

CASSELMAN MAIN SPS UPGRADES

16 BRISSON ST, CASSELMAN, ON K0A 1M0

Project No. 16953-134 | ISSUED FOR TENDER | APRIL 23, 2025



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GENERAL NOTES:

- WITH THE EXCEPTION OF THE CITY OF OTTAWA CONSTRUCTION SPECIFICATIONS & STANDARD DETAIL DRAWINGS REFERRED TO IN THIS CONTRACT, ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) & STANDARD SPECIFICATIONS (OPSS) SHALL APPLY TO THIS CONTRACT.
- DRAWINGS TO BE READ IN CONJUNCTION WITH THE GEOTECHNICAL AND HYDROGEOLOGICAL INVESTIGATION REPORT NO. 100117.051 PREPARED BY GEMTEC CONSULTING ENGINEERS AND SCIENTISTS LTD.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATION, BACKFILL, REINSTATEMENT OF ALL AREAS DISTURBED DURING CONSTRUCTION AND ALL ASSOCIATED WORKS TO THE SATISFACTION OF THE ENGINEER AND THE MUNICIPALITY OF CASSELMAN.
- THE LOCATION OF UTILITIES IS APPROXIMATE ONLY. THE EXACT LOCATION SHOULD BE DETERMINED BY CONSULTING THE MUNICIPAL AUTHORITIES AND UTILITY COMPANIES CONCERNED. THE MUNICIPALITY OF CASSELMAN CANNOT ACCEPT RESPONSIBILITY FOR ANY ERRORS OR OMISSIONS ON THE INFORMATION SHOWN HEREIN.
- THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING THE LOCATION OF ALL EXISTING UTILITIES AND EXISTING UTILITY SERVICES, INCLUDING BUT NOT LIMITED TO: WATER, SEWER, GAS, HYDRO, AND TELECOMMUNICATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING PROTECTION AND SUPPORT SYSTEMS FOR ALL EXISTING UNDERGROUND AND ABOVE GROUND UTILITIES DURING CONSTRUCTION.
- EXISTING PUMPING STATION AND FORCEMAIN MUST REMAIN OPERATIONAL UNTIL NEW STATION, EMERGENCY GENERATOR BYPASS, ETC. AND NEW FORCEMAIN HAVE BEEN TESTED AND COMMISSIONED (REFER TO CONSTRAINTS AND SUGGESTED SEQUENCING IN SPECIFICATIONS). PROVIDE SAFE ACCESS TO EXISTING PUMPING STATION AT ALL TIMES DURING CONSTRUCTION.
- ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.

STAGING NOTES:

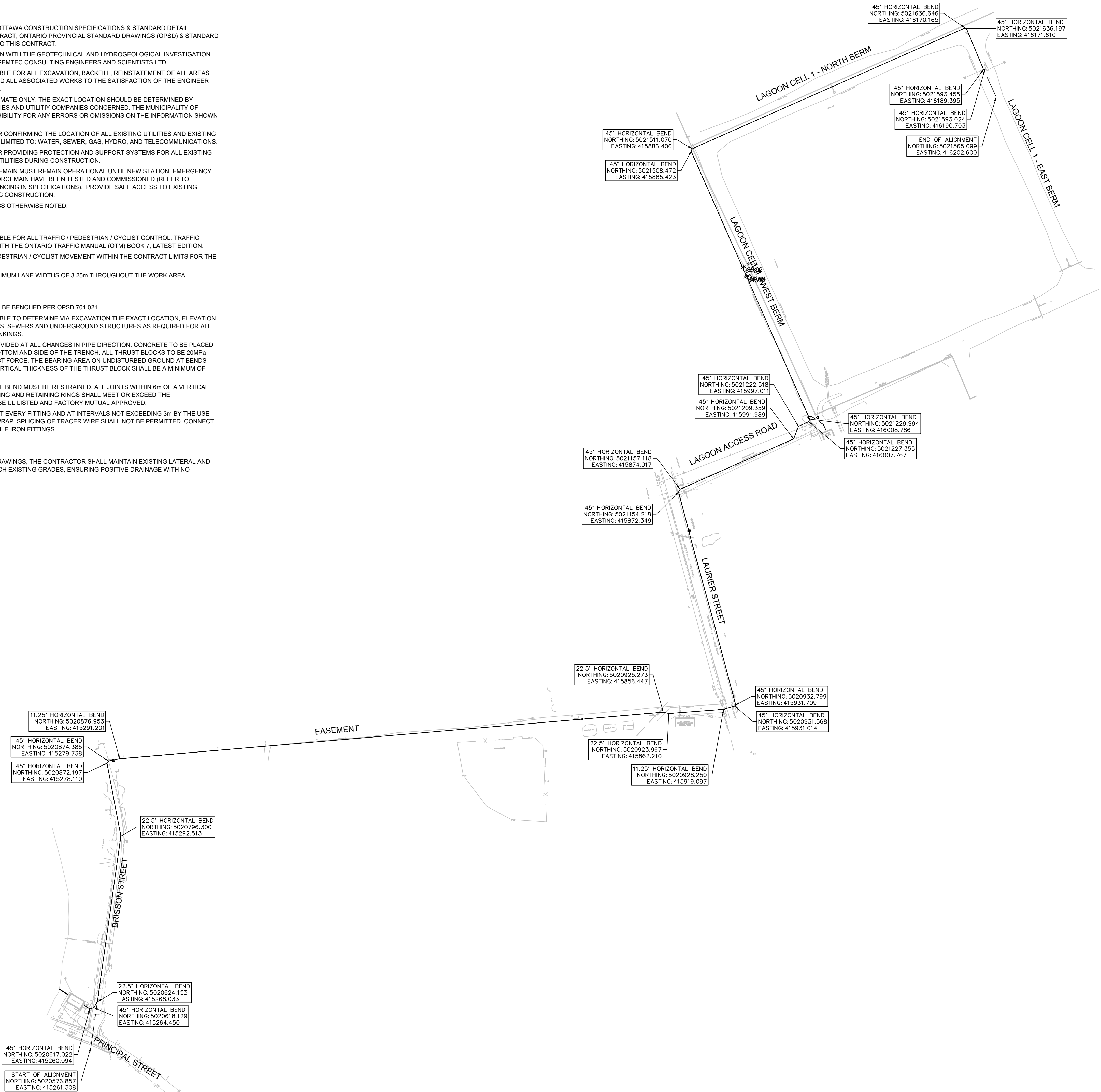
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC / PEDESTRIAN / CYCLIST CONTROL. TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE ONTARIO TRAFFIC MANUAL (OTM) BOOK 7, LATEST EDITION.
- THE CONTRACTOR SHALL MAINTAIN PEDESTRIAN / CYCLIST MOVEMENT WITHIN THE CONTRACT LIMITS FOR THE DURATION OF THE CONSTRUCTION.
- THE CONTRACTOR SHALL MAINTAIN MINIMUM LANE WIDTHS OF 3.25m THROUGHOUT THE WORK AREA.

SEWER NOTES:

- ALL SANITARY MAINTENANCE HOLES TO BE BENCHED PER OPSD 701.021.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO DETERMINE VIA EXCAVATION THE EXACT LOCATION, ELEVATION AND SIZE OF THE EXISTING WATERMAINS, SEWERS AND UNDERGROUND STRUCTURES AS REQUIRED FOR ALL CONNECTIONS, RELOCATIONS AND BLANKINGS.
- CONCRETE THRUST BLOCKS TO BE PROVIDED AT ALL CHANGES IN PIPE DIRECTION. CONCRETE TO BE PLACED AGAINST UNDISTURBED SOIL AT THE BOTTOM AND SIDE OF THE TRENCH. ALL THRUST BLOCKS TO BE 20MPa AND SHALL BE CENTRED ON THE THRUST FORCE. THE BEARING AREA ON UNDISTURBED GROUND AT BENDS SHALL BE A MINIMUM OF 500mm. THE VERTICAL THICKNESS OF THE THRUST BLOCK SHALL BE A MINIMUM OF 300mm.
- ALL JOINTS WITHIN 3m OF A HORIZONTAL BEND MUST BE RESTRAINED. ALL JOINTS WITHIN 6m OF A VERTICAL BEND MUST BE RESTRAINED. RESTRAINING AND RETAINING RINGS SHALL MEET OR EXCEED THE REQUIREMENTS OF UNI-B-13-92, SHALL BE UL LISTED AND FACTORY MUTUAL APPROVED.
- TRACE WIRE TO BE SECURED TO PIPE AT EVERY FITTING AND AT INTERVALS NOT EXCEEDING 3m BY THE USE OF FIBREGLASS TAPE OR PLASTIC TIE WRAP. SPLICING OF TRACER WIRE SHALL NOT BE PERMITTED. CONNECT TRACKER WIRE TO BOLTS AT ANY DUCTILE IRON FITTINGS.

GRADING NOTES:

- UNLESS OTHERWISE SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL MAINTAIN EXISTING LATERAL AND LONGITUDINAL ROAD SLOPES AND MATCH EXISTING GRADES, ENSURING POSITIVE DRAINAGE WITH NO PONDING.



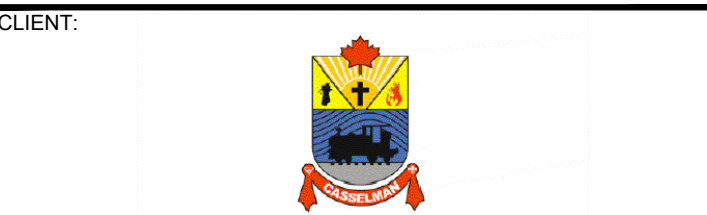
NOTE:
ALL HORIZONTAL COORDINATES GIVEN ARE
GEOREFERENCED.

SITE BENCHMARKS
MNR MONUMENT No. 01019800626
BRASS PLUG, FLUSH WITH GRADE, LOCATED ON SIDEWALK
AT THE NORTHEAST SIDE OF PRINCIPAL STREET AND IS
APPROXIMATELY 85m NORTHWEST OF MONTCALM STREET.
N:5018091.529
E:492911.346
Z:63.437
CP-25
CUTCROSS ON NORTH EDGE OF SIDEWALK, NORTH SIDE OF
RUE PRINCIPAL, APPROXIMATELY 28.3m WEST OF BRISSON
STREET CENTRELINE, ACROSS THE STREET FROM HYDRO
TRANSFORMER.
N:5018134.476
E:492833.738

0	ISSUED FOR TENDER	23/04/25
No.	ISSUE / REVISION	DDMMYY

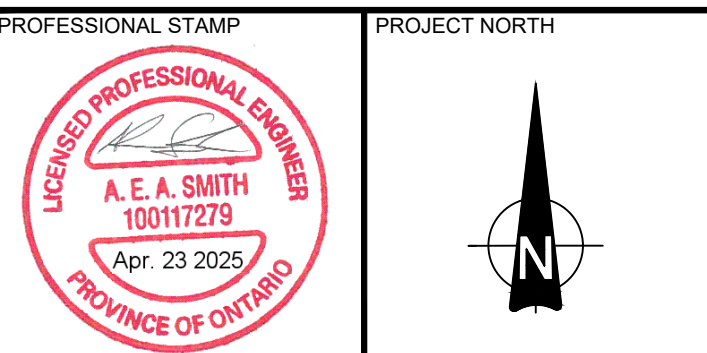
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VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING.



CONSULTANT:
J.L. Richards
ENGINEERS - ARCHITECTS - PLANNERS

CONSULTANT:

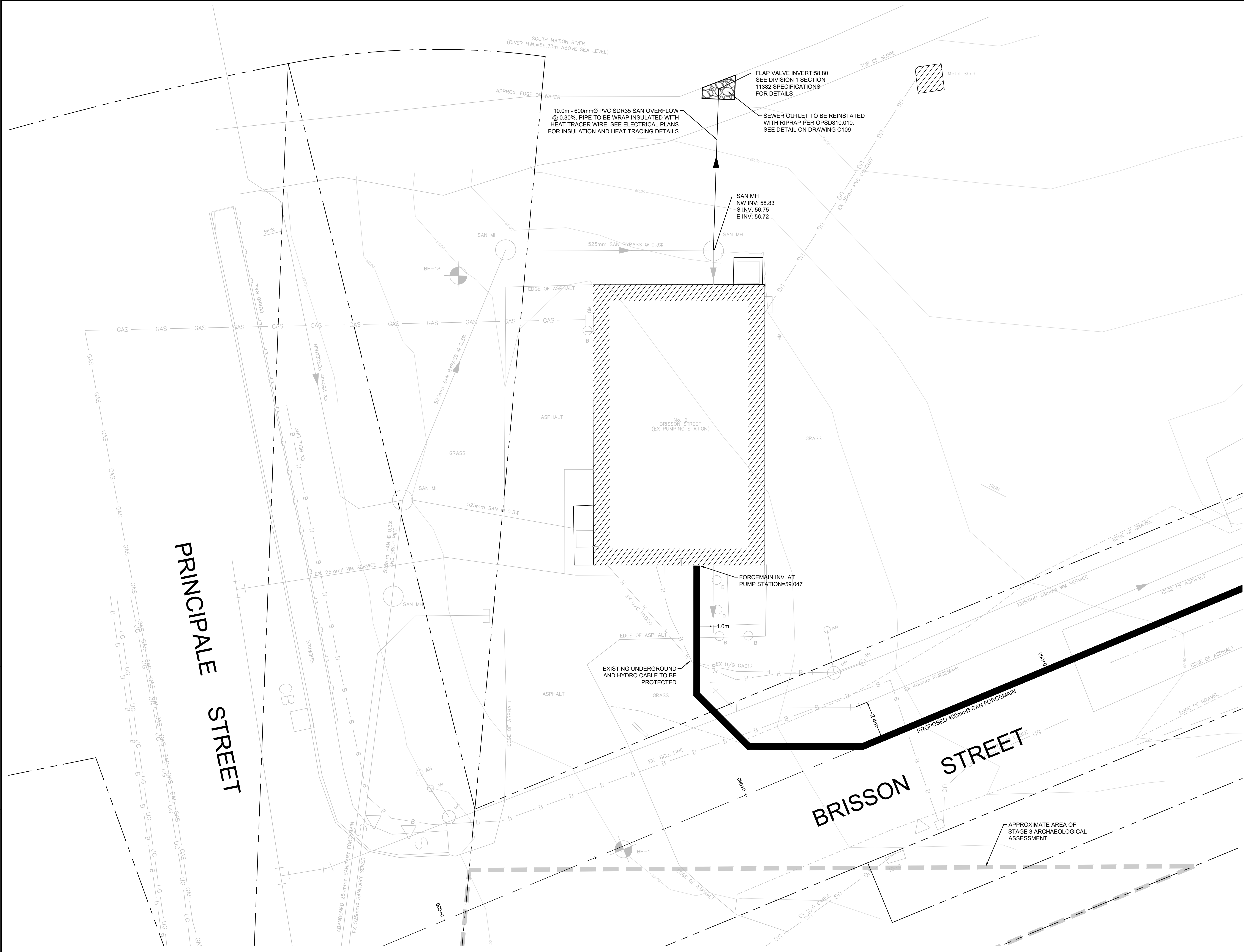


PROJECT:
16953-134 - CASSELMAN MAIN SPS UPGRADE
16 BRISSON ST, CASSELMAN, ON K0A 1M0

DRAWING:
ALIGNMENT PLAN

DESIGN:	AP	DRAWING #:	C100
DRAWN:	PC		
CHECKED:	AS		
JLR #:	16953-134		

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LEGEND

—	PROPERTY LINE
— WM —	WATERMAIN
— SAN —	SANITARY SEWER
— FORCEMAIN —	SANITARY FORCEMAIN
— STM —	STORM SEWER
— GAS —	GAS LINE
— B —	UNDERGROUND BELL
— H —	UNDERGROUND HYDRO
— UG —	UNDERGROUND CABLE
— OH —	OVERHEAD HYDRO
— X —	CHAIN LINK FENCE
— □ —	GUARD RAIL
—	DRIP LINE/VEGETATION
—	BUILDING
○	MANHOLE
□ CB	CATCH BASIN
⋄ FH	FIRE HYDRANT
⋄ BH-3	BOREHOLE
○ U/P	UTILITY POLE
⋄ AN	GUY WIRE
□ TB	CABLE BOX
△ S	SIGN
□ B	BOLLARD
□ GM	GAS METER

TOPOGRAPHIC SURVEY
PREPARED BY:
AOV
DATED: 2024-08-01
HORIZONTAL DATUM: MTM ZONE 9, NAD 83 (CSRS)
VERTICAL DATUM: CGVD28

0	ISSUED FOR TENDER	23/04/25
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SCALE: 1:100

CLIENT:

CONSULTANT:

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 BRISSON ST, CASSELMAN, ON K0A 1M0

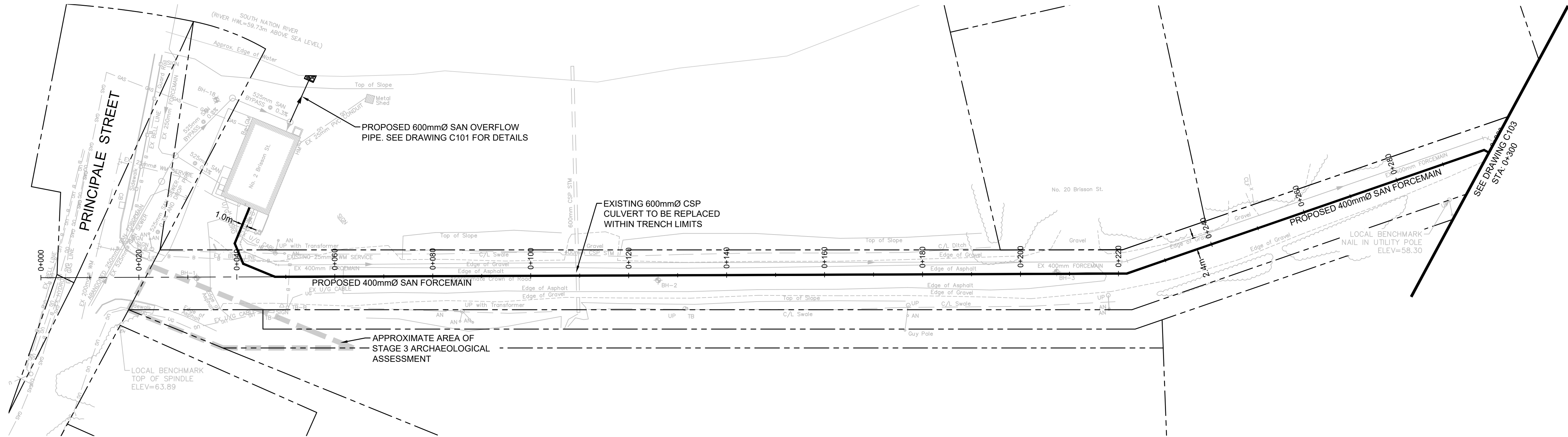
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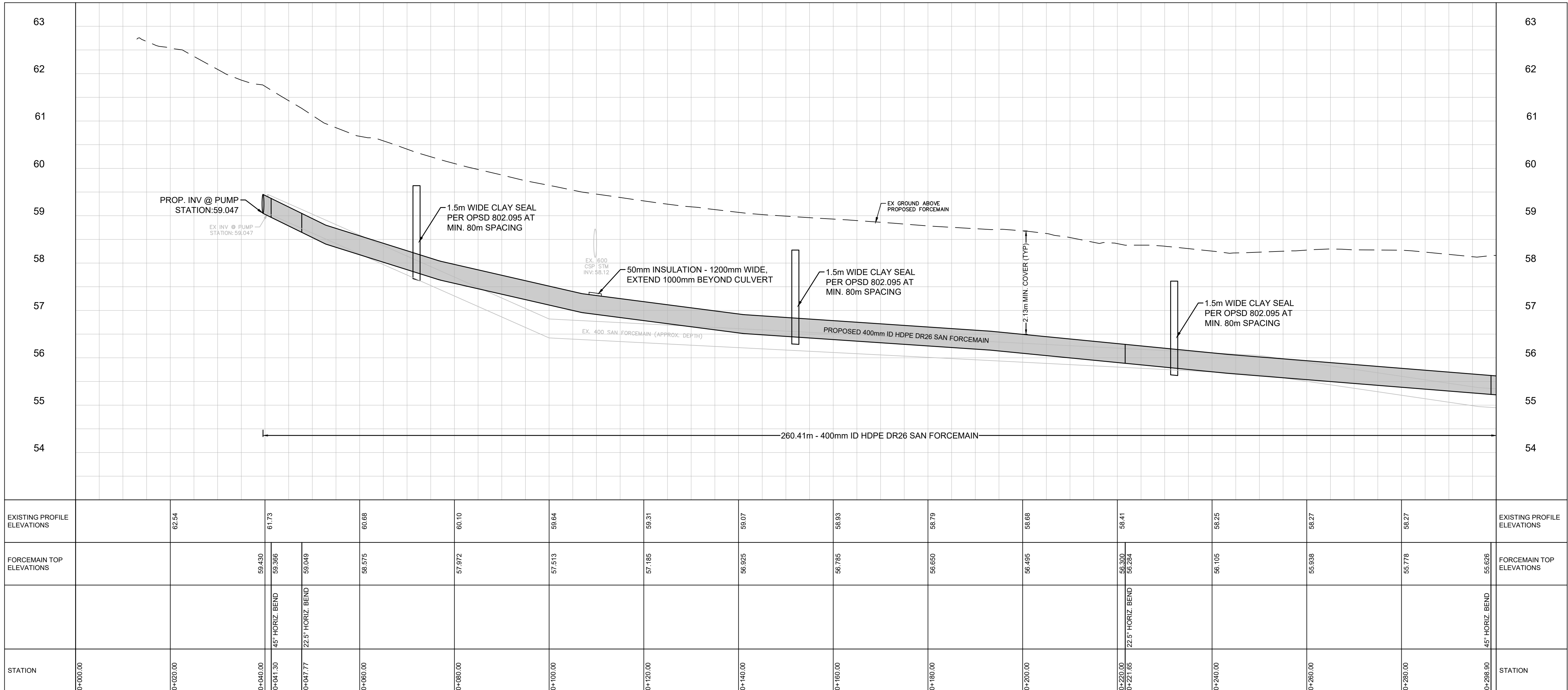
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BRISSON STREET



- LEGEND
- PROPERTY LINE
 - WIM WATERMAIN
 - SAN SANITARY SEWER
 - FORCEMAIN SANITARY FORCEMAIN
 - STM STORM SEWER
 - GAS GAS LINE
 - B UNDERGROUND BELL
 - H UNDERGROUND HYDRO
 - UG UNDERGROUND CABLE
 - OH OVERHEAD HYDRO
 - X CHAIN LINK FENCE
 - GUARD RAIL
 - D RIP LINE/VEGETATION
 - BUILDING
 - MANHOLE
 - CATCH BASIN
 - FIRE HYDRANT
 - BOREHOLE
 - UTILITY POLE
 - GUY WIRE
 - CABLE BOX
 - SIGN
 - BOLLARD
 - GAS METER

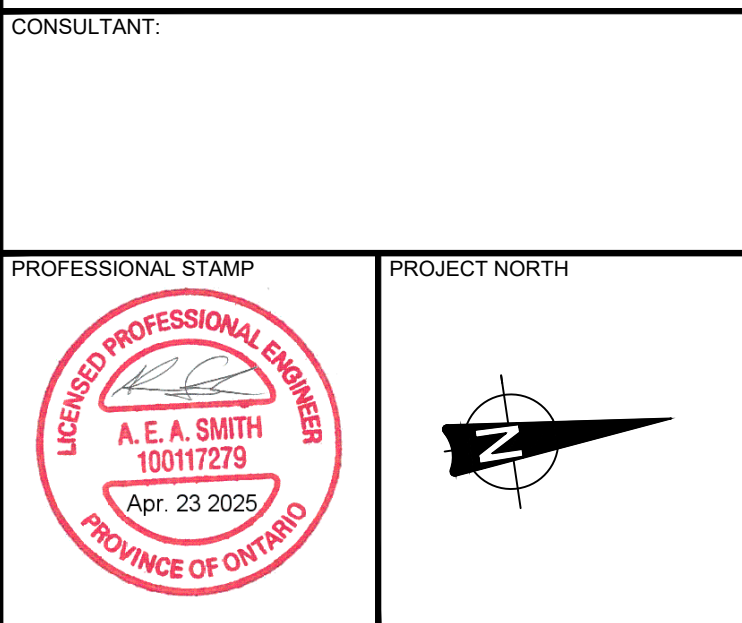
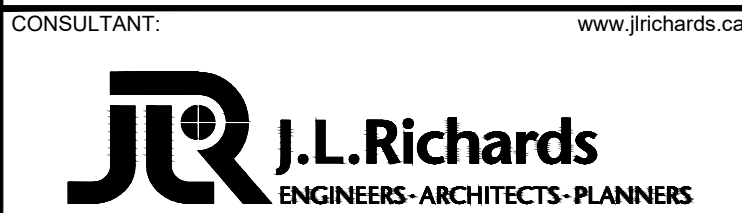
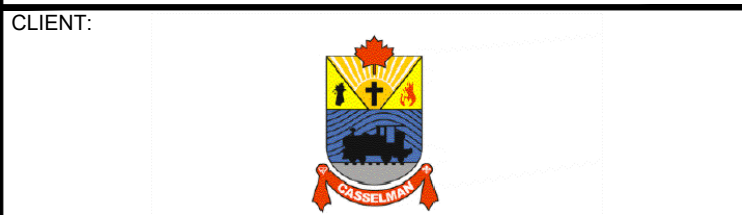
TOPOGRAPHIC SURVEY
PREPARED BY:
AOV
DATED: 2024-08-01
HORIZONTAL DATUM: MTM ZONE 9, NAD 83 (CSRS)
VERTICAL DATUM: CGVD28

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PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 BRISSON ST, CASSELMAN, ON K0A 1M0

