze Impeller	All Bronze Construction*
Alloy Steel Shaft	Bronze Casing Wear Ring
Bronze Shaft Sleeve	Stainless Steel Shaft Sleeve
Internal Flushed Seal	Bypass Flush Line Stuffing Box Configuration
Buna/Carbon-Ceramic Seal	(Standard Configuration only) EPR/Tungsten Carbide-Carbon Seal EPR/Silicone Carbide-Silicone Carbide Seal Stuffing Box Configuration EPR/Tungsten Carbide-Carbon Seal

SEAL SELECTION GUIDE

STANDARD CONFIGURATION

Buna/Carbon-Ceramic – PH Limitations 7-9; Temperature Range -20 to +225°F

EPR/Tungsten Carbide-Carbon – PH Limitations 7-11; Temperature Range -20 to +250°F

EPR/Silicone Carbide-Silicone Carbide – PH Limitations 7-12.5; Temperature Range -20 to +250°F

Recommended for use on closed or open systems which are relatively free of dirt and/or other abrasive particles.

STUFFING BOX CONFIGURATION

Flushed Single Seal

EPR/Tungsten Carbide-Carbon – PH Limitations 7-11; Temperature Range -20 to +300°F†

Recommended for use on closed or open systems which may contain a high concentration of abrasives. An external flush is required.

Flushed Double Seal

EPR/Carbon-Ceramic – PH Limitations 7-9; Temperature Range 0 to +250°F

Recommended for use on closed or open systems which may contain a high concentration of abrasives. An external flush is required.

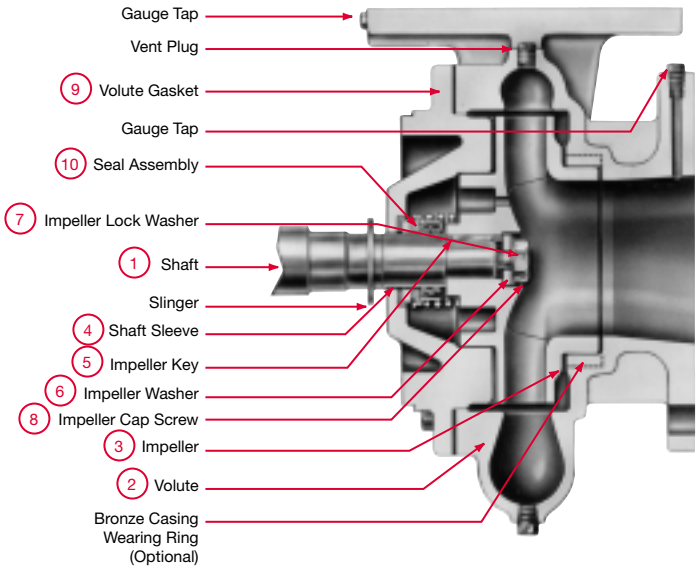
Packing

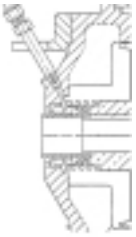
Braided Graphite PTFE-PH Limitations 7-9; Temperature Range 0 to +250°F

Recommended for use on closed or open systems which require a large amount of makeup water, as well as systems which are subjected to widely varying chemical conditions and solids buildup.

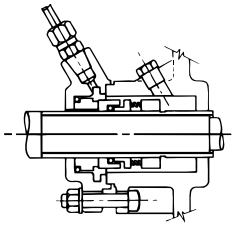
† *For operating temperatures above 250°F a cooled flush is required and is recommended for temperatures above 225°F for optimum seal life. On closed systems cooling is accomplished by inserting a small heat exchanger in the flush line to cool the seal flushing fluid.*

Flush-line Filters and Sediment Separators are available on special request.





1531-F OPTION
BYPASS FLUSH LINE
INTERNALLY FLUSHED SEAL



1531-S OPTION
FLUSH SINGLE SEAL
STUFFING BOX CONSTRUCTION

DESCRIPTION	BRONZE FITTED PUMP	ALL IRON PUMP	ALL BRONZE PUMP*
1 Shaft	Steel SAE 1144	Steel SAE 1144	Steel SAE 1144
2 Volute	Cast Iron ASTM #A159	Cast Iron ASTM #A159	Cast Bronze ASTM #B584
3 Impeller	Cast Bronze ASTM #B854	Cast Iron ASTM #159	Cast Bronze ASTM #B584
4 Shaft Sleeve	Aluminum Bronze ASTM #B111	#304 Stainless Steel ASTM #A312	Aluminum Bronze ASTM #B111
5 Impeller Key	#304 Stainless Steel	#304 Stainless Steel	#304 Stainless Steel
6 Impeller Washer	1531 – Brass	Stainless Steel	Brass
7 Impeller Lock Washer	#304 Stainless Steel	#304 Stainless Steel	#304 Stainless Steel
8 Impeller Cap Screw	#304 Stainless Steel	#304 Stainless Steel	#304 Stainless Steel
9 Volute Gasket	Cellulose Fiber	Cellulose Fiber	Cellulose Fiber
10 Seal Assemblies			
Standard Seal			
Bellows	Buna N	Buna N	Buna N
Faces	Carbon-Ceramic	Carbon-Ceramic	Carbon-Ceramic
Metal Parts	Brass	Stainless Steel	Brass
Spring	Stainless Steel	Stainless Steel	Stainless Steel
For Stuffing Box			
10A Flushed Single			
O-Rings	EPR	EPR	
Faces	Carbon-Tungsten Carbide	Carbon-Tungsten Carbide	
Metal Parts	Stainless Steel	Stainless Steel	
Spring	Stainless Steel	Stainless Steel	
10B Flushed Double			
O-Rings	EPR	EPR	
Faces	Carbon-Ceramic	Carbon-Ceramic	
Metal Parts	Stainless Steel	Stainless Steel	
Spring	Stainless Steel	Stainless Steel	
Packed			
Packing	Graphited Braided Yarn	Graphited Braided Yarn	
Gland	Bronze	Cast Iron	
Lantern Ring	Filled TFE	Filled TFE	

*All Bronze Construction ***NOT*** available in **stuffing box construction** or any of the following sizes: 1½AC, 4AC, 5A, 3AC, 3BC, 4BC, 5BC, 6BC, all E and G sizes.

ENGINEERING SPECIFICATIONS FOR BELL & GOSSETT SERIES 1531 HORIZONTAL CLOSE COUPLED PUMPS

Furnish and install pumps with capacities as shown on plans. Pumps shall be close coupled, single stage, end suction design, capable of being serviced without disturbing piping connections.

Pump volute shall be Class 30 cast iron. The impeller shall be cast bronze enclosed type, balanced, keyed to the shaft and secured by a locking capscrew.

The liquid cavity shall be sealed off at the motor shaft by an internally flushed mechanical seal with ceramic seal seat and carbon seal ring, suitable for continuous operation at 225°F. A replaceable shaft sleeve of bronze alloy shall completely cover the wetted area under the seal.

Pumps shall be rated for 175 psi maximum working pressure. Volute shall have gauge tappings at the suction and discharge nozzles and vent and drain tappings at the top and bottom.

Motor shall meet NEMA specifications and shall be of the size, voltage and enclosure called for on the plans. It shall have heavy duty grease lubricated ball bearings, completely adequate for the maximum load for which the motor is designed.

The pump(s) selected shall conform to ANSI/HI 9.6.3.1 standards for Preferred Operating Region (POR) unless otherwise approved by the engineer. The pump NPSH shall conform to the ANSI/HI 9.6.1-1997 standards for *Centrifugal and Vertical Pumps for NPSH Margin.*

Each pump shall be factory tested per Hydraulic Institute standards. It shall then be thoroughly cleaned and painted with at least one coat of high-grade machinery enamel prior to shipment.

The pump(s) shall be manufactured, assembled and tested in an ISO 9001 approved facility.

Pumps shall be Series 1531 as manufactured by ITT Bell and Gossett.

AUTHORIZED REPRESENTATIVE

ITT
8200 N. Austin Avenue
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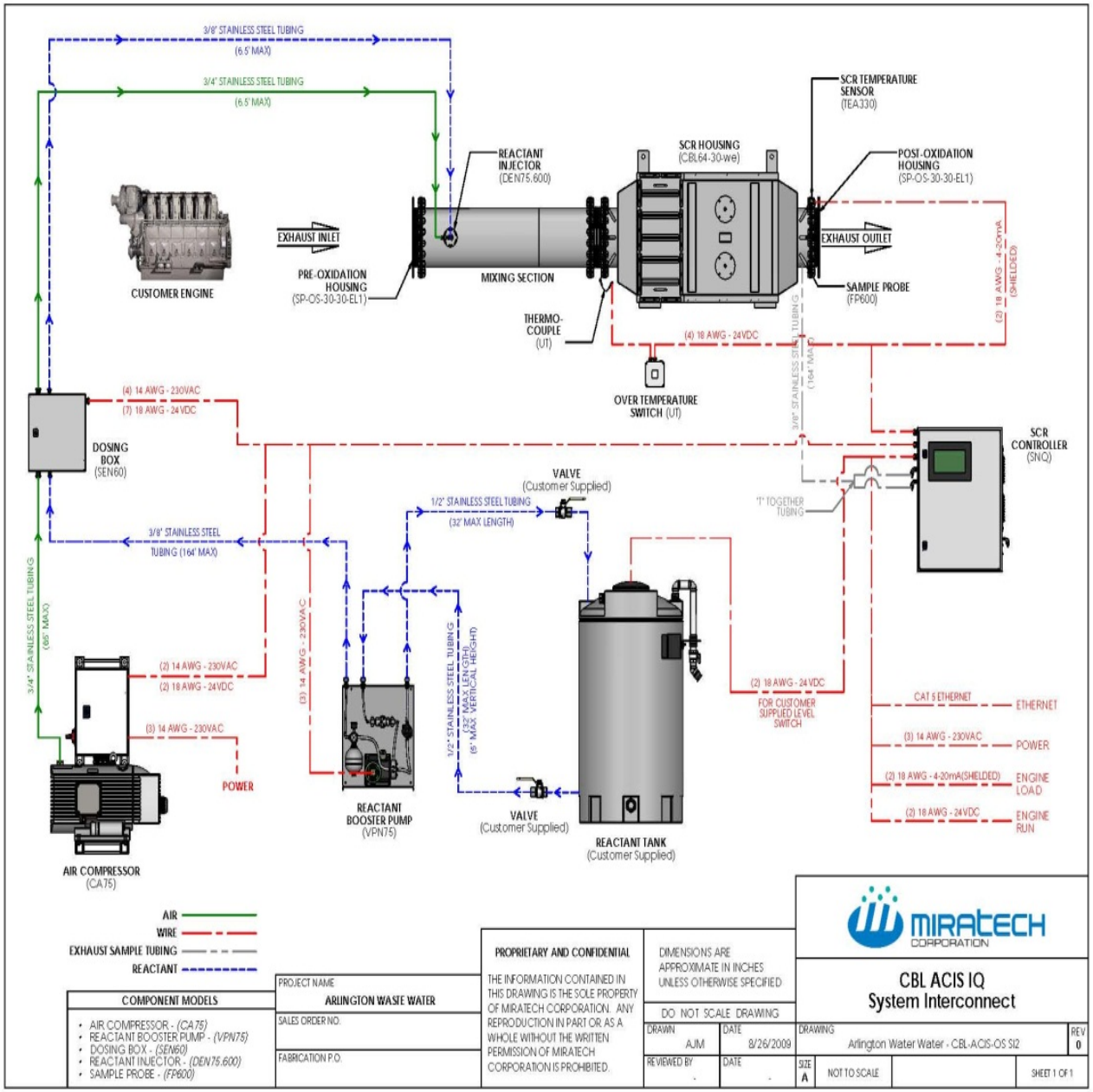
Fax: (847) 966-9052
www.bellgossett.com

TÜV CERT DIN ISO 9001
ISO 9001 Certified

Attachment E

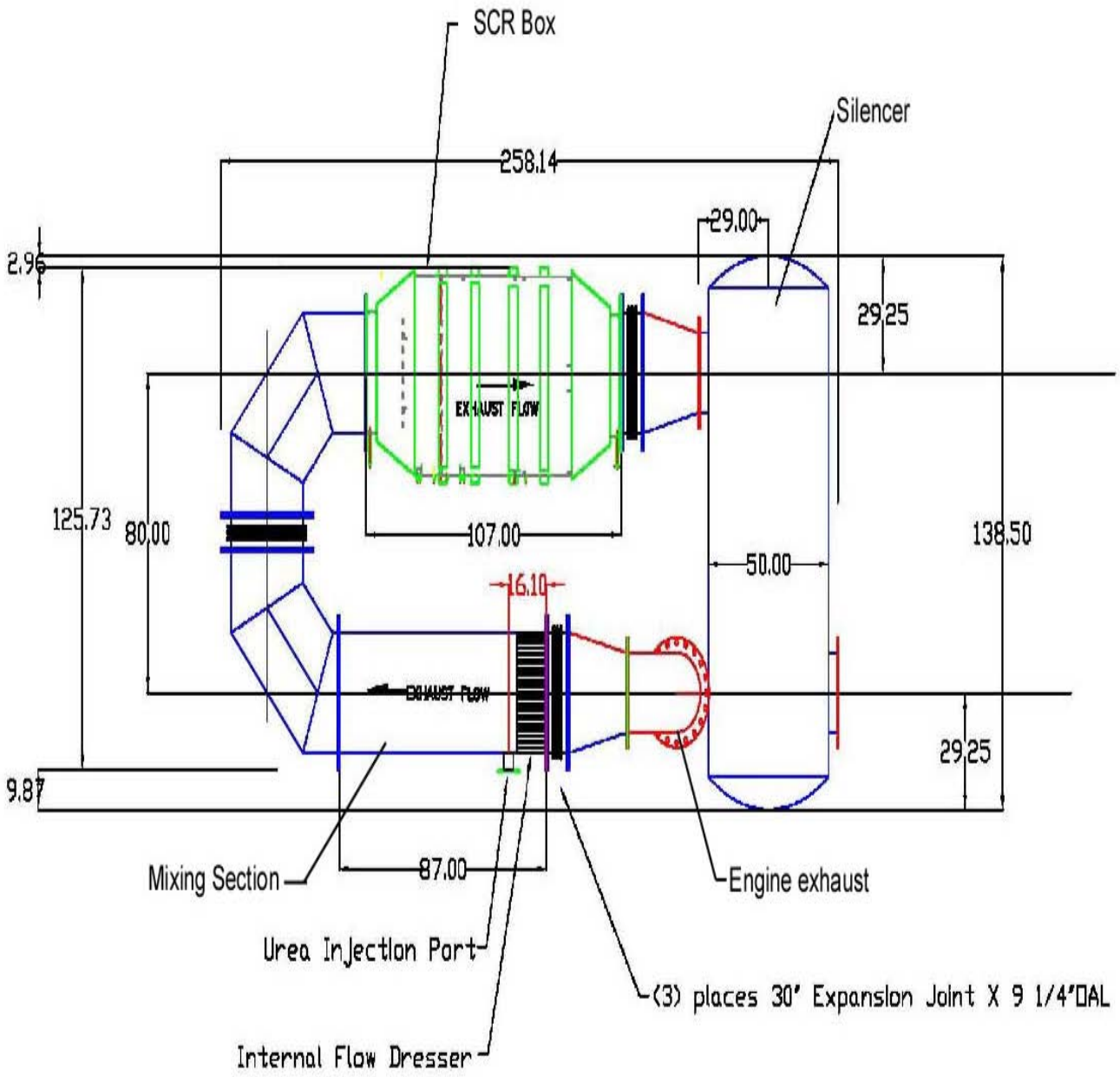
Urea and Emissions Control System

SCR Schematic



Urea and Emissions Control System

Engine Exhaust Ductwork



Urea and Emissions Control System

MIRATECH CORPORATION

SCR Maintenance Schedule and Milestones

The schedule below outlines the maintenance tasks required in order to keep the SCR system functioning properly. Time intervals are a guideline only; actual site conditions will determine if the intervals can be lengthened or shortened.

Daily – Customer

- Visual inspection of Dosing Box, Compressor, Urea Pump, SCR housing, SNQ control panel. Observe for leaks, unusual operation or noises.

First 1000 Hours after Initial Commissioning – MIRATECH

- Sample Gas Filters — Inspect and replace as required
- Sample Gas Pumps — Flow test / clean diaphragms

Every 1000 Hours Scheduled Maintenance – Customer

- Sample Gas Filters — Inspect and replace as required

Every 2000 Hours Scheduled Maintenance – Customer

- Air Compressor Suction Filter — Clean
- Reactant Filter — Clean
- Reactant pressure — Check/adjust
- Sample Gas Filters — Replace
- System Operation and Performance — Check

Every 4000 Hours Scheduled Maintenance – MIRATECH / Customer

- 2000 hour Maintenance Plus:
- Air Compressor Suction Filter — Clean / Replace if needed
- Compressor Vanes — Replace
- Reactant Filter — Clean / Replace if needed
- Enclosure Filters — Clean
- Reactant Pump — Clean
- Reactant pulsation dampener — Check/adjust pressure
- Reactant Injector — Clean and Adjust
- Sample Pumps — Flow test
- Dosing Box 3-Way Valve — Check operation
- Dosing Box Air Pressure Switch — Check operation

MIRATECH CORPORATION

Every 8000 Hours Scheduled Maintenance – MIRATECH w/Customer Assistance

- 4000 hour Maintenance Plus:
- Enclosure Filters — Replace
- Reactant Pump — Replace diaphragms
- SCR Catalyst — Inspect and Vacuum Clean (in place)
- OXI Catalyst — Inspect and Chemical Wash
- Measuring Cell — Calibration check
- Sampling Probe — Clean
- Check/Adjust Load Curve if needed

Every 16000 Hours Scheduled Maintenance – MIRATECH w/Customer Assistance

- 8000 hour Maintenance Plus:
- SCR Catalyst — Remove, clean, re-gasket
- OXI Catalyst — Replace if needed
- Measuring Cell — Replace

ADDRESS
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PHONE 800 640 3141
FAX 918 662 3928
WEB SITE www.miratechcorp.com

ADDRESS
MIRATECH Corporation, 420 South 145TH East Ave., Mail Drop A, Tulsa, OK 74108-1305
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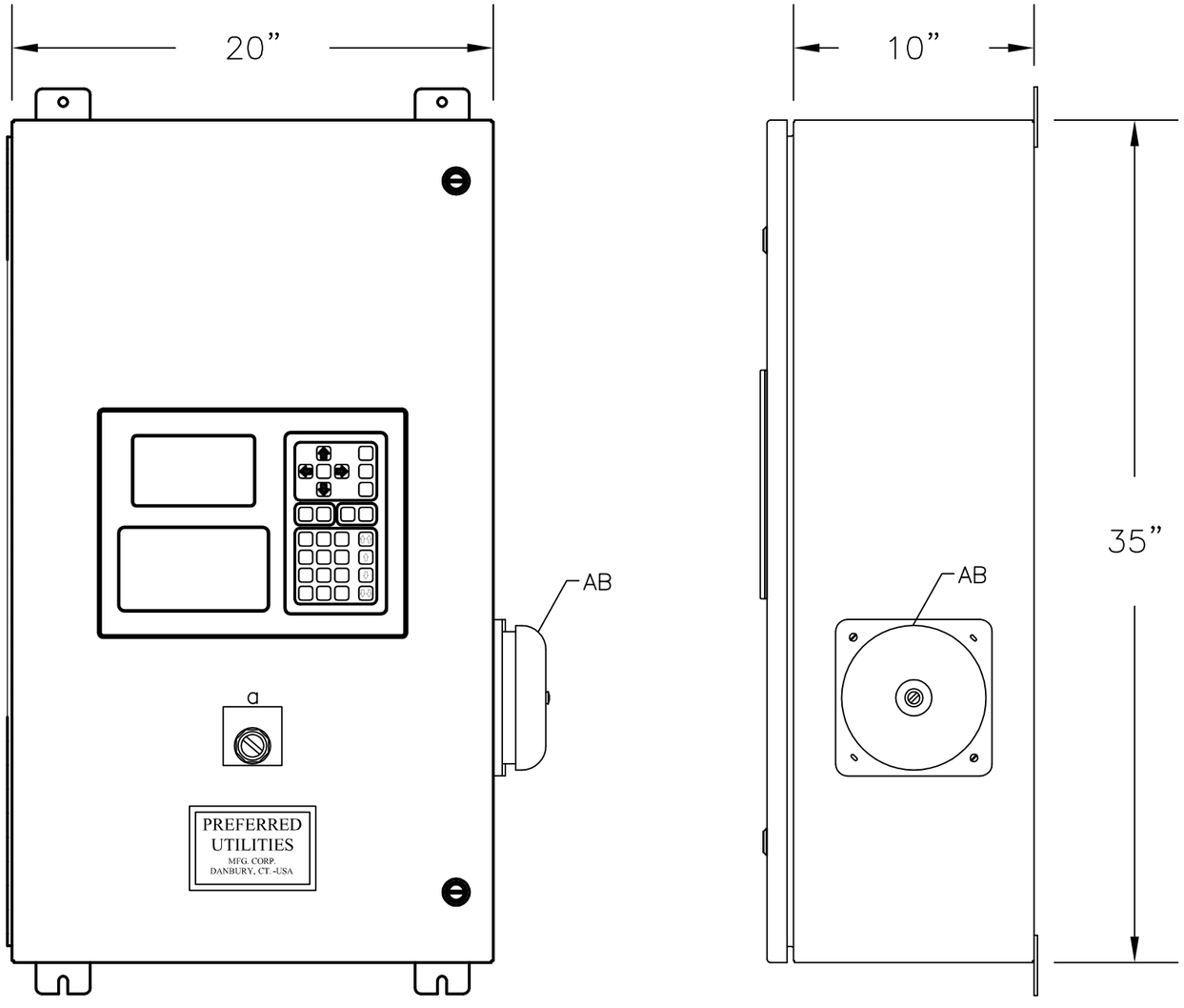
Attachment F



NOTES:

CABINET: 35”H x 20”W X 10”D
NEMA 4, 14 GA. STEEL
CONTINUOUS SEAM WELDED
CONSTRUCTION – WALL MOUNTED

CABINET SUPPLIED WITH:
FORMED STEEL HINGE WITH STAINLESS STEEL
HINGE PINS

ALL INTERNAL COMPONENTS MOUNTED
ON A REMOVABLE SUBPLATE

FINISH: PRIME COATED & PAINTED
EXTERIOR: GRAY TEXTURED ENAMEL
INTERIOR: WHITE BAKED ENAMEL

NAMEPLATE LEGEND

a. CONTROL POWER OFF/ON (PREF. #90099)

JOB: ALRINGTON COUNTY WATER POLUTION CONTROL PLANT

CUST: W.C. ROUSE & SON

REF. DWGS: W-11142A, W-11142A-1, PH-11142-1

S.O. J11142E
S.N. 3548
PROG. J11142A

FILE # W11142A

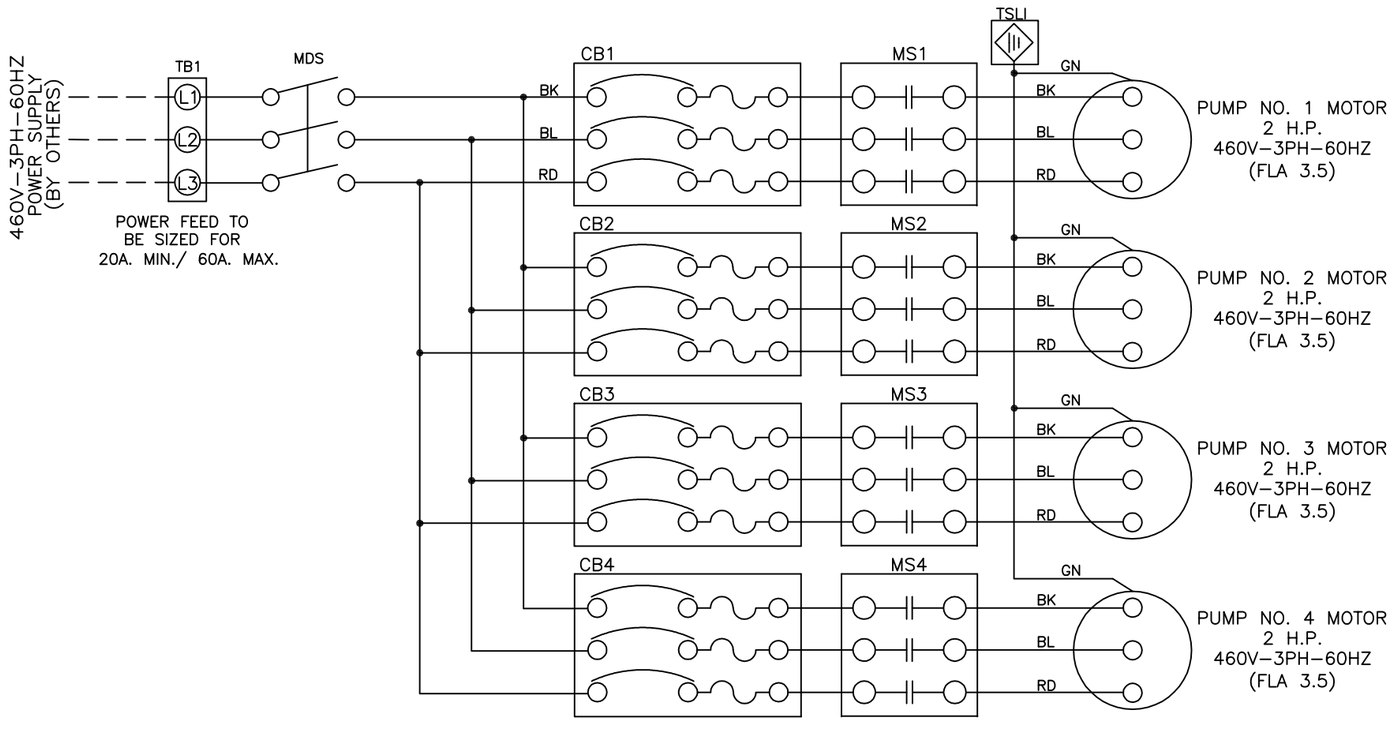
LET.	REVISIONS	DATE OF CHANGE	
A	REVISED PER ENGINEER	2/24/10	RMM
B	REV TANK-BLDG LK SNSR	8/30/10	RMM
C	REVISED AS BUILT	9/7/10	RMM
D	REVISED MBV TERMINALS	2/22/11	RMM

PREFERRED UTILITIES MANUFACTURING CORP.
31-35 SOUTH STREET-DANBURY, CONNECTICUT

SGF-FOMP-01 FUEL OIL MANAGEMENT CONTROL CABINET – LAYOUT –

MODEL: SIZE: TYPE:
SUPERSEDES: ASS'Y NO.:
MATERIAL: SCALE: NONE
DRAWN: RMM 9/24/09
APPR'D:

W-11142A-2



NOTES:

1. WIRING IN CABINET SHALL BE COLOR CODED AND TERMINATED AT NUMBERED TERMINALS FOR ALL FIELD CONNECTIONS
2. MIN. WIRE – MOTORS: #12 AWG – CONTROL CIRCUIT: #16 AWG
3. ——— FACTORY WIRING ------ FIELD WIRING
   SHIELDED CABLE LOW VOLTAGE DC DO NOT RUN IN CONDUIT WITH AC WIRING
   (X–Y) PWC TERMINAL X=SLOT Y=TERMINAL
4. SUPPLY 10 % BLANK TERMINALS IN ADDITION
5. I.B.E.W. UNION LABEL
6. LEVEL SWITCH SETTINGS – ALARM & PUMP OPERATION, (SHOWN WITH TANK EMPTY)
7. PUMP FAIL LIGHTS WILL STAY ILLUMINATED UPON MALFUNCTION UNTIL RESET BUTTON (RPB) IS DEPRESSED AND CONDITION IS CLEARED.
8. WHEN H–O–A SWITCHES ARE PLACED IN THE HAND POSITION– PUMPS WILL OPERATE CONTINUOUSLY UNTIL A SHUTDOWN CONDITION EXISTS.
9. CABINET MUST BE MET APPROVED.

