

CONTRACT DRAWINGS

# SUB-SLAB DEPRESSURIZATION SYSTEM

## CROSMAN CORPORATION SITE 7629 ROUTES 5 & 20 EAST BLOOMFIELD, NEW YORK

DATE ISSUED  
**DECEMBER 2015**

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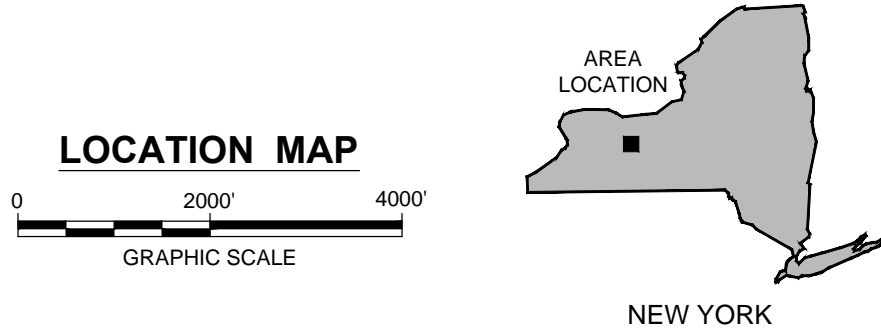
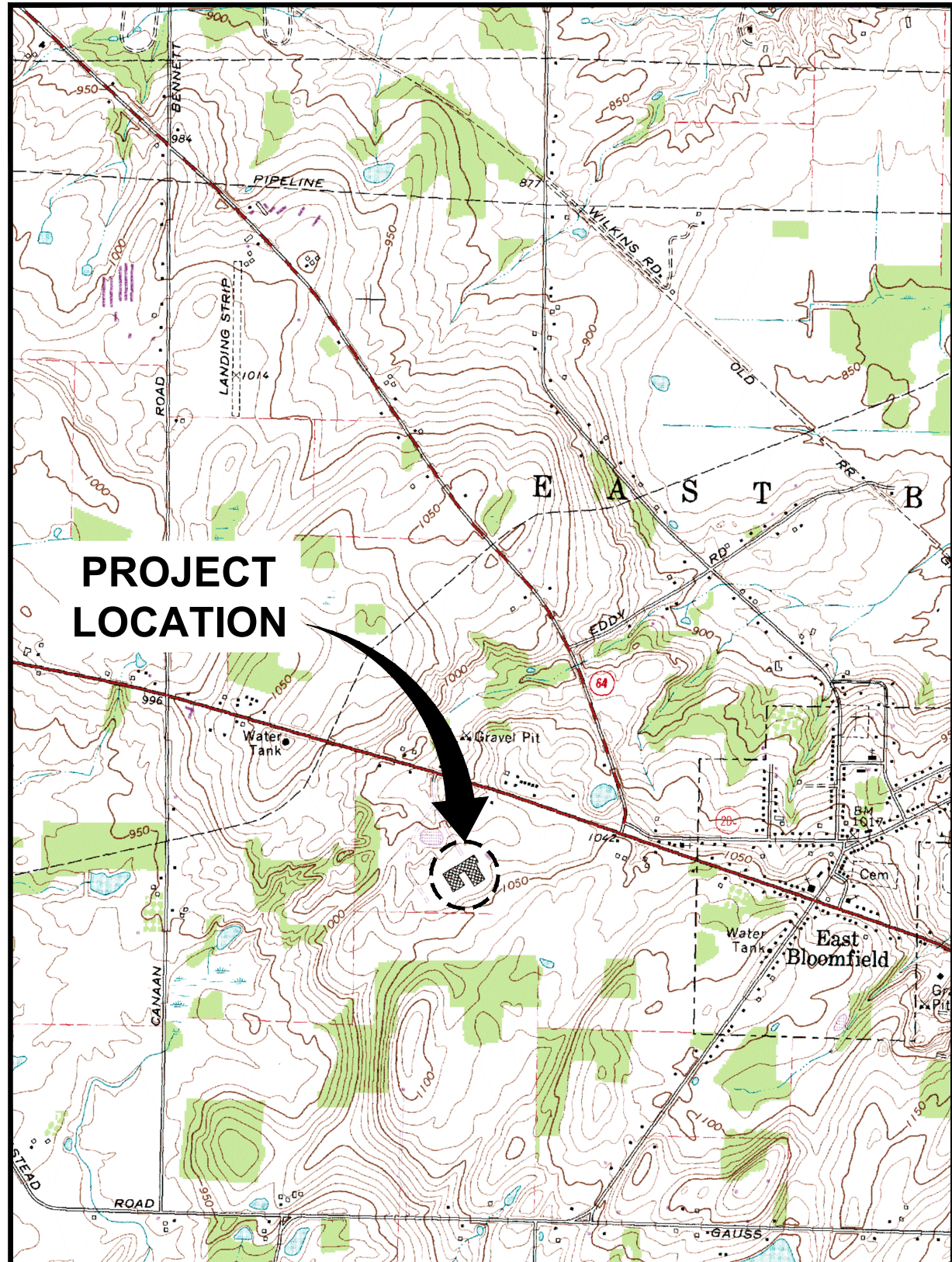
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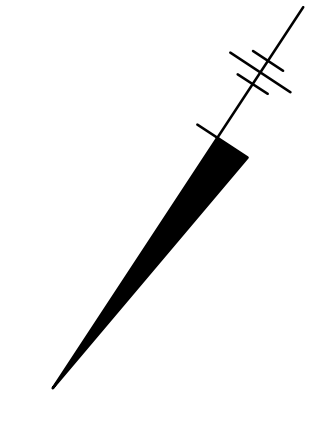
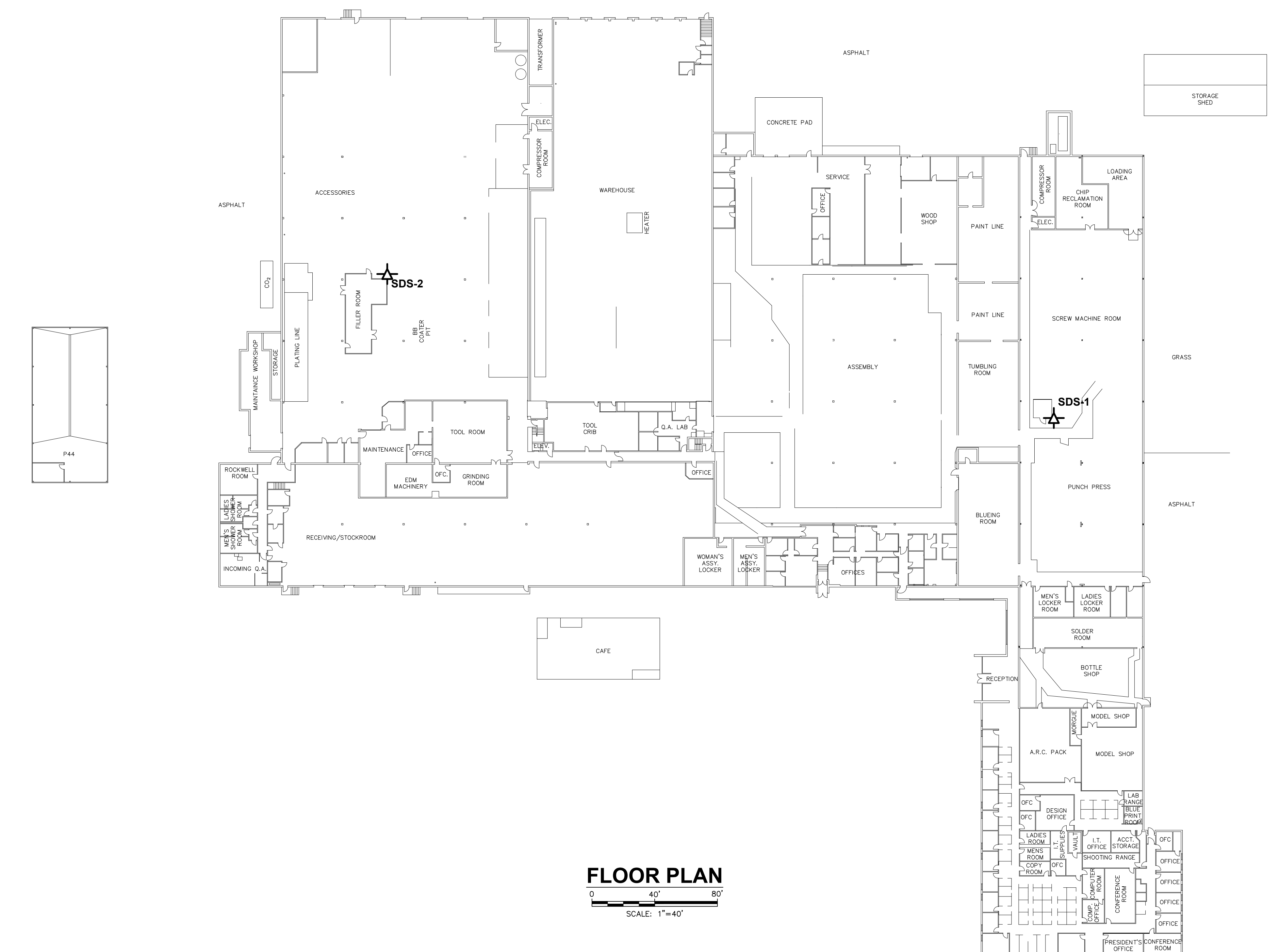
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**LEGEND:**  
 SSD SYSTEM EXTRACTION POINT (EXISTING)

**NOTES:**  
 1. BASE MAP SUPPLIED BY CROSMAN CORPORATION, DRAWING FACILITY-3-14-08, DATED 3/14/2008.  
 2. NOT ALL PHYSICAL FEATURES SHOWN.  
 3. ALL LOCATIONS ARE APPROXIMATE.

**FLOOR PLAN**  
 0 40' 80'  
 SCALE: 1"=40'

SCALE(S) AS INDICATED

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 Professional Engineer's No.  
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 State NY Date Signed Project Mgr.  
 WBP  
 Designed by Drawn by Checked by  
 CD GHS CDE



CROSMAN CORPORATION • EAST BLOOMFIELD, NEW YORK  
 SUB-SLAB DEPRESSURIZATION SYSTEM

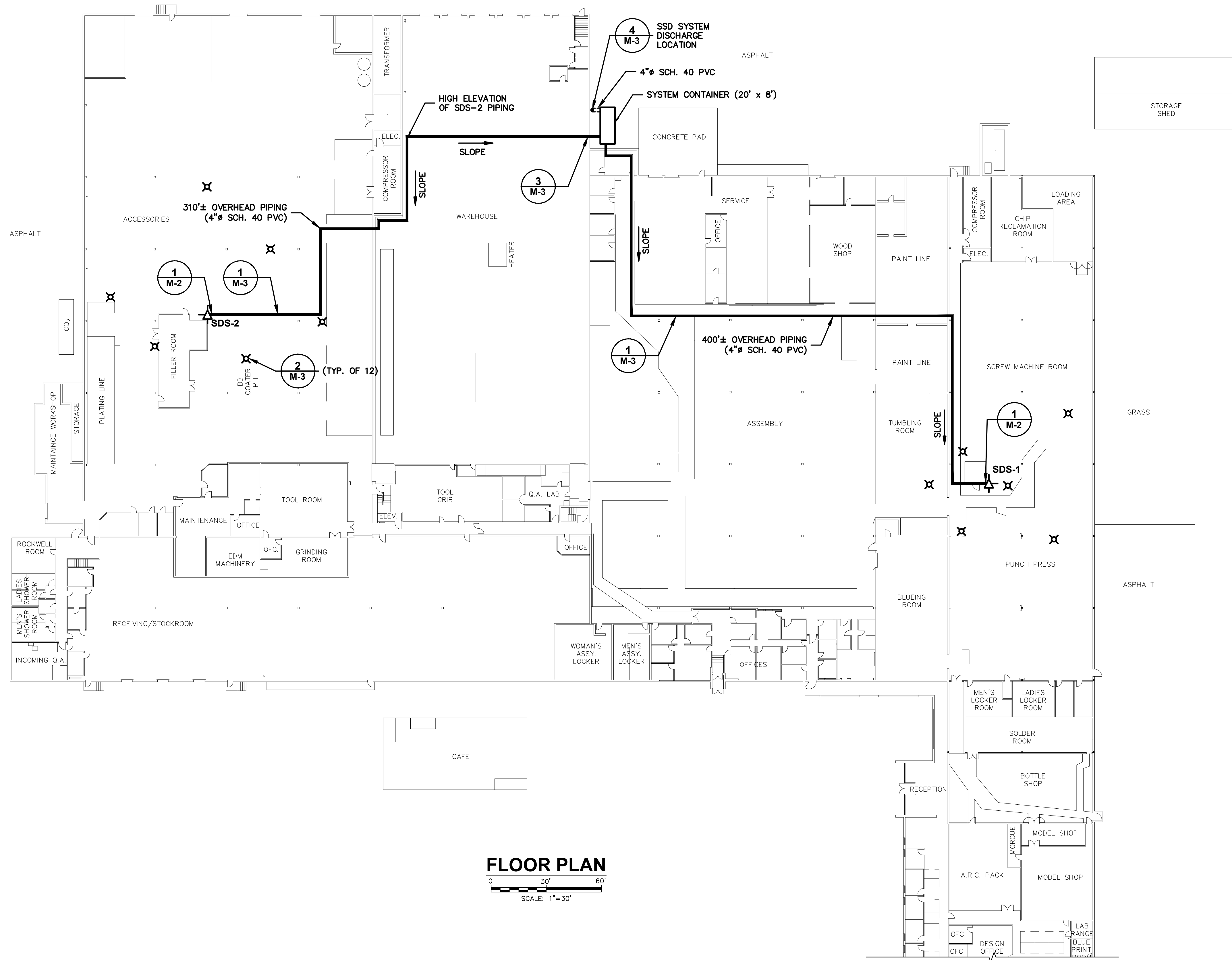
**EXISTING SITE CONDITIONS**

ARCADIS Project No.  
 B0041501.0001.00010  
 Date  
 DECEMBER 2015  
 ARCADIS  
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 Fairport, NY 14450  
 Tel. 585-385-0090



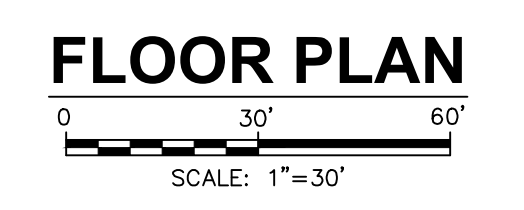
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- LEGEND:**
- SSD SYSTEM EXTRACTION POINT (EXISTING)
  - SSD MONITORING POINT
  - OVERHEAD SSD EXTRACTION PIPING
  - SSD SYSTEM DISCHARGE PIPING