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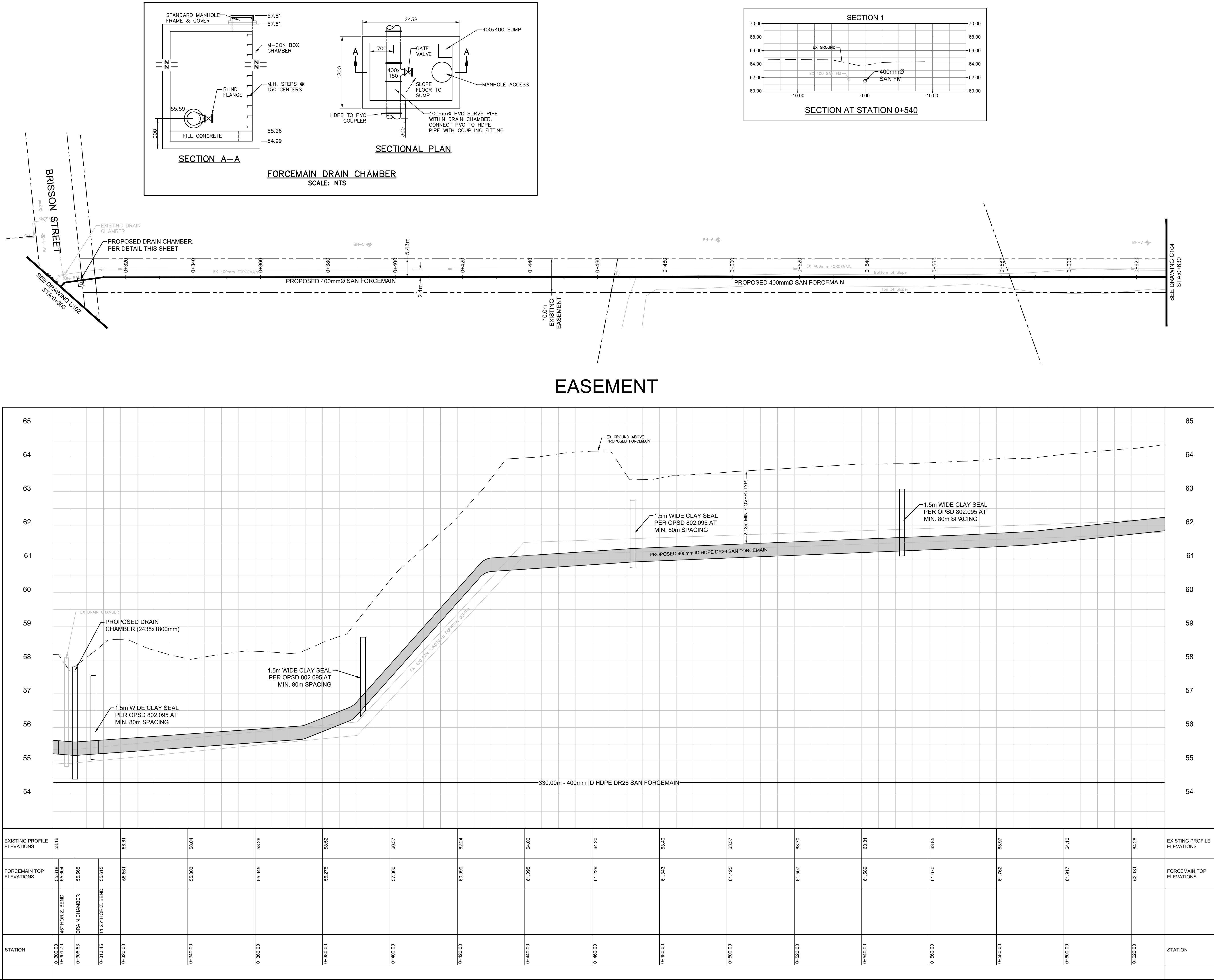
FORCEMAIN PLAN & PROFILE
BRISSON STREET

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CHECKED: AS
JLR #: 16953-134

DRAWING #:
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PLOT DATE: April 22, 2025 2:14:54 PM

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LEGEND

- PROPERTY LINE
- WATERMAIN
- SANITARY SEWER
- SANITARY FORCEMAIN
- STORM SEWER
- GAS LINE
- UNDERGROUND BELL
- UNDERGROUND HYDRO
- UNDERGROUND CABLE
- OVERHEAD HYDRO
- CHAIN LINK FENCE
- GUARD RAIL
- DRIP LINE/VEGETATION
- BUILDING
- MANHOLE
- CATCH BASIN
- FIRE HYDRANT
- BOREHOLE
- UTILITY POLE
- GUY WIRE
- CABLE BOX
- SIGN
- BOLLARD
- GAS METER

TOPOGRAPHIC SURVEY

PREPARED BY: AOV

DATED: 2024-08-01

HORIZONTAL DATUM: MTM ZONE 9, NAD 83 (CSRS)

VERTICAL DATUM: CGVD28

No.	ISSUE / REVISION	DD/MM/YY
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CLIENT:

CONSULTANT:

www.jlrichards.ca

J.L. Richards

ENGINEERS - ARCHITECTS - PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 BRISSON ST, CASSELMAN, ON K0A 1M0

DRAWING:

FORCEMAIN PLAN & PROFILE EASEMENT (SHEET 1)

DESIGN: AP

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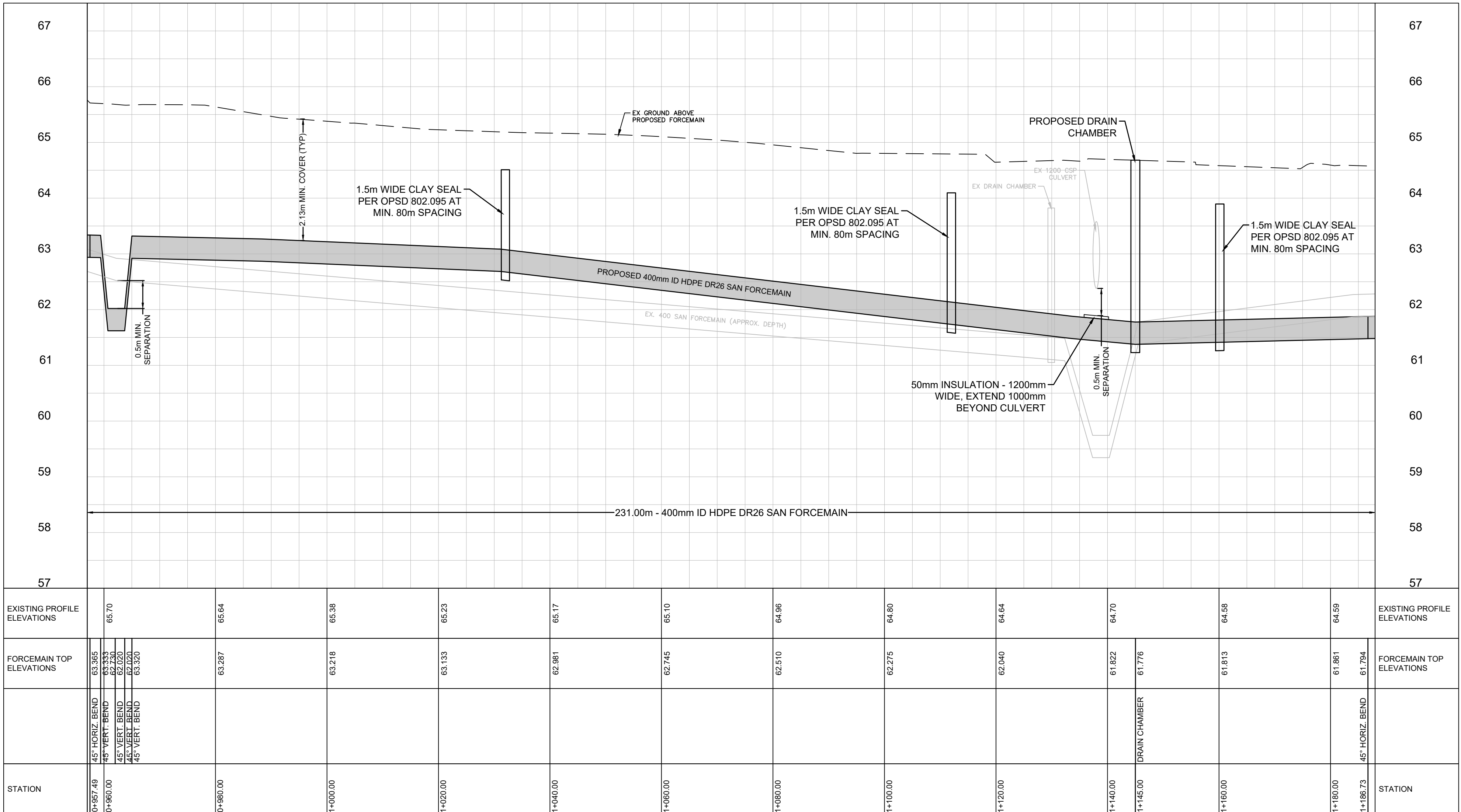
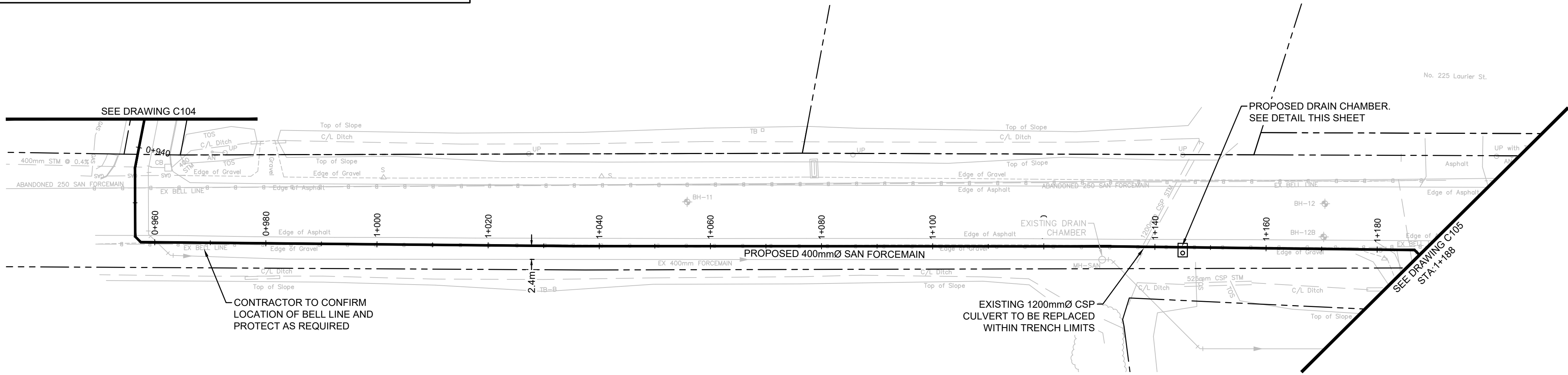
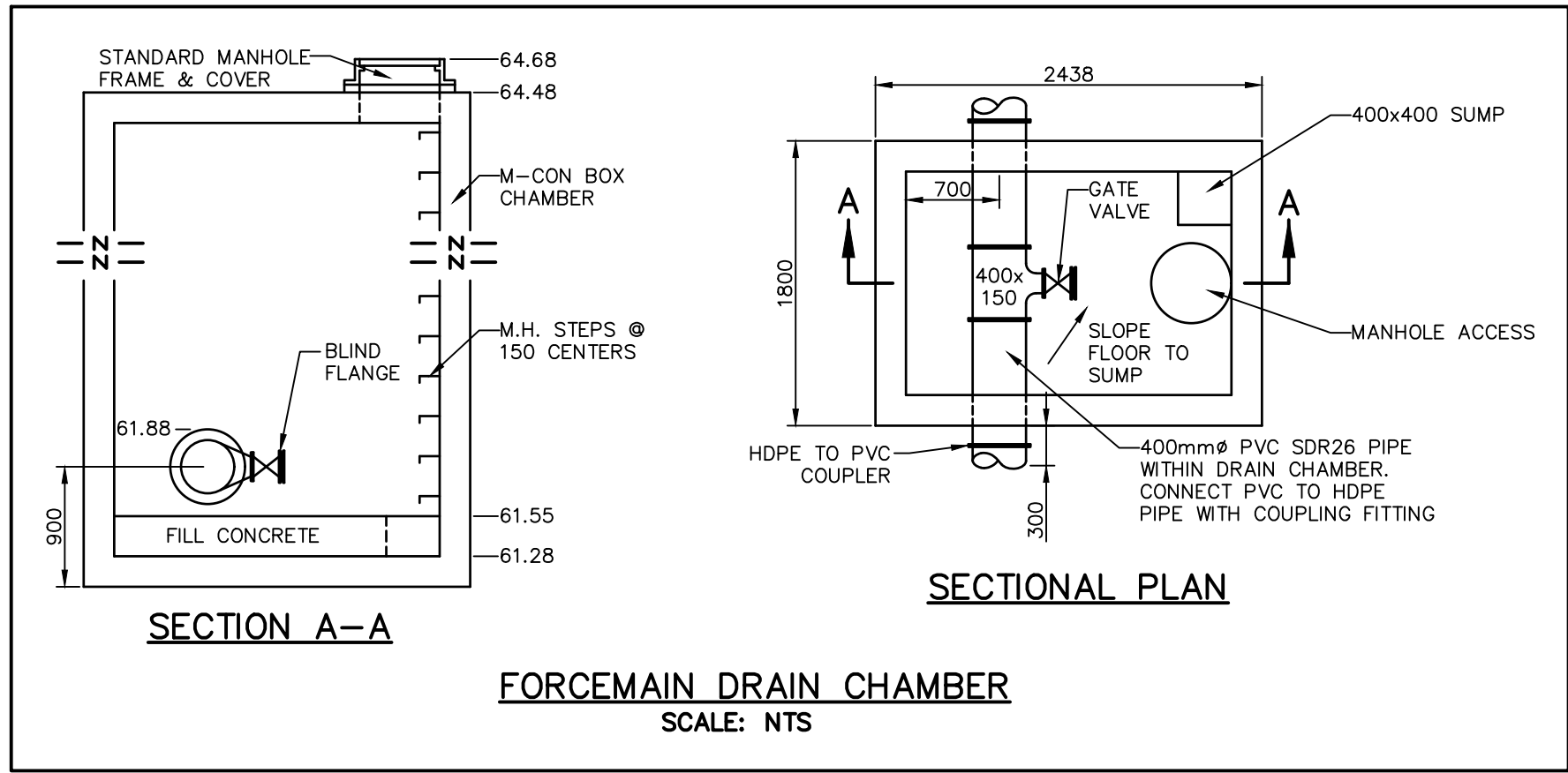
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JLR #: 16953-134

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C103

PLOT DATE: April 22, 2025 2:15:00 PM



- LEGEND
- PROPERTY LINE
 - WATERMAIN
 - SANITARY SEWER
 - SANITARY FORCEMAIN
 - STORM SEWER
 - GAS LINE
 - UNDERGROUND BELL
 - UNDERGROUND HYDRO
 - UNDERGROUND CABLE
 - OVERHEAD HYDRO
 - CHAIN LINK FENCE
 - GUARD RAIL
 - DRIP LINE/VEGETATION
 - BUILDING
 - MANHOLE
 - CATCH BASIN
 - FIRE HYDRANT
 - BOREHOLE
 - UTILITY POLE
 - GUY WIRE
 - CABLE BOX
 - SIGN
 - BOLLARD
 - GAS METER

TOPOGRAPHIC SURVEY
PREPARED BY:
AOV
DATED: 2024-08-01
HORIZONTAL DATUM: MTM ZONE 9, NAD 83 (CSRS)
VERTICAL DATUM: CGVD28

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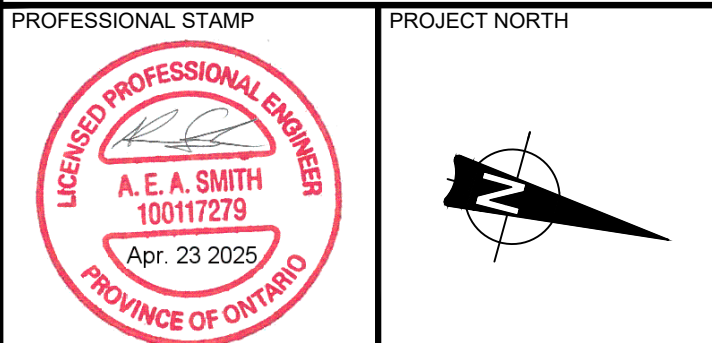
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CONSULTANT:

J.L. Richards
ENGINEERS - ARCHITECTS - PLANNERS

CONSULTANT:



PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

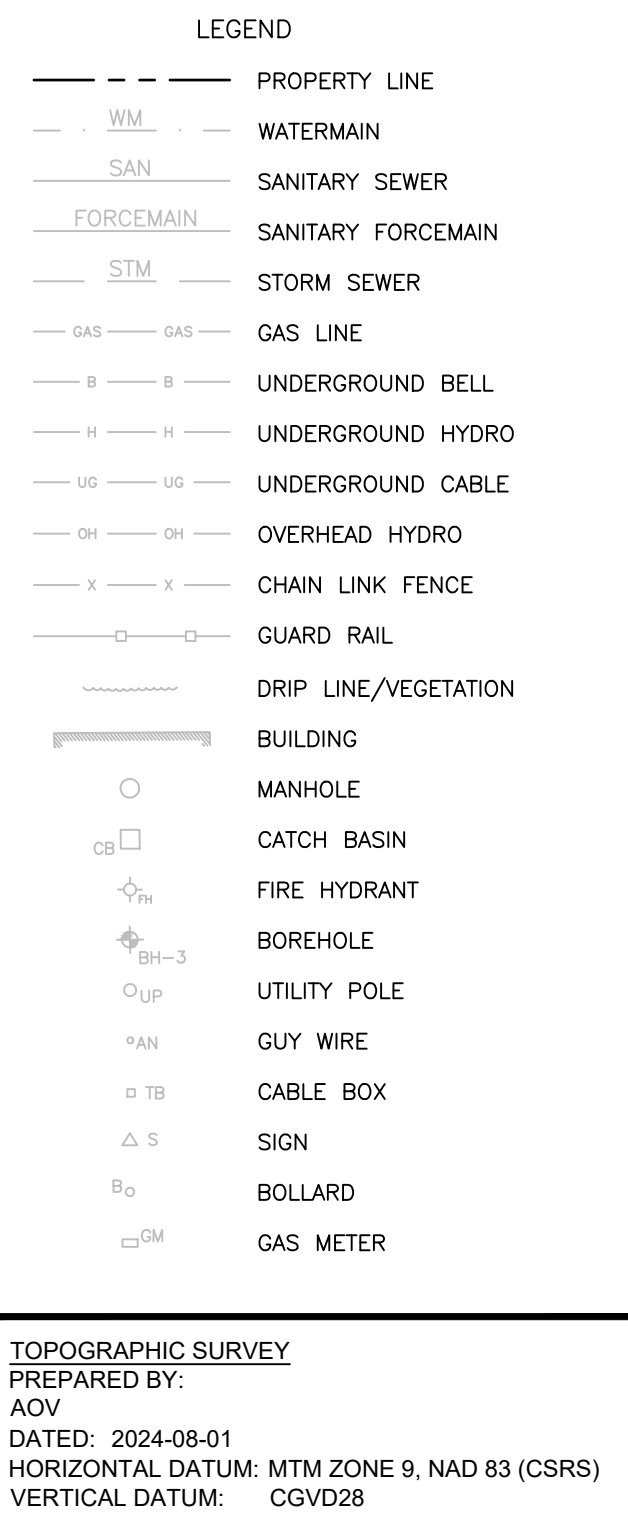
16 BRISSON ST, CASSELMAN, ON K0A 1M0

DRAWING:

**FORCEMAIN PLAN & PROFILE
LAURIER STREET**

DESIGN: AP
DRAWN: PC
CHECKED: AS
JLR #: 16953-134

DRAWING #:
C105



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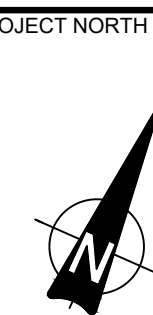
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SCALE: 1:500 H, 1:50 V

CLIENT:

CONSULTANT: www.jlrichards.com

CONSULTANT:



PROJECT:	
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16953-134 - CASSELMAN MAIN SP
UPGRADE

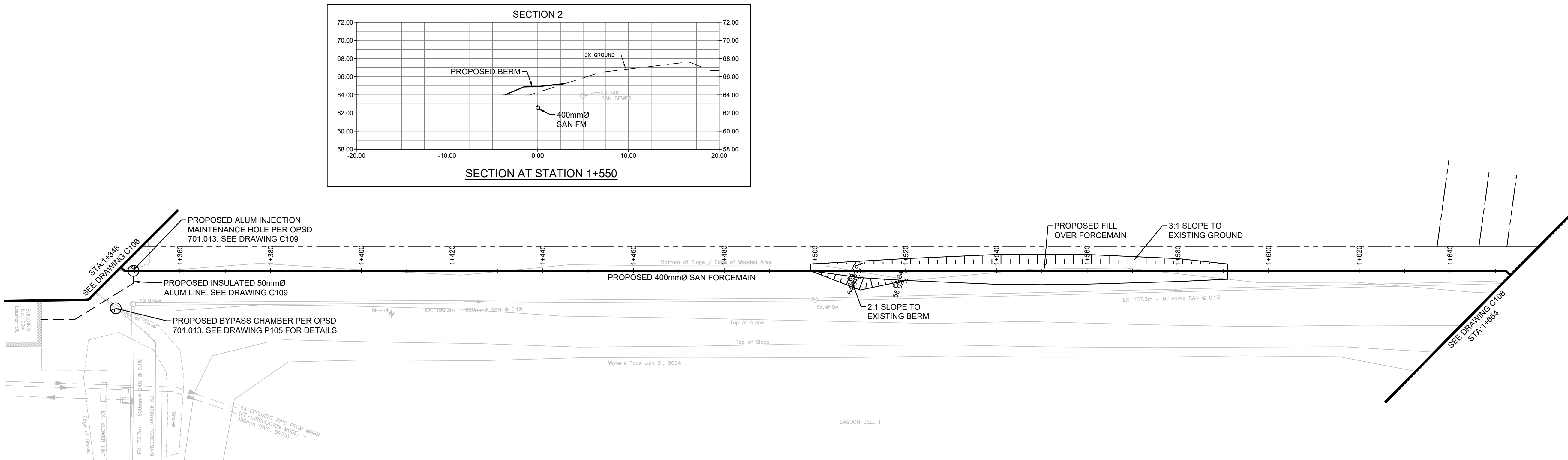
16 BRISSON ST, CASSELMAN, ON K0A 1M0

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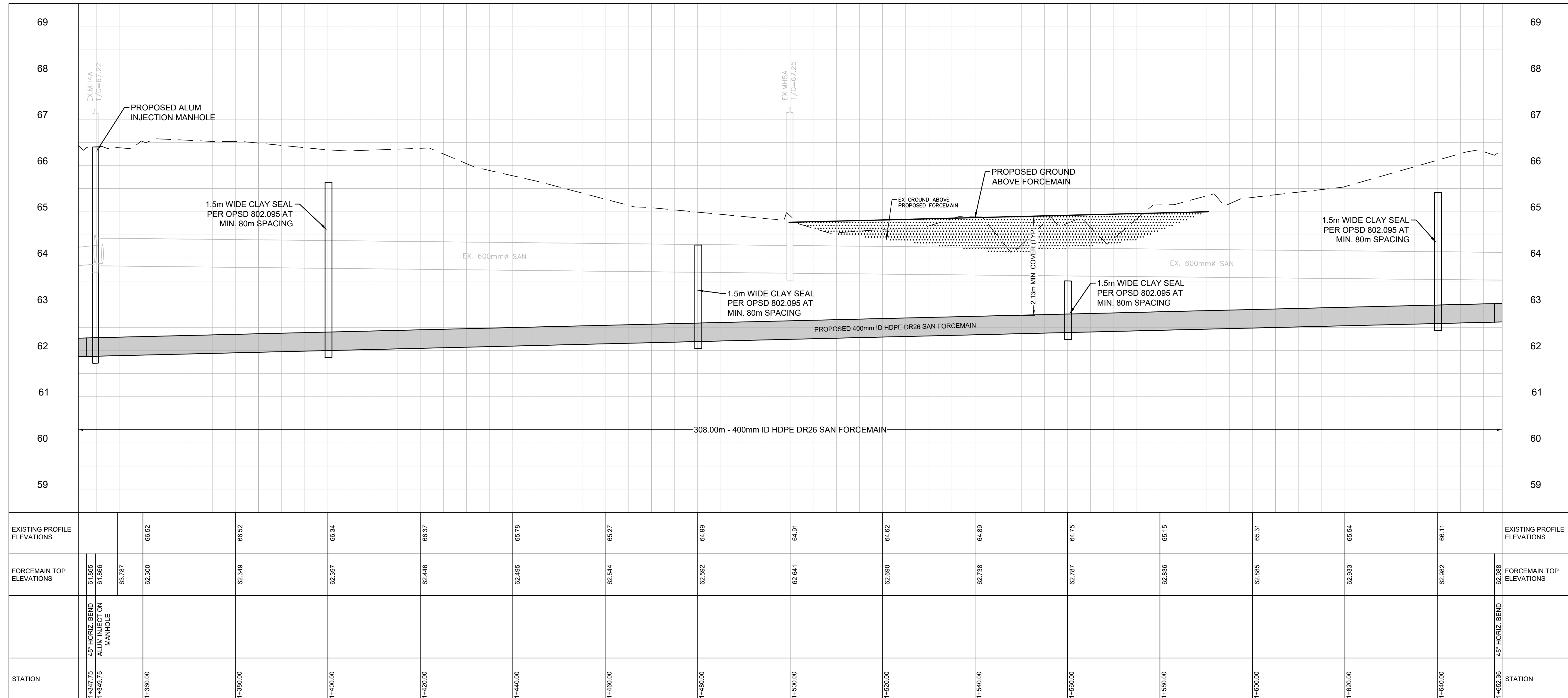
FORCEMAIN PLAN & PROFILE
LAGOON ACCESS ROAD

DESIGN: AP	DRAWING #: C106
DRAWN: PC	
CHECKED: AS	
JLR #: 16953-134	

File Location: P:\160001\16953-134 - Casselman Main SPS Upgrade\03-Production\01-Civil\16953-134_C1003-PR.dwg



LAGOON CELL 1 WEST BERM



- LEGEND
- PROPERTY LINE
 - WATERMAIN
 - SANITARY SEWER
 - SANITARY FORCEMAIN
 - STORM SEWER
 - GAS LINE
 - UNDERGROUND BELL
 - UNDERGROUND HYDRO
 - UNDERGROUND CABLE
 - OVERHEAD HYDRO
 - CHAIN LINK FENCE
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 - FIRE HYDRANT
 - BOREHOLE
 - UTILITY POLE
 - GUY WIRE
 - CABLE BOX
 - SIGN
 - BOLLARD
 - GAS METER

TOPOGRAPHIC SURVEY
PREPARED BY:
AOV
DATED: 2024-08-01
HORIZONTAL DATUM: MTM ZONE 9, NAD 83 (CSRS)
VERTICAL DATUM: CGVD28

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No.	ISSUE / REVISION	DD/MM/YY

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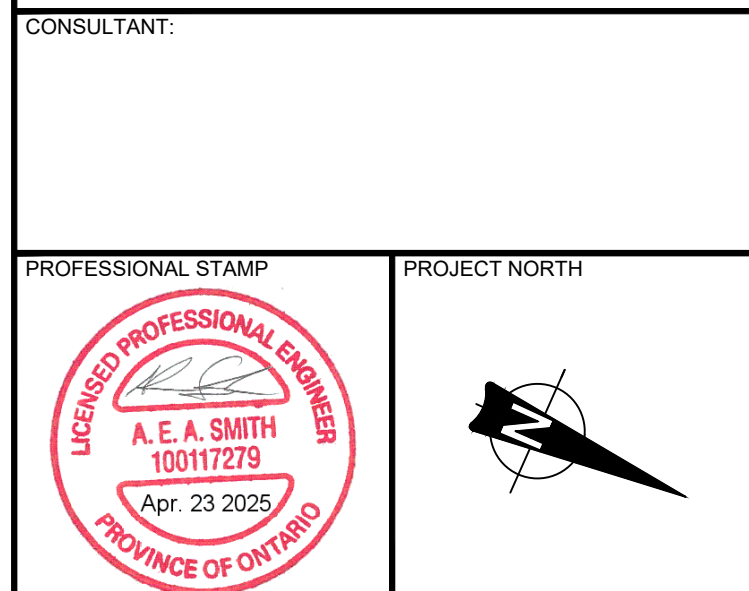
VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING.