TEST WIRE SIZE INSTALLED IN CONNECTOR	TIGHTENING TORQUE/POUND–INCHES			
	SLOTTED HEAD No.10 AND LARGER		HEXAGONAL HEAD EXTERNAL DRIVE SOCKET WRENCH	
AWG	SLOT WIDTH 0.047 INCH OR LESS AND SLOT LENGTH 1/4 INCH OR LESS	SLOT WIDTH OVER 0.047 INCH OR SLOT LENGTH–OVER 1/4 INCH	SPLIT BOLT CONNECTORS	OTHER CONNECTORS
18 – 10	20	35	80	75
8	25	40	80	75
6 – 4	35	45	165	110

FOR VALUES OF A SLOT WIDTH OR LENGTH NOT CORRESPONDING TO THOSE SPECIFIED THE LARGEST TORQUE VALUE ASSOCIATED WITH THE CONDUCTOR SIZE SHALL BE MARKED.
SLOT WIDTH IS THE NOMINAL DESIGN VALUE. SLOT SHALL BE MEASURED AT THE BOTTOM OF THE SLOT.

[a] SLOT LENGTH OF SCREW	SLOT WIDTH OF SCREW–INCHES[b]	
	SMALLER THAN 0.047	0.047 AND LARGER
INCHES		
LESS THAN 5/32	7	9
5/32	7	12
3/16	7	12
7/32	7	12
1/4	9	12
9/32		15
ABOVE 9/32		20

[a] FOR SLOT LENGTHS OF INTERMEDIATE VALUES, TORQUES PERTAINING TO NEXT SHORTER SLOT LENGTH SHALL BE UTILIZED. FOR SCREWS WITH MULTIPLE TIGHTENING MEANS, THE LARGEST TORQUE VALUE ASSOCIATED WITH THE CONDUCTOR SIZE SHALL BE MARKED. SLOT LENGHTS SHALL BE MEASURED AT THE BOTTOM OF THE SLOT
[b] SLOT WIDTH IS THE NOMINAL DESIGN VALUE

SOCKET SIZE ACROSS FLATS	TIGHTENING TORQUE
INCHES	POUND–INCHES
1/8	45
5/32	100
3/16	120
7/32	150
1/4	200
5/16	275
3/8	375
1/2	500
9/16	600

[a] FOR SCREWS WITH MULTIPLE TIGHTENING MEANS, THE LARGEST TORQUE VALUE ASSOCIATED WITH THE CONDUCTOR SIZE SHALL BE MARKED. SLOT LENGTH SHALL BE MEASURED AT THE BOTTOM OF THE SLOT

JOB: ARLINGTON COUNTY WATER POLLUTION CONTROL PLANT

CUST: W.C. ROUSE & SON

REF. DWGS: W–11142, PH–11142–1

S.O. J11142E

FILE # W11142

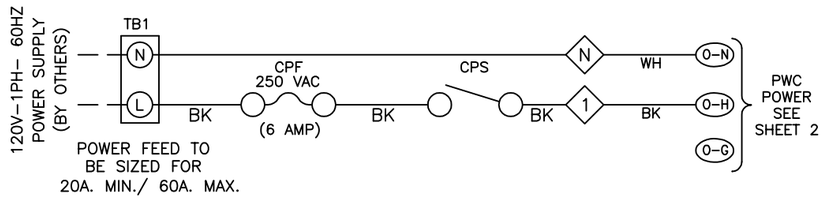
LET.	REVISIONS	DATE OF CHANGE	APPR'D:
A	REVISED PER ENGINEER	2/24/10	RMM

PREFERRED UTILITIES MANUFACTURING CORP.
31–35 SOUTH STREET–DANBURY, CONNECTICUT

FOPP – FUEL OIL PUMP CONTROL CABINET FACTORY & FIELD WIRING

MODEL: | SIZE: | TYPE:
SUPERSEDES: | ASS'Y NO.:
MATERIAL: | SCALE: NONE
DRAWN: RMM 9/24/09

W–11142–1
SHEET 1 OF 2



NOTES:

1. WIRING IN CABINET SHALL BE COLOR CODED AND TERMINATED AT NUMBERED TERMINALS FOR ALL FIELD CONNECTIONS
2. MIN. WIRE – MOTORS: #12 AWG – CONTROL CIRCUIT: #16 AWG
3. ——— FACTORY WIRING – – – – – FIELD WIRING
   SHIELDED CABLE LOW VOLTAGE DC DO NOT RUN IN CONDUIT WITH AC WIRING
   (X–Y) PWC TERMINAL X=SLOT Y=TERMINAL
4. SUPPLY 10 % BLANK TERMINALS IN ADDITION
5. I.B.E.W. UNION LABEL
6. LEVEL SWITCH SETTINGS – ALARM & PUMP OPERATION, (SHOWN WITH TANK EMPTY)
7. PUMP FAIL LIGHTS WILL STAY ILLUMINATED UPON MALFUNCTION UNTIL RESET BUTTON (RPB) IS DEPRESSED AND CONDITION IS CLEARED.
8. WHEN H–O–A SWITCHES ARE PLACED IN THE HAND POSITION– PUMPS WILL OPERATE CONTINUOUSLY UNTIL A SHUTDOWN CONDITION EXISTS.
9. CABINET MUST BE MET APPROVED.

TEST WIRE SIZE INSTALLED IN CONNECTOR AWG	TIGHTENING TORQUE/POUND–INCHES			
	SLOTTED HEAD No.10 AND LARGER		HEXAGONAL HEAD EXTERNAL DRIVE SOCKET WRENCH	
	SLOT WIDTH 0.047 INCH OR LESS AND SLOT LENGTH 1/4 INCH OR LESS	SLOT WIDTH OVER 0.047 INCH OR SLOT LENGTH–OVER 1/4 INCH	SPLIT BOLT CONNECTORS	OTHER CONNECTORS
18 – 10	20	35	80	75
8	25	40	80	75
6 – 4	35	45	165	110

FOR VALUES OF A SLOT WIDTH OR LENGTH NOT CORRESPONDING TO THOSE SPECIFIED THE LARGEST TORQUE VALUE ASSOCIATED WITH THE CONDUCTOR SIZE SHALL BE MARKED. SLOT WIDTH IS THE NOMINAL DESIGN VALUE. SLOT SHALL BE MEASURED AT THE BOTTOM OF THE SLOT.

SLOT LENGTH OF SCREW[a]	SLOT WIDTH OF SCREW–INCHES[b]	
INCHES	SMALLER THAN 0.047	0.047 AND LARGER
LESS THAN 5/32	7	9
5/32	7	12
3/16	7	12
7/32	7	12
1/4	9	12
9/32		15
ABOVE 9/32		20

[a] FOR SLOT LENGTHS OF INTERMEDIATE VALUES, TORQUES PERTAINING TO NEXT SHORTER SLOT LENGTH SHALL BE UTILIZED. FOR SCREWS WITH MULTIPLE TIGHTENING MEANS, THE LARGEST TORQUE VALUE ASSOCIATED WITH THE CONDUCTOR SIZE SHALL BE MARKED. SLOT LENGHTS SHALL BE MEASURED AT THE BOTTOM OF THE SLOT

[b] SLOT WIDTH IS THE NOMINAL DESIGN VALUE

SOCKET SIZE ACROSS FLATS	TIGHTENING TORQUE
INCHES	POUND–INCHES
1/8	45
5/32	100
3/16	120
7/32	150
1/4	200
5/16	275
3/8	375
1/2	500
9/16	600

[a] FOR SCREWS WITH MULTIPLE TIGHTENING MEANS, THE LARGEST TORQUE VALUE ASSOCIATED WITH THE CONDUCTOR SIZE SHALL BE MARKED. SLOT LENGTH SHALL BE MEASURED AT THE BOTTOM OF THE SLOT

——— = FACTORY WIRING
– – – = FIELD WIRING

JOB: ALRINGTON COUNTY WATER POLUTION CONTROL PLANT

CUST: W.C. ROUSE & SON

REF. DWGS: W–11142A, W–11142A–2, PH–11142–1

S.O. J11142E
S.N. 3548
PROG. J11142A
FILE # W11142A

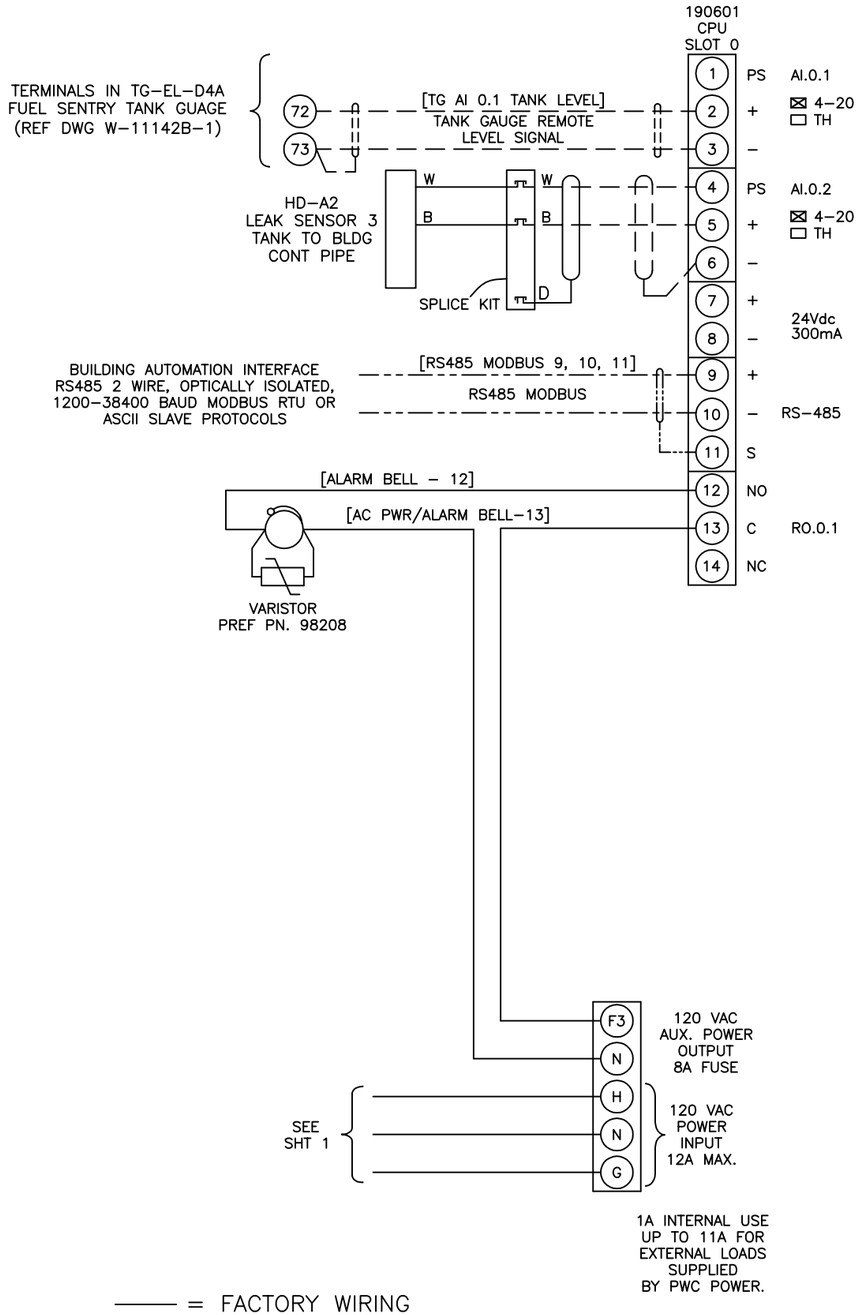
LET.	REVISIONS	DATE OF CHANGE	APPR'D:
A	REVISED PER ENGINEER	2/24/10	RMM
B	REV TANK–BLDG LK SNSR	8/30/10	RMM
C	REVISED AS BUILT	9/7/10	RMM
D	REVISED MBV TERMINALS	2/22/11	RMM

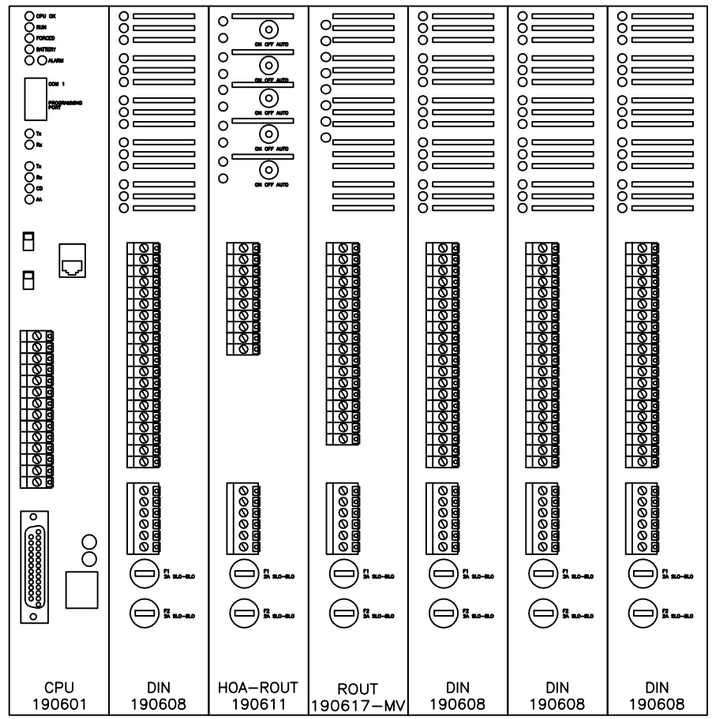
PREFERRED UTILITIES MANUFACTURING CORP.
31–35 SOUTH STREET–DANBURY, CONNECTICUT

SGF–FOMP–01 FUEL OIL MANAGEMENT CONTROL CABINET FACTORY & FIELD WIRING

MODEL: | SIZE: | TYPE:
SUPERSEDES: | ASS'Y NO.:
MATERIAL: | SCALE: NONE
DRAWN: RMM 9/24/09

W–11142A–1
SHEET 1 OF 5





MODEL: PWC–CDHVDDD

NOTES:
1. DO NOT RUN DC WIRING IN THE SAME CONDUIT WITH AC WIRING.
2. TERMINATE SHIELDS AS SHOWN. INSULATE OR TAPE OFF ALL OTHER EXPOSED SHIELDS.

JOB: ALRINGTON COUNTY WATER POLUTION CONTROL PLANT

CUST: W.C. ROUSE & SON

REF. DWGS: W–11142A, W–11142A–2, PH–11142–1

S.O. J11142E
S.N. 3548
PROG. J11142A
FILE # W11142A

LET.	REVISIONS	DATE OF CHANGE	APPR'D:
A	REVISED PER ENGINEER	2/24/10	RMM
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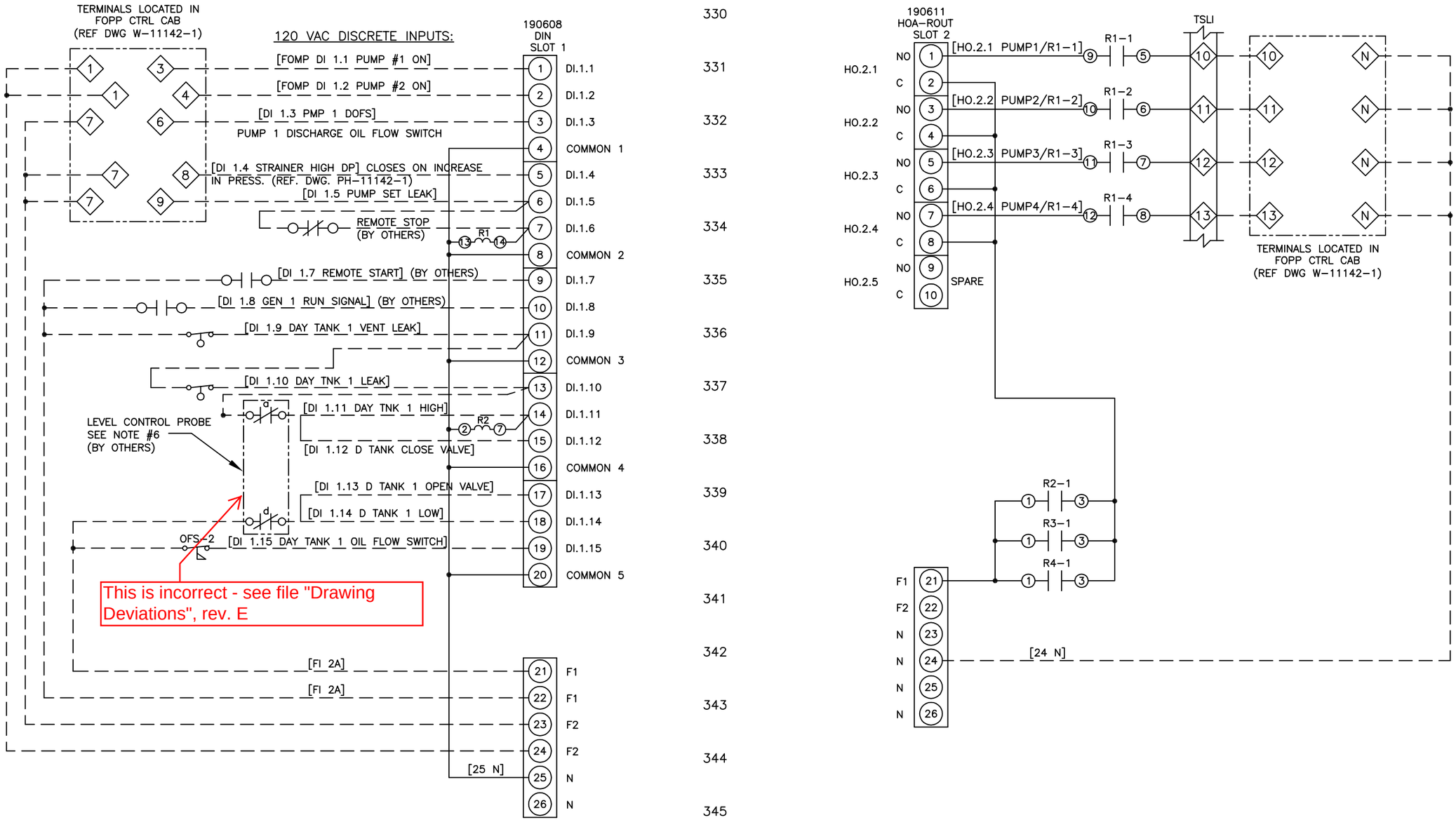
D	REVISED MBV TERMINALS	2/22/11	RMM

PREFERRED UTILITIES MANUFACTURING CORP.
31–35 SOUTH STREET–DANBURY, CONNECTICUT

SGF–FOMP–01 FUEL OIL MANAGEMENT CONTROL CABINET FACTORY & FIELD WIRING

MODEL: | SIZE: | TYPE:
SUPERSEDES: | ASS'Y NO.:
MATERIAL: | SCALE: NONE
DRAWN: RMM 9/24/09

W–11142A–1
SHEET 2 OF 5



——— = FACTORY WIRING

– – – = FIELD WIRING

JOB: ALRINGTON COUNTY WATER POLUTION CONTROL PLANT

CUST: W.C. ROUSE & SON

REF. DWGS: W-11142A, W-11142A-2, PH-11142-1

S.O. J11142E
S.N. 3548
PROG. J11142A
FILE # W11142A

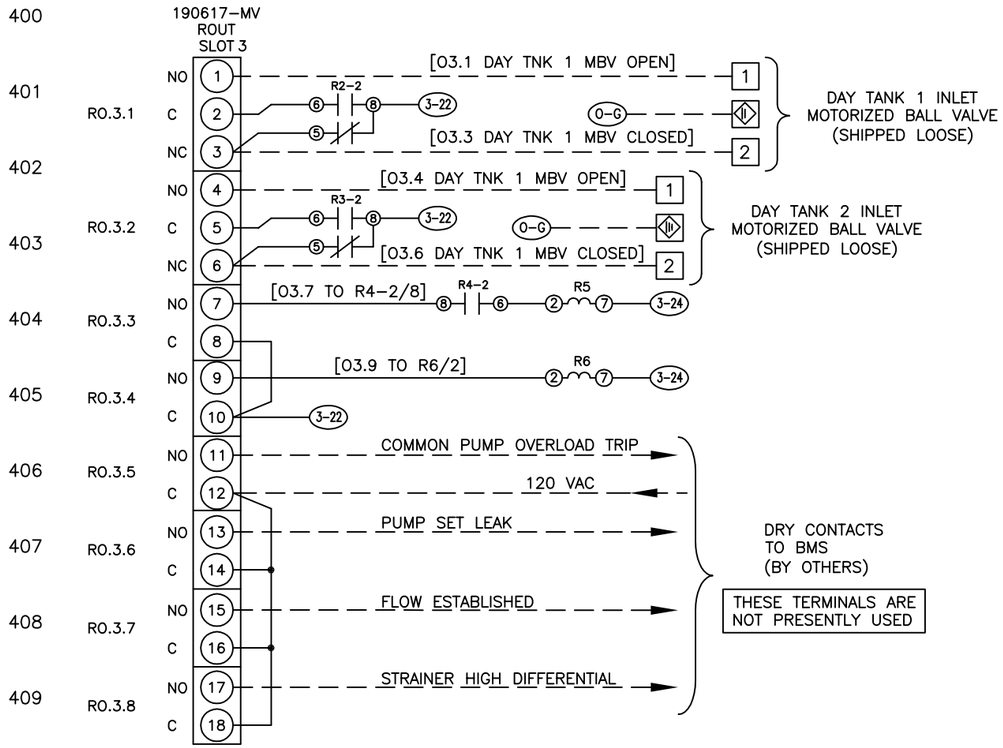
LET.	REVISIONS	DATE OF CHANGE	
A	REVISED PER ENGINEER	2/24/10	RMM
B	REV TANK-BLDG LK SNSR	8/30/10	RMM
C	REVISED AS BUILT	9/7/10	RMM
D	REVISED MBV TERMINALS	2/22/11	RMM

