

BUILDING KEY

NOTE:
 HEADER PIPING TO BE MOUNTED ABOVE CEILING.
 THERE SHALL BE NO PIPING/TUBING EXPOSED
 WITHIN THE CORRIDORS.



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ON-LINE RACK FLUSH NOTE:
 INTERCONNECT AND SOLENOID LOCATIONS MAY CHANGE DEPENDING ON RACK MANUFACTURER. CUSTOMER HAS IDENTIFIED RACK MANUFACTURER AS TECNIPLAST. CUSTOMER SHALL VERIFY INLET/OUTLET LOCATIONS ON RACKS, AND NOTIFY EDSTROM PRIOR TO SUBMITTAL APPROVAL. RACK INFORMATION IS NECESSARY FOR PROPER INTERCONNECT AND SOLENOID ORIENTATION.

IF WALL MOUNTED RACK BLOWERS ARE TO BE USED, WALL PLATES MUST BE INSTALLED PRIOR TO EDSTROM WATERING SYSTEM.

	CENTRAL PROPORTIONER (CP-654)
	ULTRAFILTER
	DUAL PURPOSE FLUSH STATION (6400) AND CHLORINE INJECTION STATION (6574-302)
	ON-LINE RACK FLUSH SOLENOID VALVE
	CP HEADER PIPING
	ROOM DRAIN HEADER PIPING
	ROOM DISTRIBUTION PIPING
	INTERCONNECT STATION
	INJECTION PORT
	MANUAL SHUT-OFF VALVE
	PRESSURE REDUCING STATION - RECESSED MOUNT (8550)

LEGEND

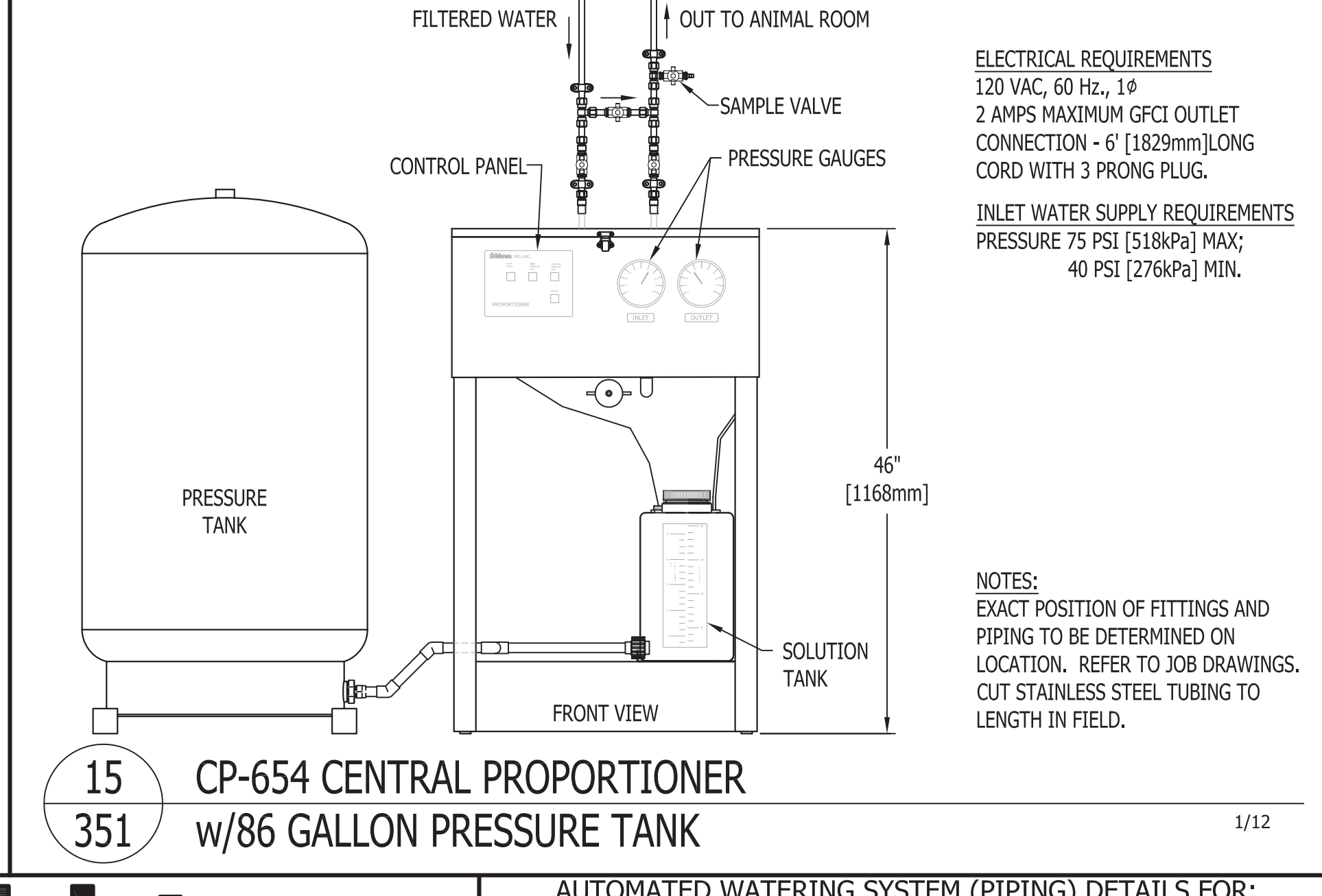
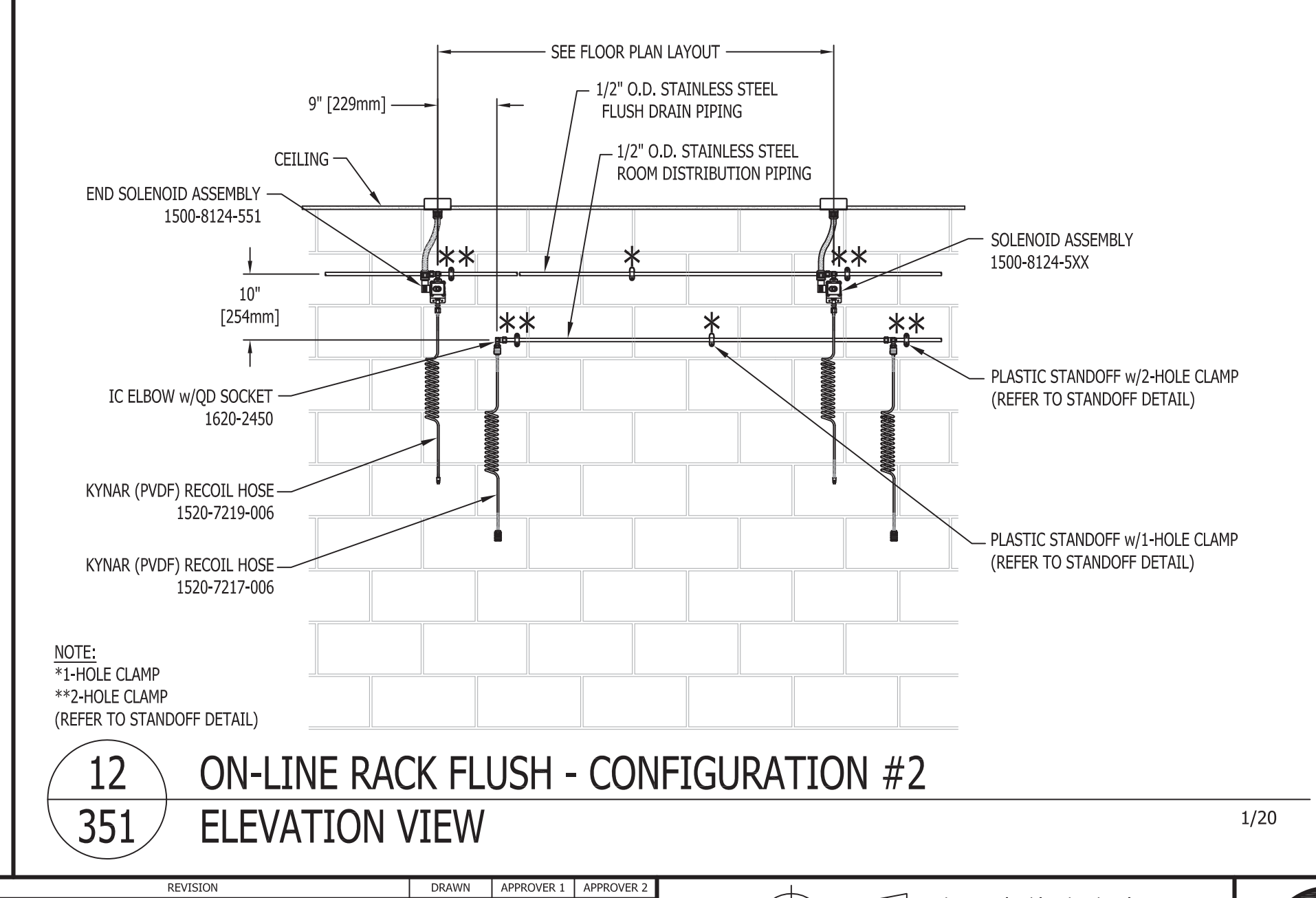
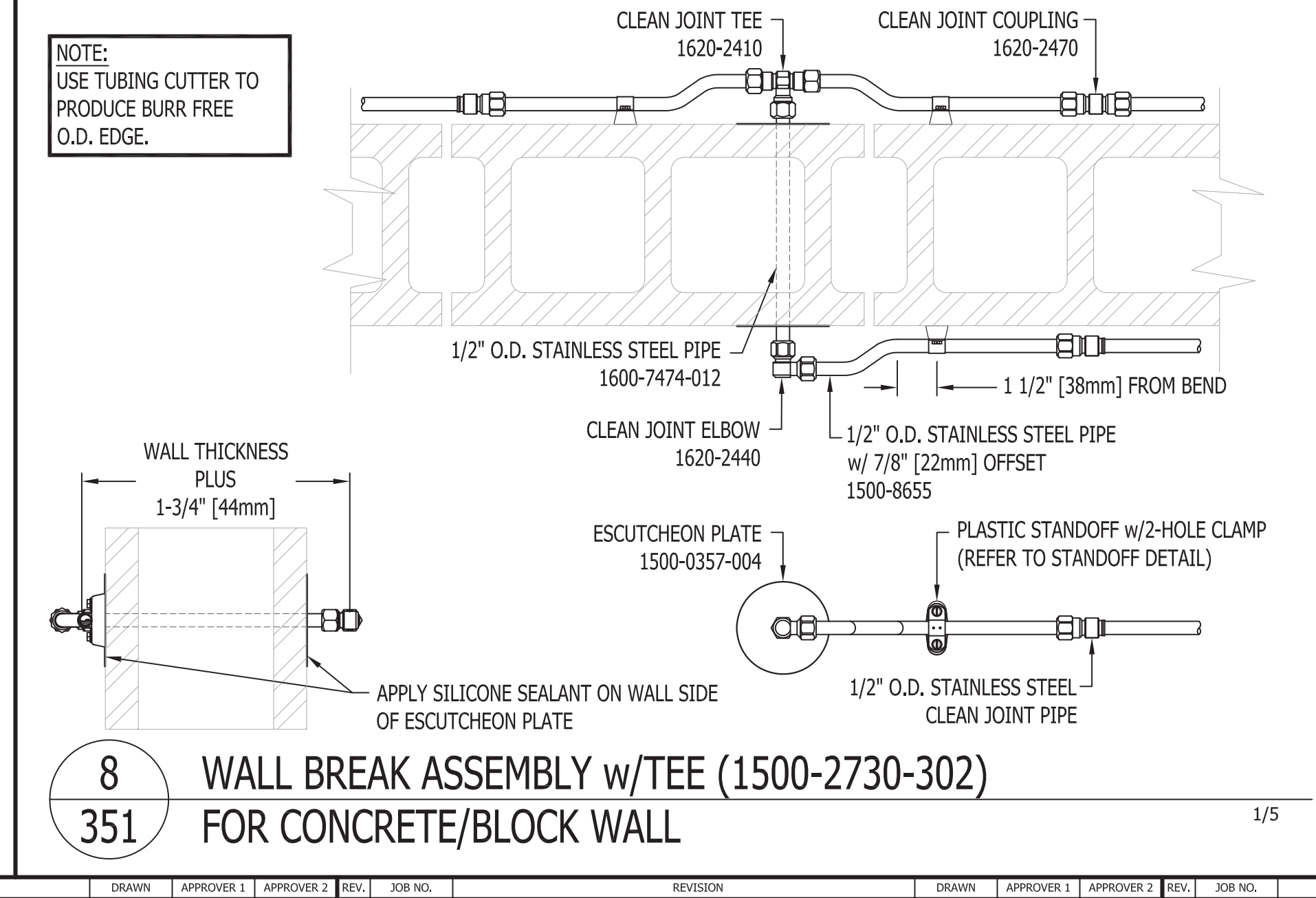
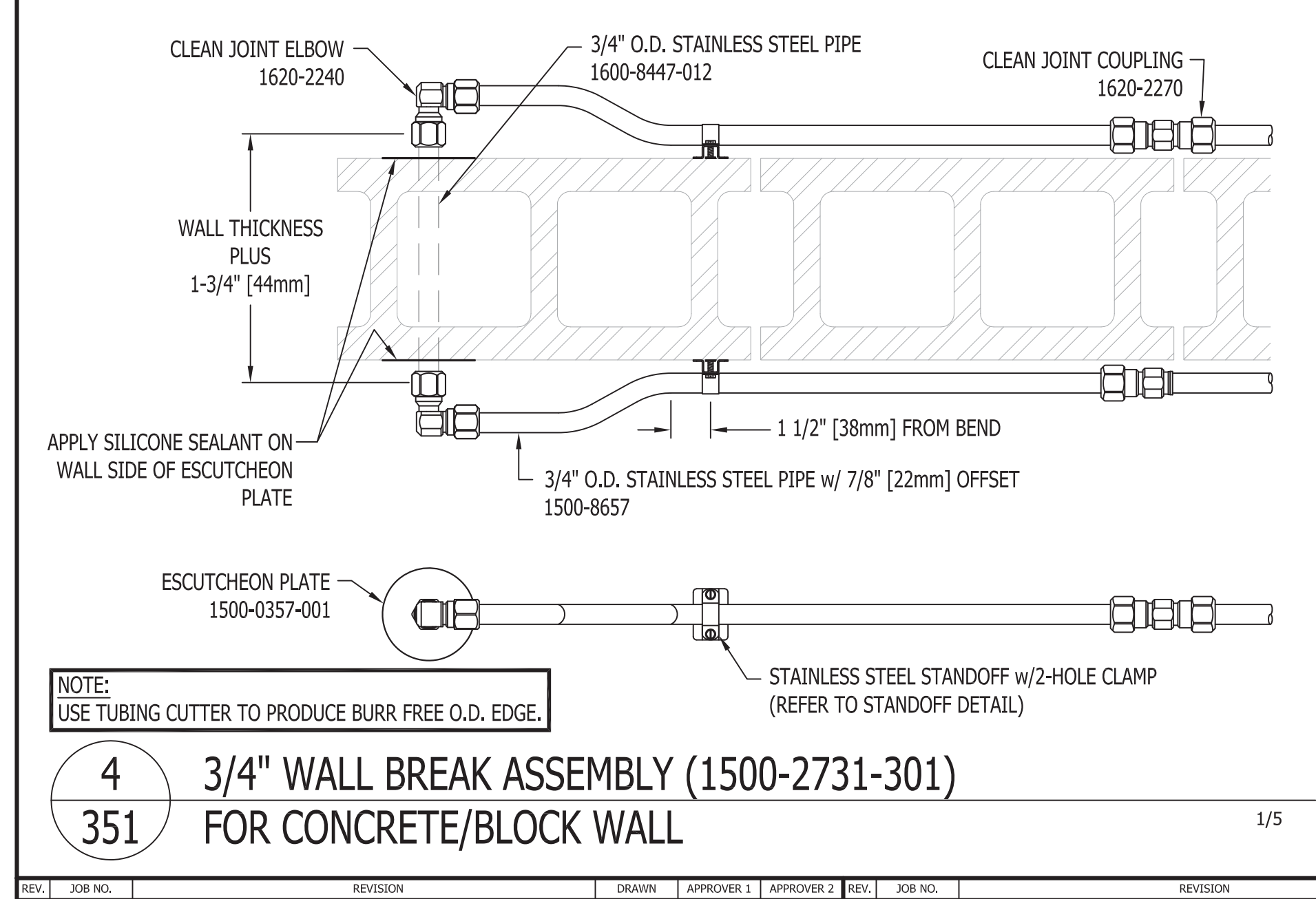
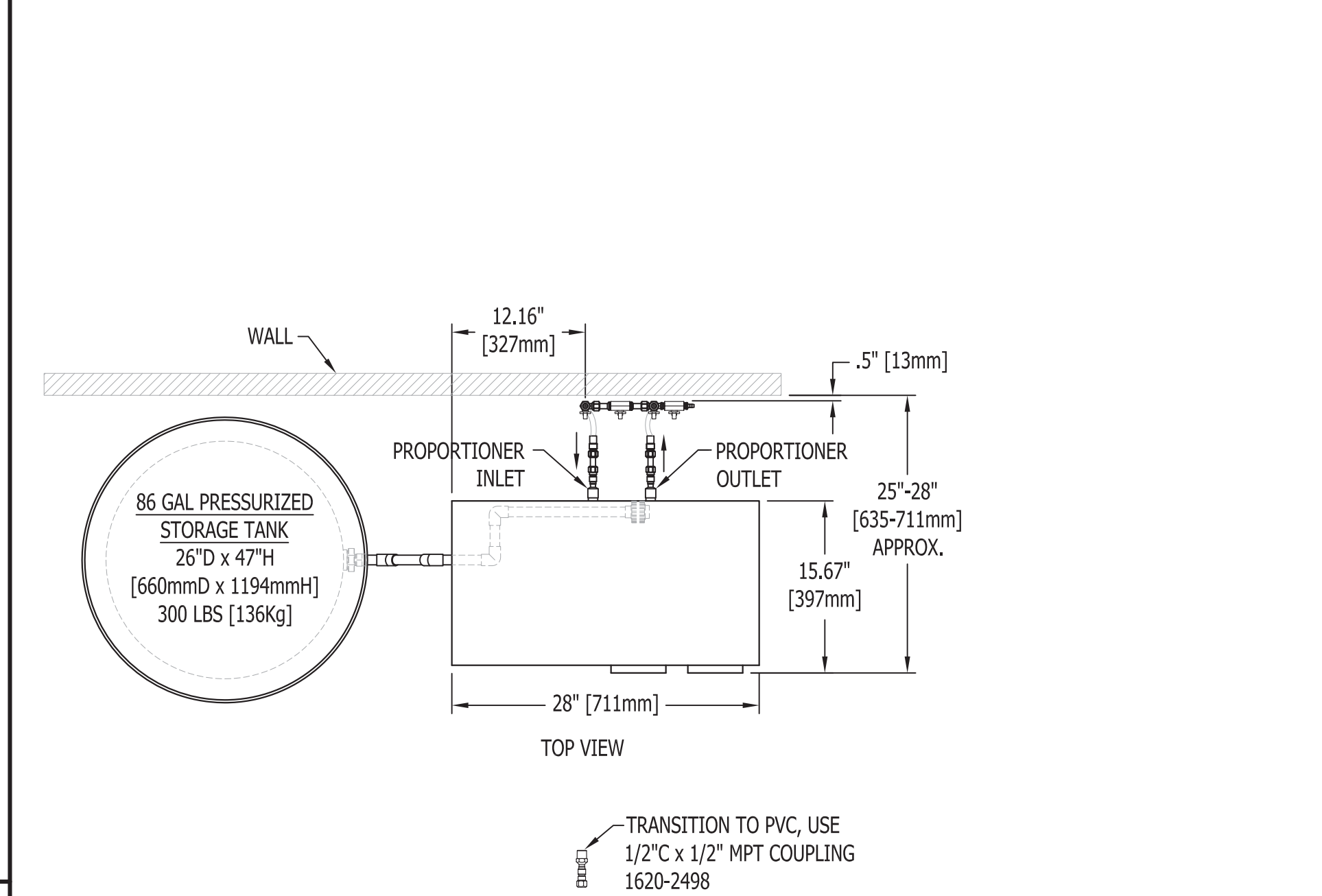
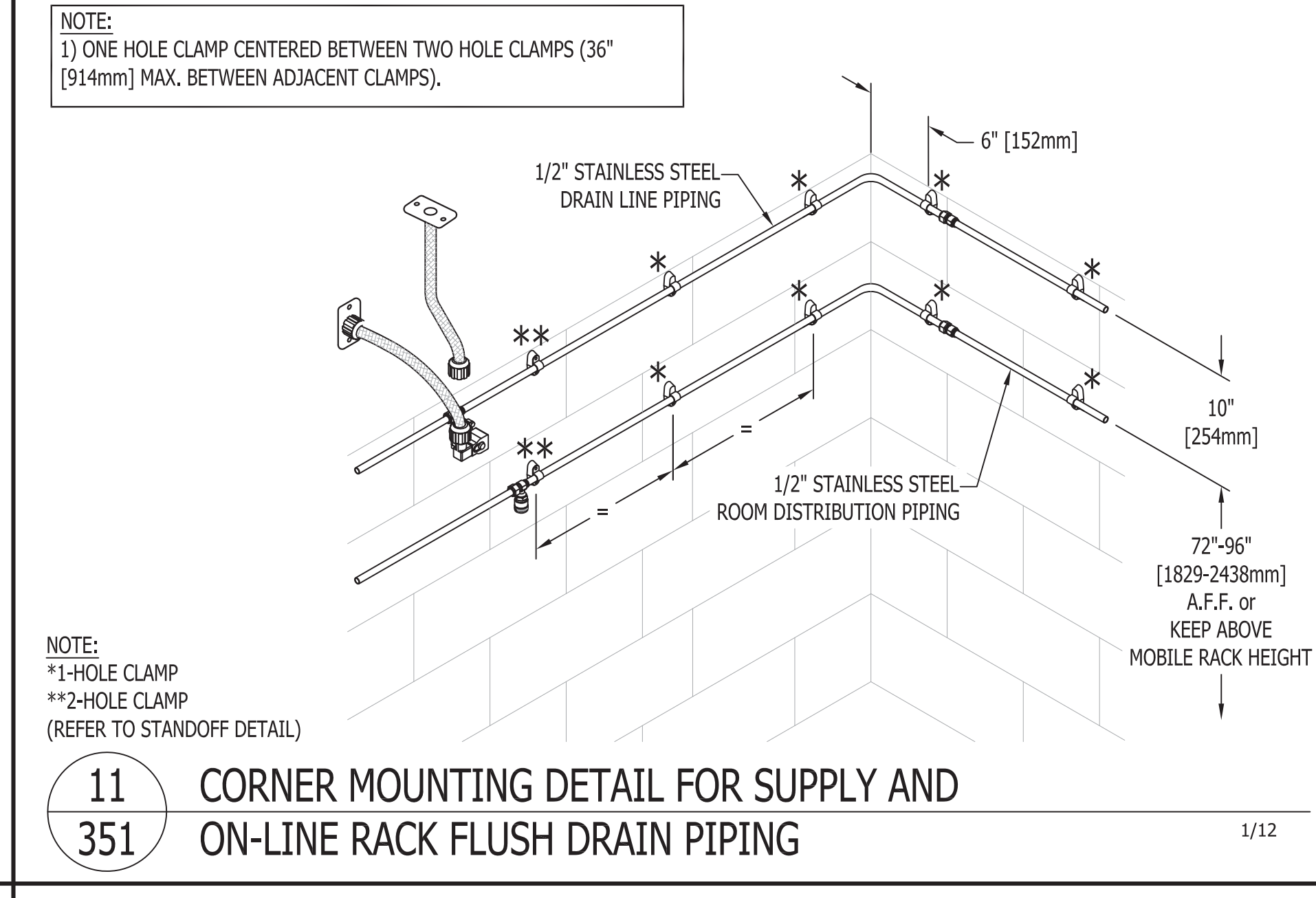
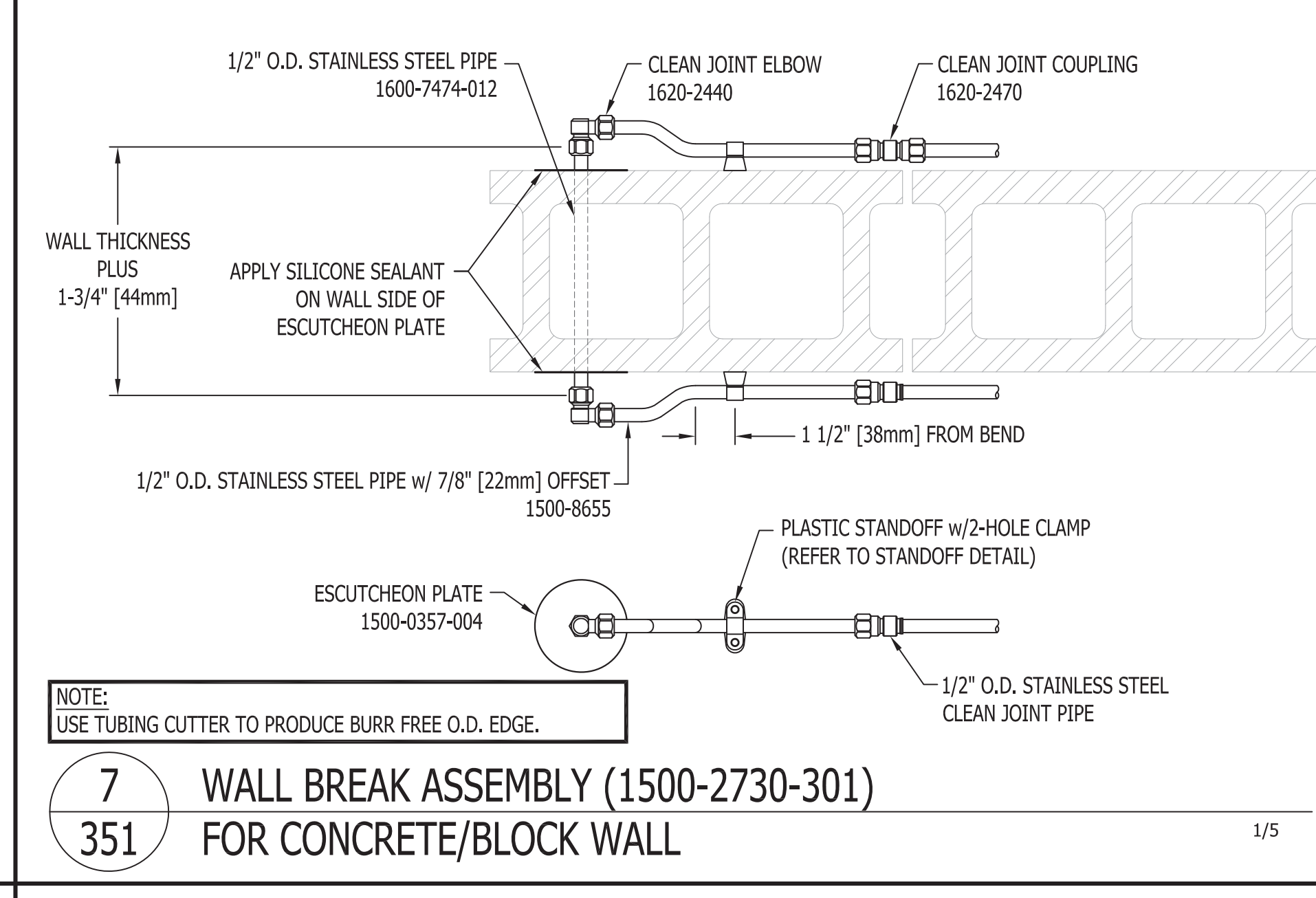
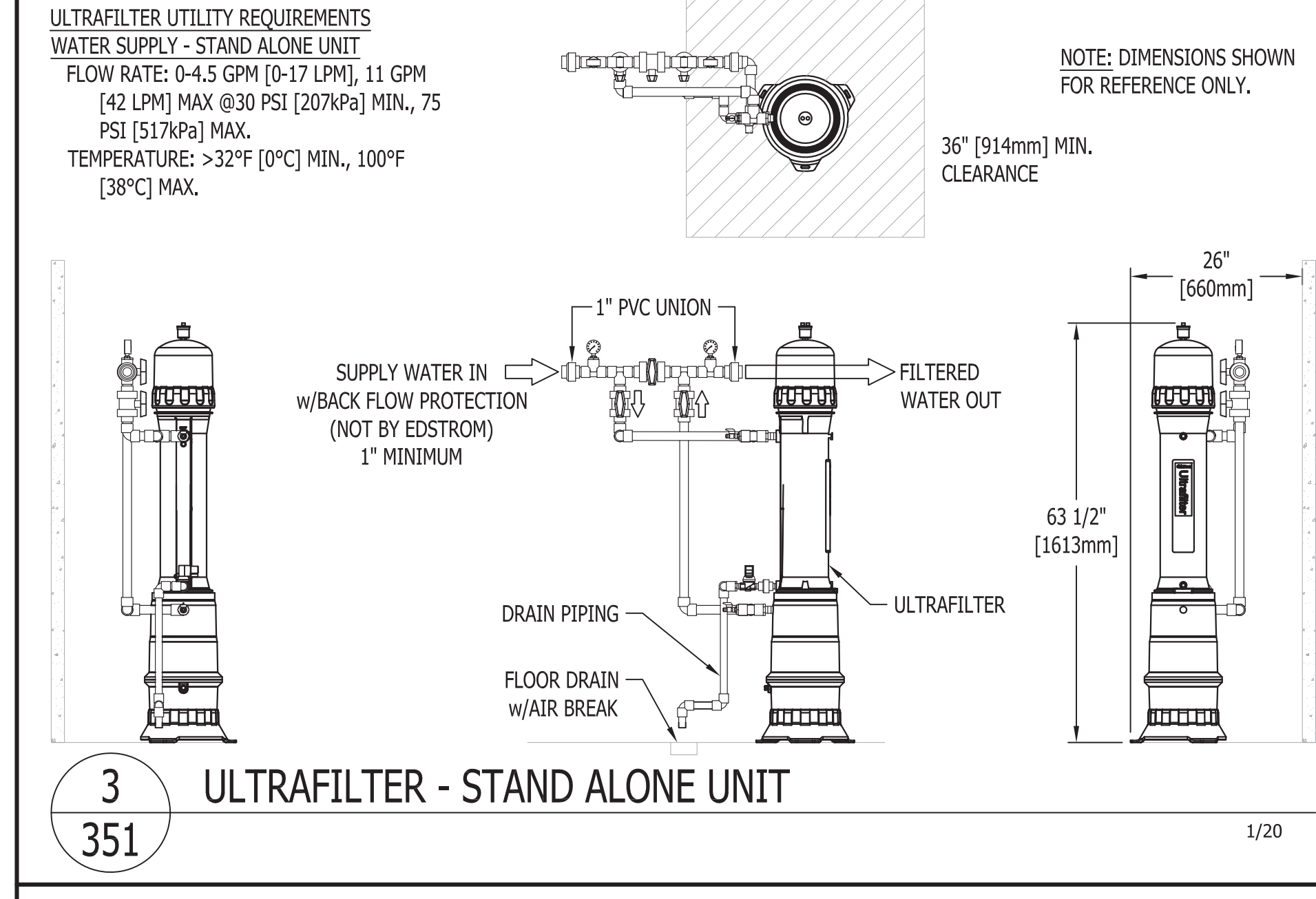
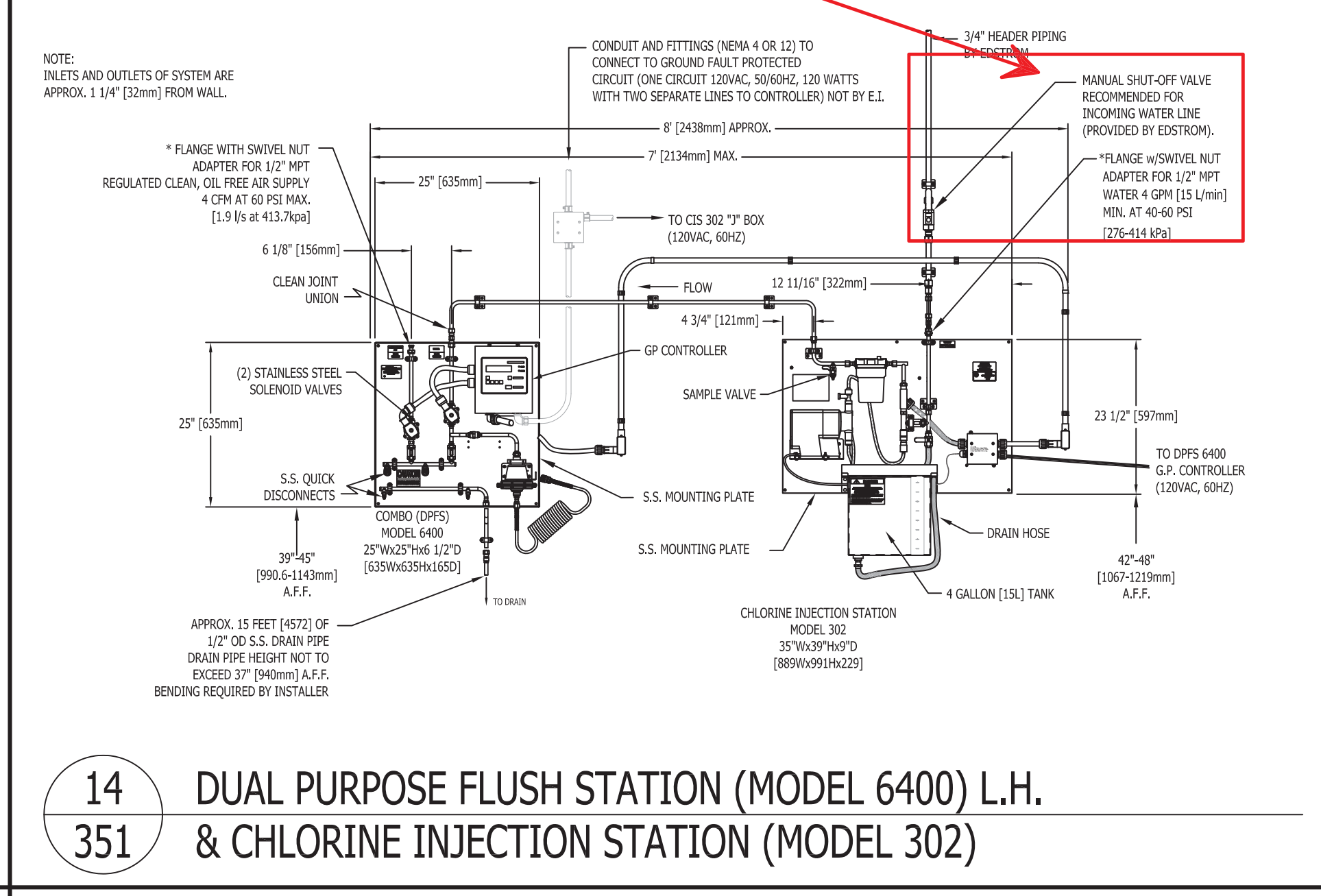
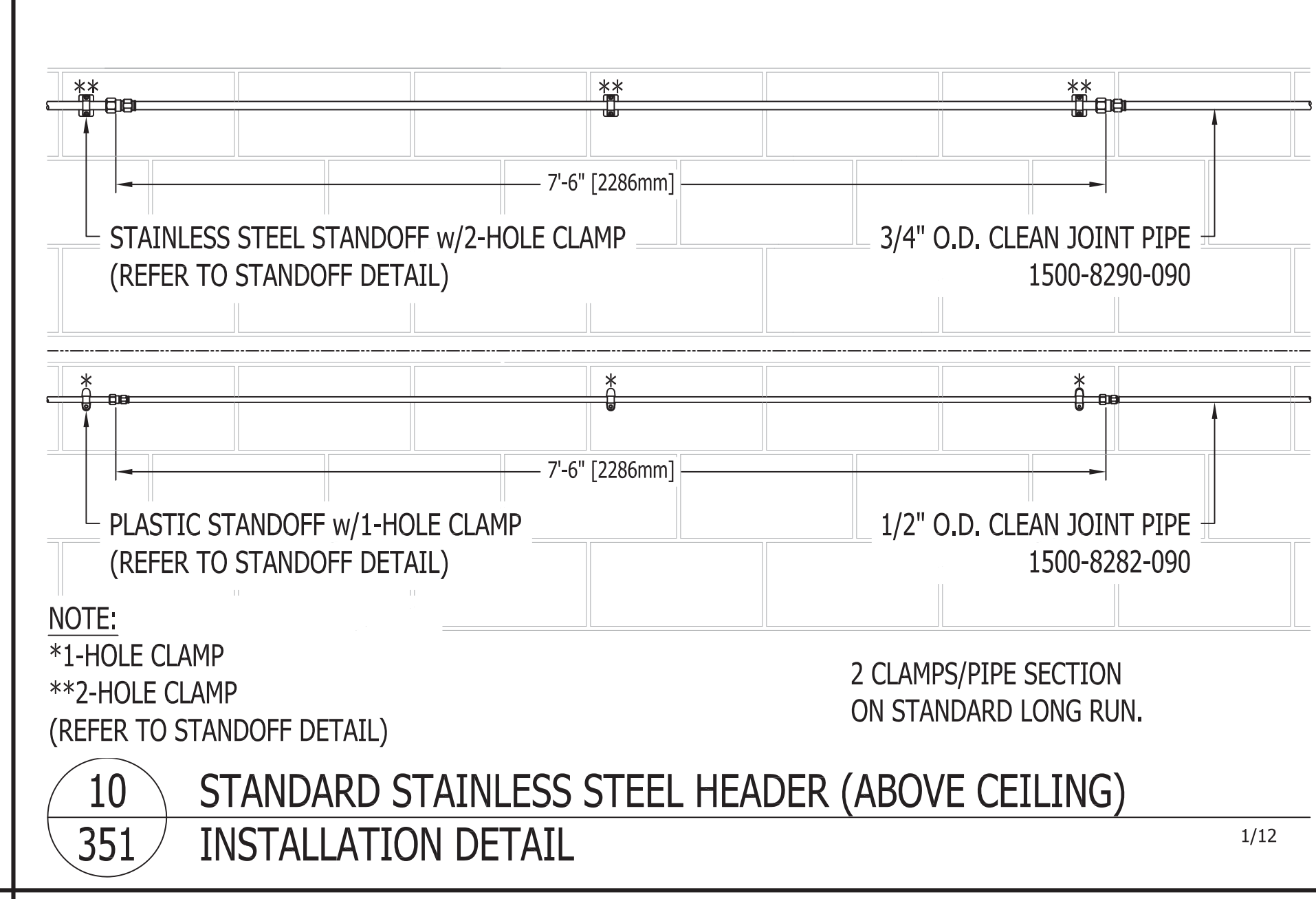
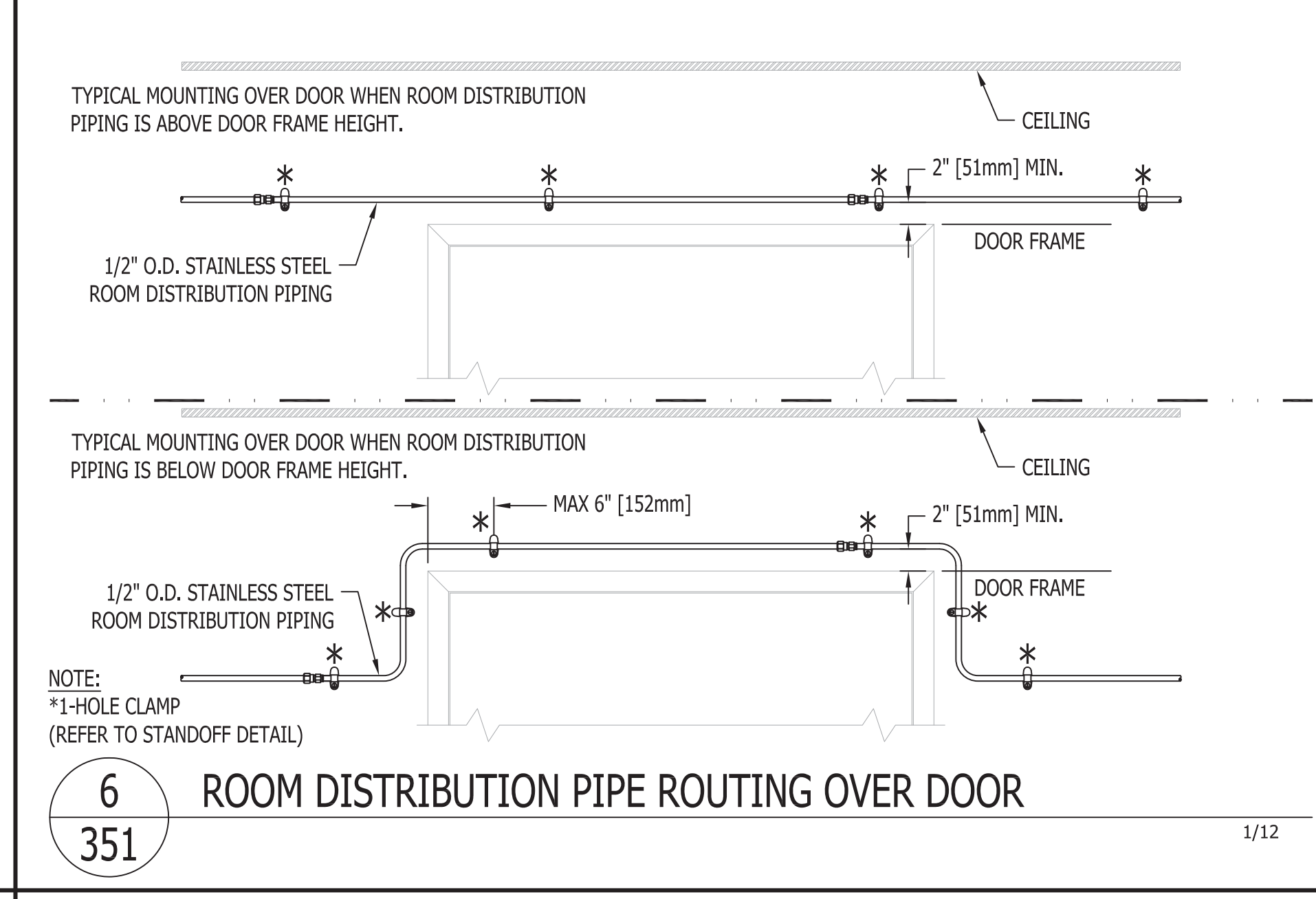
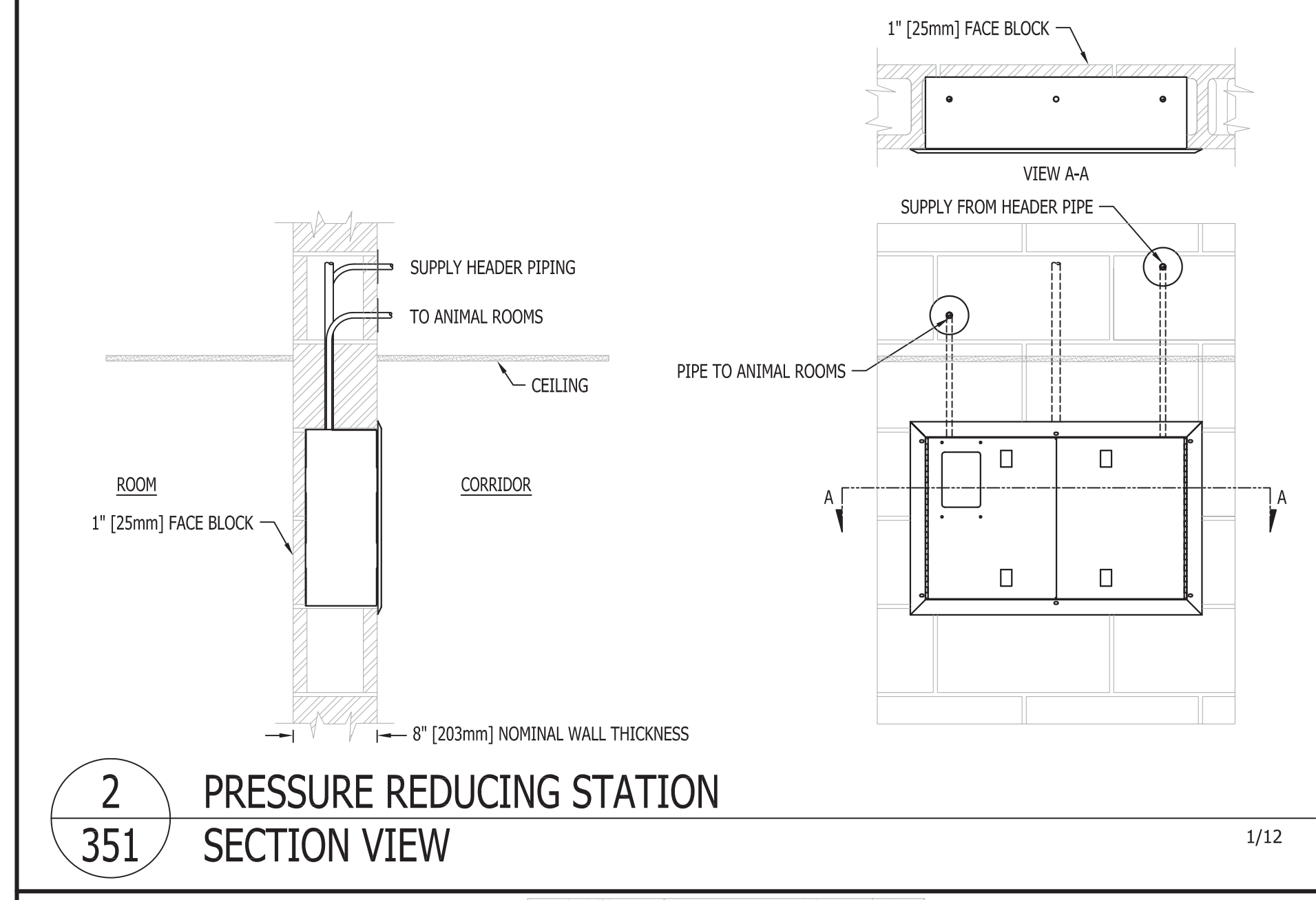
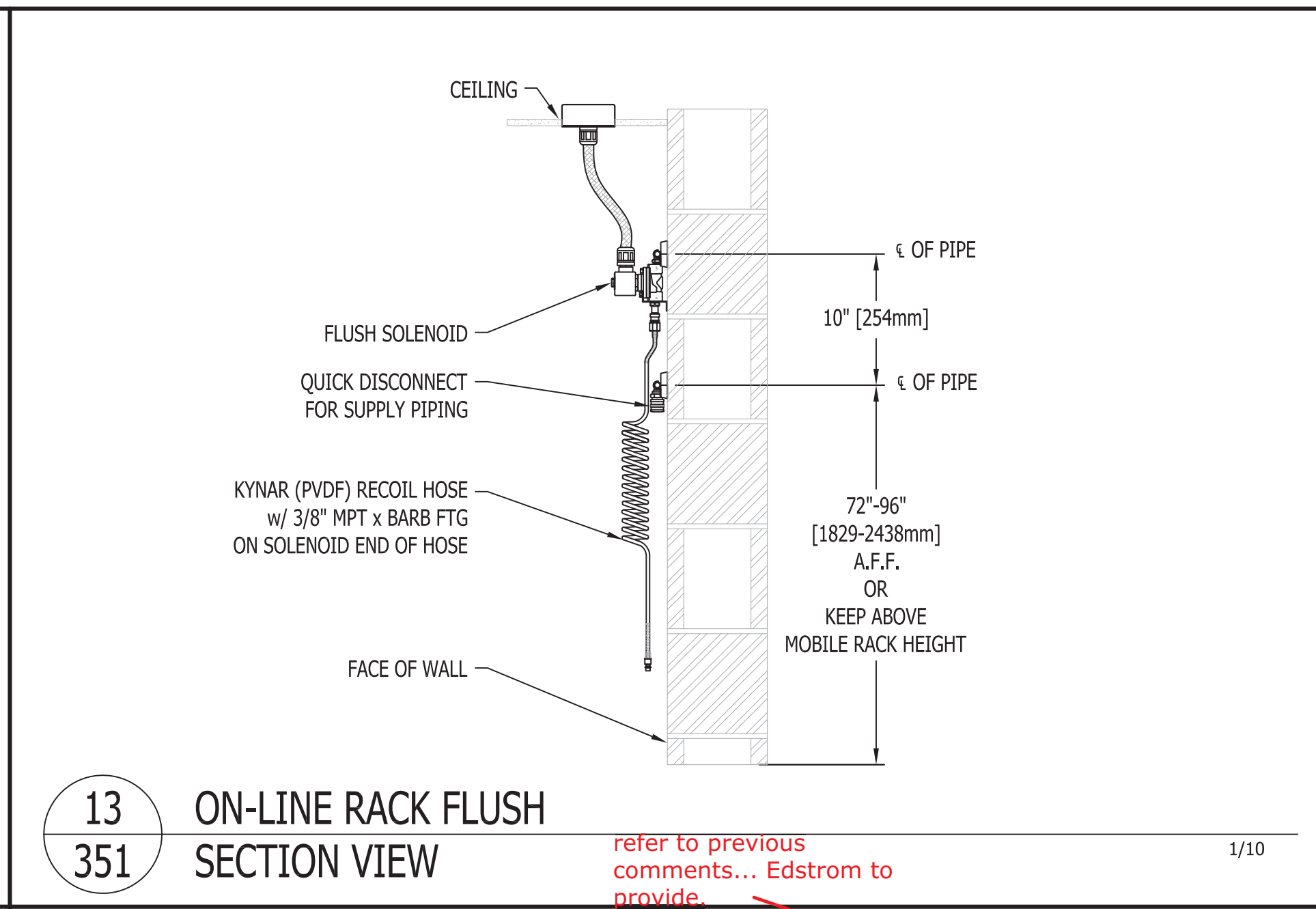
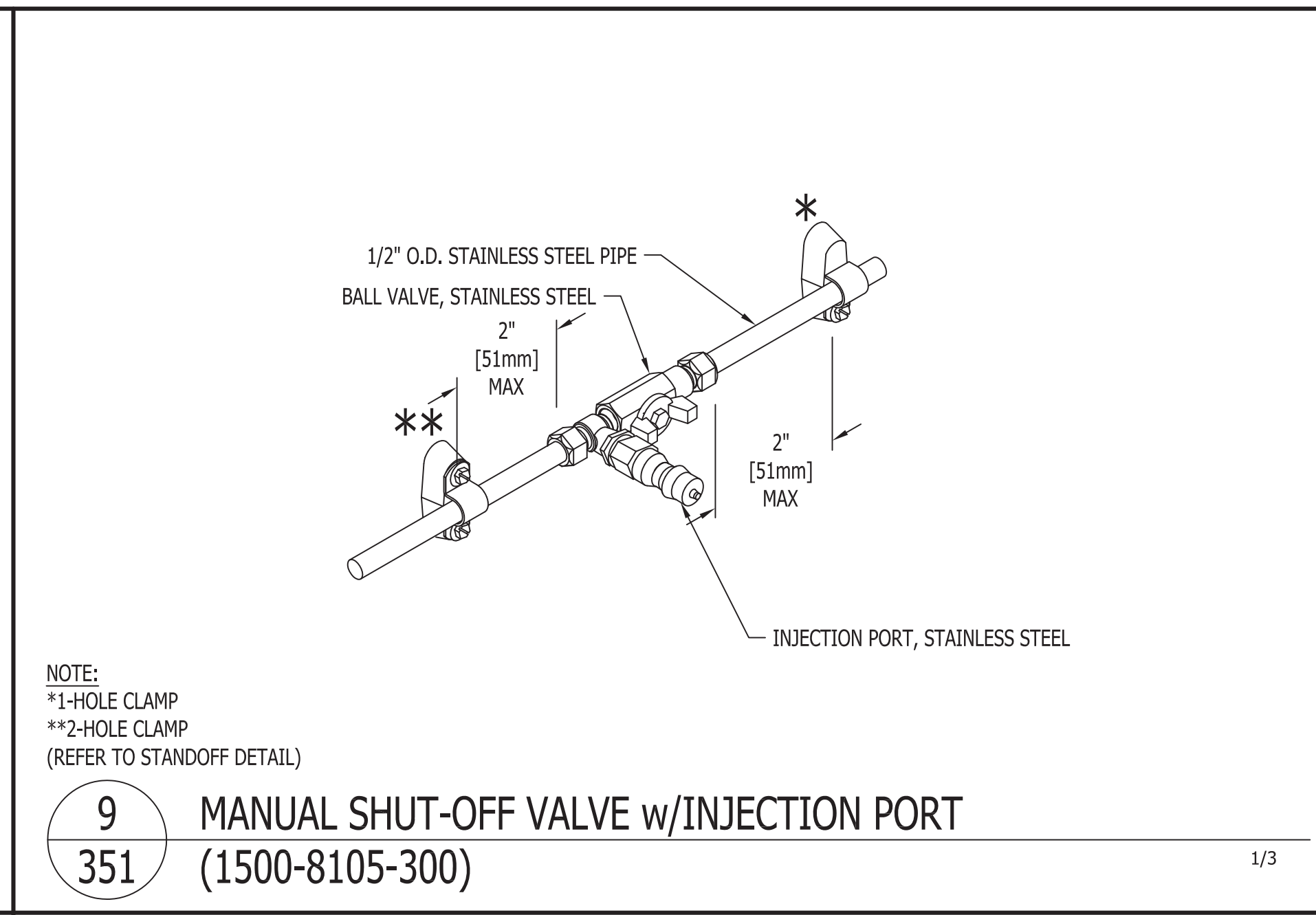
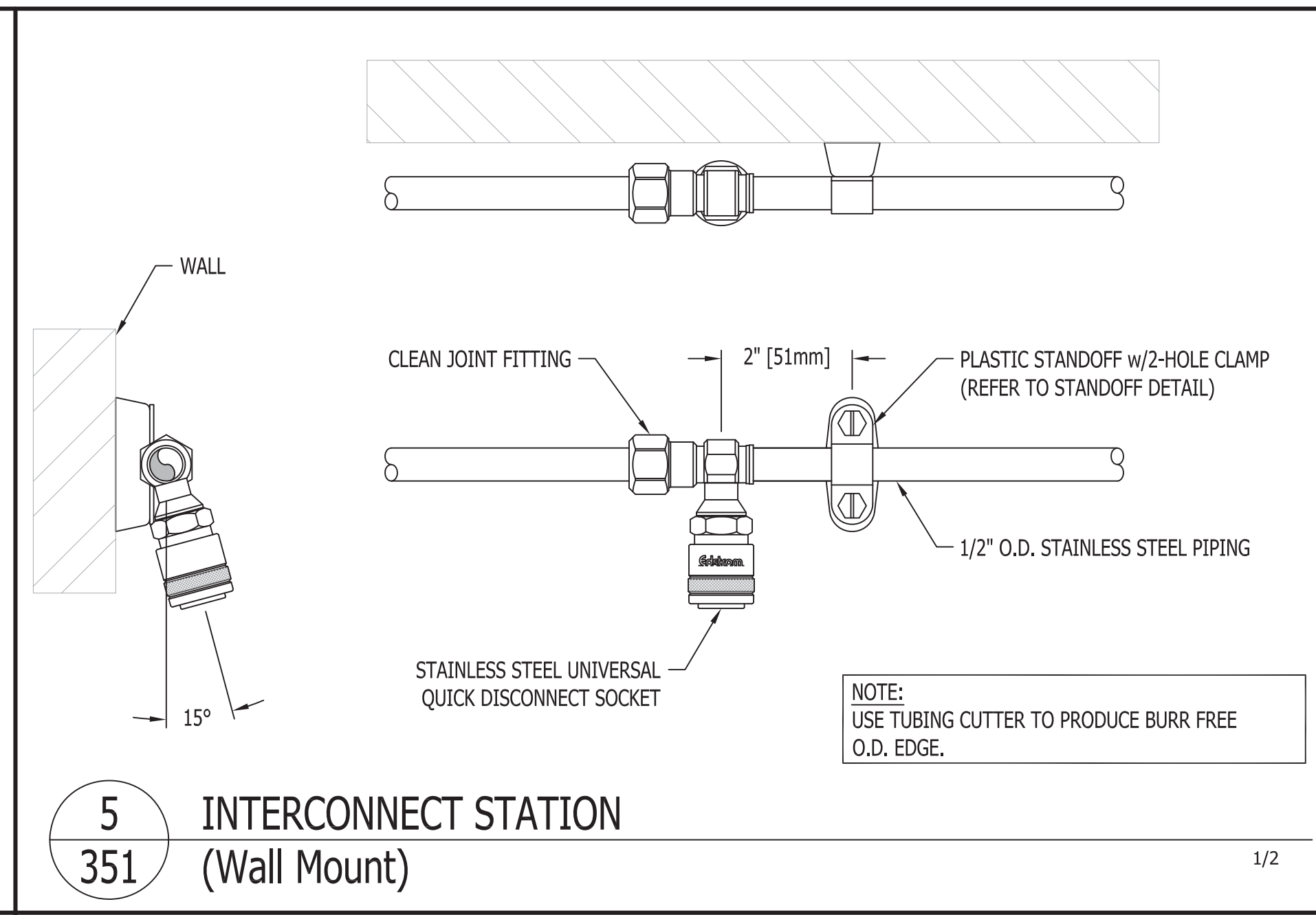
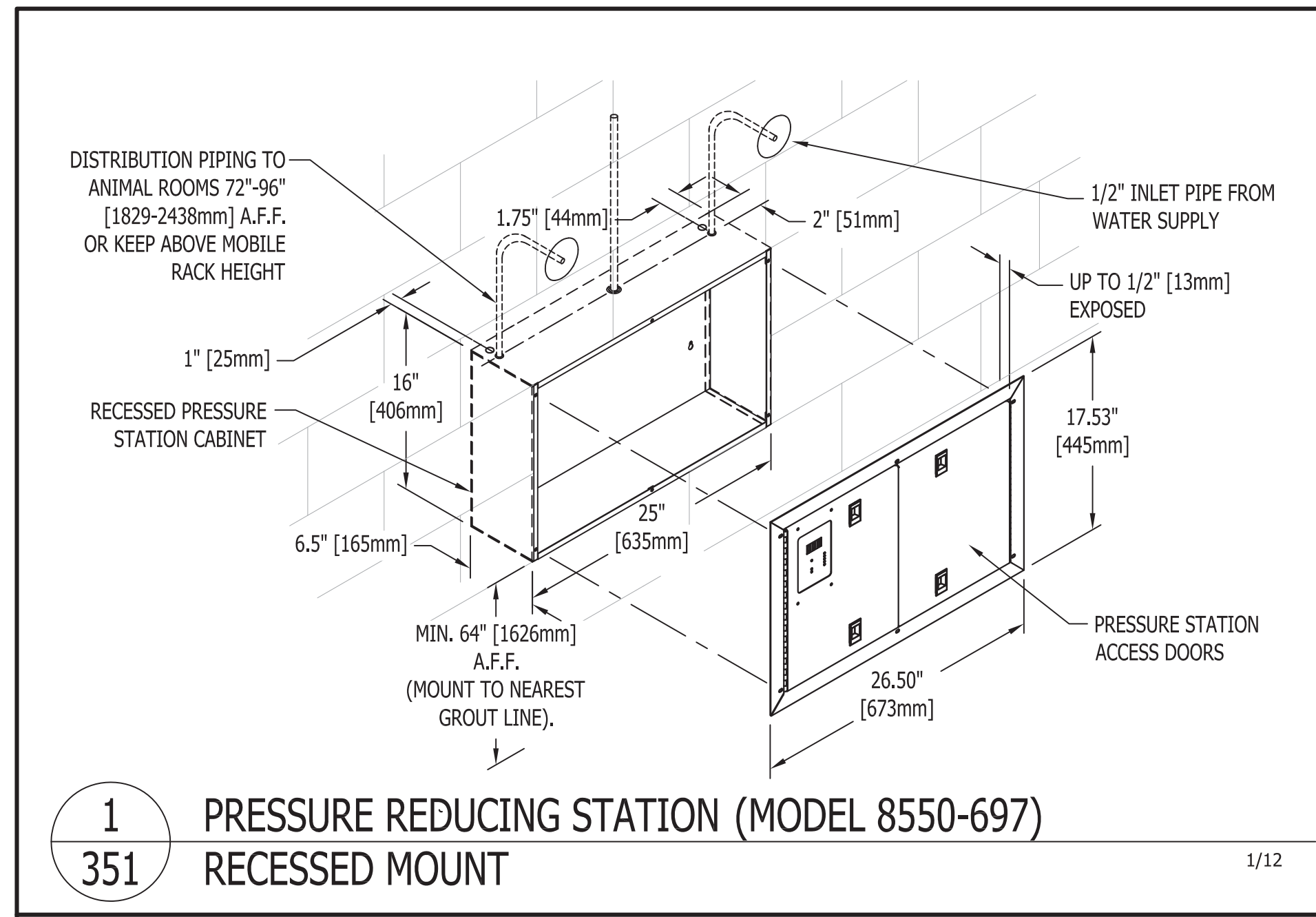
AUTOMATED WATERING SYSTEM (PIPING) LAYOUT FOR:
 WAYNE STATE UNIVERSITY
 MULTI-DISCIPLINARY BIOMEDICAL RESEARCH BUILDING\BASEMENT
 DETROIT, MI

REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2	REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2
A	142-0281	SUBMITTAL INITIAL DRAWING RELEASE - MATERIAL: U.S. CLEAN SORT	KJAN/01/13	TEC/04/01/13	APR/04/01/13						
B	142-0281	SUBMITTAL REV# RELOCATED SOL D IN RM #0331 L; REVISE CLAY NOTE: UPDATE LEGEND.	KJAN/02/14	PS/02/13/14	AP/02/03/14						
C	142-0281	SUBMITTAL REV# ADDED NOTE FOR HEADER PIPING.	KJAN/03/14	TES/03/10/14	PS/03/10/14						

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Edstrom
 819 Bakke Avenue, Waterford, WI 53185
 Tel: 262.534.5181 Fax: 262.534.5184

PROJ SCALE	1 = 1	E BORD	DRAWING NO.	REV.
REV. BY	KJ	DATE	04-04-12	5200-8579-300.1
				C



REV.	JOB NO.	REVISION
A	1501275	QUOTE: INITIAL DRAWING RELEASE - MATERIAL: U.S. CLEAN JOINT.
B	P151661	SUBMITTAL REV: REVISION DETAILS #1, 3, 10 & 15.
C	P151661	SUBMITTAL REV: REVISION DETAILS #2, 3, 10 & 14.