SCALE: 1:500 H, 1:50 V



CONSULTANT:

JLR J.L. Richards
ENGINEERS - ARCHITECTS - PLANNERS



PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 BRISSON ST, CASSELMAN, ON K0A 1M0

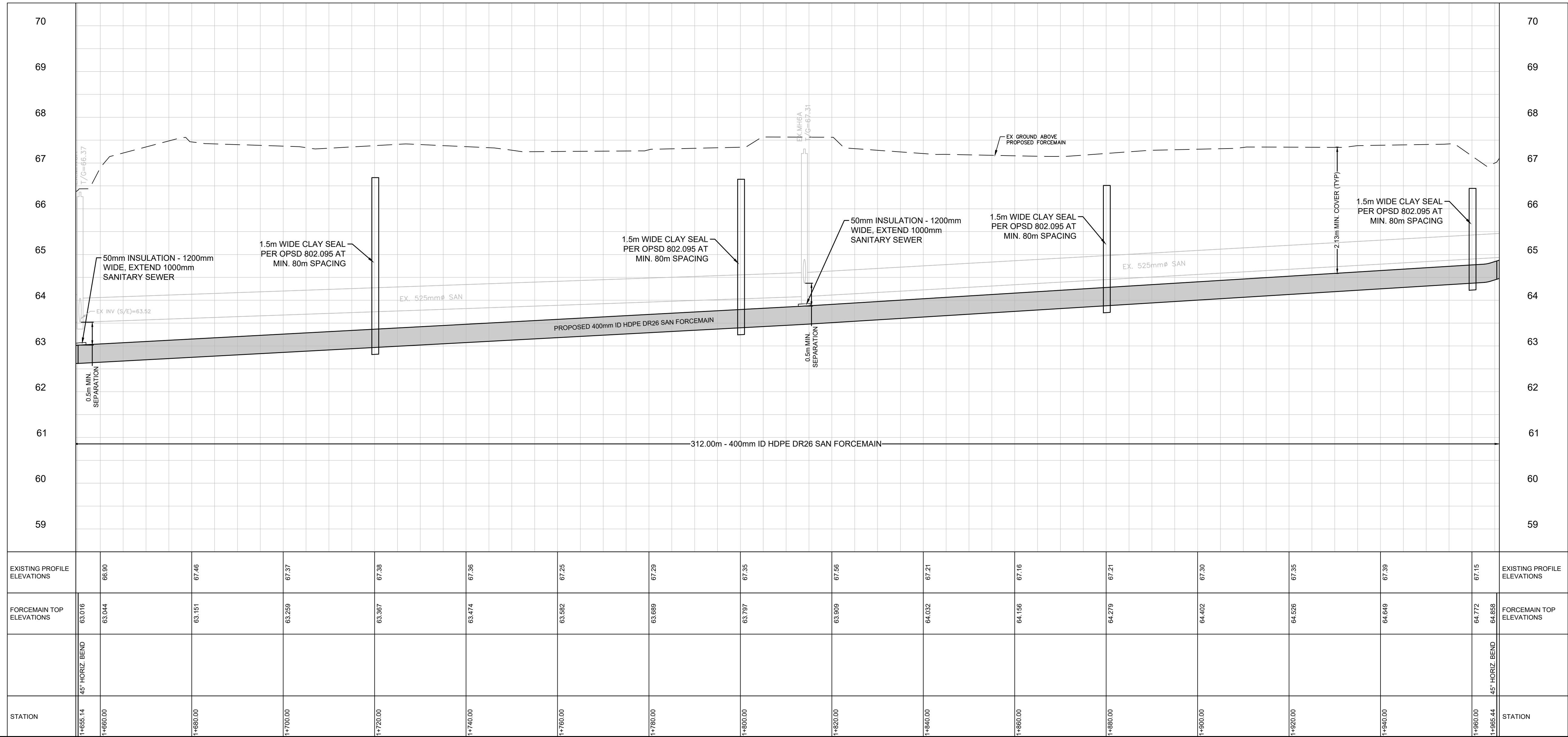
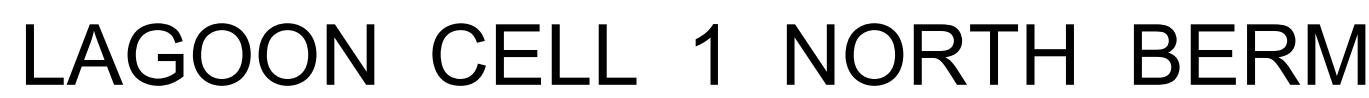
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FORCEMAIN PLAN & PROFILE
LAGOON CELL 1 WEST BERM

DESIGN: AP
DRAWN: PC
CHECKED: AS
JLR #: 16953-134

DRAWING #:
C107

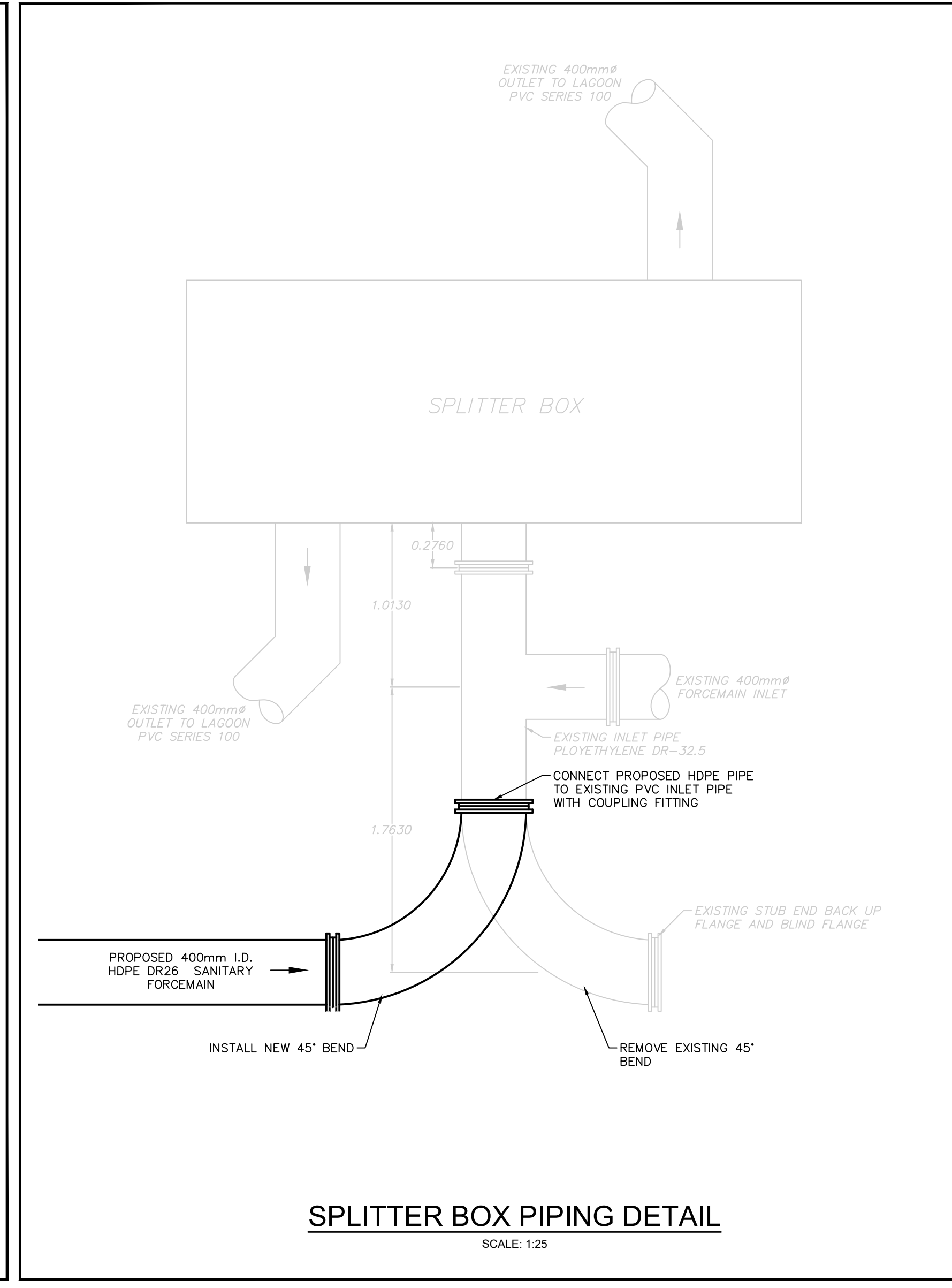
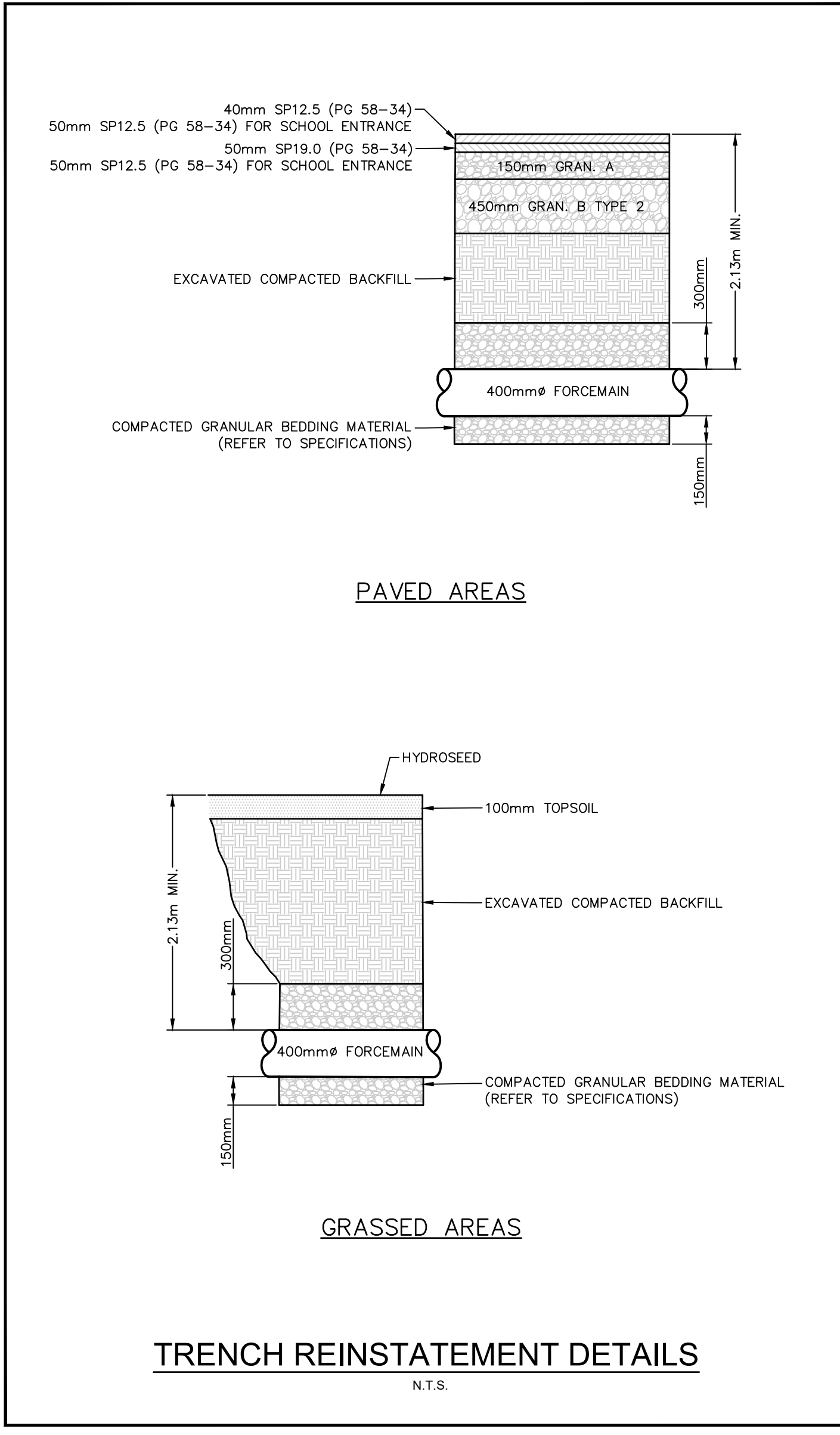
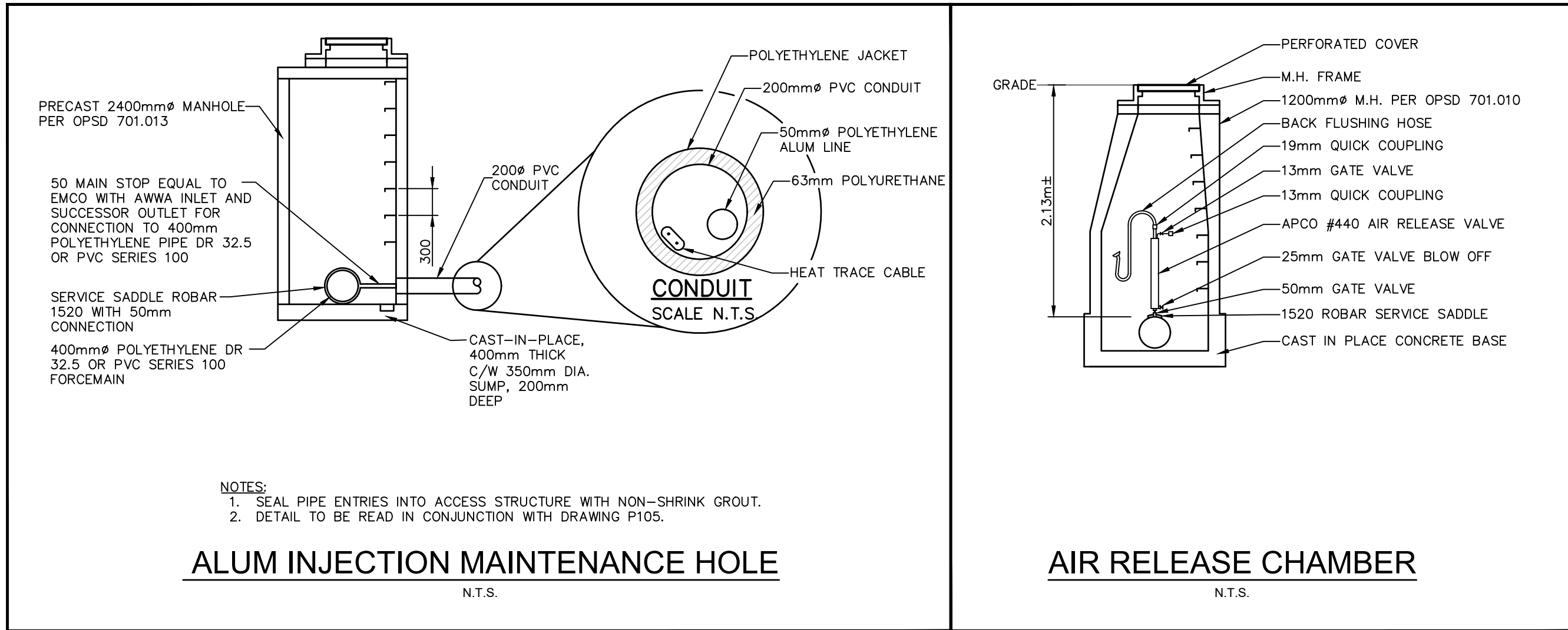
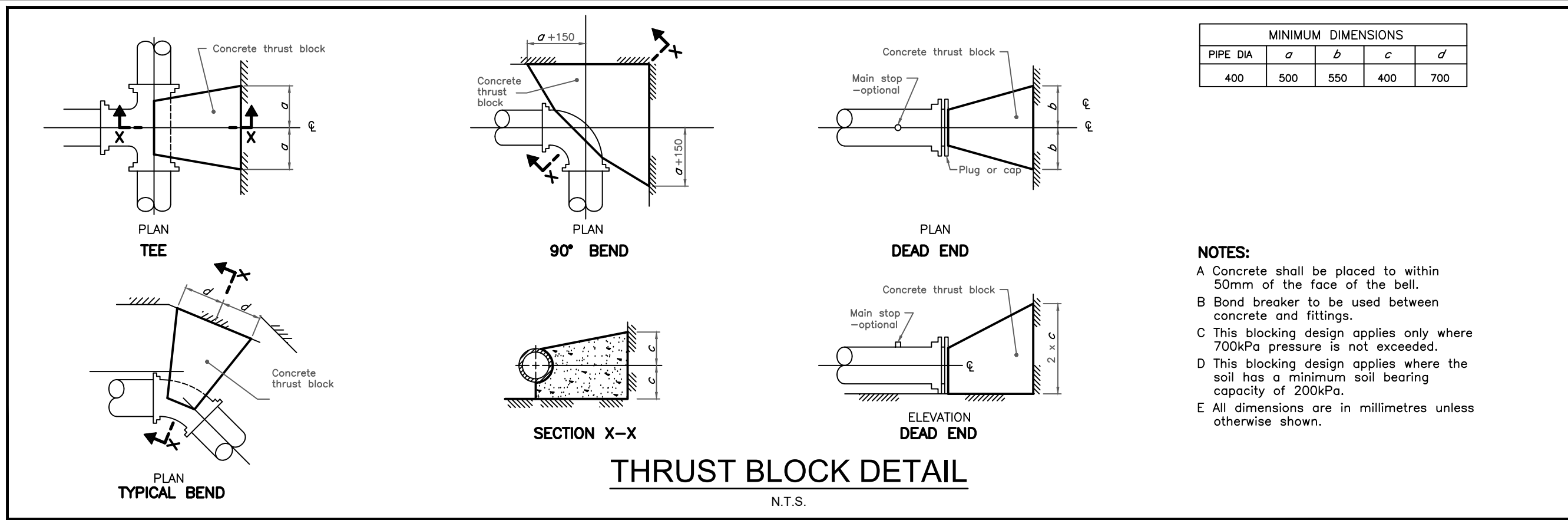
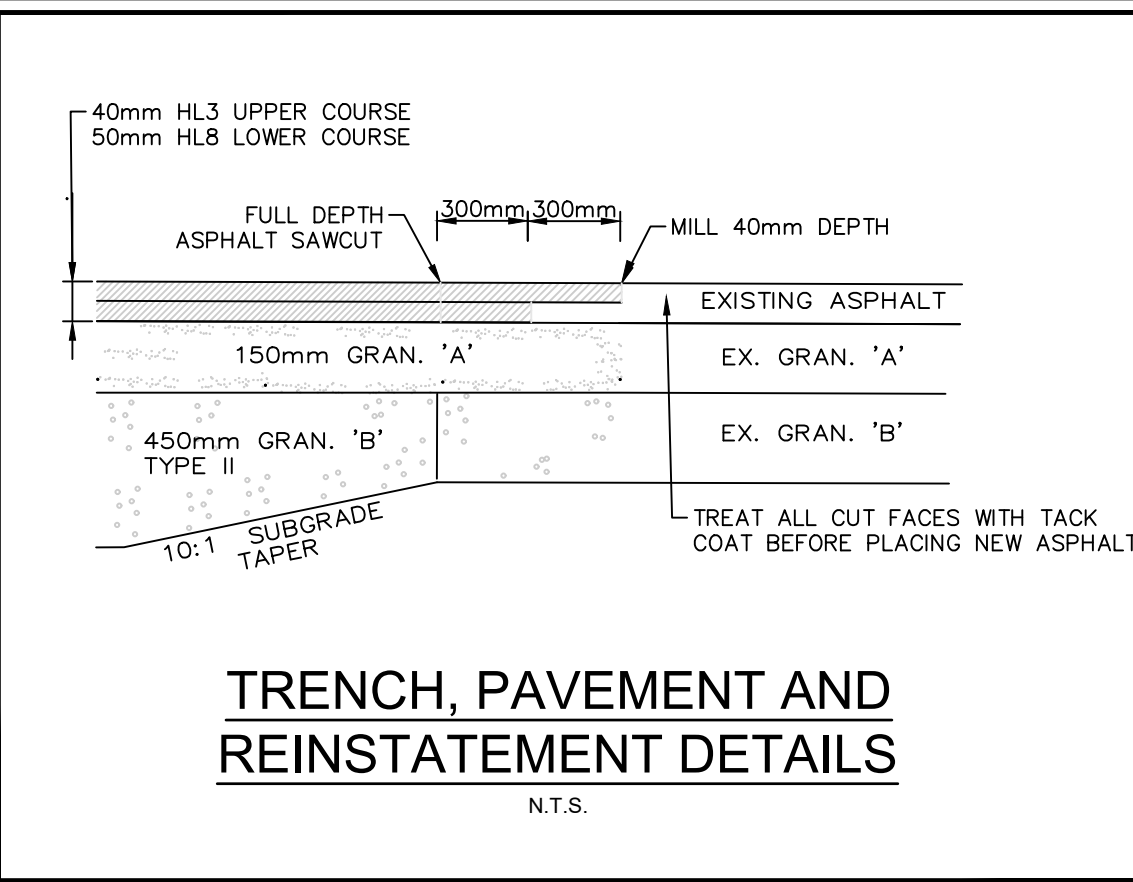
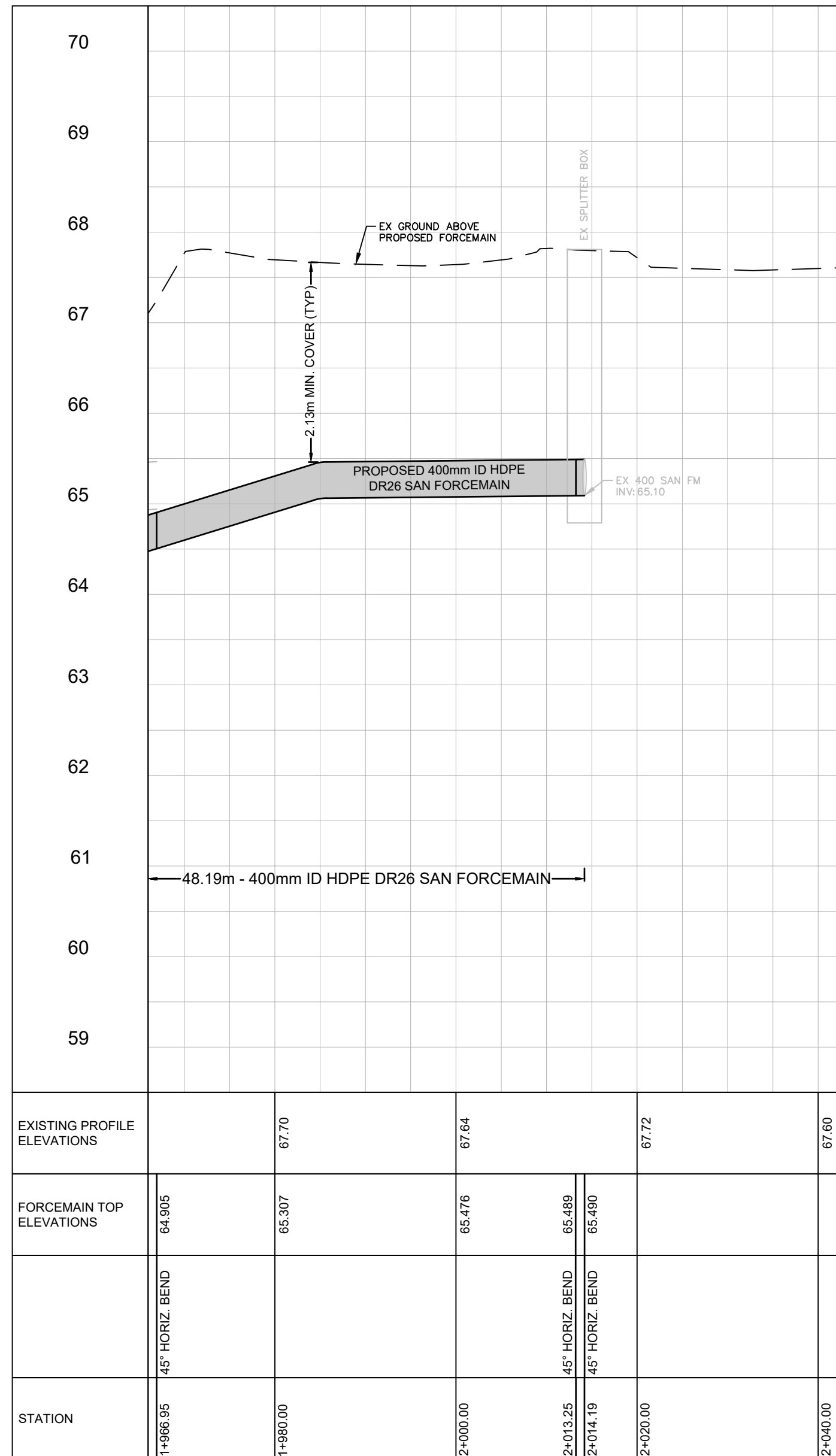
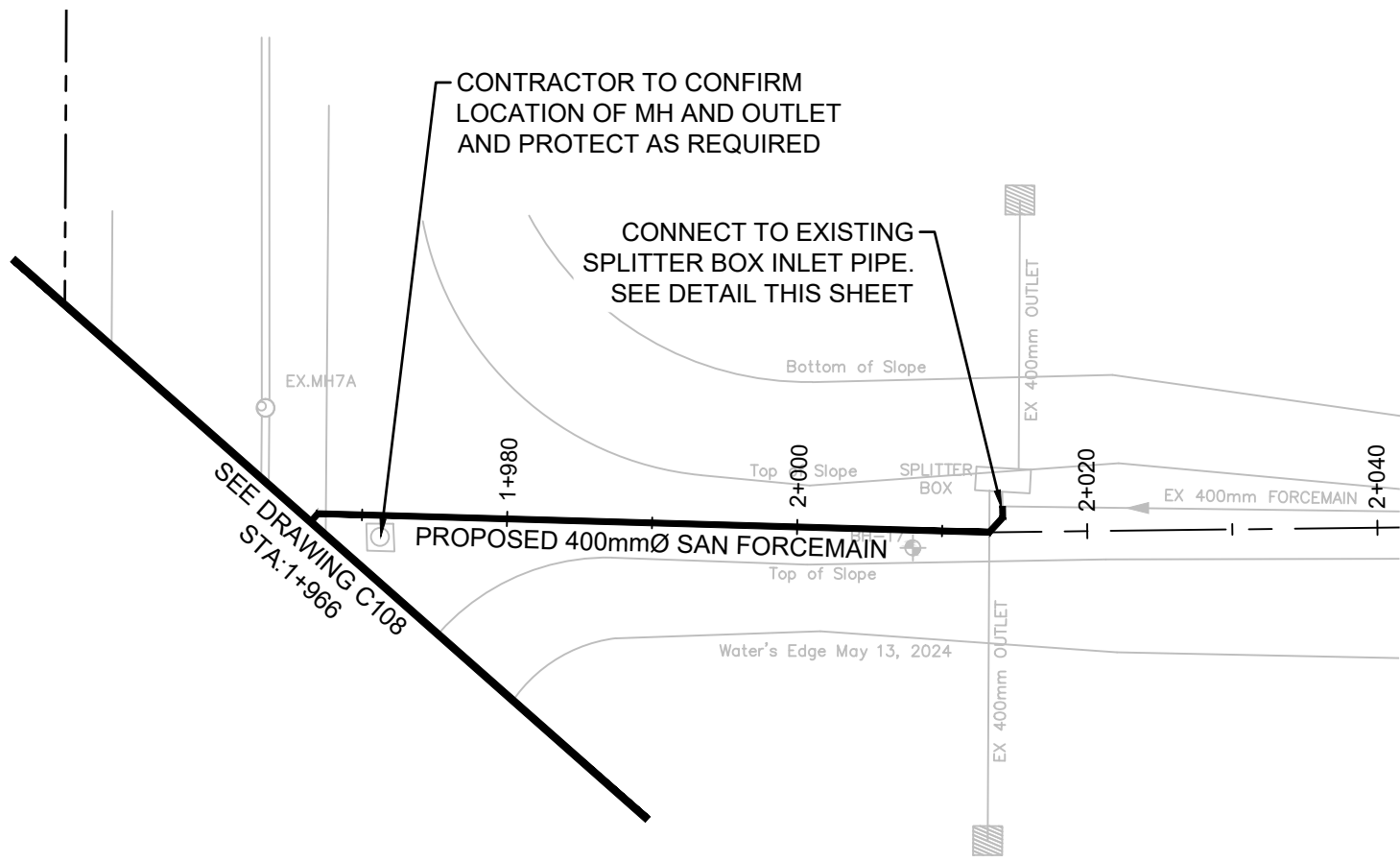
PLOT DATE: April 22, 2025 2:15:20 PM