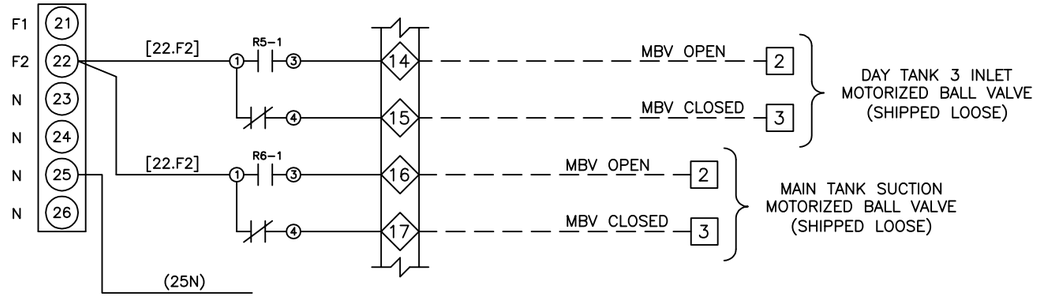
PREFERRED UTILITIES MANUFACTURING CORP.
31-35 SOUTH STREET-DANBURY, CONNECTICUT

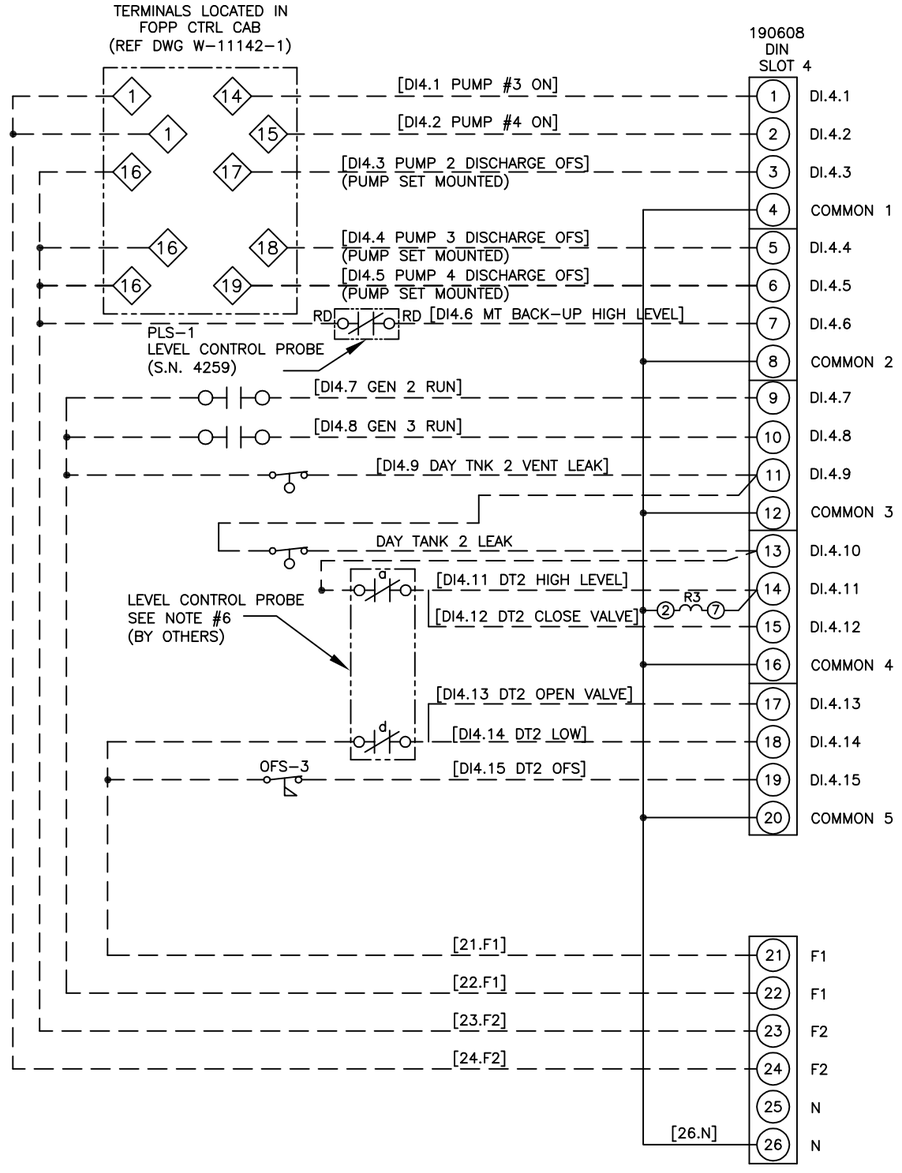
SGF-FOMP-01 FUEL OIL MANAGEMENT CONTROL CABINET FACTORY & FIELD WIRING

MODEL: | SIZE: | TYPE:
SUPERSEDES: | ASS'Y NO.:
MATERIAL: | SCALE: NONE
DRAWN: RMM 9/24/09
APPR'D:

W-11142A-1
SHEET 3 OF 5







——— = FACTORY WIRING
– – – = FIELD WIRING

JOB: ALRINGTON COUNTY WATER POLUTION CONTROL PLANT

CUST: W.C. ROUSE & SON

REF. DWGS: W-11142A, W-11142A-2, PH-11142-1

S.O. J11142E
S.N. 3548
PROG. J11142A
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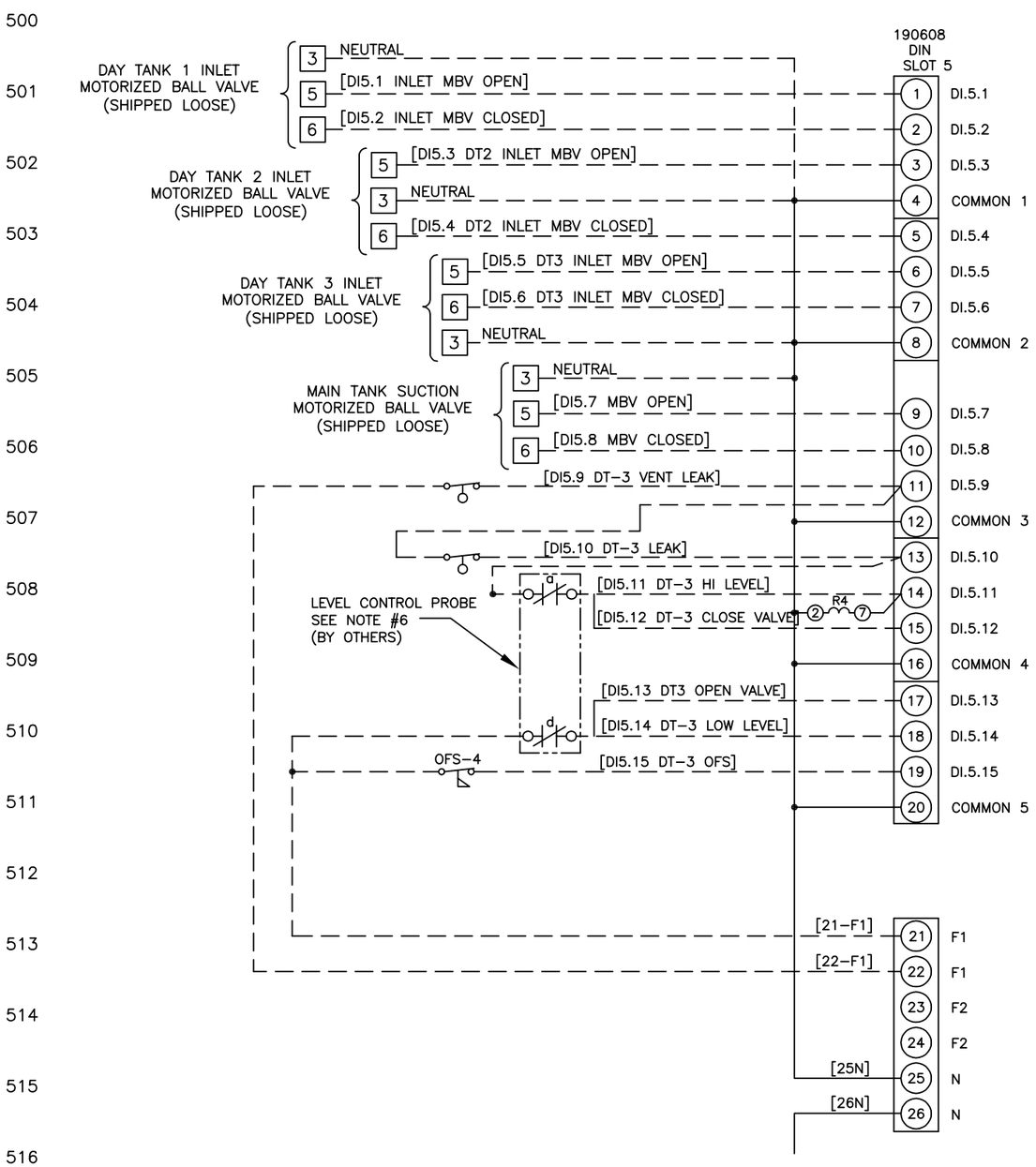
LET.	REVISIONS	DATE OF CHANGE	APPR'D:
A	REVISED PER ENGINEER	2/24/10	RMM
B	REV TANK-BLDG LK SNSR	8/30/10	RMM
C	REVISED AS BUILT	9/7/10	RMM
D	REVISED MBV TERMINALS	2/22/11	RMM

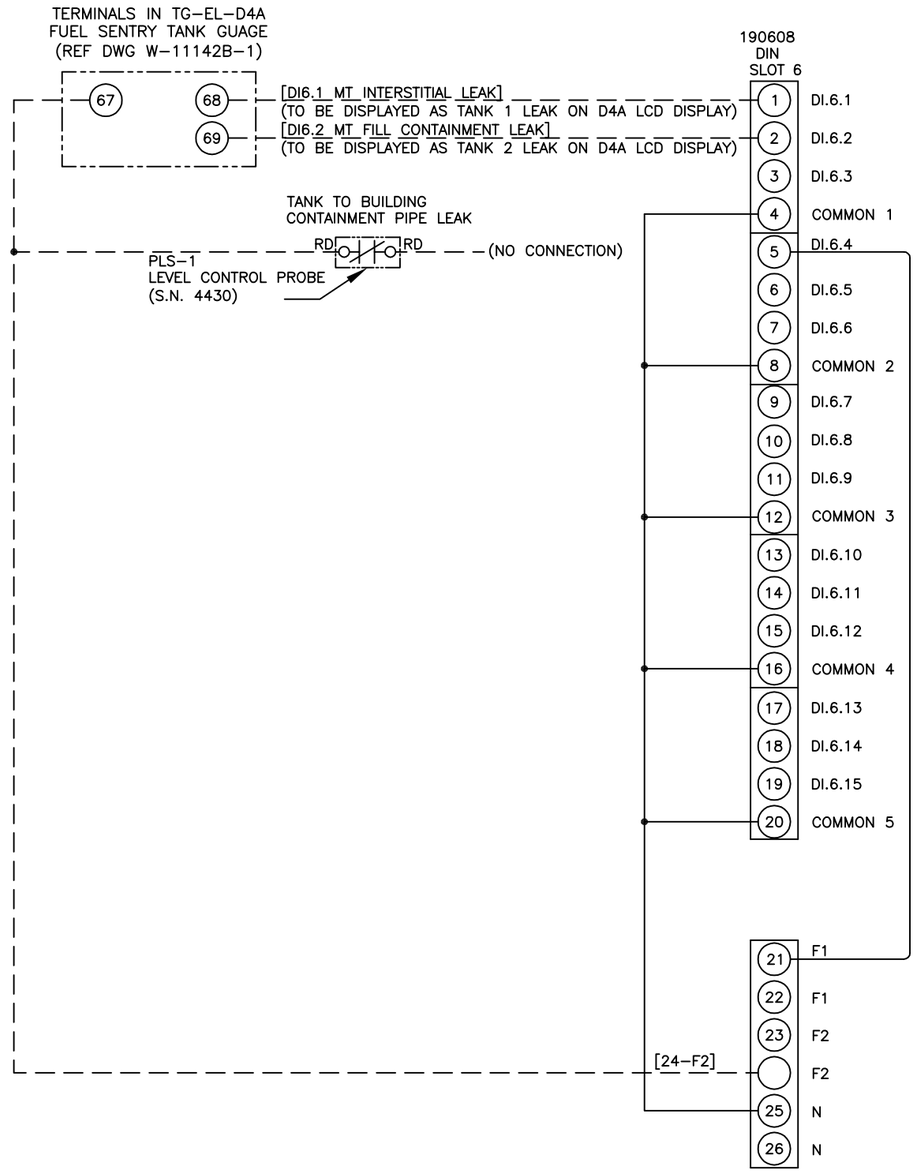
PREFERRED UTILITIES MANUFACTURING CORP.
31-35 SOUTH STREET-DANBURY, CONNECTICUT

SGF-FOMP-01 FUEL OIL MANAGEMENT CONTROL CABINET FACTORY & FIELD WIRING

MODEL: | SIZE: | TYPE:
SUPERSEDES: | ASS'Y NO.:
MATERIAL: | SCALE: NONE
DRAWN: RMM 9/24/09
APPR'D:

W-11142A-1
SHEET 4 OF 5





——— = FACTORY WIRING
– – – = FIELD WIRING

JOB: ALRINGTON COUNTY WATER POLUTION CONTROL PLANT

CUST: W.C. ROUSE & SON

REF. DWGS: W-11142A, W-11142A-2, PH-11142-1

S.O. J11142E
S.N. 3548
PROG. J11142A
FILE # W11142A

LET.	REVISIONS	DATE OF CHANGE	APPR'D:
A	REVISED PER ENGINEER	2/24/10	RMM
B	REV TANK-BLDG LK SNSR	8/30/10	RMM
C	REVISED AS BUILT	9/7/10	RMM
D	REVISED MBV TERMINALS	2/22/11	RMM

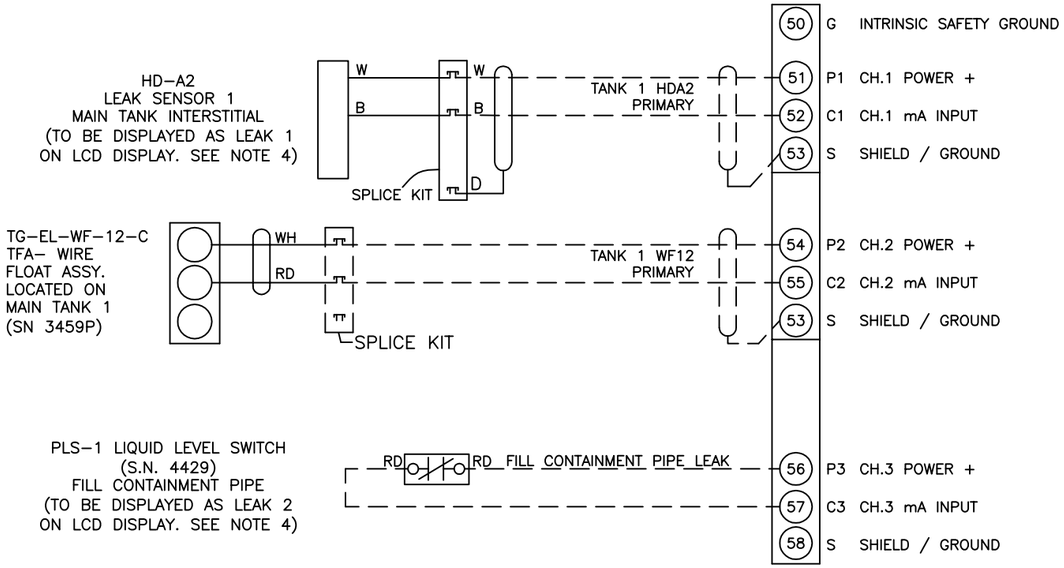
PREFERRED UTILITIES MANUFACTURING CORP.
31-35 SOUTH STREET-DANBURY, CONNECTICUT

SGF-FOMP-01 FUEL OIL MANAGEMENT CONTROL CABINET FACTORY & FIELD WIRING

MODEL: | SIZE: | TYPE:
SUPERSEDES: | ASS'Y NO.:
MATERIAL: | SCALE: NONE
DRAWN: RMM 9/24/09

W-11142A-1
SHEET 5 OF 5

INTRINSICALLY SAFE FIELD WIRING



INTRINSICALLY SAFE FIELD WIRING

NOTES:

1. DO NOT RUN DC WIRING IN THE SAME CONDUIT WITH AC WIRING.

2. TERMINATE SHIELDS AS SHOWN. INSULATE OR TAPE OFF ALL OTHER EXPOSED SHIELDS.

3. FLOAT ASSEMBLY TO BE CONNECTED AND POTTED IN EPOXY SPLICE KIT BY INSTALLING CONTRACTOR.

4. LEAK 1 & 2 OPERATION: THE FUEL SENTRY TANK GAUGE ONLY HAS THREE RELAY OUTPUT OPTIONS FOR LEAK ALARMS:
LEAK 1 / LEAK 2 / LEAK COMMON
IN ORDER TO GET SEPARATE RELAY OUTPUT SIGNALS FOR THIS PROJECT, THE FUEL SENTRY WILL BE PROGRAMMED AS FOLLOWS:

THE MAIN TANK INTERSTIAL HD–A2 LEAK SENSOR WILL BE PROGRAMMED FOR TANK 1. WHEN A LEAK IS SENSED BY THE MAIN TANK INTERSTITIAL HD–A2, THE TANK GAUGE WILL DISPLAY LEAK 1, AND ENERGIZE RELAY OUTPUT 1 PROGRAMMED FOR LEAK 1.

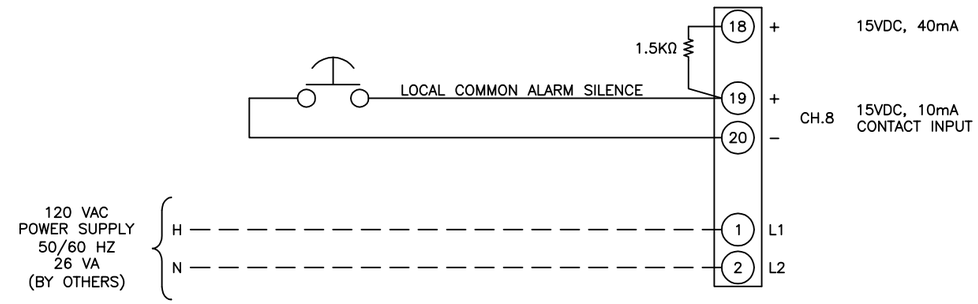
THE FILL CONTAINMENT PIPE HD–A2 LEAK SENSOR WILL BE PROGRAMMED FOR TANK 2. WHEN A LEAK IS SENSED BY THE FILL CONTAINMENT PIPE HD–A2, THE TANK GAUGE WILL DISPLAY LEAK 2, AND ENERGIZE RELAY OUTPUT 2 PROGRAMMED FOR LEAK 2.

AFTER LEAK ALARMS ARE NO LONGER ACTIVE THE RESET BUTTON MUST BE PRESSED TO CLEAR THE ALARM FROM THE DISPLAY.

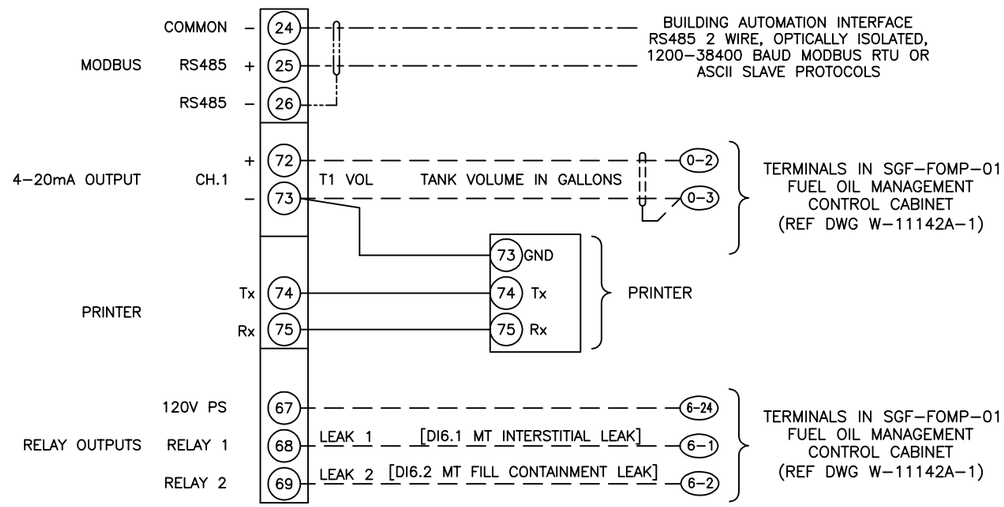
5. THIS WIRING DIAGRAM AND PROGRAM CONFIGURATION IS SPECIFIC TO THIS JOB ONLY DUE TO THE SPECIFIC POINTS THAT NEED TO BE MONITORED.

——— = FACTORY WIRING
– – – = FIELD WIRING

INPUTS



OUTPUTS



JOB: ALRINGTON COUNTY WATER POLUTION CONTROL PLANT

CUST: W.C. ROUSE & SON

REF. DWGS: W–11142B

S.O. J11142E

FILE # W11142B

LET.	REVISIONS	DATE OF CHANGE	APPR'D:
A	REVISED PER ENGINEER	2/24/10	RMM
B	REV LK SNSR 2 TO PLS	8/30/10	RMM

PREFERRED UTILITIES MANUFACTURING CORP.
31–35 SOUTH STREET–DANBURY, CONNECTICUT

TG–EL–D4A–xx–x–0
TANK GAUGE
FACTORY & FIELD WIRING

MODEL:	SIZE:	TYPE:
SUPERSEDES:		ASS'Y NO.:
MATERIAL:		SCALE: NONE
DRAWN: RMM 10/2/09		W–11142B–1

SHEET 1 OF 1

PLANT WIDE CONTROLLER (PWC)
Overview

- Programmable Function Controller (PFC)
  Large 704 "Block" memory, six (6) I/O board Rack (Chassis).

- LCD Operator and Setup Display
  160 x 240 pixel LCD display with Membrane, tactile feedback keyboard, cursor arrow and full numeric keypad.

- Hardwired Panel
  Status lights, switches and control dials provide simple manual control for easy troubleshooting and service.

- Multiple four (4) Pen "Paperless Chart Recorder"
  Non-volatile historical trending memory for up to 32 data points for at least 45 days of history with 8 minute thru 24 hour chart "width" selections.

- Alarm / Event Summary
  200 point, alarms, system events and operator actions are listed in "first in first out" order with time/date stamp.

- Internal Telephone Modem
  "Dial in" for remote operation and setup and "dial out" to alphanumeric pagers for immediate notification of alarms or events.

- Optically Isolated RS485 Modbus Data Highway
  SCADA (Supervisor Control and Data Acquisition) remote monitoring and/or control.

- 120 VAC Power Distribution
  Fuses, terminals and internal 24 VDC power supply.

- Wall Mount Enclosure
  UL508A labeled, key lockable viewing window, mounting holes and multiple conduit knockouts.

- Universal Analog Input Board

Plant Wide Controller
(Shown with three I/O boards)

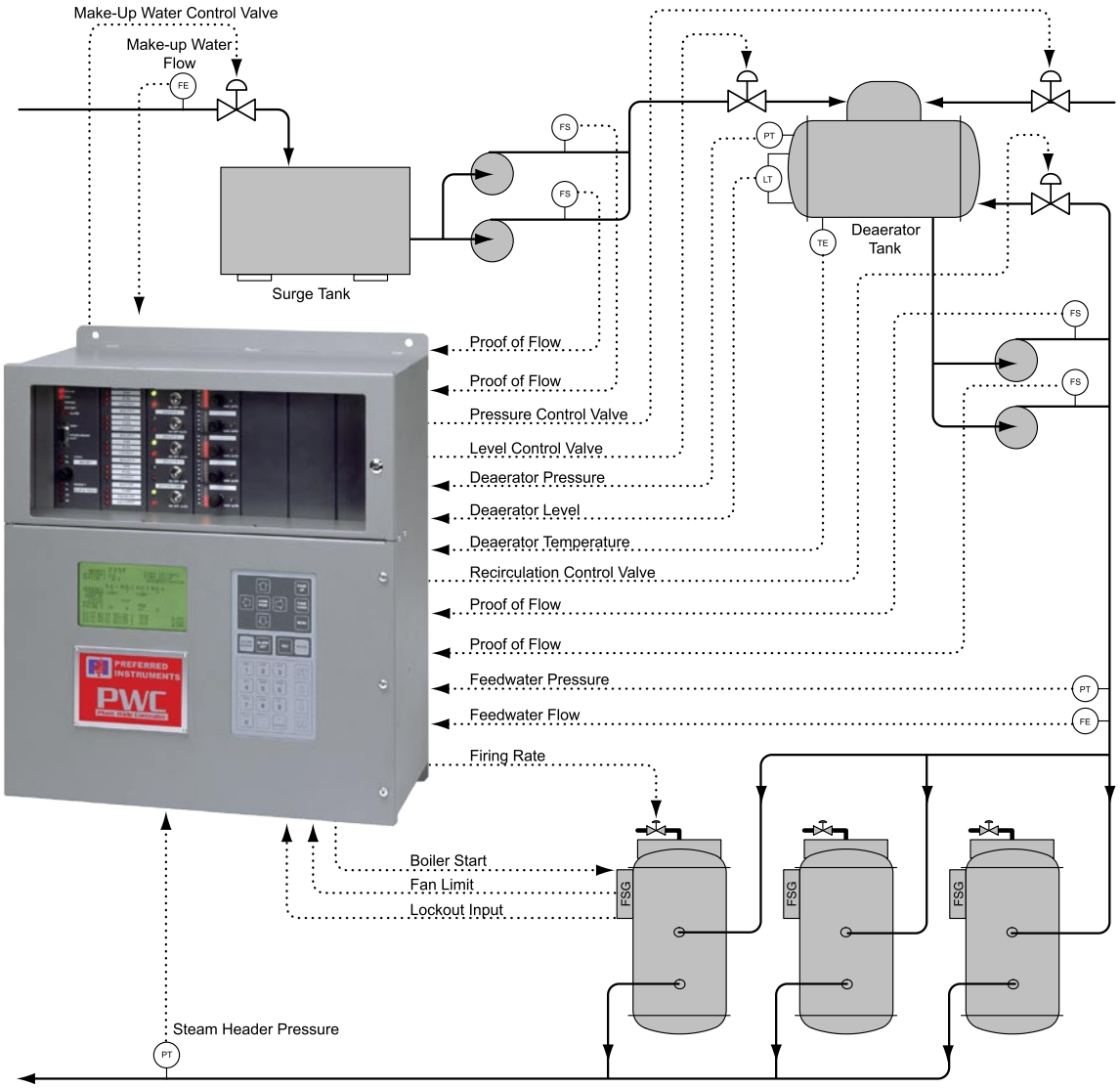
State-of-the-Art
Sequencing, Monitoring and Control

The **Plant Wide Controller** (**PWC**) is a state-of-the-art equipment sequencing, control and monitoring system. The PWC combines innovative ease of operation, communication and expansion capabilities with boiler plant control application expertise. Off-the-shelf, standard applications for boiler modulating lead/lag, cooling towers and air compressors can be expanded to include additional monitoring or control additional pumps, variable speed drives and valves. Multiple communication protocols allow simultaneous communication to alphanumeric pagers, laptops via standard telephone lines and Building Automation System or SCADA Systems using a control network. The PWC is a complete plant monitoring, control and communication interface.