- NOTES:**
1. BASE MAP SUPPLIED BY CROSMAN CORPORATION, DRAWING FACILITY-3-14-08, DATED 3/14/2008.
  2. NOT ALL PHYSICAL FEATURES SHOWN.
  3. ALL LOCATIONS ARE APPROXIMATE.
  4. THE SSD SYSTEM IS DESIGNED TO ACHIEVE A 40' RADIUS OF INFLUENCE AT SDS-1 AND 60' RADIUS OF INFLUENCE AT SDS-2.
  5. EXTRACTION POINTS SDS-1 AND SDS-2 ALREADY INSTALLED AND TEMPORARILY FINISHED WITH 4-INCH DIAMETER SCHEDULE 40 PVC PIPE INSTALLED TO 3- FEET ABOVE FLOOR SURFACE AND SEALED WITH PVC PLUG.
  6. INTERIOR SSD EXTRACTION PIPING TO BE INSTALLED SUCH THAT THERE IS A MINIMUM 1% SLOPE DOWNWARD TOWARD EXTRACTION POINT, WITH EXCEPTION OF PROPOSED HIGH POINT IN SDS-2 PIPING AS SHOWN. SDS-2 EXTRACTION PIPING TO HAVE MINIMUM 1% SLOPE DOWNWARD FROM HIGH POINT IN WAREHOUSE TO MOISTURE SEPARATOR TANK IN SYSTEM CONTAINER. SEE MECHANICAL DETAILS DRAWING FOR SLOPING REQUIRED AT EXTERIOR WALL PENETRATION.
  7. OVERHEAD SSD EXTRACTION PIPING TO BE RUN AT HIGHEST FEASIBLE ELEVATION TO MAINTAIN REQUIRED SLOPE, AND BE INSTALLED LOWER THAN FIRE SPRINKLERS. PIPING SHALL BE A MINIMUM DISTANCE OF 4' HORIZONTALLY AND 2' VERTICALLY BELOW SPRINKLER HEADS.
  8. OVERHEAD CLEARANCE, FINAL PIPE ROUTING, AND PIPE SUPPORT LOCATIONS SHALL BE FIELD VERIFIED BY CONTRACTOR AND SUBJECT TO ENGINEER APPROVAL.
  9. LAND SURFACE AT PROPOSED SYSTEM CONTAINER LOCATION IS CONCRETE. CONTAINER SHALL BE LEVELED AS NEEDED USING STEEL SHIMS.
  10. SSD SYSTEM DISCHARGE PIPING STACK SHALL EXTEND TO 3 FEET ABOVE ROOFLINE OR PARAPET (IF PRESENT).
  11. SEE BILL OF MATERIALS FOR SYSTEM CONTAINER DETAILS.
  12. LOCATION AND QUANTITY OF SUB-SLAB MONITORING POINTS SHALL BE FIELD VERIFIED BY ENGINEER. SEE MECHANICAL DETAILS DRAWING FOR MONITORING POINT DETAILS.



SCALE(S) AS INDICATED

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 Designed by  
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 Drawn by  
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 Checked by  
 CDE



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 SUB-SLAB DEPRESSURIZATION SYSTEM

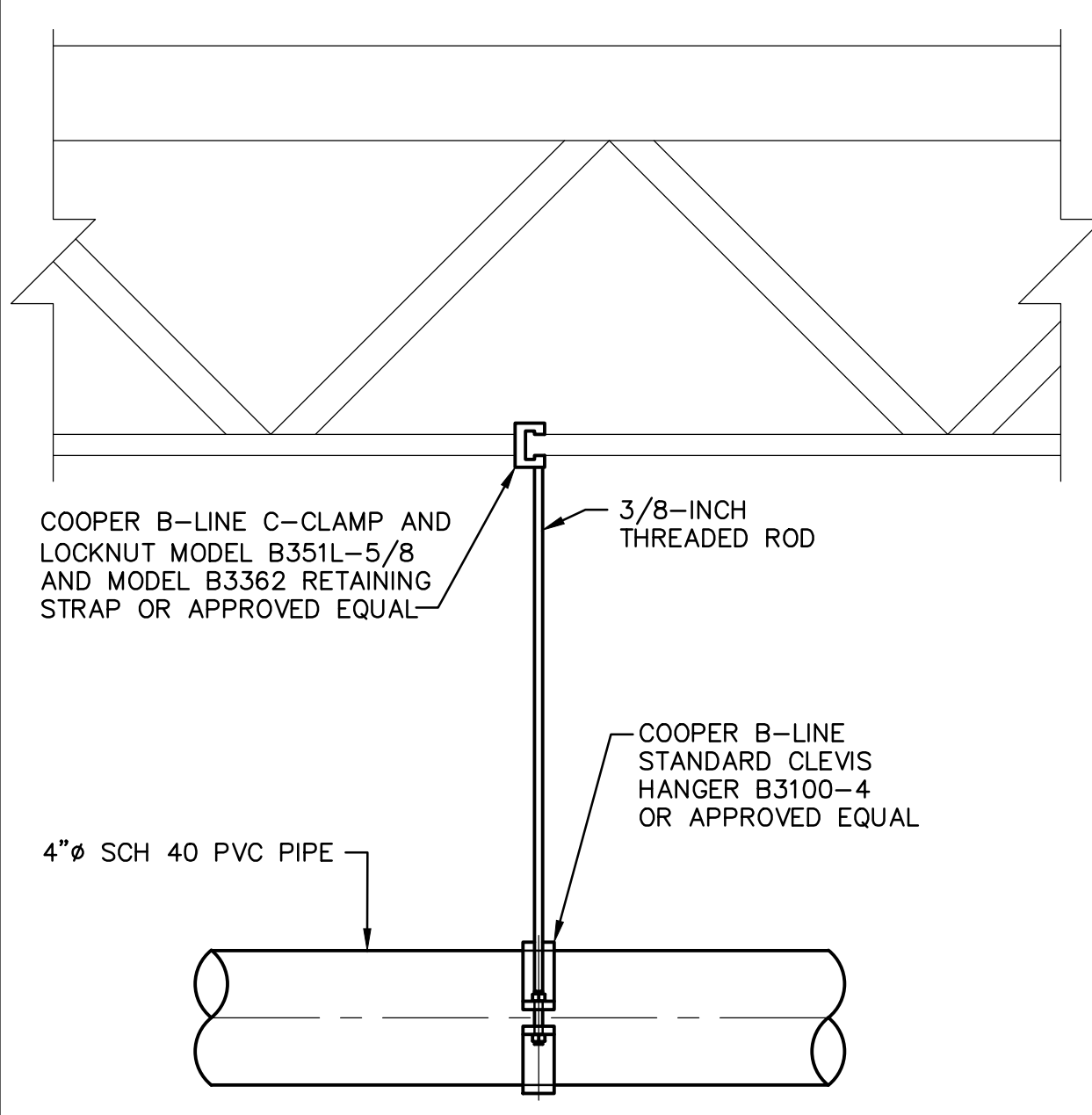
**PROPOSED SSD SYSTEM LAYOUT**

ARCADIS Project No.  
 B0041501.0001.00010  
 Date  
 DECEMBER 2015  
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 295 Woodcliff Drive, Suite 301  
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**M-1**

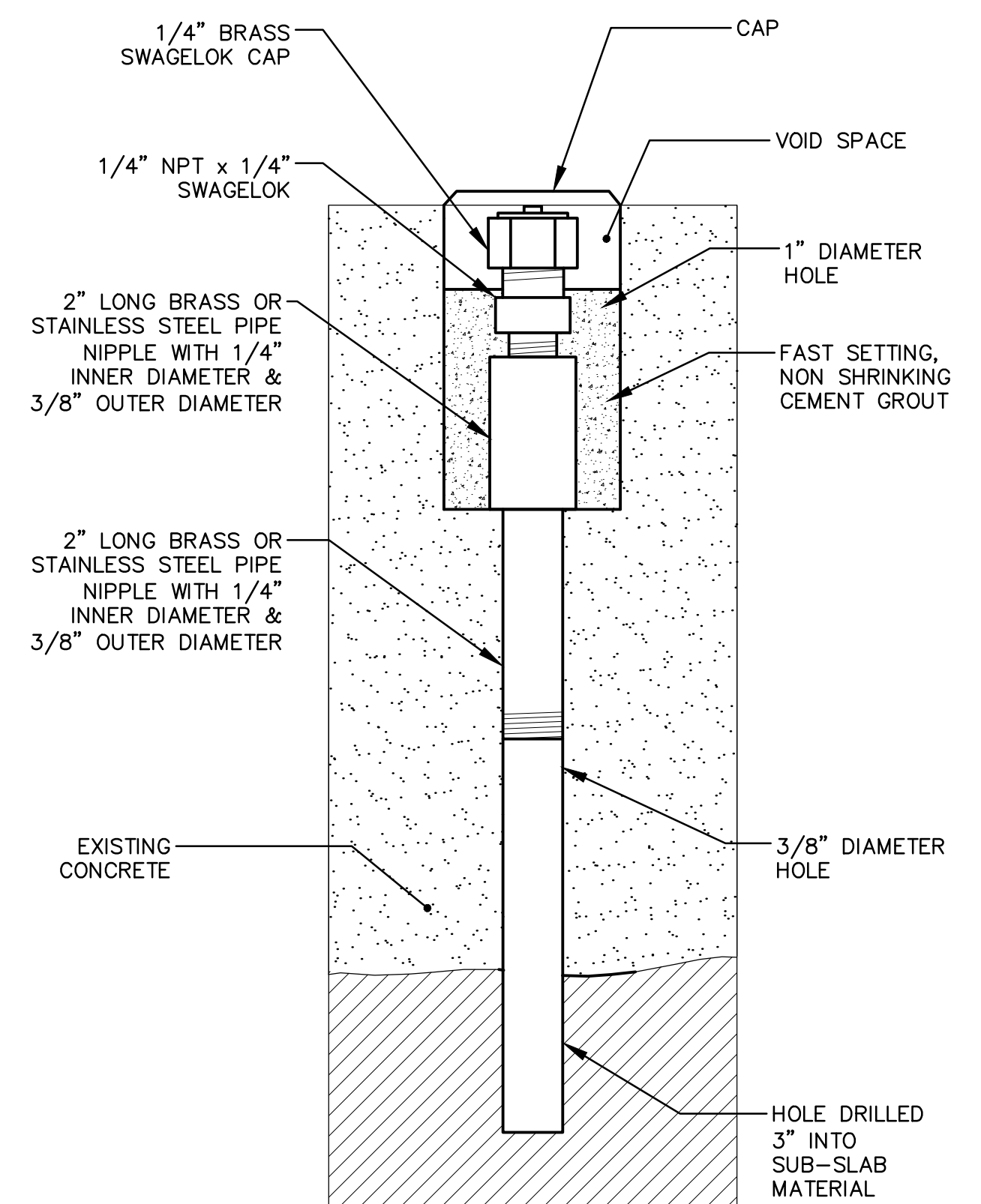


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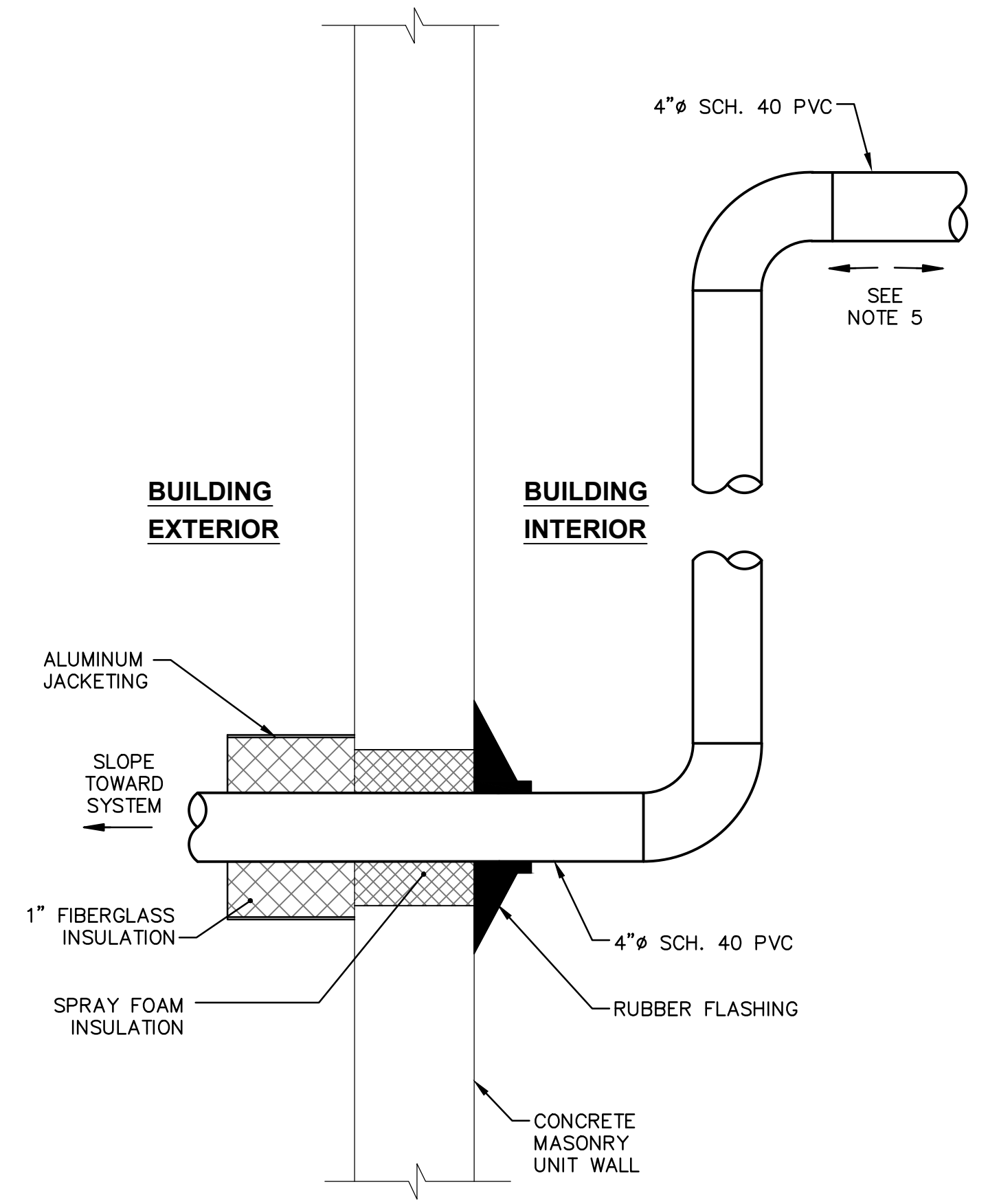
- NOTES:**
- HORIZONTAL PIPE SHALL BE SUPPORTED EVERY 4 FEET.
  - HORIZONTAL PIPING SHALL BE PITCHED 1% TOWARDS THE EXTRACTION POINT, UNLESS NOTED OTHERWISE.
  - HORIZONTAL PIPING SHALL BE RAN ABOVE DROP CEILING WHERE PRESENT.