DESIGN: AP	DRAWING #: C108
DRAWN: PC	
CHECKED: AS	
JLR #: 16953-134	

File Location: P:\160001\16953-134 - Casselman Main SPS Upgrade\03-Production\01-Civil\16953-134_C1003-PR.dwg

LAGOON CELL 1 EAST BERM



LEGEND

- PROPERTY LINE
- WM --- WATERMAIN
- SAN --- SANITARY SEWER
- FORCEMAIN --- SANITARY FORCEMAIN
- STM --- STORM SEWER
- GAS --- GAS LINE
- B --- B --- UNDERGROUND BELL
- H --- H --- UNDERGROUND HYDRO
- UG --- UG --- UNDERGROUND CABLE
- OH --- OH --- OVERHEAD HYDRO
- X --- X --- CHAIN LINK FENCE
- O --- O --- GUARD RAIL
- D --- D --- DRIP LINE/VEGETATION
- BUILDING --- BUILDING
- MANHOLE --- MANHOLE
- CB --- CATCH BASIN
- FH --- FIRE HYDRANT
- BH --- BOREHOLE
- UP --- UTILITY POLE
- AW --- GUY WIRE
- TB --- CABLE BOX
- S --- SIGN
- B --- BOLLARD
- GM --- GAS METER

TOPOGRAPHIC SURVEY
PREPARED BY:
AOV
DATED: 2024-08-01
HORIZONTAL DATUM: MTM ZONE 9, NAD 83 (CSRS)
VERTICAL DATUM: CGVD28

0	ISSUED FOR TENDER	23/04/25
No.	ISSUE / REVISION	DD/MM/YY

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SCALE: 1:500 H, 1:50 V

CLIENT:

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 BRISSON ST, CASSELMAN, ON K0A 1M0

DRAWING:

FORCEMAIN PLAN & PROFILE
LAGOON CELL 1 EAST BERM AND
DETAILS

DESIGN: AP

DRAWN: PC

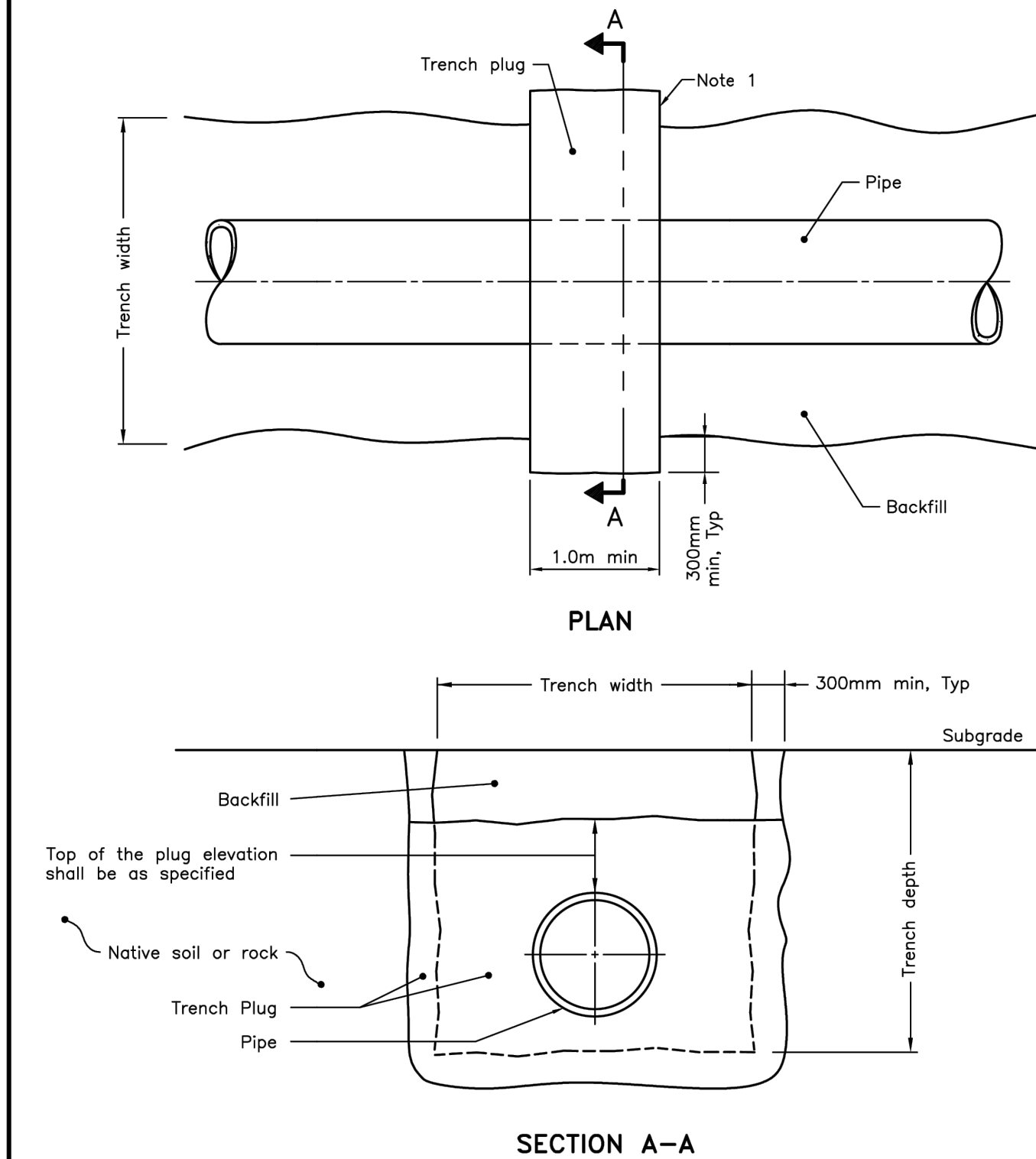
CHECKED: AS

JLR #: 16953-134

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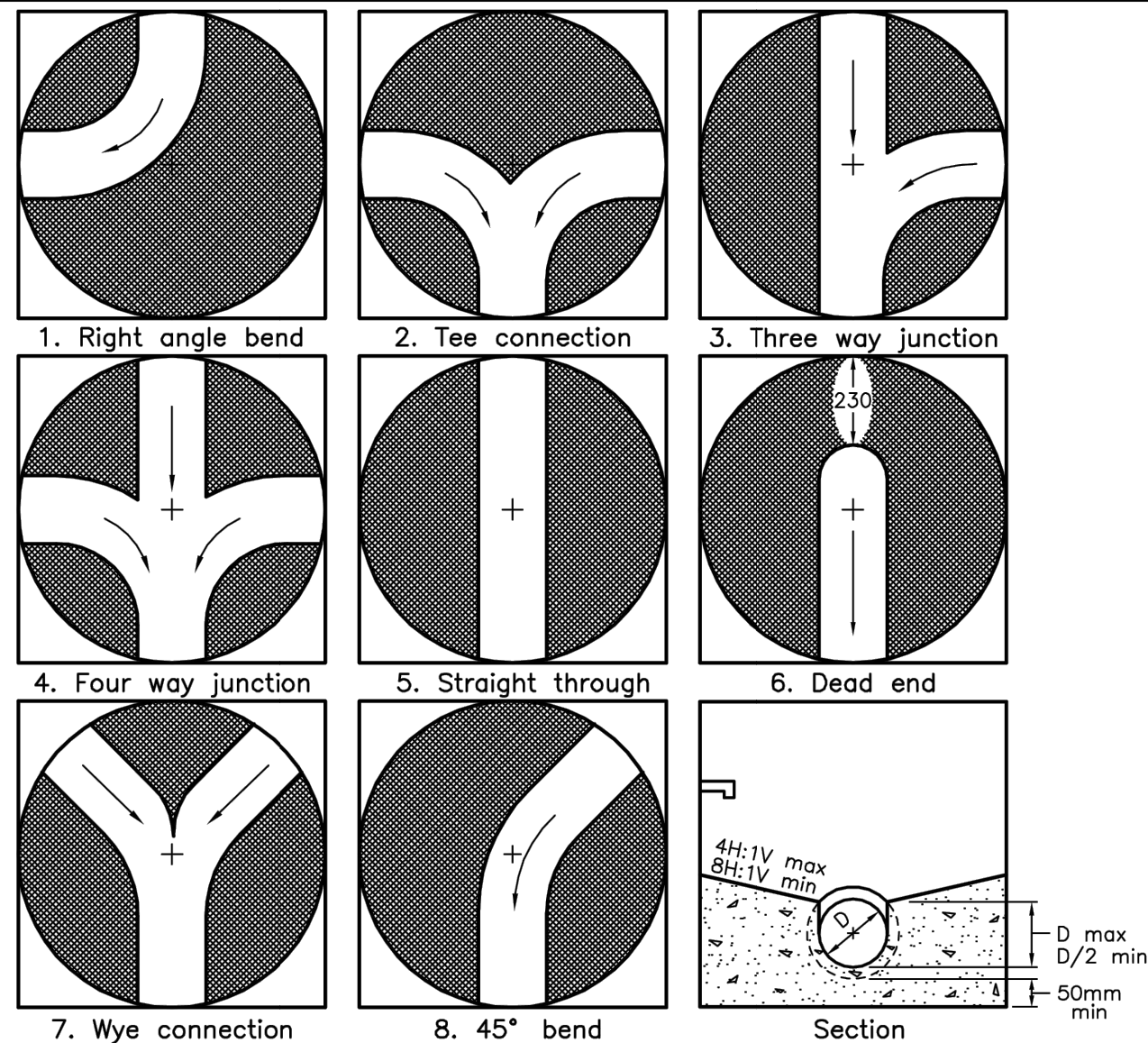
C109

PLOT DATE: April 22, 2025 2:15:29 PM



NOTES:
1 Key trench plug into undisturbed trench soil into sides and bottom (minimum 300mm).
A Unshrinkable fill or impervious clay shall be used as trench plug material.
B Trench plug shall be located so that no pipe joints are within the plug material.
C All dimensions are in metres unless otherwise shown.

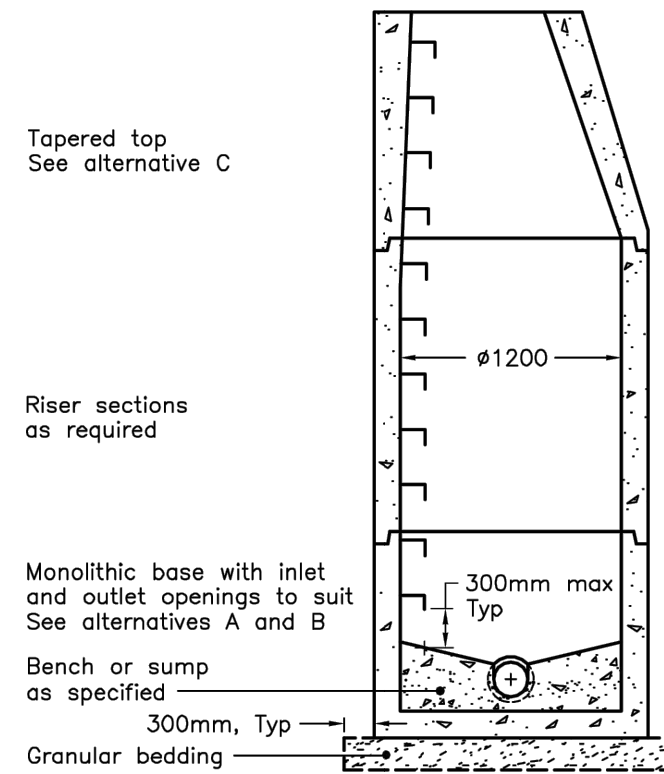
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev 3	
TRENCH PLUG			
OPSD 802.095			



MAXIMUM SIZE HOLE IN THE WALL IN PRECAST RISER SECTIONS					
Maintenance Hole Diameter	No. 1-4	No. 5 and 6	No. 8	Inlet Hole	Outlet Hole
1200	700	860	780	700	860
1500	860	1220	960	860	1170
1800	1220	1485	1220	1220	1485
2400	1485	2020	1760	1485	2020
3000	1930	2450	2300	1930	2450
3600	2470	3085	2730	2470	3085

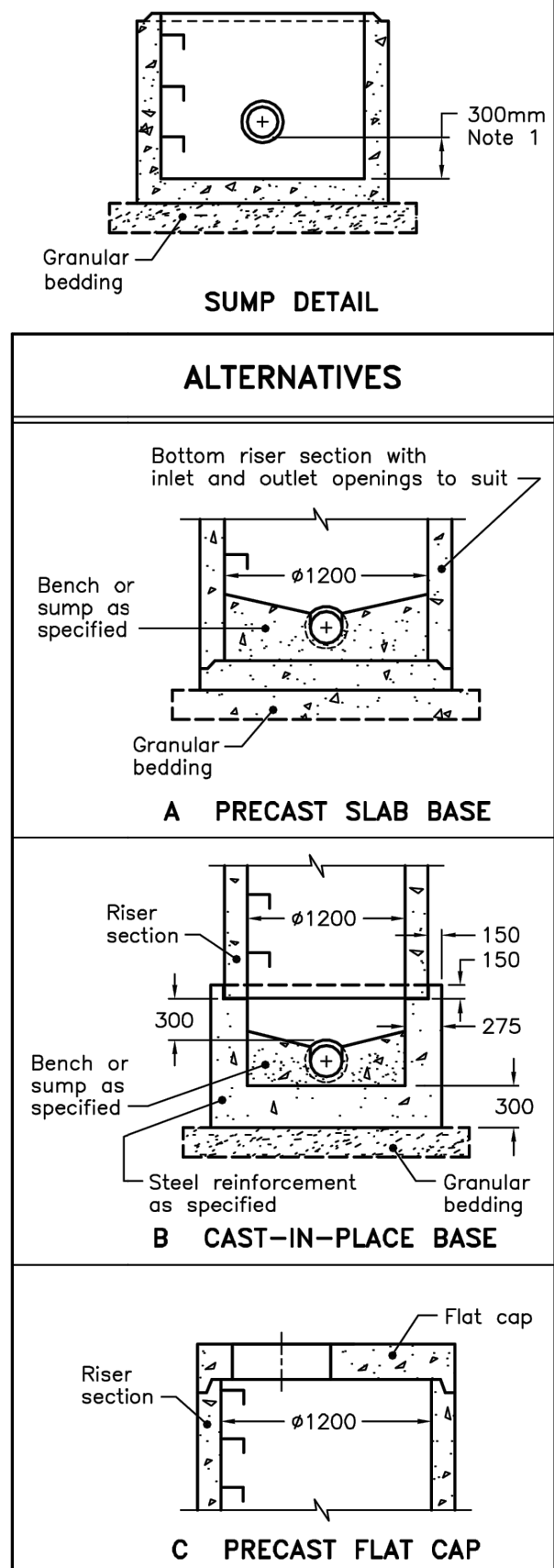
NOTES:
1 Slopes shall be maintained from the outlet hole opening for top of benching.
A Concrete for benching shall be 30MPa.
B When benching is hand-finished, it shall be given wood float finish, channel shall be given steel trowel finish.
C Benchng slope and height shall be as specified.
D When specified, maintenance holes that are 1200mm in diameter with a uniform channel for 200 or 250mm pipe may be pre-benched at the manufacturer with standardized benching slope and channel orientation.
E All dimensions are nominal.
F All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 4	
MAINTENANCE HOLE BENCHING AND PIPE OPENING ALTERNATIVES			
OPSD 701.021			



NOTES:
1 The sump is measured from the lowest invert.
A Granular backfill shall be placed to a minimum thickness of 300mm all around the maintenance hole.
B Precast concrete components shall be according to OPSD 701.030, 701.031, or 701.032.
C Structure exceeding 5.0m in depth shall include safety platform according to OPSD 404.020.
D Pipe support according to OPSD 708.020.
E For benching and pipe opening details, see OPSD 701.021.
F For adjustment unit and frame installation, see OPSD 704.010.
G All dimensions are nominal.
H All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 5	
PRECAST CONCRETE MAINTENANCE HOLE 1200mm DIAMETER			
OPSD 701.010			



TOPOGRAPHIC SURVEY
PREPARED BY:
AOV
DATED: 2024-08-01
HORIZONTAL DATUM: MTM ZONE 9, NAD 83 (CSRS)
VERTICAL DATUM: CGVD28

0	ISSUED FOR TENDER	23/04/25
No.	ISSUE / REVISION	DDMMYY

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SCALE: 1:500 H, 1:50 V



CONSULTANT: www.jrichards.ca



CONSULTANT:

PROFESSIONAL STAMP PROJECT NORTH



PROJECT:

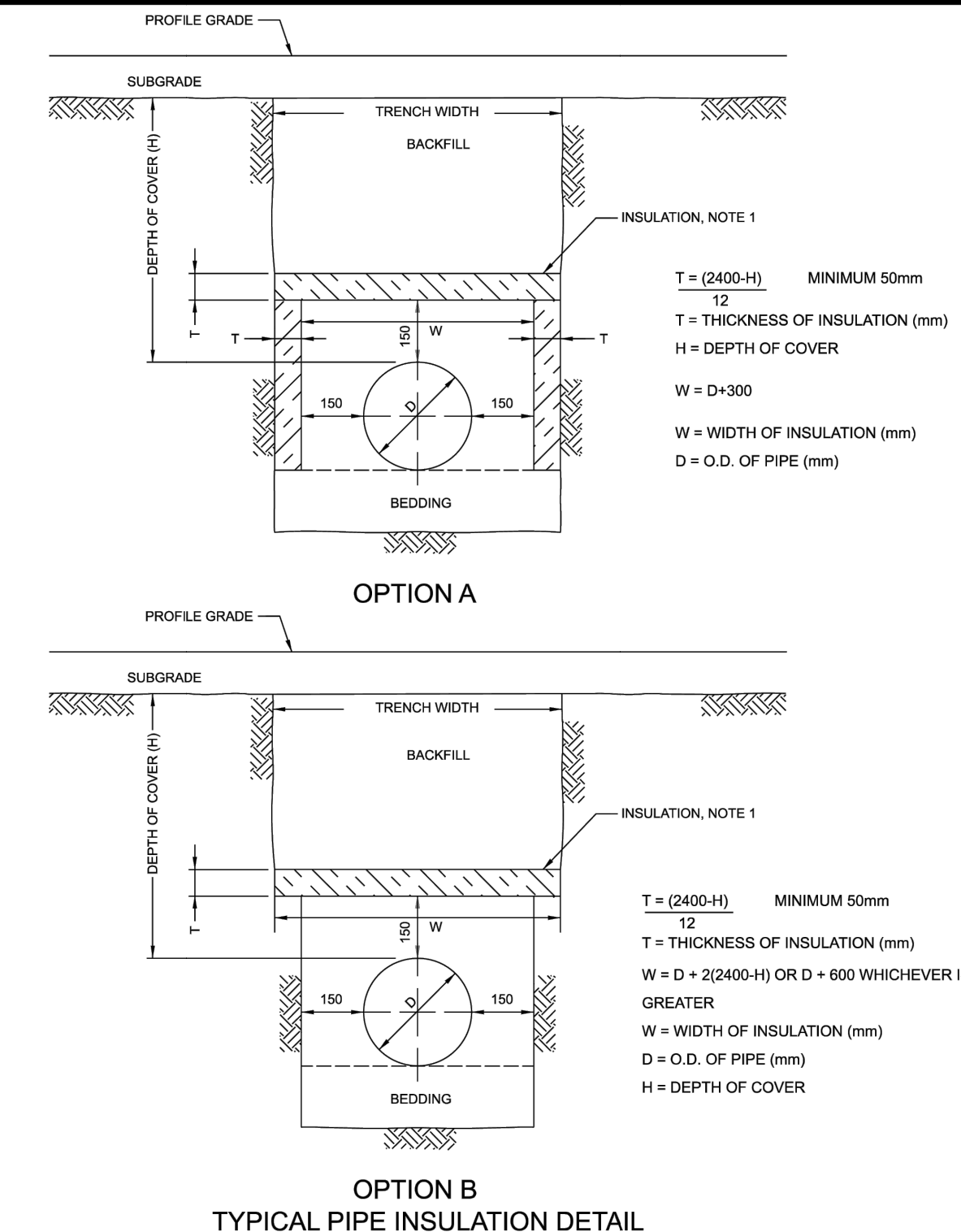
16953-134 - CASSELMAN MAIN SPS UPGRADE

16 BRISSON ST, CASSELMAN, ON K0A 1M0

DRAWING:

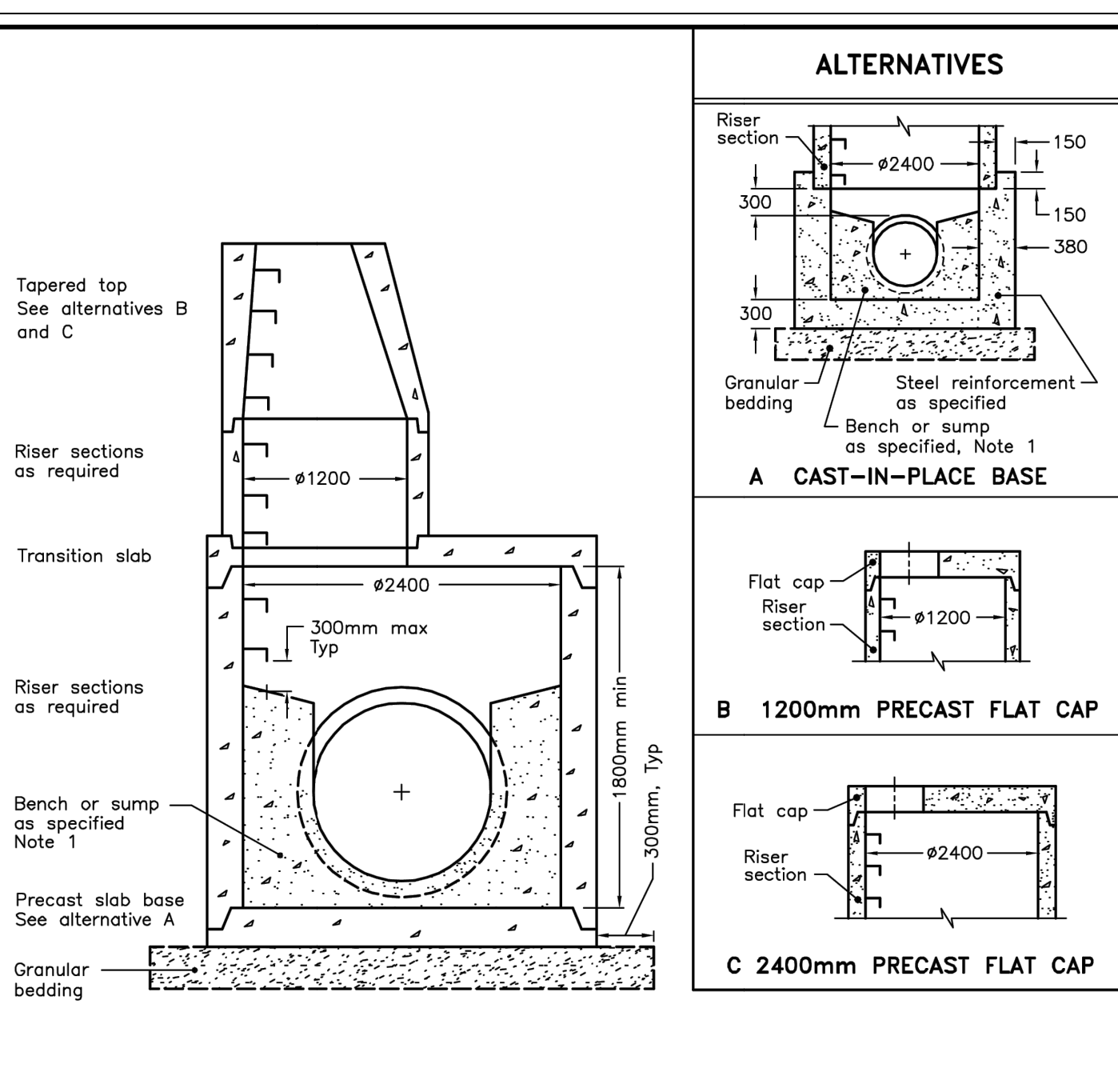
DETAILS

DESIGN: AP	DRAWING #:
DRAWN: PC	
CHECKED: AS	
JLR #:	16953-134
	C110



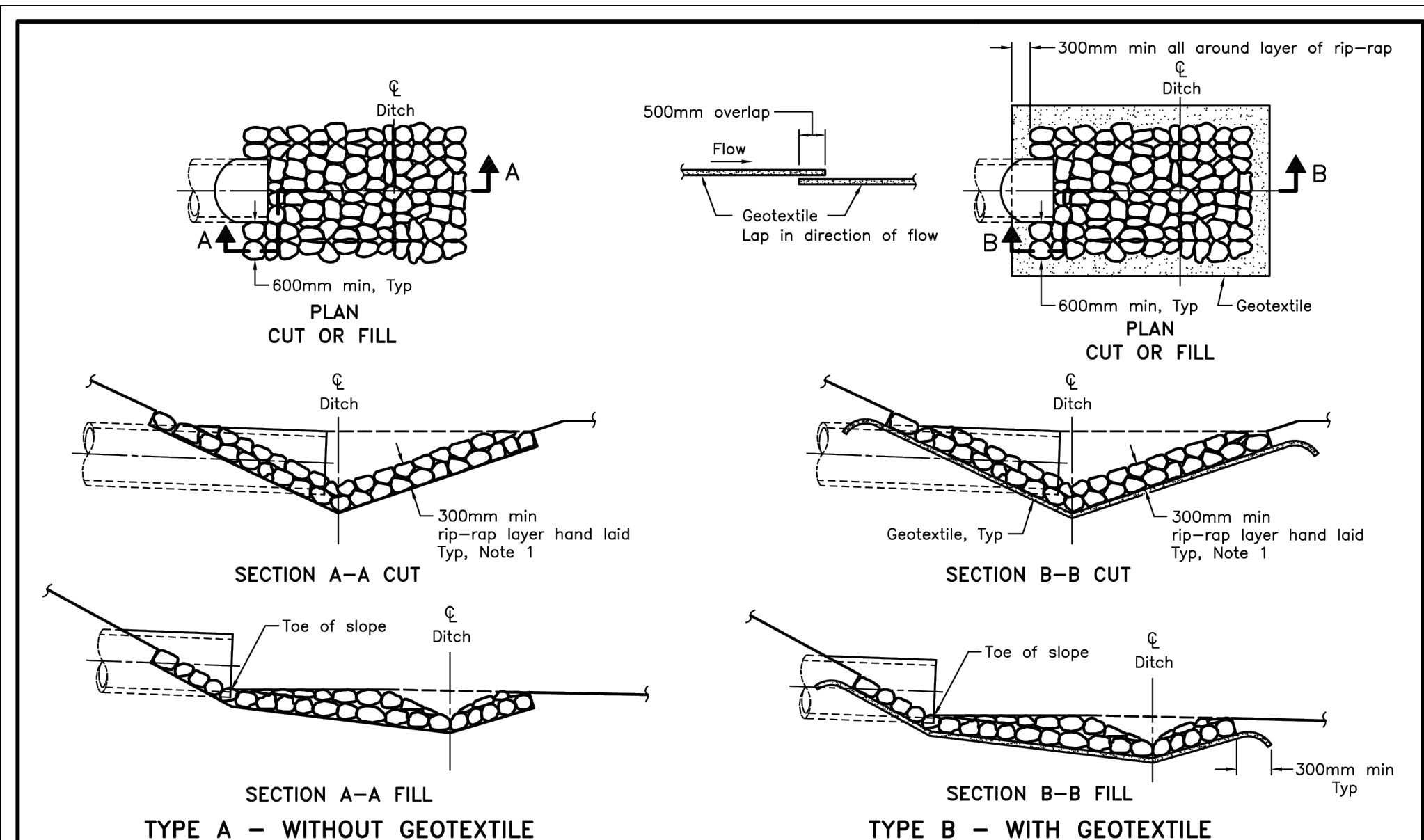
NOTES:
1. THE INSULATION MATERIAL SHALL BE EXTRUDED POLYSTYRENE ACCORDING TO MW-19.15 WITH
A MINIMUM COMPRESSIVE STRENGTH OF 275 KPA.
2. MINIMUM INSULATION THICKNESS SHALL BE 50MM.
3. JOINTS SHALL BE STAGGERED FOR MULTIPLE INSULATION SHEETS.
4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 5	
PRECAST CONCRETE MAINTENANCE HOLE 2400mm DIAMETER			
OPSD 701.013			



NOTES:
1 For sump detail, see OPSD 701.010.
A Granular backfill shall be placed to a minimum thickness of 300mm all around the maintenance hole.
B Precast concrete components shall be according to OPSD 701.030, 701.031, 701.080, 701.081, 703.013, 703.023, 706.030 and 706.031.
C Structures exceeding 5.0m in depth shall include safety platform according to OPSD 404.020.
D Pipe support shall be according to OPSD 708.020.
E For benching and pipe opening details, see OPSD 701.021.
F For adjustment unit and frame installation, see OPSD 704.010.
G All dimensions are nominal.
H All dimensions are in millimetres unless otherwise shown.