Easy to Use

- Easy Installation – The PWC integrates a powerful Programmable Function Controller (PFC), I/O boards, hardwired and LCD HMI, power distribution, 24 VDC power supplies, external communications, isolation relays into a single wall mountable controller. No external control devices are required.
- Easy to Operate – Large LCD Display, intuitive operation, setup, alarm / event summary and historical trend displays allow quick process assessment and maintenance monitoring.
- Easy to Configure – PWC configuration tools maintain the look and feel of the PCC-III and offer advanced features. The PWC uses an intuitive "Blockware" configuration language with multiple block outputs and special purpose "Super" blocks that greatly simplify complex logic such as Outdoor Air Reset and boiler sequencing.

PLANT WIDE CONTROLLER (PWC)
Applications



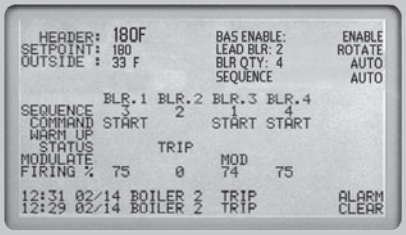
Plant Wide Controller
Boiler Modulating Lead/Lag, Deaerator and Surge Tank Control Example Application

Boiler Modulating Lead/Lag Applications

- Full Boiler Modulation - Multiple boiler firing rates are automatically adjusted to satisfy the overall plant hot water or steam demand. Either unison (parallel) or series modulation is used.
- Improved Steam or Hot Water System Availability Automatic Sequencing ensures that the number of boilers in service meets hot water or steam demand. Tripped equipment is automatically replaced with a standby unit.
- Boiler Monitoring - Flue gas temperature, smoke opacity and boiler draft may be monitored and trended. Warning alarms and burner safety shutdown interlocks may be included.
- Unmanned Boiler Plants - Provides for off-site monitoring and control using internal modem or RS485 interface. Serves as a single plant monitoring point for Building Automation Systems and personal alphanumeric pagers.

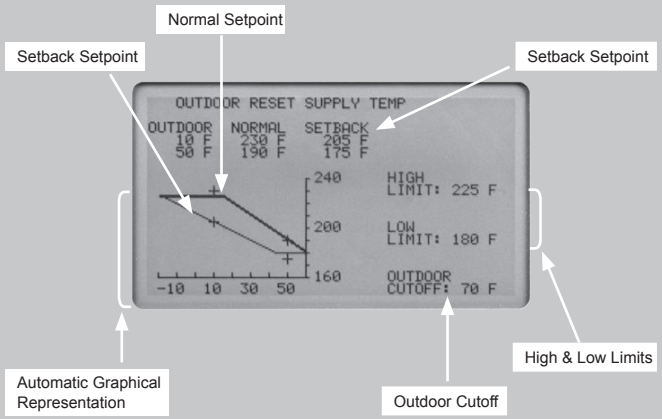
Extensive Plant Wide Control Applications

- Cooling Tower Optimization – Multiple Tower Cells are sequenced and fan speed controlled with wet bulb optimization. Substantial fan and chiller electrical savings can be realized.
- Improved E-Gen Fuel System Availability – Fuel pump standby sequencing, day tank level control and fuel storage tank level and leak monitoring.
- Improved Steam System Availability – Condensate transfer and feed pump standby sequencing, Deaerator and Surge tank level monitoring, alarm and remote communications.
- Coordinated Hot Water System Operation – Pumps, isolation valves, distribution pumps and temperature monitoring for reduced thermal stress and energy consumption.
- Fresh Air Dampers, Air Compressors and Fans Sequencing, monitoring, and control are based on the number of boilers online. A single damper failure will not prevent a boiler from firing.



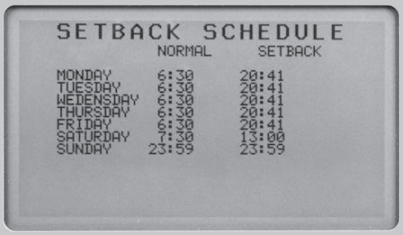
Plant Overview Display

Typical operator display for plant monitoring and control



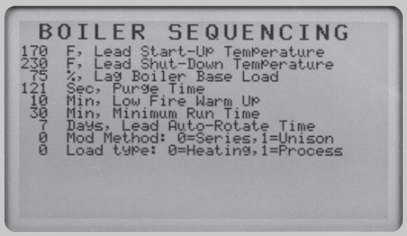
Outdoor Reset Display

The Outdoor Reset Setpoint [ORSP] block's parameters may be entered using this standard display.



Setback Schedule Display

The Time/Date Scheduler [SCHED] block's parameters may be entered using this standard display.



Boiler Sequence Tuning Display

Equipment Sequence block's parameters may be entered using project specific displays.

"Blockware"

The PWC uses an intuitive "Blockware" configuration language. Functions (AIN, PID, LOALM, F(x)...) are simply copied into a configuration, and then the control signals are "wired" from block to block. Preferred's innovative PWC_Draw™ for MS Windows® uses a graphical, "drag and drop" interface. It allows the user to print or plot Blockware drawings, and then download them to a PWC via a standard RS232 port. Additionally, Blockware and displays may be edited from the spreadsheet style PWC_Edit™.

Multiple Block Outputs

Using the Analog Input Block's "BAD" data quality output a user may switch a loop to manual control or initiate an alarm. The PWC display and any block can access all block outputs. Other available outputs include cold junction temperature, input is out of normal range, pulser is missing pulses, input type selector switch position does not match the input type, etc.

"Super" Blocks

The PWC provides a collection of special function "Blockware" to enable simplified implementation of complex control strategies. The function Outdoor Reset Setpoint [ORSP] is used to save energy by changing a setpoint based on the outdoor air temperature. A typical application is to use the ORSP to generate the Hot Water Setpoint for a Hot Water Heating System. Another important energy savings block is the Scheduler block. The Time/Date Scheduler [SCHED] compares the current Time and Date to the schedule defined by the entered parameters, and sets the schedule output to "1" during the "Normal" period, and to "0" during the "Setback" period. Typically this function is used to conserve energy during low occupancy periods. It can be used to "setback" hot or chilled water temperature setpoints, activate outdoor lighting, and other time or day of week, or date based control logic.

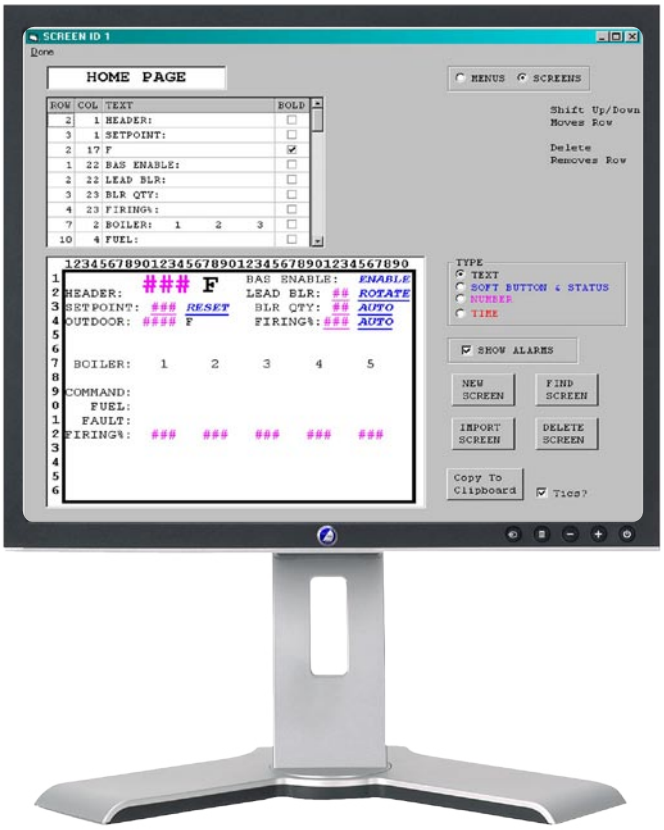
PLANT WIDE CONTROLLER (PWC)
Configuration

LCD Display Commissioning

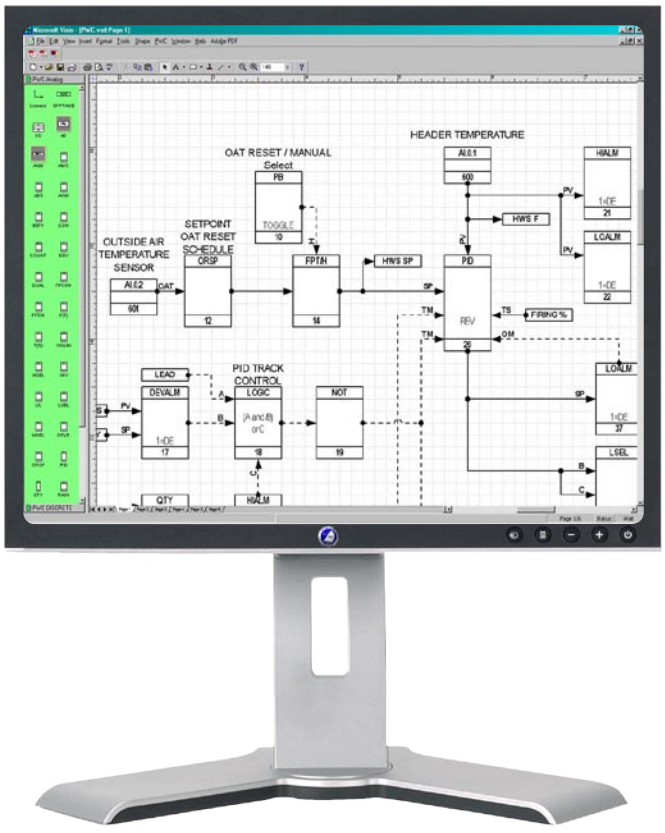
Plant Wide Controller configurations are designed to allow commissioning to be accomplished from the controller mounted displays. Project specific tuning displays may be created to present and group key "Blockware" parameters for field tuning. Additionally, any block parameter may be edited from the front panel display using the "Parameter Edit" mode. Laptop computers are only required when it is necessary to change wiring between blocks or add additional blocks.

PWC_Edit™

The "point and click" simplicity of the PWC_Edit software makes "Blockware" configuration simple and intuitive. The program uses a straightforward spreadsheet format with a convenient fill-in-the-blanks approach. Each Block has an unlimited length "comments" field for clear documentation. The "Blockware" data and comments can be printed to any MS Windows® compatible printer. PWC_Edit offers fill-in-the-blanks style display generation. Display text can be presented as either regular or bold. Dynamic-text, softbuttons, status, numeric values, time values and alarms may be added to any display. The Chart Edit display allows configuration of trace and chart selections using a menu style system. The generated configurations are then easily downloaded using a standard RS232 DB9F cable.



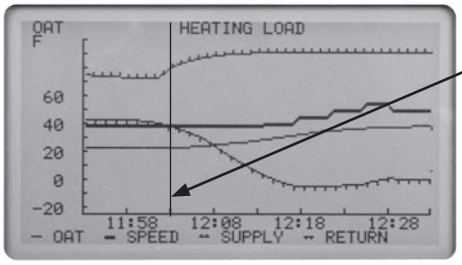
PWC_Edit Overview Display Screen Setup



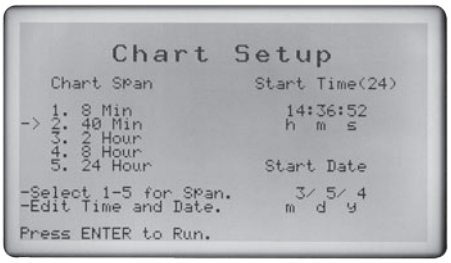
PWC_Draw Screen

PWC_Draw™

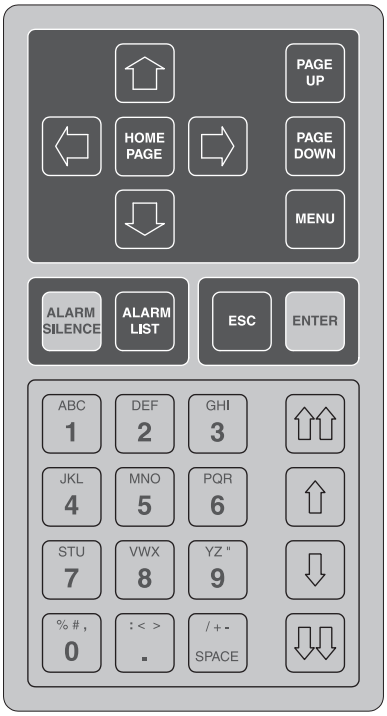
The powerful object-oriented CAD interface in PWC_Draw makes the program the ideal choice for rapid "Blockware" programming in a visual environment. The program is built on a Visio® platform with extensive Visual Basic automation. Standard functions are included in menus of pre-drawn figures for each PWC Blockware Function Type. Functions are simply dragged onto the drawing page and connected with "Smart Connector" lines to interconnect the Blocks. Block inputs are automatically generated by placing the Block connections. Double clicking on any block allows the user to edit data within the Block. Drawings can be saved as AutoCAD® drawings and can be printed on any MS Windows® compatible printer or plotter. "Blockware" data can also be printed in the PWC_Edit tabular format.



Historical Trend Display
Screen shown with 40 minute chart "Span" selection



Historical Trend Setup Display
This standard screen determines the starting time and date of the chart, and also "span" of time that the chart covers.



Plant Wide Controller Keypad

Description
Each Chart can display up to 4 traces, called "Pens." The bottom of the screen shows the symbol and name of each Pen. Charts can be a mixture of analog and discrete data. A specific chart is displayed by selecting a Menu line that is linked to the chart. The PWC can save up to 32 analog values plus up to 32 discrete values every 1, 5, 15, or 60 seconds in the 128 MB non-volatile memory. The 128 MB Historical Memory can store up to six months of data (number of points monitored, sample interval, and data compression ratio affect duration).

Pen Selection
Each "Pen" trace has a unique name, chart scale, and engineering units. However, only one Pen Scale can be displayed at a time. The up and down cursor arrows may be used to display the desired Pen Scale.

Chart Cursor Readout
When a chart is first displayed, the Chart Cursor is located at the right hand edge of the screen. Using the Numeric keypad Arrows the operator may move the Chart Cursor. The number on the top line of the screen is the value of the currently selected Pen trace where it touches the Chart Cursor. Use the cursor up and down arrows to display the values for the other Pens.

Start Time Panning
Use the cursor left and right arrows to shift the start time backward or forward in time. The time is shifted 7/8 of the span to provide chart display overlap.

Changing Chart Span
Using the PAGE UP and PAGE DOWN keys, the operator may change the Chart Span between 8 minutes, 40 minutes, 2 hours, 8 hours, or 24 hours.

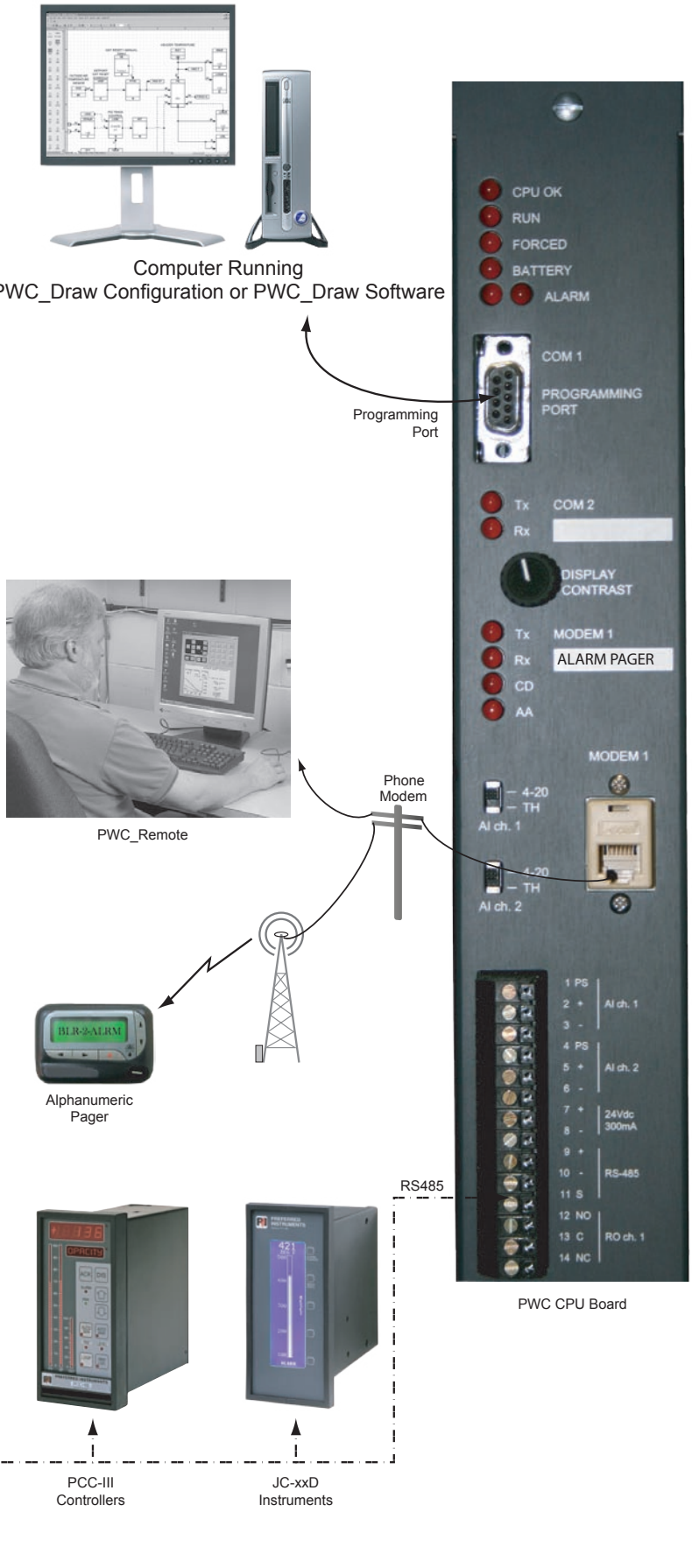
"Span," Start Time and Date Selection
When a Chart is selected, the first screen that appears is the "Setup Display." This display allows the operator to easily select "Span" (width), Start Time and Date. This screen defaults to the current time and date with a 40 minute wide chart.

PLANT WIDE CONTROLLER (PWC)
Communication

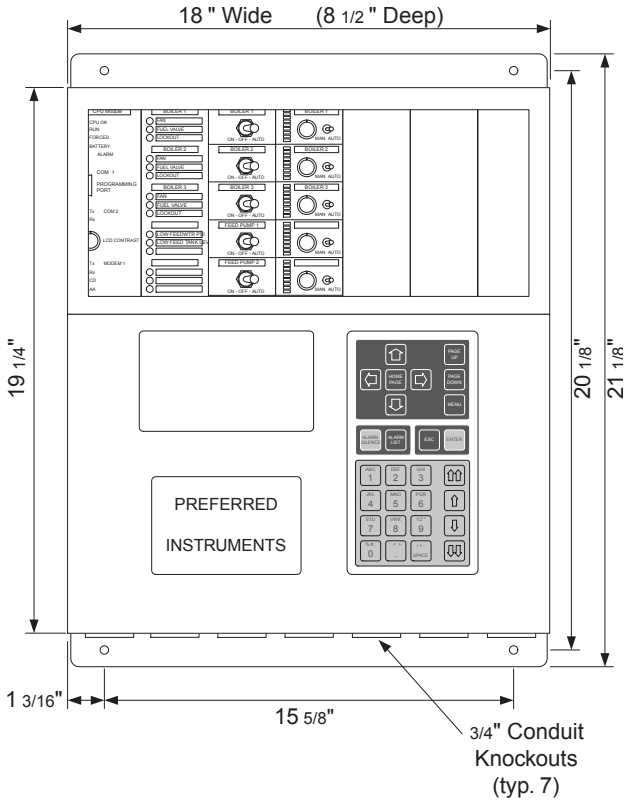
Telephone Modem (option p/n 190604)
The internally mounted Telephone Modem permits the PWC to "dial out" to an alphanumeric pager and allows a user to "dial in" to the PWC to view all displays and make tuning adjustments. Selected alarms cause the modem to dial a pager service center telephone number. A 20 digit phone number can include outside line codes, access codes, and pauses. The modem uses the TAP protocol to send a text message to an alphanumeric pager. The message can include a 30-character facility name plus a 20-character alarm message. Upon receipt of the page, the user can "dial in" to the modem to acknowledge the message. If the system does not receive a dial back acknowledgement or front panel Alarm Silence button "press" within 5 minutes (adjustable), the system will dial a second backup pager and re-send the alarm message. The system will log the time and date of all pages and acknowledgments in the Alarm/Event List.

Using **PWC_Remote™** software, which is included with the Telephone Modem (option p/n 190604), a remote user is able to "dial in" to the modem to view any screen and remotely "press" any keypad button just as if they were standing in front of the controller. **PWC_Remote™** software running on the user's personal computer can "dial in" to any PWC site, and does NOT require site specific programs or custom configurations.

Control Network
The **PWC** includes an RS485 Modbus port to communication with Building Automation System (BAS), Building Management System (BMS) or Supervisory Control and Data Acquisition (SCADA) systems.



PLANT WIDE CONTROLLER (PWC)
Specifications



Mechanical

Case Size:	16½" H x 14½" W x 6¾" D
Enclosure Type:	Wall mounted
Case:	7 Slot, (CPU + 6 I/O Slots)
Weight**:**	55 lbs.

Environmental

Operating Temp:	32° to 122° F (0° to 50° C)
Storage Temp:	-20° to 150° F (-28° to 65° C)
Humidity Limits:	15 to 95% (noncondensing)
Enclosure:	NEMA 1

Performance

Accuracy:	0.025% Analog I/O
Resolution:	16 bit input/12 bit output
Microprocessor:	32 bit, 128k EEPROM
Execution Cycle:	Five per second
Time/Date Clock:	(battery backed)

Operator Control Panel

LCD Graphic Display:	2.9" H x 5.1" W
Keyboard:	Membrane, tactile feedback

Historical Data (Optional)

Displays:	8 or 40 minute or 2, 8 or 24 hour charts
Memory:	Non-Volatile, 128 MB 48 points every second for 30 days

Configuration

Standard Lead/Lag:	Menu style "Fill-In-The-Blanks" setup.
Control Language:	Function block style, 60 functions, 600 Blocks
Security:	2 password levels
Custom Blockware Configuration Software:	PWC_Edit™ spread sheet based or PWC_Draw™ graphical, editor. (Windows PC Required)

Communication

Control Network:	
Protocol:	Modbus (ASCII or RTU mode)
Speed:	1200 to 38,400 baud
Type:	RS485, optically isolated
Telephone Modem (optional):	Internal Card 33,600 baud, RJ-11 Jack, Data and Pagers
Printer Port:	Alarms/Logs, DB25F connector
Programming Port	
Speed:	9600 to 38,400 baud
Type:	RS232, DB9F connector

Electrical

Input Power:	120 VAC (+/- 15%), 12A total, 0.7A internal Built in surge suppressors
Internal Power Supply:	24 VDC @ 300 mADC for external use

PLANT WIDE CONTROLLER PWC (PWC)
Specifications

PWC shown with both doors open, divider plate removed and three spare I/O slots. The wall mounted enclosure provides field wiring conduit connection points and front door key lock security.

Expandable - Plug-in I/O expansion modules are easy to install. "Blockware" configuration language allows control strategies to be easily adapted to on-site conditions.

"Hand-Off-Auto" Relay Output Board. Toggle switch directly activates output in "Hand" and "Off."

Input/Output Specifications

CPU Board:

Analog Inputs:	Quantity:	2
	Type:	4-20 mADC or -20°F to +300°F Thermistor
Relay Output:	Quantity:	1
	Type:	SPDT, 8A, ½ HP, 120VAC

Hand-Off-Auto Relay Output (HOA-ROUT) Board:

Relay Output:	Quantity:	5
	Type:	SPST, 8A, ½ HP, 120VAC
Toggle Switches:	Quantity:	5
	Type:	Hand-Off-Auto (hardwired) SPDT, 8A, ½ HP, 120VAC
LED Indicators:	Quantity:	10
	Type:	"Call for Operation" and "Output Status"

Auto/Manual Analog Output (A/M-AOUT) Board:

Analog Output:	Quantity:	5
	Type:	4-20 mADC or 0-135 ohm (any combination)
Toggle Switches:	Quantity:	5
	Type:	Auto-Manual
Control Dial:	Quantity:	5
	Type:	0-100% (Manual Potentiometer)
Bargraphs:	Quantity:	5
	Type:	0-100%, 10 segment

Discrete Input (DIN) Board:

Digital Inputs:	Quantity:	15
	Type:	120 VAC, optically isolated
LED Indicators:	Quantity:	15
	Type:	Status Indication

Analog Input (AIN) Board:

Analog Input:	Quantity:	8
	Type:	Universal, Switch Selectable as: - 4-20 mADC, 2 wire - Thermistor, -20°F to 300°F, Thermocouple Type J, 0-1200° F, 0-5 VDC, or Potentiometers - Pulse, 0.01 – 4000 Hz, 0-15 VDC
LED Indicators:	Quantity:	8
	Type:	Status Indication

Relay Output (ROUT) Board:

Relay Output:	Quantity:	8
	Type:	(2) SPDT, (6) SPST-NO, 8A, ½ HP, 120 VAC
LED Indicators:	Quantity:	8
	Type:	Status Indication

PLANT WIDE CONTROLLER (PWC)
Ordering Information

Catalog Number: PWC - C a b c d e f - [#I]-[# P]-[M]-[T]

Optional Input/Output Boards (slots a - f):			
x	None		
A	AIN	8 ch.	Universal, Switch Selectable
D	DIN	15 ch.	120 VAC, Optically Isolated
H	HOA-ROUT	5 ch.	Relay, 8A, 120VAC
R	ROUT	8 ch.	Relay, 8A, 120VAC
O	A/M-AOUT	5 ch.	4-20 mADC or 0-135 ohm
	Specify A/M-AOUT output channel cards: (one required per active channel, any combination) 1 ch 4-20 mADC (#I = quantity) 1 ch 135ohm pot (#P = quantity)		
Optional Features:			
M	Telephone Modem (CPU Daughter Board, P/N 190603). Includes Internal Modem and PWC_Remote™ PC Software		
T	Historical Memory (CPU Daughter Board, P/N 190604), 32 MB		

Catalog Number Example:
PWC-CDHODAR-3P-2I-M-T: PWC with CPU, DIN, HOA-ROUT, DIN, AIN, ROUT Boards,(3) 135ohm output cards and (2) 4-20 mADC output cards, Internal Modem and Historical Trending.