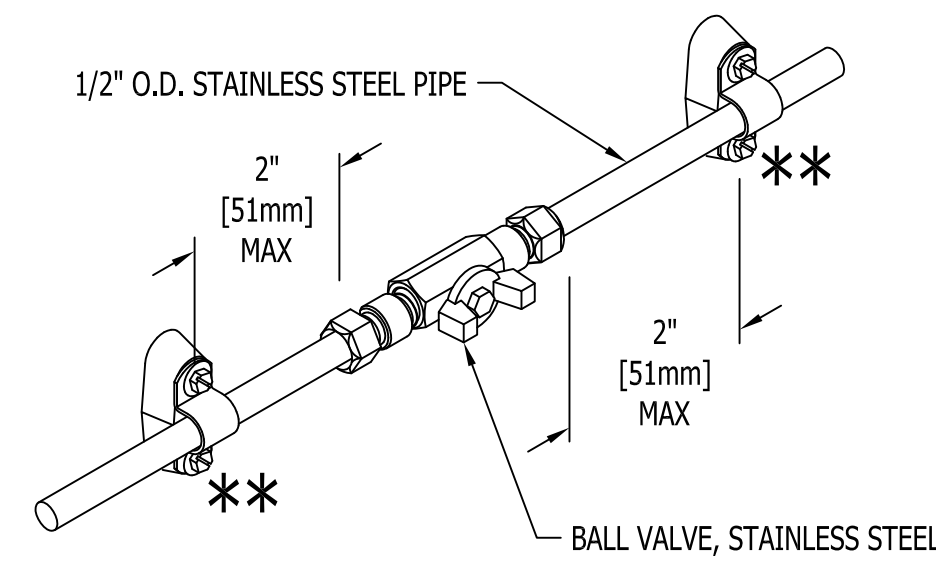
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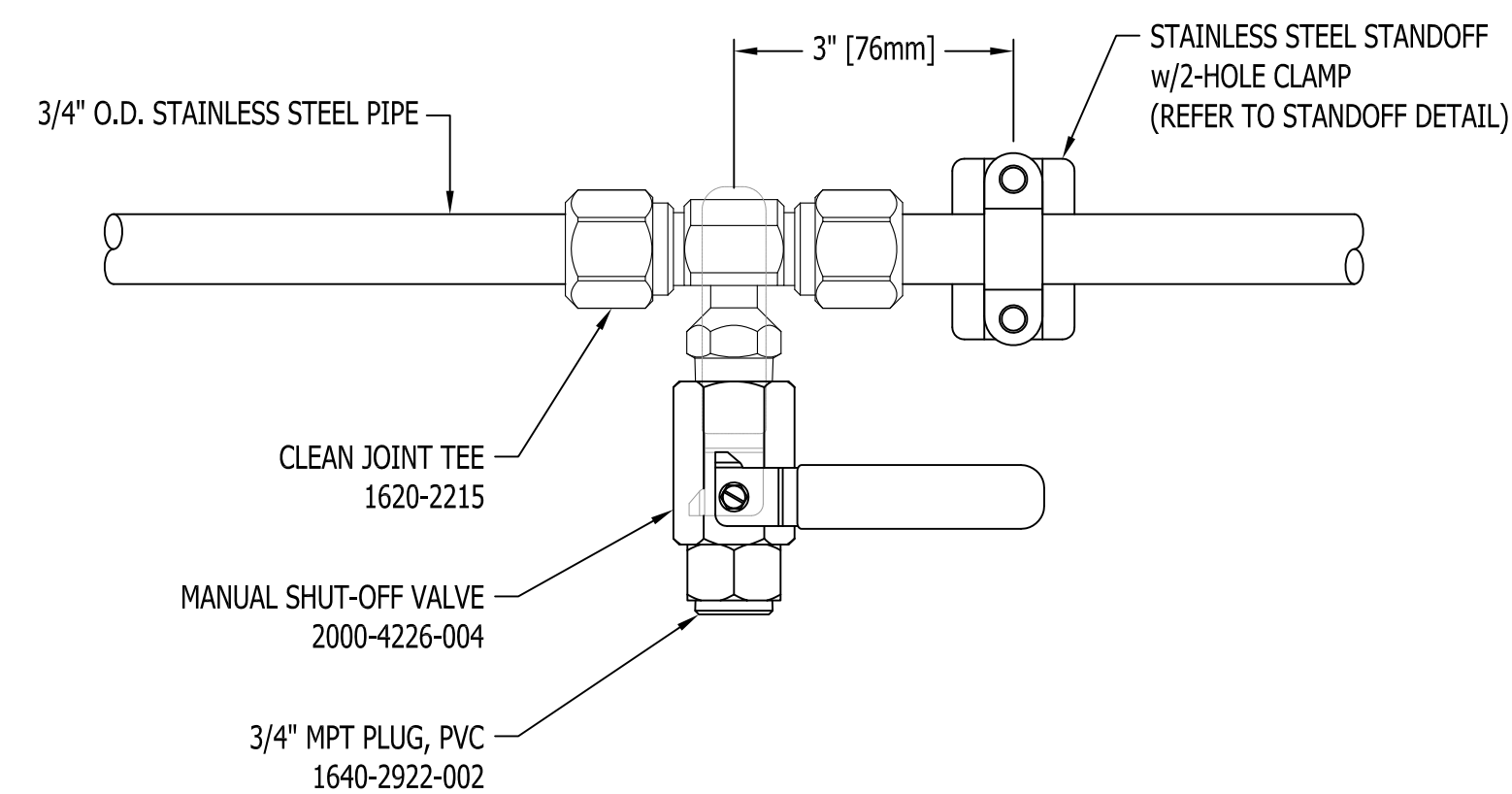
AUTOMATED WATERING SYSTEM (PIPING) DETAILS FOR:
 WAYNE STATE UNIVERSITY
 MULTI-DISCIPLINARY BIOMEDICAL RESEARCH BUILDING BASEMENT
 DETROIT, MI

DRAWING NO. 5200-8579-351
 DATE 04-04-13
 E BORD
 REV. C



NOTE:
**2-HOLE CLAMP
(REFER TO STANDOFF DETAIL)

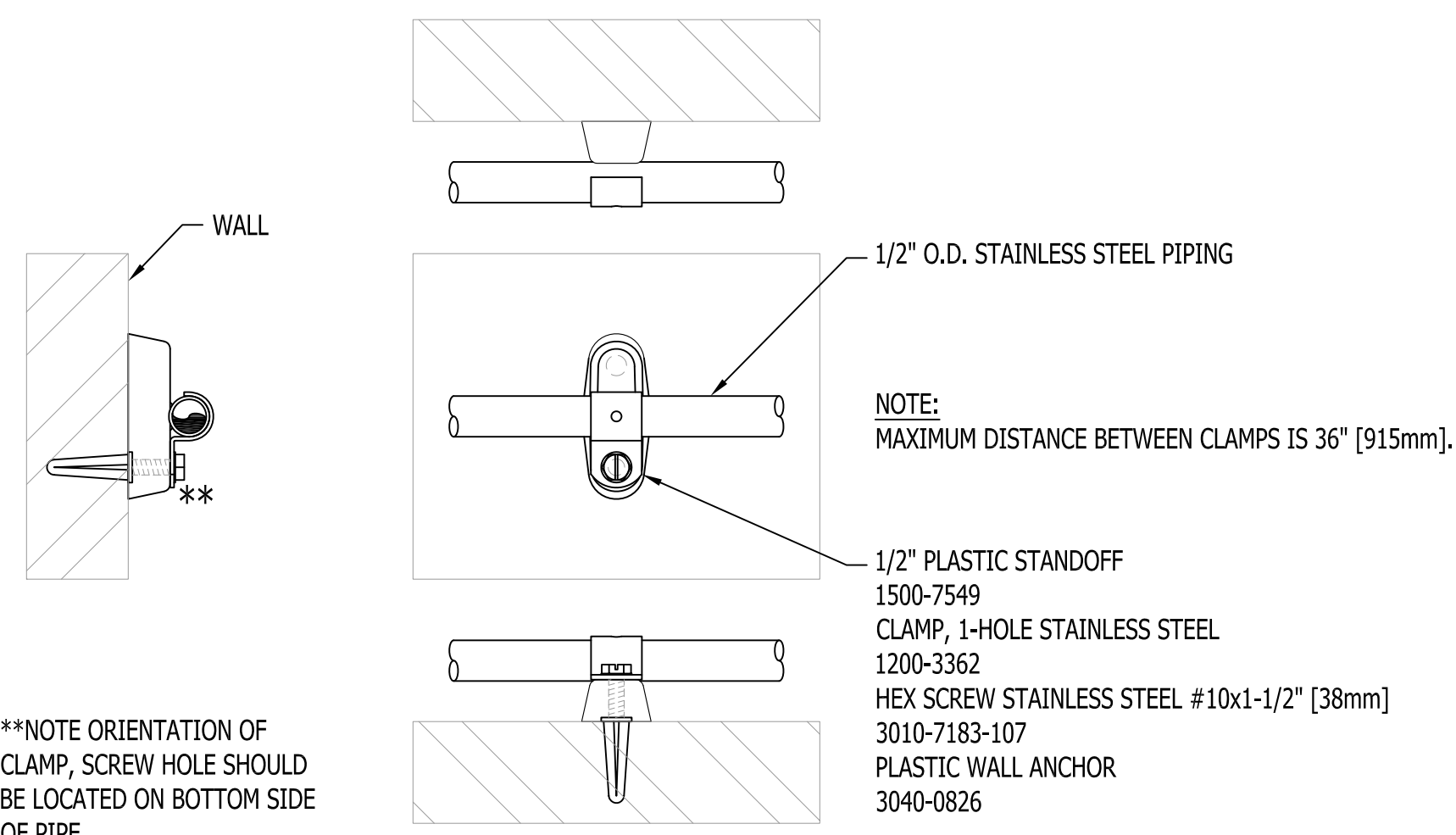
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352 MANUAL SHUT-OFF VALVE (1500-8103-300) 1/3



5
352 3/4" HEADER PIPE w/TEE & 3/4" MANUAL SHUT-OFF VALVE w/PLUG 1/2

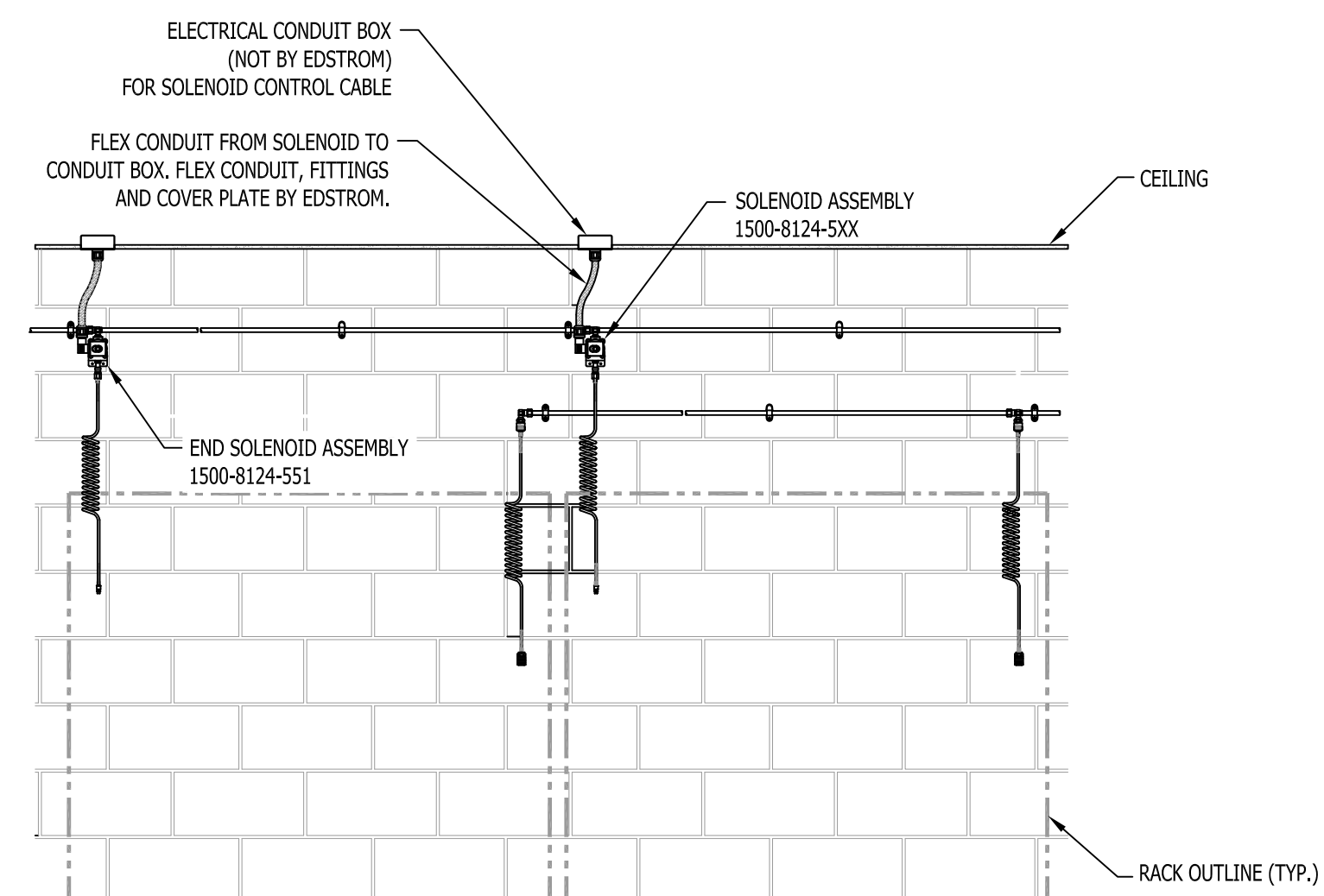
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**NOTE ORIENTATION OF CLAMP. SCREW HOLE SHOULD BE LOCATED ON BOTTOM SIDE OF PIPE.

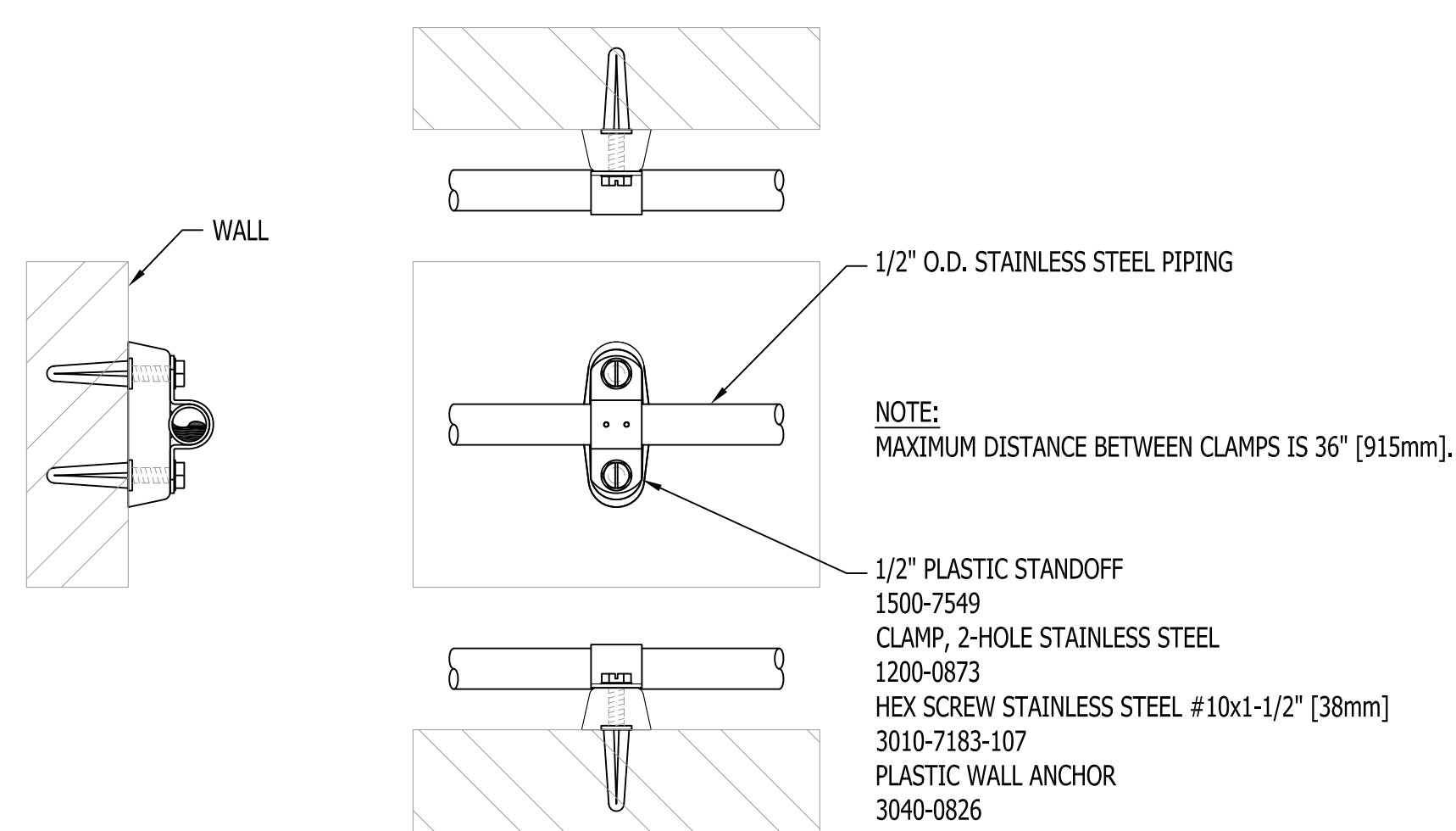
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352 STANDOFF w/1-HOLE CLAMP FOR 1/2" O.D. PIPE (Wall Anchor Mount) 1/2



6
352 ON-LINE RACK FLUSH - CONFIGURATION #3 ELEVATION VIEW 1/20

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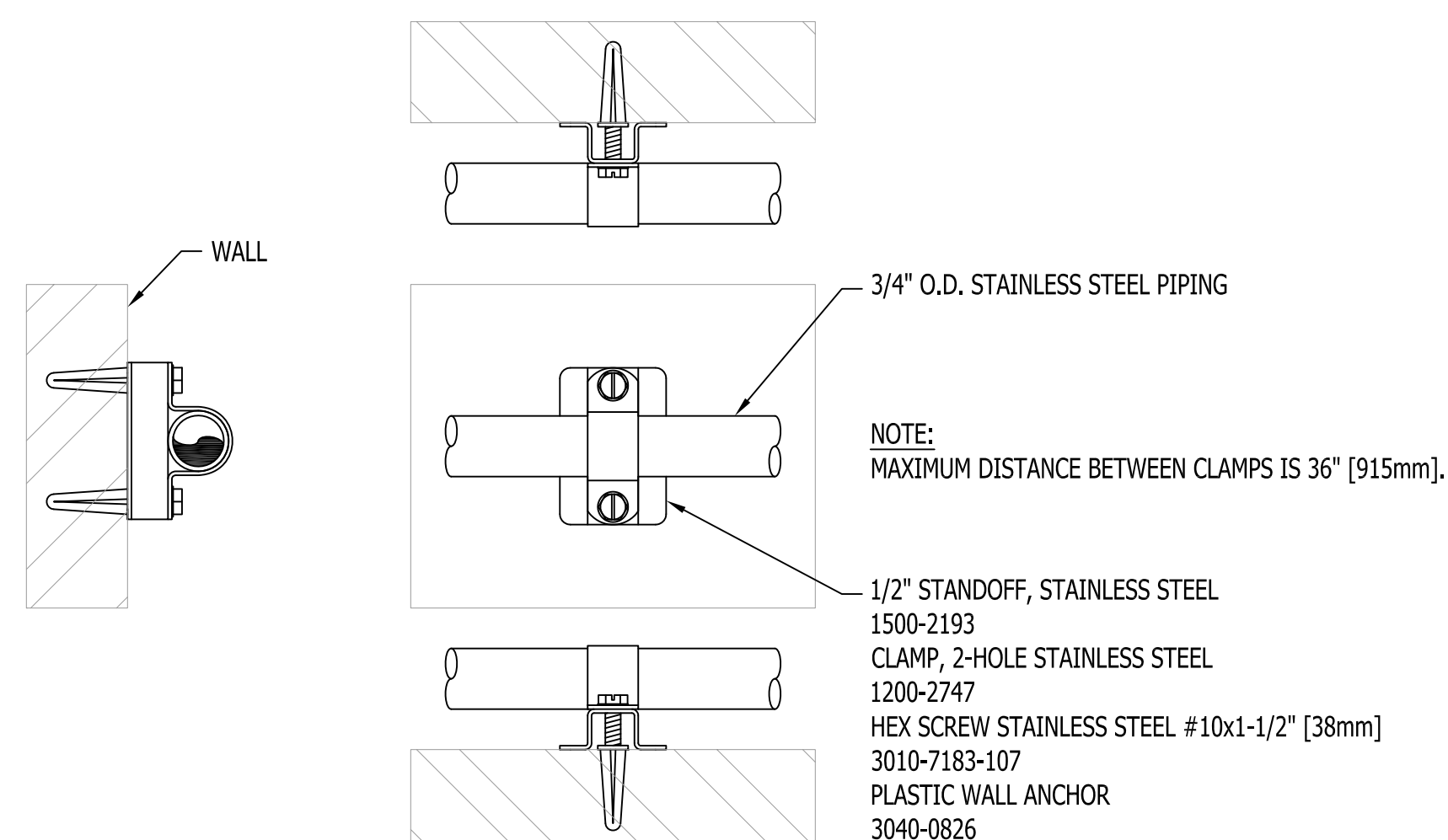


3
352 STANDOFF w/2-HOLE CLAMP FOR 1/2" O.D. PIPE (Wall Anchor Mount) 1/2

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4
352 STANDOFF w/2-HOLE CLAMP FOR 3/4" O.D. PIPE (Wall Anchor Mount) 1/2

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REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2	REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2	REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2
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REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2	REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2	REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2
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2	131661	SUBMITTAL REV#3 REVISOR DETAIL #6	KJAK	EDSTROM	EDSTROM	2	131661	2	KJAK	EDSTROM	EDSTROM	2	131661	2	KJAK	EDSTROM	EDSTROM

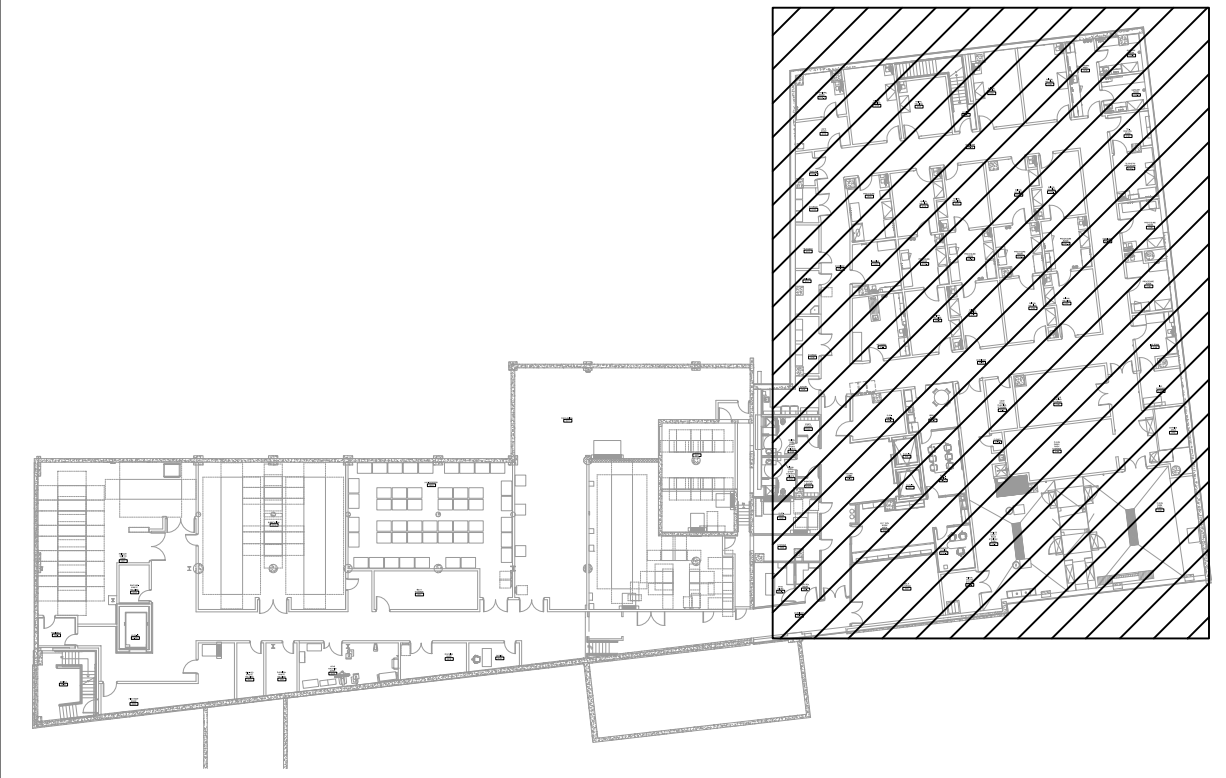
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AUTOMATED WATERING SYSTEM (PIPING) DETAILS FOR:
WAYNE STATE UNIVERSITY
MULTI-DISCIPLINARY BIOMEDICAL RESEARCH BUILDING\BASEMENT
DETROIT, MI

PROJ SCALE: 1 = 1
DATE: 04-05-13
DRAWING NO.: 5200-8579-352
REV. B



BUILDING KEY



	ULTRAFILTER
	ON-LINE RACK FLUSH SOLENOID VALVE
	PRESSURE REDUCING STATION, RECESSED MOUNT (8550)
	POWER SUPPLY: LON BUS (24 VDC/10 AMP)
	REMOTE ALARM INDICATOR (MODEL RAI-604), SURFACE MOUNTED
	PULSE CENTRAL CONTROLLER WITH I/O BOX, SURFACE MOUNTED

LEGEND

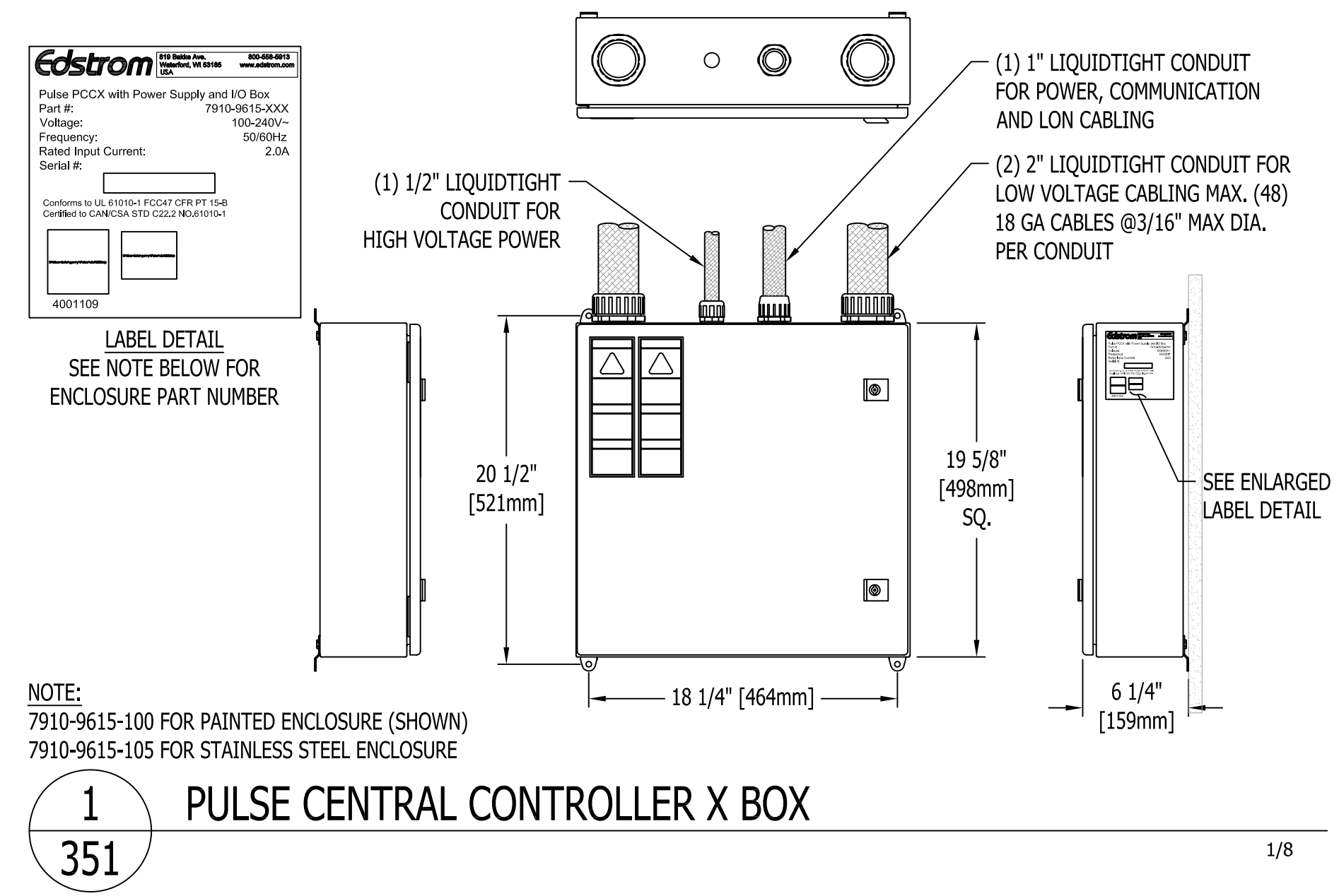
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A	P31661	SUBMITTAL: INITIAL DRAWING RELEASE	K44402114	PS-04/2014	PS-04/2014												
B	P31661	SUBMITTAL REV'S: ADDED ULTRAFILTER TO FLOORPLAN; UPDATE LEGEND.	K44402114	PS-04/2014	PS-04/2014												
C	P31661	SUBMITTAL REV'S: ADDED DETAIL BALLOON #7351.	K44402114	PS-04/2014	PS-04/2014												

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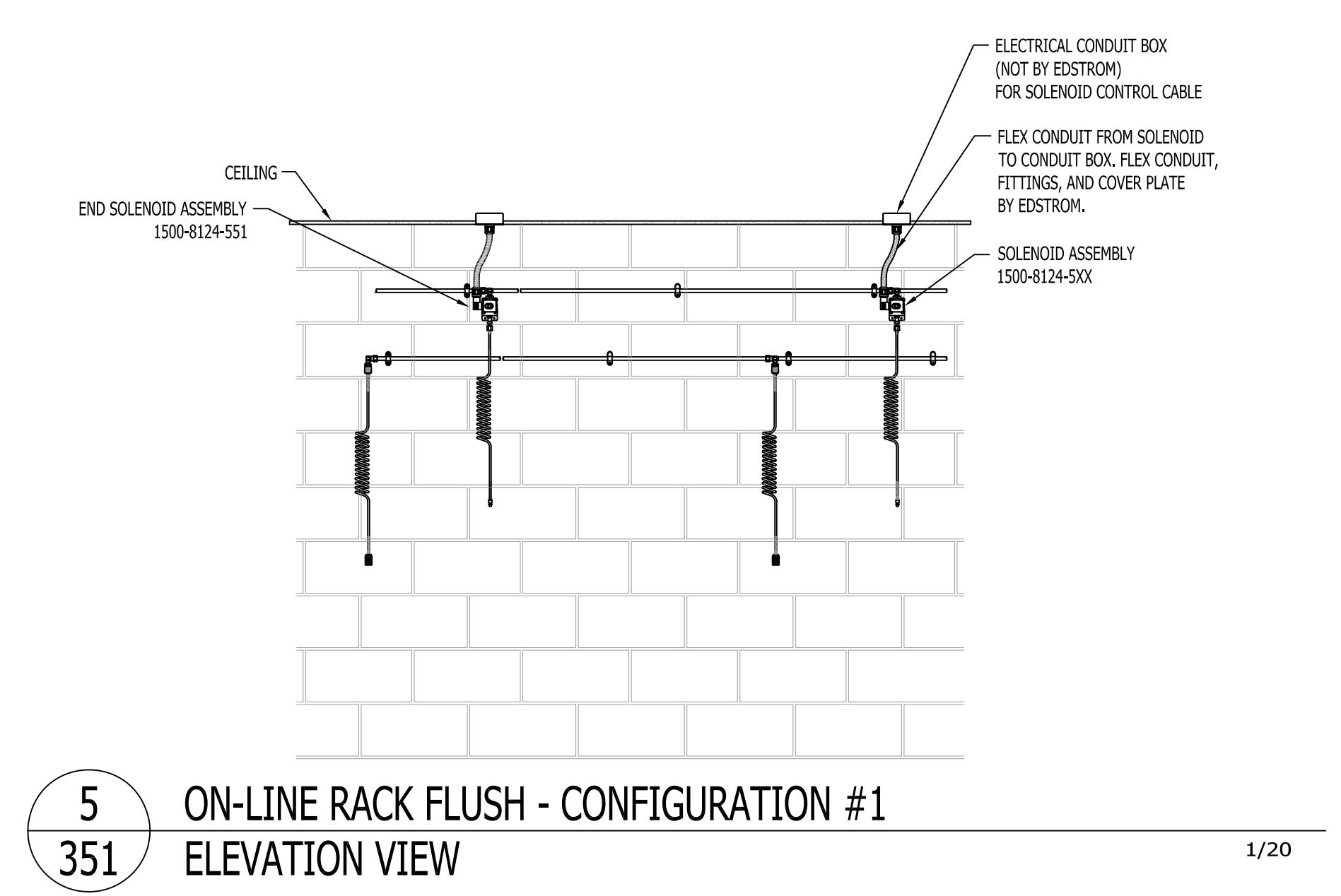