**HANGING PIPE SUPPORT DETAIL 1**  
NOT TO SCALE



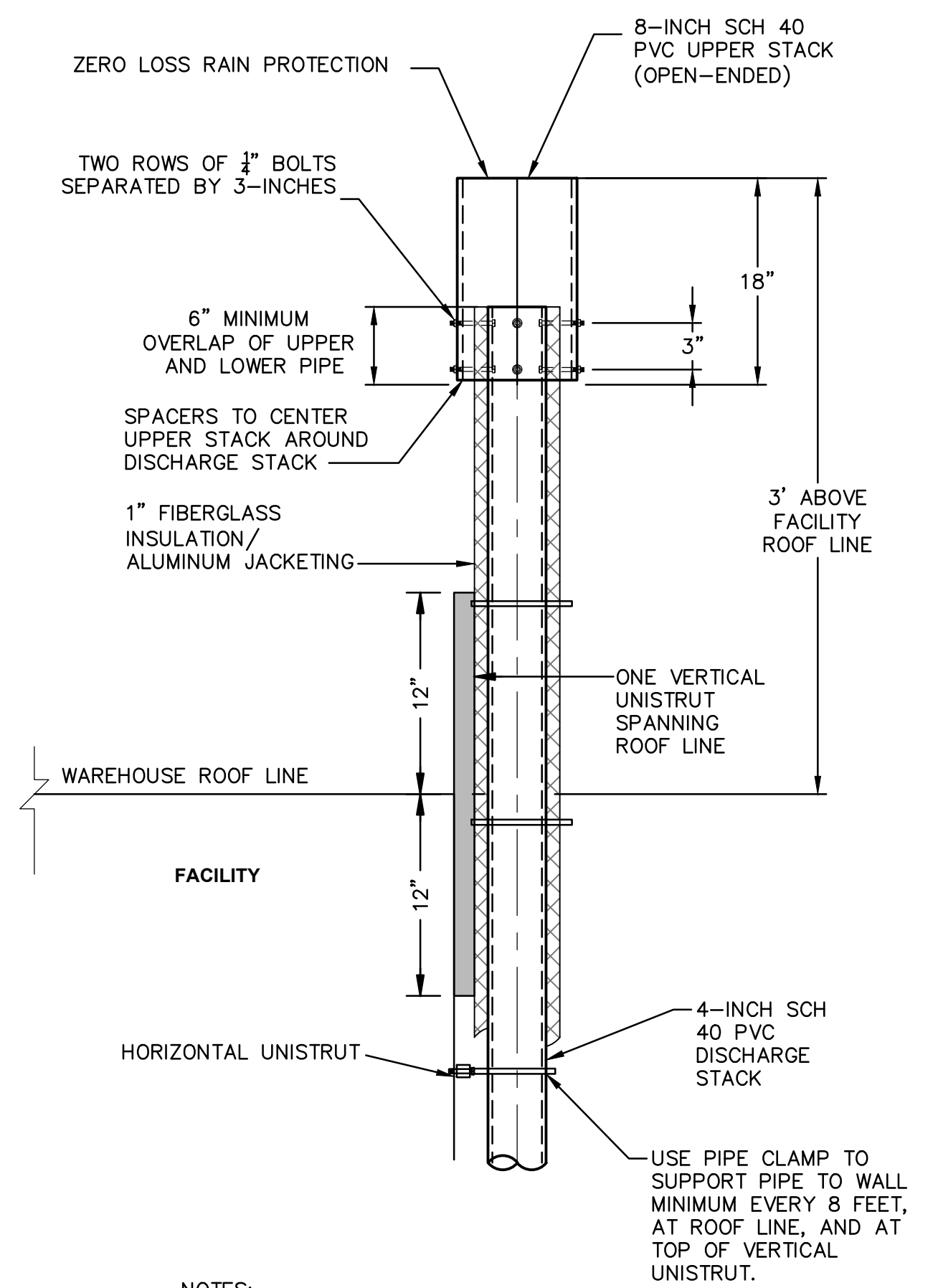
- NOTE:**
- MONITORING POINT LOCATIONS TO BE FIELD VERIFIED BY ENGINEER.

**SUB-SLAB MONITORING POINT 2**  
NOT TO SCALE



- NOTES:**
- ALL EXTERIOR PIPING SHALL BE FITTED WITH FIBERGLASS INSULATION WITH R-VALUE OF 5 AND ALUMINUM JACKETING.
  - EXTERIOR WALL MAY INCLUDE METAL SHEATHING.
  - BLOCK WALL PENETRATION SHALL BE MADE USING WET DIAMOND CORE BIT.
  - SDS-1 TO BE SLOPED TOWARD EXTRACTION POINT AT THIS LOCATION. SDS-2 TO BE SLOPED TOWARD SYSTEM AT THIS LOCATION (HIGH ELEVATION POINT IN WAREHOUSE).
  - PIPE SHALL BE FULLY SUPPORTED IMMEDIATELY ON INSIDE OF WALL.

**EXTERIOR WALL PENETRATION DETAIL 3**  
NOT TO SCALE



- NOTES:**
- DIMENSIONS ARE RELATIVE TO WAREHOUSE ROOF LINE, OR TO PARAPET IF PRESENT.
  - SECURE UNISTRUT TO WALL WITH 1/4-INCH CONCRETE SLEEVE ANCHORS SPACED 6" O.C.
  - THE DISCHARGE STACK SHALL BE A MINIMUM OF 10' IN ANY DIRECTION FROM ANY AIR INTAKE OR OTHER OPENING ON THE BUILDING.

**NO LOSS CAP DETAIL 4**  
NOT TO SCALE

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Professional Engineer's No. 069748			
State NY	Date Signed	Project Mgr. WBP	
Designed by CD	Drawn by GHS	Checked by CDE	



**ARCADIS** Design & Consultancy for natural and built assets

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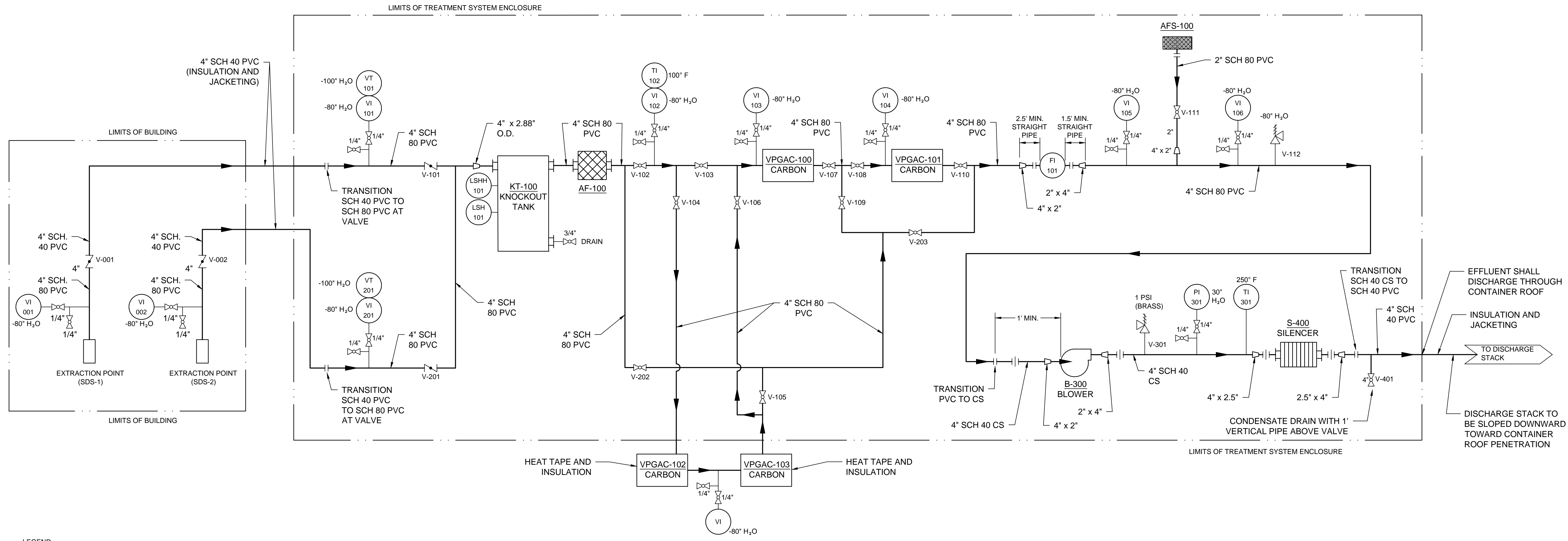
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SUB-SLAB DEPRESSURIZATION SYSTEM

**MISCELLANEOUS DETAILS**

ARCADIS Project No. B0041501.0001.00010
Date DECEMBER 2015
ARCADIS 295 Woodcliff Drive, Suite 301 Fairport, NY 14450 Tel. 585-385-0090

**M-3**

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**LEGEND:**

- VAPOR PROCESS PIPING
- BUILDING LIMITS
- FLANGE / TRANSITION
- UNION
- BLOWER
- FLANGED BUTTERFLY VALVE
- BALL VALVE
- PRESSURE RELIEF VALVE
- VACUUM RELIEF VALVE
- REDUCER
- AIR FILTER ONLY
- AIR FILTER / SILENCER
- SILENCER ONLY

**ABBREVIATIONS:**

- CPVC CHLORINATED POLYVINYL CHLORIDE
- CS CARBON STEEL
- FIT FLOW INDICATING TRANSMITTER
- LSH LEVEL SWITCH HIGH
- PI PRESSURE INDICATOR
- PVC POLYVINYL CHLORIDE
- SCH SCHEDULE
- TI TEMPERATURE INDICATOR
- TT TEMPERATURE TRANSMITTER
- VI VACUUM INDICATOR
- VT VACUUM TRANSMITTER

**NOTES:**

1. SEE BILL OF MATERIALS FOR PERTINENT EQUIPMENT MODEL TYPES.
2. IN-LINE VALVE MATERIALS SHALL BE SAME MATERIAL TYPE AS CONNECTING PROCESS LINE.
3. ALL TRANSMITTERS, SENSORS, AND MOTORS SHALL BE INTERLOCKED WITH PROGRAMMABLE LOGIC CONTROLLER.
4. TREATMENT SYSTEM ENCLOSURE TYPE SHALL BE IN ACCORDANCE WITH BILL OF MATERIALS.
5. EQUIPMENT LAYOUT TO BE PROPOSED BY CONTRACTOR AND SUBJECT TO ENGINEER'S APPROVAL.
6. FLOW INDICATOR SHALL BE INSTALLED WITH STRAIGHT PIPE LENGTHS UPSTREAM AND DOWNSTREAM IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
7. ALL EXTERIOR PIPING SHALL BE INSTALLED WITH 1" FIBERGLASS INSULATION AND ALUMINUM JACKETING.
8. ALL NECESSARY PIPING CONNECTIONS TO BE MADE BY CONTRACTOR.
9. SYSTEM STARTUP/SHAKEDOWN SHALL BE PERFORMED AND SHALL INCLUDE TESTING OF SYSTEM PROCESS PROGRAMMING, BASELINE ELECTRICAL READINGS, PROCESS LEAK TESTING, TROUBLESHOOTING/REPAIRS AS NEEDED TO ENSURE INTENT OF DESIGN IS ACHIEVED, AND CORRECTION OF ANY PUNCHLIST ITEMS IDENTIFIED BY OWNER OR ENGINEER.
10. PROJECT CLOSEOUT DOCUMENTS SHALL INCLUDE EQUIPMENT CUT SHEETS AND OPERATOR'S MANUALS, AND MARKUPS OF DESIGN DRAWINGS AND BILL OF MATERIALS TO REFLECT ACTUAL CONSTRUCTION.

**GENERAL PROCESS DESCRIPTION:**

THE SYSTEM IS A SUB-SLAB DEPRESSURIZATION (SSD) SYSTEM DESIGNED TO EXTRACT SUB-SLAB SOIL VAPORS FROM TWO (2) EXTRACTION POINTS (SDS-1 AND SDS-2) TO CREATE A NEGATIVE SUB-SLAB DIFFERENTIAL PRESSURE ACROSS THE TARGET DEPRESSURIZATION AREA. BLOWER (B-300) SHALL EXTRACT SOIL VAPORS SIMULTANEOUSLY FROM TWO SEPARATE EXTRACTION HEADERS (SDS-1 AND SDS-2). THE TWO EXTRACTION HEADERS WILL COMBINE INTO A SINGLE EXTRACTION HEADER INSIDE THE TREATMENT SYSTEM ENCLOSURE. THE EXTRACTION HEADER WILL INCLUDE A MOISTURE SEPARATOR TANK (KT-100) TO REMOVE ANY CONDENSATE PRESENT IN THE VAPOR STREAM, IN-LINE AIR FILTER (AF-100), AND VACUUM TRANSMITTER (VT-101). THE MOISTURE SEPARATOR SHALL BE EQUIPPED WITH HIGH AND HIGH-HIGH LIQUID LEVEL SENSORS (LSH-101 AND LSHH-101). PIPING/VALVES SHALL BE CONFIGURED SUCH THAT SOIL VAPORS MAY EITHER UNDERGO OR BYPASS CARBON TREATMENT. CARBON TREATMENT SHALL INCLUDE TWO (2) 1,000-POUND VAPOR PHASE CARBON VESSELS (VPGAC-100 AND VPGAC-101) ARRANGED IN SERIES. APPLIED VACUUM FROM THE BLOWER SHALL BE ADJUSTABLE VIA A DILUTION LINE EQUIPPED WITH A COMBINATION AIR FILTER/SILENCER. THE PROCESS STREAM ON THE DISCHARGE SIDE OF THE BLOWER SHALL INCLUDE AN IN-LINE SILENCER/MUFFLER (S-400). VAPORS WILL BE DISCHARGED TO THE ATMOSPHERE VIA A ROOF STACK EXTENDING 3' ABOVE THE WAREHOUSE ROOF LINE AT THE PROPOSED LOCATION OF THE SYSTEM CONTAINER. TWO (2) SUPPLEMENTAL 1,000-POUND VAPOR PHASE CARBON VESSELS (VPGAC-102 AND VPGAC-103) WILL BE UTILIZED DURING THE INITIAL SYSTEM OPERATION AND STAGED OUTSIDE THE TREATMENT SYSTEM ENCLOSURE. SUPPLEMENTAL CARBON VESSELS AND ASSOCIATED EXTERIOR PIPING SHALL BE FITTED WITH SELF-REGULATING HEAT TAPE AND INSULATION. PIPING/VALVES SHALL BE CONFIGURED SUCH THAT AFTER TREATMENT BY THE SUPPLEMENTAL CARBON VESSELS, THE VAPOR STREAM MAY BYPASS EITHER OR BOTH VPGAC-100 AND/OR VPGAC-101.