Optional Input/Output Board Expansion Examples:

PWC Model #	AIN	AOUT	DIN	ROUT	Total I/O	Example Applications
PWC-C D H O x x x	2	5	15	6	28	2-5 Boiler Modulating Lead/Lag
PWC-C D H O D H O	2	10	30	11	53	2-10 Boiler Modulating Lead/Lag
PWC-C D H x x x x	2	0	15	6	23	2-5 Boiler Lead/Lag
PWC-C D H D H D H	2	0	45	16	63	2-15 Boiler Lead/Lag
PWC-C D H O A A A	26	5	15	6	52	2-5 Boiler Mod. L/L With Monitoring
PWC-C D A H H H O	6	4	3	11	24	3 Cell Cooling Tower, VSD Fans
PWC-C D A H H O O	9	6	14	9	38	3 Boiler, DA and Surge Tanks
PWC-C A A A A A A	50	0	0	1	51	Plant Monitoring
PWC-C D D D D D D	2	0	90	1	93	Plant Monitoring

Notes:
1) The examples given in no way reflect the number of possible option board combinations. The PWC has a total of six (6) option board slots, and any option board may be used in any slot.
2) Consult factory for available pre-configured control strategies.
3) Separately order PWC Edit™ or PWC Draw™ programming packages as required.

Specify Pressure Sensor as follows:
P/N **70600** for 0-25 PSI with syphon loop
P/N **70601** for 0-200 PSI with syphon loop
P/N **70602** for 0-500 PSI with syphon loop

Specify Thermistor Temperature Sensor as follows:
P/N **70610** for 0-300° F hot water with 4" thermowell
P/N **70611** for 0-300° F hot water with 8" thermowell
P/N **70612** for Outside Air Temperature with weatherproof cover

PLANT WIDE CONTROLLER (PWC)
Suggested Specifications

1. General

Supply a microprocessor-based control system with field expandable plug-in Input/Output modules. Control logic shall be either Ladder Logic or Function Block based. Any/all loop controllers, programmable logic controllers, and/or historical trend recorders within the Control System shall be interconnected via serial links to minimize wiring of internal control signals from device to device. The control system logic and calibration data shall be stored in a non-volatile memory that does not require battery backup. A field replaceable battery back-up shall be included to maintain the system time/date clock. The control system shall operate on 120 VAC and include a surge suppressor. The control system shall include a 24 VDC power supply with 300 mADC available for external use that is UL508A rated for 120° F.

2. Enclosure

A wall mounted, factory-assembled steel enclosure shall be provided. All operator interface control switches, indicators and displays shall be physically separated from any field terminations. During normal operation it shall not be possible for an operator to come in contact with 120 VAC wiring. Manual Backup control switches and indicators must be protected from unauthorized operation by a key lockable door with a viewing window.

3. Operating Displays

The control System shall have a flat panel LCD Display for operator control, alarm listing, control tuning and troubleshooting functions. Provide tactile feedback, numeric keypad for data entry. Provide dedicated pushbuttons for Alarm Silence and to view a Plant Overview displays. The display shall be 5" x 2.9", 8 line x 40 character or larger. The Control System shall include a password protected menu system for controller tuning functions.

4. Historical Trend Display

The Control System shall provide historical trend displays by using a paperless chart recorder or other video graphic hardware. This recorder shall include a 100 x 150 pixel resolution, up to 4 traces per chart, 8 minute to 24 hour chart “width” and a non-volatile memory for up to 32 data points for at least 45 days of history. Arrow keys shall be provided to scroll backward and forward thru time. For efficiency monitoring, tuning, and troubleshooting, a technician shall be able to re-configure trace and chart selections using a menu style system.

5. Alarm And Event Management

Alarms, events and operator actions shall be logged with Time/Date stamp and English language description. The control system shall include a 200 point memory minimum. Provide an Alarm Display page for viewing the most recent 8 alarms/events with scrolling capability to view the complete 200 point alarm/event memory. New alarms shall trigger the common alarm output relay. Events shall be recorded, but shall not trigger an alarm. A dedicated Alarm Silence button shall silence the alarm output.

6. Control Panel Mounted Indicators

Provide individual long life LED status indicators for all controlled equipment. All indicators shall be labeled with a permanent marking.

7. Input/Output Signal Types

The Control System shall include the following input/output signal types: Analog inputs shall be universal type and must be field selectable between 4-20 mADC, Thermistor, Thermocouple, Potentiometer and pulser. Analog outputs shall be 4-20 mADC and 0-135 ohm. Discrete inputs shall be 120 VAC, optically isolated type. Relay outputs shall be SPDT and SPST, 8A, ½ HP, 120VAC.

8. Reliability

Field wiring shorts or ground loops within one pump, valve or fan shall not affect automatic or manual operation of other devices. Provide electrically isolated relay contact and isolated 4-20 mADC/0-135 ohm modulating control outputs. Each Transmitter and Sensor shall have individual power supply short circuit protection. “Hard Manual” backup stations shall be provided to ensure continued central operator control in the event of CPU memory corruption or failure. Include hardwired “Hand-Off-Auto” control switches inserted directly into every boiler, pump, damper, fan, etc... Start/Stop circuit. Each 4-20 mADC or 0-135 ohm modulating control output must include a hardwired Manual Backup Station with Auto/Manual Switch, output control knob or pushbuttons, and output level indicator (bargraph, analog meter or digital display). The Manual Station hardware must function when the CPU is not functioning.

9. Remote Monitoring and Paging System

Selected alarms shall cause a modem to dial a pager service center telephone number. Provide a 20-digit phone number that can include outside line codes, access codes, and pauses. The modem shall use the TAP protocol to send a text message to an alphanumeric pager. The message shall include a 30-character facility name plus a 20-character alarm message. Upon receipt of the page, the person shall “dial in” to the modem to acknowledge the message. If the system does not receive a dial back acknowledgement or front panel Alarm Silence button “press” within 5 minutes (adjustable), the system shall dial a second backup pager and re-send the alarm message. The system shall log the time and date of all pages and acknowledgments in the Alarm/Event List. A remote user shall be able to dial in to the modem and be able to view any screen and remotely “press” any keypad button just as if they were standing in front of the control system. Provide software to allow a remote user’s personal computer to “dial in” to any Control System site, without custom configured for each site.

10. Control Network

In addition to the Remote Monitoring and Paging System features, the Control System must include a RS485 Modbus communication interface to a Supervisory Control And Data Acquisition (SCADA) System, Building Automation System (BAS), or Building Management System (BMS).

11. Quality Assurance

The control enclosure shall be manufactured and labeled in accordance with UL508A (CSA C22.2 #14 for use in Canada). Simply supplying UL recognized individual components is not sufficient. The assembled control enclosure, as a whole, must be inspected for proper wiring methods, fusing, etc., and must be labeled as conforming to UL508A. Inspection and labeling shall be supervised by UL or other OSHA approved Nationally Recognized Test Lab (NRTL). Lack of an NRTL certified UL508A wiring methods inspection and labeling will be grounds for control enclosure rejection.

Attachment G

ARLINGTON COUNTY
ENVIROMENTAL SERVICES DEPARTMENT
WATER POLLUTION CONTROL BUREAU
STANDARD OPERATING PROCEDURES

Contractor Safety Standard

Effective Date: September 28, 2006

NewLast Revision: _____

Safety Specialist Date:
Water Pollution Control Bureau

Approved By: _____

Larry Slattery, Bureau Chief Date:
Water Pollution Control Bureau (WPCB)

APPLICABILITY

WPCB facilities, a bureau of the Department of Environmental Services. This is a site specific document written for use by the Water Pollution Control Bureau only.

Technical Writer

Jerry Contey, Safety Specialist, WPCB

I. PURPOSE

The purpose of this standard is to provide minimum guidelines and procedures that will be followed by all Contractors who perform work or contracted services Water Pollution Control Bureau (WPCB) facility and remote WPCB locations (herein after the WPCB facilities). The guidelines outlined in this standard are to ensure the protection and safety of service Contractors, construction Contractors, sub–Contractors, WPCB employees, county employees, citizens, (i.e. any personnel on WPCB property) property, equipment, and anyone who might be affected by the service contracted or construction work being performed at the WPCB.. The Contractor Safety Standard shall be provided to all service and construction Contractors in order to communicate and outline known hazards at the WPCB facilities and to provide information that outlines the WPCB's Safety and

Environmental procedures in order to comply with the following standards: Occupational Safety and Health Administration/Virginia Occupational Safety and Health (OSHA/VOSH) Title 29 CFR 1910, Standards for General Industry, Title 29 CFR 1926, Standards for the Construction Industry, Federal, State and Local laws, applicable national consensus standards as well as Arlington County policies and procedures.

II. SCOPE

This standard applies to all Contractors performing work and/or services at the WPCB facilities. This includes Contractors who through a written contract are performing work or services at the WPCB facilities as well as Contractors working on construction projects (upgrade or expansion) at the WPCB such as the Master Plan 2001 upgrade and expansion project. Contractors bear sole responsibility for the safety of his or her employees. The Contractor must take all steps necessary to establish, administer, and enforce safety rules that meet or exceed the minimum laws, standards and procedures outlined in Section I of this standard. Contractors are also responsible for ensuring that all of their sub–Contractors comply with the requirements outlined within this standard.

III. GENERAL OVERVIEW OF THE CONTRACTOR SAFETY STANDARD

A. HEALTH AND HUMAN FACTOR CONSIDERATION

Contractors must recognize the fact that their employees as well as sub–Contractors often resist following safety and health laws due to scheduling requirements, inconvenience and discomfort sometimes associated with wearing Personal Protective Equipment, and the requirements for specialized equipment.All service Contractors are responsible for meeting the intent of this standard for the work which they were hired to perform in conformance to Section 1 of this standard. Hazardous conditions or practices not covered in an OSHA or VOSH standard may be covered under Section 5 (a) (1) or 5(a) (2) (General Duty clause) of the Occupational Safety and Health Act of 1970 which states, “Each employer shall furnish to each of his

employees employment and a place of employment which are free from recognized hazards that are likely to cause death or serious physical harm to his employees.

B. MINIMUM STANDARD REQUIREMENTS

Listed below are the minimal requirements that will be followed by Contractors in conjunction with; Construction safety plans, where applicable, VOSH laws, County policies and procedures, State and Federal laws as well as applicable National Consensus guidelines. All of the above will be followed in order to ensure that everyone i.e. Contractors, sub–Contractors, facility employees, visitors, citizens on site, equipment and property are protected from hazards. The main sections of the standard are listed below: 1.) Written Contractor Program 2.) General Requirements, 3.) Relationship with WPCB, 4.) Designation of Competent Person(s), 5.) Workplace Inspections, 6.) Basic Safety Rules. 7.) Safety permits and procedures. 8.) Training requirements, 9.) Facility Operations, 10.) Housekeeping and Sanitation, 11.) Maintainence and Inspection, 12.) Storage, 13.) Medical Services and First Aid, 14.) Reporting Accidents and Incidents, 15.) Environmental Issues, 16.) Periodic review and Standard evaluation and 17.) Appendices #1–6 (Appendix #1 – General review of OSHA standards applicable to Contractors, Appendix #2– Contractor Safety Checklist, Appendix #3 – Pre Job Contractor Safety Planning Checklist, Appendix #4 – Instructions for use of Appendix #3 & 4 – Checklists, Appendix #5 – Contact Telephone Numbers and Appendix #6 – Facility Map of the WPCB)

IV. DEFINITIONS

Accident – An unplanned or unforseen event that may or may not result in physical harm and/or property or equipment damage; any unplanned event which interrupts the normal progress of an activity and is proceeded by an unsafe act, unsafe condition or some combination thereof. An accident may be seen as resulting from a failure to identify a hazard or from some inadequacy in an existing system of hazard controls.

Annually – Time period not to exceed 365 days.

ANSI – American National Standards Institute

Approved – Sanctioned, endorsed, accredited, certified or accepted as satisfactory by a duly constituted and nationally recognized authority or agency.

Authorized – A person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the jobsite.

Certified or Licensed – A person possessing a license or certification issued by a reputable authority attesting that the person has been trained and/or tested and is qualified to perform specific tasks or operate specific equipment.

Competent Person – This person must be capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous or dangerous to employees and who has authorization to take prompt corrective measures to eliminate or correct hazards.

Contractor – One who contracts to do work for another. This term is applicable to any person who enters into a contract, but is commonlyreserved to designate one who for a fixed price, undertakes to procure the performance of works or services on a large scale, or the furnishing of goods in large quantities, whether for the public, a company or individual. A Contractor is a person who, in pursuit of any independent business, undertakes to do a specific piece of work for another, using his/her own means and methods without submitting to their control in respect to all its details, and who renders service in the course of an independent occupation representing the will of his/her employer only as to the result of the work and not as to the means of which it is accomplished.

Contractor Employee(s) – A person(s) employed by a Contractor.

Construction – Construction work means work for the creation of a structure, alteration, and/or repair including painting and decorating.

Construction Manager – The Construction Manager is repsonsible for the implementation of the constuction project including all aspects of Contractor management and construction protocols.

Construction Program Management Company – The Construction Program Management Company is the person(s) or company contracted to represent WPCB and manage the facility upgrade and expansion projects conducted at the WPCB facilities and remote locations. They oversee the overall performance of the project including but not limited to budget, schedules, designer and Contractor management, work quality, safety and program communications.

Designated – Means selected or assigned by the employer or the employer's representative as being qualified to perform specific duties.

Designee – A designated or authorized person that has been given the responsibility for acting in another person's place in order to ensure that a task is performed.

D.O.T. – Department of Transportation (Federal agency)

Employee – The person taking direction from the employer. An individual who has an agreement to work for an employer and is compensated by that employer for his/her time and/or effort.

Employer – Employer for the purpose of this standard means Arlington County, Contractors or sub-Contractors working at the WPCB.

EMS – Emergency Management System

Engineer Program Coodinator – The Water Pollution Control Bureau Engineer Program Coordinator is responsible for the coordination, contract administration and negotiations for facility upgrades and/or expansions.

General Contractor – General Contractor fits the description of a Contractor but has responsibility for the entire job or project.

Hazard Analysis /Evaluation – A review or evaluation by a person trained in hazard recognition to evaluate a work area. A Hazard Analysis is performed to identify hazardous conditions and gather data for the purpose of the elimination or control of the hazard.

Hazardous Atmosphere – An atmosphere that is poisonous, corrosive, oxidizing, irritating or otherwise harmful. The atmosphere is likely to cause injury or death.

Hazardous Substance – Any substance that has the potential of causing injury by reason of being explosive, flammable, toxic, corrosive, oxidizing, irritating or otherwise harmful to a person.

Imminent Danger – An impending or threatening situation that is dangerous with an outcome that could be expected to cause serious injury or death to persons in the immediate future unless corrective measures are taken.

Incident – An occurance, happening or energy transfer that results from either positive or negative influencing events. An incident may be classified as an accident, mishap, or near miss depending on the negative or positive outcome.

IDLH (Immediately Dangerous to Life and Health) – Any atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Lift Stations – Pumping or flow metering stations that are located away or off-site from the main WPCB facility.

MSDS – Material Safety Data Sheets

NIOSH – National Institute for Occupational Safety and Health

OSHA – Occupational Safety and Health Administration.

PFAS – Personal Fall Protection System

PPE – Personal Protective Equipment

Qualified – A person by possession of a recognized degree, certificate or professional standing, or who by extensive knowledge, training and experience has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work or the project.

Sub Contractor(s)– A person(s) who meets the definition of a Contractor but is only responsible for a portion of the job

Training – Prior to beginning for work at the WPCB all Contractors must be trained regarding all aspects of Contractor protection and applicable safety and health requirements according to Titles 29 CFR 1910 or 29 CFR4 1926 and applicable national consensus standards relevant to the type of work being preformed. (Note the section of this Contractor Safety Standards entitled Training).
VOSH – Virginia Department of Labor and Industry (Virginia Occupational Safety and Health Compliance Program)

WPCB – Water Pollution Control Bureau i.e. facility, lift stations and other remote locations belonging to WPCB facility. .

V. RESPONSIBILITIES

The following responsibilities are assigned to make sure that both management and employees are involved in the Contractor safety process. Managers and employees are encouraged to become familiar with their responsibilities as they will be held accountable for this standard as well as for reporting Contractors who fail to comply

with this standard.

A. RESPONSIBILITIES OF THE BUREAU CHIEF

1. Take the necessary actions to ensure that a Contractor Safety Standard is established and maintained for the Bureau. Support managers and supervisors with resolving problem areas as they pertain to this standard.

2. Make sure that training regarding this Standard is established for all employees to include Contractor hazards and the contents of this standard. Additional training will be provided for those who are required to work directly with Contractors. .

3. Support managers and supervisors through the budgetary and staffing process such that the contents of this standard are implemented and maintained in order to ensure the health and safety of Water Pollution Control Bureau employees as well as Contractor employees while contracted services are being performed at the WPCB facility

4. Shall require that managers, supervisors and crew leaders, or their designees(s) implement, adhere to, enforce, and comply with this policy and report unsafe acts and conditions to the appropriate authorities including the Safety Specialist and WPCB Bureau Chief.

5. Make his best efforts to ensure that all contract documents for contracted or construction services contacin the necessary information concerning safety, health and environmental requirements that comply with all aspects of this standard.

6. Make his best efforts to ensure that violations of this standard are addresses in a timely manner when Contractors of their employees fail to adhere to policies, laws and standards outlined within this document.

7. Make his best efforts to coordinate with the Arlington County Purchasing

agent to ensure that the appropriate contract language is included in contract documentation to ensure Contractor compliance.

8. Makes his best efforts to implement, adhere to, enforce and comply with this standard and take the necessary acts to address all unsafe acts, conditions, and violations of this standard.

B. RESPONSIBILITIES OF SAFETY SPECIALIST

1. Assist WPCB management to ensure that a written Contractor Safety Standard is written, implemented and periodically maintained.

2. Provide support and safety expertise to designated WPCB project employees assigned to Contractor or construction projects to ensure the health and safety of all employees at all WPCB locations.

3. Periodically ensure that the Contractor Safety Standard complies with applicable Arlington County policies, County, State, and Federal laws as well as applicable National Consensus Guidelines.

4. Develop training that includes all aspects of the Contractor Safety Standard. Awareness training will be provided to all WPCB employees and additional training provided for those required to work with Contractors as a part of their job function. The Safety Specialist will coordinate, with the appropriate WPCB person who is in responsible charge of the Contractor in order to ensure that Contractors are aware and adhere to appropriate safety training requirements outlined within this standard. Contractor employee safety training is the sole responsibility of the Contractor and must be conducted prior to work beginning at the WPCB facility.

5. Make sure that a hazard analysis of work areas are performed upon requrest to ensure that known facility hazards are identified prior to the beginning of

Contractor service or work. Communication of this information will be via the person in responsible charge of the Contractor.

6. Make sure that the Contractor Safety Checklist completed by service and construction Contractors are reviewed and that necessary steps are taken to ensure compliance with the WPCB Contractor Safety Standard.

7. Make sure that the Contractor Safety Standard is monitored and that a periodic Standard review is conducted to ensure compliance.

8. Periodically monitor for any changes of County, State or Federal laws and applicable national consensus standards that might require changes in this Contractor Safety Standard. Make sure that any updates or changes are made in a timely manner after the periodic review and communicated to the appropriate employees.

9. Shall inform the Bureau Chief in a timely manner of any violations of this policy that the Safety Specialist has been made aware of.

10. Shall include a review of this policy in all training provided to employees in the New Employee Orientation training.

C. RESPONSIBILITIES OF THE OPERATIONS/MAINTENANCE MANAGERS

1. Make sure that WPCB employees performing job duties requiring them to work with Contractors as a part of their job are identified to the Safety Specialist.

2. Make sure that employees within their sections adhere to all aspects of the Contractor Safety Standard.

3. Make sure that all safety concerns surrounding Contractors are promptly resolved or referred to the Safety Specialist or designee for review and resolution.

4. Make sure that any accidents, exposures or concerns that are communicated to them by employees are reported immediately or within 24 hours to the Safety Specialist or designee so that the appropriate steps such as inspections or hazard analysis can be conducted immediately in order to resolve concerns. In the event that the Safety Specialist is not avaialable during the job the designee will report all accidents, exposure or concerns to the Safety Specialist immediately.

5. Shall be responsible for taking all action necessary to implement and enforce this policy.

6. Shall budget adequate funding for the implementation and maintenance of this policy.

D. RESPONSIBILITIES OF SUPERVISORS

1. Make sure that employees comply with all aspects of this standard.

2. Make sure that any changes in the work place due to contracted services that might pose a health or safety hazard to Contractors or employees are reported to the appropriate Manager, Safety Specialist or designee immediately for proper evaluation and resolution.

3. Report problem areas immediately to the appropriate Manager, Safety Specialist or designee for prompt inspection or resolution prior to allowing employee to enter areas where Contractors are working.

4. Ensure that employees comply with all signs, barricades or warnings

implemented by Contractors to ensure site safety.

5. Monitor and periodically access Contractors to ensure compliance with this standard and report any violations to the appropriate Manager, Safety Specialist or designee immediately.

6. Monitor and periodically assess the safe use of Contractor equipment by Contractor employeesl while they are working in areas that are under their supervision.

7. Make sure that WPCB employees do not provide WPCB equipment to Contractors for use under any circumstances, other than emergency equipment such as eyewash facilities, AEDs, and first aid supplies and only in the event of an emergency

8. Ensure that Contractors return work areas to a safe condition upon completion of contracted services before leaving the WPCB work site.

E. RESPONSIBILITY OF WPCB RELIABILITY ENGINEER, PLANNERS/OR DESIGNEE/ENGINEERING PROGRAM COORDINATOR/PROGRAM MANAGERS OR OTHER WPCB EMPLOYEES REQUIRING CONTRACTED SERVICES

1. Ensure that all work is planned looking at the safety related aspects of the job. Ensure that the hazards associated with the work that is to be performed are outlined and communicated to the Contractor before work is started.

2. Make sure that Contractors working on jobs are aware that they have responsibility for complying with all aspects of this standard.

3. Make sure that any changes in the work place due to contracted services that might pose a safety hazard to Contractors or employees are reported to the

appropriate Manager, Safety Specialist or designee immediately for proper evaluation and resolution.

4. Report problem areas immediately to the Manager, Safety Specialist or designee for prompt inspection or resolution prior to allowing employees to enter areas where Contractors are working.

5. Ensure that facility employees comply with all signs, barricades or warnings implemented by Contractors to ensure site safety during contracted services or construction.

6. Monitor and periodically assess Contractors to ensure that they are not violating this standard and report any violations to the appropriate Manager, Safety Specialist or designee or WPCB point of contact immediately. In the event that the Safety Specialist is not initially involved, the designee will report all accidents, exposures or concerns to the Safety Specialist immediately.

7. Monitor and periodically asses the safe use of Contractor equipment by Contractor employees while they are working in areas on projects that they oversee.

8. Make sure that WPCB personnel do not provide WPCB equipment to Contractors for use under any circumstances other than emergency eyewash facilities, AED's, and first aid supplies and only in the event of an emergency.

9. Ensure that Contractors maintain housekeeping in such a way as to not pose hazards to facility employees and others.

10. Ensure that Contractors return work area to a safe condition upon completion of work before leaving the WPCB work site.

11. Ensure that safety related paperwork generated by the Contractor is turned in to the safety office in a timely manner for record keeping purposes.

12. Report all instances, which you have been made aware of, concerning the Contractor(s) failure to comply with this standard immediately to the appropriate Construction Management, Safety Specialist or designee for prompt inspection or resolution.

13. Make best efforts to ensure that issues concerning safety and health are addressed in a timely manner between the WPCB Safety Specialist and the designated construction safety employees.

F. RESPONSIBILITIES OF ENGINEER PROGRAM COORDINATOR OR DESIGNEE

1. Make best efforts to coordinate contract administration, negotiations and communications regrading the contract to facility employees to ensure the safety of all emplpoyees throughout the construction project.

2. Make best efforts to ensure that all construction contract language and documents contain the necessary information concerning safety, health and environmental requirements that comply with all aspects of this standard.

G. RESPONSIBILITIES OF ALL EMPLOYEES

1. Adhere to all signs, warnings and barricades implemented by the Contractor to ensure facility safety.

2. Ensure that any changes in the facility that occur as a result of, or during work being performed by Contractors that might pose a hazard to anyone is reported to their Supervisor immediately for proper evaluation and resolution.