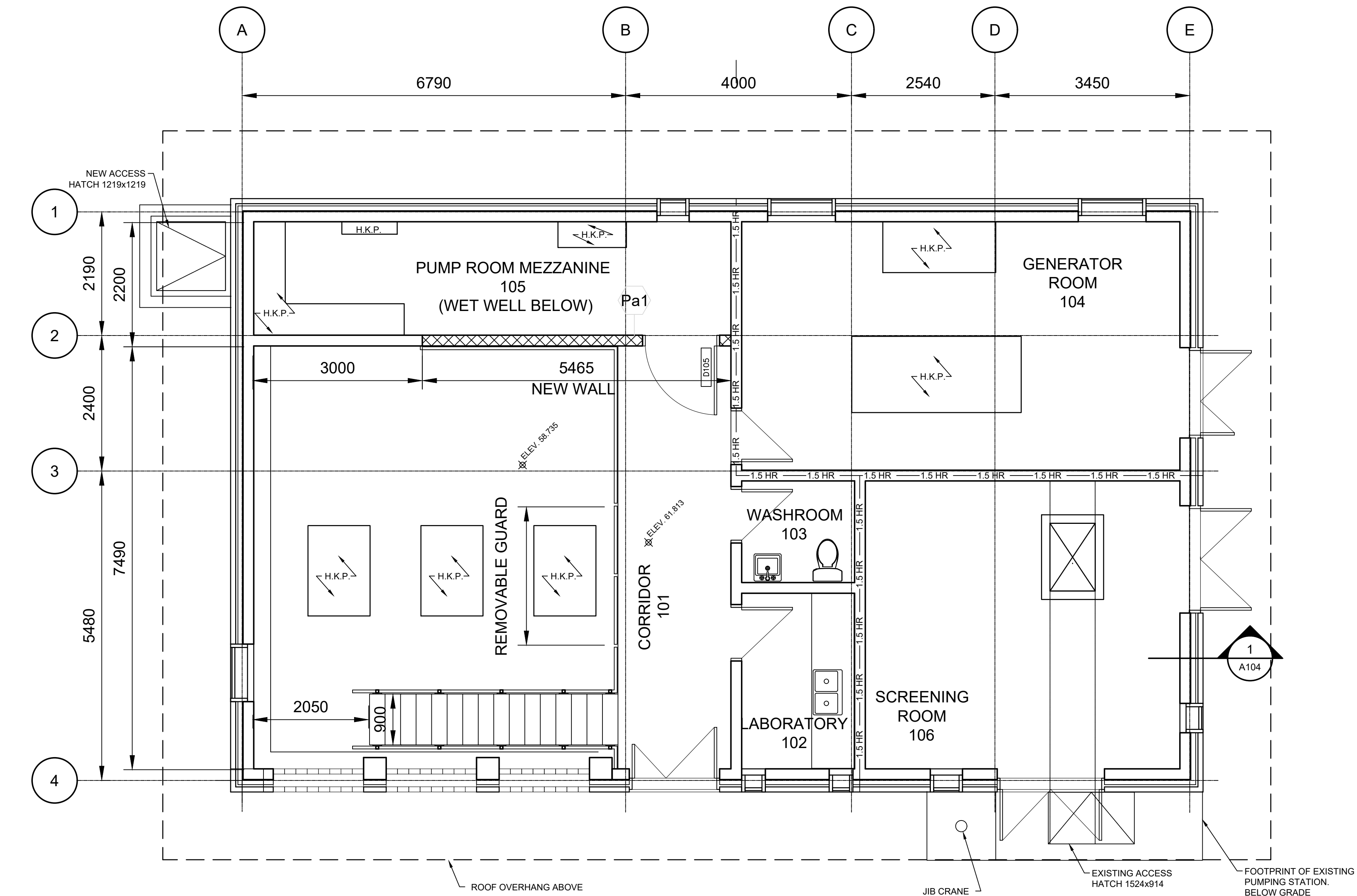
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2014	Rev 5	
PRECAST CONCRETE MAINTENANCE HOLE 2400mm DIAMETER			
OPSD 701.013			



NOTES:
1 The thickness of the rip-rap layer shall be at least 1.5 times the rip-rap mean diameter.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2018	Rev 3	
GENERAL RIP-RAP LAYOUT FOR SEWER AND CULVERT OUTLETS			
OPSD 810.010			

File Location: P:\160001\16953-134 - Casselman Main SPS Upgrade\03-Production\02-Arch\A104 NEW GROUND LEVEL PLAN.dwg



1
A101
NEW GROUND LEVEL PLAN
SCALE: 1:50

DOOR SCHEDULE												
DOOR NUMBER	FROM ROOM NUMBER	TO ROOM NUMBER	DOOR					FRAME				REMARKS
			TYPE	MATERIAL	FINISH	HARDWARE GROUP	SIZE	TYPE	MATERIAL	FINISH	F.R./J.R.	
D105	105	101	HM1	H.M.	PT.	1	1220x2440x50	FE1	P.S.	PT.		
<div><div><div>DOOR WIDTH</div><div>50</div><div>DOOR HEIGHT</div><div>50</div><div>FE1</div></div><div><div>REFER TO SCHEDULE</div><div>REFER TO SCHEDULE</div><div>HM1</div></div></div> <div><div>HARDWARE SCHEDULE</div><div>GROUP 01 - SINGLE INTERIOR DOOR</div><div>1. LEVER HANDLE LATCHSET ANSI F-82.</div><div>2. 1½ PAIR B.B. HINGES.</div><div>3. S.S. KICKPLATE.</div><div>4. FLOOR OR WALL STOP.</div></div> <div><div>MATERIAL</div><div>H.M. = HOLLOW METAL</div><div>P.S. = PRESSED STEEL</div><div>FINISH</div><div>PT. = PAINTED</div></div>												

NEW INTERIOR WALL SCHEDULE			
DESIGNATION	DESCRIPTION	FIRE RATING	REMARKS
Pa1	NEW INTERIOR PARTITION WALL - 16mm FIBERGLASS MAT GYPSUM WALL BOARD - 92 STEEL STUD (20 GAUGE) @ 400mm C.C. - 16mm FIBERGLASS MAT GYPSUM WALL BOARD	-	HEIGHT TO UNDERSIDE OF EXISTING CEILING

NEW ROOF ASSEMBLY SCHEDULE			
DESIGNATION	DESCRIPTION	FIRE RATING	REMARKS
R1	NEW ROOF CONSTRUCTION - STANDING SEAM METAL ROOF c/w CLOSURE TRIM - ICE AND WATER SHIELD - 13mm PRESSURE TREATED PLYWOOD - EXISTING PRE-MANUFACTURED WOOD TRUSSES	-	

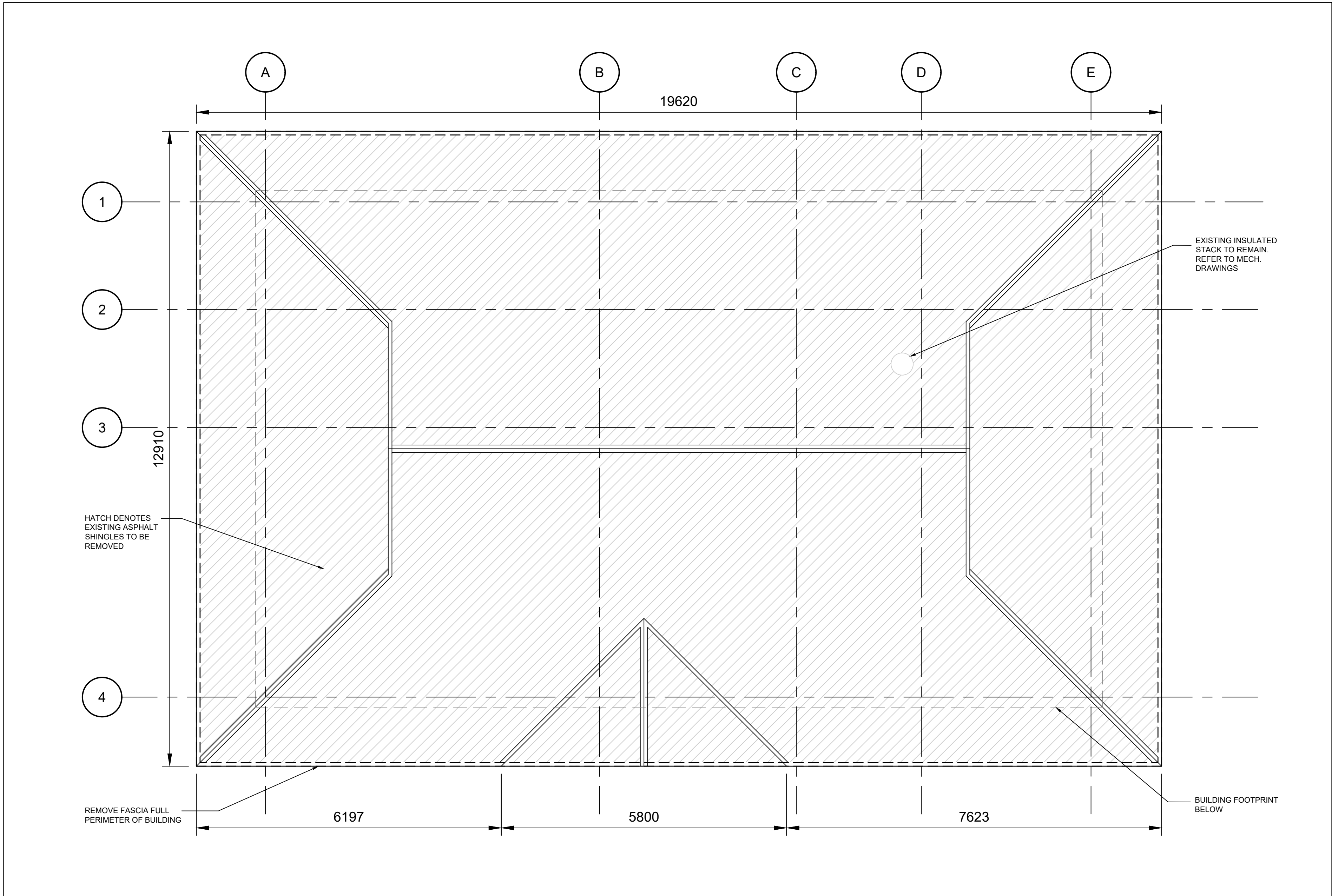
ROOM FINISH SCHEDULE												
RM. NO.	ROOM NAME	FLOOR			BASE	WALLS			CEILING		MISC.	REMARKS
		V.C.T.	PORCELAIN SEALED CONCRETE	CONCRETE		100 RESILIENT BASE	PORCELAIN TILE BASE	SHEET FLOORING				
105	PUMP ROOM MEZZANINE			*								

Name of Practice:				J.L. RICHARDS & ASSOCIATES LIMITED			
Name of Project:				CASSELMAN MAIN SPS UPGRADE			
Location:				16 BRISSON ST, CASSELMAN, ON			
Ontario Building Code Data Matrix 2024 - Part 11 - Renovation of Existing Building						OBC Reference	
11.1	Existing Building Classification:	Describe Existing Use: SEWAGE PUMPING STATION				11.2.1	
		Construction Index: Hazard Index: Not Applicable (no change of major occupancy)				T 11.2.1.1A T 11.2.1.1B to N	
11.2	Alteration to Existing Building is:	Basic Renovation				11.3.3.1	
		Extensive Renovation				11.3.3.2	
11.3	Reduction in Performance Level:	Structural:				11.4.2.1	
		By Increase in occupant load:				11.4.2.2	
11.4	Compensating Construction:	Change of major occupancy:				11.4.3.4	
		Plumbing:				11.4.3.5	
11.5	Compliance Alternatives Proposed:	Sewage system:				11.4.3.6	
		No Yes (give number(s))				11.5.1	

0	ISSUED FOR TENDER	23/04/25
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SCALE: 1:50		<div><div></div><div>025mm</div></div>
CLIENT:		
CONSULTANT:		www.jlrichards.ca
CONSULTANT:		
PROFESSIONAL STAMP		PROJECT NORTH
PROJECT:		
16953-134 - CASSELMAN MAIN SPS UPGRADE		
16 Brisson St, Casselman, ON K0A 1M0		
DRAWING:		
ARCHITECTURAL		
NEW GROUND LEVEL PLAN		
DESIGN: HB		DRAWING #: A101
DRAWN: AAJ		
CHECKED: HB		
JLR #: 16953-134		

PLOT DATE: Monday, April 21, 2025 1:05:05 PM

File Location: P:\160001\16953-134 - Casselman Main SPS Upgrade\03-Production\02-Arch\A112 DEMOLITION ROOF PLAN.dwg



1 ROOF DEMOLITION PLAN
A102 SCALE: 0.018538

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SCALE:

CLIENT:



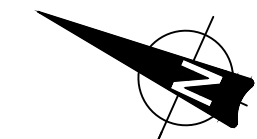
CONSULTANT: www.jrichards.ca



CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH



PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 Brisson St, Casselman, ON K0A 1M0

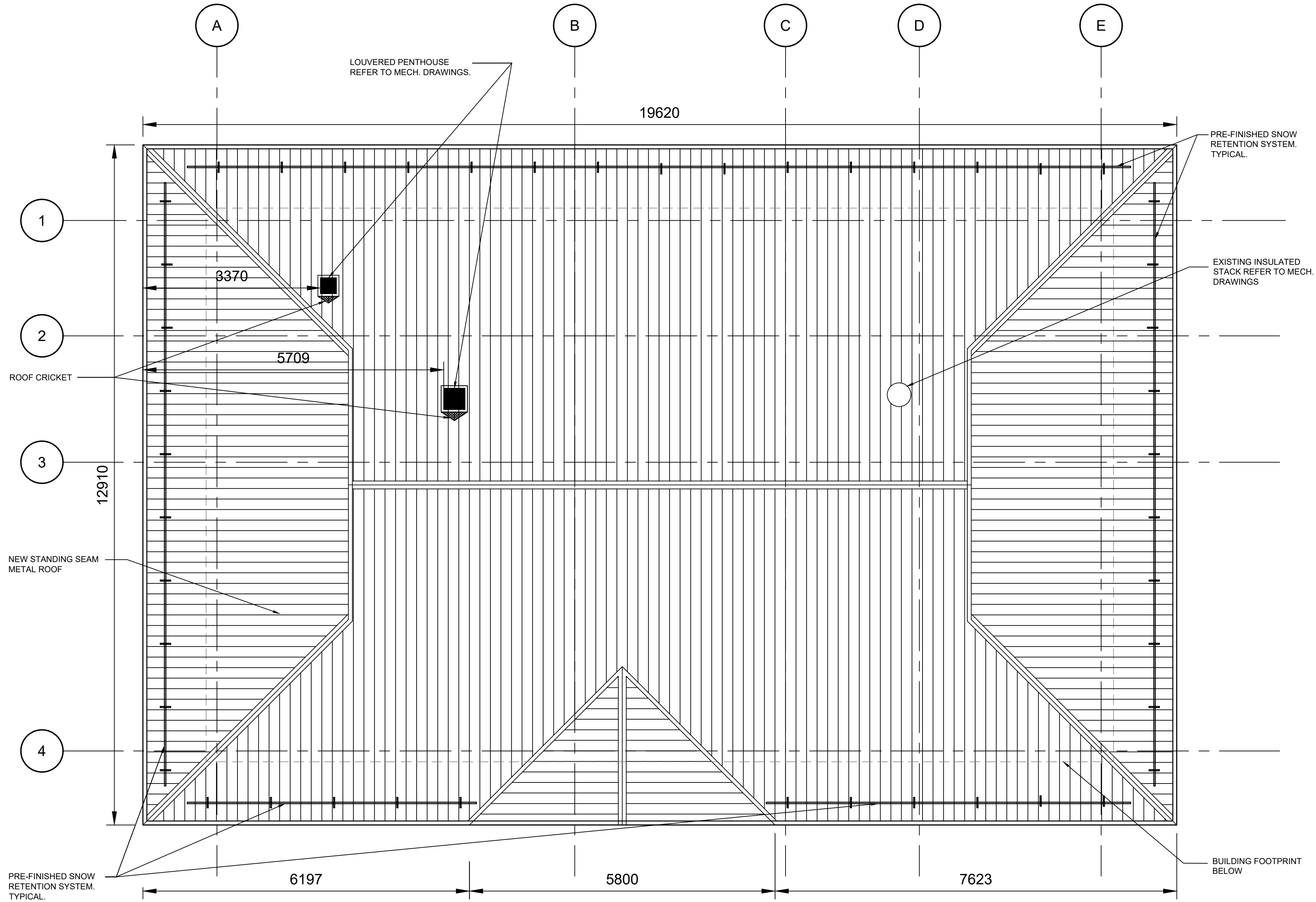
DRAWING:

ARCHITECTURAL

DEMOLITION ROOF PLAN

DESIGN: HB	DRAWING #:
DRAWN: AAJ	A102
CHECKED: HB	
JLR #: 16953-134	

PLOT DATE: Monday, April 21, 2025 1:05:05 PM



1
A103

ROOF PLAN

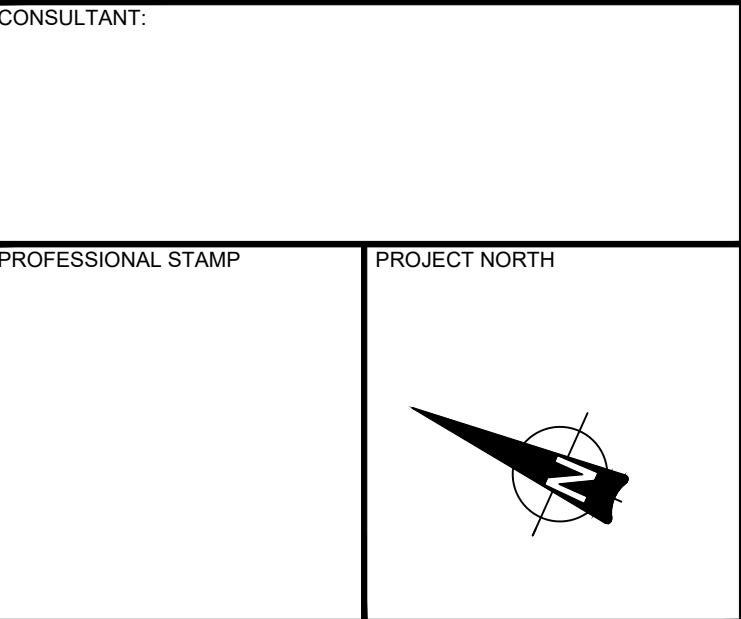
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SCALE: 1:50



PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 Brisson St, Casselman, ON K0A 1M0

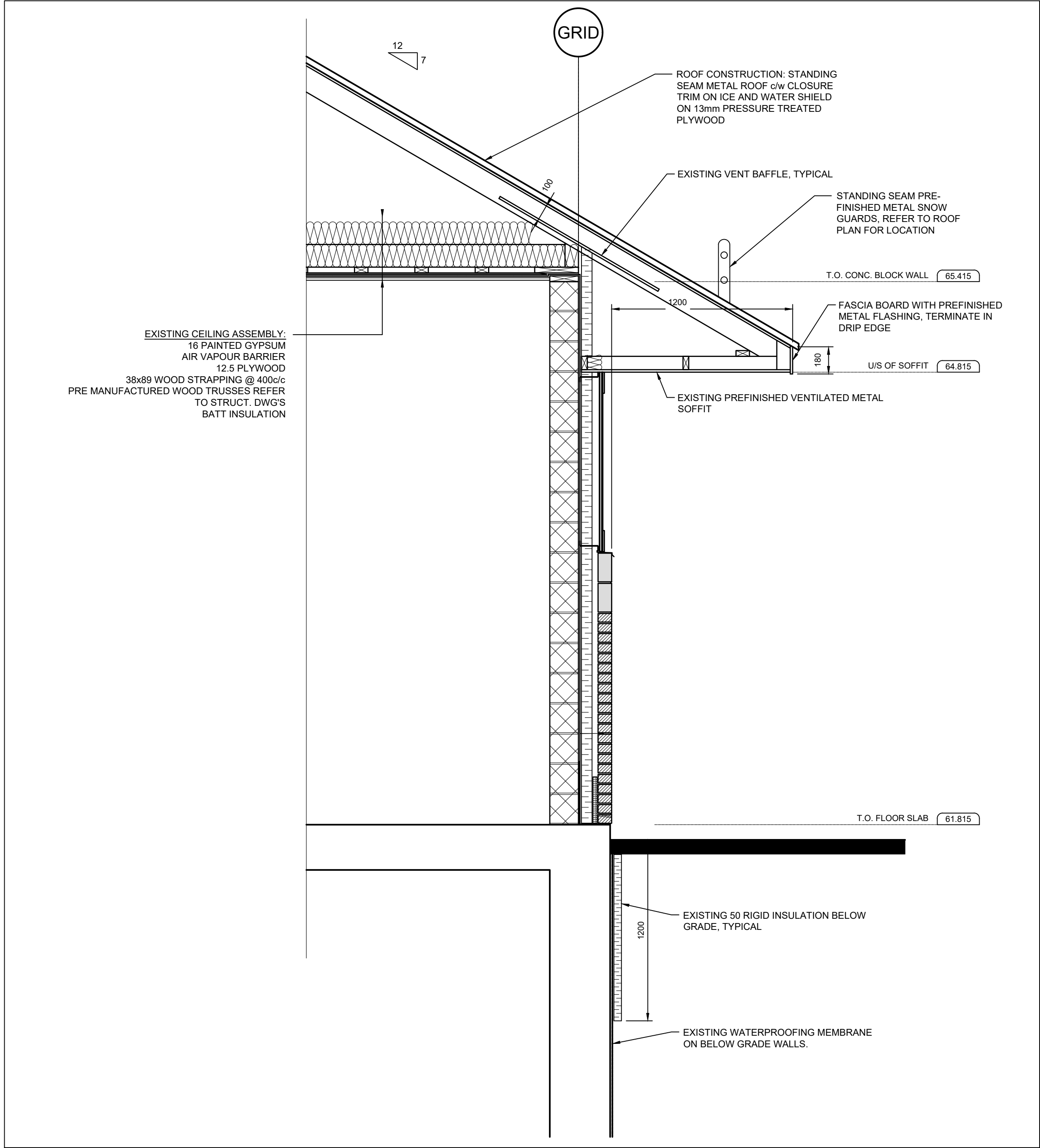
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ARCHITECTURAL

ROOF PLAN

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CHECKED: HB	
JLR #: 16953-134	

File Location: P:\160001\16953-134 - Casselman Main SPS Upgrade\03-Production\02-Arch\A104 WALL SECTIONS.dwg



1
A104

WALL SECTION
SCALE: 1:20

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No.	ISSUE / REVISION	DD/MM/YY

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SCALE: 0 25mm

SCALE:

CLIENT:



CONSULTANT: www.jlrichards.ca

JLR J.L.Richards
ENGINEERS - ARCHITECTS - PLANNERS

CONSULTANT:

PROFESSIONAL STAMP PROJECT NORTH

PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 Brisson St, Casselman, ON K0A 1M0

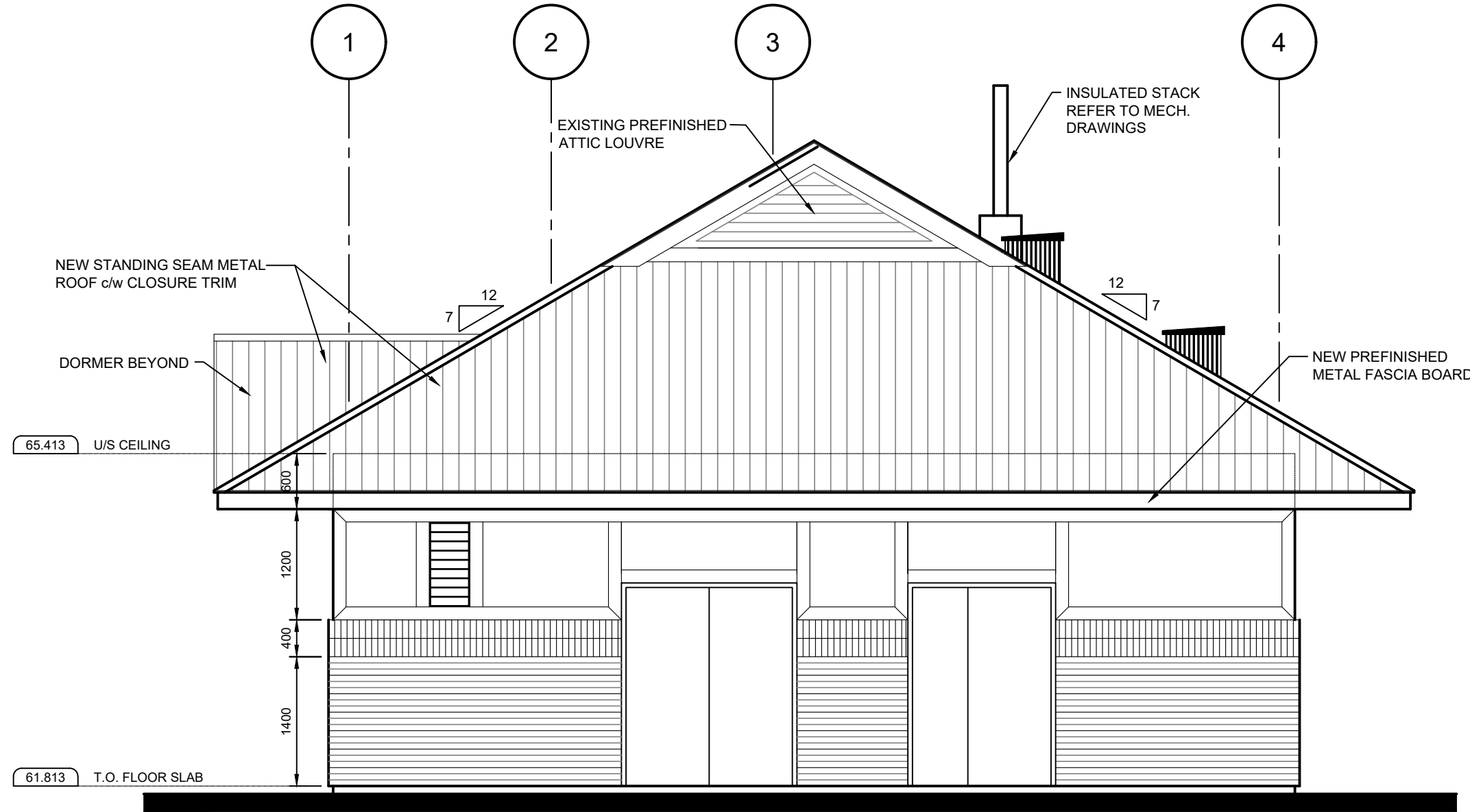
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ARCHITECTURAL
WALL SECTIONS