PULSE SYSTEM LAYOUT FOR: WAYNE STATE UNIVERSITY MULTI-DISCIPLINARY BIOMEDICAL RESEARCH BUILDING\BASEMENT DETROIT, MI		DRAWING NO. 5800-8579-300.1	REV. C
PLOT SCALE 1 = 1	E BORD	DATE 04-05-12	REV. C



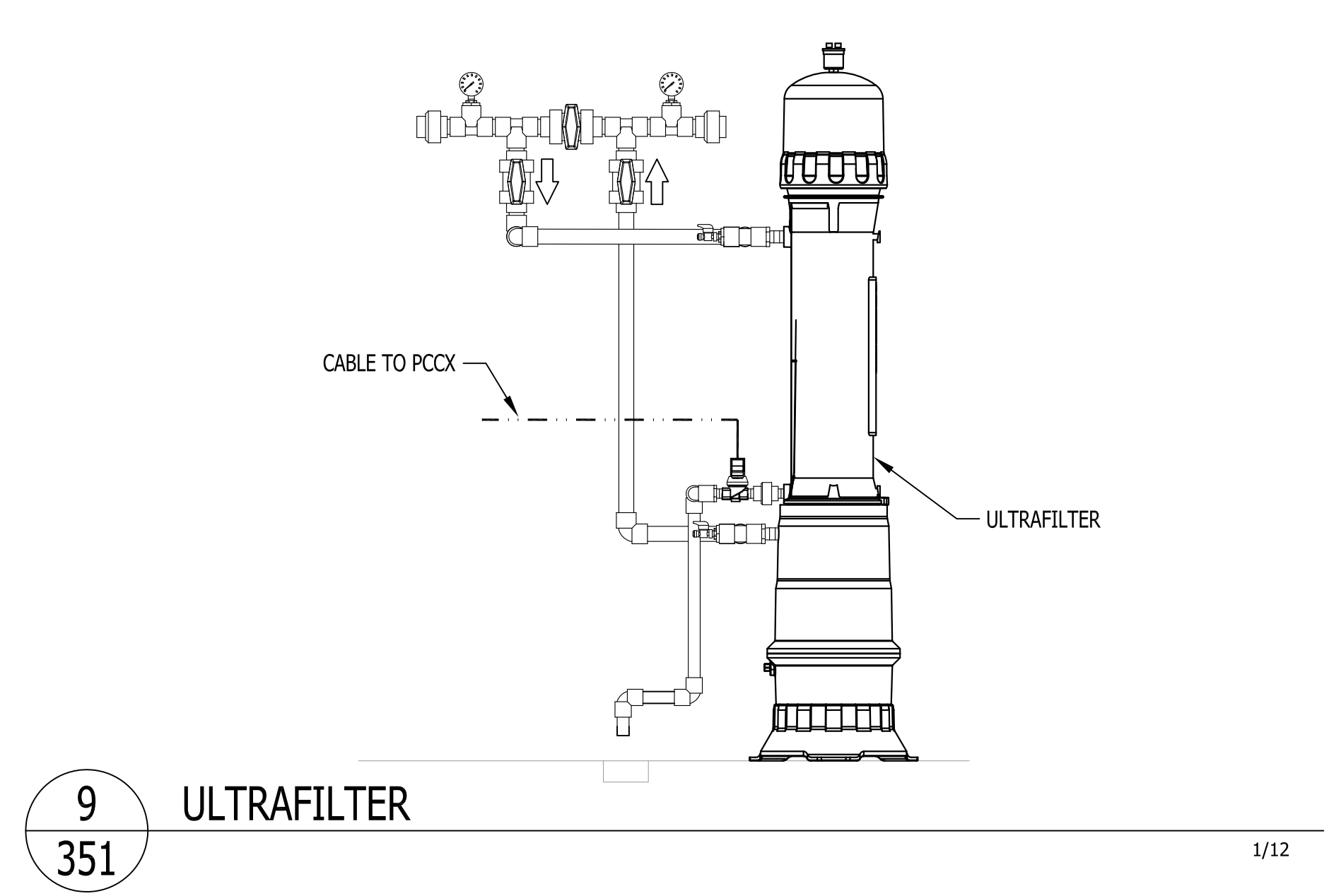
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351 PULSE CENTRAL CONTROLLER X BOX

1/8



5
351 ON-LINE RACK FLUSH - CONFIGURATION #1 ELEVATION VIEW

1/20

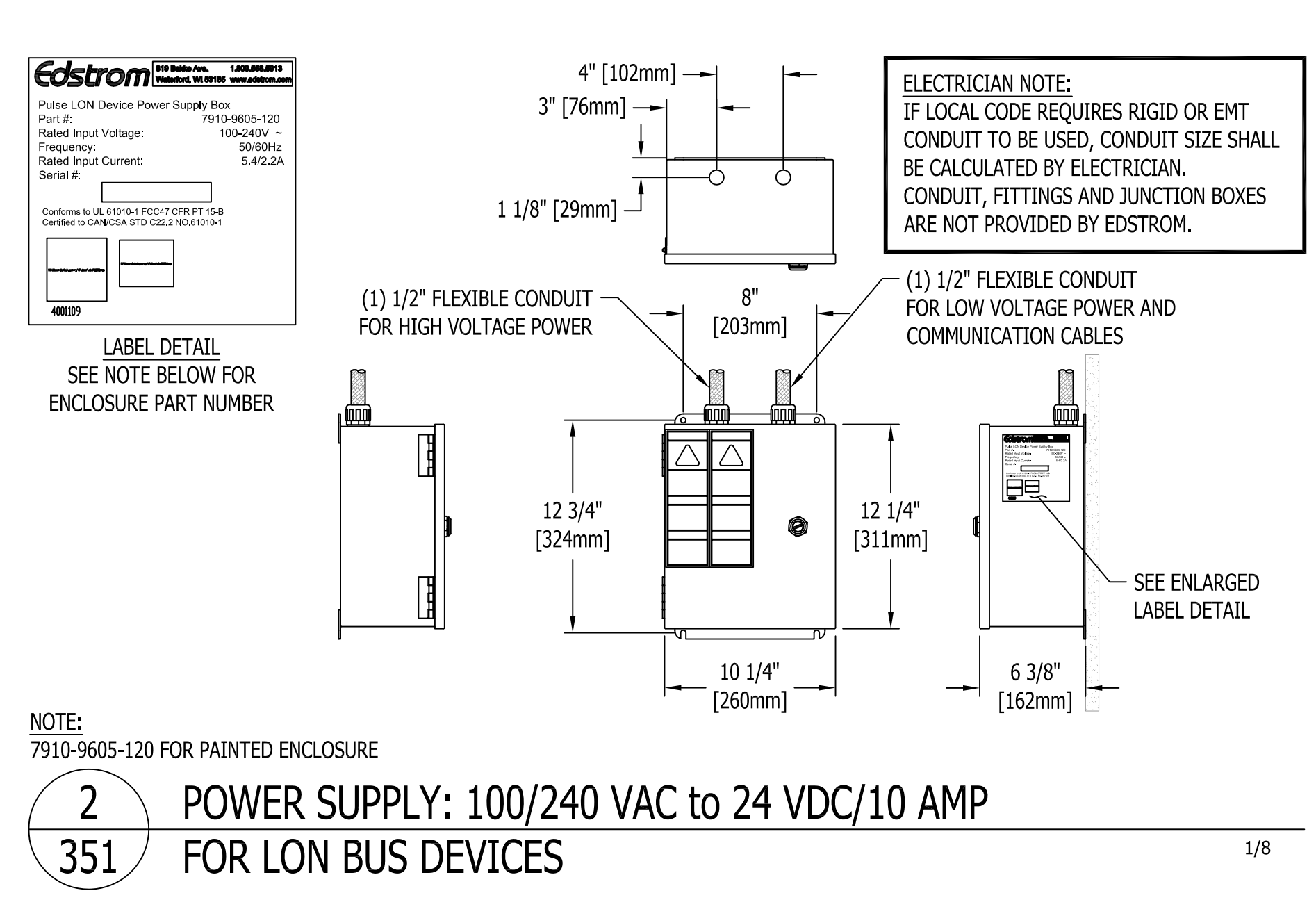


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351 ULTRAFILTER

1/12

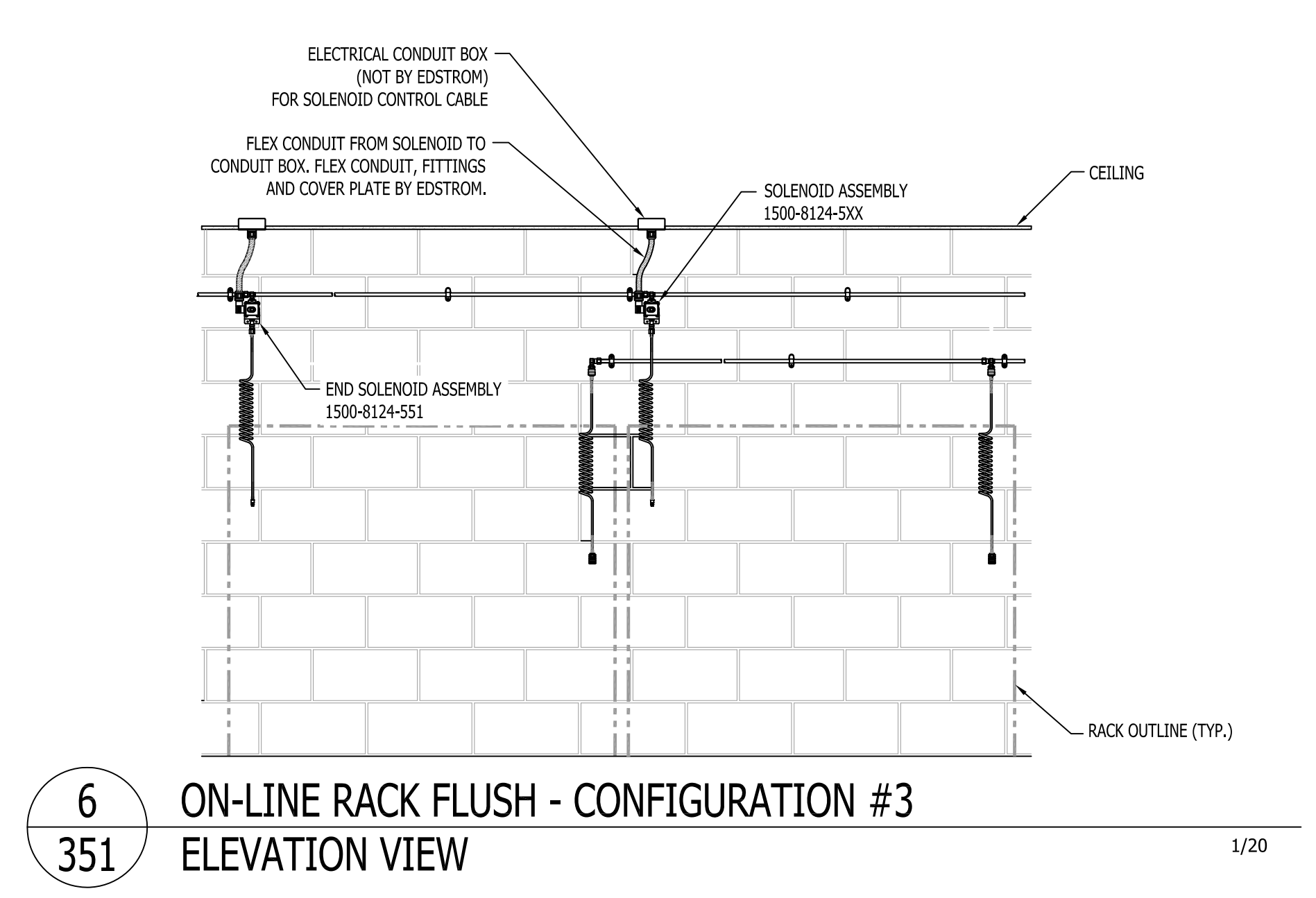


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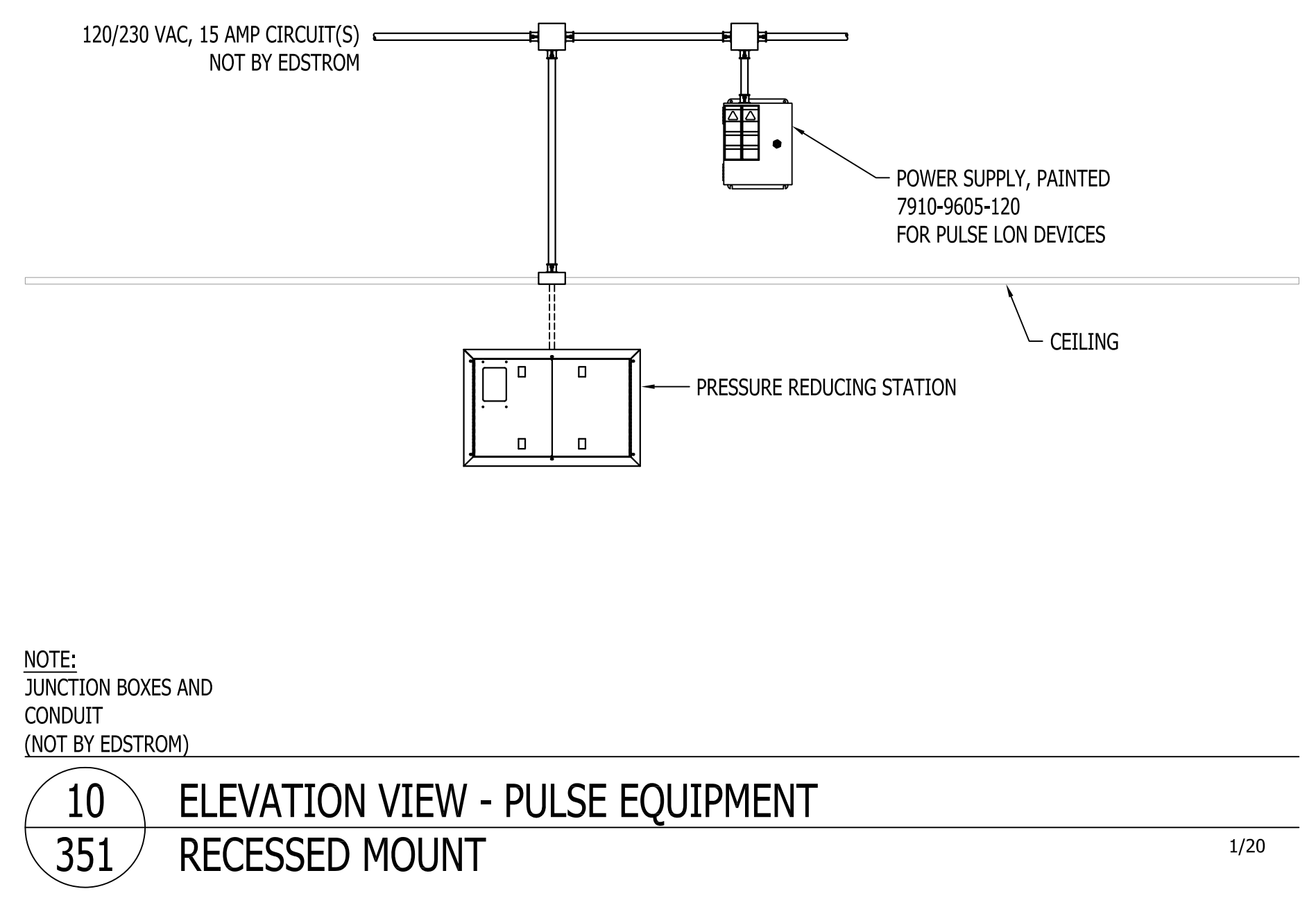
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351 POWER SUPPLY: 100/240 VAC TO 24 VDC/10 AMP FOR LON BUS DEVICES

1/8



6
351 ON-LINE RACK FLUSH - CONFIGURATION #3 ELEVATION VIEW

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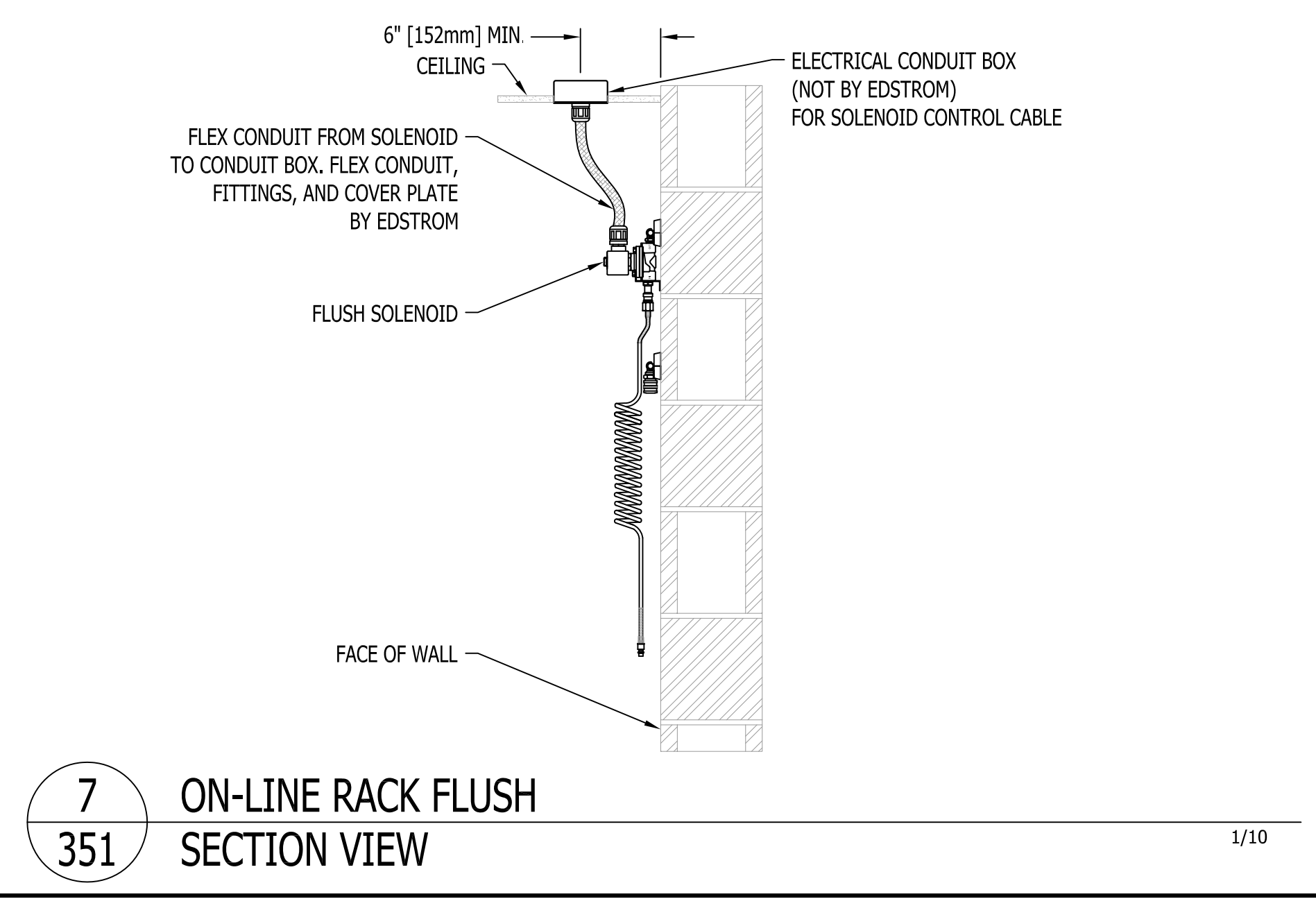
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351 ELEVATION VIEW - PULSE EQUIPMENT RECESSED MOUNT

1/20



3
351 REMOTE ALARM INDICATOR (RAI-604) FOR PULSE CENTRAL CONTROLLER

1/4



7
351 ON-LINE RACK FLUSH SECTION VIEW

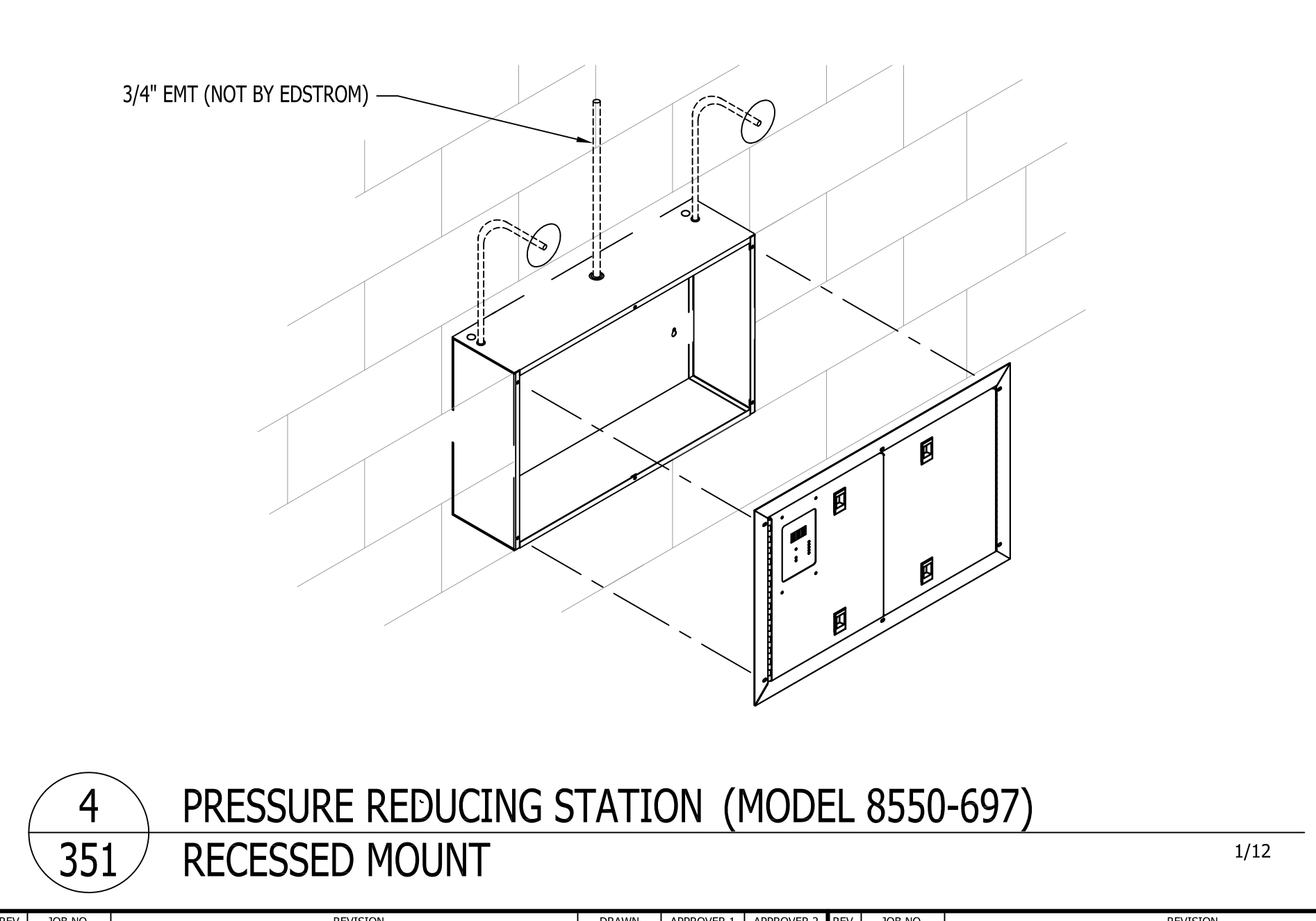
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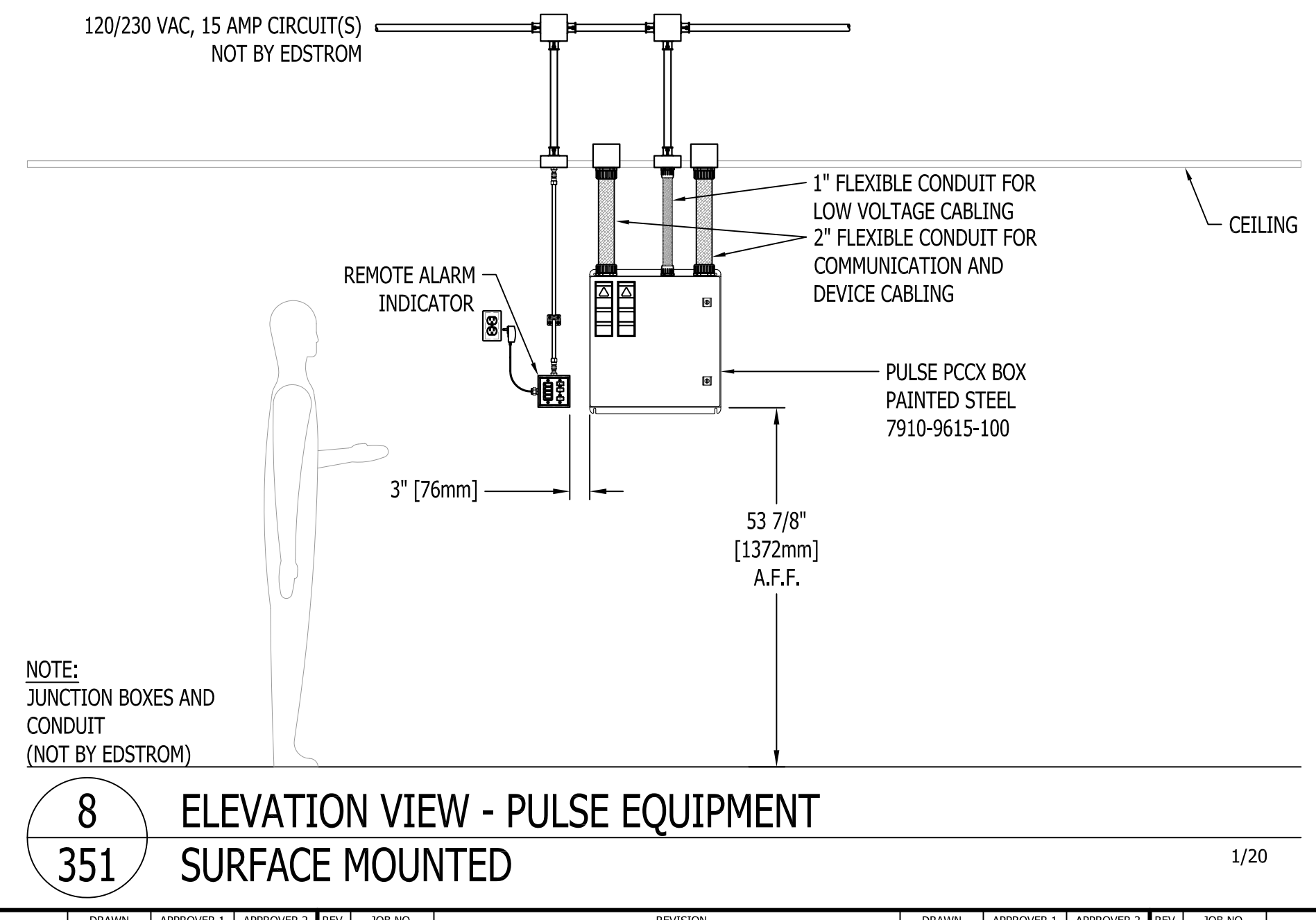


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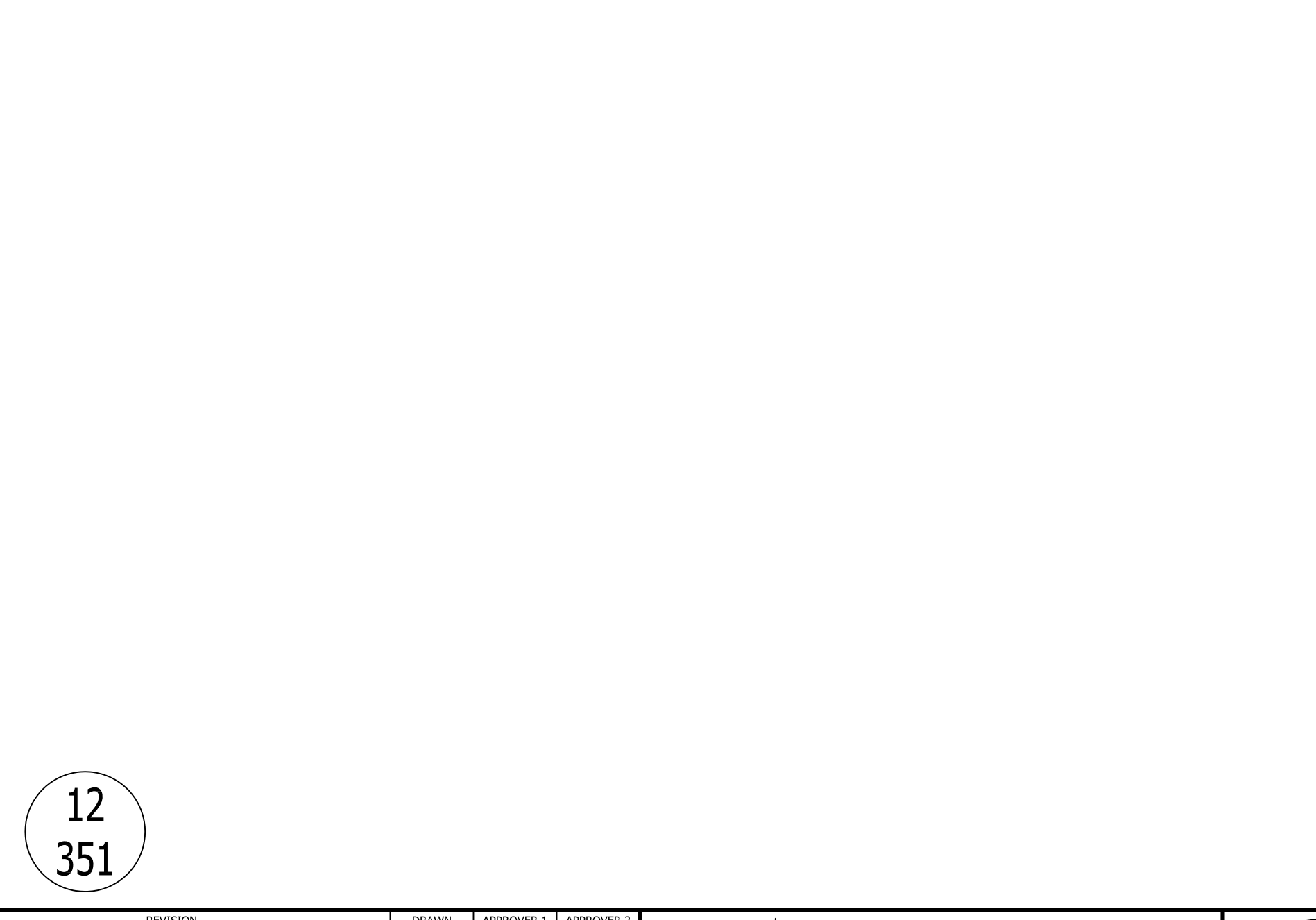
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351 PRESSURE REDUCING STATION (MODEL 8550-697) RECESSED MOUNT