**MAIN CONTROL PANEL/HUMAN MACHINE INTERFACE:**

SEE CONTROL PANEL DRAWINGS.

**REMOTE ACCESS:**

OPERATORS SHALL BE ABLE TO REMOTELY ACCESS THE PLC/HMI THROUGH USE OF WIRELESS COMMUNICATION COMPONENTS ONSITE AND AN INTERNET WEB BROWSER. REMOTE ACCESS SHALL PROVIDE REMOTE SYSTEM OPERATORS WITH:

- VIEWING OF THE STATUS AND VALUE OF ALL SYSTEM INPUTS AND OUTPUTS INCLUDING ALARMS.
- ABILITY TO ADJUST ALARM SETPOINTS.
- ABILITY TO ACKNOWLEDGE ALARM CONDITIONS.
- VIRTUAL "RESET", "SHUTDOWN", AND "STARTUP" BUTTONS.
- ABILITY TO VIEW AND DOWNLOAD LOGGED DATA, INCLUDING THE STATUS OF ALL SYSTEM INPUTS, OUTPUTS, AND RUNTIME OF B-300. DATA SHALL BE LOGGED AT A MINIMUM FREQUENCY OF EVERY 15 MINUTES AND WITH A MINIMUM OF 30 DAYS SAVED AT ANY TIME.

**ALARM NOTIFICATION:**

OPERATORS SHALL BE NOTIFIED VIA EMAIL IN THE EVENT ANY ALARM CONDITION (CRITICAL OR NON-CRITICAL) OCCURS. ACKNOWLEDGEMENT OF ALARM CONDITIONS SHALL REQUIRE REMOTE ACCESS.

**CONTROL LOGIC:**

**VIRTUAL CONDITIONS:** THE FOLLOWING CONDITIONS SHALL EXIST WITHIN THE CONTROL LOGIC:

- AUTORUN CONDITION:**
- SHALL TURN ON IF RESET BUTTON IS PRESSED AND CRITICAL ALARM CONDITION IS OFF
  - SHALL TURN OFF IF SHUTDOWN IS INITIATED OR CRITICAL ALARM CONDITION IS ON.

- CRITICAL ALARM CONDITION:**
- SHALL TURN ON IF ANY CRITICAL ALARM OCCURS.
  - SHALL TURN OFF IF NO CRITICAL ALARMS ARE PRESENT AND A RESET IS INITIATED.

- NON-CRITICAL ALARM CONDITION:**
- SHALL TURN ON IF ANY NON-CRITICAL ALARM OCCURS.
  - SHALL TURN OFF IF NO NON-CRITICAL ALARMS ARE PRESENT AND A RESET IS INITIATED.

- BLOWER B-300:**
- SHALL RUN IF PHYSICAL HAND-OFF-AUTO SWITCH FOR BLOWER IS IN HAND.
  - SHALL RUN IF PHYSICAL HAND-OFF-AUTO SWITCH FOR BLOWER IS IN AUTO AND AUTORUN CONDITION IS ON.

**ALARM INTERLOCKS**

NO.	INSTRUMENT	ALARM CONDITION	TYPE	ALARM RANGE	DELAY
1	B-300	BLOWER MOTOR FAILURE	CRITICAL	NO RUN	2 SECONDS
2	VT-101	LOW VACUUM	NON-CRITICAL	< 50 INWC VACUUM	15 SECONDS
3	VT-101	LOW-LOW VACUUM	CRITICAL	< 40 INWC VACUUM	15 SECONDS
4	VT-201	LOW VACUUM	NON-CRITICAL	< 50 INWC VACUUM	15 SECONDS
5	VT-201	LOW-LOW VACUUM	CRITICAL	< 40 INWC VACUUM	15 SECONDS
6	LSH-101	HIGH LIQUID LEVEL KNOCKOUT TANK (KT-100)	NON-CRITICAL	RAISED	2 SECONDS
7	LSHH-101	HIGH-HIGH LIQUID LEVEL KNOCKOUT TANK (KT-100)	CRITICAL	RAISED	2 SECONDS

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CROSMAN CORPORATION • EAST BLOOMFIELD, NEW YORK  
SUB-SLAB DEPRESSURIZATION SYSTEM  
**PIPING AND INSTRUMENTATION DIAGRAM**

ARCADIS Project No.  
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**P-1**



**ELECTRICAL SPECIFICATIONS:**

**GENERAL**

1. ALL ELECTRICAL EQUIPMENT SHALL BE U.L. LISTED AND LABELED.
2. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF NFPA-70 NEC.
3. ELECTRICAL PANEL BUILDER(S) SHALL PROVIDE DETAILED SHOP DRAWINGS OF PANEL(S) FOR ENGINEER APPROVAL PRIOR TO CONSTRUCTION.

**RIGID METAL CONDUIT (RGS)**

1. GALVANIZED STEEL, HOT-DIPPED ZINC, ANSI STANDARD C80.1 AND C80.4.
2. MANUFACTURER SHALL BE ALLIED TUBE & CONDUIT CORPORATION, TRIANGLE WIRE AND CABLE INC., OR EQUAL.
3. PROVIDE CONDUIT SEAL-OFF FITTING IN CONDUIT RUN AS REQUIRED TO COMPLY WITH NEC 501.15. CONDUIT SEAL SHALL PREVENT PASSAGE OF GASES, VAPORS, OR FLAMES FROM ONE PORTION OF THE ELECTRICAL INSTALLATION TO ANOTHER.

**NONMETALLIC (PVC) CONDUIT**

1. NONMETALLIC RIGID CONDUIT AND FITTINGS SHALL BE SCHEDULE 40, POLYVINYL CHLORIDE AND SHALL BE RESISTANT TO CORROSION.
2. CONDUIT AND FITTINGS SHALL BE IN ACCORDANCE WITH NEMA STANDARD TC-2 AND TC-3, LATEST REVISION.
3. MANUFACTURER SHALL BE CARLON ELECTRIC CONDUIT CO., TRIANGLE PWC CO., OR EQUAL.

**JUNCTION BOXES**

JUNCTION BOXES AND FITTINGS SHALL BE OF GALVANIZED STEEL OR COPPER FREE ALUMINUM.

**WIRES AND CABLES**

1. GENERAL
  - A. ALL CONDUCTORS, UNLESS OTHERWISE NOTED, SHALL BE STRANDED COPPER, CONSTRUCTED OF SOFT DRAWN OR ANNEALED COPPER.
  - B. CONDUCTORS INSULATION SHALL BE COLOR CODED, WITH COLOR OF INSULATION ONE COLOR THROUGHOUT THE ENTIRE RUN.
  - C. 277/480 VAC, THREE PHASE, 4 WIRE
    - PHASE A - BROWN
    - PHASE B - ORANGE
    - PHASE C - YELLOW
    - NEUTRAL - WHITE
    - GROUND - GREEN
2. LOW VOLTAGE CONDUCTORS
  - A. ALL CONDUCTORS FOR POWER, LIGHTING AND 120 VAC CONTROL SHALL BE RATED A MINIMUM 600 VAC.
  - B. CONDUCTORS SHALL BE CONSTRUCTED OF UNCOATED CLASS C COPPER CONCENTRIC-LAY-STRANDED WIRES.
  - C. POWER AND LIGHTING CONDUCTORS SHALL BE TYPE THHN-90C/THWN-2-90C WITH PVC INSULATION AND NYLON JACKET.
3. INSTRUMENTATION CABLES
 

TWISTED PAIR OF NO. 18 AWG TINNED COATED CLASS C COPPER CONCENTRIC LAY STRANDED WIRES WITH AN ALUMINUM POLYESTER SHIELD AND COPPER DRAIN. RATED FOR 600V AND COLOR COATED PVC OUTER JACKET.
4. CONNECTORS
  - A. PIGTAIL SPLICING #10 AND SMALLER, USE TAPERED SPRING WIRE NUTS. MANUFACTURER SHALL BE IDEAL WING NUT, BUCHANAN B-CAP, T&B PIGGIES, OR EQUAL.
  - B. FOR TERMINATION OF #14 CONTROL WIRES TO TERMINALS, USE INSULATED COMPRESSION SPADE TYPE CONNECTORS. MANUFACTURER SHALL BE BURNDY HYDENT, T&B STA-KON, OR EQUAL.
  - C. SPLICES AND TERMINALS FOR #8 AND LARGER SHALL BE COPPER COMPRESSION TYPE. MANUFACTURER SHALL BE BURNDY HYDENT OR HYLUG, T&B, STA-CON, OR EQUAL.
  - D. FIXTURE CONNECTIONS MANUFACTURER SHALL BE T&B STA-KON SERIES PT-66M, IDEAL CRIMP SLEEVE NO. 410 WITH LONG BARREL, OR EQUAL.

**GROUNDING**

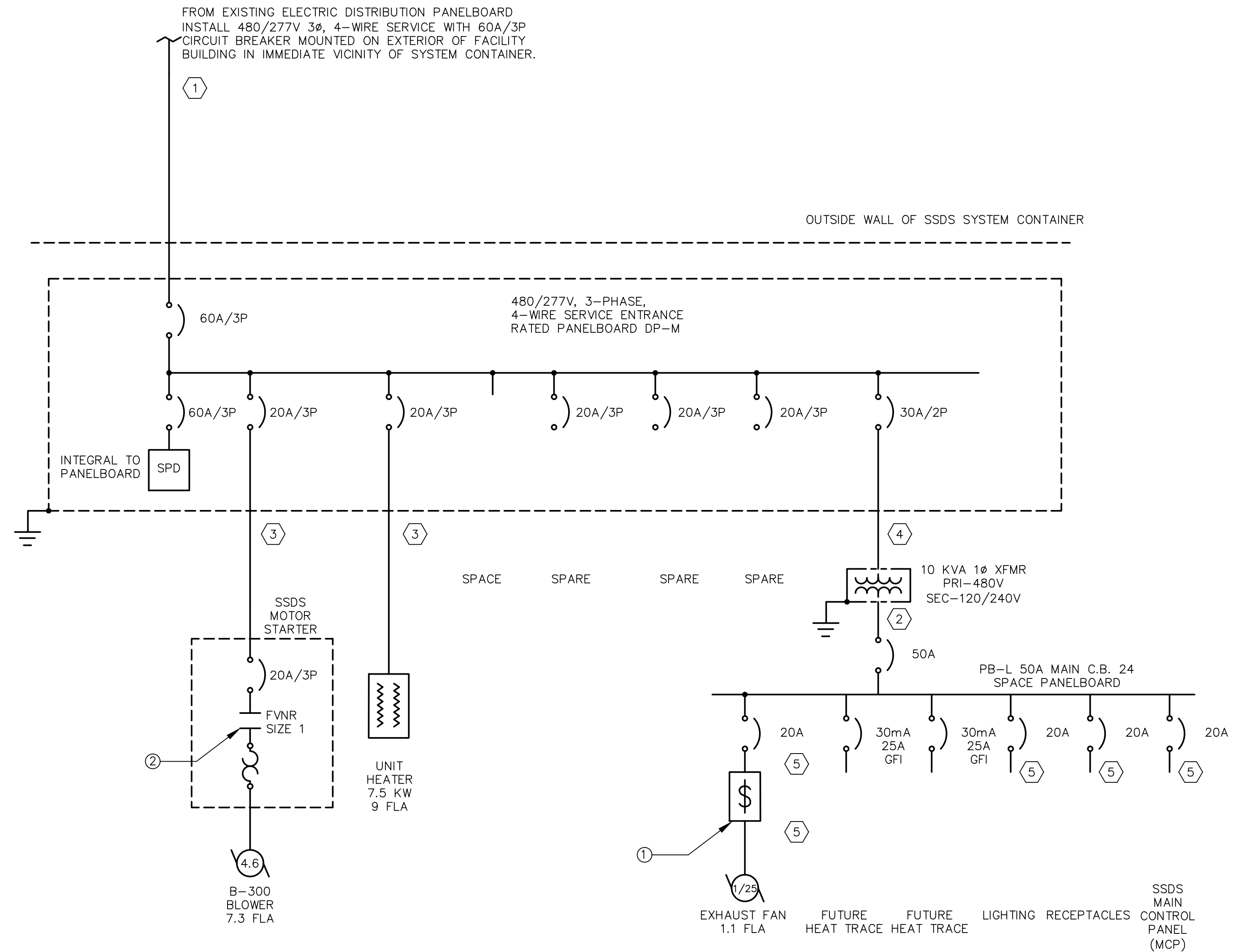
1. GROUNDING OF ELECTRICAL SYSTEMS AND EQUIPMENT SHALL, AT A MINIMUM, MEET THE REQUIREMENTS OF THE NEC ARTICLE 250 OR SHALL EXCEED ARTICLE 250 AS HEREIN SPECIFIED.
2. ALL CONDUITS SHALL HAVE AN INTERNAL GROUND CONDUCTOR. THIS GROUND CONDUCTOR SHALL BE PROVIDED ALTHOUGH IT MAY NOT BE SHOWN OR SCHEDULED ON THE PLANS.
3. GROUNDING ELECTRODE CONDUCTORS SHALL BE A MINIMUM OF NO. 6 AWG BARE STRANDED COPPER.
4. GROUND RODS SHALL BE 3/4" DIAMETER, 10 FEET LONG, STEEL CORE WITH COPPER MOLTEN WELDED OR ELECTROLYTICALLY BONDED TO EXTERIOR.
5. ALL CONNECTIONS SHALL BE MADE WITH COMPRESSION OR CADWELD CONNECTORS.