3. Report all observations of Contractor unsafe acts or conditions immediately to his/her Supervisor for prompt resolution.

4. Report any observations of Contractor unsafe use of equipment, equipment malfunction, need for equipment repair, damage or replacement needs to the supervisor for proper resolution.

5. Do not under any circumstances provide Contractors tools or equipment belonging to the WPCB other than emergency equipment such as eyewash facilities, AED's, and first aid supplies and only in the event of an emergency. Report any request for these items immediately to the WPCB Supervisor.

6. Attend scheduled Contractor training as required by WPCB management.

VI. REQUIREMENTS

A. MINIMUM REQUIREMENTS

1.) Written Contractor Safety Standard – The WPCB will implement, maintain, review and update a written Contractor Safety Standard that provides guidance designed to protect workers from known hazards that have been identified in the workplace. Companies who perform contracted work and or services within the WPCB facility or off site locations will adhere to the contents of this Standard as well as all applicable national consensus standards listed in Section I of this standard.

2.) Contractor General Requirements – Contractors shall be subject to the OSHA/VOSH provisions outlined in the Contractor Safety Standard which has been prepared for the protection and safety of WPCB employees, other Contractors, property, and anyone who may be affected by work being performed. Contractor work can potentially affect the safety of all employees and property, and for this reason the Contractor Safety Standard shall be provided to all Contractors working at the WPCB. Due to the wide variety of services that Contractors and construction companies could provide while working at the WPCB,, it is not feasible to outline every applicable law, standard and work practice in this document. Contractors bear sole responsibility for the safety of

their employees. Contractors must take all steps necessary to establish, administer, and enforce health and safety rules and regulations that meet or exceed the regulatory requirements of VOSH (Virginia Occupational Safety and Health), OSHA (Occupational Safety and Health Administrator)), the DEQ (The Virginia Department of Environmental Quality), Then Virginia Workers' Compensation Commission, all Local, State and Federal lawas as well as applicable national consensus Safety and Environmental standards. Contractors are expected to take all steps necessary to establish, administer and enforce safetyh rules that meet or eceed the regulatory requirements listed above. Hazardous conditions or practices not outlined in a specific VOSH or PSHA standard may be covered under section 5(a) (1), 5(a) (2) i.e. the General Duty clause of the Occupational Safety and Health Act of 1970 which states that "Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are likely to cause death or serious physical harm to his employees." Contrators bear sole responsibility for communication and safety-related information and requirements to sub-Contractors working under their direction. Contractors shall assure that their sub-Contractors comply with the requirements outlined herein.

3.) Relationship with WPCB – All agencies, firms or companies conduting work at the WPCB facility must comply with the requirements of this standard. Contractors shall adhere to all safety requirements outlined in purchasing documentation. The agency, firm or company shall maintain appropriate insurance, including general liability, auto liability and Worker's Compensation insurance. Verification of insurance shall be sent to the Arlington County Purchasing Agent prior to the start of work. The Arlington County purhcasing agent can be reached at 703-228-3410.

4.) Designation of Competent Person – The designation of a competent person will be required when the job consists of wotk that meets the definition of construction as outlined in 29 CFR 1926. The selection of a Competent Person will be made in accordance with the requirements outlined in 29 CFR 1926.32. The competent person must have the ability and authority to address and remedy hazards that are identified in a timely manner.

5.) Workplace inspections – An assessment of all areas and types of equipment currently being utilized for contracted services is ongoing and may be conducted while the Contractor is working on site. The duration of inspections will depend upon the type of work being preformed, the hazards associated with the work and the amount of time that the Contractor will be working at the WPCB. Inspections may be conducted upon request when non–compliance to this standard is demonstrated or upon request by any affected employee. The purpose of this assessment will be to identify possible Contractor hazards that might exist in the workplace. The hazard analysis must be conducted by a person trained to recognize hazards and must be documented. The hazard analysis must adequately access the potential for the use of Administrative or Engineering controls and must be conducted prior to recommendations being made for the use of Contractor protection. Contractors must be notified of deficiencies immediately.

6.) Basic Safety Rules – An employee of a contracor may be temporarily or permanently removed from the WPCB for the following reasons:

- Possession or use of alcoholic beverages or related drugs not prescribed by a physician
- Being under the influence of prescribed or non prescribed medications that could influence behavior or equipment operation
- Not using appropriate PFAS (Personal Fall Protection System)
- Failure to wear the appropriate PPE. The following PPE (Personal Protective Equipment) is required at all time on the WPCB site:
  - Hard Hat
  - Steel Toed Boots
  - Reflective Vest
  - Safety Glasses with Side Shields

Note: In addition Construction Contractor emplopyees will also be required to wear:

- Long Pants
- Shirts that cover the shoulders

A hazard assessment may indicate the need for additional PPE. All designated PPE must be worn by Contractors and their employees.

- Fighting or horseplay
- Possession of explosives, firearms, ammunition, or other weapons
- Deliberate violation of safety or security rules
- Ignoring “Danger” “Caution” or other safety related signs or barricades
- Unauthorized removal or desctruction of a safety barricade, guardrails, warning signs, fall protection, or other warning devices intended to protect WPCB employees, property, or others on the WPCB site.
- Illegal dumping, handling or disposal of hazardous chemicals or materials
- Destruction or removal, without written permission of any property belonging to WPCB, WPCB employees or other Contractors or their employees
- Intimidating, threatening, harassing impeding or interfering with an inspector, police officer, security officer, WPCB, VOSH Compliance Officer, state or federal employee or designated representative of any of these agencies
- Using emergency exits other than for emergencies
- Misuse of fire prevention and protection equipment
- Not maintaining an orderly and clean work area
- Violating any Arlington County policy, Local, State or Federal safety and

environmental law.

- Operation of equipment or vehicles without mandated State license, endorsements or equipment specific training.

- Failure to notify Miss Utility of Virginia and keeping tickets current. Miss Utility of Virginia can be reached at 1–800-552-7001.

7.) Safety Permits and Procedures – There are no operations that Contractors or sub–Contractors might perform that could represent a hazard to their employees, WPCB employees and others at the facility. Approval must be obtained through the WPCB Safety Specialist or designee, Shift Supervisor, EMS Administrator, Contract Administrator, WPCB Planners or other WPCB designated points of contact before the following work is to begin:

- Working on fire protection/detection systems

- All hot work including but not limited to burning, welding, cutting or soldering requires a hot permit

- Working on electrical, steam, chillsed water systems, chemical systems and piping, chemical storage containers

- Working on or near energized systems

- Working on or moving emergency equipment (fire extinguishers, first aid kits, etc.) provided by WPCB

- Installing a temporary electrical service or system

- Working with hazardous chemicals (including solvents and paints)

- Generating Hazardous Waste (such as waste oil)

- Working with hazardous cehmicals

- Using powder actuated tools

- Using a gas, diesel or LP (propane) powered engine indoors
- Operating a powered vehicle or self–propelled work platform
- Excavating/trenching
- Using radioactive source or conducting field radiography (x–ray)
- Working with asbestos–containing materials
- Working with lead–containing materials
- Working with Silica containing materials
- Working on security systems
- Working with compressed air/gases
- Using a laser
- Working on a fume hood
- Working on a solvent storage cabinet
- Working on heating, ventilation, or air conditioning systems
- Working on a roof
- Lifting or hoisting with cranes, derricks, hoists or helicopter (Note construction project may require a 'Critical Lift Plan' before work begins)
- Performing blasting operations
- Confined Space Entry
- Working in close proximity to basins, tanks, and any other space containing large amounts of liquid

8.) Training Requirements – All contracors, sub–Contractors and their employees

must be trained, according to OSHA and VOSH requirements, in general safety relative to the jobs that they are expected to perform whilke working at the WPCB. This training must be conducted and documented prior to employees beginning work at the WPCB facility. Training regarding specific hazards must be provided to anyone working at the WPCB facility prior to the beginning of work on site. Anyone required to operate specialized equipment must be certified to do so. Specialized equipment includes but is not limited to all heavy equipment such as cranes, scrapers, bull dozer, track machines, front end loaders, bo cats, fork trucks, stinger cranes and back hoes. A copy of the training certification must be current and available upon request by WPCB management or designee. Contractors working during a construction project at the WPCB must conduct the above safety training as well as any additional instruction that is defined in the training portion of the Contractor specifications or documentations. The use of any machinery, tool or equipment by a person who has not been trained in accordance with applicable requirements of the VOSH (Virginia Occupational Safety and Health) or OSHA (Occupational Safety and Health Administration) is prohibited.

9.) Facility Operations – Care must be observed to not disrupt facility operations or cause conditions that could violate the WPCB Department of Environmental Quality Virginia Pollution Discharge Elimination System permit. The following rules apply for working on any system that impacts the operation of the facility:

- Only trained WPCB Operations employees may shut down, start up, or adjust equipment and facilities that impact the operation of the facility.
- Contractors must notify the WPCB supervisor or designated persons and must coordinate with appropriate WPCB Operations employees in advance of the need for shutdowns and startups of any facility system.
- Lock Out and Tag Out of facility systems must be coordinated with the WPCB supervisor or desginated Operations employees
- The attachment and disconnection of Back Flow Prevention devices must be authorized and coordinated with the WPCB Supervisor or designated

Operations employees

- Contractors must notify the WPCB Supervisor or designee of suspected or actual hazardous materials or substances observed or discovered in the course and scope of their work

10.) Housekeeping and Sanitation – Contractors must maintain good housekeeping while working on WPCB facilities at all times. Poor housekeeping at a jobsite may lead to increaed potential for safety hazards and an increased incidence of accidents and chemical spills. Contractors are expected to comply with 29 CFR 1926.25, and must:

- Keep all work area neat, clean, orderly and free of excess trash and debris
- Keep form and scarp lumber with protruding nails and all other devris clear from work areas
- Conbustible scrap and debris shall be removed on a regular basis to prevent safety and fire hazards from occuring.
- Containers shall be provided for collection and seperation of all refuse. If the Contractor is utilizing the Arlington Water Pollution Control Plant waste conveyance system per the Contract, the Contractor shall provide appropriate separate waste containers to segregate the refuse into the following categories: metals, glass, plastic, clean paper, and other non–hazardous materials. No hazardous materials will be disposed of vis the Arlington Water Pollution Control Plant waste conveyance system by the Contractor.
- Containers that comply with OSHA/VOSH standards shall be provided and used for flammable or harmful substances. Containers must be properly labeled.
- Wastes shall be disposed of at frequeent intervals to prevent safety and fire hazards from occuring.
- Lay down/Staging areas shall be orderly and free from tripping hazards

- Impedeing access to walkways, stairs, driveweays, or roadways can only be done with the permission of the Safety Specialist and the WPCB Bureau Chief and designee. Fire exits can not be impeded or blocked under any circumstances.

- The Contractor shall provide adequate water and sanitation facilities for Contractor employees during major construction. These provisions will be outlined in the construction contract. Service Contractors will be premitted to utilize water and sanitation facilitiese within WPCB facilities.

11.) Maintenance and Inspection – All Contractor employees required to wear or use safety equipment must conduct visual inspections prior to the wear or use of the equipment. The purpose of this inspection is to identify the need for repairs of faults/damage that could hamper or impair the use of the equipment or cause accidents. The employee is responsible to report maintenance and repair concerns to their supervisor immediately. Equipment must be immediately replaced with the same make, model and size or equivalent equipment. The employee will not wear or use equipment that they identify during the inspection process as needing repair or being unsafe.

12.) Storage of equipment – Contractor equipment must be stored in such a way as to ensure that it remains clean and ready for use when needed. It should also be stored in such a way as to not cause an unsafe condition and to ensure that no one else is able to use or misuse the equipment. Lay down areas must be kept neat and items that must be stacked and stored m ust be stored at a minimum of 12” off the ground.

13.) Medical Services and First Aid – All Contractors performing work at the WPCB are to ensure that Medical and First Aid Services are available to their employees in the event that their employee(s) are involved in an accident. All aspects of Section 17, Appendix 1 – Item 17.11 must be followed.

14.) Reporting Accident and Incidents – Contractorsd mist report all accidents and incidents that have or have the potential to cause injury, illness, property loss or damage to the appropriate WPCB personnel immediately or within 24 hours

according to Section 17, Appendix 1 – Item 17.28.

15.) Environmental Issues – All applicable Environmental regulations and standards must be followed while work is being performed at the WPCB facilities. All spills must be reported immediately to the WPCB Supervisor, EMS Administrator, Safety Specialist or WPCB designee. Clean up and disposal of hazardous waste must be coordinated with one of the WPCB employees listed above.

16.) Periodic Standard Review and Evaluation – The Safety Specialist or WPCB desginatee will review the requirements of this standard periodically and when changes occur that might impact the current Standard. Any changes in the Standard will be identified and communicated to all employees who are impacted by this Standards within the Bureau.

B. APPENDICES TO STANDARD (1–6)

VII. WORKPLACE HAZARD ASSESSMENT

A work place hazard assessment is a qualitative evaluation of potential hazards in all elements of a system i.e. employees, equipment and facilities. For the purpose of this standard an assessment will be conducted with a focus on potential Contractor hazards. The results of these assessments will be used to recommend Administrative and Engineering Controls first. In the event that these controls will not adequately reduce facility hazards, recommendations by Contractors for their staff will be required to supply and enforce the use of PPE that provides adequate protection against the hazards their employees will be exposed to.

VIII. HAZARD PREVENTION AND CONTROL

Every effort will be made to prevent and control Contractor hazards by the use of Administrative and Engineering controls. Guidance from other VOSH standards including but not limited to Hazard Communication, Confined Space, the Control of Hazardous Energy and various equipment standards will also be used to assist in this process. However the controls utilized must minimize and reduce identified hazards to acceptable levels as noted in OSHA/VOSHA, NIOSH, ACGIH and other applicable national consensus standards. The WPCB will inform the Contractor of known hazards in work areas without the hazards generated by the performance of the task(s). The Contractor will determine the additional hazards in work areas based on the performance of the task(s)

IX. RECORDKEEPING

Recordkeeping for all aspects of the Contractor Safety Standard shall be maintained by the Safety Specialist or WPCB designee. Records will include the following:

- Completed – Contractor Safety Checklist by companies

- Completed – Contractor Safety Planning Checklist
- Completed – Contractors Confined Space Permits
- Documentation of all on site Contractor accidents
- List of Contractors, subs, consultants, etc who are anticipated to be working on site (needs to be submitted prior to Contractor proceeeding with work)
- Material Safety Data Sheets for chemicals used by Contractors (needs to be submitted prior to proceeding with work

These records will be maintained in accordance with OSHA/VOSHA recordkeeping requirements.

The above noted information must be provided to the Safety Specialist or WPCB designee prior to or immediately after completion of the work element.

X. SOURCES INFORMATION FOR STANDARD

- Local, State, and Federal Environmental Regulations
- Local, State and Federal Occupational Safety laws including OSHA/VOSH –
- Title 29 CFR 1910 and 1926
- Applicable national consensus standards

SECTION 17 APPENDIX 1 SAFETY STANDARD SUMMARY

17.1 – Flammable and Combustible Liquids

- Flammable and combustible liquids shall only be stored in accordance with OSHA 29 CFR 1910.106. Flammable and combustible liquids must be stored in approved and labeled containers
- Flammable and combustible liquids must only be stored in appropriate quantities for the job site use.
- Plastic gasoline cans are not allowed on site.
- Containers must meet all qualifications listed in OSHA 29 CFR 1910.106.
- Conspicuous and legible signs prohibiting smoking shall be posted in service and refueling areas as well as where large amounts of flammable materials are stored
- Flammable liquids shall be dispensed through grounded and bonded containers.
- Flammable and combustible liquids must have appropriate containment.
- Flammable and combustible liquids can not be stored near doors that would be used for emergency exits or in egress areas.
- Storage locations shall have at least one approved portable fire extinguisher that us appropriate for the materials that are being stored and any other flammable materials or ignition sources that are present in the storage area.

17.2 – Liquefied Petroleum Gas (LP Gas)

- Storage of LP Gas within buildings is prohibited.
- Each system shall have containers, valves, connectors, manifold valve assemblies, and regulators of an approved type.
- All cylinders shall meet DOT (Department of Transportation) specifications.

- Every container and vaporizer shall be provided with one or more approved safety relief valves or devices.
- Containers shall be placed upright on firm foundations or otherwise firmly secured.
- Portable heaters shall be equipped with an approved automatic device to shut off the flow of gas in the event of flame failure.
- Storage locations shall have at least one approved portable fire extinguisher.

17.3 – Compressed Air Tools

Must comply with 29 CFR 1910.179

- Pneumatic power tools shall be secured to the hose or whip in a positive manner to prevent accidental disconnection.
- Safety clips or retainers shall be securely installed and maintained on pneumatic impact tools to prevent attachments from being accidentally expelled.
- The manufacturer's safe operating pressure for all fitting shall not be exceeded.
- All hoses exceeding 1/2- inch diameter shall have a safety device at the source of supply or branch line to reduce pressure in case of hose failure.
- Damaged hoses shall not be used and must be removed from service immediately.

17.4 – Compressed Air

- Compressed air used for cleaning purposes must be less than 30 P.S.I.
- Compressed air for cleaning will only be used with effective chip guarding and personal protective equipment.
- Compressed air is NOT to be used on any individual for cleaning, dusting off clothing, or any other purpose.

17.5 – Compressed Gas Cylinders

Compressed gases can pose a severe hazard. Contractors must take the following measures for their protection and the protection of others:

- Valve protection caps must be in place when compressed gas cylinders are transported, moved, or stored.

- Close cylinder valves and replace valve protection caps when work is complete and when cylinders are empty or moved.

- Secure compressed gas cylinders in an upright position in a welding cart or to a solid object (using chains, straps, or a rigid retaining bar).

- Secure compressed gas cylinders on an approved carrier in an upright position while being transported. Cylinders shall only be moved with suitable hand truck, forklift truck, cylinder pallet system or by vehicles that are in compliance with D.O.T., OSHA/VOSH standards. The cylinders must be secured to the device or vehicle in such a way as to guard against dropping or permitting contaciners to violently strike against each other or other surfaces. Personnel who handle containers must be trained in the safe handling and storage of compressed gasses in containers.

- Keep cylinders at a safe distance or shielded from welding or cutting operations.

- Do not place cylinders where they can contact an electrical circuit. Do not hang welding leads or electrical cords from cylinders.

- Keep oxygen and flammable gas regulators in proper working order and a wrench in position on the acetylene valve when in use.

- Oxygen and flammable gas cylinders in storage must be separated by 20 feet or a 5 foot high fireproof barrier having a fire-resistance rating of at least one-half hour Cylinder storage is addressed in 1910.253 (b)(2)(iv) for General Industry and 1926.253 (b)(4) for Construction. Keep cylinders a safe distance from any heat, flame, and/or spark producing activities.

- If a leak develops in a cylinder and it cannot be immediately corrected, move the cylinder to a safe location outdoors Away from sources of ignition, fuel, and oxidizers and slowly empty. This must be done a safe distance away from flammable or combustible materials, confined spaces, and ignition sources. Contractor shall follow all manufacturer recommended procedures for handling leaking cylinders.

- Use only approved spark igniters to light torches. Matches or cigarette lighters are strictly prohibited.

- Cylinders must not be taken into or stored in confined spaces, including gang boxes and office/storage trailers.

- Store hoses and regulators according to OSHA, VOSH, and applicable National Consensus Guidelines.

- Contractor shall properly store and secure all cylinders according to OSHA, VOSH, and applicable National Consensus Guidelines in order to prevent unauthorized personnel from accessing the cylinders. In addition, the partially filled or empty cylinders that will not be utilized within 24 hours must be removed from the job site.

17.6 – Control of Fugitive Emissions

The Contractor shall take all reasonable precautions necessary to control fugitive emissions from the job site. Fugitive emissions include, but are not limited to: nuisance dust, chemical odors,vapors,gases, and hazardous materials (such as lead dust or asbestos).

Where the product(s) or material(s) to be used by the Contractor has a permissible exposure limit (PEL) established by OSHA or VDLI, the Contractor shall take all reasonable steps to maintain exposures below the PEL. Contractor employees, WPCB employees and the public must be protected from exposure to product or material. Where products or materials may cause exposure, the Contractor shall monitor, or shall contract to have monitored, work area exposure conditions. Monitoring shall occur, at a minimum, prior to, during, and after the start of work and whenever there is a change in procedure, process, or chemical or material used. If exposures can not be maintained below the PEL, the Contractor shall restrict access to all areas where exposures exceed the PEL to authorized employees only who have been provided the required PPE for the operation. Safety Specialist or designee shall be notified if the potential exsists for the PEL to be exceeded.

17.7 – Pest Control

The Contractor shall not use any insecticide/pesticide products on WPCB facilities unless such activities are part of contracted work, workers are specifically trained and licensed to use/apply the product and prior approval for use has been obtained from the WPCB EMS administrator, Safety Specialist/designee, and the Operations Manager/designee (all three are required). The Pest Control Contractor shall provide a copy of the MSDS for any chemicals to be used for Pest Control at the WPCB. Care shall be taken by the Contractor to ensure that no persons are exposed to insecticide/pesticide products while pest control work is being performed at WPCB facilities.Contractors must notify the WPCB designated contact person, designee or the Shift Supervisor immediately when his/her employees see evidence of cockroaches, rats, mice, ants or other pests during the course of their work. Contractors must ensure that they perform their on-site operations in a manner that minimizes the potential for pest and insect infestation including, but not

limited to, potential, maintaining housekeeping on the project site, utilizing rodent-proof trash receptacles and securing door/window/wall penetrations and other access points. In addition, the Contractor shall take all ncessary measures to prevent the insecticide/pesticide from entering the process streams in the WPCB facilities unless the process stream is the prior determined target for the application of the insecticide/pesticide. Also, the Contractor shall take all necessary measures to prevent the insecticide/pesticide from entering the storm drainage system and the receiving waters.

17.7 – Herbicides

The Contractor shall not use any herbicide products on WPCB facilities unless such activities are part of contracted work, workers are specifically trained and licensed to use/apply the product, and prior approval for use of the product has been obtained from the WPCB EMS administrator, Safety Specialist/desginee, and the Operationls manager/designee (all three are required). The Herbicide Control Contractor shall provide a copy of the MSDS for any chemicals t be used for plant control at the WPCB. Care shall be taken by the Contractor to ensure that no persons are exposed to herbicide products while plant control wotk is being performed at WPCB facilities. In addition, the Contractor shall take all ncessary mesaures to prevent the herbicide from entering the process streams in the WPCB facilities unless the process stream is the prior determined target for the aplication of the herbicide. Also, the Contractor shall take all ncessary measures to prevent the herbicide from entereing the storm drainage system and the receiving waters.

17.8 – Air Emissions

Contractors must ensure compliance with all applicable local, state, and federal air emissions regulations pertaining to the operations of their on-site equipment.

17.9 – Combustion Units

Combustion units include, but are not limited to, boilers, heaters, emergency generators and kilns. All Contractors must immediately report the following to the WPCB designated contact person, designee or the Shift Supervisor.

- Any installation, maintenance or repairs to a combustion unit that could result in a change in maximum heat input valve or overall emissions (e.g. burner replacement or fuel conversions)

- Any conditions discovered which could have resulted in an increase on air pollutant emissions.

- Prior to beginning work on any combustion unit, the Contractor must notify the

WPCB designated contact person

17.10 – CFC-Containing Unit

CFC containing units include those containing any ozone depleting refrigerants including, but not limited to, Chloro-fluorocarbons (CFC), Hydro chloro-fluorocarbons (HCFC) and Halon. Contractors shall immediately notify the WPCB designated contact person, designee or the Shift Supervisor whenever they become aware of any unintentional or intentional release of CFC's above de-minims levels as established by EPA regulations. The intentional release of CFC's and Halon is prohibited.

Contractors must immediately notify and provide documentation to the WPCB designated contact person, designee or the Shift Supervisor whenever:

A leak rate equals or exceeds the limits established in 40 CFR part 82, OSHA, VOSH, General Consensus Guidelins, or other applicable laws and/or regulations.

Contractors must provide the following documentation to the WPCB designated contact person, designee or the Safety Specialist:

- EPA certifications for any re-claimers to which CFC products evacuated from WPCB systems are to be sent.
- Certifications for any CFC recycle/recovery equipment to be use for WPCB.
- Technician Certifications
- Service records for all units containing greater than 50 pounds of refrigerant. Records must include the date and type of service and the type and quantity of refrigerant added.

17.11 – Medical Services and First Aid

- A person(s) employed by the Contractor who is trained to render First Aid and CPR must be on site or, in the absence of an infirmary or onsite medical employees, a clinic or hospital in near proximity to the facility must be designated for treatment of injuries sustained by Contractor employees.
- Adquate first aid supplies, based on information contacined within American National Standard (ANSI) Z308.1.1998 "Minimum Requirements for Workplace First-aid Kits", are to be provided by the Contractor for their employees.

- Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use. WPCB has emergency showers located throughout the facility that the Contractor is permitted to use in emergencies. The Contractor and the WPCB shall verify, together at the same time, that the emergency showers and eyewashes are properly operational prior to beginning work.

- WPCB has 6 AED's, Phillips Heart Start defibrilators, located on site. Contractors must contact the WPCB Shift Supervisor or Safety Specialist/desginee immediately if ones of these units is needed or activated.

17.12 – Hand and Power Tools

- Electric power operated tools shall either be approved double-insulated, or be properly grounded, and used with ground fault circuit interrupters when used in damp or wet areas.

- Only authorized and properly trained employees shall use power tools.

- Powder actuated tools must only be used by trained operators and warning signs posted in all areas affected by the noise of the nail gun.