1/12



8
351 ELEVATION VIEW - PULSE EQUIPMENT SURFACE MOUNTED

1/20



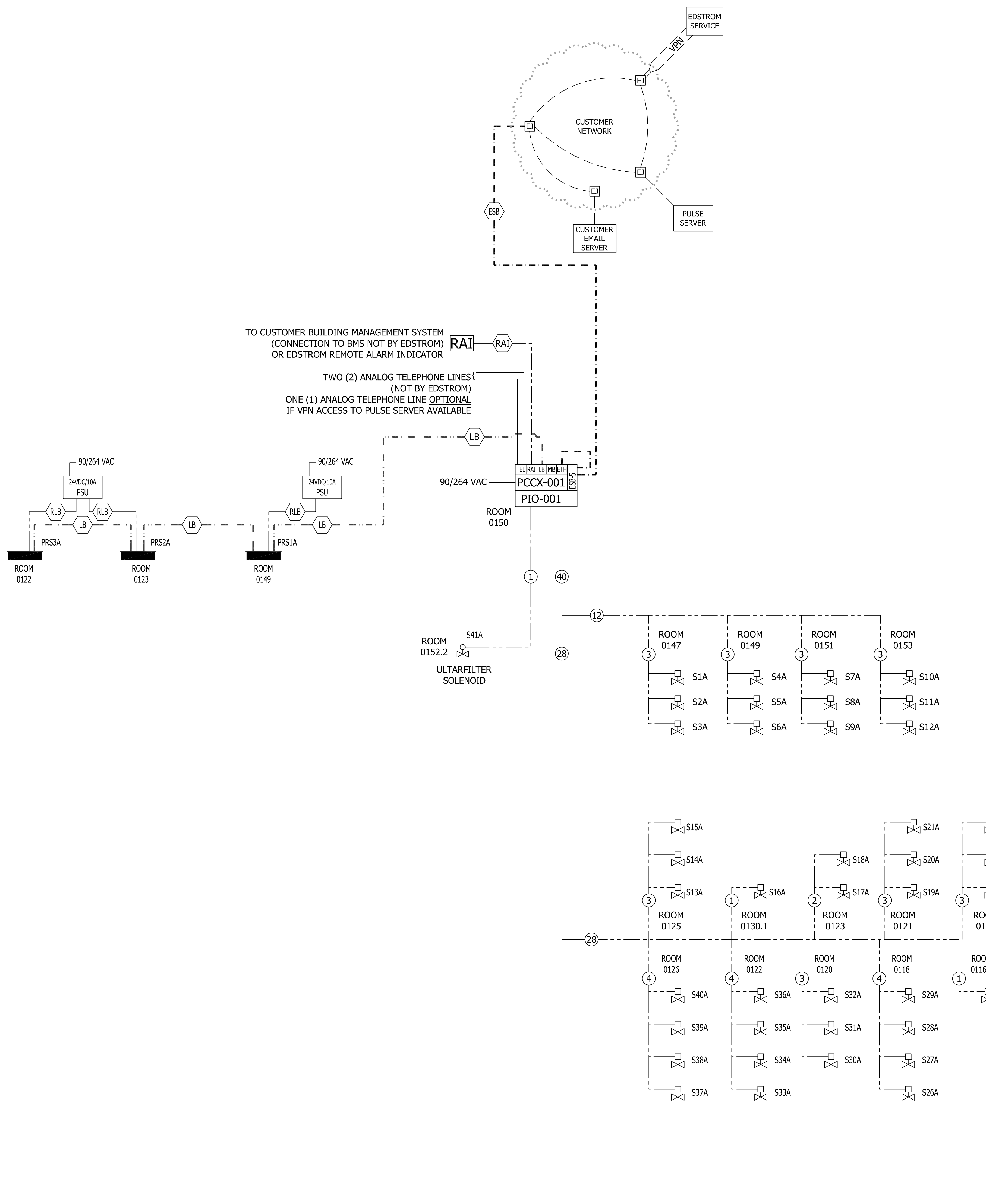
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KEY

GENERAL NOTES



REV	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2	REV	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2	REV	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2
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2	110-0101	SUBMITTAL: REVISED DRAWING RELEASE	KJ	11/13/13	11/13/13	2	110-0101					2	110-0101				

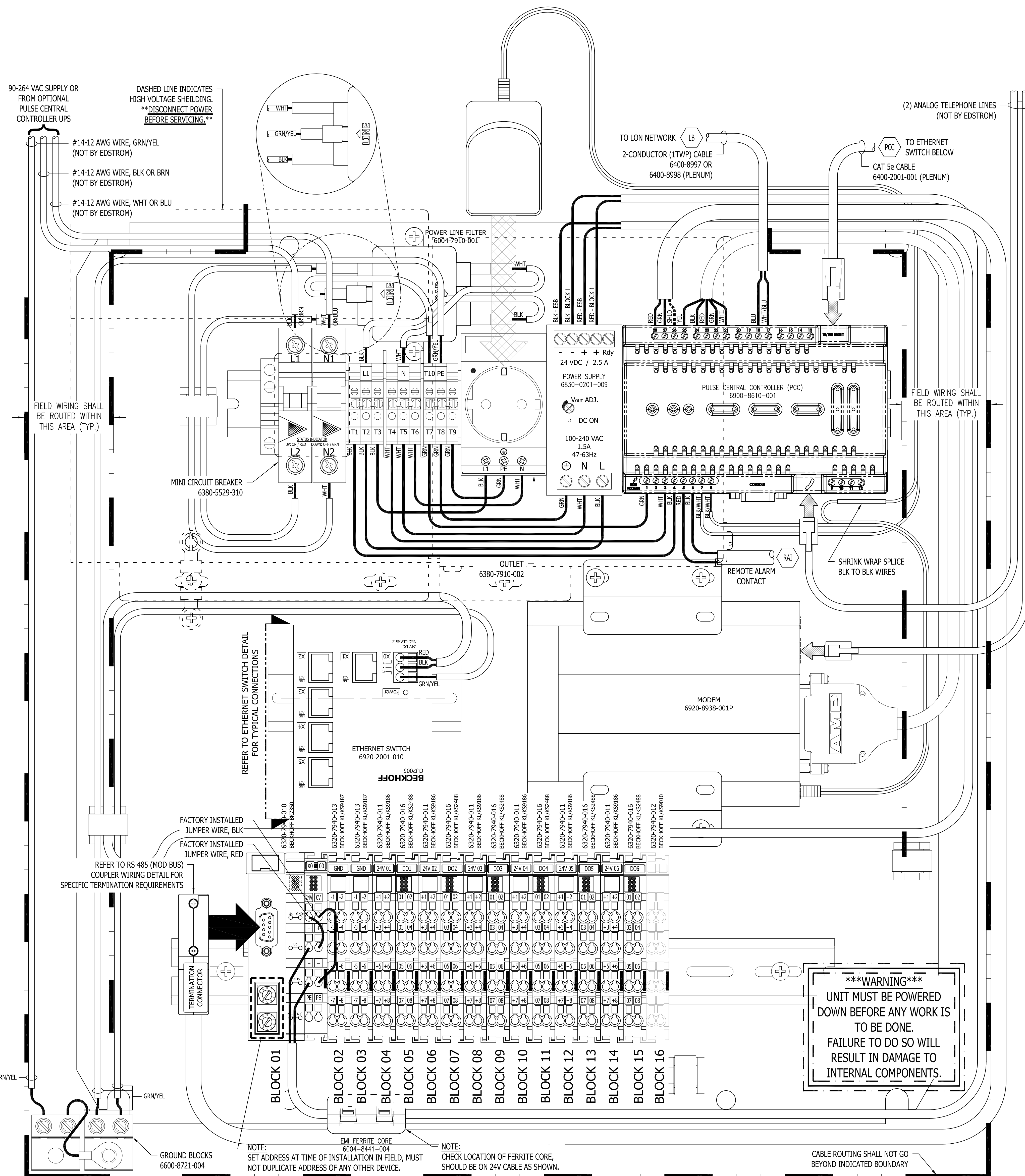
LEGEND

- PULSE SERVER (NOT BY EDSTROM)
- PULSE CENTRAL CONTROLLER
- PULSE I/O BOX
- PULSE CENTRAL CONTROLLER & w/ I/O PANEL AND ETHERNET SWITCH
- PCCX-001
- PIO-001
- UNINTERRUPTIBLE POWER SUPPLY (UPS)
- POWER SUPPLY: 12VDC/2.5 AMP
- POWER SUPPLY: 24VDC/2.5 AMP
- POWER SUPPLY: 24VDC/10 AMP
- REMOTE ETHERNET JACK
- VENT RACK MONITORING POINT
- TOUCHSCREEN
- REMOTE ALARM INDICATOR
- PRESSURE REDUCING STATION (RECESSED)
- FLUSH SOLENOID VALVE
- ON-LINE RACK FLUSH SOLENOID VALVE
- VENT RACK MONITORING POINT
- CO2 SENSOR
- CO2 SENSOR w/REMOTE ALARM INDICATOR
- REMOTE pH SENSOR
- TEMPERATURE SENSOR (RTD TYPE)
- NETWORK JUNCTION BOX
- HHL
- LIGHT CONTROL MODULE
- COMPONENT BOX w/NETWORK JUNCTION BOXED, AIR FLOW, DIFFERENTIAL PRESSURE AND LIGHT CONTROL MODULES
- AIR FLOW MODULE
- DIFFERENTIAL PRESSURE MODULE
- LIGHT CONTROL MODULE
- TAP SWITCH FOR LIGHT CONTROL
- COMPONENT BOX w/LIGHT CONTROL RELAYS
- ADVANCED LIGHT MODULE w/LIGHT RELAYS FOR LIGHT CONTROL
- ADVANCED LIGHT MODULE MEMBRANE SWITCH FOR LIGHT CONTROL
- LEGACY COMPONENT BOX w/AIR FLOW AND DIFFERENTIAL PRESSURE TRANSDUCERS
- LEGACY AIR FLOW TRANSDUCER
- LEGACY DIFFERENTIAL PRESSURE TRANSDUCER
- LEGACY SENSOR MODULE 1 FOR TEMPERATURE AND HUMIDITY
- LEGACY SENSOR MODULE 2 FOR TEMPERATURE
- LEGACY SENSOR MODULE 3 FOR TEMPERATURE
- CABLE QUANTITY BACK TO I/O PANEL
- 2-CONDUCTOR CABLE w/SHIELD (RS485), 22 GA FOR MOD BUS COMMUNICATION
- 2-CONDUCTOR CABLE, 22 GA FOR MOD BUS COMMUNICATION
- 1-TWISTED PAIR CABLE, 22 GA FOR MOD BUS COMMUNICATION
- 3-CONDUCTOR CABLE w/GROUND, 22 GA
- 4-CONDUCTOR CABLE, 22 GA
- 5-CONDUCTOR CABLE, 22 GA
- 6-CONDUCTOR CABLE, 22 GA
- 2-TWISTED PAIR SHIELDED CABLE w/GROUND, 22 GA
- WIRELESS POINT MANAGER
- WIRELESS REPEATER
- WIRELESS SENSOR FOR TEMPERATURE & HUMIDITY
- WIRELESS SENSOR FOR TEMPERATURE & HUMIDITY USING A REMOTE PROBE
- WIRELESS SENSOR FOR TEMPERATURE & HUMIDITY
- WIRELESS SENSOR FOR LIGHT DETECT

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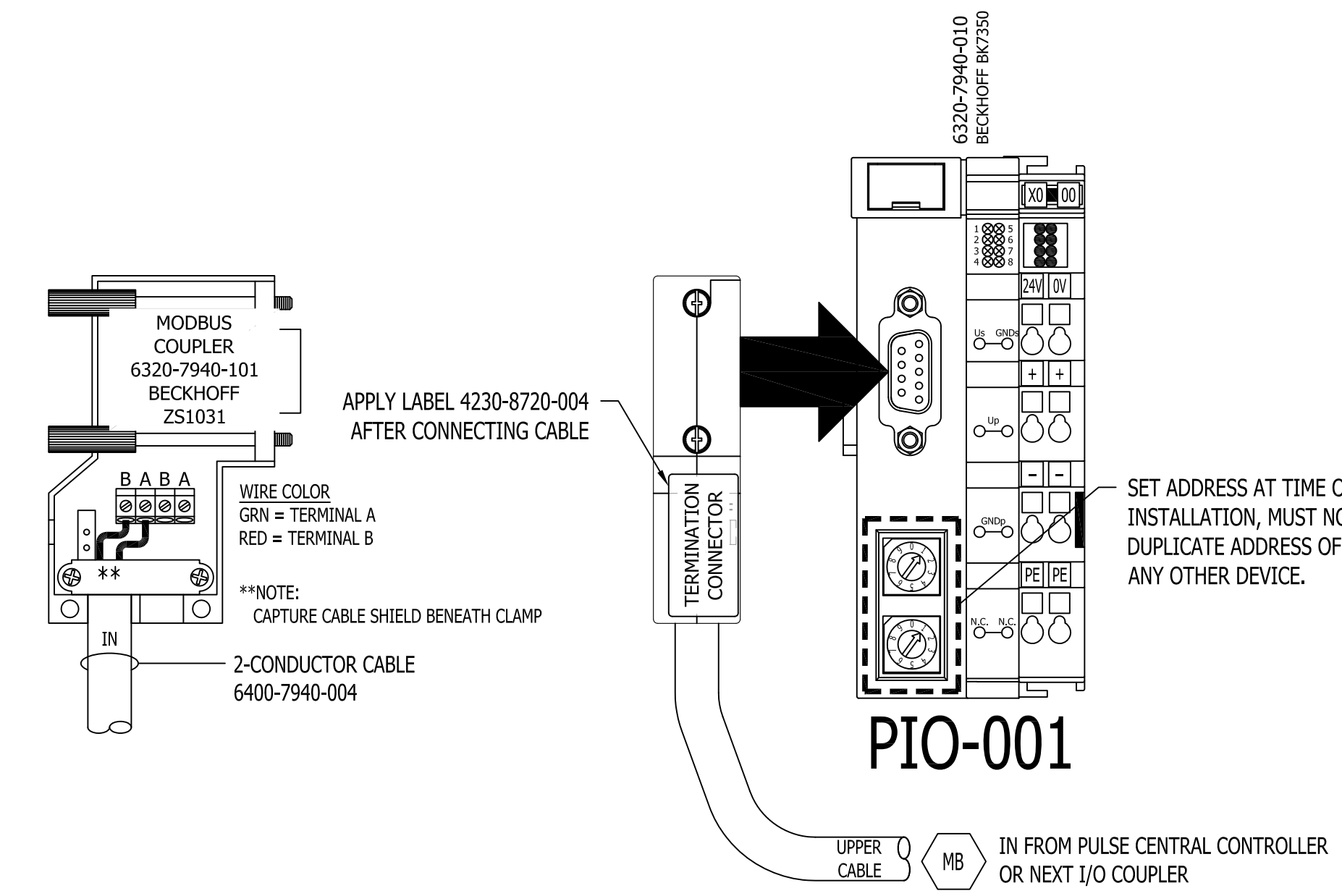


PULSE SYSTEM EQUIPMENT CABLING SCHEMATIC FOR:			
WAYNE STATE UNIVERSITY			
MULTI-DISCIPLINARY BIOMEDICAL RESEARCH BUILDING\BASEMENT			
DETROIT, MI			
PROJ SCALE	1 = 1	E BORD	DRAWING NO.
DRN BY	KJ	DATE	04-05-13
5810-8579-301.1			REV. B



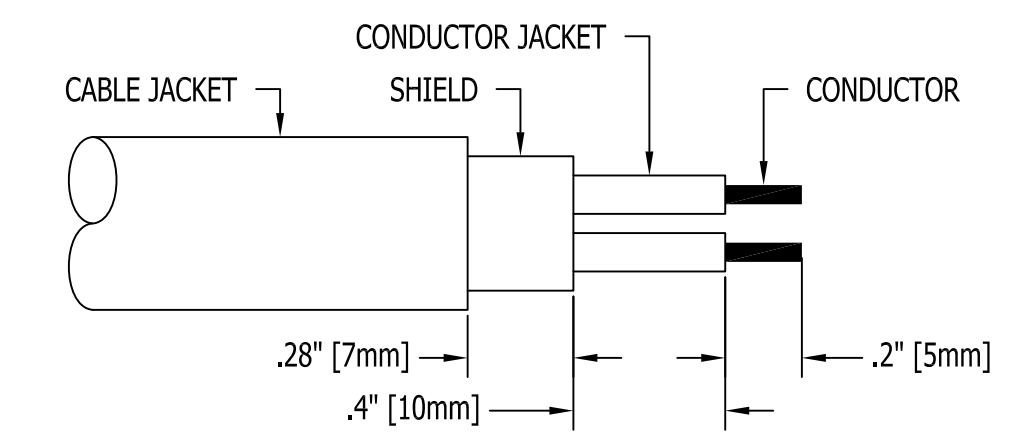
PCCX-001

NOTE: THIS PCC REFERENCES DEVICES IDENTIFIED AS #PRSXAA



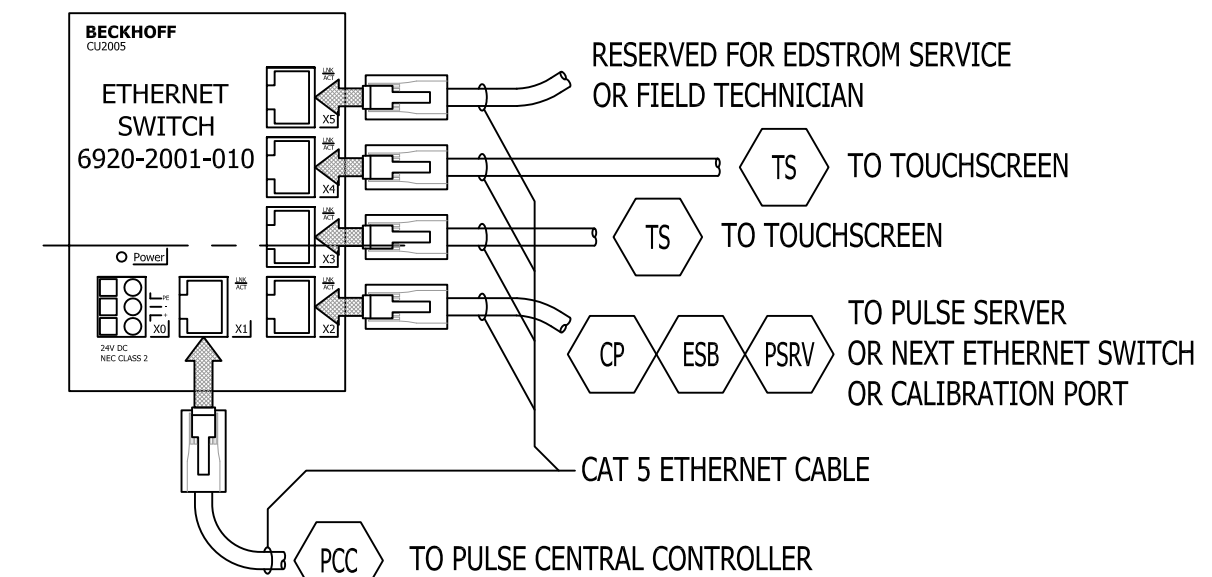
RS-485 (MODBUS) COUPLER 6320-7940-101 WIRING FOR TERMINATION CONNECTIONS

1/1



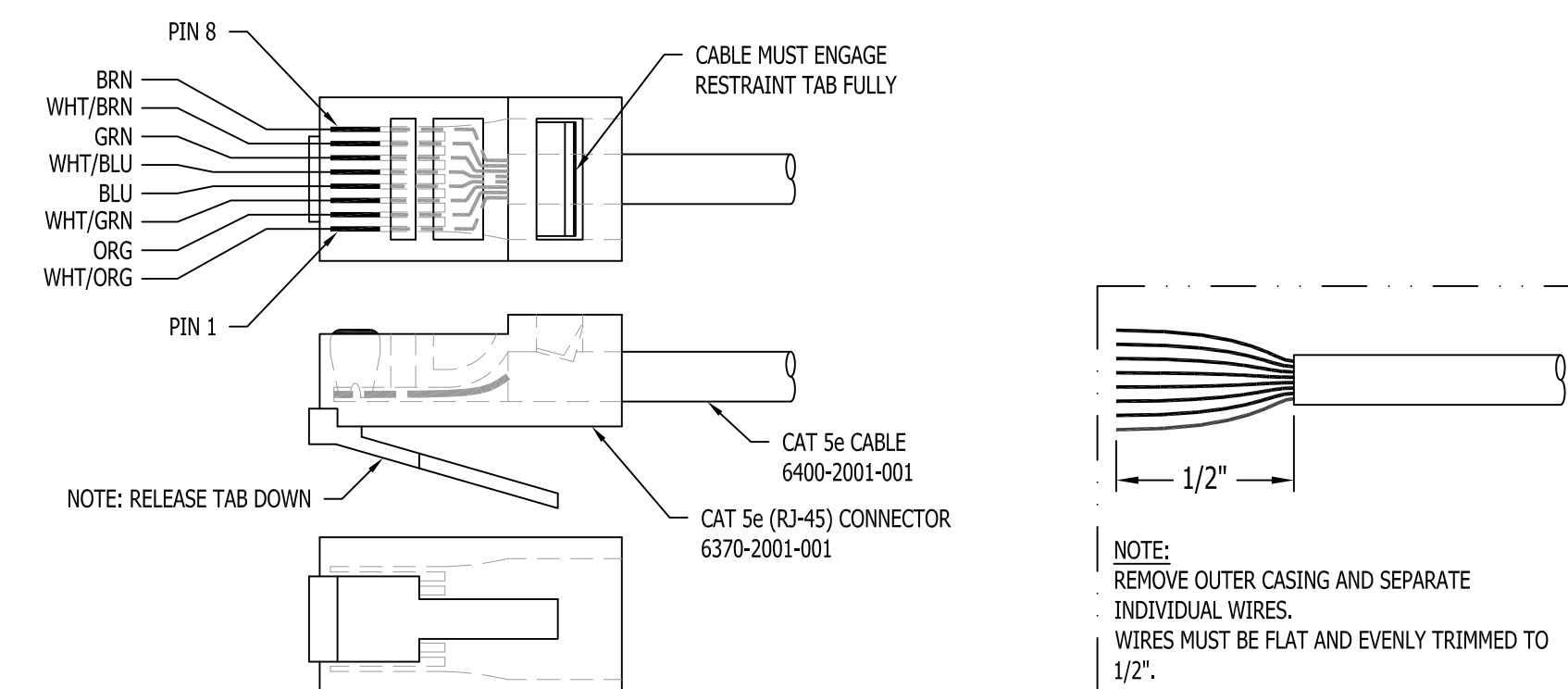
CABLE STRIPPING GUIDE FOR MODBUS CABLE 6400-7940-004

2/1



PULSE 5-PORT ETHERNET SWITCH CONNECTIONS

1/2



RJ-45 ETHERNET CONNECTION WIRING PINOUT (T568B) STANDARD TIA/EIA-568-B.1-2001

2/1

- General Notes for Pulse Central Controller:**
- 1) Maintain proper/required clearances of all Edstrom supplied components per N.E.C. specifications.
 - 2) Electrical conduit and accessories not provided by Edstrom. If conduit is provided by the customer for cable installed by Edstrom, pull strings and suitable access for pulling cable must be provided by the customer.
 - 3) Computer furniture is not included.
 - 4) Receiving, unloading, and storage of material at jobsite is not included.
 - 5) Final disposal of packaging, scrap material, and removed equipment is not included.
 - 6) Permits, certifications and inspections required by local, state, or federal codes are not included.
 - 7) Installation of recessed enclosures is not included.
 - 8) Recessed enclosures require minimum 8" wall thickness.

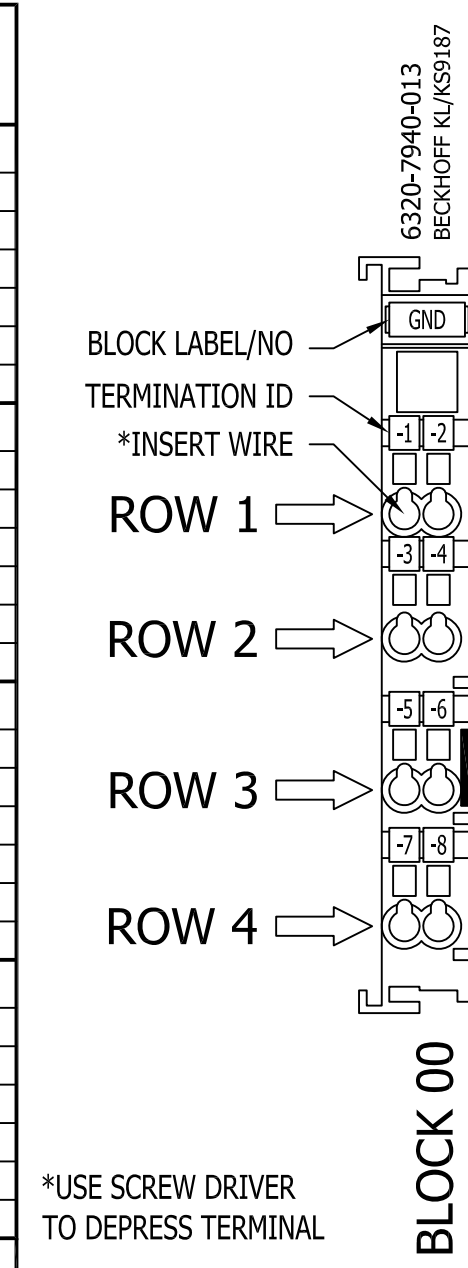
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PULSE PCCX I/O BOX CONNECTIONS FOR: WAYNE STATE UNIVERSITY MULTI-DISCIPLINARY BIOMEDICAL RESEARCH BUILDING/BASEMENT DETROIT, MI		PROJ SCALE 1 = 1	E BORD	DRAWING NO. 5820-8579-001.1	REV. A
REV. BY KJ	DATE 04-22-14				

I/O CONNECTION TABLE		BLOCK POSITION 2	BLOCK LABEL GND	BLOCK POSITION	BLOCK LABEL	BLOCK POSITION 4	BLOCK LABEL 24V 01	BLOCK POSITION 5	BLOCK LABEL DO1	BLOCK POSITION 6	BLOCK LABEL 24V 02	BLOCK POSITION 7	BLOCK LABEL DO2		
R	1	BLOCK PORT I.D.	-1	-2	-1	-2	+1	+2	01	02	+1	+2	01	02	
		WIRE COLOR					RED	RED	BLK	BLK	RED	RED	BLK	BLK	
		PULSE CONFIGURATION POINT					1L	2L	1L	2L	1L	2L	1L	2L	
		ROOM NO. OR LOCATION					Room 0147	Room 0147	Room 0147	Room 0147	Room 0151	Room 0153	Room 0151	Room 0153	
		BLOCK POSITION	-3	-4	-3	-4	+3	+4	03	04	+3	+4	03	04	
O	2	WIRE COLOR					RED	RED	BLK	BLK	RED	RED	BLK	BLK	
		PULSE CONFIGURATION POINT					3L	4L	3L	4L	3L	4L	3L	4L	
		ROOM NO. OR LOCATION					Room 0147	Room 0149	Room 0147	Room 0149	Room 0153	Room 0153	Room 0153	Room 0153	
		SENSOR/SOLENOID NO.					S3A	S4A	S3A	S4A	S13A	S12A	S13A	S12A	
		BLOCK POSITION	-5	-6	-5	-6	+5	+6	05	06	+5	+6	05	06	
W	3	WIRE COLOR					RED	RED	BLK	BLK	RED	RED	BLK	BLK	
		PULSE CONFIGURATION POINT					5L	6L	5L	6L	5L	6L	5L	6L	
		ROOM NO. OR LOCATION					Room 0149	Room 0149	Room 0149	Room 0149	Room 0125	Room 0125	Room 0125	Room 0125	
		SENSOR/SOLENOID NO.					S5A	S6A	S5A	S6A	S13A	S14A	S13A	S14A	
		BLOCK POSITION	-7	-8	-7	-8	+7	+8	07	08	+7	+8	07	08	
O	4	WIRE COLOR					RED	RED	BLK	BLK	RED	RED	BLK	BLK	
		PULSE CONFIGURATION POINT					7L	8L	7L	8L	7L	8L	7L	8L	
		ROOM NO. OR LOCATION					Room 0151	Room 0151	Room 0151	Room 0151	Room 0125	Room 0130.1	Room 0125	Room 0130.1	
		SENSOR/SOLENOID NO.					S7A	S8A	S7A	S8A	S15A	S16A	S15A	S16A	
		BLOCK POSITION													
BLOCK DESCRIPTION		Beckhoff KL/KS9187			Beckhoff KL/KS9186			Beckhoff KL/KS2488			Beckhoff KL/KS9186			Beckhoff KL/KS2488	



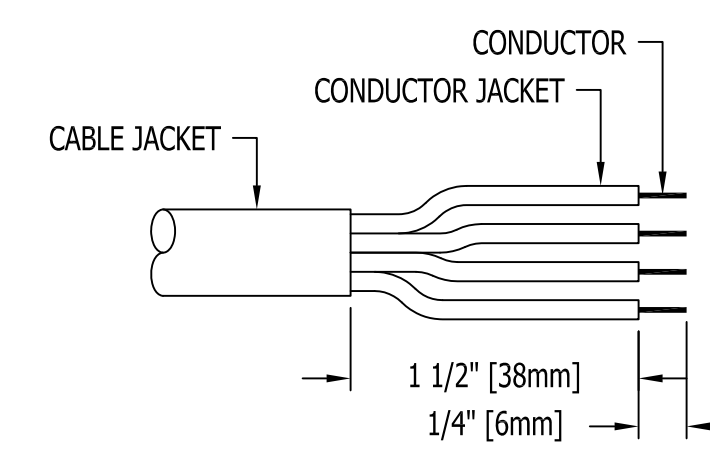
I/O CONNECTION TABLE		BLOCK POSITION 8	BLOCK LABEL 24V 03	BLOCK POSITION 9	BLOCK LABEL DO3	BLOCK POSITION 10	BLOCK LABEL 24V 04	BLOCK POSITION 11	BLOCK LABEL DO4	BLOCK POSITION 12	BLOCK LABEL 24V 05	BLOCK POSITION 13	BLOCK LABEL DO5	
R	1	BLOCK PORT I.D.	+1	+2	01	02	+1	+2	01	02	+1	+2	01	02
		WIRE COLOR	RED	RED	BLK	BLK	RED	RED	BLK	BLK	RED	RED	BLK	BLK
		PULSE CONFIGURATION POINT	1L	2L	1L	2L	1L	2L	1L	2L	1L	2L	1L	2L
		ROOM NO. OR LOCATION	Room 0123	Room 0123	Room 0123	Room 0123	Room 0116.1	Room 0118	Room 0116.1	Room 0118	Room 0122	Room 0122	Room 0122	Room 0122
		BLOCK POSITION	+3	+4	03	04	+3	+4	03	04	+3	+4	03	04
O	2	WIRE COLOR	RED	RED	BLK	BLK	RED	RED	BLK	BLK	RED	RED	BLK	BLK
		PULSE CONFIGURATION POINT	3L	4L	3L	4L	3L	4L	3L	4L	3L	4L	3L	4L
		ROOM NO. OR LOCATION	Room 0121	Room 0121	Room 0121	Room 0121	Room 0118	Room 0118	Room 0118	Room 0118	Room 0122	Room 0122	Room 0122	Room 0122
		SENSOR/SOLENOID NO.	S19A	S20A	S19A	S20A	S27A	S28A	S27A	S28A	S35A	S36A	S35A	S36A
		BLOCK POSITION	+5	+6	05	06	+5	+6	05	06	+5	+6	05	06
W	3	WIRE COLOR	RED	RED	BLK	BLK	RED	RED	BLK	BLK	RED	RED	BLK	BLK
		PULSE CONFIGURATION POINT	5L	6L	5L	6L	5L	6L	5L	6L	5L	6L	5L	6L
		ROOM NO. OR LOCATION	Room 0121	Room 0119	Room 0121	Room 0119	Room 0118	Room 0120	Room 0118	Room 0120	Room 0126	Room 0126	Room 0126	Room 0126
		SENSOR/SOLENOID NO.	S21A	S22A	S21A	S22A	S29A	S30A	S29A	S30A	S37A	S38A	S37A	S38A
		BLOCK POSITION	+7	+8	07	08	+7	+8	07	08	+7	+8	07	08
O	4	WIRE COLOR	RED	RED	BLK	BLK	RED	RED	BLK	BLK	RED	RED	BLK	BLK
		PULSE CONFIGURATION POINT	7L	8L	7L	8L	7L	8L	7L	8L	7L	8L	7L	8L
		ROOM NO. OR LOCATION	Room 0119	Room 0119	Room 0119	Room 0119	Room 0120	Room 0120	Room 0120	Room 0120	Room 0126	Room 0126	Room 0126	Room 0126
		SENSOR/SOLENOID NO.	S23A	S24A	S23A	S24A	S31A	S32A	S31A	S32A	S39A	S40A	S39A	S40A
		BLOCK POSITION												
BLOCK DESCRIPTION		Beckhoff KL/KS9186			Beckhoff KL/KS2488			Beckhoff KL/KS9186			Beckhoff KL/KS2488			