**ENCLOSURE**

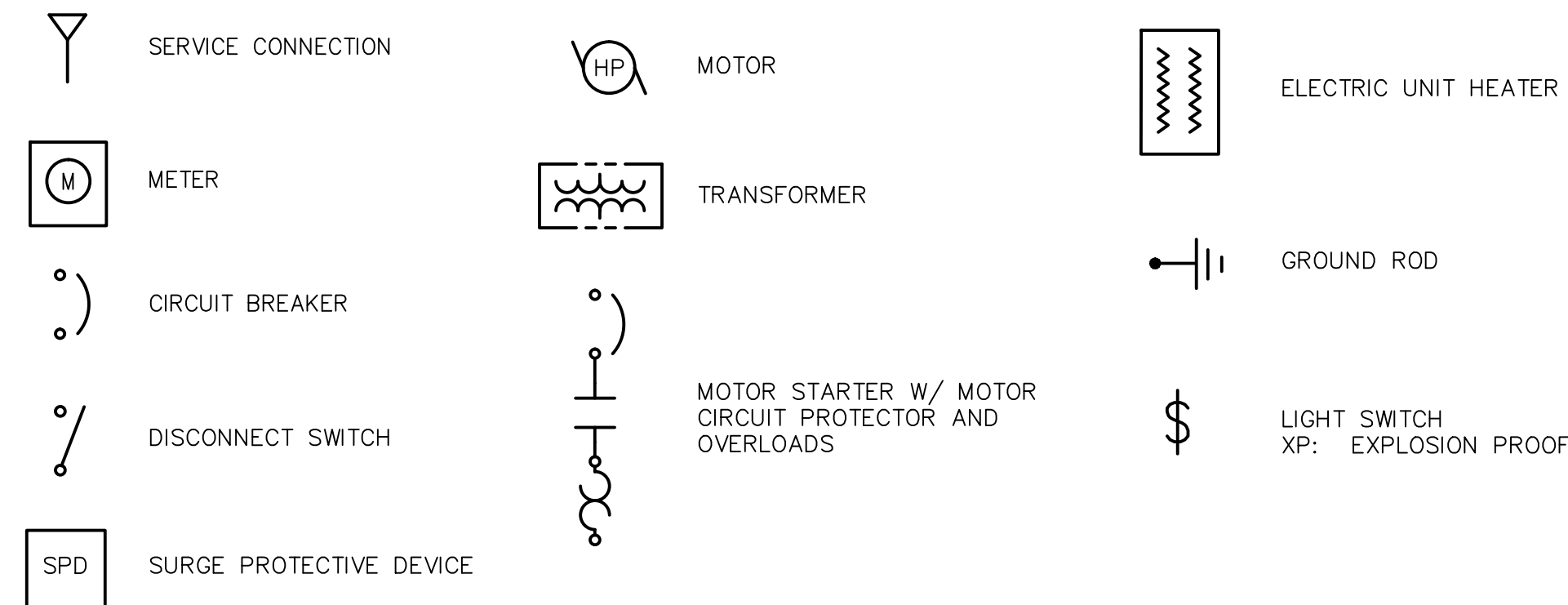
1. ENCLOSURES SHALL BE NEMA RATED FOR LOCATION UNLESS OTHERWISE NOTED.
2. WET LOCATIONS OR OUTDOORS, ENCLOSURES SHALL BE NEMA TYPE 4, STAINLESS STEEL.
3. ENCLOSURES SHALL HAVE NAMEPLATE ON THE EXTERIOR IDENTIFYING THE APPLICATION FUNCTION OF THE EQUIPMENT ENCLOSED.

**WIRING DEVICES**

1. RECEPTACLES MARKED AS GFCI SHALL BE OF THE GROUND FAULT CIRCUIT INTERRUPTER TYPE. MANUFACTURER SHALL BE GE TYPE TGR20, OR EQUAL.
2. SWITCHES
  - A. LIGHTING SWITCHES SHALL BE RATED 20 AMPERES AT 277 VAC, TOGGLE OPERATED, PLASTIC ENCLOSED, SINGLE POLE, THREE-WAY OR FOUR-WAY AS SHOWN OR REQUIRED. MANUFACTURER SHALL BE P&S SERIES 20A1 SPECIFICATION GRADE, OR EQUAL.
  - B. SWITCHES SHALL HAVE SILVER ALLOY CONTACTS AND PROVISIONS FOR SIDE AND BACK WIRING.
  - C. EACH SWITCH SHALL BE SUITED FOR FULL-RATED CAPACITY ON TUNGSTEN FILAMENT AND FLUORESCENT LAMP LOADS.
3. FACEPLATE AND COVERS
  - A. FINISHED AREAS SHALL HAVE STAINLESS STEEL TYPE 302 ALLOY COVERS.
  - B. WET AND CORROSIVE AREAS SHALL BE WEATHERPROOF COVERS WITH GASKETS.



**ELECTRICAL SYMBOL LEGEND**



**SINGLE LINE DIAGRAM**

**CONDUIT AND CABLE SCHEDULE**

- ① (4) #4, (1) #10 G., 1-1/2" C.
- ② (3) #4, (1) #8 G., 1-1/4" C.
- ③ (3) #12, (1) #12 G., 3/4" C.
- ④ (2) #10, (1) #10 G., 3/4" C.
- ⑤ (2) #12, (1) #12 G., 3/4" C.

**ELECTRICAL NOTES:**

- ① PROVIDE LINE VOLTAGE THERMOSTAT FOR CONTROL.
- ② SEE PANEL DESIGN FOR STARTER PART NUMBER.

**ELECTRICAL GENERAL NOTES:**

1. THIS IS A GENERAL ELECTRICAL SYMBOLS AND GENERAL NOTES SHEET. SOME SYMBOLS AND/OR NOTES MAY NOT BE USED IN THIS SET OF DRAWINGS.

PROJECTNAME: ...  
IMAGES: ...  
XREFS: ...

SCALE(S) AS INDICATED	Professional Engineer's Name <b>THOMAS P ARMSTRONG JR.</b>
	Professional Engineer's No. 085236
	State NY
	Date Signed
	Project Mgr. WBP
	Designed by NCP
	Drawn by NCP
	Checked by TPA



**ARCADIS** Design & Consultancy for natural and built assets

ARCADIS OF NEW YORK, INC.

CROSMAN CORPORATION • EAST BLOOMFIELD, NEW YORK  
SUB-SLAB DEPRESSURIZATION SYSTEM

**SINGLE LINE DIAGRAM**

ARCADIS Project No.  
B0041501.0001.00010

Date  
DECEMBER 2015

ARCADIS  
295 Woodcliff Drive, Suite 301  
Fairport, NY 14450  
Tel. 585-385-0090

**E-1**

XREFS: IMAGES: PROJECTNAME: ...

LUMINAIRE SCHEDULE						
TYPE	LAMPS		CONNECTED WATTS	LUMINAIRE DESCRIPTION	MANUFACTURER / CATALOG NUMBER	QUANTITY
	QUANTITY	TYPE				
A	2	A33	75	SURFACE MOUNTED INCANDESCENT LUMINAIRE, WITH PLAIN GLOBE AND GUARD	CROUSE HINDS CAT NO. VDA2759 OR EQUAL	1

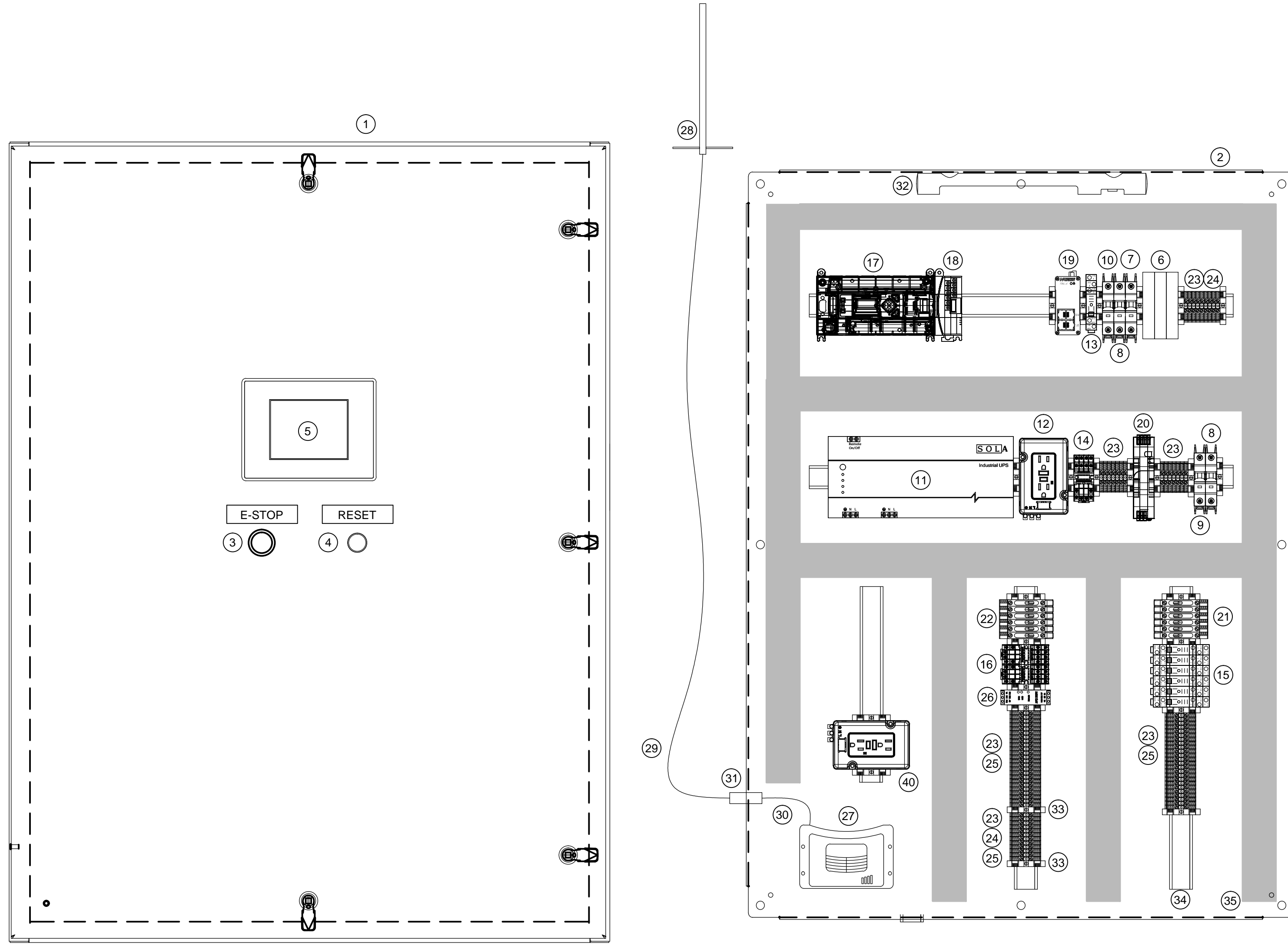
- LIGHTING NOTES:
1. CONTRACTOR SHALL PROVIDE AND INSTALL INCANDESCENT LIGHTING OF TYPE "A" LUMINAIRE. LUMINAIRE SHALL BE EVENLY SPACED WITHIN THE CARGO CONTAINER.
  2. CONTRACTOR SHALL PROVIDE AND INSTALL THE EXHAUST FAN AND HEATER. COORDINATE WITH CONTAINER VENDOR FOR HVAC PLACEMENT.
  3. EQUIPMENT LAYOUT SHALL BE PROPOSED BY CONTRACTOR AND SUBJECT TO ENGINEERS'S APPROVAL.

HVAC SCHEDULE									
TYPE	AIRFLOW (CFM)	PROPELLER DIA (IN)	MOTOR DATA			WEIGHT (LBS)	MANUFACTURER	MODEL	QUANTITY
			HP	RPM	V/PH/HZ				
EXHAUST FAN	800	12	1/25	1550	115/1/60	12	GRAINGER	1HLA2	1
HEATER	650	-	1/30	1600	480/3/60	24	QMARK	MUH0704	1

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			State NY	Date Signed WBP	Project Mgr. WBP					Date DECEMBER 2015	



CITY: Milwaukee, WI DIV/GROUP: ENV DB: J. Yuen, C. McKeough PIC: (Opt) LVR: (Opt) ON="OFF"=REF\* PROJECT NAME: CROSSMAN ARMS BORDER  
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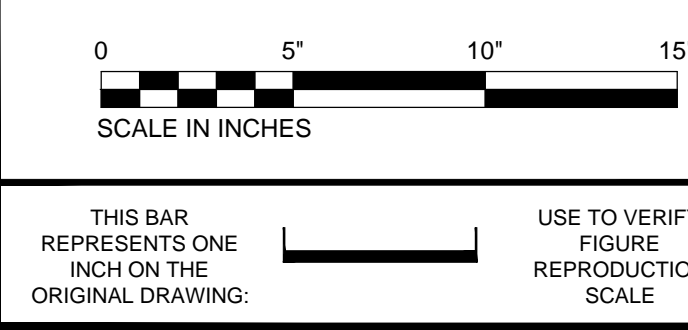
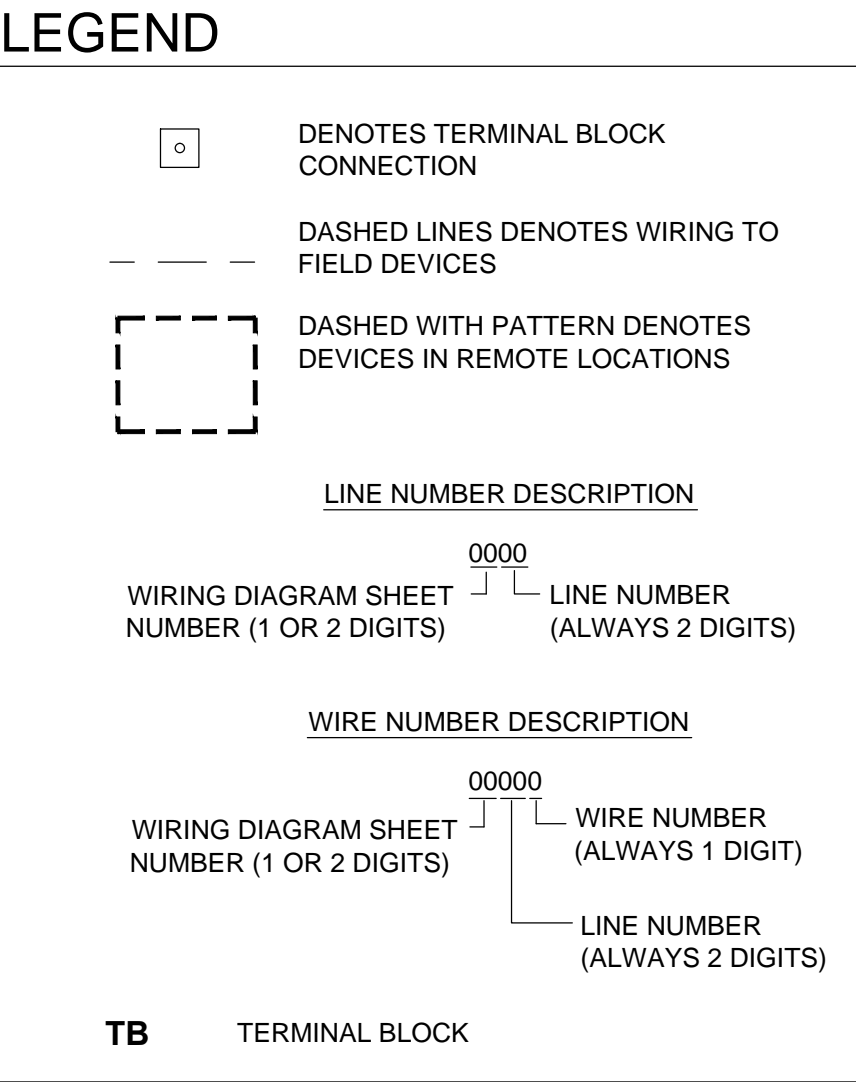