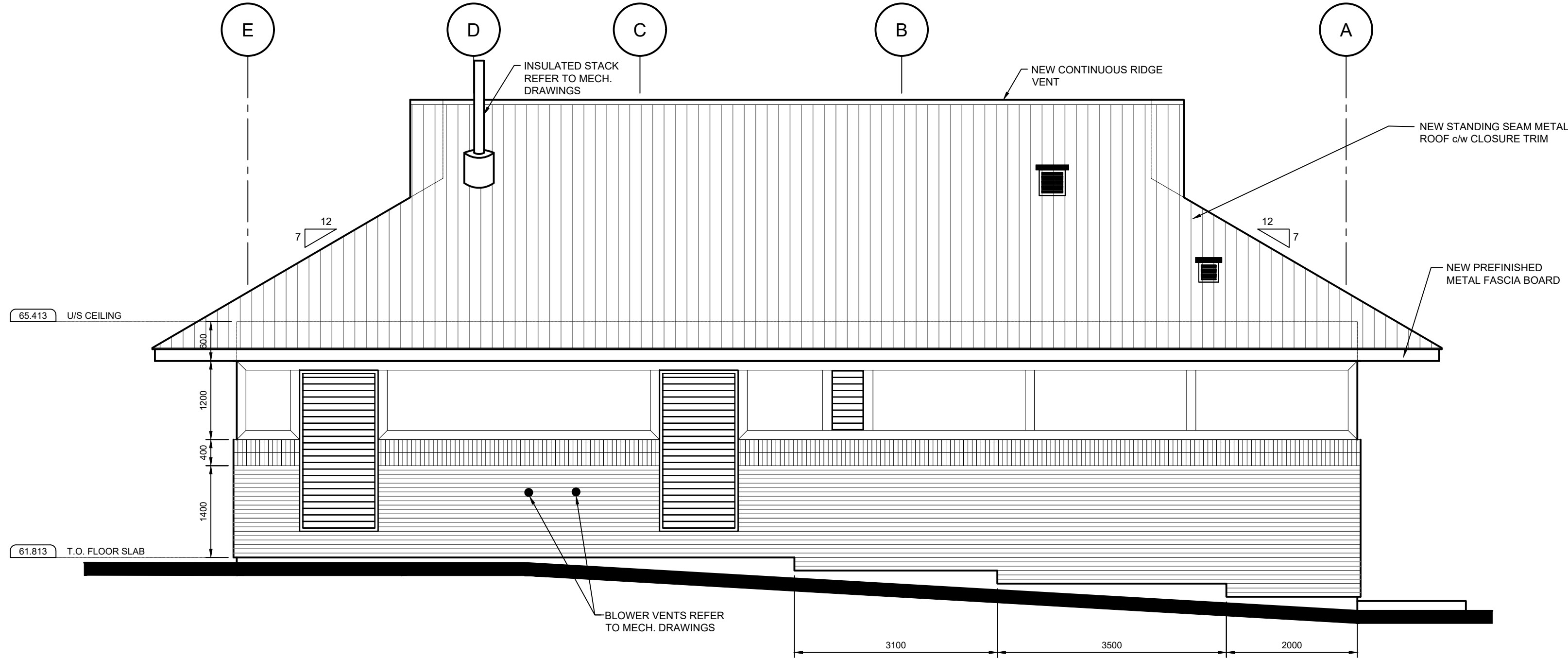
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PLOT DATE: Monday, April 21, 2025 1:05:07 PM

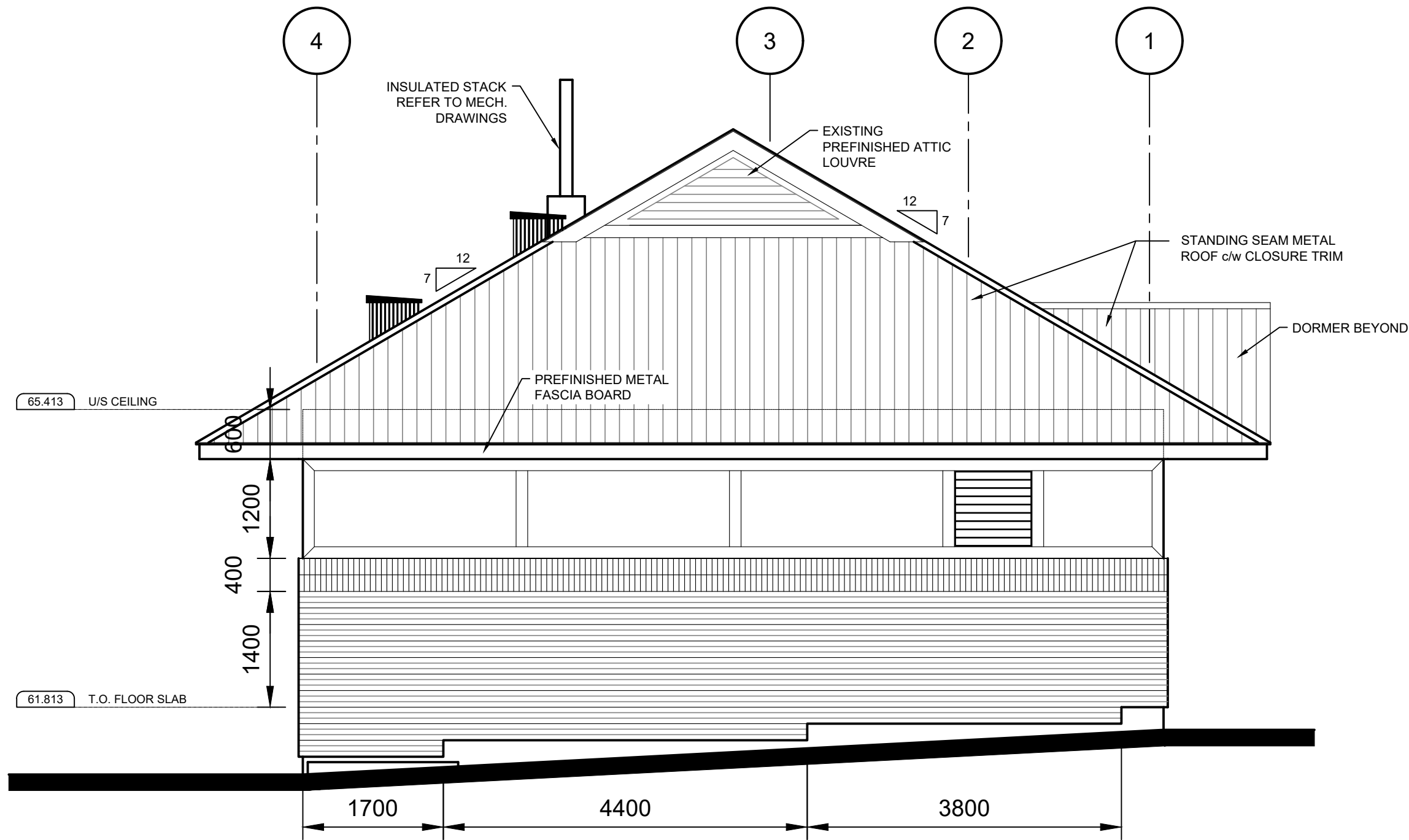
File Location: P:\160000\16953-134 - Casselman Main SPS Upgrade\03-Production\02-Arch\A107 NEW EXTERIOR ELEVATION (SHEET 1).dwg



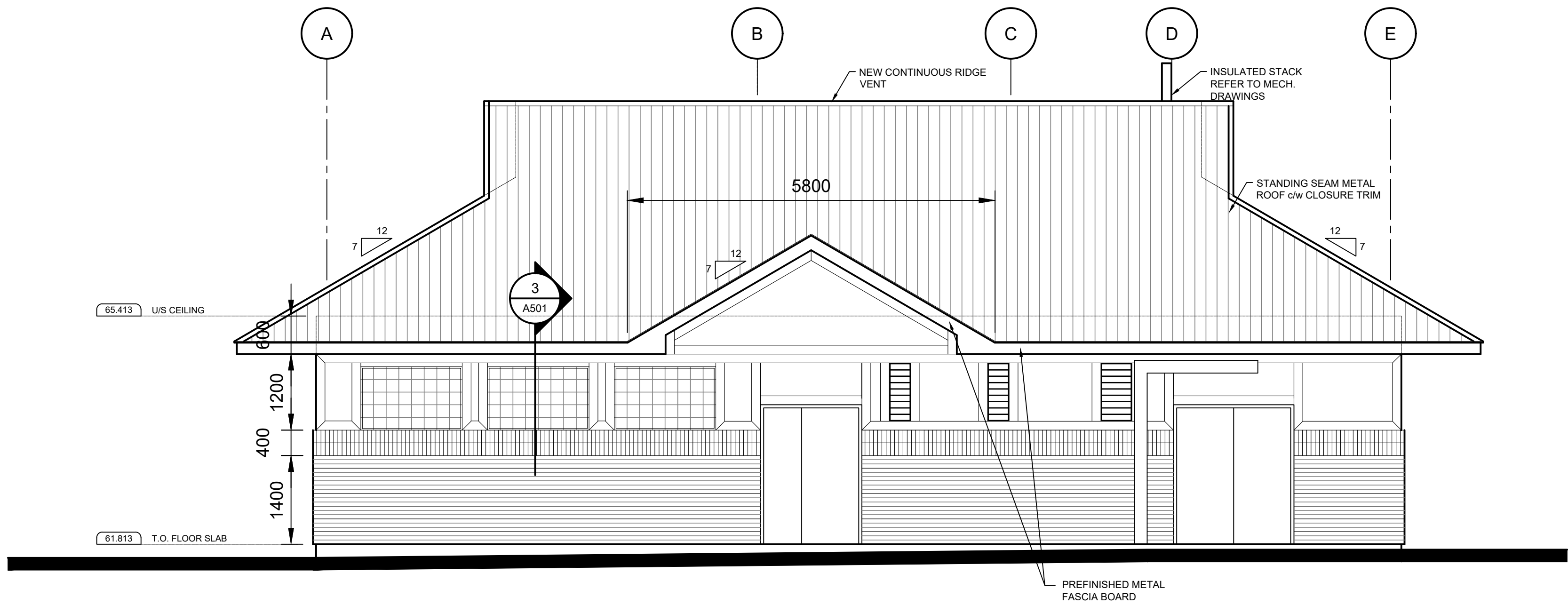
1 EAST ELEVATION
A105 SCALE: 1:50



2 NORTH ELEVATION
A105 SCALE: 1:50



3 WEST ELEVATION
A105 SCALE: 1:50



4 SOUTH ELEVATION
A105 SCALE: 1:50

0	ISSUED FOR TENDER	23/04/25
No.	ISSUE / REVISION	DD/MM/YY

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VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING. 0 25mm
SCALE:

CLIENT:


CONSULTANT:

www.jrichards.ca

CONSULTANT:

PROFESSIONAL STAMP
PROJECT NORTH

PROJECT:

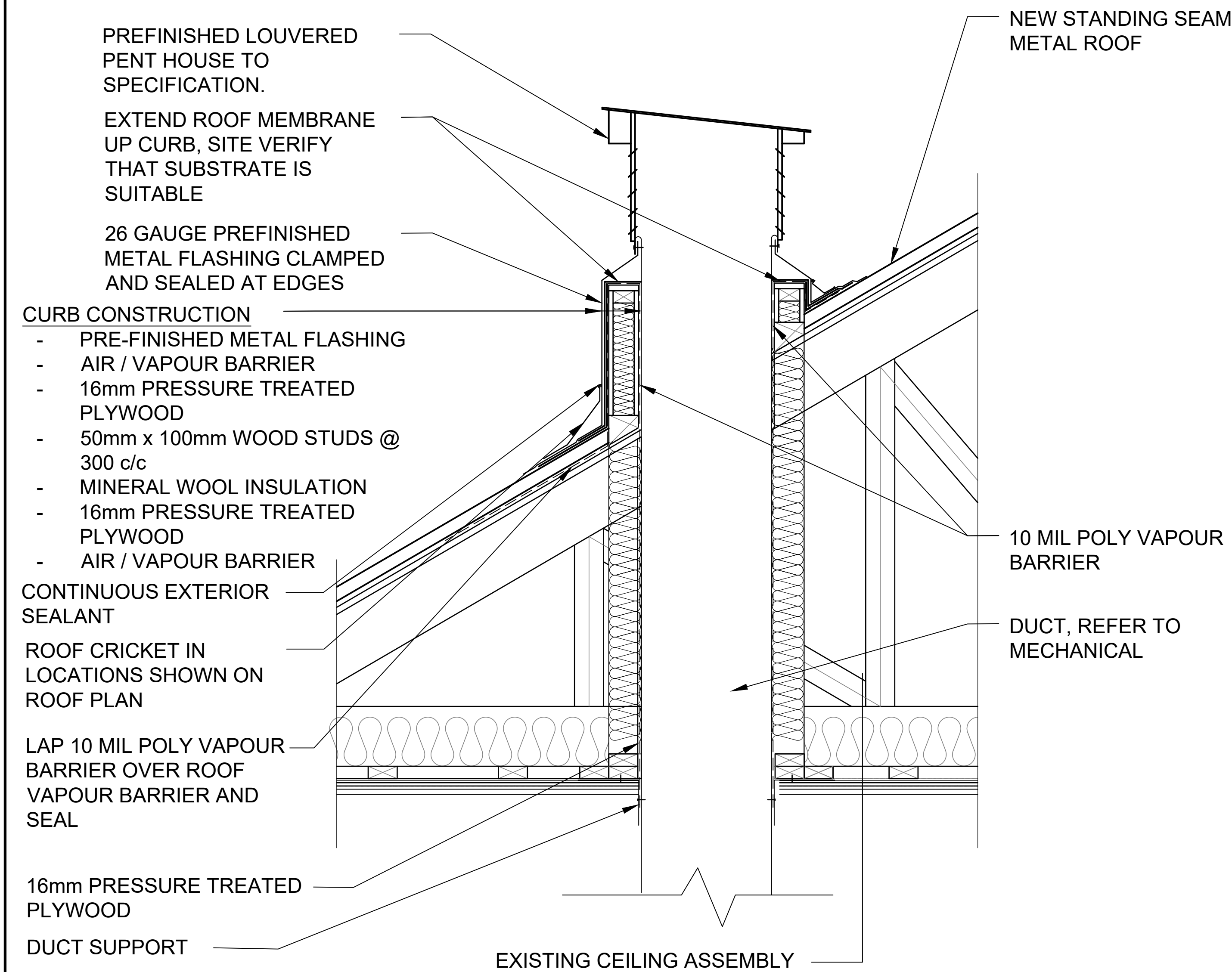
16953-134 - CASSELMAN MAIN SPS UPGRADE
16 Brisson St, Casselman, ON K0A 1M0

DRAWING:
ARCHITECTURAL
NEW EXTERIOR ELEVATION

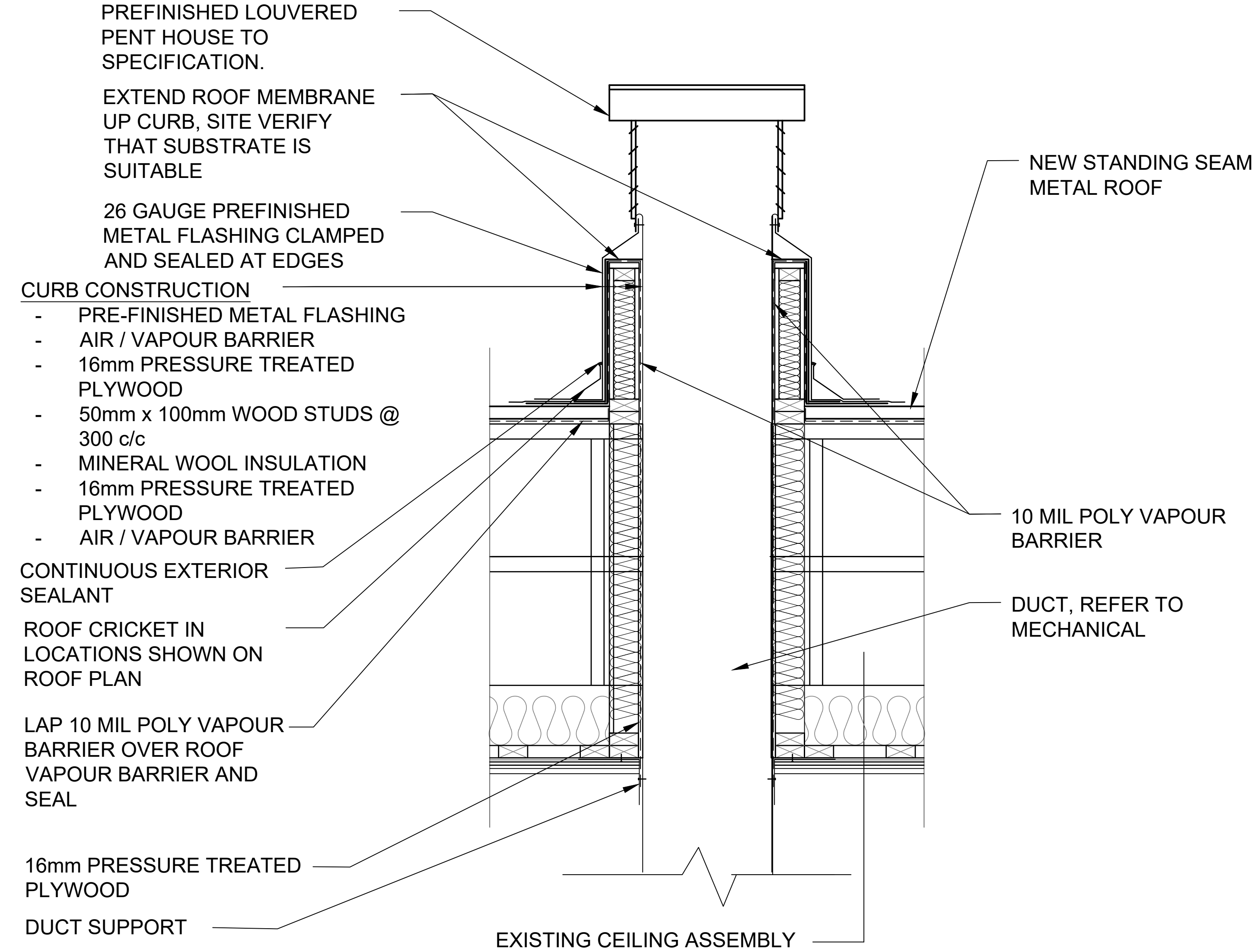
DESIGN: HB	DRAWING #:
DRAWN: AAJ	A105
CHECKED: HB	
JLR #: 16953-134	

PLOT DATE: Monday, April 21, 2025 1:05:05 PM

File Location: P:\60001\6953-134 - Casselman Main SPS Upgrade\03-Production\02-Arch\A111 TYPICAL ROOF PENETRATION DETAILS.dwg



1 TYPICAL ROOF PENETRATION DETAIL
A106 SCALE: 1:10



2 TYPICAL ROOF PENETRATION DETAIL
A106 SCALE: 1:10

0	ISSUED FOR TENDER	23/04/25
No.	ISSUE / REVISION	DD/MM/YY

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SCALE:

CLIENT:



CONSULTANT: www.jrichards.ca

JLR J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 Brisson St, Casselman, ON K0A 1M0

DRAWING:

ARCHITECTURAL

TYPICAL DETAILS

DESIGN: HB

DRAWN: AAJ

CHECKED: HB

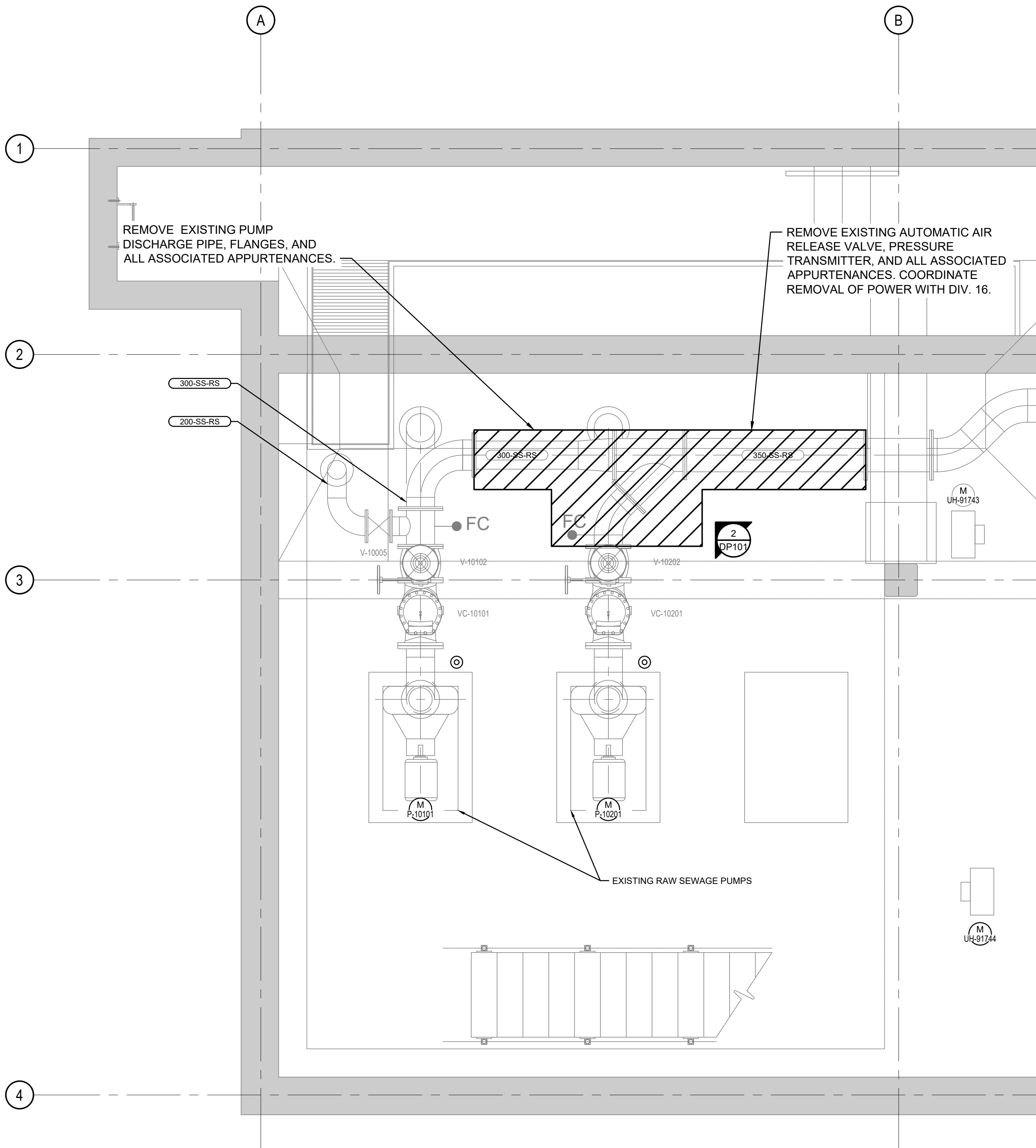
JLR #: 16953-134

DRAWING #:

A106

PLOT DATE: Monday, April 21, 2025 1:05:05 PM

File Location: P:\160001\16953-134 - Casselman Main SPS Upgrade\03-Production\04-Process\DP101 PUMPING STATION DEMOLITION.dwg



1 PUMPING STATION DEMOLITION PLAN
SCALE: 1:30

GENERAL NOTES:

- DEMOLITION DRAWINGS ARE BASED ON ORIGINAL INSTALLATION AND DO NOT NECESSARILY REFLECT ALL DETAILS, PIPING, CONDUITS, ETC. TO BE REMOVED.
- CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS TO FAMILIARIZE THEMSELVES WITH THE SCOPE OF WORK PRIOR TO PROCEEDING.
- PRIOR TO COMMENCING DEMOLITION, THE OWNER CONSULTANT AND CONTRACTOR WILL TOUR THE SITE AND CONFIRM EXACT DEMOLITION SCOPE.
- UNLESS INDICATED OTHERWISE, ALL DEMOLISHED MATERIAL TO BE REMOVED FROM THE SITE AND DISPOSED OF IN AN APPROVED MANNER.
- REMOVE ALL PIPING, CONDUITS, SUPPORTS, ANCHORS AND OTHER APPURTENANCES ASSOCIATED WITH REMOVED EQUIPMENT AND/OR MATERIALS TO BE CUT FLUSH WITH OR BELOW WHERE DETAILED. MAKE GOOD ALL SURFACES.
- WHERE SECTION OF PARTIALLY DEMOLISHED PIPING IS TO REMAIN, PROVIDE PIPE CAP/BLIND FLANGE AT THE TERMINATION POINT OF DEMOLITION.
- REFER TO DRAWINGS OF EACH DISCIPLINE FOR TYPICAL DETAILS FOR MAKING GOOD SURFACES, TERMINATING PIPING, FILLING OPENINGS, SLEEVES, ETC.
- REMOVE EXISTING PIPING AND ASSOCIATED APPURTENANCES MADE OBSOLETE BY NEW INSTALLATION.
- DEMOLITION TO BE PHASED TO MAINTAIN OPERATION AT ALL TIMES.
- SELECTIVE DEMOLITION IS SHOWN ON DESIGN DRAWINGS.
- DP SERIES DRAWINGS ARE BASED ON DRAWINGS FOR EXISTING INSTALLATIONS AS NOTED, AS SUCH, FADED DRAWING NOTES ARE GENERALLY FROM THESE DRAWINGS AND ARE FOR INFORMATION PURPOSES ONLY, WITH THE EXCEPTION OF DARK NOTES.
- REFER TO THE SEQUENCING SPECIFICATION PRIOR TO ANY REMOVALS.
- COORDINATE REMOVAL OF ALL POWER AND CONTROLS FOR PROCESS EQUIPMENT WITH DIV. 16.
- FOR BELOW GRADE REMOVALS, REFER TO CIVIL DEMOLITION DRAWINGS.



REMOVE EXISTING AUTOMATIC AIR
RELEASE VALVE, PRESSURE
TRANSMITTER, AND ALL ASSOCIATED
APPURTENANCES. COORDINATE
REMOVAL OF POWER WITH DIV. 16.

REMOVE EXISTING PUMP
DISCHARGE PIPE, FLANGES
AND ALL ASSOCIATED
APPURTENANCES.

2 PUMPING STATION DEMOLITION
SCALE: NTS

REMOVE EXISTING DISCHARGE
PIPING AND PROVIDE NEW PIPING
AND VALVES IN ACCORDANCE
WITH THE PID TO CONNECT TO
NEW AND EXISTING PUMPING
SYSTEM



REMOVE EXISTING SUCTION
PIPING. PROVIDE NEW SUCTION
PIPING AND VALVES TO EXISTING
PUMP AND NEW PUMP IN
ACCORDANCE WITH THE PID.

3 HEATING WATER PUMPS DEMOLITION
SCALE: NTS

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VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING.