I/O CONNECTION TABLE		BLOCK POSITION 14	BLOCK LABEL 24V 06	BLOCK POSITION 15	BLOCK LABEL DO6	
R	1	BLOCK PORT I.D.	+1	+2	01	02
		WIRE COLOR	RED		BLK	BLK
		PULSE CONFIGURATION POINT	1L			
		ROOM NO. OR LOCATION	Room 0152.2		Room 0152.2	
		BLOCK POSITION	+3	+4	03	04
O	2	WIRE COLOR			BLK	
		PULSE CONFIGURATION POINT				
		ROOM NO. OR LOCATION				
		SENSOR/SOLENOID NO.				
		BLOCK POSITION	+5	+6	05	06
W	3	WIRE COLOR				
		PULSE CONFIGURATION POINT				
		ROOM NO. OR LOCATION				
		SENSOR/SOLENOID NO.				
		BLOCK POSITION	+7	+8	07	08
O	4	WIRE COLOR				
		PULSE CONFIGURATION POINT				
		ROOM NO. OR LOCATION				
		SENSOR/SOLENOID NO.				
		BLOCK POSITION				
BLOCK DESCRIPTION		Beckhoff KL/KS9186			Beckhoff KL/KS2488	

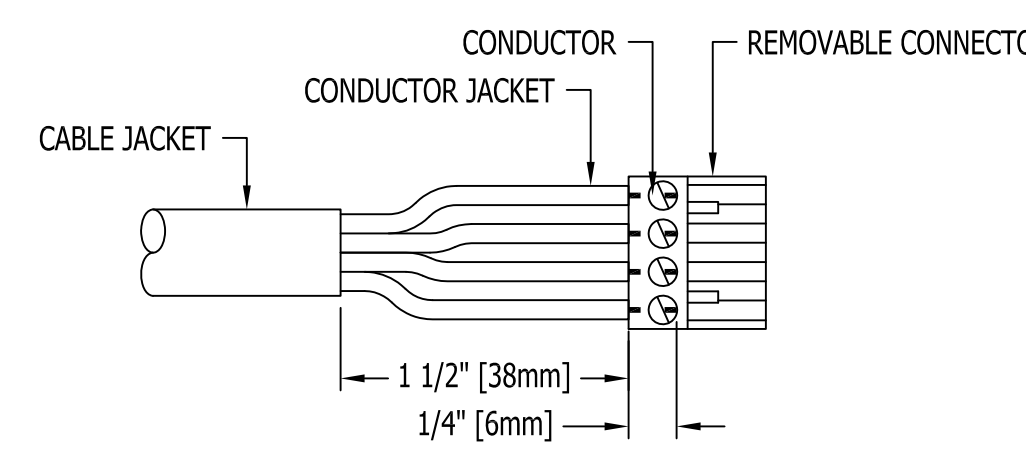


PULSE I/O BLOCK LABEL TABLE

BECKHOFF PART NUMBER	EDSTROM BLOCK PART NUMBER	BLOCK FUNCTION	LABEL DESCRIPTION	EDSTROM LABEL PART NUMBER	BECKHOFF PART NUMBER
KL/KS1408	6320-7940-015	DIGITAL IN	DI1-D19	4230-7940-001	BZ1532
KL/KS2488	6320-7940-016	DIGITAL OUT	DO1-DO9	4230-7940-002	BZ1533
KL/KS3448	6320-7940-017	ANALOG IN	AI1-A19	4230-7940-003	BZ1534
KL/KS6041	6320-7940-019	WIRELESS	RS485	4230-7940-005	BZ1394
KL/KS9186	6320-7940-011	POWER	24V	4230-7940-006	BZ1104
		BLOCK #	00-09	4230-7940-007	BZ1200
KL/KS3202	6320-7940-008	RTD	X1-X9	4230-7940-008	BZ1695
KL/KS9187	6320-7940-013	GROUND	GND	4230-7940-009	BZ1162
KL/KS9010	6320-7940-012	TERMINATION			



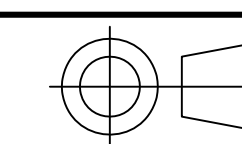
CABLE STRIPPING GUIDE FOR TYPICAL PLAIN WIRE CONNECTIONS NOT USING REMOVABLE CONNECTOR 1/1



CABLE STRIPPING GUIDE FOR TYPICAL PLAIN WIRE CONNECTIONS USING REMOVABLE CONNECTOR 1/1

CONNECTION DETAILS FOR PANEL LABELED PCCX-001

PULSE PCCX I/O BOX CONNECTIONS FOR:
WAYNE STATE UNIVERSITY
MULTI-DISCIPLINARY BIOMEDICAL RESEARCH BUILDING BASEMENT
DETROIT, MI



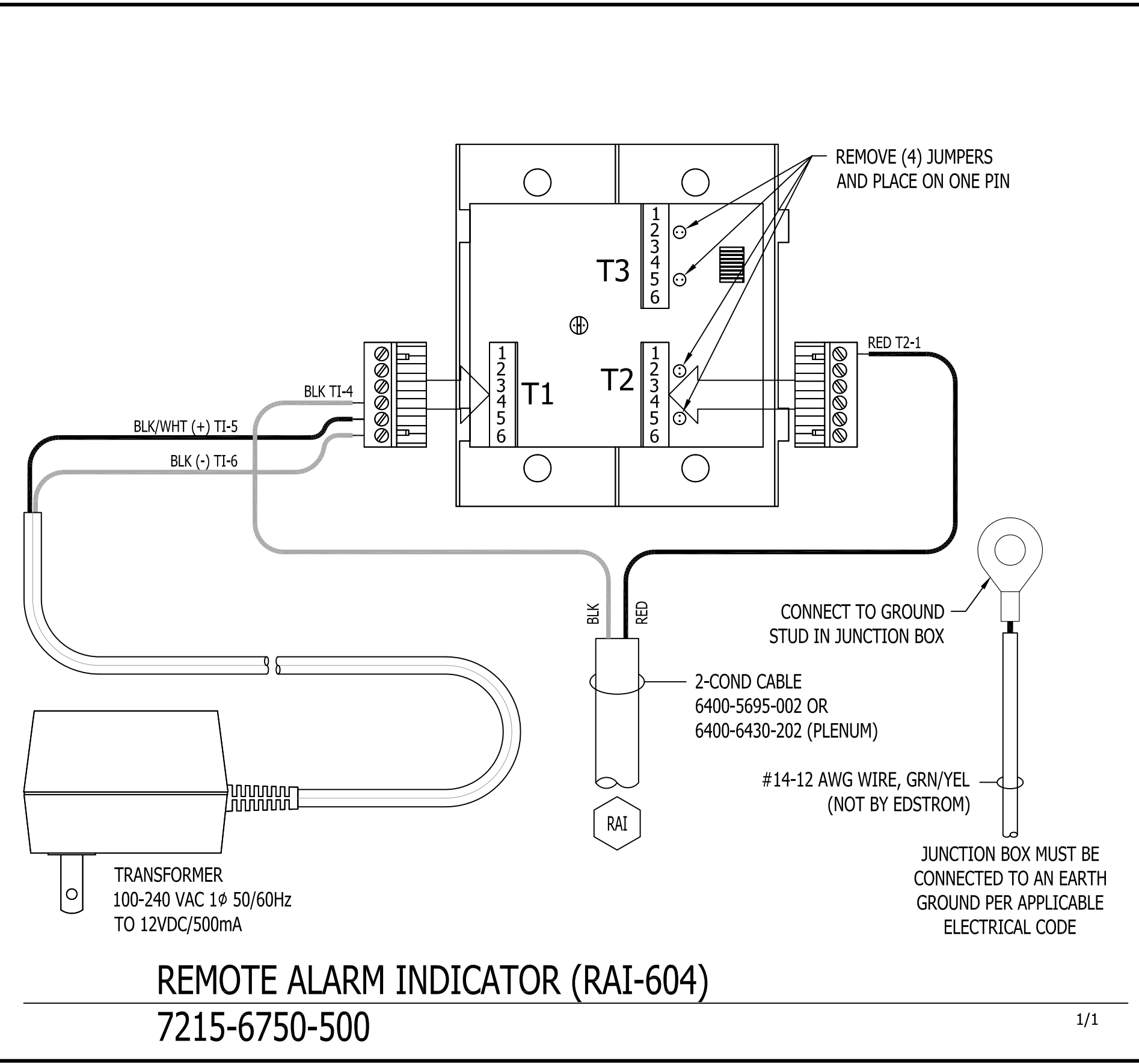
When applicable, the detail views on this drawing incorporate third angle projection.

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Tel: 262.534.5181 Fax: 262.534.5184

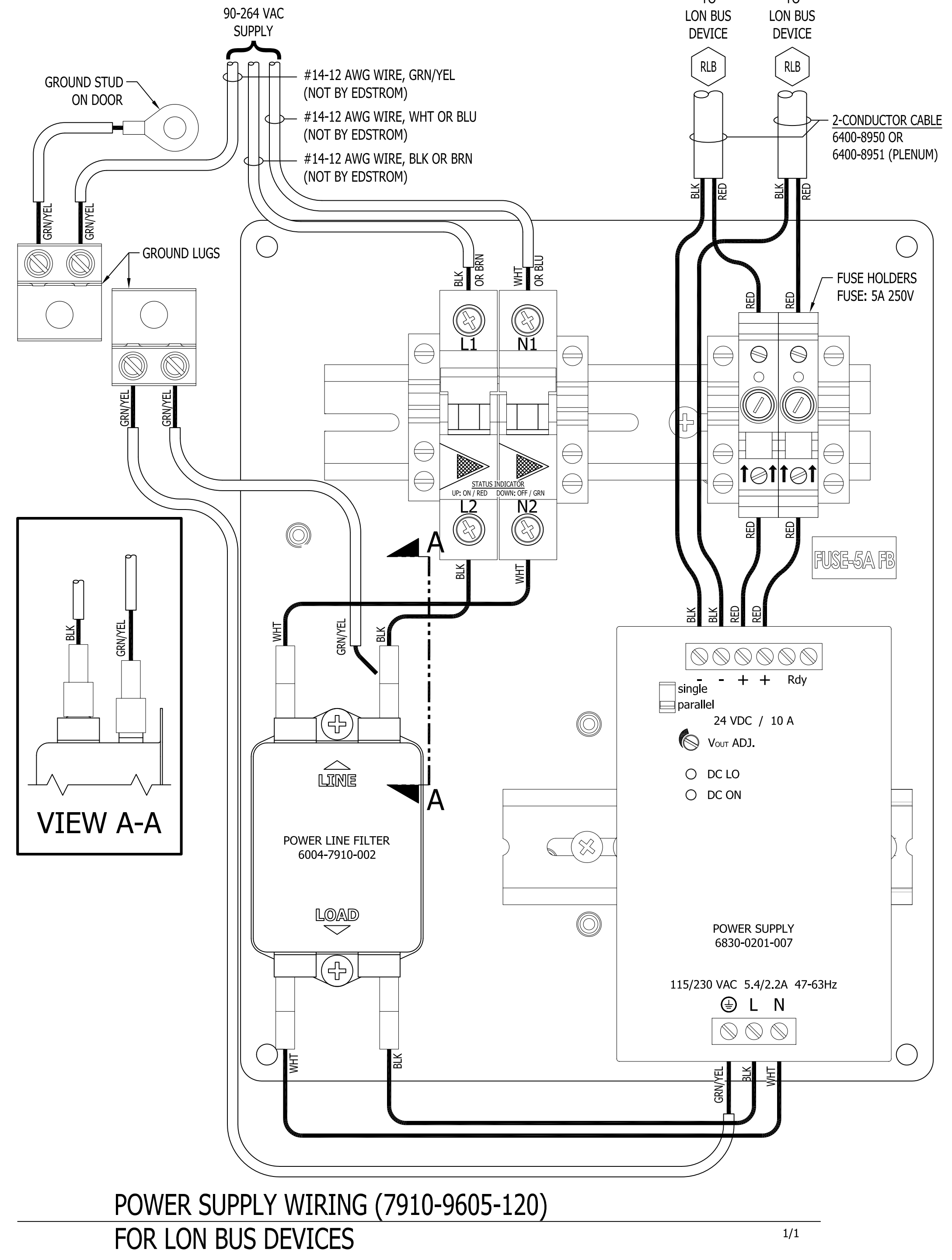
PROJ SCALE 1 = 1 E BORD DRAWING NO. 5820-8579-001.2 REV. A

REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2	REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2	REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2
01	031044	SUBMITTAL: INITIAL DRAWING RELEASE	KCH	JKW	JCS	0	0		BP	JKW	JKW	0	0		BP	JKW	JKW



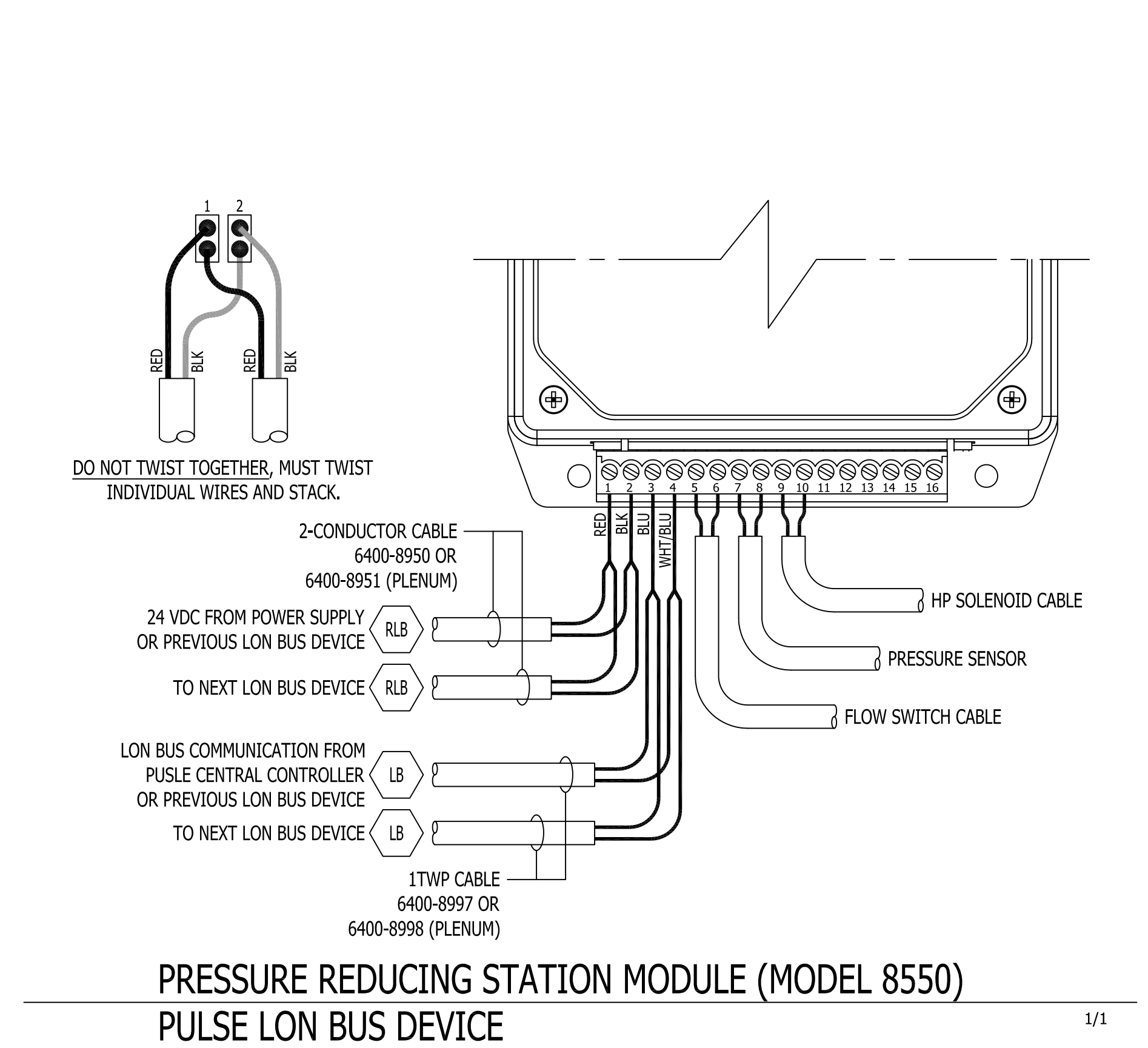
REMOTE ALARM INDICATOR (RAI-604)
7215-6750-500

1/1



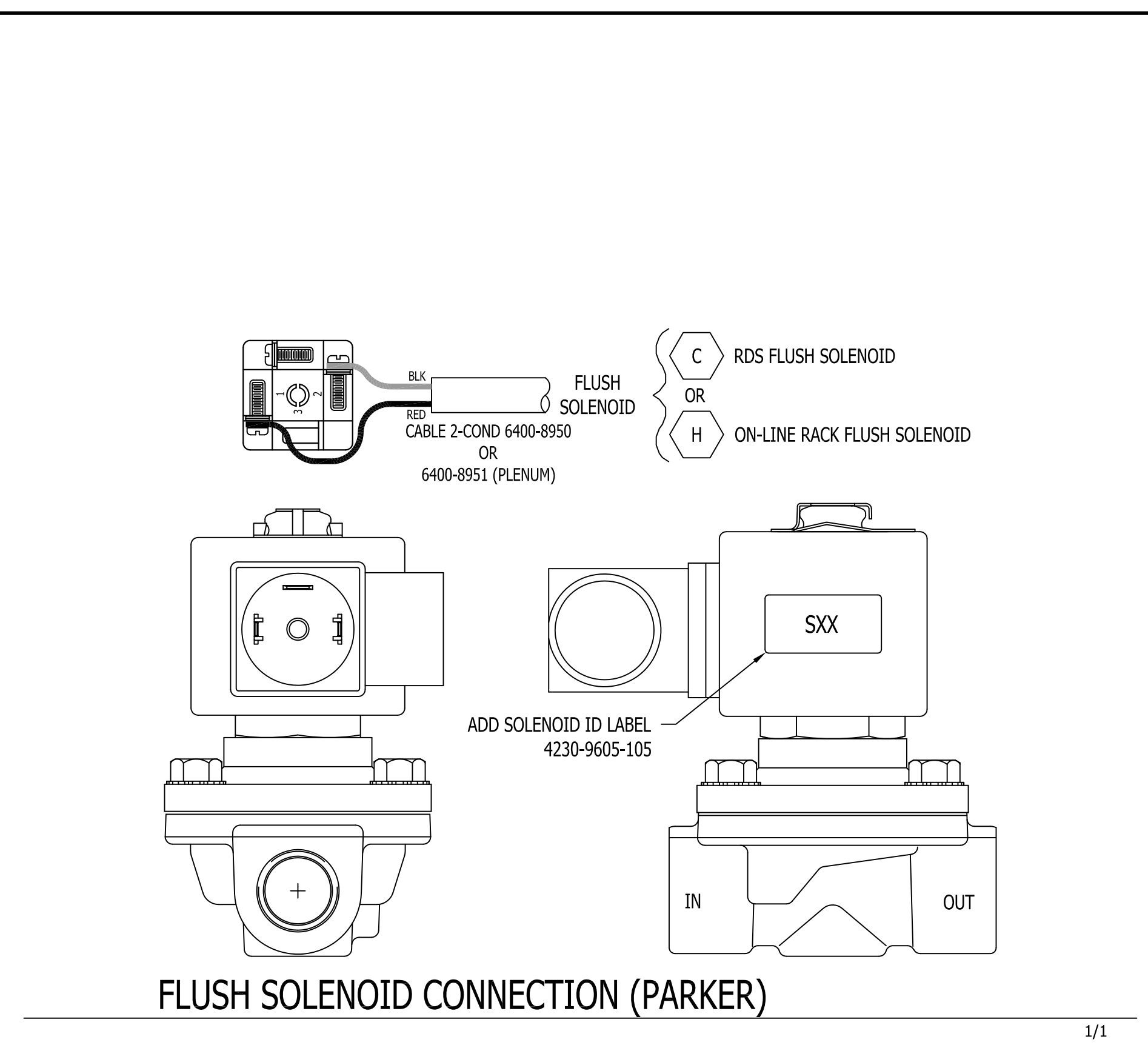
POWER SUPPLY WIRING (7910-9605-120)
FOR LON BUS DEVICES

1/1



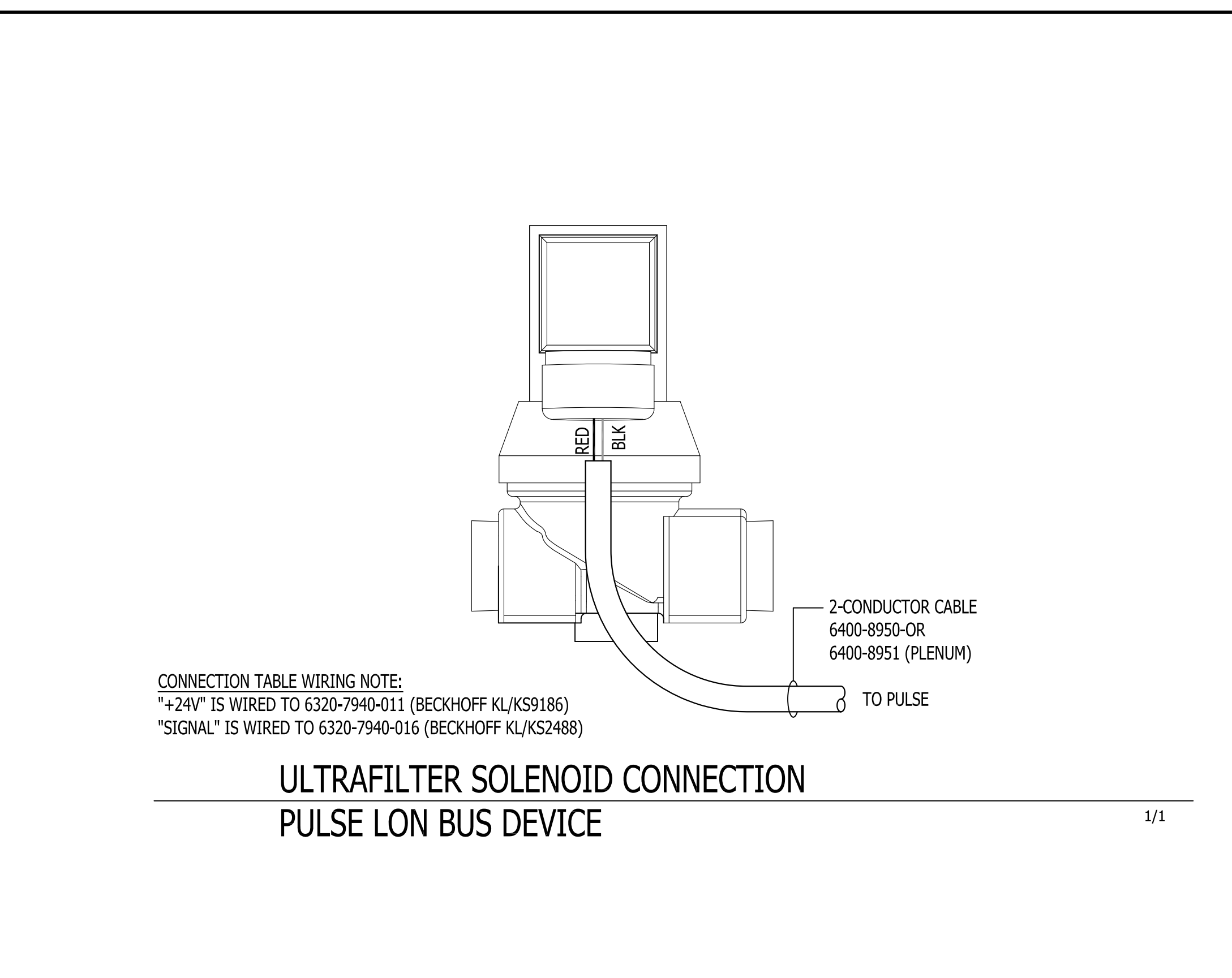
PRESSURE REDUCING STATION MODULE (MODEL 8550)
PULSE LON BUS DEVICE

1/1



FLUSH SOLENOID CONNECTION (PARKER)

1/1



ULTRAFILTER SOLENOID CONNECTION
PULSE LON BUS DEVICE

1/1

CONNECTION DETAILS FOR PANEL LABELED PCCX-001

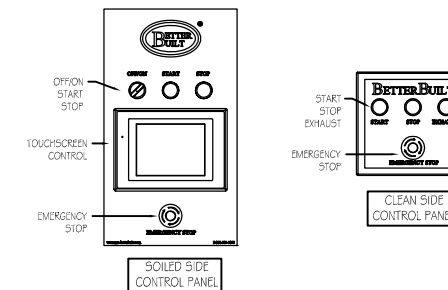
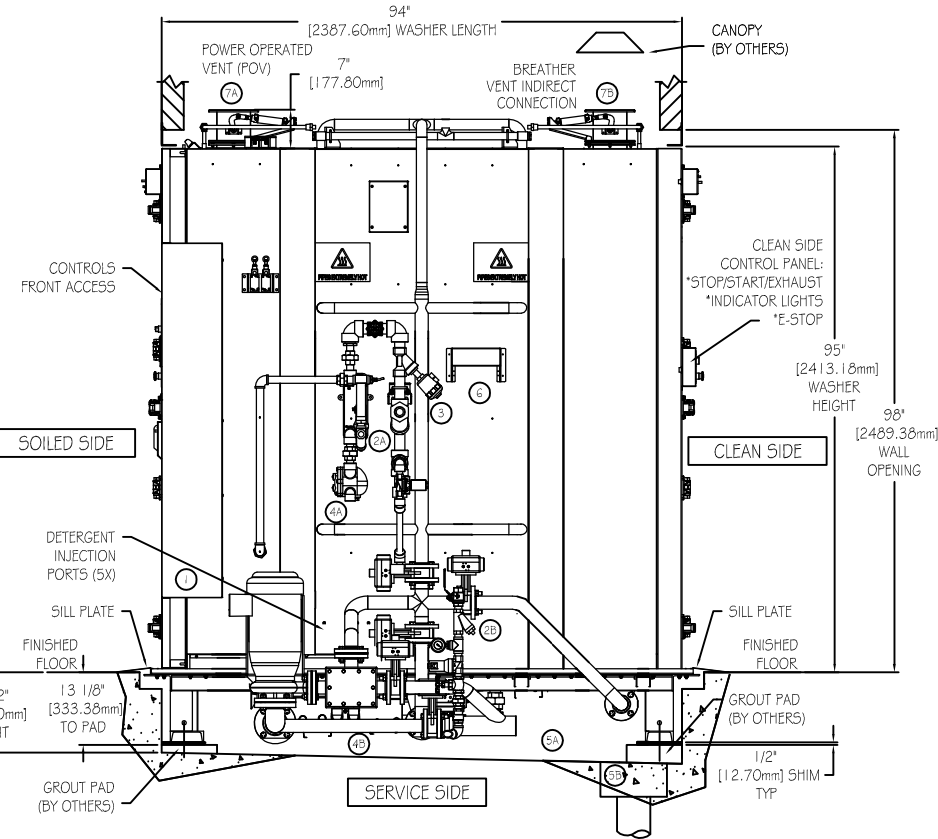
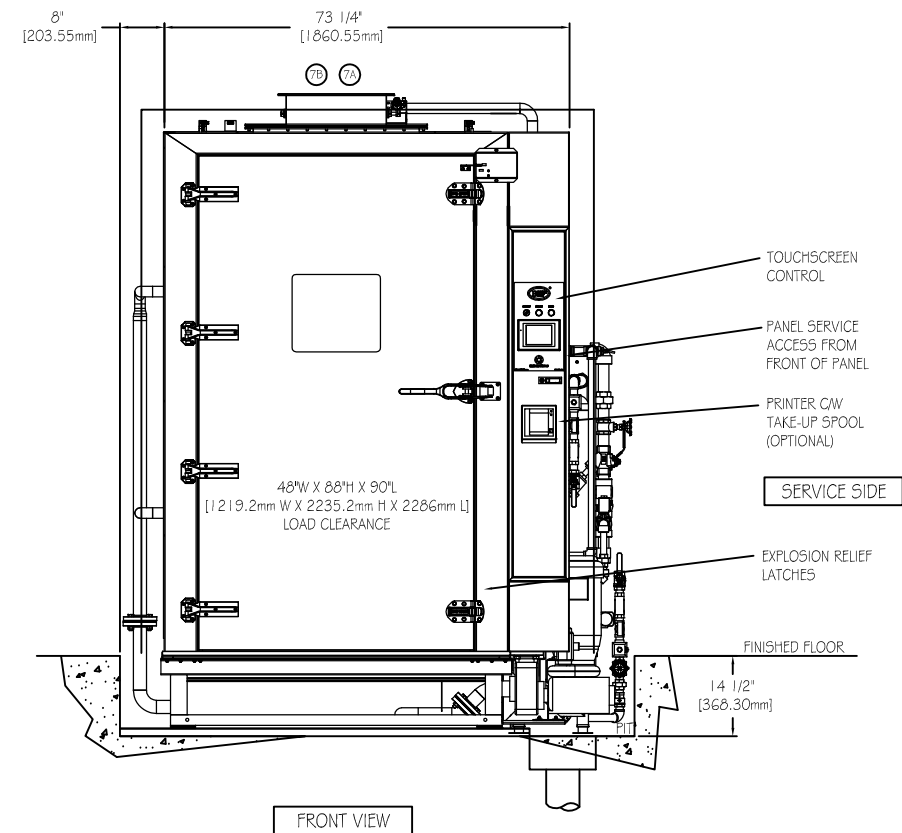
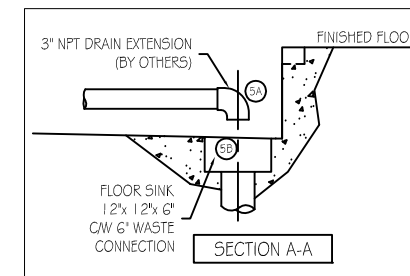
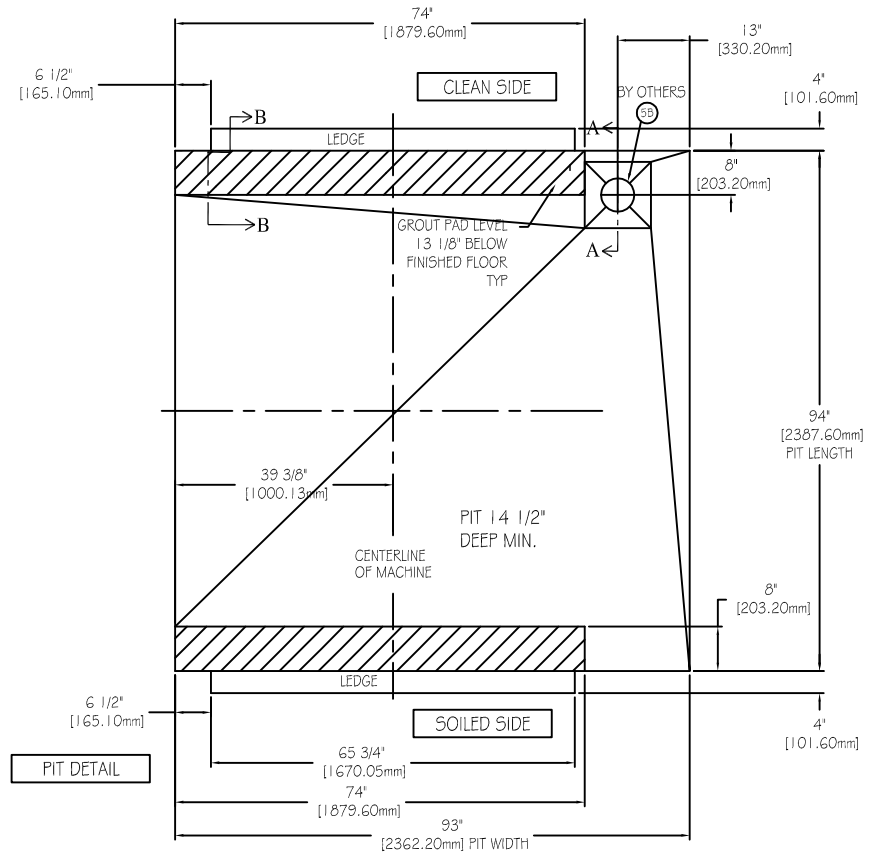
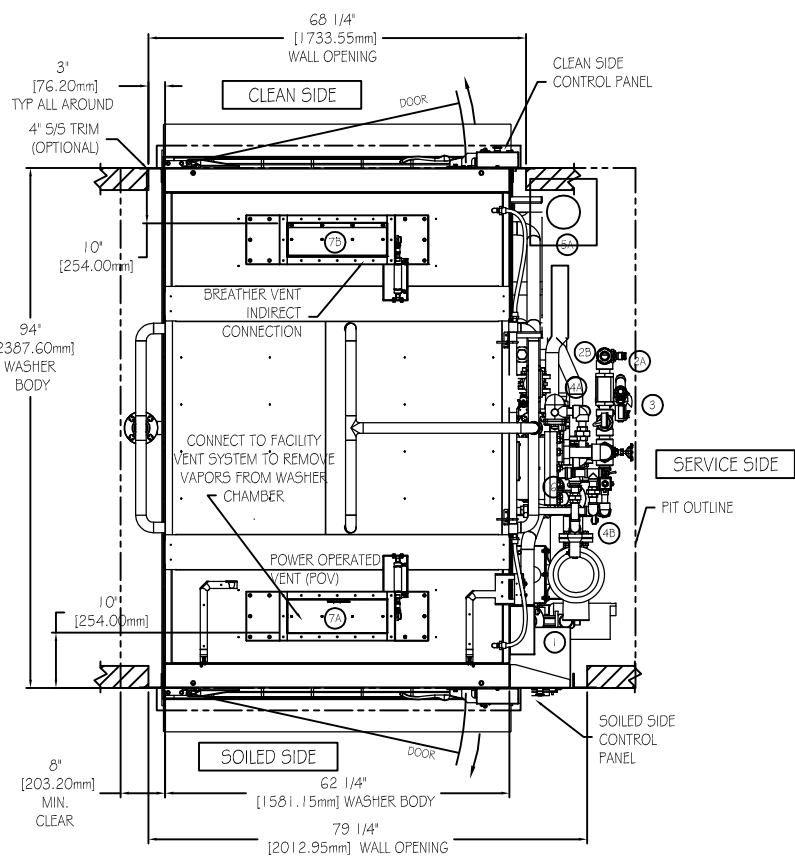
REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2	REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2	REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2
1	P0104H	SUBMITTAL: INITIAL DRAWING RELEASE	KCH/02/14	PK/02/14	JDC/02/14	1			WPT/02/14	- / - / -	- / - / -	1			WPT/02/14	- / - / -	- / - / -