- Wrenches shall not be used when the jaws are sprung to the point slippage occurs.

- Impact tools shall be kept free of mushroomed heads.

- The wooden handles of tools shall be kept free of splinters or cracks and shall be kept tight in the tool.

17.13 – Confined Spaces

ALL CONFINED SPACES IN THE WPCB FACILITY ARE 'PERMIT REQUIRED'

The Contractor has responsibility to implement and maintain its own Confined Space Entry Program, including a written program, and a provision for emergency rescue. The Contractor can designate rescue to be done by the Arlington County Fire and Rescue Department prior to beginning work. The Arlington County Fire and Rescue Department can be contacted by dialing 911 and

requesting Technical Rescue. The Contractor shall perform confined space entry in accordance with the OSHA 29 CFR 1926.20 and/or 1910.146 as applicable and Virginia Department of Labor and Industry (VDLI) requirements. The Contractor's written program shall be made available to the WPCB Safety Specialist or the WPCB designated contact person or designee for review upon request.

When the WPCB arranges to have a Contractor perform work that involves entry into a 'Permit-Required' confined space, the WPCB designated contact person or designee will:

- Inform the Contractor that the workplace contains 'Permit Required' confined spaces and that entrance into permit spaces are allowable only through compliance with the above mentioned regulations.

- Apprise the Contractor of the elements, including the hazard(s) identified and the reason for why the space is a confined space and a permit is required for entry.

- Apprise the Contractor of any precautions or procedures that WPCB has implemented for the protection of WPCB employees in or near 'Permit Required' spaces where Contractor employees will be working.

- Debrief the Contractor at the conclusion at the conclusion of the entry operations regarding the permit space program followed and any hazards confronted or created in permit spaces during entry operations.

- The Contractor must provide a copy of the permit for the entry into the space to WPCB designated contact person or designee who will forward the copy to the Safety Specialist.

Each Contractor who is retained to perform work that will require permit space operations shall:

- Coordinate entry operations with the WPCB designated contact person or designee whether or not both the Contractor and WPCB employees will be working in or near the permit spaces.

- Inform the DES Safety Specialist/designee in writing of the permit space program the Contractor will follow and provide a copy of the Confined Space Entry program for review at least one month prior to performing any Confined Space Entries.

- Inform DES Safety Specialist/designee of any hazards confronted or created in permit spaces during operations.

- Inform the WPCB Safety Specialist/designee in writing of the rescue services/team they will be using during entry (if Arlington County Fire and Rescue are to be used

ouotline how they will be contacted immediately for notification of an emergency. i.e. cell phone or other method). Notification of the Safety Specialist or WPCB point of contact shall also be made in conjunction with the 911 call.

- Provide a copy of the canceled permit(s) to the WPCB Safety Specialist or the WPCB point of contact at the conclusion of entry operations.

17.14 – Ladders

- The use of ladders with broken or missing rungs, steps, broken or split side rails or with other faulty or defective construction is prohibited.

- When ladders with such defects are discovered they shall immediately be withdrawn from service.

- Portable ladders shall be placed on a substantial base at a 4 to 1 pitch, have clear access at top and bottom, extend a minimum of 36 inches above the landing, or where practical, be provided with grab rails and be secured against movement while in use.

  No portable metal ladders will be permitted for For any type of work.
- Weight limits of ladders shall not be exceeded.

- Job-made ladders shall be constructed for their intended use. Cleats shall be uniformly spaced, 12 inches, top-to-top.

- Except where either permanent or temporary stairways or suitable ramps or runways are provided, ladders shall be used to give safe access to all elevations.

- All users of ladders shall be properly trained and documented by the Contractor.

- Ladders shall be inspected periodically by the Contractor and removed promptly should any defects be found.

17.15 – Powder–Actuated Tools

Powder-actuated tools can pose many hazards; therefore their use will not be permitted in WPCB facility buildings without approval of the WPCB Safety Specialist or designee. In addition:

- Contractor employees who operate, load, maintain, etc. powder-actuated tools must be properly trained in their use as specified by the manufacturer.

- Each powder-actuated tool must be stored in its own locked container when not being used.

- A sign of at least 7 inches by 10 inches with bold face type reading "POWDER-ACTUATED TOOL IN USE" must be conspicuously posted in the area where the tool is being used and at all entrances immediately adjacent to the work area.

- Powder-actuated tools must be left unloaded until they are ready to be used.

17.16 – Scaffolds

- Contractors shall comply with 29 CFR 1926, Subpart L on scaffolding and 29 CFR 1910.28.

- Access to scaffolds shall be restricted to authorized employees only, especially after work hours.

17.17 – Railings

- A standard railing used to protect employees from falls shall consist of top rail, intermediate rail, toe board, and posts, and have a vertical height of 42 inches from upper surface of top rail to the floor, platform etc.

- The top of a railing shall be smooth-surfaced, with strength to withstand at least 200 pounds. The intermediate rail shall be approximately halfway between the top rail and floor.

- A stair railing shall be of construction similar to a standard railing, but the vertical height shall be no more than 34 inches, or less than 30 inches from upper surface of top rail to surface of tread in line with face or riser at forward edge of tread.

17.18 – Fall Protection

Contractors are responsible to comply at a minimum with the following regulations pertaining to fall protection in the workplace as it applies to their work at WPCB facilities:

- 29 CFR 1926 Subpart M – Fall Protection
- 29 CFR 1910.23 – Guarding Floors, Wall Openings and

Holes

- Reasonable fall protection shall be provided to protect employees from accidental falls associated with floors, platforms, scaffolds, guardrails, physical barriers, elevated work locations, trenches and excavations.

- Fall protection devices must be rate for industrial use and must be used according to the manufacturer recommendations.

- Standard guardrails must be provided for work locations 6 feet or more above the adjacent level per 29 CFR 1926.500 and personal fall protection as required.

- All employees working at unguarded locations above 6 feet in construction (10 feet on scaffolds) must be protected by properly wearing approved fall protection equipment including safety harnesses and life lines as specified in 29 CFR 1926.500.

- Protection for floor openings, wall openings and hols are to include railing and toe boards as outlined in 29 CFR 1910.23.

- All employees required to wear approved fall protection devices must be properly trained concerning the need for and purpose of the protection. They must also be instructed in the proper use, care, and storage of the equipment and shall demonstrate that they know, understand and can use the fall protection devices properly.

- Contractors must maintain guardrails, mid rails, and toe boards located at WPCB facilities unless removal is approved by the WPCB Safety Specialist or WPCB designee as part of a contract. An inspection to ensure the proper replacement of any of these items removed for service or work must be conducted upon completion of the job and before the Contractor leaves the facility. Employees working in or entering areas where the removal of guardrails, mid rails and toe boards have occurred must be protected at all times. Communications such as signs and barricades must be used.

- Contractors must cover all open holes, trenches, or excavations into which WPCB employees or others may fall and/or have guardrails, mid rails, toe boards installed around them.

- Open trenches and areasmust be protected such that people can not accidentally walk into the trench.

- Materials used for barricades or railings must be substantial and act as a barrier such as to restrict a person from access to an area. Materials such as wood, pipe, angle iron and concrete jersey barriers should be used. Snow fencing or the equivalent and tape

are not acceptable. 'Caution' and 'Danger' tape are only used to commuinicate hazards and are not sunstantial enough to act as a barrier or prevent access.

- Contractor's must provide all employees with exposure to fall hazards personal fall protection equipment or other hazard control measures listed within the fall protection standard and ensure their proper use.

- Contractors must ensure that fall related hazards are thoroughly communicated to Contractor employees,sub Contractors and anyone who might be exposed. The communication must be adequate for the hazard.

17.19 – Hot Work (Welding, Brazing, Cutting)

Contractors performing hot work shall maintain a 'Hot Work Permit' program and employee training program that meets the requirements in 29 CFR 1926.352, 1910.251, ANSI Z49.1-88 and NFPA 51B. Examples of hot work include, but are not limited to:

- Use of open flames.

- Compressed gasses or supplied fuel burning.

- Brazing, cutting, grinding, soldering, thawing pipe, torch applied roofing, and welding.

Contractors must obtain a permit for hot work activities from the designated WPCB contact person for each separate work activity and ensure that all conditions of the permit are met at all times. The permit must be submitted to the WPCB Safety Specialist or WPCB designee prior to the start of any welding/cutting/brazing work. (See Section VI-A, #7, Pages 18 and 19 of this standard).

The Contractor Must:

- Request the initial permit and receive the permit before beginning the Hot Work.

- Post a copy of the Hot Work permit at entrances to the Hot Work area.

- Provide a copy of all canceled permits to the WPCB designee or Safety Specialist upon completion of the work.

- Remove combustible materials from the area before beginning work or if this is not possible, protect combustible materials so thatg they will not be ignited

- Take the necessary actions to protect oxygen/acetylene hoses from conditions that

could cause damage to them.

- Install anti-flash back (safety/check) valves in both the oxygen/acetylene hoses at the regulator.

- Shield adjacent areas with welding partitions.

- Have a “Fire watch”, i.e. a second person standing by, at the location of the hot work, with an approved fire extinguisher for welding and burning operations and that is appropriate for the material in the area in accordance with OSHA/VDLI regulations and permit requirements. This person should remain in the area for a minimum of 30 minutes after the hot work is completed to ensure the site id cold.

17.20 – Cranes and Rigging

Each crane, rigging, or hoist bought onto WPCB facilities must have an annual inspection performed by a certified testing agency. All documentation, including certifications, log book, must be provided to the Safety Specialist/WPCB desginee before operations begin on the site and when new and offsite equipment is brought onsite.

All operators must be fully trained, certified and have a license if applicable, for the operation of the equipment they will be using on WPCB facilities. Training records shall be provided upon request.

Employees who are not appropriately trained or licensed for using equipment (cranes, hoists, and rigging equipment) that is to be utilized no WPCB facilties are prohibited from operating or using this equipment.

All critical lifts must be planned and documented with a ‘Critical lift’ plan outlining the means and methods to protect employees, property and operations from accidents.

The operator is responsible for the proper placement of the crane in relationship to the load to be handled and the landing area so as to obtain the best rated lift capacity.

The operator is not to override crane safety devices and is responsible for maintaining appropriate clearances around the crane.

Employees operating cranes shall:

- Comply with the manufacturer’s specifications and limitations for hoists.

- Never move suspended loads directly over employees.

- Have current information concerning rated load capacities, recommended operating speeds, and special hazard warnings or instructions posted on cars and platforms.

17.21 – Hazard Communication

The Contractor is responsibile for developing, implementing and maintaining a Hazard Communication Plan that complies with 29 CFR 1910.1200.

The Contractor shall maintain, on site, Material Safety Data Sheets (MSDS's) for all chemicals used or stored on the job site as required by VDLI/OSHA regulations. The Contractor shall provide copies of MSDS's to the WPCB Safety Specialist or designee upon request. All Contractors shall:

- Ensure that all containers that are brought onto WPCB facilities for the storage of hazardous chemicals are labeled and inspected in accordance with all applicable regulations.

- Contact the WPCB EMS Administrator, Safety Specialist or designee, to ensure that manifesting, storage, the proposed disposal method and disposal site meet regulatory compliance when there are instances that hazardous waste dispoal manifests are required by regulations

- The contracor shall notify the Environmental Management System administratot, Safety Specialist, and Household Hazardous Materials coordinator of incidents of the discovery or generation of hazardous materials and also inform the above noted personnel at least 30 days in advance of the shipping date for the disposal of solid materials.

- The Contractor shall supply a legible copy of the properly filled out and partially completed waste manifest (having signatures of the generator and transporter) to the EMS Administrator or WPCB designee within 24 hours of when the material was removed from WPCB facilties.

- The Contractor shall supply a legible copy of the completed waste manifest (having signatures of the generator, all transporters, and the TSD (treatment, storage, and disposal) facility) upon receipt of the material at the TSD fcaility to the EMS Administrator or WPCB designee within 24 hours of receipt.

- The Contractor shall supply a legible copy of the completed waste manifest (having signatures of the generator, all transporters and the TSD (treatment, storage and disposal) facility) upon proper disposal of the material at the TSD faciltity to the EMS Administrator or WPCB designee within 24 hours of receipt.

- The Contractor shall properly and safely dispose of all hazardous chemicals that it brings onto WPCB facilities.

- The Contractor may request and review Material Safety Data Sheets for any chemical encountered on WPCB facilities during the performance of facility work. Requests should be made through the Safety Specialist at (703) 228-6834 or the WPCB Shift Supervisor at (703) 585-6851. The WPCB chemical list is available upon request through the Safety Specialist at (703) 228-6834

17.21 – A Other Hazardous Materials

Sludges (non-stabilized biosolids), wastewater, and plant process liquids are a hazardous material and appropriate PPE should be worn when handling these materials. Discharging any materials inot nearby streams or storm sewers is prohinbited unless pre-approved by the EMS Administator, WPCB Supervisor, Manager and the Bureau Chief.

The Contractor shall post at all entry access ways warnings if lasers are either bneing or intended to be used.

17.22 – Excavations and Trenches

The Contractor shall coordinate excavating and trenching work with the WPCB Shift Supervisor, designee or Safety Specialist.

The design of sloping and benching systems, support systems, shield systems or other protective systems shall conform to, at a minimum, to the OSHA requirements detailed in 29 CFR 1926 Subpart P and VDLI requirements. The Contractor shall submit a copy of the completed review to the designated WPCB Engineer or Safety Specialist prior to the start of work. When this design requires review and approval by a registered professional engineer, the Contractor will be required ro procure those services at the Contractor's cost.
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The Contractor shall notify the WPCB designated person of the name of the individual that is to serve as the Contractor's 'Competent person' as defined by OSHA/VDLI regulations. The Contractor's designated 'Competent person' shall maintain a written log of the daily inspections made of excavations, adjacent areas, and protective systems. A copy of these written logs shall be made available to the WPCB Safety Specialist or WPCB designeeupon request.

Substantial physical barricades to prevent persons from falling into an open trench shall be maintained around the perimeter of trenches. This is especially important for trenches that must remain open overnight. Snow fencing or the equivalent, tape, and plastic caution tape/ribbon Are not acceptable.

All areas of 29 CFR 1926 Subpart P and VDLI regulation must be followed.

Anyone proposing to excavate, dig, bore, tunnel, blast or disturb the earth in any manner which may damage buried utilities is required to call Miss Utility of Virginia at 1-800-552-7001 48 hours (2 working days) before starting the proposed work. All Miss Utility Tickets must be cleared before work begins, to check for cleared tickets call 1-800-552-3120. Just waiting 48 does not necessarily mean you may start excavations, you must make phone contact to ensure ticket is clear before beginning work.

17.23 – Lockout/Tagout

The Contractor is responsible for its own Lockout/Tagout program. This program must be in full compliance with OSHA 29 CFR 1910.147 and VDLI regulations. The Contractor shall submit a copy of its Lockout/Tagout Program to the WPCB designee for review by the Safety Specialist or designee before the start of any work where 29 CFR 1910.147 is applicable. OSHA lockout/tagout procedure requires at a minimum:

- Use of locks and/or tags on energy isolating devices.
- Special lockout/tagout procedures for jobs requiring multiple lockout/tagout devices.
- Contractors must provide their own lockout/tagout devices.
- All Contractor employees, (authorized, affected, and other employees), must be trained by the Contractor (or other acceptable training source) concerning lockout/tagout procedures.

  Locks, and/or tags must not be removed by anyone other than the employee applying them except under approved emergency situations and the appropriate notification and documentation must be followed to ensure the safety of contracor and WPCB employees.
- Testing and positioning of machines or equipment will be performed only under special procedures per OSHA 29 CFE 1910.147(f).
- WPCB employees will shut down and start up all systems unless otherwise specifically directed by WPCB management.
- The Contractor will maintain a log of machines and equipment that are locked out and/or tagged out during the performance of the work at the WPCB facilities. The log shall identify the equipment that was worked on, the dates the work began and ended,

why work was being done and the name of the individual performing the work. The Contractor will submit this log to the WPCB Safety Specialist or designee on a daily basis when lockout/tagout work is being performed.

17.24 – General Electrical Safety

- Electrical systems and equipment that use or control electrical power can only be worked on by qualified electricians.

- Do not operate electrical tools or equipment in wet areas where potentially flammable dusts, vapors, or liquids are present, unless specifically approved for the location. Intrinsically safe tools are required in areas where the potential for a hazardous atmosphere exist due to raw sewage or sludge.

- Ensure that a qualified electrician checks the circuit and equipment and corrects the problem before resetting the breaker when a circuit breaker or other protective device trips.

- The Contractor shall erect barriers and post warning signs to ensure non-authorized personnel stay clear of electrical work areas.

- The Contractor must report hazards (lack of protective guards or covers, damaged equipment etc.) to the WPCB Shift Supervisor, Safety Specialist or the WPCB designee immediately.

- Do not leave electrical boxes, switch gear, cabinets, or other electrical rooms open when not directly attended. Insulate energized parts when covers have been removed or doors are ajar. Use of cardboard, plywood, or other flammable materials to cover energized circuits is prohibited.

- Contractors must establish and maintain an effective electrical safety-related work practices program. References for such a program include OSHA standards 29 CFR 1910.331 to 1910.333 – Electrical Safety Related Work practices and CFR 1926 Subpart K Electrical.

- All electrical work shall be in compliance with the most recent (NFPA) National Fire Protection Association, NEC (National Electrical Code) and NFPA 70-E guidelines.

- Unqualified persons i.e. WPCB or Contrators shall not be allowed to work or operate equipment within 10 feet of energized overhead power lines or crossing clearance from electrical distribution lines and 50 feet from transmission lines. Special permission in writing must be obtained from the power company for all work that

involves 50 feet or less working clearance from overhead lines. The writtem documentation must be provided to the appropriate WPCB point of contact or designee prior to the beginning of work.

- Extension cords used with portable electric tools shall be the 3-wire type, shall be protected from damage. Extension cords shall be inspected and maintained in accordance with the Contractor's Assured Grounding Program. Worn or frayed cords shall not be used. Cords used in damp or wet areas must be GFCI protected.

- Bulbs on temporary lights shall be equipped with guards or deeply recessed in the reflector. Temporary lights shall not be suspended by their electrical cords unless designed for suspension.

- Receptacles for attachment plugs shall be of the approved concealed contact type. Where different voltages, frequencies, or types of current are supplied, receptacles shall be of such designs that attachment plugs are not interchangeable.

- Each disconnecting means of motors and appliances and each service feeder or branch circuit at the point where it originates shall be legibly marked to indicate its purpose, unless located and arranged so the purpose is evident.

- Cable passing through work areas shall be covered or elevated to protect it from damage which would create a hazard to employees.

- Boxes for disconnecting means shall be securely and rigidly fastened to the surface upon which they are mounted and fitted with covers.

- All extension cords and cord & plug connected equipment shall be protected by an assigned equipment grounding conductor program.

- Workers, other licensed electricians, shall not use jackhammers, bars, or other hand tools in close proximity to energized lines.

Personal Protective Equipment

17.25 – Personal Protective Equipment

- A hazard assessment must be conducted by the Contractor to determine the appropriate Personal Protective Equipment for contract employees performing work at the WPCB facility. Personal Protective Equipment shall be worn in all operations where there is an exposure to hazardous conditions or where the need is indicated for

using such equipment to reduce the hazard to the employee. The minimum requirement for Personal Protective Equipment at all WPCB facilities is:

- Safety Glasses
- Steel Toed Boots/Shoes
- Reflective Vest
- Hard Hat

- Additional Personal Protective Equipment may be required based on the work that Contractors are on site to perform. The selection and use of additional Personal Protective equipment is the responsibility of the Contractor.

- Employees working over or near non-aerated (process or non-process) water, where the danger of drowning exists, shall be provided with U.S. Coast Guard approved life jackets or buoyant work vests. Employees working over or near aerated (process or non-process) water, where the danger of drowning exists, shall be provided with harnesses and lanyards of such length that they cannot fall into the water.

17.25.1 – Eye and Face Protection

- Eye and face protection shall be provided when machines or operations present potential eye or face injury.

- Eye and face protective equipment shall meet requirements of ANSI Z87.1–1991. "Practice for Occupational and Educational Eye and Face Protection."

- Employees involved in welding operations shall be furnished with filter lenses or plates of at least the proper shade number for the type of welding being performed.

- Employees exposed to laser beams shall be furnished suitable laser safety goggles that will protect for the specific wavelength of the laser and shall have adequate optical density for the laser being used.

17.25.2 – Foot Protection

- All Contractors working at the WPCB must wear the appropriate foot protection that meets or exceeds the requirements of ANSI Z41-1991. Steel toe boots/shoes that totally cover the foot are required as a mimimum.

17.25.3 – Head Protection

- Head protective equipment (hard hats only) shall be worn in all WPCB facility areas unless it is determined to be unsafe. Hard hats shall meet the highest performance requirements of ANSI Z89.1–2003 "American Standards for Industrial Head Protection". Then use of Bump caps at WPCB facilities is prohibited.

17.25.4 – Hearing Protection

- Feasible engineering or administrative controls shall be utilized to protect employees against sound levels in excess of those shown in Table D-2 OSHA Standard 1926.52.

- When engineering or administrative controls fail to reduce sound levels within the limits of table D-2, hearing protective devices shall be provided and used.

- Hearing protection is required at constant noise levels above 85 decibels. Exposure to impulsive or impact noise should not exceed above 140 dB peak sound pressure level.

- Hearing protection that meets the NRR (Noise Reduction Rating) that protects the employee from the noise that the contract employees might be exposed to while working at the WPCB facility is required.

- Hearing protection is required anywhere in the WPCB where signs are posted indicating that hearing protection is a requirement.

- A hearing conservation program shall be administered and maintained in all cases where the sound levels exceed the values shown in safety and health regulations,

17.25.5 – Respiratory Protection

- When engineering or administrative controls are not effective in controlling toxic and other substances that could cause injury or illness to the respiratory system, appropriate respiratory protection shall be selected, provided and use enforced.

- Respiratory protective devices approved by the Mine Safety and Health Administration/National Institute for Occupational Safety and Health for the specific contaminant to which the employee is exposed shall be used.

- Respiratory protective devices provided to Contractor employees by their supervisors shall be appropriate for the hazardous materials involved and the extent and nature of the work requirements and conditions.

- Contractor must not provide Air Purifying Respirations to employees who are working in IDLH or Oxygen Deficient atmospheres. The appropriate Supplied Air respirator must be provided.

- Employees required to use respiratory protective devices shall be medically cleared, fit tested and thoroughly trained in the use of respiratoty protection in accordance with OSHA Standards. The use of negative pressure respiratory equipment with tight fitting face pieces is prohibited with facial hair.

- Contractors shall have a written respirator program that meets or exceeds the requirements of 29 CFR 1926.103. This program shall be made available to the WPCB Safety Specialist or designee upon request.

17.26 – Motor Vehicles and Mechanized Equipment

- All Contractors and their employees must observe posted speed limits, give pedestrians the right of way, and yield to emergency vehicles. Unless otherwise posted the speed limit on WPCB Glebe Road facility shall be 10 miles an hour. Note: several areas on both sides of the WPCB facility have 5 M.P.H posted with an instruction to sound the horn. Caution should be observed when entering or exiting the WPCB tunnel that is below S. Glebe Road.

- All vehicles in use shall be checked at the beginning of each shift to ensure that all parts, equipment and accessories that affect safe operation are in proper operating condition and free from defects. All defects will be corrected before vehicle is placed in service.

- No person shall use any motor vehicle, earth moving or compacting equipment having an obstructed view to the rear unless.

    - The vehicle has a reverse signal alarm distinguishable from the surrounding noise level.
    - The vehicle id backed up only when an observer signals that it is safe to do so.

- Heavy machinery, equipment, or parts thereof which are suspended or held aloft shall be substantially blocked to prevent falling or shifting before employees are permitted to work under or between them.

- Park only in areas approved for Contractor use.

- Contractors must ensure that their drivers are legally licensed and trained for the vehicle or equipment that they are required to operate.

17.27 – Work Zones

Contractor must follow the Standard on Uniform Traffic Control Devices (MUTCD) and the Virginia Work Area Protection Standard.

Flaggers must be trained and keep their Flagger Certification Card on them at all times.

17.28 – Accident, Incident, Injury, or Illness

All life threatening work related accidents, incidents, injuries and illnesses must be immediately reported to the appropriate emergency agency (i.e., Local Emergency 9-1-1 for for WPCB Emergency, Fire and Rescue), The Contractor must also report all accidents to the WPCB Shift Supervisor,must WPCB Safety Specialist or the WPCB designee immediately or within 24 hours of the incident. A type written report detailing the incident and outlining methods to keep it from occurring must be submitted within 48 hours of the accident. The Contractor is responsible for notifying VDLI for any incidents that are reportable to that agency.

17.28 – Lead–Containing Building Materials

The location of lead materials, where present, will be detailed in the construction documents for that project.

Contractors that will disturb lead-containing building materials during the course of work shall take all necessary precautions to protect Contractor employees, WPCB employees and the public from exposure to lead dust or contamination. These measures shall conform, at a minimum, to the OSHA requirements detailed in 29 CFR 1926.62 and applicable VDLI, and federal regulations related to health, safety, transportation and disposal. Proper disposal of lead materials must be coordinated with the WPCB Safety Specialist, or WPCB designee. A copy of applicable manifest documents shall be provided to the WPCB for recordkeeping purposes.

- The Contractor shall contact the WPCB EMS Administrator, Safety Specialist or designee to ensure that manifesting, storage, the proposed disposal method and disposal site meet regulatory compliance when there are instances that hazardous waste disposal manifest(s) are required by regulations.

- The Contractor shall supply a legible copy of the properly filled out and partially completed waste manifest (having signatures of the generator and transporter) to the EMS Administrator or WPCB designee within 24 hours of when the material was removed from WPCB facilities.