**SSDS MAIN CONTROL PANEL (MCP)**

**SSDS MOTOR STARTER**

TAG	QTY	SUB	DESCRIPTION	MANUFACTURER	CATALOG #
1	1		WALL MOUNT STEEL ENCLOSURE 48X36X12	SCE	SCE-48EL3612LP
2	1		BACK PANEL FOR ENCLOSURE	SCE	SCE-48P36
3	1		RED MUSHROOM HEAD E-STOP TWIST RELEASE	AB	800FP-MT44
		1	22.5MM PB BASE MOUNT, SCREW CONTACT BLOCK, 1 N.C.	AB	800F-BX01
4	1		BLACK, 22 MM, MOMENTARY PUSH BUTTON	AB	800FP-F2PX20
5	1		6" C, MORE COLOR TOUCH PANEL	AUTOMATION DIRECT	EA9-T6CL-R
6	1		120 VAC SURGE PROTECTION DEVICE (10A)	AB	4983-DS120-401
7	1		10 AMP MINIATURE CIRCUIT BREAKER (1 POLE, 120 VAC)	AB	1489-M1C100
8	2		8 AMP MINIATURE CIRCUIT BREAKER (1 POLE, 120 VAC)	AB	1489-M1C080
9	1		7 AMP MINIATURE CIRCUIT BREAKER (1 POLE, 120 VAC)	AB	1489-M1C070
10	1		2 AMP MINIATURE CIRCUIT BREAKER (1 POLE, 120 VAC)	AB	1489-M1C020
11	1		UPS, 850 KVA	SOLA	S1K850
		1	MOUNTING BRACKET FOR UPS	SOLA	S1K-PMBRK
12	1		DUAL RECEPTACLE	AB	1492-REC15
13	1		RELAY - 1 POLE, 120 VAC, 16 A CONTACT	AB	700-HK36A1
		1	RELAY SOCKET (5 PIN)	AB	700-HN221
14	1		RELAY - 4 POLE, 120 VAC, 7 A CONTACT	AB	700-HC24A1
		1	RELAY SOCKET (14 PIN)	AB	700-HN104
15	6		RELAY - 1 POLE, 24 VDC, 8 A CONTACT	AB	700-HK36A24
		6	RELAY SOCKET (5 PIN)	AB	700-HN221
16	2		RELAY - 4 POLE, 24VDC, 7 A CONTACT	AB	700-HC24Z24
		2	RELAY SOCKET (14 PIN)	AB	700-HN104
17	1		MICROLOGIX 1400 PLC, (20) 24 VDC IN, 12 OUT, 110 AC PWR	AB	1766-L32BWA
18	1		4 CHANNEL CURRENT/VOLTAGE ANALOG INPUT MODULE	AB	1762-IF4
19	1		4 PORT ETHERNET SWITCH	NTRON	104TX
20	1		24 VDC POWER SUPPLY (120 W)	AB	1606-XLE120E
21	5		120 VAC FUSE BLOCKS	AB	1492-WFB4250
		5	2 A, 250 V, TIME DELAY 5 X 20 MM FUSES	BUSSMANN	S505-2-R
22	7		24 VDC FUSE BLOCKS	AB	1492-WFB424
		1	5 A, 250 V, TIME DELAY 5 X 20 MM FUSES	BUSSMANN	S506-5-R
		6	2 A, 250 V, TIME DELAY 5 X 20 MM FUSES	BUSSMANN	S506-2-R
23	TBD		IEC TERMINAL BLOCK	AB	1492-J3
24	TBD		IEC GROUND TERMINAL BLOCK	AB	1492-J3G
25	15		IEC TERMINAL BLOCK WITH PLUG IN FUSE	AB	1492-J3P
		9	FUSE PLUG 10-36 V WITH BLOW FUSE INDICATION	AB	1492-FPK224
		5	0.50 A, 250 V, TIME DELAY 5 X 20 MM FUSES	BUSSMANN	S506-500-R
		4	0.25 A, 250 V, TIME DELAY 5 X 20 MM FUSES	BUSSMANN	S506-250-R
		6	FUSE PLUG 60-150 V WITH BLOW FUSE INDICATION	AB	1492-FPK2120
		6	1 A, 250 V, TIME DELAY 5 X 20 MM FUSES	BUSSMANN	S505-1-R
26	1		DUAL CHANNEL, AUTO/MANUAL RESET, 24V AC/DC SAFETY RELAY	AB	440R-N23117
27	1		4G CELLULAR MODEM	SIERRA WIRELESS	GX-450
28	2		OMNI DIRECTIONAL LTE/CELLULAR/PCS COMBO ANTENNA	WILSON ELECTRONICS	
29	2		COAXIAL CABLE - N MALE TO N MALE (20 ft)	TBD	
30	2		COAXIAL CABLE - SMA MALE TO N MALE (2 ft)	TBD	
31	2		RF COAXIAL SURGE PROTECTOR	POLYPHASER	TSX-NFF
32	1		24VDC PANEL LIGHT	AUTOMATION DIRECT	25401-00
		1	CONNECTION CABLE 2 X 16 AWG WITH INPUT CONNECTOR	AUTOMATION DIRECT	244361
33	TBD		END BARRIERS	TBD	
34	TBD		DIN RAIL	TBD	
35	TBD		WIRING DUCT	TBD	
36	1		WALL MOUNT DISCONNECT ENCLOSURE 24X21X8	SCE	SCE-24XEL2108LP
37	1		BACK PANEL FOR ENCLOSURE	SCE	SCE-24P20
38	1		20 A MOLDED CASE CIRCUIT BREAKER, 3 POLE, 25 KA INTERRUPT RATING	AB	140G-G2C3-C20
		1	DISC CABLE/HANDLE, FRAME G.I	AB	140G-G-FCX04
39	1		NON-REVERSING E-COMBO STARTER FOR 4 HP MOTOR WITH 120 VAC COIL	AB	309-AOD-EEE
40	1		DUAL GFCI RECEPTACLE	WEIDMULLER	DRAC GF15

**NOTES:**  
 1. PANEL MANUFACTURER TO PROVIDE ALL ITEMS EXCEPT FOR 27, 28, 29, 30 AND 31 WHICH WILL BE PROVIDED BY OTHERS.



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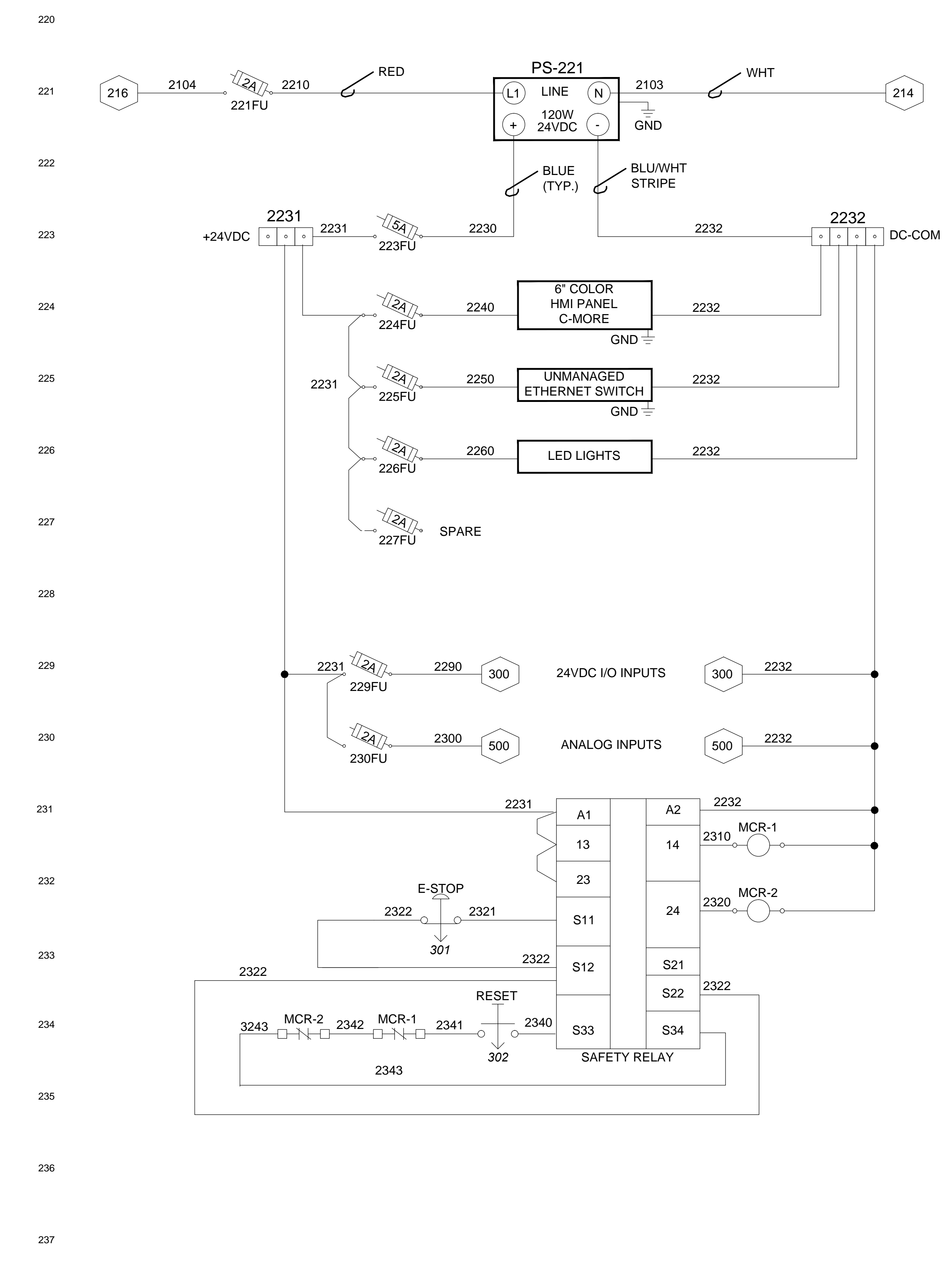
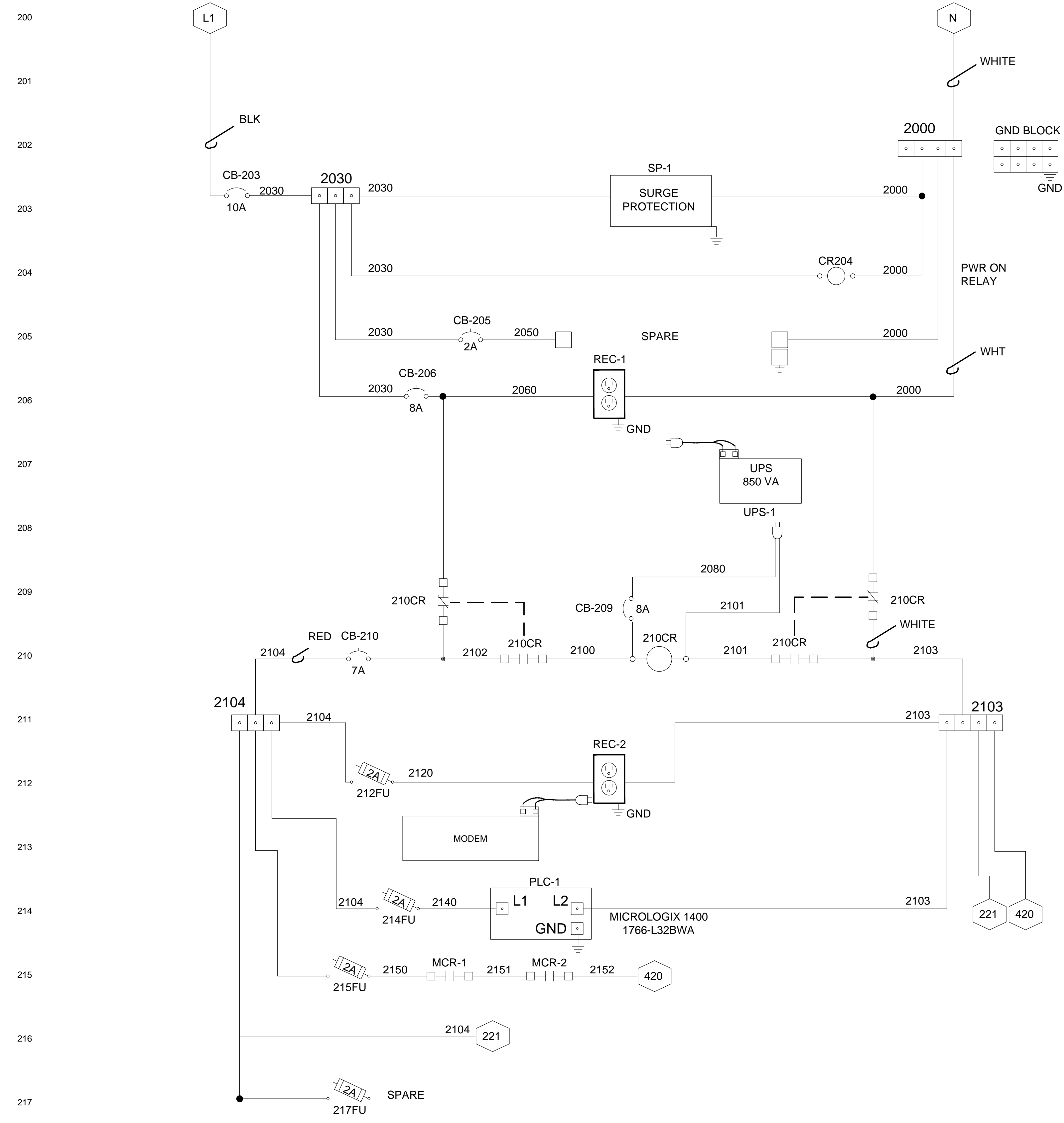
Professional Engineer's Name  
**THOMAS P. ARMSTRONG JR.**  
 Professional Engineer's No.  
 085236  
 State NY Date Signed Project Mgr.  
 WP  
 Designed by Drawn by Checked by  
 KE JA KE