SCALE: AS SHOWN

CLIENT:

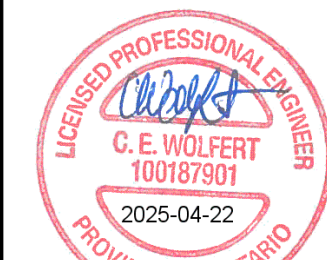


CONSULTANT: www.jrichards.ca

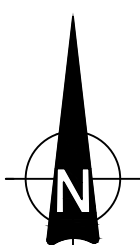
J.L. Richards
ENGINEERS - ARCHITECTS - PLANNERS

CONSULTANT:

PROFESSIONAL STAMP



PROJECT NORTH



PROJECT:

16953-134 - CASSELMAN MAIN SPS
UPGRADE

16 BRISSON ST, CASSELMAN, ON K0A 1M0

DRAWING:

PUMPING STATION DEMOLITION

DESIGN: CVR/CW

DRAWN: JV

CHECKED: JW

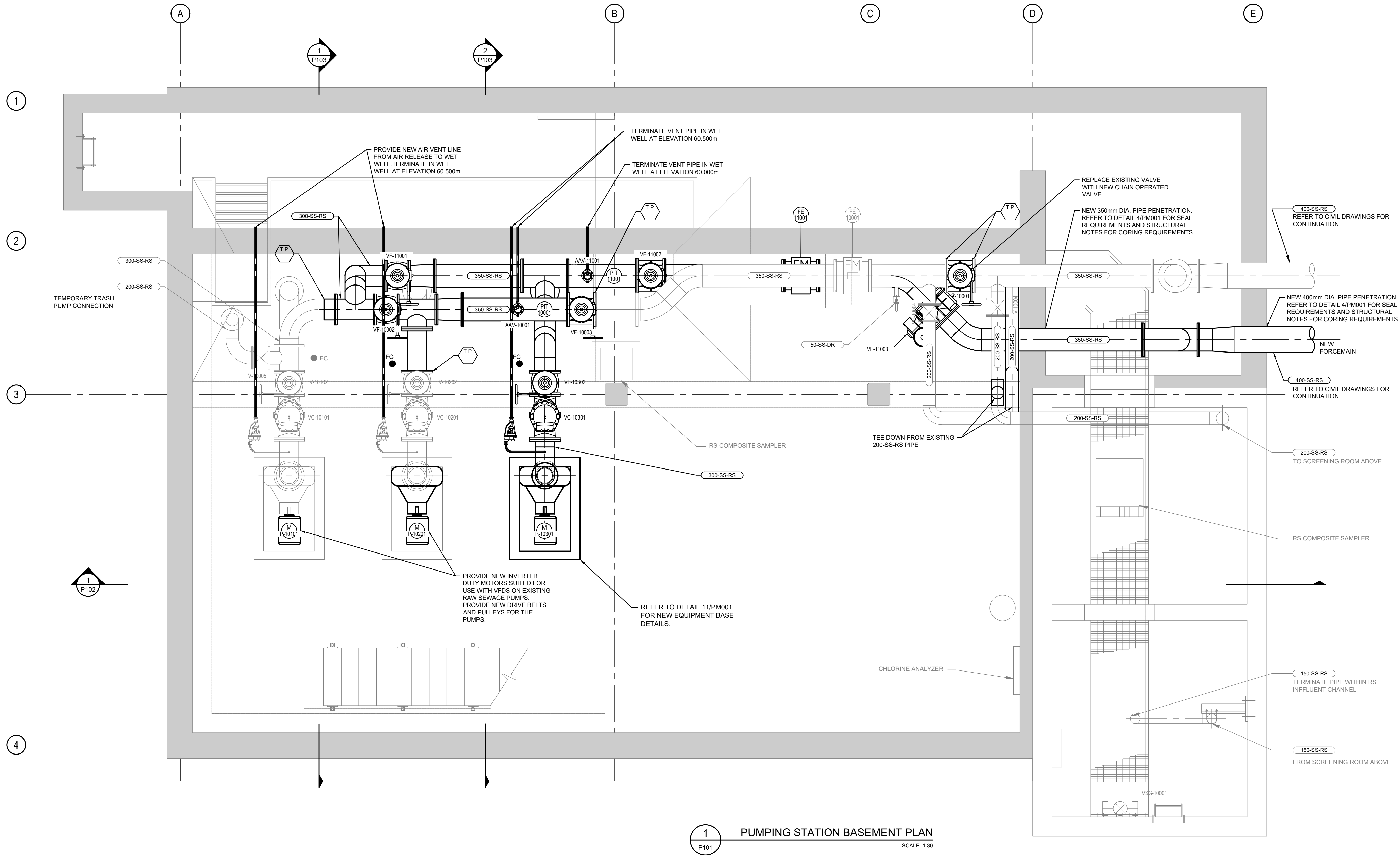
JLR #: 16953-134

DRAWING #:


DP101

PLOT DATE: Tuesday, April 22, 2025 1:26:14 PM

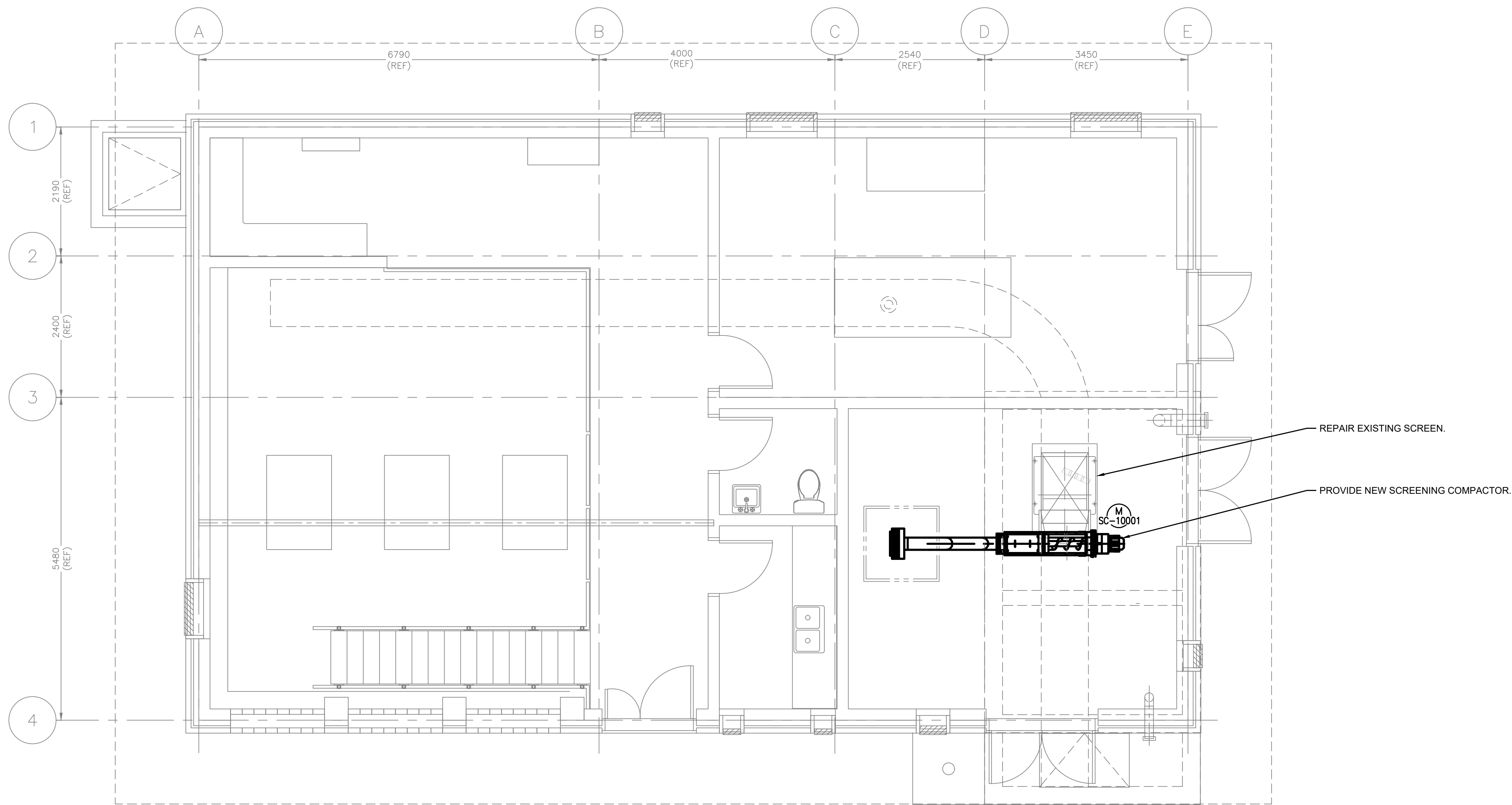
File Location: \\jrichards\Corpl\Projects\16000\16953-134 - Casselman Main SPS Upgrade\03-Production\04-Process\P101 PUMPING STATION PLAN.dwg



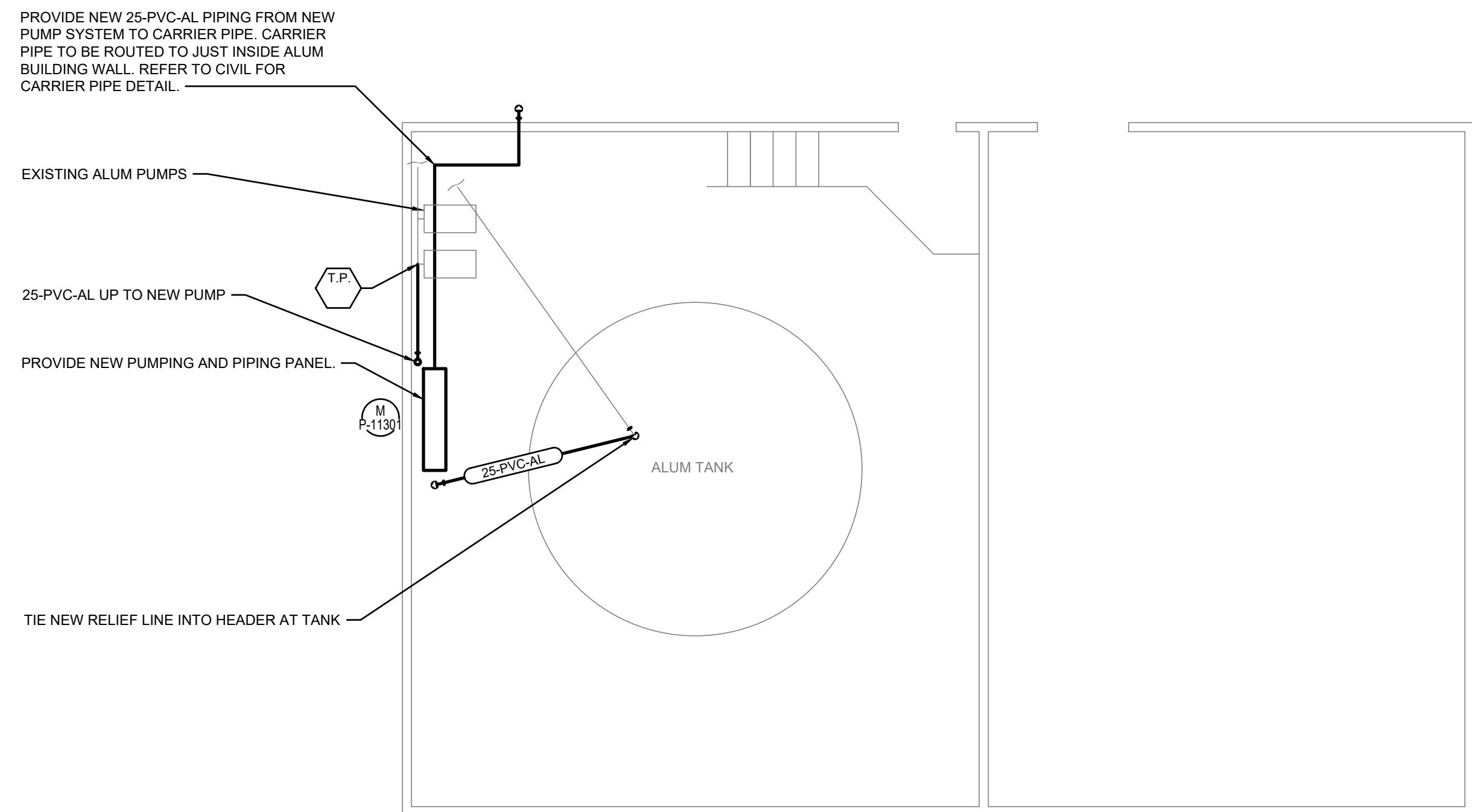
1 PUMPING STATION BASEMENT PLAN
P101 SCALE: 1:30

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VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING.		
SCALE: 1:30		<div><div></div><div>025mm</div></div>
CLIENT:		
<div><div>J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS</div></div>		
CONSULTANT: www.jlrichards.ca		
CONSULTANT:		
PROFESSIONAL STAMP		PROJECT NORTH
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PLOT DATE: Tuesday, April 22, 2025 1:26:16 PM



1 PUMPING STATION GROUND FLOOR PLAN
PID002 SCALE: 1:50



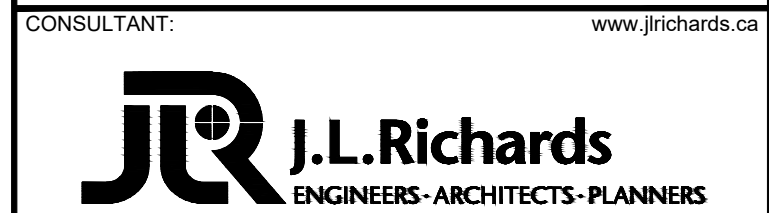
2 ALUM / BLOWER BUILDING
P102 SCALE: 1:50

0	ISSUED FOR TENDER	23/04/25
No.	ISSUE / REVISION	DD/MM/YY

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VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING.

SCALE: 1:50
0 1 2 3 4m

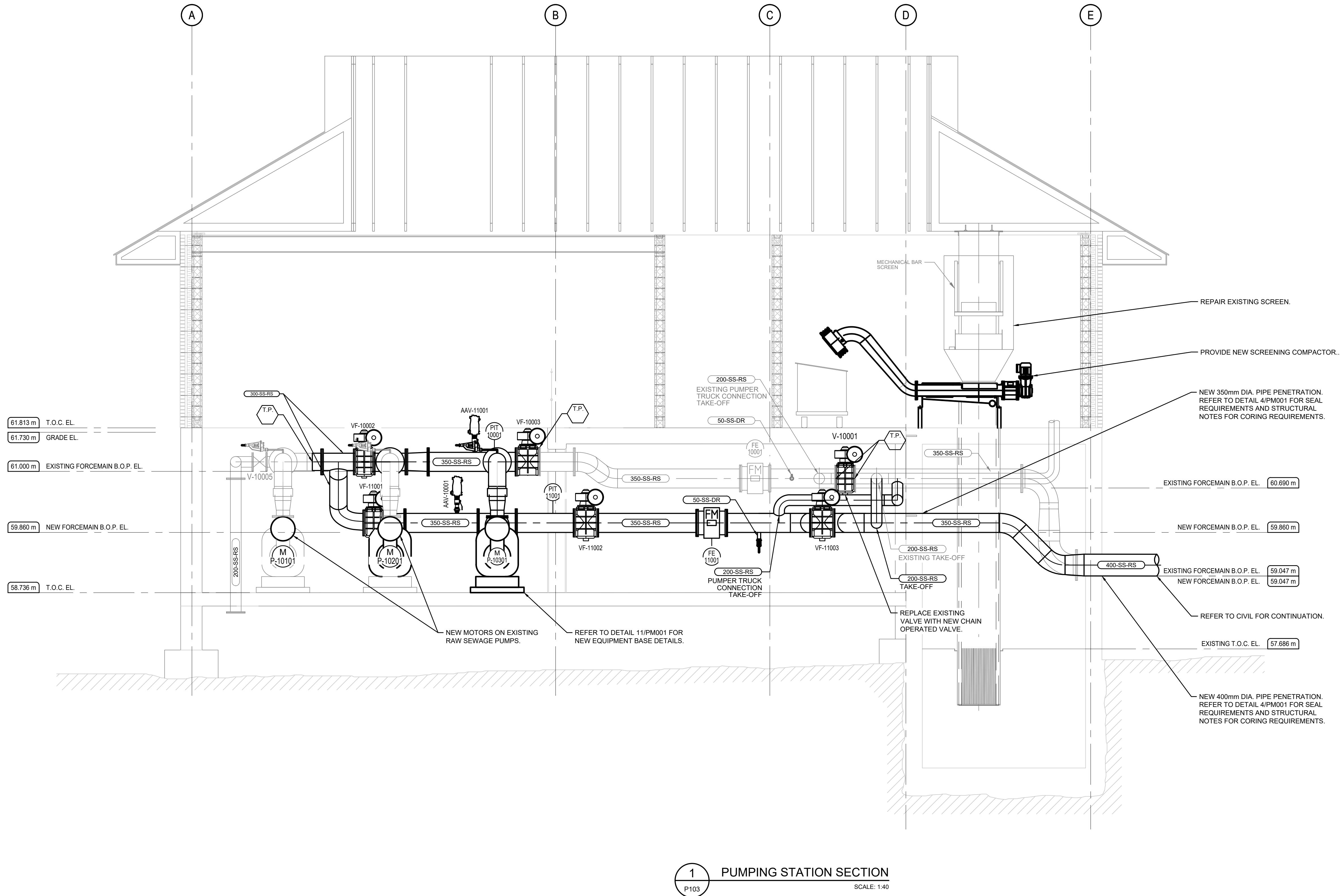


PROFESSIONAL STAMP 	PROJECT NORTH
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PROJECT:
16953-134 - CASSELMAN MAIN SPS UPGRADE
16 Brisson St, Casselman, ON K0A 1M0

DESIGN: CW	DRAWING #:
DRAWN: EH	P102
CHECKED: JW	
JLR #:	16953-134

File Location: \\jrichards\Corpor\Projects\16000\16953-134 - Casselman Main SPS Upgrade\03-Production\04-Process\P102 PUMPING STATION SECTIONS.dwg



0	ISSUED FOR TENDER	23/04/25
No.	ISSUE / REVISION	DD/MM/YY

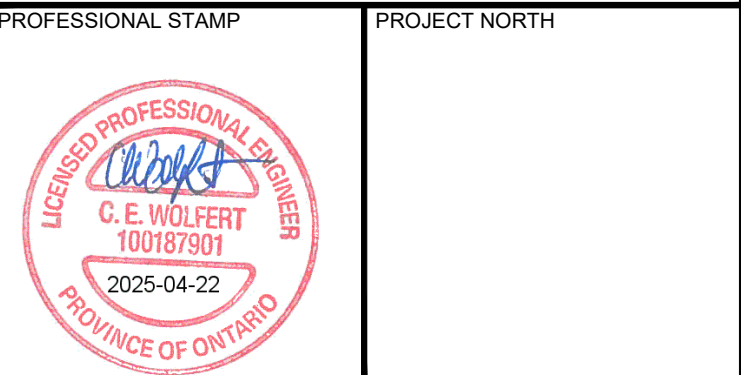
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VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING. 0 25mm
SCALE: 1:40



CONSULTANT: **J.L. Richards**
ENGINEERS - ARCHITECTS - PLANNERS

CONSULTANT:



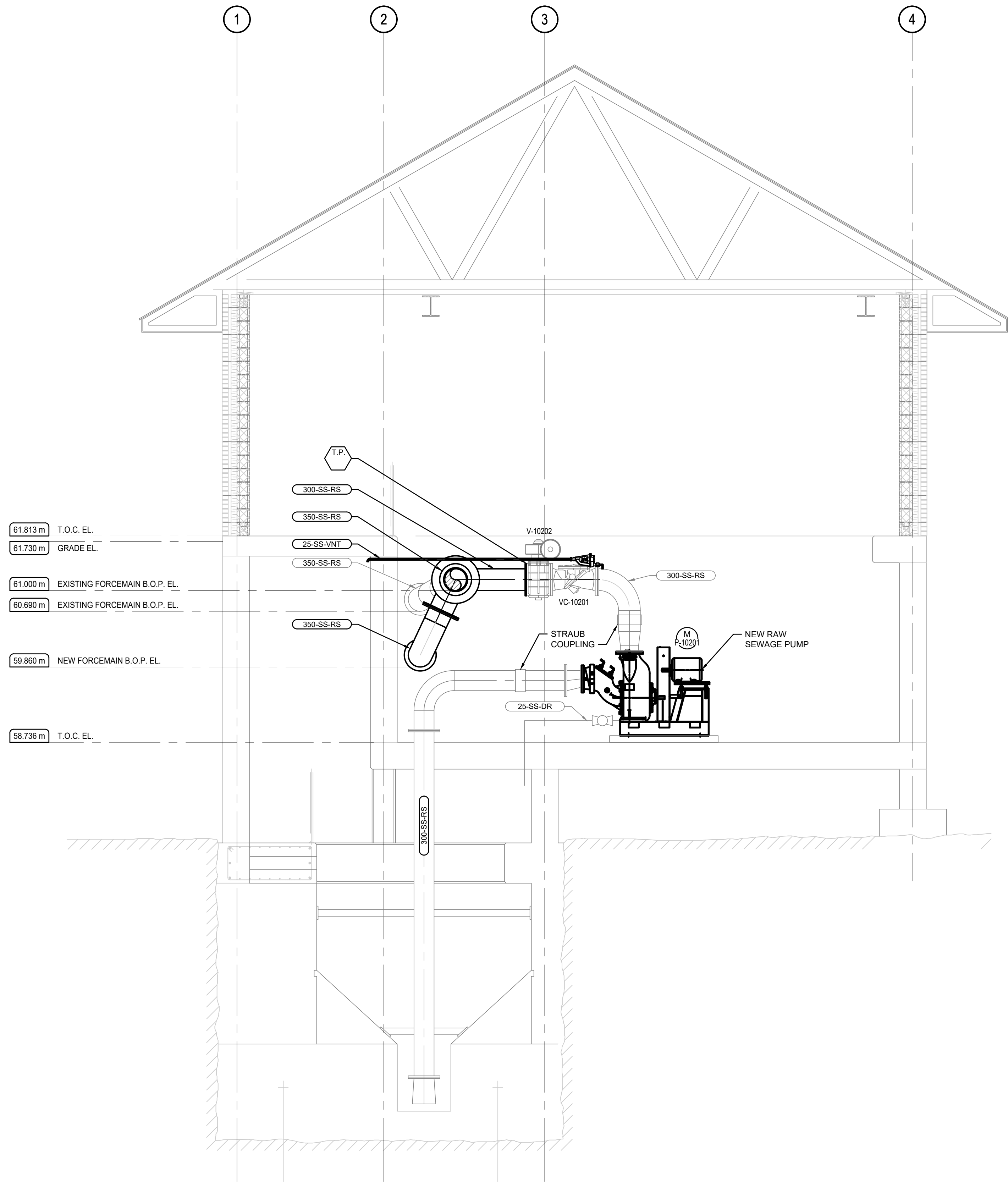
PROJECT:
16953-134 - CASSELMAN MAIN SPS UPGRADE
16 BRISSON ST, CASSELMAN, ON K0A 1M0

DRAWING:
PUMPING STATION SECTIONS

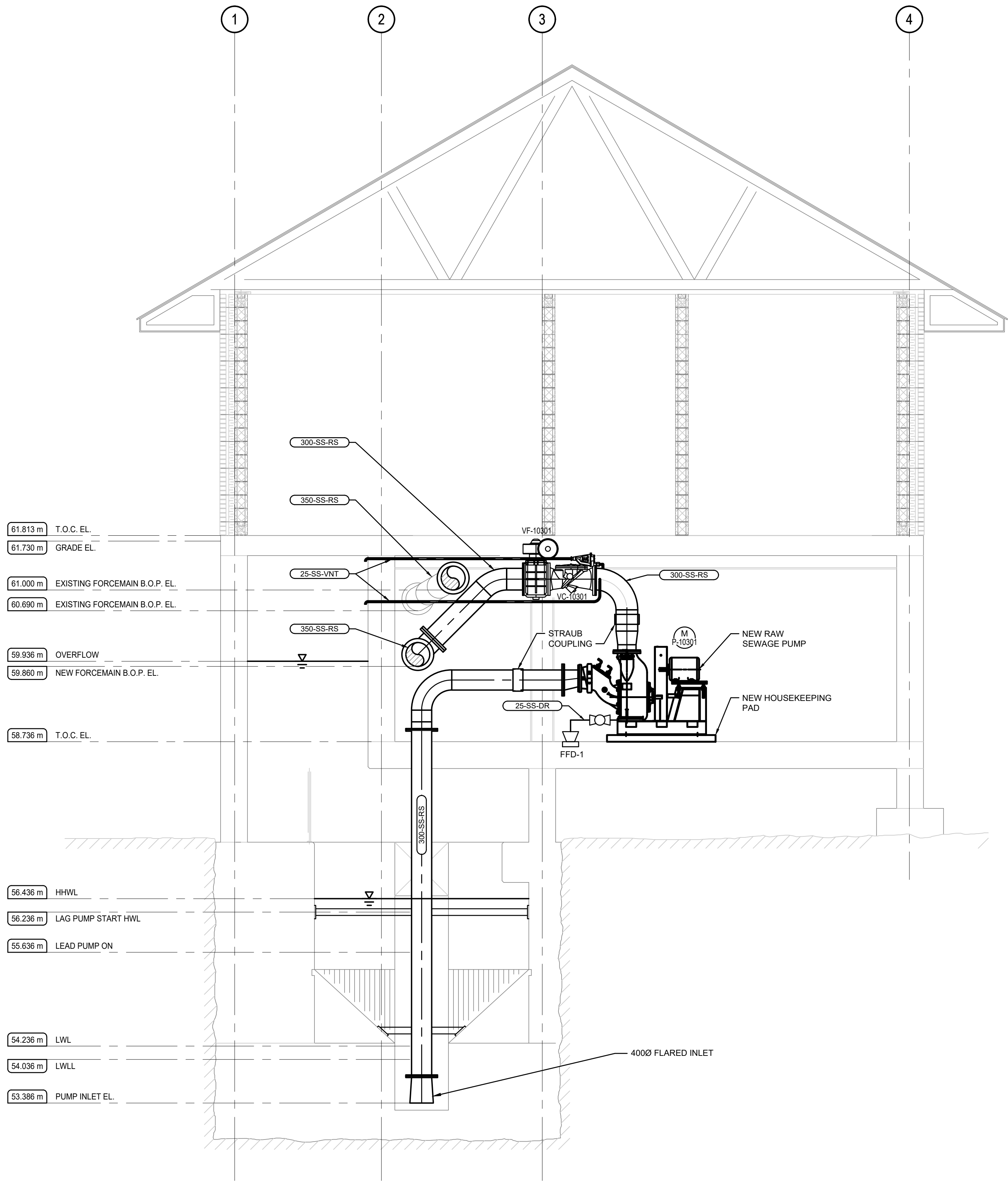
DESIGN: CVR/CW	DRAWING #:
DRAWN: JV	P103
CHECKED: JW	
JLR #: 16953-134	

PLOT DATE: Tuesday, April 22, 2025 1:26:19 PM

File Location: \\jrichards\Corpor\Projects\16000\16953-134 - Casselman Main SPS Upgrade\03-Production\04-Process\P102 PUMPING STATION SECTIONS.dwg



1 PUMPING STATION SECTION
P104 SCALE: 1:40



2 PUMPING STATION SECTION
P104 SCALE: 1:40

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No.	ISSUE / REVISION	DD/MM/YY

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VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING.