- The Contractor shall supply a legible copy of the completed waste manifest (having signatures of the generator, all transporters and the TSD (treatment, storage and disposal) facility) upon receipt of the material at the TSD facility to the EMS Admininstraor or WPCB designee within 24 hours of receipt.

- The Contractor shall supply a legible copy of the completed waste manifest (having signatures of the generator, all transporters and the TSD (treatment, storage and disposal) facility) upon proper disposal of the material at the TSD facility to the EMS Administrator or WPCB designee within 24 hours of receipt.

17.30 – Asbestos and Suspect Asbestos Containing Building Materials

Asbestos materials may not be used or installed in WPCB Facilities.

The Contractor has the responsibility to provide thier own asbestos awareness program which shall include, but not be limited to, the information contained in the construction documents and the OSHA asbestos related regulations (29 CFR 1926.1101). Verification that the training has been conducted shall be sent to the Architect/Engineer of record for the project, the WPCB Safety Specialist or WPCB designee. Proper disposal of asbestos containing materials must be coordinated with the WPCB Supervisor, EMS Administrator, HHM Coordinator, Safety Specialist, or WPCB designee. A copy of applicable manifest documents shall be provided to the WPCB for recordkeeping purposes.

- The Contractor shall contact the WPCB EMS Administrator, Safety Specialist or designee to ensure that manifesting, storage, the proposed disposal method and disposal site meet regulatory compliance when there are instances that hazardous waste disposal manifest(s) are required by regulations.

- The Contractor shall supply a legible copy of the properly filled out and partially completed waste manifest (having signatures of the generator and transporter) to the EMS Administrator or WPCB designee within 24 hours of when the material was removed from WPCB facilities.

- The Contractor shall supply a legible copy of the completed waste manifest (having signatures of the generator, all transporters and the TSD (treatment, storage and disposal) facility) upon receipt of the material at the TSD facility to the EMS

Admininstraor or WPCB designee within 24 hours of receipt.

- The Contractor shall supply a legible copy of the completed waste manifest (having signatures of the generator, all transporters and the TSD (treatment, storage and disposal) facility) upon proper disposal of the material at the TSD facility to the EMS Administrator or WPCB designee within 24 hours of receipt.

17.31 – Inspections

Work site inspections should be conducted by the Contractor to ensure that work is proceeding in a safe manner. Contractors that are on site for long term projects will thouroughly inspect their work areas at least once a week at a minimum.

Work site inspection will also be conducted by the WPCB Shift Supervisor, WPCB Safety Specialist or a WPCB designee. These inspections are conducted solely for the benefit of WPCB, and shall not relieve the Contractor of responsibility for enforcement of, and compliance with, VDLI and the OSHA, environmental or other applicable regulations.

In the event that work site conditions exist that potentially impact the safety of WPCBemployees or the public, WPCB shall issue a verbal or written warning to the Contractor and shall notify the Contractor's main office. If the unsafe conditions cannot be immediately corrected and represent imminent danger to Contractor employees or have the potential to harm WPCB employees or the public, WPCB will:

- Detail the VDLI and/or OSHA violations that were noted, and explain the potential impact upon WPCB employees and the public.

- Require that the Contractor either cease that portion of work, or implement measures to isolate the hazardous condition until the unsafe condition can be mitigated.

- Issue a formal written report of the violation(s) to the Contractor, and their main office.

Reports of deficiencies may be factored into the evaluation of the contract by WPCB. Repeat safety violations of a similar nature and/or a single serious, willful safety violation by a Contractor will require a detailed investigation and a written report that will outline root causes and corrective action within 48 hours of the incident. This report must be sent to the WPCB Bureau Chief, Safety Specialist and the Contractor's home office. In addition, the employee who was responsible for the safety infraction must be barred from working at WPCB unless the Contractor requests in writing and received writtem permission from the WPCB Bureau Chief, after Safety Specialist review, that the employee can continue to work.

Environmental Requirements

17.32 – Hazardous Waste Management

The Contractor must provide the EMS Administrator, WPCB Safety Specialist or designee with a list of actual and potential hazardous waste(s) to be generated during a project. Hazardous waste generated by a Contractor as part of its work is the responsibility of the Contractor. Contractors must ensure that their hazardous waste is properly identified, stored, transported and disposed of in accordance with all applicable local, state, and federal laws. The Contractor must provide the WPCB designated employee with the appropraie manifest or paperwork to validate disposal. Contractor employees must be properly trained to handle hazardous waste safely and in compliance with all applicable local, state and federal laws. For projects where temporary on-site storage is necessary, the Contractor must ensure, at a minimum, proper labeling of containers and tanks, adequate secondary containment, segregation of incompatible materials and documentation of weekly inspections of these storage areas. Contractors must maintain an adequate emergency plan and spill equipment to address spills, fire, etc. In addition, all hazardous waste containers shall be kept securely closed at all times.

The Contractor is responsible for completing all disposal documents, which may include, but are not limited to, waste profiles, waste analytical samples and hazardous waste manifests. Copies of these documents will be provided to the WPCB Safety Specialist or WPCB designee at the end of the project or when requested for the inclusion in WPCB's project file.

Manifests will be provided to the WPCB Safety Specialist or WPCB designee as follows:

- The Contractor shall supply a legible copy of the properly filled out and partially completed waste manifest (having signatures of the generator and transporter) to the EMS Administrator or WPCB designee within 24 hours of when the material was removed from WPCB facilities.

- The Contractor shall supply a legible copy of the completed waste manifest (having signatures of the generator, all transporters and the TSD (treatment, storage and disposal) facility) upon receipt of the material at the TSD facility to the EMS Admininstraor or WPCB designee within 24 hours of receipt.

- The Contractor shall supply a legible copy of the completed waste manifest (having signatures of the generator, all transporters and the TSD (treatment, storage and disposal) facility) upon proper disposal of the material at the TSD facility to the EMS Administrator or WPCB designee within 24 hours of receipt.

For projects where WPCB is deemed responsible for hazardous waste generated, the Contractor will

ensure that hazardous wastes are managed in accordance with local, state and federal laws. The Contractor must ensure that the WPCB is designated as the generator on all manifests and land disposal restriction forms for which the county is the generator. The Contractor shall provide the WPCB Safety Specialist or designee with copies of all waste analyses and related documentation.

The Contractor shall immediately cease work in the affected area when previously unidentified material that is reasonably believed to be radioactive, volatile, corrosive, flammable, explosive, biomedical, infectious, toxic, hazardous, asbestos containing or oil based are found. The condition must be reported immediately to the WPCB Suprvisor or WPCB designee. At no time shall such material be disposed of in any manner that is inconsistent with the local, state, federal and other applicable environmental regulations. The Contractor agrees to cooperate with WPCB and any consultants engaged by WPCB to perform services with respect to the analysis, detection, removal, containment, treatment and disposal of such regulated materials.

17.33 – Transport of Hazardous Materials

Hazardous materials must not be transported via public or private roads at the WPCB in a manner that could result in an unsafe condition for employees or the environment. All transportation of hazardous materials while on or off WPCB facilities shall be conducted in accordance with USDOT Hazardous Materials Regulations for proper packaging, marking/labeling, handling, documentation, etc. Contractors must ensure, that appropriate shipping documentation accompanies shipments of hazardous materials and that a 24-hour emergency contact is available to address transportation related emergencies in accordance with USDOT regulations.

17.34 – Spill Prevention and Response

Water Pollution Control Bureau Spill Prevention Control and Countermeasures (SPCC) Program establishes facility procedures for prevention, detection and reporting of spills and/or releases of oil or hazardous materials. Contractors must adhere to SPCC protocols, including the following when working at WPCB facilities:

17.34.1 – Spill Prevention

- The Contractor shall have available equipment (e.g., secondary containment pallets, absorbent pads, absorbent booms, or other absorbent agents) that are suitable and sufficient to control a potential spill/release based on the inventory of oil, hazardous chemicals, and other materials that will be broughtg and/or stored on-site.

- The Contractor is responsible for immediately identifying conveyances to the environment (e.g., sumps, storm/floor drains, etc.) and adequately minimizing spill potential to these areas.

- The Contractor is responsible for the proper storage of all flammable and combustible chemicals that are brought and/or stored on site to complete work of this contract. Such storage may require the use of safety containers, safety cabinets, and/or secondary containment. The Contractor shall also ensure that any incompatible chemicals are safely segregated. The Contractor is responsible for maintaining and securing all chemical containers and all chemical storage areas. This requires selecting locations and methods to minimize exposure to rainfall, surface water, and the ground surface or subsurface. Enclosures, shelters, and secondary containment should be used where appropriate.

- The Contractor must use appropriate protective procedures such as double containment, inspections, employee training, overflow protection, and other measures as part of activities involving the use, storage, or handling of petroleum products or hazardous materials on WPCB facilities.

- The Contractor must ensure that their employees are adequately trained in spill response/notification procedures outlined below.

17.34.2 – Spill Response

"Incidental" spills meet all the following criteria: 1) employees are familiar with the hazards associated with the spill material; 2) containment/response does not pose potential health and safety hazards (i.e.; fire, explosion, and chemical exposure); 3) a small quantity (less than 10 gallons) of material is spilled/released which **DOES NOT** reach the environment or pose potential health hazards; and 4) spilled/released material can be readily absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate area or by maintenance personal.

"Non-Incidental" spills include 1) major spill/release (e.g. greater than 10 gallons) that does not reach the environment or 2) any amount of spilled material that escapes to the environment (including drains, sumps, soil, etc.)

Water Pollution Control Bureau SPCC Program also establishes reporting requirements in event of a spill or release of oil or hazardous materials. The Contractor is responsible for the proper management of their spills including internal/external notifications, must pay for all costs as well as, proper mitigation steps and clean-up to the satisfaction of the WPCB EMS Administrator. Schedule delays, cost overruns, etc. caused by a spill are the responsibility of the Contractor. In the event of a spill or release, the Contractor must follow all of the reporting requirements of the SPCC Program as specified below:

(1) The Contractor shall determine if the spill/release in incidental or non-incidental.

(2) For ***incidental*** spills/releases:

- The Contractor shall attempt to stop or contain the spill/release at the source provided that doing so does not endanger anyone.
- The Contractor shall prevent discharge of materials to the environmental receptors including drains, sumps, soil etc.
- The Contractor shall immediately notify the WPCB EMS Administrator, WPCB Supervisor, Safety Specialist or WPCB designee of all incidental spills/releases.
- The Contractor is responsible for the proper collection, storage of waste materials in compliance with EPA and DEQ regulations and in cooperation with the Contract Coordinator.

(3) For ***non-incidental*** spills/releases: The Contractor shall immediately report the spill/release to the Arlington County Fire Department if the spill is too large to contain. The Contractor must immediately notify the WPCB Shift Supervisor at (703) 585-6851, the WPCB EMS Administrator at (703) 228-6881, or the WPCB Safety Specialist at at (703) 228-6834-office, (703) 864-5380 cell.

The Contractor must also contact the Virginia Department of Environmental Quality at (703) 583-3864 or (703) 583-3800.

Water Pollution Control Bureau
Arlington County Department of Environmental Services
Appendix #2

Contractor Safety Program Checklist

I hereby acknowledge that I have received and completed a copy of the WPCB Department of Environmental Services Water Pollution Control Bureau Contractor Safety Program Checklist.

Name: _____

Title: _____

Company (name, address and phone number): _____

_____

_____

_____

Sign name _____

Print Name _____

Date: _____

Return this signed copy to: Safety Specialist
Department of Environmental Services
Water Pollution Control Bureau
Room 306
3402 S. Glebe Road
Arlington Virginia, 22202

Return the signed document to the Safety Specialist or WPCB designee prior to the start of work.

CONTRACTOR SAFETY PROGRAM CHECKLIST

Please complete and return this checklist to the Safety Specialist or designee before beginning work. Copies of all Permits i.e. Permit Required Confined Space and Hot Work must be posted while work is in progress and provided to the Safety Specialist or designee upon completion of the work. Write N/A next to any item that does not apply to the work your company is performing. Questions:

WRITTEN SAFETY PROGRAM

1. Do you have a written safety program — Yes No

2. Does it contain the following components: — Yes No
   a. Management — Yes No
   b. Record keeping — Yes No
   c. Analysis — Yes No
   d. Education/Training — Yes No
   e. Inspections & Internal Audits — Yes No
   f. Accident Investigations — Yes No
   g. Periodic Review & Revision — Yes No

GENERAL WORKSITE

1. Required posters – VOSH — Yes No

2. Virginia Workers' Compensation Notice — Yes No

3. Written substance abuse policy — Yes No

4. Sanitation – adequate toilets and wash areas — Yes No

5. Housekeeping
   a. Provisions to keep work areas clean and orderly — Yes No
   b. Clean up and discard materials daily — Yes No

6. First Aid and Medical Attention
   a. First aid kits provided — Yes No
   b. Emergency medical procedures & phone numbers — Yes No
   c. System to contract WPCB Safety Specialist or designee when an injury or emergency occurs — Yes No

7. Fire Prevention & Protection

8. Established procedures — Yes No
   a. Will Fire Extinguishers be provided — Yes No
   b. Storage for flammable and combustible liquids — Yes No

c. Storage of compressed gas cylinders Yes No
d. Welding fire watch Yes No

9. Signs and Barricades
   a. Type used _____
   b. Plan to address vehicle traffic Yes No
   c. Method of preventing non-construction personnel on the job-site Yes No
   d. Trenches Yes No

GENERAL CONTRACTOR AND SUBCONTRACTOR RELATIONSHIP

1. Are sub-Contractors required to follow any particular established guidelines
   a. What are they _____
   b. VOSH, OSHA.ANSI, DOT, etc. Yes No

2. Are Sub-Contractors required to have a written safety program Yes No

3. Are Sub-Contractors required to provide documentation of training Yes No

4. Who is responsible for ensuring Sub-Contractors follow established safety requirements _____

PERSONAL PROTECTIVE EQUIPMENT (PPE)

1. Has a Job Hazard Analysis been performed to determine what PPE is required Yes No
   a. Is it in writing Yes No

2. What type of PPE will this project require
   a. Eye, head, and foot Yes No
   b. Hearing protection Yes No
   c. Respiratory protection Yes No
   d. Fall protection Yes No
   e. Others _____

3. Will eye wash and/or a shower be available Yes No
   a. Type of materials used which could require the use of an eye wash or shower _____

4. Welding curtains Yes No

JOB SITE EQUIPMENT

1. Heavy and Mechanized Equipment (front-end loaders, scrappers, etc.)
   a. Experienced (Trained and certified) operators Yes No

b. Back-up alarms or horns Yes No
c. Equipped and operated according to OSHA, VOSHA and ANSI standards Yes No

2. Material Handling Equipment
   a. Types used (powered industrial trucks, chain hoists, conveyors) Circle all that apply.
      Others: _____
   b. Cranes used Yes No
   c. Trained and certified operators Yes No
   d. Established safety procedures Yes No
   e. Will lift plans be provided Yes No
   f. Equipped and operated according to OSHA, VOSHA, ANSI and applicable standards Yes No

ELECTRICAL

1. Do you specify compliance with VOSH, OSHA and WPCB Codes for all contract electrical work Yes No
2. Portable tools and equipment grounded or double insulated Yes No
3. Ground-fault circuit interrupters installed Yes No
4. Electrical cords and cables free of splices or taps Yes No
5. Plan for location and work around electrical power lines and cables (overhead, underground, under floors and in walls) Yes No
6. Lock-out/Tag-out program Yes No

ELEVATED SURFACES – FLOOR & WALL OPENINGS

1. Scaffolding or propelled mobile ladder stands used Yes No
   a. Erected and used according to OSHA requirements Yes No
2. Handrail, mid rails, and toe boards installed according to OSHA requirements Yes No
3. Floor openings guarded by a cover, guardrail or equivalent on all sides Yes No

CONFINED SPACES

1. Have job-site confined spaces been identified Yes No
   a. Will your work create confined spaces Yes No
2. Written program developed Yes No

3. Do you have a Permit System Yes No

4. Do you have air monitoring equipment & other safety equipment Yes No

CHEMICALS

1. Will you be bringing chemicals onto the work site Yes No

2. Do you have MSDS's for the chemicals you plan to use Yes No

3. Provided MSDS's to Safety Specialist or designee Yes No

Additional information or comments:

Water Pollution Control Bureau
Arlington County Department of Environmental Services
Appendix #3

Pre– Job Contractor Safety Planning Checklist

Company Name: _____

Contractor performing work: _____
Date of Pre-Job Conference: _____

Date work to start: _____

Location of work: _____

Describe work being performed: _____
_____
_____
_____

Identification of Hazards in work area:
Fall Protection concerns: _____
Hazard Communications – Chemical(s) _____
Permit Required Confined Space(s) Location: _____
Hazards in space _____
Lock Out / Tag Out _____
Material Handling and Rigging _____
Personal Protective Equipment _____
Welding and Hot Work Permits _____
Work Zones and Traffic Control _____
Other: _____
_____
_____
_____

Signature of Contractor Representative: _____
Date: _____

Signature of WPCB Representative: _____
Date: _____

Water Pollution Control Bureau
Arlington County Department of Environmental Services
Appendix #4
Instructions for the Use of the 'Contractor Safety Checklist' and the Pre–Job Contractor Safety Planning Checklist'

The 'Contractor Safety Checklist' should be sent or given to all Contractors performing work at WPCB facilities.

The 'Contractor Safety Planning Checklist' should be sued to plan and provide information to Contractors about WPCB facility hazards.

1.) **The WPCB point of contact securing the contracted services must ensure that the Contractor receives, completes and returns a copy of the 'Contractor Safety Checklist'. The checklist must be completed and signed before work begins.**

2.) **The completed 'Contractor Safety Checklist' form must be forwarded to the Safety Specialist upon receipt for review.**

3.) **The Safety Specialist must review the document to ensure that the Contractor safety program meets minimum Safety requirements.**

4.) **The Safety Specialist notifies the WPCB point of contact indicating that the Contractor Safety program meets the WPCB Contractor Safety Standard.**

5.) **The WPCB point of contact will then complete the 'Contractor Safety Planning Checklist' form as a part of planning the job.**

6.) **The WPCB point of contact will contact the WPCB Safety Specialist for support should they have any questions identifying hazards.**

7.) **The WPCB point of contact will contact the Contractor to advise them of hazards that they could encounter while performing the proposed task or service. They will discuss special Personal Protective Equipment or equipment requirements so that the Contractor can prepare for the job before coming on site.**

8.) **The WPCB point of contact will go over the information with the Contractor on the date of service and secure the Contractor's signature.**

9.) **The WPCB point of contact will send the completed form to the Safety Specialist as documentation for file.**

Water Pollution Control Bureau
Arlington County Department of Environmental Services
Appendix #5

CONTACT TELEPHONE NUMBERS

Safety Specialist
Department of Environmental Services
Water Pollution Control Bureau
3402 S. Glebe Road
Room 306
Arlington, Virginia 22202
(703) 228-6875 Office
(703) 864-5380 Cell Phone

Operation Shift Supervisor(s)
Water Pollution Control Bureau
3402 S. Glebe Road
Arlington, Virginia 22202
(703) 585-6851 Cell Phone
This cell phone number will put you in touch with the on duty Supervisor 24 hour 365 days a week for the Department of Environmental Services Water Pollution Control Bureau

Engineering Program Coordinator
Water Pollution Control Bureau
Arlington County Department of Environmental Services
3402 S. Glebe Road
Arlington, Virginia 22202
(703) 228-3732 Office
(703) 927-2636 Cell Phone
(703) 228-6875 Fax

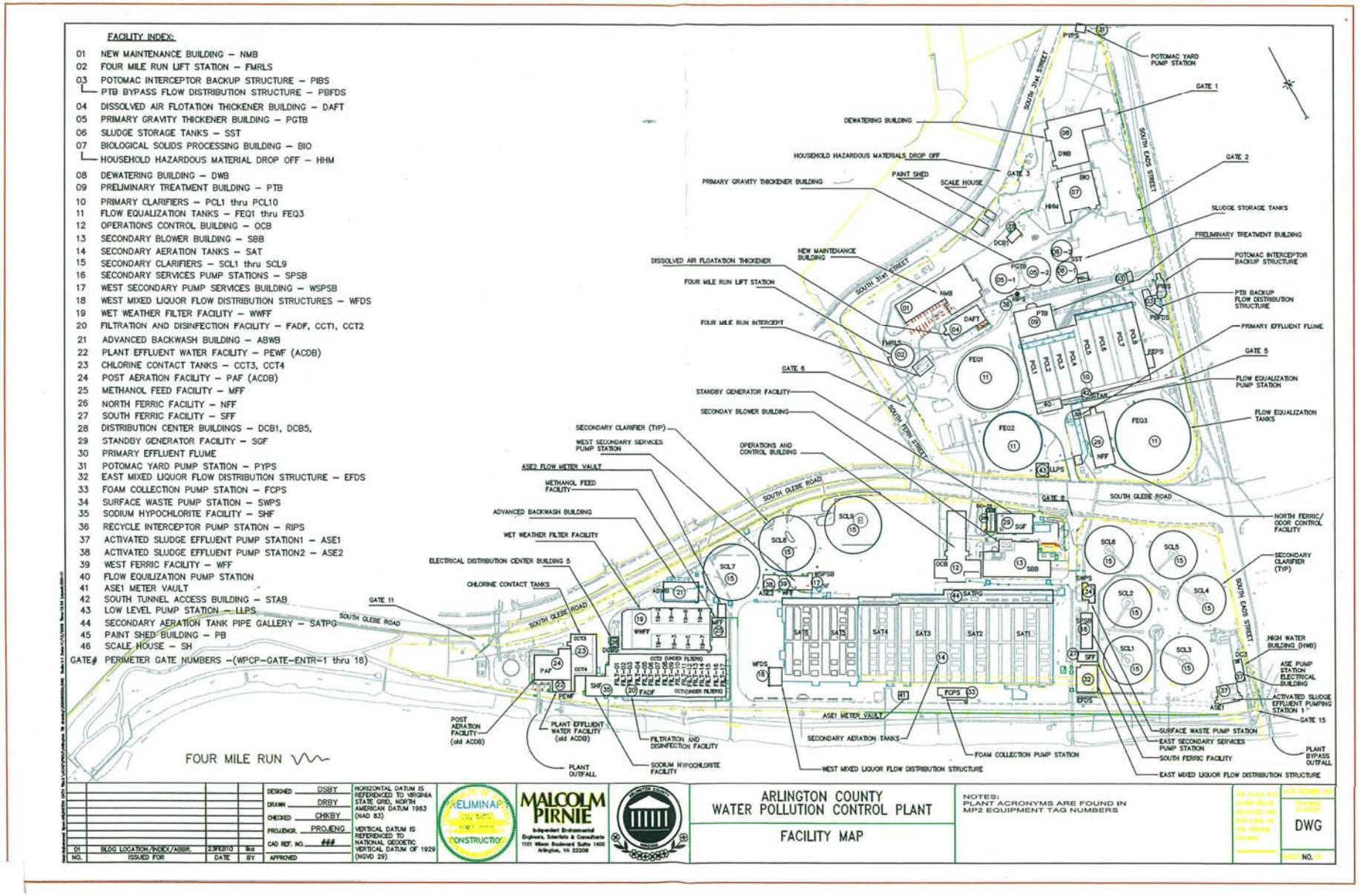
EMS Administrator
3402 S. Glebe Road
Room 331
Arlington, Virginia 22202
(703) 228-6881 Office

Reliability Engineer/Planning Supervisor
3111 South Fern Street
Arlington, Virginia 22202
(703) 228-6827 Office

PLANNERS:

3111 South Fern Street
Arlington, Virginia 22202
(703) 228-6825
(703) 228-6859
(703) 228-6860

Water Pollution Control Bureau
Arlington County Department of Environmental Services
Appendix #6
WPCB Facility Map



Attachment H

Sample Inspection Checklist

Standby Generator Facility
Bi-annual Inspection of Ancillary Systems
Date _____
Time _____
Technician _____

SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM		
Check Urea Tank Level	E F	Mark sight glass reading on line
Gen 1 Hours Remaining Until Next Maintenance		Hours
Gen 2 Hours Remaining Until Next Maintenance		Hours
Gen 3 Hours Remaining Until Next Maintenance		Hours
GENERATOR COOLING SYSTEM		
Coolant Level in Main Tank		Gallons
Gen 1 Roof Belt Condition		Satisfactory/Frayed/Broken/Comment
Gen 2 Roof Belt Condition		Satisfactory/Frayed/Broken/Comment
Gen 3 Roof Belt Condition		Satisfactory/Frayed/Broken/Comment
Gen 1 Roof Coolant Tank Level	E F	Mark sight glass reading on line
Gen 2 Roof Coolant Tank Level	E F	Mark sight glass reading on line
Gen 3 Roof Coolant Tank Level	E F	Mark sight glass reading on line
BI-FUEL SYSTEM		
Control Panel Touchscreen		Y/N Controls On, Operational and showing no fault indicators. If N, provide comment.

PARALLELING GEAR AND MASTER CONTROLS		
Observe Controls When Generators Start and Stop		Y/N Controls operated correctly; if N, provide comment
Master Control PLC		Y/N Controls On, Operational and showing no fault indicators. If N, provide comment.
Master Control Interface Touchscreen		Y/N Controls On, Operational and showing no fault indicators. If N, provide comment.
Generator 1 Parallelling Gear Touchscreen		Y/N Controls On, Operational and showing no fault indicators. If N, provide comment.
Generator 1 Parallelling Gear Touchscreen		Y/N Controls On, Operational and showing no fault indicators. If N, provide comment.
Generator 1 Parallelling Gear Touchscreen		Y/N Controls On, Operational and showing no fault indicators. If N, provide comment.

Add any additional comments in the space below