CROSMAN CORPORATION • EAST BLOOMFIELD, NEW YORK  
 SUB-SLAB DEPRESSURIZATION SYSTEM  
**SSDS PANEL LAYOUTS**

ARCADIS Project No.  
 B0041501.0001.00010  
 Date  
 DECEMBER 2015  
 ARCADIS  
 295 Woodcliff Drive, Suite 301  
 Fairport, NY 14450  
 Tel. 585-385-0090

CITY: Milwaukee, WI DIV/GROUP: ENV DB: J. Yuen, C. McKeough PIC: (Opt) LVR: (Opt) ON=OFF=REF\*  
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 State NY Date Signed Project Mgr.  
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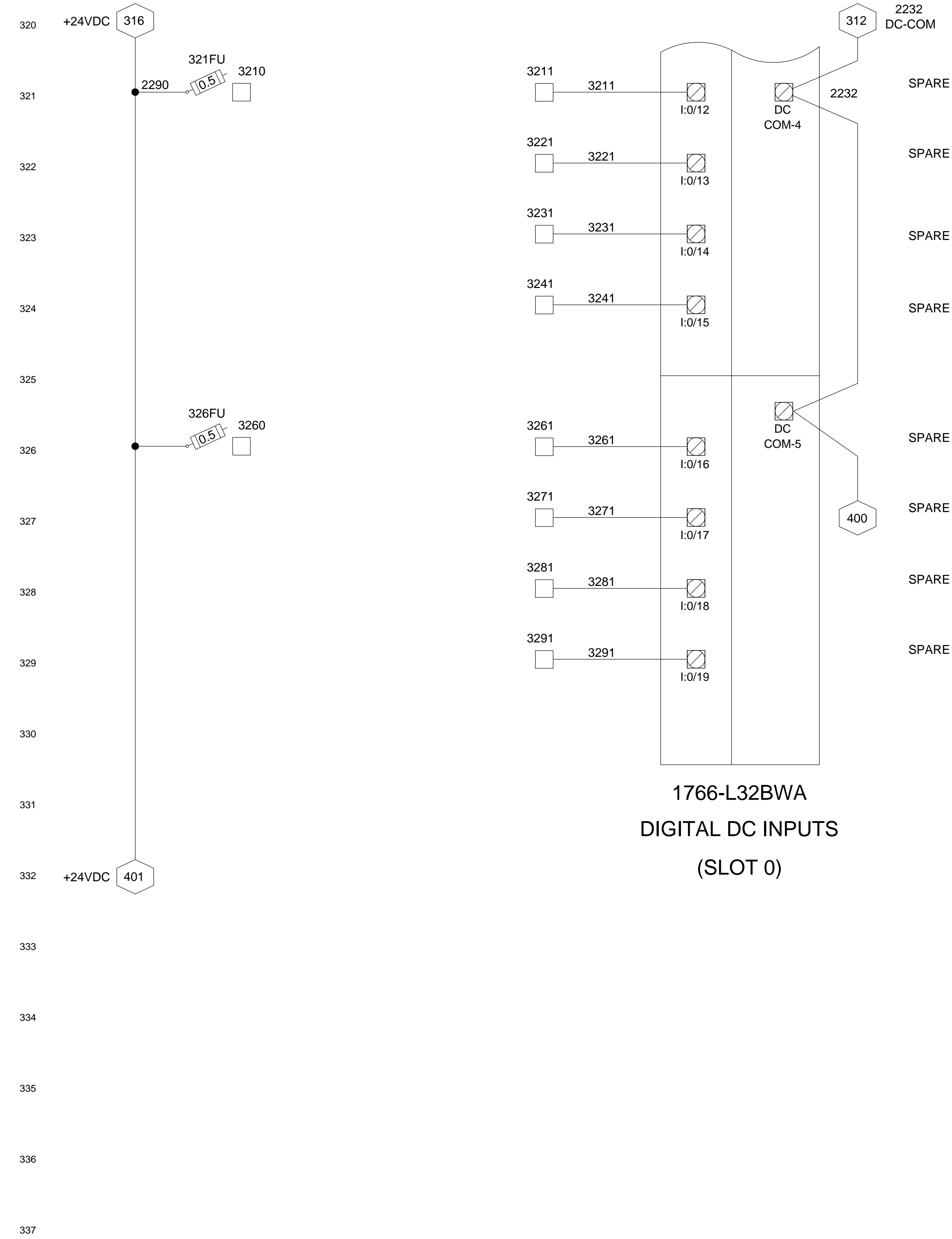
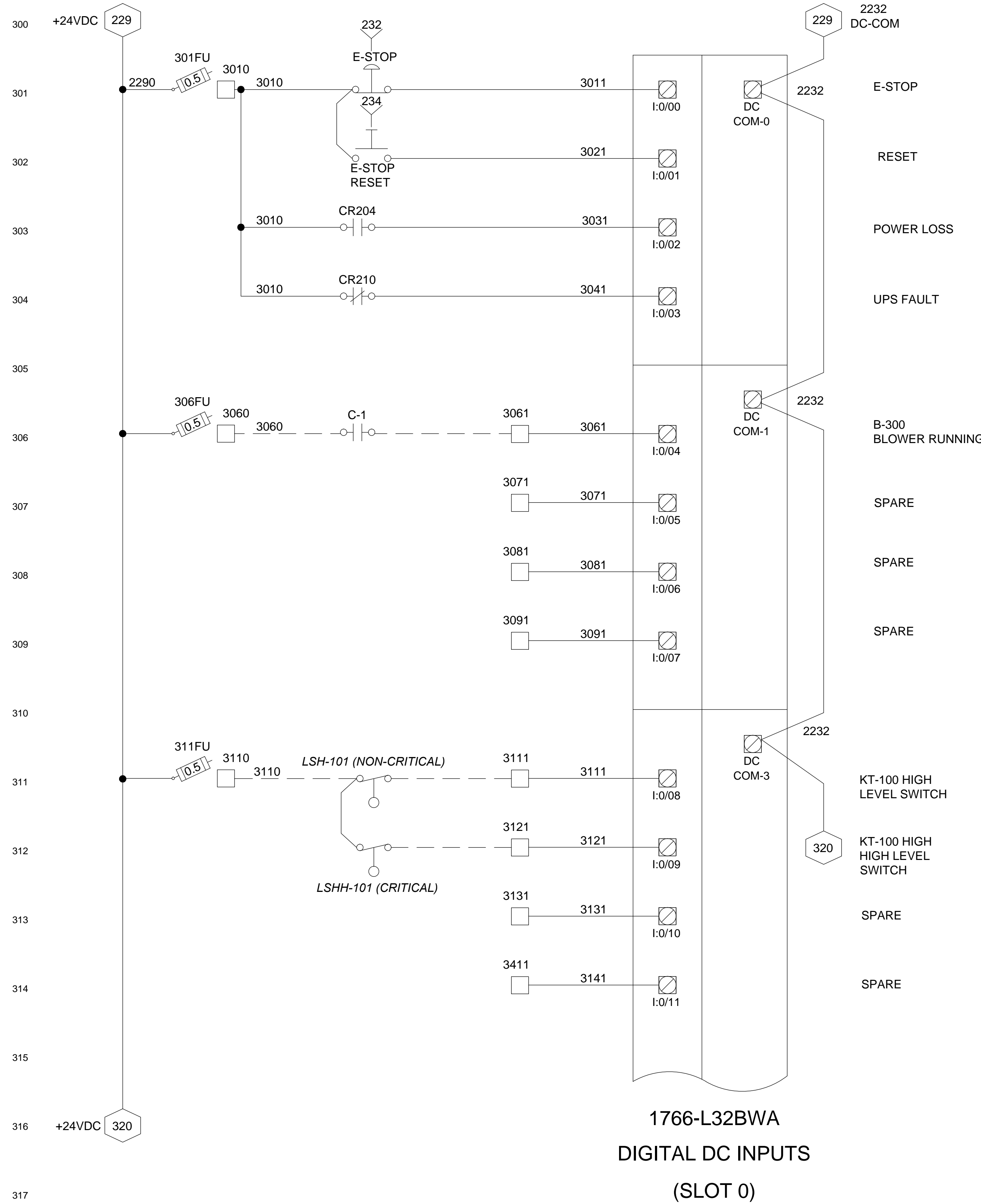
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 SUB-SLAB DEPRESSURIZATION SYSTEM  
**SSDS MAIN CONTROL PANEL POWER DISTRIBUTION**

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 B0041501.0001.00010  
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PROJECTNAME: ...  
 XREFS: IMAGES: Crossman Arms Border



1766-L32BWA  
 DIGITAL DC INPUTS  
 (SLOT 0)

1766-L32BWA  
 DIGITAL DC INPUTS  
 (SLOT 0)

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Professional Engineer's Name <b>THOMAS P ARMSTRONG JR.</b>	
Professional Engineer's No. 085236	
State NY	Date Signed Project Mgr. WP
Designed by KE	Drawn by JA
Checked by KE	



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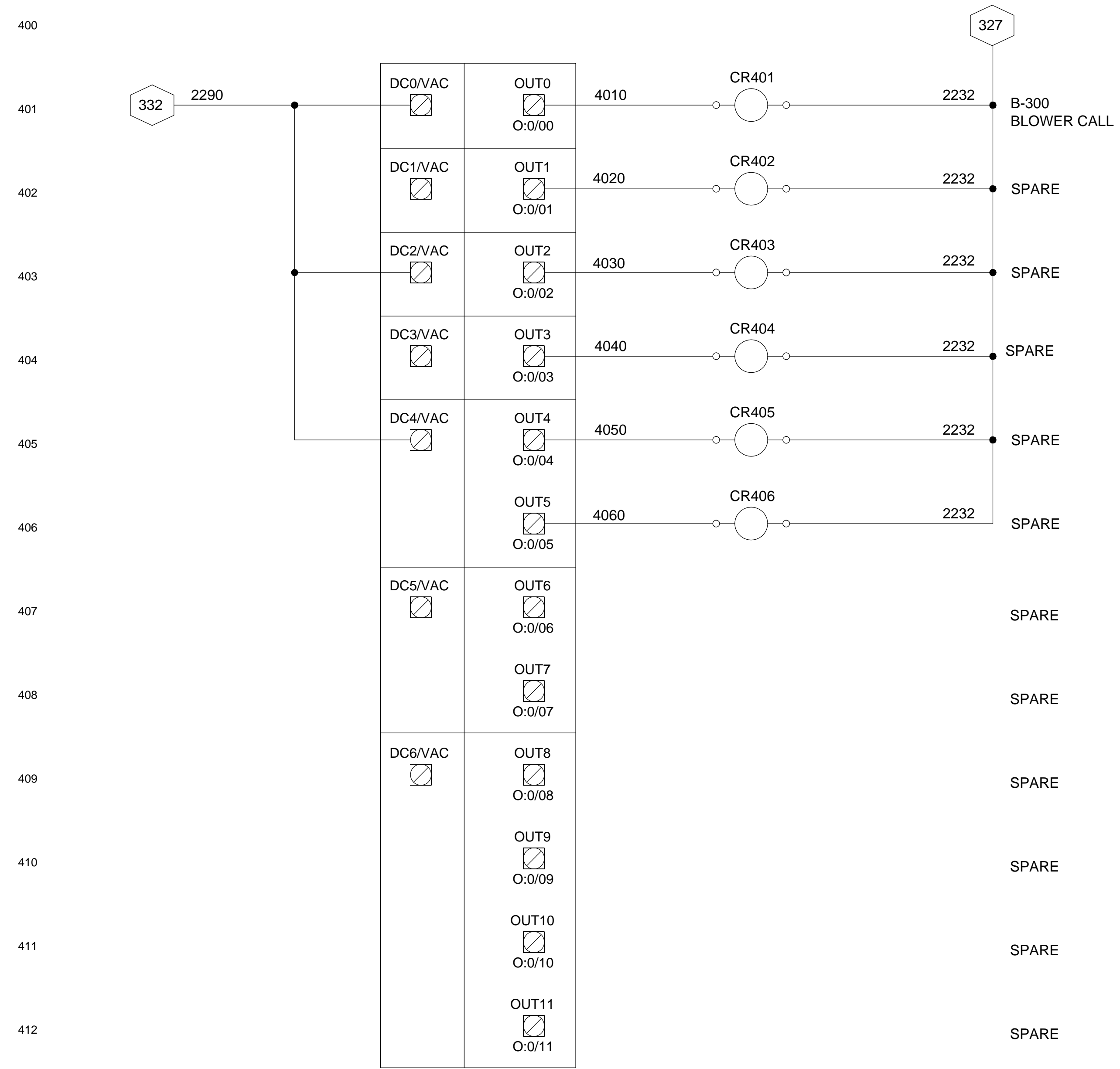
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 SUB-SLAB DEPRESSURIZATION SYSTEM  
**SSDS MAIN CONTROL PANEL  
 MICROLOGIX DIGITAL INPUTS**