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PULSE PCCX I/O BOX CONNECTIONS FOR:
 WAYNE STATE UNIVERSITY
 MULTI-DISCIPLINARY BIOMEDICAL RESEARCH BUILDING\BASEMENT
 DETROIT, MI

PROJ SCALE	1 = 1	E BORD	DRAWING NO.	REV.
DRN BY	KJ	DATE	04-22-14	5820-8579-001.3
				A



- GENERAL NOTES**
1. DUE TO WET CONDITIONS, ELECTRICAL SUPPLY MUST BE PROVIDED USING SEALTITE FLEX CONDUIT AND BE FED VIA A FUSED DISCONNECT PANEL PRIOR TO CONNECTION AT MACHINE POINTS.
 2. ALL ELECTRICAL DISCONNECTS BY OTHERS.
 3. ALL FINAL CONNECTIONS TO THE MACHINE BY OTHER TRADES MUST COMPLY WITH ALL APPLICABLE LOCAL CODES AND PRACTICES.
 4. ALL INCOMING HOT WATER TO HAVE MAXIMUM WATER HARDNESS OF CaCO₃ 50ppm.
 5. WATER ARRESTORS OR ANTI-HAMMERING EQUIPMENT TO BE INSTALLED PRIOR TO CONNECTION WITH MACHINE. (BY OTHERS).
 6. SHUT OFF VALVES ARE REQUIRED IN THE HOT WATER, STEAM AND AIR LINES PRIOR TO CONNECTION AT MACHINE. (BY OTHERS). RECOMMEND GAUGES ON ALL SERVICE CONNECTIONS. (BY OTHERS).
 7. ALL WATER, AIR, STEAM, AND CONDENSATE LINES TO BE CONNECTED TO MACHINE VIA UNIONS (BY OTHERS).
 8. RANGES ON SERVICE SCHEDULE INDICATE MINIMUM / MAXIMUM DYNAMIC PRESSURES. PROVIDE A REGULATOR IN LINE PRIOR TO CONNECTION WITH MACHINE (BY OTHERS).
 9. EXTERNAL HEAT EXCHANGER CAPABLE OF RISING 25 US GPM (OR 95 L/MIN) OF WATER FROM 120°F TO 180°F (49°C TO 82°C). STEAM PRESSURE NOT TO EXCEED 80 PSIG (5.5 BAR) (STEAM HEATED UNIT ONLY).
 10. 10 PSI MAXIMUM BACK PRESSURE ON CONDENSER LINES.
 11. INSULATION REQUIRED ON MACHINE STEAM / HOT WATER LINES (BY OTHERS).
 12. ALL EXHAUST DUCT MUST BE SEALED AND PITCHED TOWARDS THE MACHINE CHAMBER. ANY LOW POINTS WILL REQUIRE DRAIN LINES. STAINLESS STEEL DUCTING RECOMMENDED. SITE EXHAUST TO THE MACHINE MUST BE 5/8\"/>
 - 13. IF REQUIRED, ALL GAPS BETWEEN WASHER AND WALL OPENING, FINISHED FLOOR, AND/OR PIT TO BE ENCLOSED BY OTHERS. TO CREATE SOILED SIDE - CLEAN SIDE BARRIER.
 - 14. PIT EPOXY COATING IS RECOMMENDED TO HANDLE TEMPERATURE UP TO 212°F/100°C.

STANDARD FEATURES INCLUDED

- PIT MOUNTED
- ALL STAINLESS STEEL CONSTRUCTION
- INSULATED DOUBLE WALL CABINET AND DOOR(S)
- MANUAL SWING-OUT HINGED DOOR(S)
- STAINLESS STEEL THRESHOLD PLATE AT EACH DOOR(S)
- SPRING LOADED SAFETY DOOR LATCH
- STAINLESS STEEL FLOOR GRATING IN LIFT-UP SECTIONS
- STAINLESS STEEL PUMP AND CIRCULATORY PIPING
- OVERLAPPING ROTARY SPRAY SYSTEM
- ADJUSTABLE SPRAY PATTERNS
- TEMPERATURE GUARANTEE DURING ALL CYCLE PHASES
- WATER CONSERVATION SYSTEM
- DRAIN DISCHARGE COOL DOWN
- FULLY DRAINED AND FLUSHED SOLUTION SUMP
- AUTOMATIC SUMP LEVEL CONTROL
- PNEUMATIC OPERATED EXHAUST DAMPER
- DOUBLE LEVEL DEBRIS SCREENS IN WASH CHAMBER
- EXTERNAL SELF CLEANING DEBRIS FILTER
- 5 CHEMICAL INJECTION PORTS, CONTACTS AND FITTINGS
- INTERIOR SIDE BUMPER RAILS
- INTERIOR EMERGENCY STOP CABLE
- ILLUMINATED CHAMBER INTERIOR
- EMERGENCY STOP BUTTON AT DOOR(S)
- AUTOMATIC MULTI-PHASE TREATMENT CYCLES
- 8 FULLY ADJUSTABLE PROGRAMMED CYCLES
- MULTI-CYCLE MICROPROCESSOR CONTROL SYSTEM
- 5\"/>
- PROGRAM SECURITY VIA PIN NUMBER ACCESS
- BUILT-IN ADVANCED DIAGNOSTICS
- NON-PROPRIETARY COMPONENTS

OPTIONAL FEATURES INCLUDED

- TWO DOOR PASS-THRU / TRIM AROUND DOOR FASCIA ON TWO DOORS
- CARTRIDGE MANIFOLD CONNECTION
- EXTERNAL STEAM HX 120F - 180F OR 60F - 180F
- STEAM SUMP HX
- DOUBLE DEBRIS INTERNAL FILTER SCREENS
- EXHAUST: POV COLLAR WITH PNEUMATIC VENT DAMPER FOR DIRECT CONNECTION TO HVAC
- SIGNAL ONLY TO START PUMPS SUPPLIED BY CHEMICAL VENDOR
- ETHERNET CONNECTIVITY; PLC TO PC DIRECT FOR DATA LOGGING / FACTORY CONNECTIVITY
- MODEM FOR COMMUNICATION TO FACTORY
- CYCLE DATA PRINTER, W/ TAKE-UP SPOOL (THERMAL)
- WATERPROOF PLASTIC PROTECTION FOR PRINTER

THIS DRAWING IS THE PROPERTY OF NORTHWESTERN SYSTEMS AND DIVISIONS THEREOF. NO REPRODUCTION OR FACSIMILE SHALL BE MADE WITHOUT WRITTEN CONSENT.

SHIPPING & GENERAL INFORMATION

CANTED SIZE:	108" W x 111" D x 139" H (2730.2mm x 2811.1mm x 3530.2mm)
UNCANTED SIZE:	94" W x 104" D x 124" H (2387.6mm x 2641.6mm x 3152.4mm)
SHIPPING WEIGHT:	6000 LBS (2722KG)
SUMP CAPACITY:	35 GALLONS (133L)
HEAT LOSS: PASS-THRU UNIT - RECESSED WALLS	
CLEAN END: 9,000 Btu/Hr	SOILED END: 9,000 Btu/Hr
SERVICE SIDE: 20,000 Btu/Hr	
AVERAGE FROM CART'S: 5,000 Btu/Hr	

MAIN EXHAUST: 1200 CFM(S) (DIRECT)
 BREATHING VENT: 150 TO 200 CFM MAX. (INDIRECT)
 SUGGESTED HOOD COVERAGE REQUIREMENT:
 SOIL DOOR: 150 TO 200 CFM MAX. (INDIRECT)
 CLEAN DOOR: 150 TO 200 CFM MAX. (INDIRECT)

SELECT	VOLTAGE	PHASE	HZ	AMPERAGE DRAW
	208V	3	60	31.3 A
	240V	3	60	28.8 A
	380V	3	50	18.1 A
	415V	3	50	16.3 A
	480V	3	60	14.4 A
	575V	3	60	11.5 A

Provide unit for 480 V., 3 phase operation.

SERVICE REQUIREMENTS & DATA					
No.	SERVICE	CONNECTION	PRESSURE	FLOW RATE	CONSUMPTION
1	MAIN ELECTRICAL CIRCUIT 10 HP MOTOR	JUNCTION BOX			1.2 KW/CYCLE
2A	HOT WATER (MAX HARDNESS: CaCO ₃ 150 ppm) 120°F / 49°C MIN (140°F / 60°C PREFERRED)	1\"/>			
2B	COLD WATER DRAIN COOL DOWN (60°F / 15°C MAX)	1\"/>			
3	STEAM	1 1/2\"/>			
4A	HEAT EXCHANGER CONDENSATE RETURN TO BOILER VIA FLASH TANK	1\"/>			
4B	SUMP HEAT EXCHANGER CONDENSATE RETURN TO BOILER VIA FLASH TANK	3/4\"/>			

SERVICE REQUIREMENTS & DATA					
No.	SERVICE	CONNECTION	PRESSURE	FLOW RATE	CONSUMPTION
5A	MACHINE DRAIN TEMPERED WASTE LINE	3\"/>			
5B	FACTORY DRAIN WITH BACK WATER VALVE RECOMMENDED	6\"/>			
6	COMPRESSED AIR (DRY & OILLESS)	1/4\"/>			
7A	MAIN EXHAUST VENT	6\"/>			
7B	BREATHING VENT	INDIRECT CONNECTION			200 CFM (340 CMH)

PROJECT:

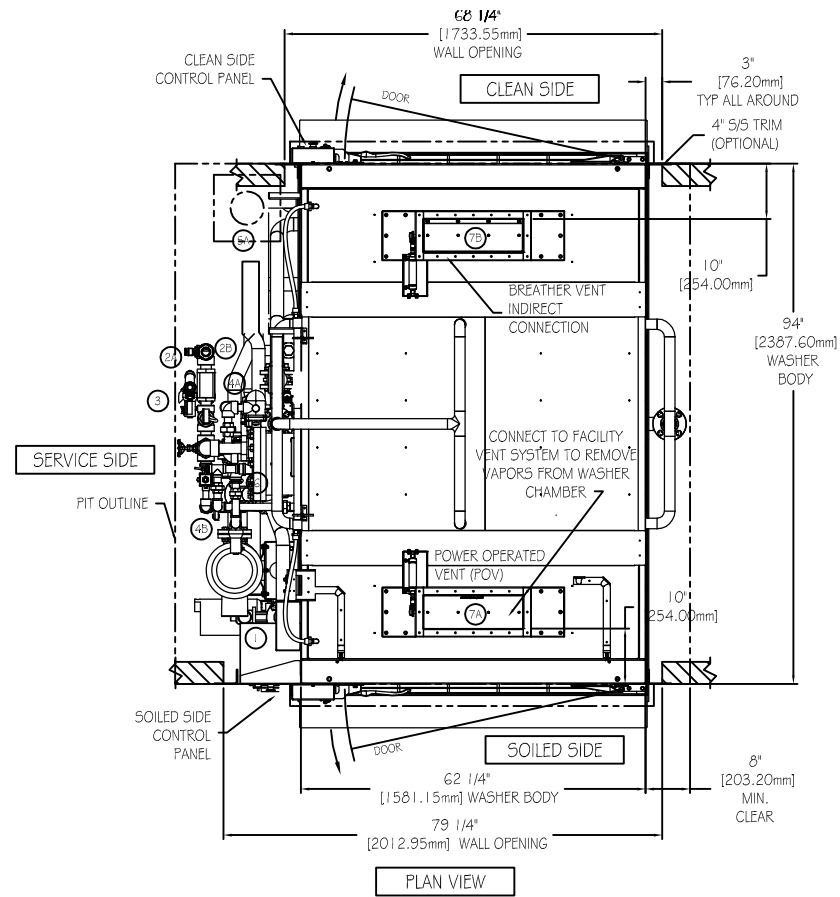
WAYNE STATE

MODEL R630
CAGE AND RACK WASHER

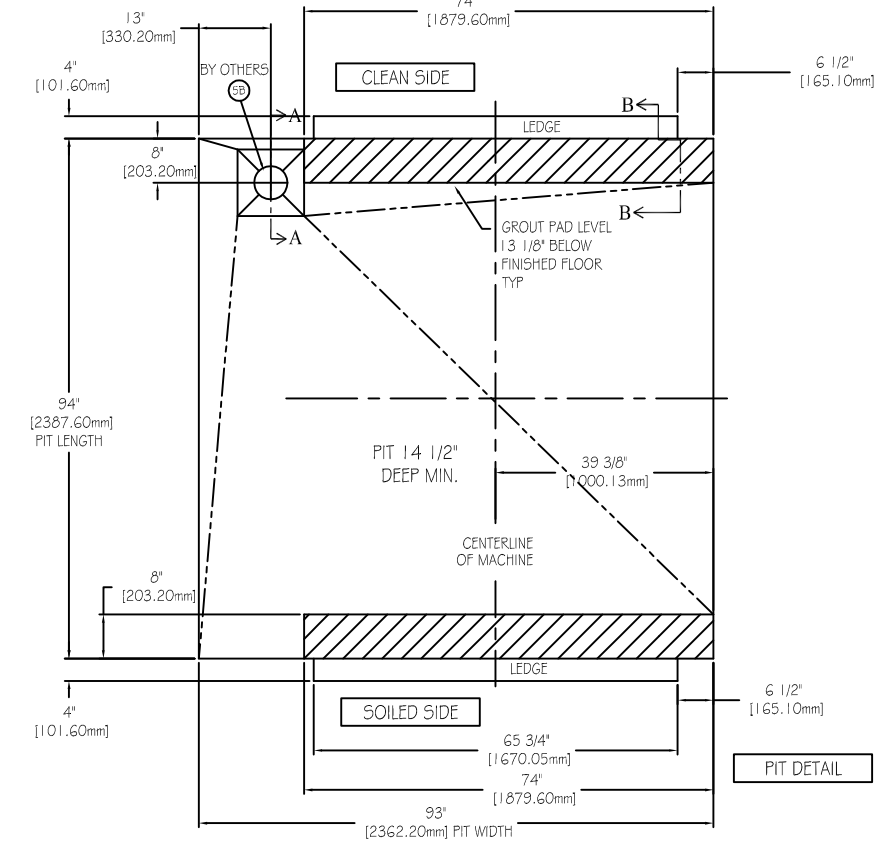
BETTER BUILT NORTHWESTERN SYSTEMS CORP.
 1388 DORWENT WAY, DELTA, B.C. V3M 6C4
 TEL: (604) 777-9988 FAX: (604) 777-9910

DESIGNED: BETTERBUILT
 DRAWN: AM
 DATE: 3-MAR-14
 JOB NO.: N4503
 SCALE: 1:16
 DRAWING NO.: R630-03 14-N4503-1A

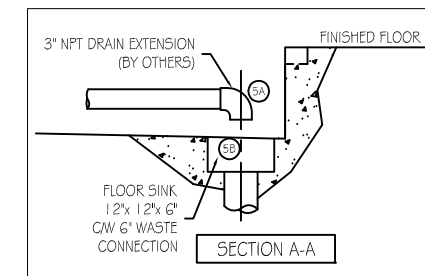
REVISIONS:
 E
 D
 C
 B
 A



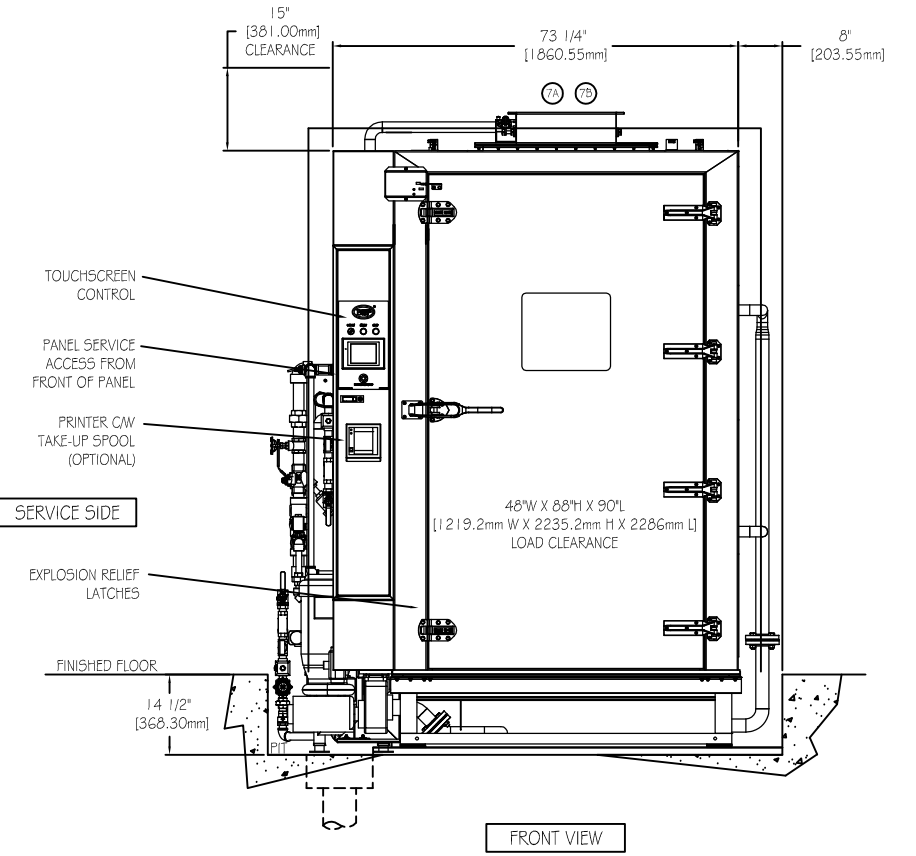
PLAN VIEW



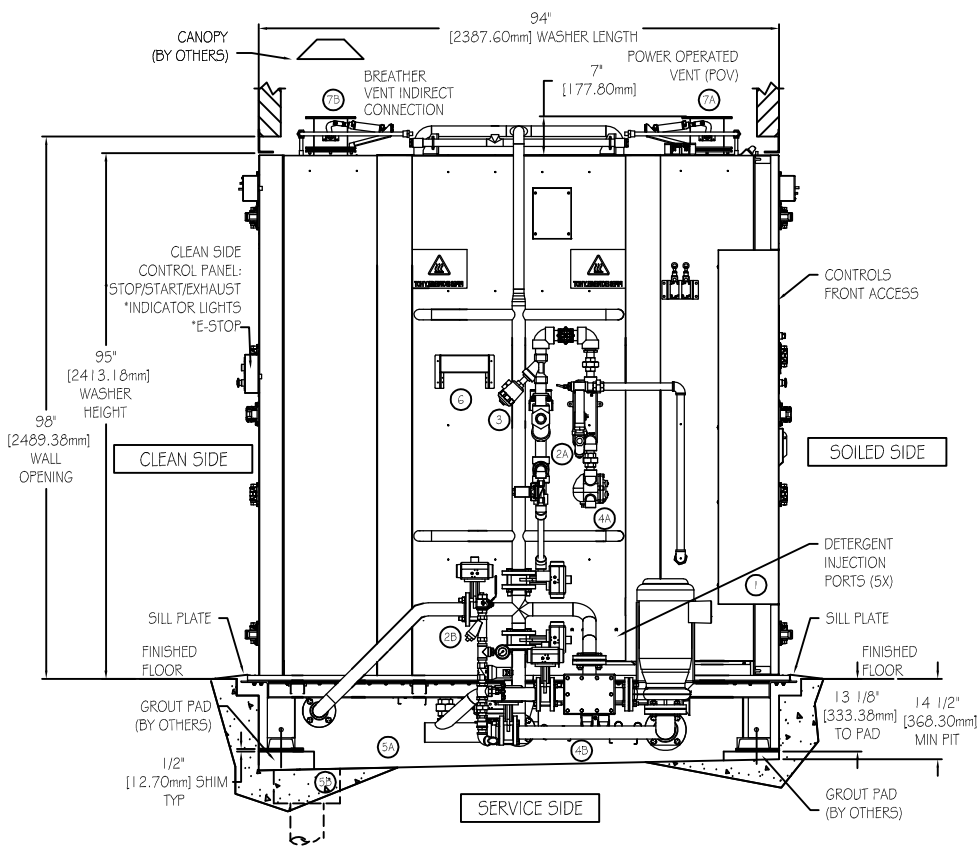
PIT DETAIL



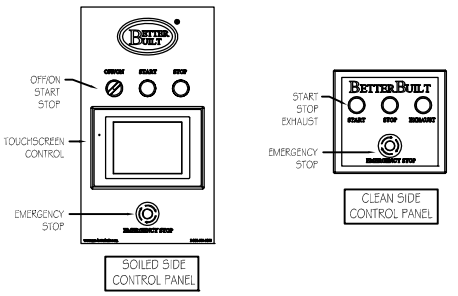
SECTION A-A



FRONT VIEW



SERVICE SIDE



GENERAL NOTES

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8. RANGES ON SERVICE SCHEDULE INDICATE MINIMUM / MAXIMUM DYNAMIC PRESSURES. PROVIDE A REGULATOR IN LINE PRIOR TO CONNECTION WITH MACHINE (BY OTHERS).
9. EXTERNAL HEAT EXCHANGER CAPABLE OF RISING 25 US GPM (OR 95 L/MIN) OF WATER FROM 120°F TO 180°F (49°C TO 82°C). STEAM PRESSURE NOT TO EXCEED 80 PSIG (5.5 BAR) (STEAM HEATED UNIT ONLY).
10. 10 PSI MAXIMUM BACK PRESSURE ON CONDENSER LINES.
11. INSULATION REQUIRED ON MACHINE STEAM / HOT WATER LINES (BY OTHERS).
12. ALL EXHAUST DUCT MUST BE SEALED AND PITCHED TOWARDS THE MACHINE CHAMBER. ANY LOW POINTS WILL REQUIRE DRAIN LINES. STAINLESS STEEL DUCTING RECOMMENDED. SITE EXHAUST TO THE MACHINE MUST BE 5/8" AND WATER-TIGHT.
13. IF REQUIRED, ALL GAPS BETWEEN WASHER AND WALL OPENING, FINISHED FLOOR, AND/OR PIT TO BE ENCLOSED BY OTHERS. TO CREATE SOILED SIDE - CLEAN SIDE BARRIER.
14. PIT EPOXY COATING IS RECOMMENDED TO HANDLE TEMPERATURE UP TO 212°F/100°C.

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SHIPPING & GENERAL INFORMATION

CRAIRED SIZE:	108" W x 111" D x 138" H (2730 mm x 2811 mm x 3503 mm)
UNCRATED SIZE:	94" W x 104" D x 124" H (2387 mm x 2641 mm x 3174 mm)
SHIPPING WEIGHT:	6000 LBS [2722 KG]
SUMP CAPACITY:	35 GALLONS [133 L]
HEAT LOSS- PASS-THRU UNIT- RECESSED WALLS	
CLEAN END: 9,000 Btu/hr	SOILED END: 9,000 Btu/hr
SERVICE SIDE: 20,000 Btu/hr	
AVERAGE FROM CARTS: 5,000 Btu/hr	

MAIN EXHAUST: 1200 CFM5 (DIRECT)
BREATHING VENT: 150 TO 200 CFM MAX. (INDIRECT)
SUGGESTED HOOD COVERAGE REQUIREMENT:
SOIL DOOR: 150 TO 200 CFM MAX. (INDIRECT)
CLEAN DOOR: 150 TO 200 CFM MAX. (INDIRECT)

SELECT	VOLTAGE	PHASE	HZ	AMPERAGE DRAW
	208V	3	60	31.3 A
	240V	3	60	28.8 A
	380V	3	50	18.1 A
	415V	3	50	16.3 A
	480V	3	60	14.4 A
	575V	3	60	11.5 A

Provide unit for 480 V., 3 phase operation.

SERVICE REQUIREMENTS & DATA					
No.	SERVICE	CONNECTION	PRESSURE	FLOW RATE	CONSUMPTION
1	MAIN ELECTRICAL CIRCUIT 10 HP MOTOR	JUNCTION BOX			1.2 KW/CYCLE
2A	HOT WATER (MAX HARDNESS: CaCO ₃ 150 ppm) 120°F / 49°C MIN (140°F / 60°C PREFERRED)	1" NPT	40-60 PSIG (2.75-4 BAR)	25 GPM (94 L/MIN)	105 GAL/CYCLE (398 L/CYCLE)
2B	COLD WATER DRAIN COOL DOWN (60°F / 15°C MAX)	1" NPT	40-60 PSIG (2.75-4 BAR)	25 GPM (94 L/MIN)	40 GAL/CYCLE (152 L/CYCLE)
3	STEAM	1 1/2" NPT	40-80 PSIG (2.75-5.5 BAR)	1/25 - 1/50 LBS/HR (AVG PEAK) (329-476 G/HR)	90 LBS/CYCLE (41 KG/CYCLE)
4A	HEAT EXCHANGER CONDENSATE RETURN TO BOILER VIA FLASH TANK	1" NPT	MAX. 10 PSIG (0.7 BAR) BACK PRESSURE		
4B	SUMP HEAT EXCHANGER CONDENSATE RETURN TO BOILER VIA FLASH TANK	3/4" NPT	MAX. 10 PSIG (0.7 BAR) BACK PRESSURE		

SERVICE REQUIREMENTS & DATA					
No.	SERVICE	CONNECTION	PRESSURE	FLOW RATE	CONSUMPTION
5A	MACHINE DRAIN TEMPERED WASTE LINE	3" NPT			35 GPM [132 L/MIN]
5B	FACTORY DRAIN WITH BACK WATER VALVE RECOMMENDED	6" NPT 12" W x 12" L x 6" D OUTLET REGO			35 GPM [132 L/MIN]
6	COMPRESSED AIR (DRY & OILLESS)	1/4" NPT	40-60 PSIG (2.75-4 BAR)	1 CFM [1.68 CMH]	1 FT ³ /CYCLE (0.28 m ³ /CYCLE)
7A	MAIN EXHAUST VENT	6" x 18" [15.2cm x 45.7cm] FLANGED, DIRECT CONN.	3/4" 5.P. (1.9cm 5.P.)	1200 CFM [2040 CMH]	
7B	BREATHING VENT	INDIRECT CONNECTION		200 CFM [340 CMH]	