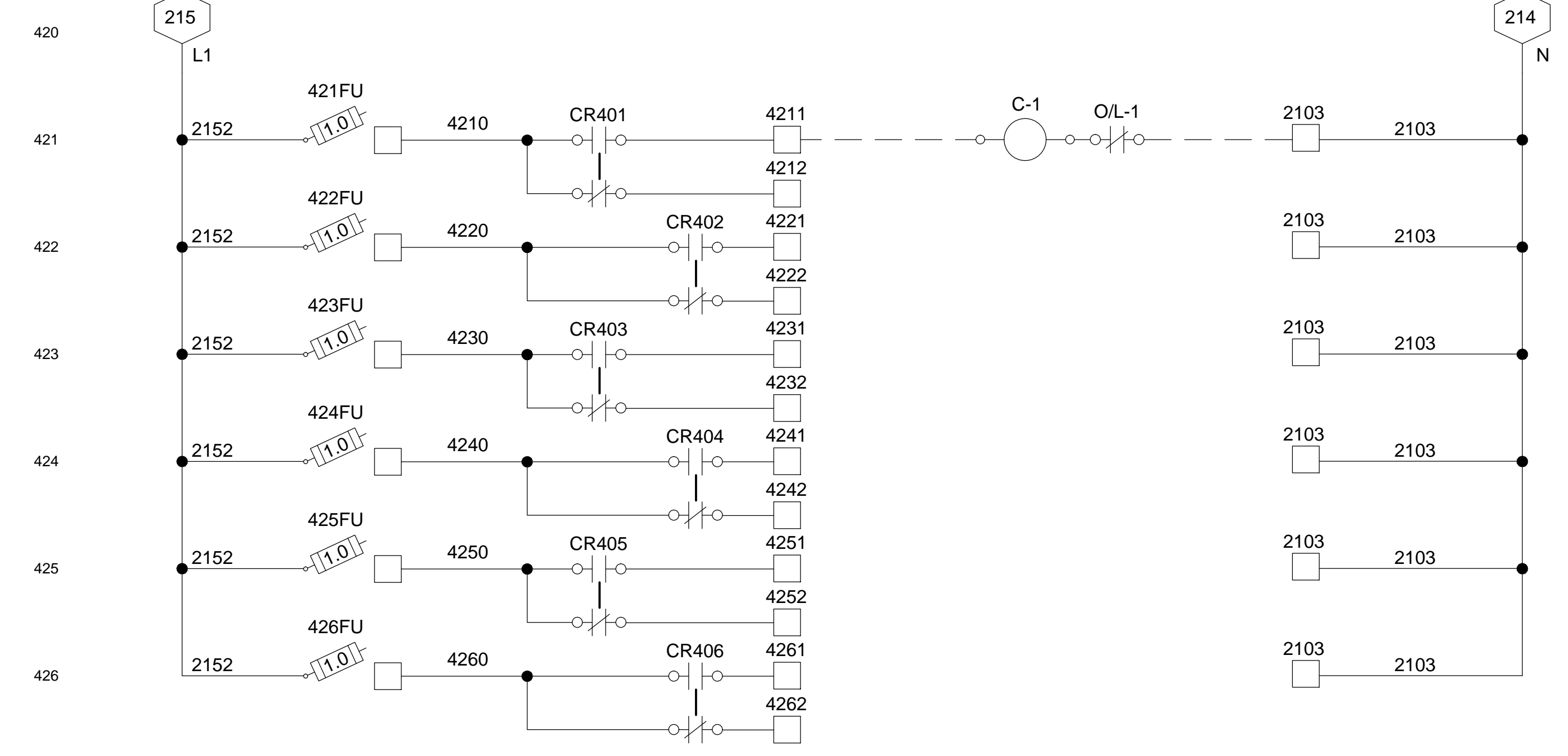
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Date DECEMBER 2015
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**1766-L32BWA**  
**DIGITAL RELAY OUTPUTS**  
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Professional Engineer's Name <b>THOMAS P. ARMSTRONG JR.</b>		
Professional Engineer's No. 085236		
State NY	Date Signed WP	Project Mgr. WP
Designed by KE	Drawn by JA	Checked by KE

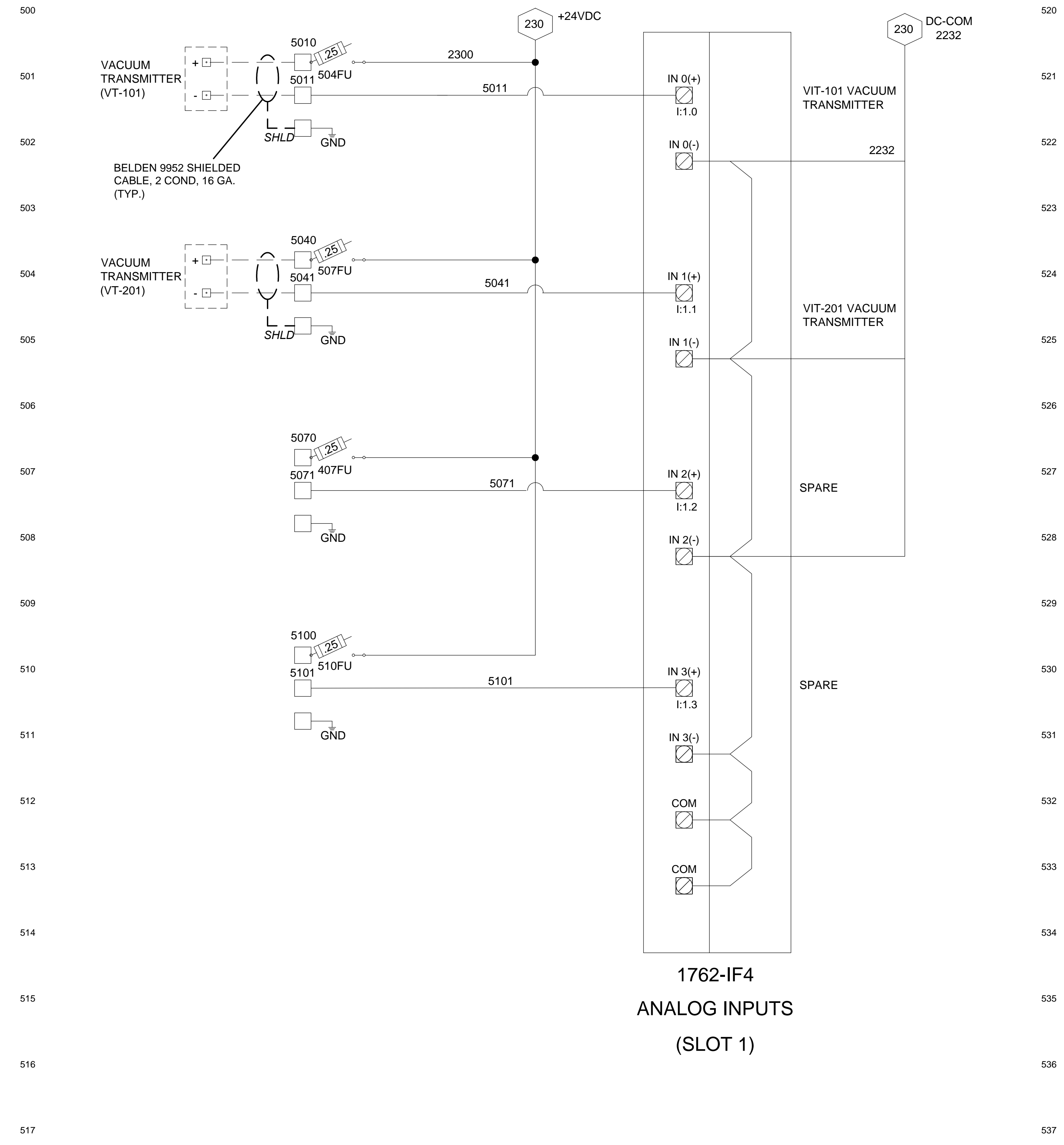


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CROSMAN CORPORATION • EAST BLOOMFIELD, NEW YORK  
 SUB-SLAB DEPRESSURIZATION SYSTEM  
**SSDS MAIN CONTROL PANEL  
 MICROLOGIX RELAY OUTPUTS**

ARCADIS Project No. B0041501.0001.00010
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ARCADIS 295 Woodcliff Drive, Suite 301 Fairport, NY 14450 Tel. 585-385-0090

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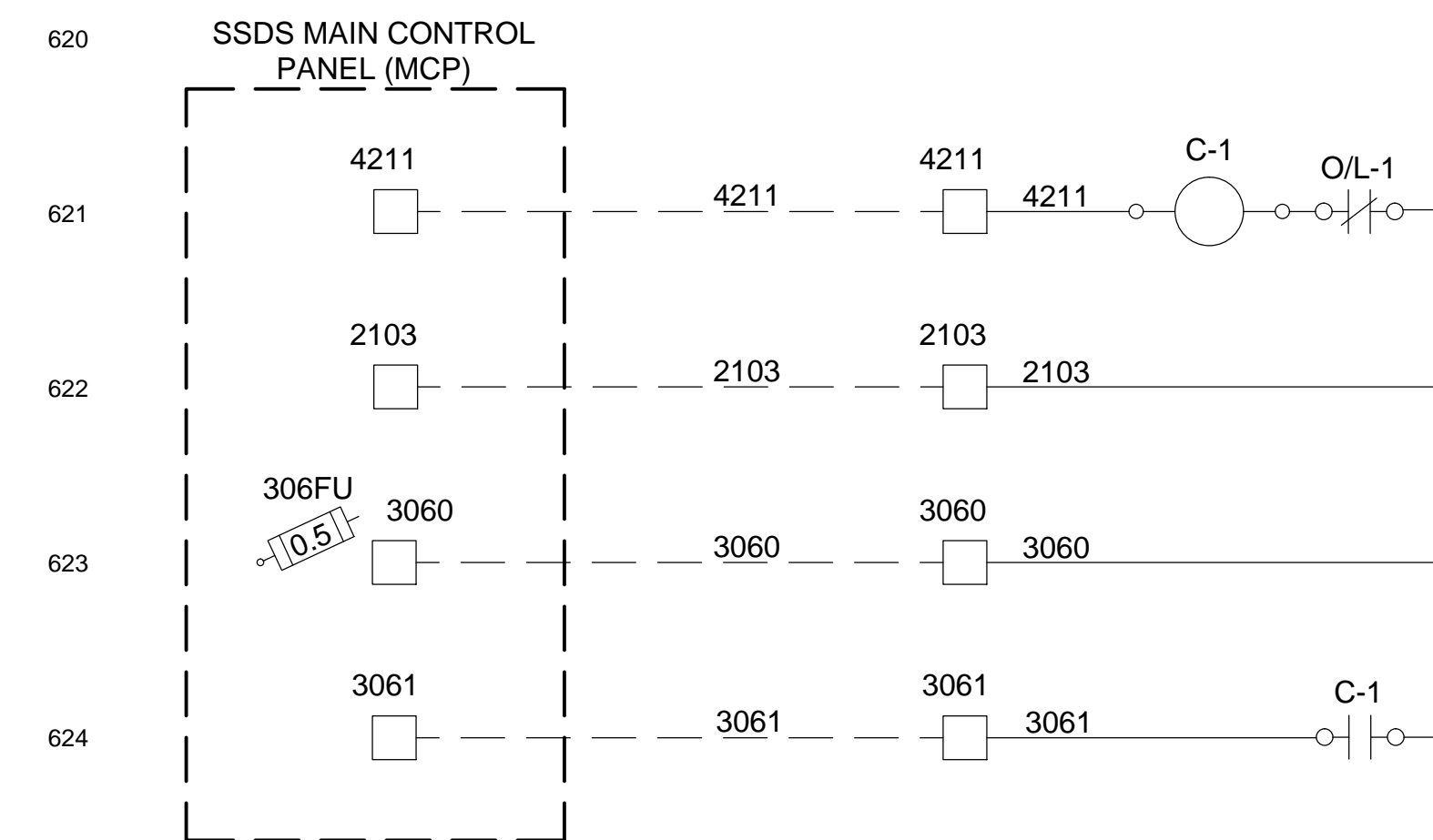
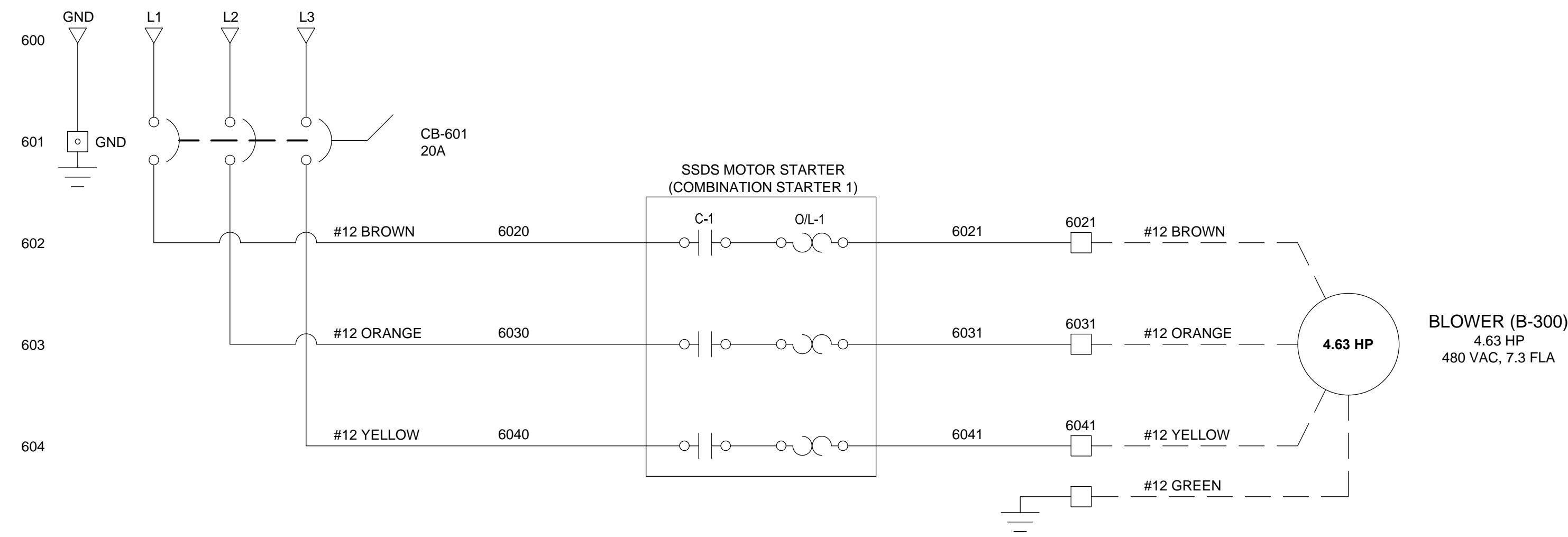
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State	Date Signed	Project Mgr.		
NY		WP		
Designed by	Drawn by	Checked by		
KE	JA	KE		



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 SUB-SLAB DEPRESSURIZATION SYSTEM  
**SSDS MAIN CONTROL PANEL  
 SLOT 1: ANALOG INPUTS**

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085236			
State	Date Signed	Project Mgr.	
NY		WP	
Designed by	Drawn by	Checked by	
KE	JA	KE	



ARCADIS OF NEW YORK, INC.

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 SUB-SLAB DEPRESSURIZATION SYSTEM  
**SSDS MOTOR STARTER  
 WIRING DETAILS**

ARCADIS Project No. B0041501.0001.00010
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