PROJECT: WAYNE STATE

MODEL R630 CAGE AND RACK WASHER

BETTER BUILT NORTHWESTERN SYSTEMS CORP.
1388 DORWENT WAY, DELTA, B.C. V3M 6C4
TEL: (604) 777-9988 FAX: (604) 777-9910

DESIGNED: BETTERBUILT
DRAWN: AM
DATE: 3-MAR-14
JOB NO.: N4503
SCALE: 1:16
DRAWING NO.: R630-0314-N4503-1B

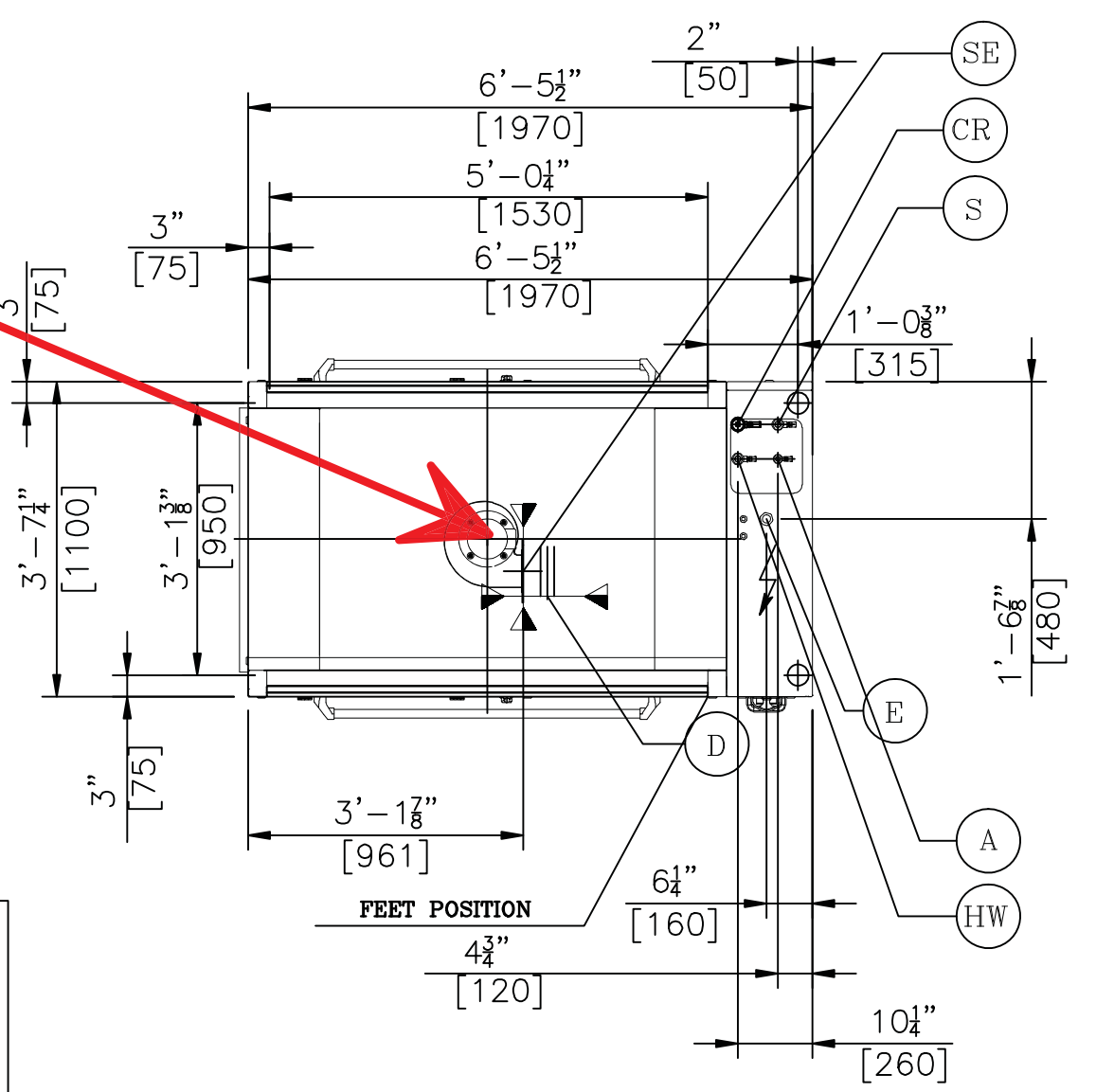
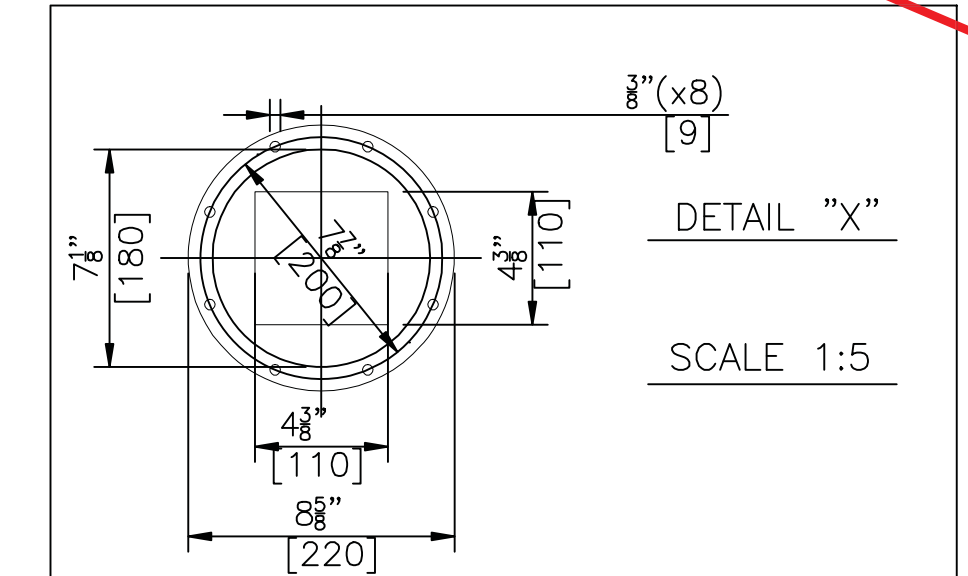
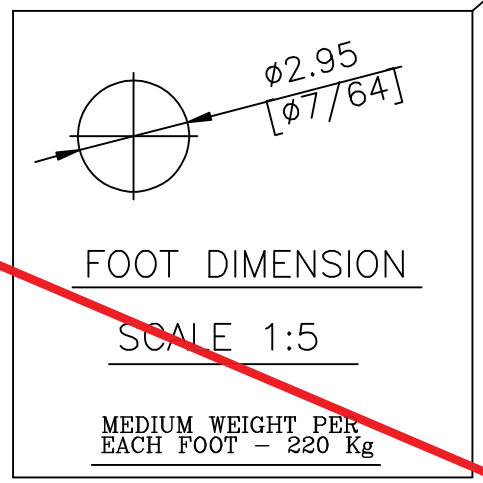
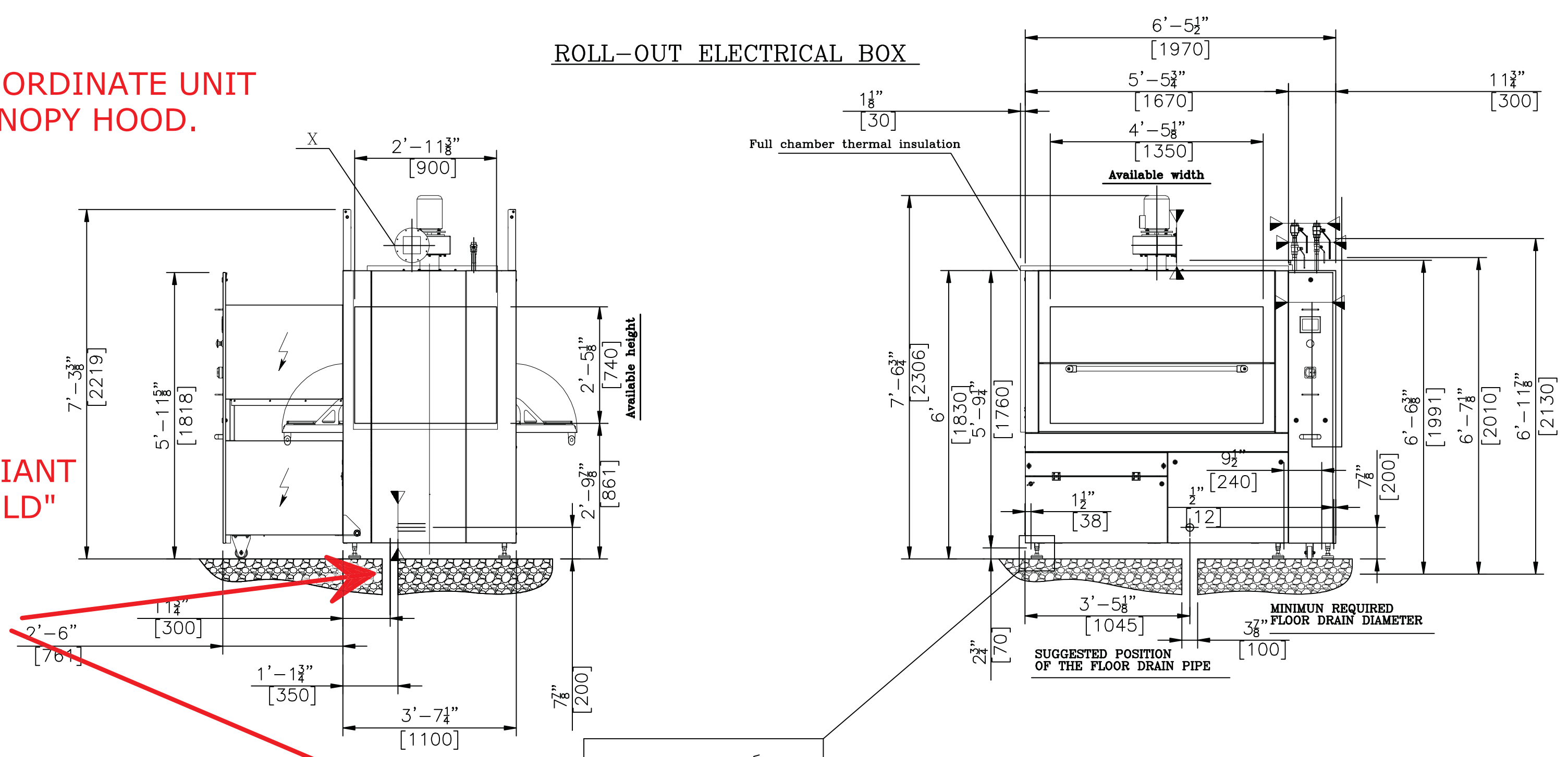
REVISIONS:
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Rel.	Date	Redraft description	Signature
A	6/16/14	ISSUE FOR CUSTOMER REVIEW	AMA

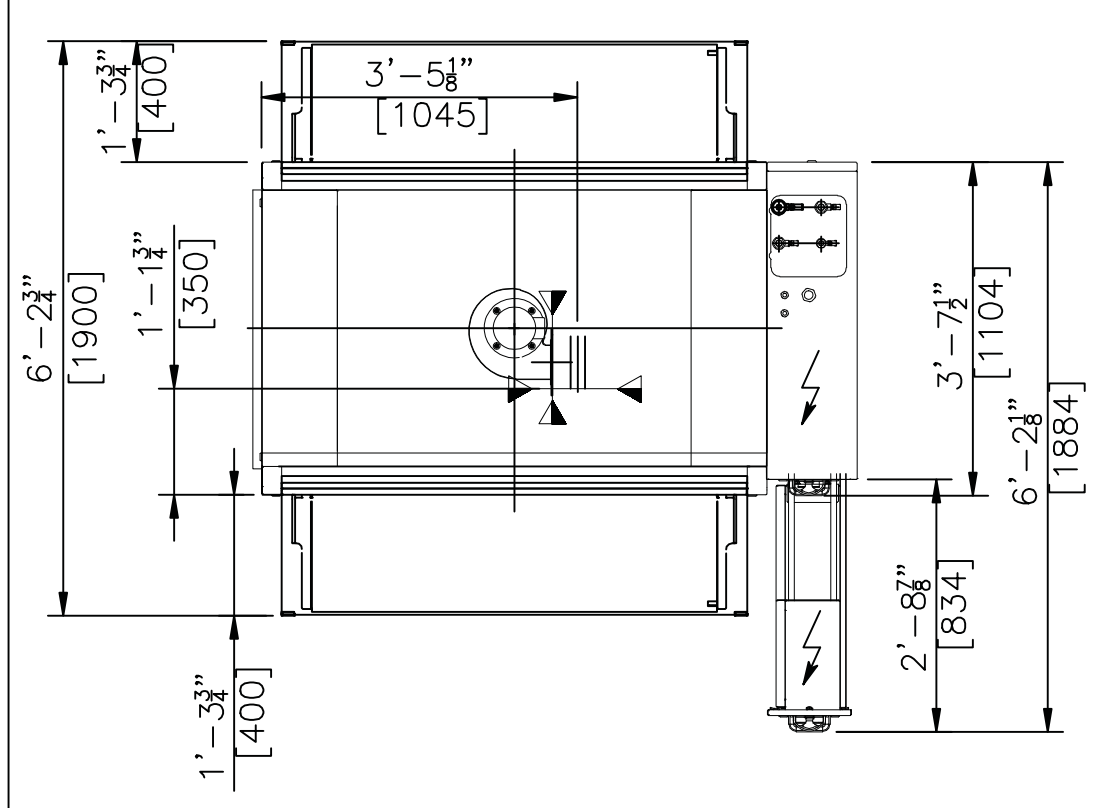
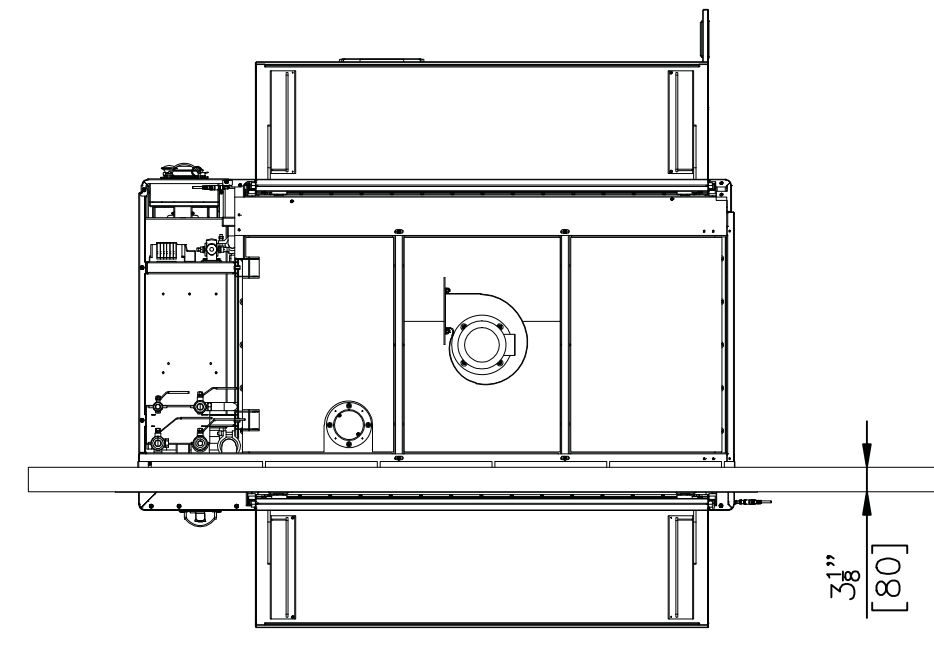
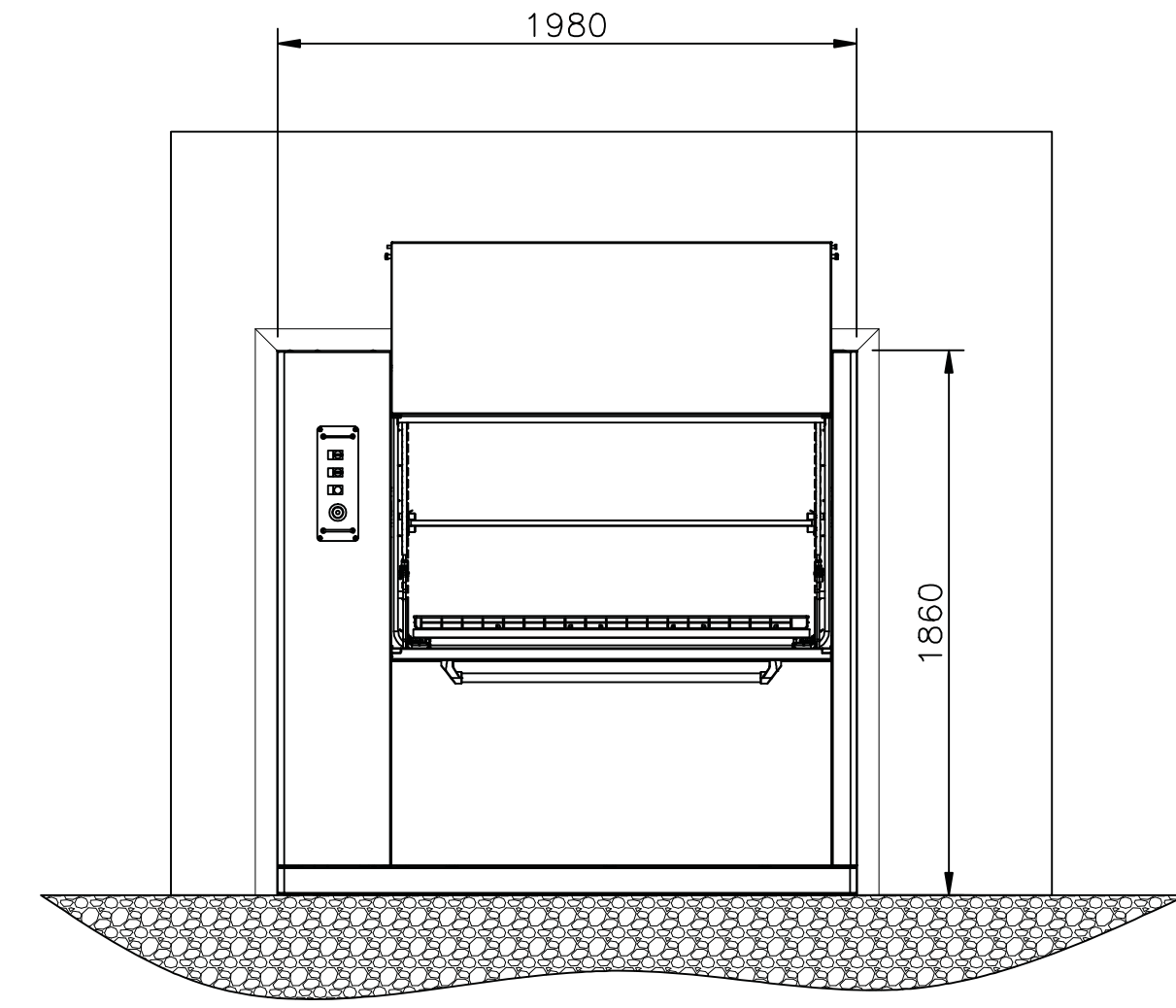
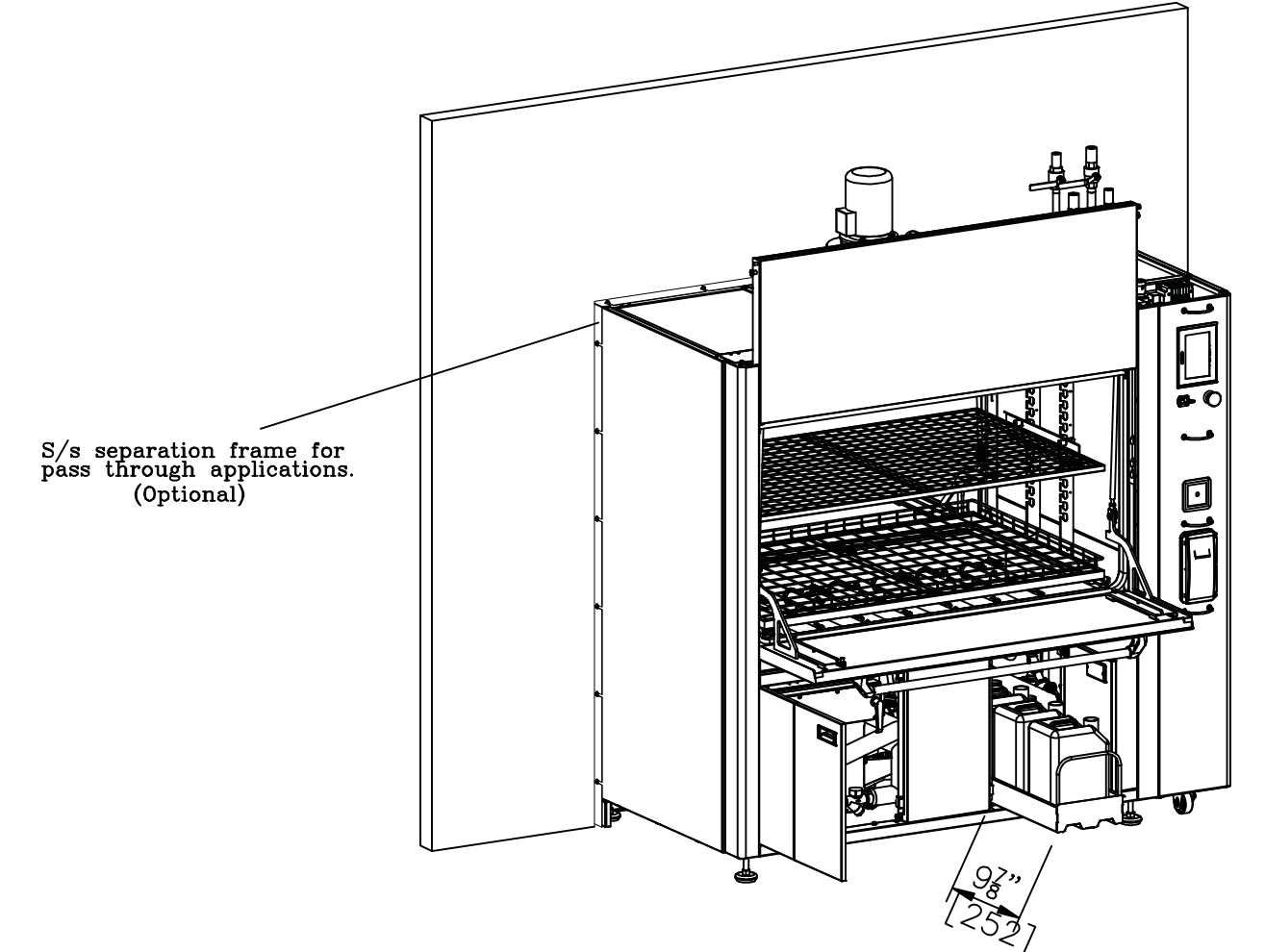
CM COORDINATE UNIT W/ CANOPY HOOD.

CM CONFIRM/COORDINATE E UTILITY "IN-FIELD" PLACEMENT PER MANUF. REQUIREMENTS.

ROLL-OUT ELECTRICAL BOX



OPENING THROUGH THE BARRIER



NOT ACCEPTABLE.

SERVICE TABLE - 650 WASHER			
REF	SERVICE	CONNECTION	SERVICE REQUIREMENTS
EI	Electrical supply	Electrical Box	Voltage and frequency: 480 V 60 Hz Type: 3 phases + ground Power required: 4.87 kW Consumption: 0.13 kWh/cycle Full Load Amps: 11.82 A Fused Disconnect (By Others): 20 A
HW	Hot softened water	3/4" NPT	Dynamic pressure: 29-43 PSI Supply flow rate min: 792 gallons/h Consumption: 8 gallons/cycle Supply temperature: 59-140 °F Max hardness: 150 ppm of CaCO3
D	Drain	Ø=2"	Min Flow rate: 0.4 gallons/s
SE	Exhaust	Round bolted flange Ø=7 1/8"	Max flow rate: 353 CFM Static pressure: 590 Pa Max ductwork resistance: 196 Pa
A	Compressed air	1/2" NPT	Dynamic pressure: 87 PSI Min flow rate: 1.6 gallons/min at 87 PSI Consumption: 0.7 gallons/cycle at 87 PSI
S	Steam	3/4" NPT	Pressure range: 43-72 PSI Min flow rate: 198 lbs/h Consumption: 110 lbs/cycle
CR	Condense return	1/2" NPT	Consumption = STEAM Max ductwork resistance up to 14.5 PSI

(*) The USA Services Connection Kit takes plus 100 mm (4") extra height above the indicated supply limits

GENERAL NOTES:

IWT supply limits are clearly shown on the drawing above floor level. All work required to complete the installation beyond the supply limits is by others. The cable of the main electrical supply must be flexible and guarantee a bending radius of 110mm.

As any cage washer, the air extracted from the machine will be hot, heavily laden with moisture and will possibly contain residues of weak detergent. The ductwork shall be completely waterproof to withstand the high temperature (rinse water temperature is 176°F) and drained at any low point.

The standard IWT steam extract fan will work efficiently up to a maximum ductwork resistance of 100 Pa downstream the fan mouth. A resistance of a greater value will require the installation of a remote fan by others. The exhaust mouth can be oriented with 180° angle around the fan axle.

The manufacturer reserves the right to make product changes that may not be reflected in the drawing.

The machine is designed to work properly in a room temperature range from 64.4 °F to 82.4 °F. If the environment is out of this range, the customer is to provide a proper air conditioning system to respect the recommended threshold.

Noise level is lower than 72 dBA

Full chamber thermal insulation OPTION is needed when temperature tapes turning is required.

Approximate machine heat loss - 2,675 kW

Approximate operating weight - 1974 lbs

Here below size and weight of the packages.

- n°1 crate 2250 (L) x 1280 (W) x 2100 (H) x 1800 (lbs)

** data in the service table refer to the cycle below:

- wash at 131°F (120s)
- dripping (10s)
- rinse at 179°F (20s)
- extraction (60s)

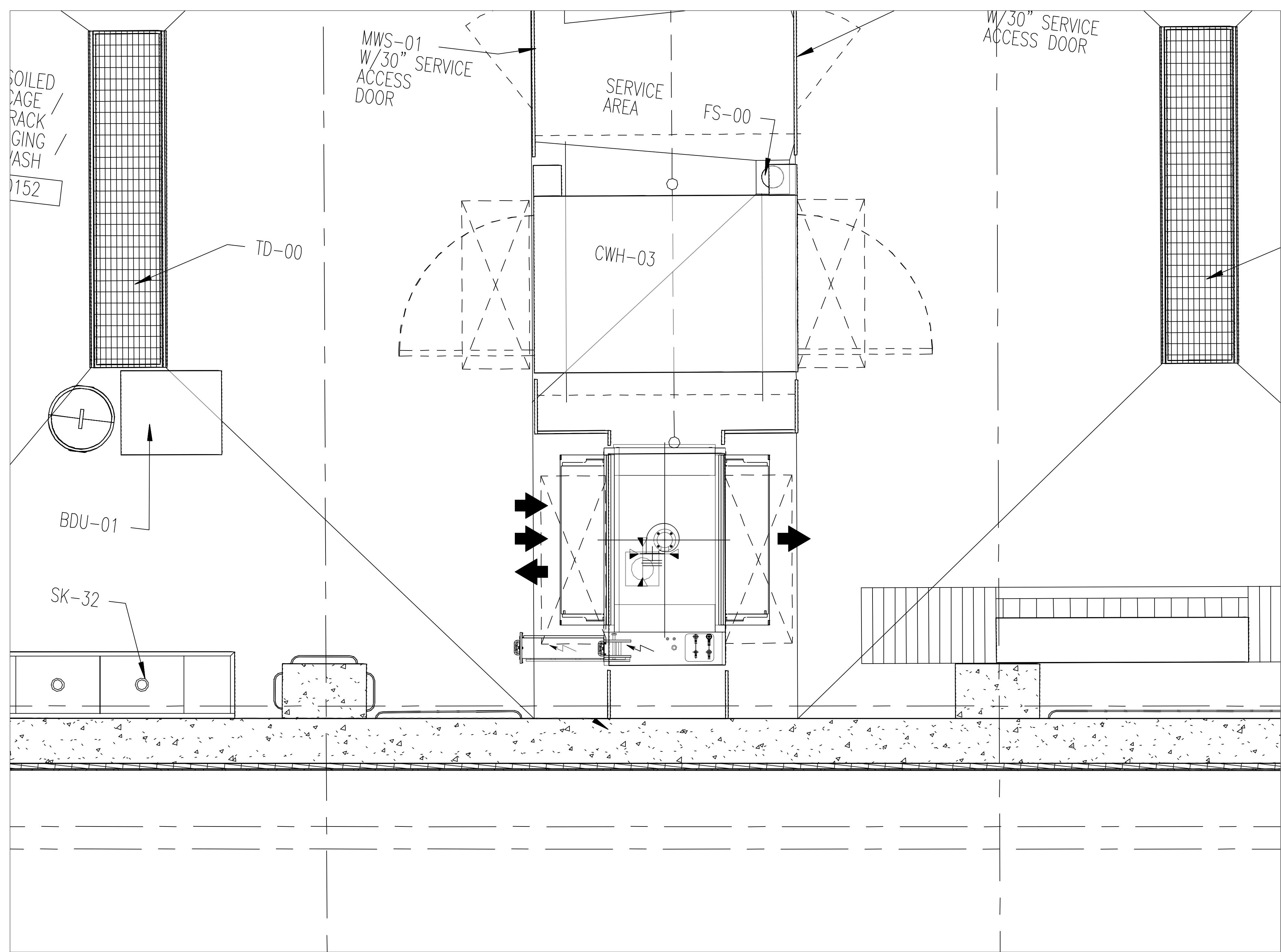
Confirm heat loss is 2,675 kW and not 2675 kW

Supply limit Customer Supplier	Dimensions in mm	DETAIL NO. SHEET NO.
--------------------------------------	------------------------	-------------------------

1 650 CABINET WASHER INSTALLATION DETAILS SCALE: NTS

1	1	650 SERIES CABINET WASHER	9LAVS652
POS.	Q.ty	Description	Code kg
		650 CAGE WASHER INSTALL DETAILS	Design: AMA
PO BOX 1457 EXTON PA 19341		Customer: WAYNE STATE	Date: 6/16/14
This document is the property of the company and is confidential. It may not be reproduced or shown to a third party without prior authorization from the Company. ALL DIMENSIONS ARE GIVEN AS A GUIDE ONLY.		Draw: TUSA14-037-0102	Scale: NTS
Rel. A		Sheet: 1.01	Format: ARCH D

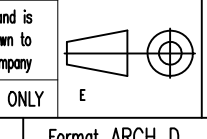
Rel.	Date	Redraft description	Signature
A	6/16/14	ISSUE FOR CUSTOMER REVIEW	AMA



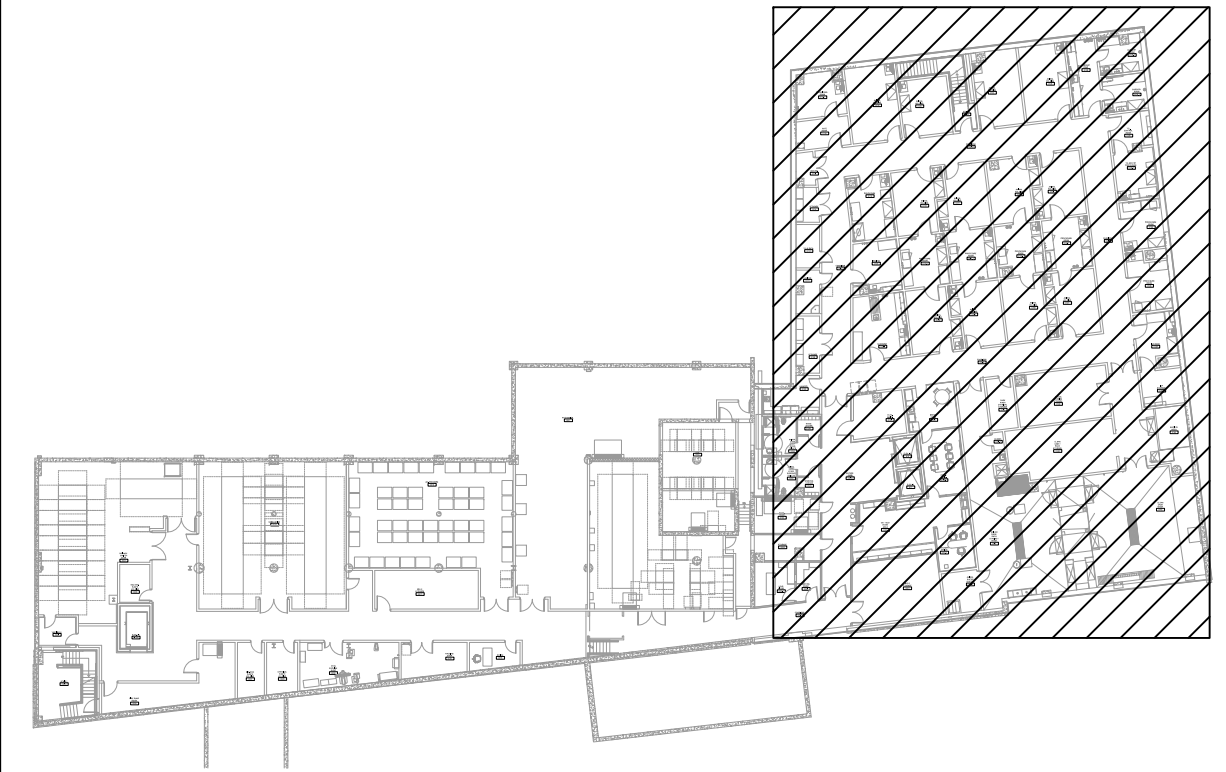
1 DETAIL DESCRIPTION
 1.01 SCALE: X/X"=1'

Supply limit Customer Supplier	Dimensions in [mm]	DETAIL NO. SHEET NO.
--------------------------------------	--------------------------	-------------------------

POS.	Q.ty	Description	Description	Code	kg
1	1	650 SERIES CABINET WASHER	9LAVS652		
		TECNIPLAST <i>Innovation through passion</i> 650 LAYOUT Design: AMA Date: 6/16/14 Customer: WAYNE STATE Via: _____ Date: _____			
PO BOX 1457 EXTON PA 19341 <small>This document is the property of the company and is confidential. It may not be used, reproduced or shown to a third party without prior authorization from the Company. ALL DIMENSIONS ARE GIVEN AS A GUIDE ONLY.</small>		Draw TUSA14-037-0101 Rel. A Scale NTS Sheet 1.01			



Format ARCH D



BUILDING KEY



	ON-LINE RACK FLUSH SOLENOID VALVE
	PRESSURE REDUCING STATION, SURFACE MOUNTED (8550)
	POWER SUPPLY: LON BUS (24 VDC/10 AMP)
	REMOTE ALARM INDICATOR (MODEL RAI-604), SURFACE MOUNTED
	PULSE CENTRAL CONTROLLER WITH I/O BOX, SURFACE MOUNTED

LEGEND

REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2	REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2	REV.	JOB NO.	REVISION	DRAWN	APPROVER 1	APPROVER 2
A	142-4231	SMITH/ITAL: INITIAL DRAWING RELEASE	KJ	TEG	APR	0			PT			0			PT		

When applicable, the detail views on this drawing incorporate third angle projection.

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819 Bakke Avenue, Waterford, WI 53185
 Tel: 262.534.5181 Fax: 262.534.5184

PULSE SYSTEM LAYOUT FOR: WAYNE STATE UNIVERSITY MULTI-DISCIPLINARY BIOMEDICAL RESEARCH BUILDING/BASEMNET DETROIT, MI		PLT SCALE: 1 = 1	E BORD	DRAWING NO.: 5800-8579-300.1	REV. A
DES. BY: KJ	DATE: 01/22/2014				