SCALE: 1:40

CLIENT:



CONSULTANT: www.jrichards.ca

J.L. Richards
ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP



PROJECT NORTH

PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 BRISSON ST, CASSELMAN, ON K0A 1M0

DRAWING:

PUMPING STATION SECTIONS

DESIGN: CVR/CW

DRAWN: JV

CHECKED: JW

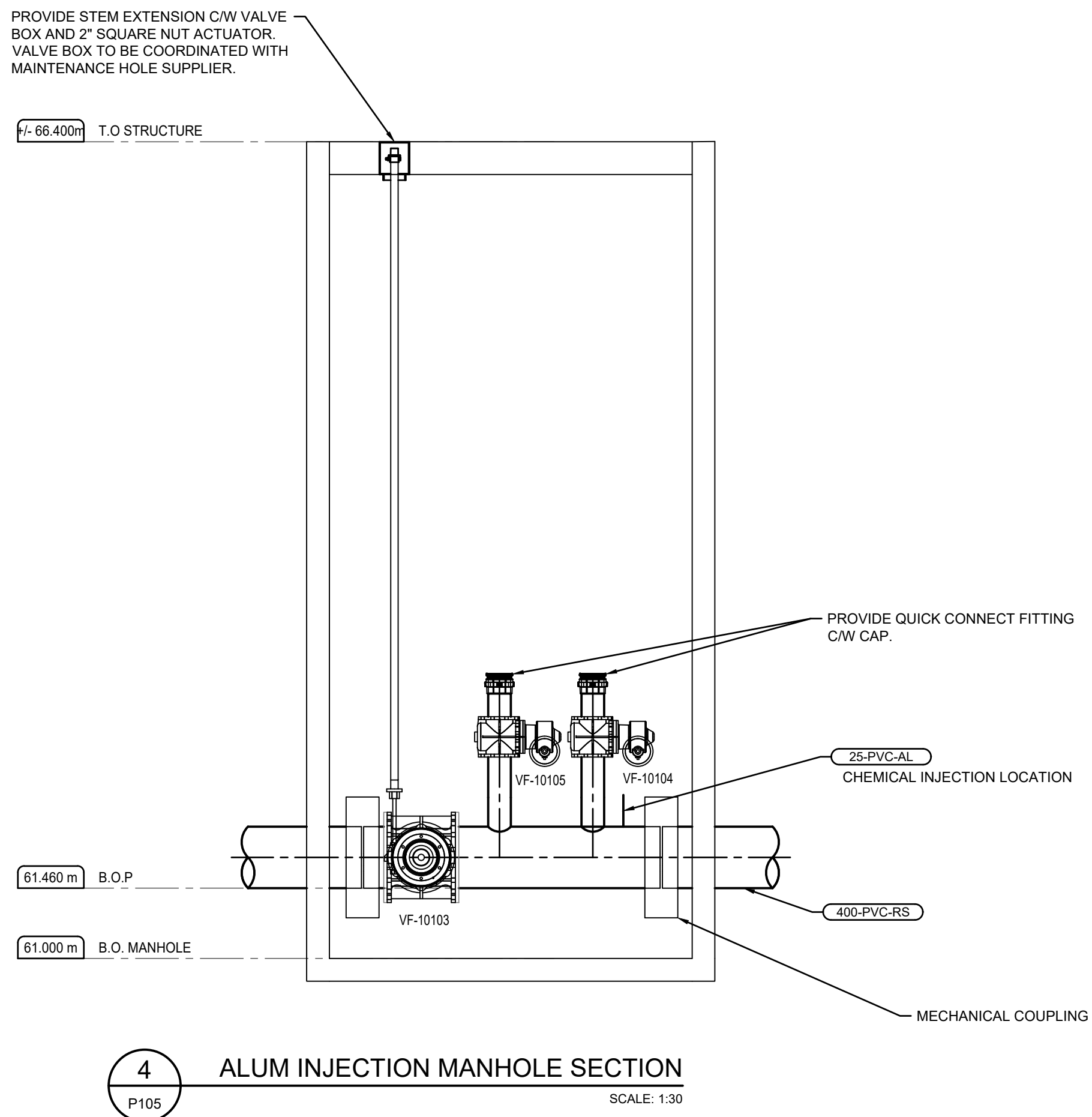
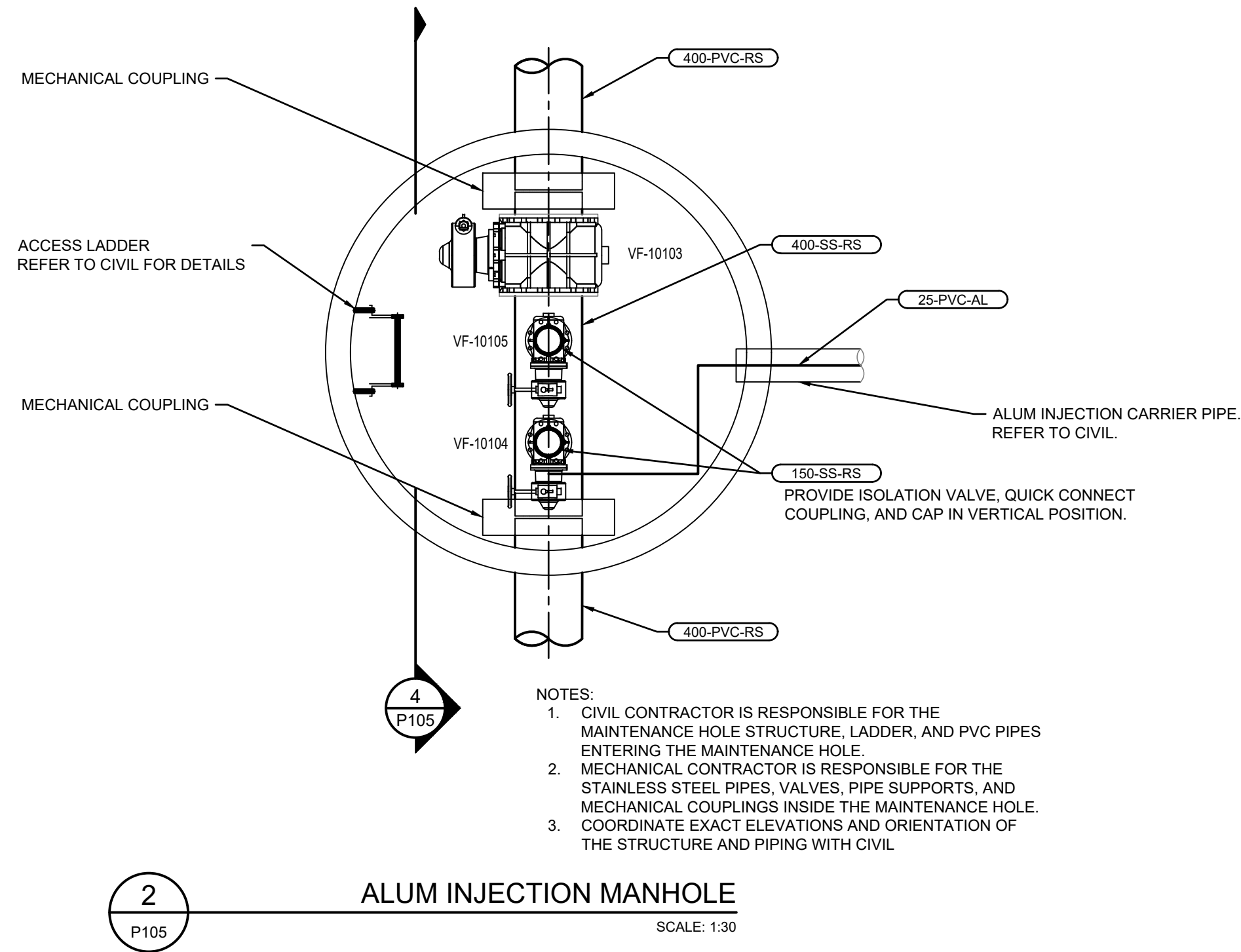
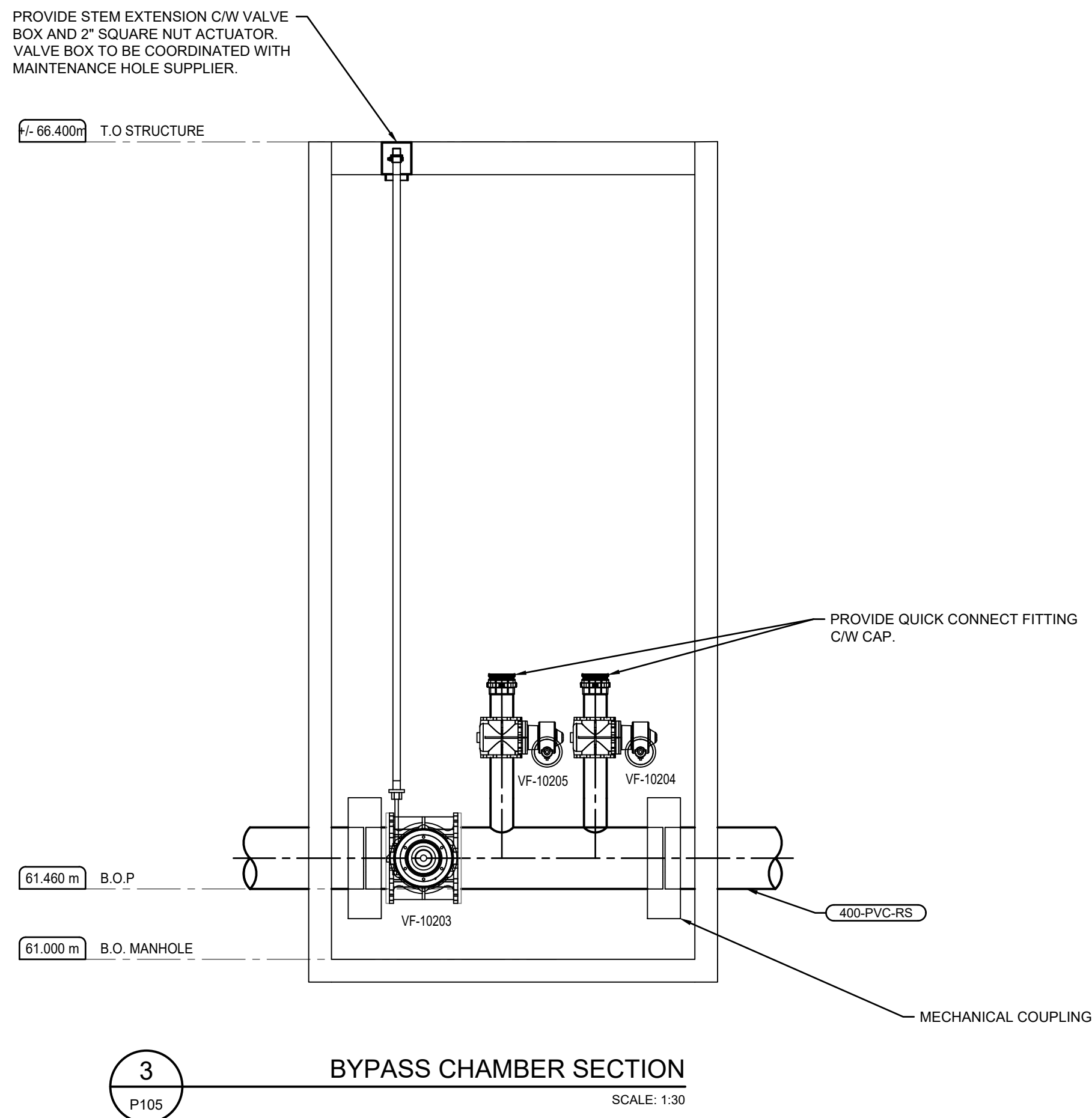
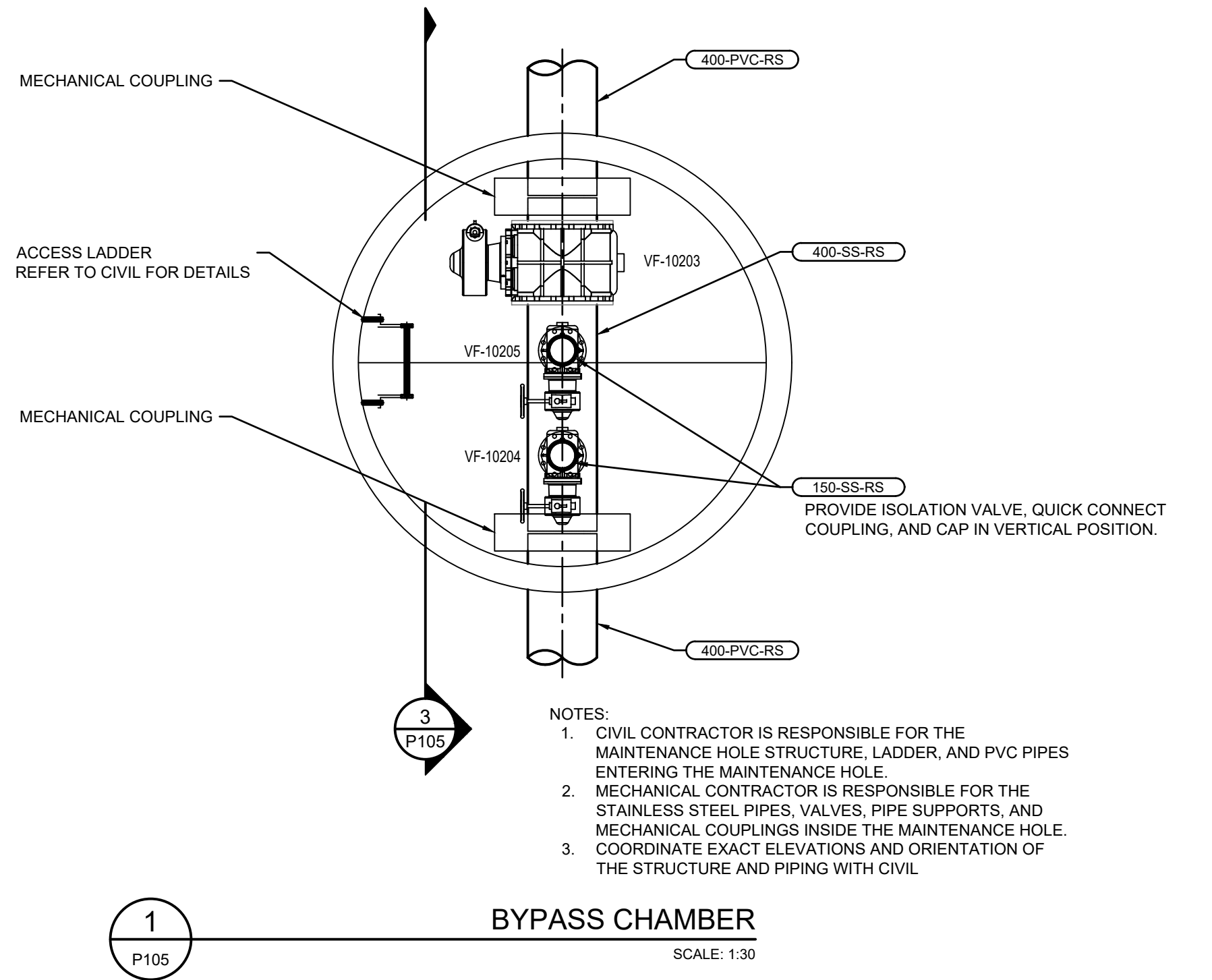
JLR #: 16953-134

DRAWING #:

P104

PLOT DATE: Tuesday, April 22, 2025 1:20:21 PM

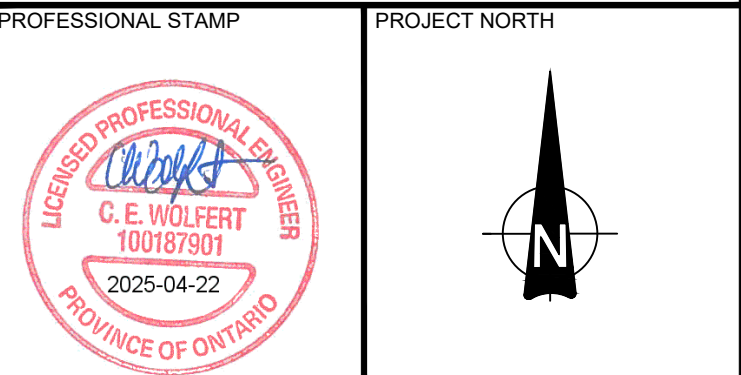
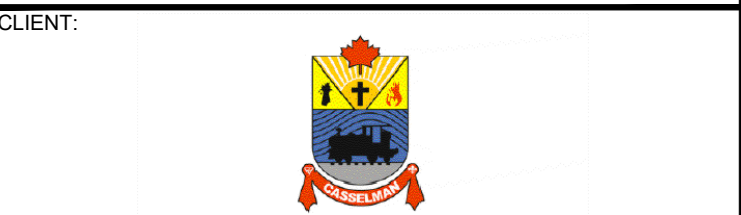
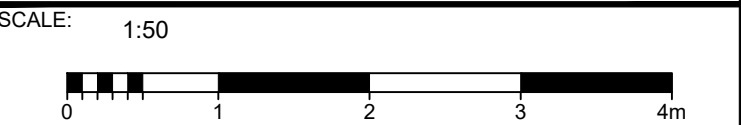
File Location: P:\160001\6953-134 - Casselman Main SPS Upgrade\03-Production\04-Process\P102 PUMPING STATION GROUND FLOOR PLAN.dwg



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PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

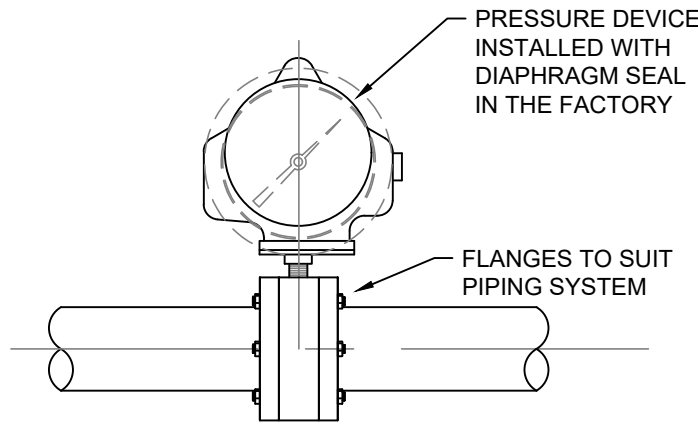
16 Brisson St, Casselman, ON K0A 1M0

DRAWING:

BYPASS CHAMBER AND MANHOLE PLAN AND SECTIONS

DESIGN:	CW	DRAWING #:	
DRAWN:	EH		
CHECKED:	JW		
JLR #:	16953-134		P105

PLOT DATE: Tuesday, April 22, 2025 1:26:17 PM

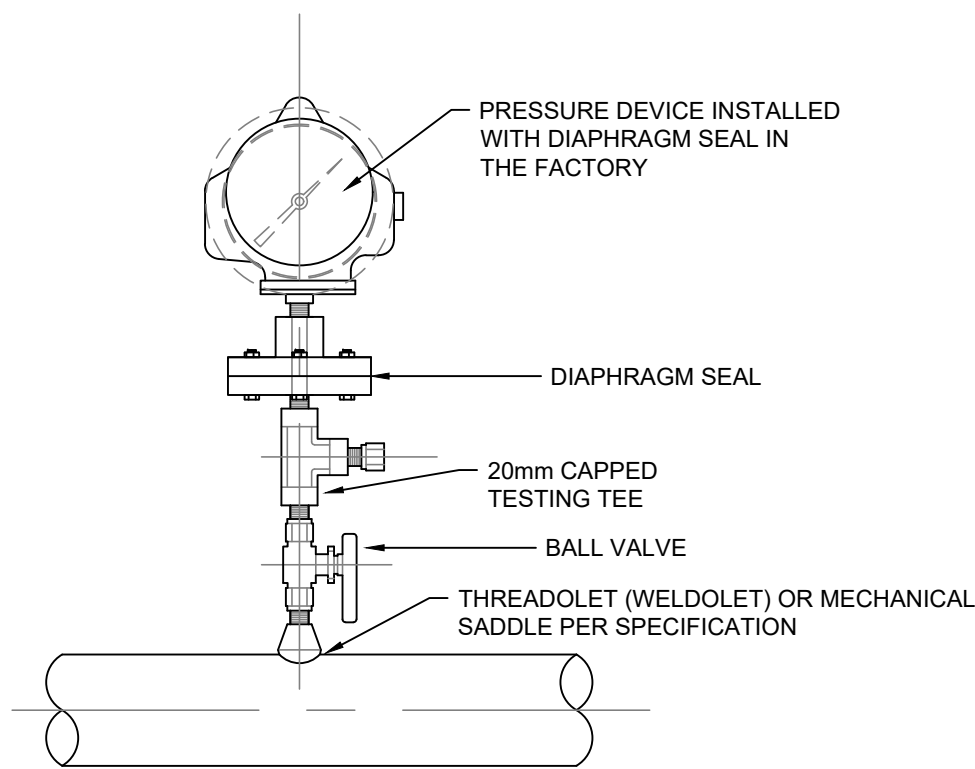


- NOTES:
1. REFER TO DIVISION 17 FOR INSTRUMENTATION TABLES LISTING PRESSURE DEVICES.
 2. ELASTOMER TO SUIT PROCESS FLUID
 3. MANUFACTURERS: RED VALVE, ONYX VALVE OR APPROVED EQUAL.
- APPLICATION:
1. SLUDGE, SCUM, AND SLURRY LINES.

1
PM002

PRESSURE DEVICE WITH ISOLATOR RING

SCALE: NTS

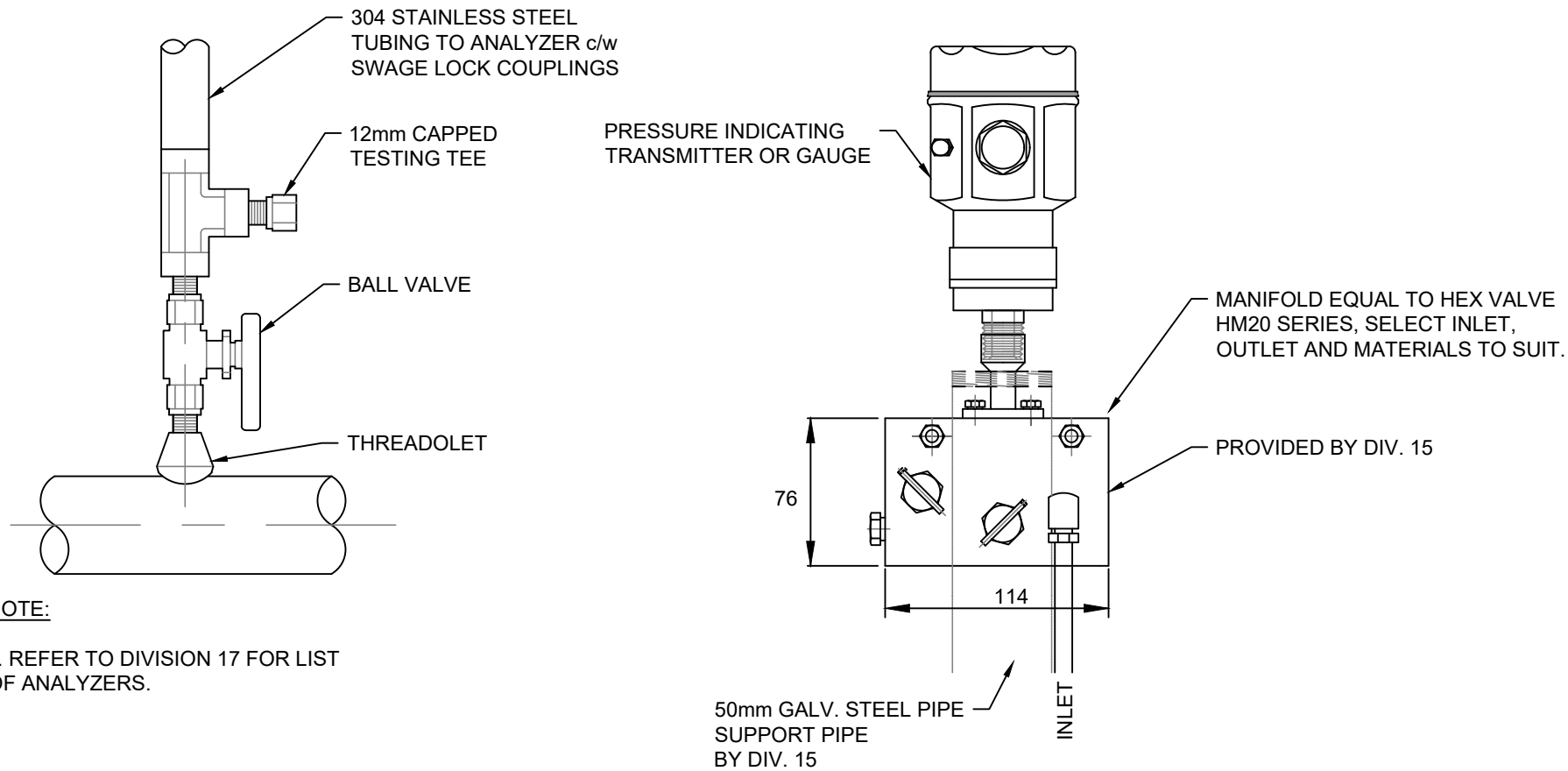


- APPLICATION:
1. SLUDGE, SCUM, AND SLURRY LINES.
- NOTE:
1. REFER TO DIVISION 17 FOR INSTRUMENTATION TABLES LISTING PRESSURE DEVICES.
 2. GAUGES BY DIV. 15.

2
PM002

PRESSURE DEVICE WITH DIAPHRAGM SEAL

SCALE: N.T.S.

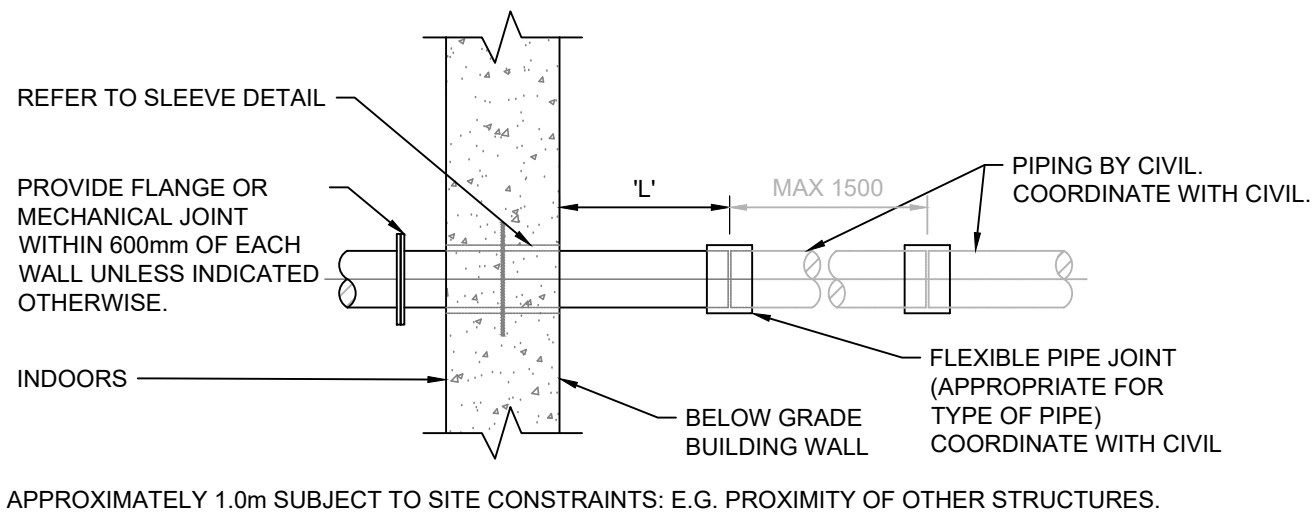


- NOTE:
1. REFER TO DIVISION 17 FOR LIST OF ANALYZERS.

3
PM002

ANALYZER INSTALLATION

SCALE: N.T.S.

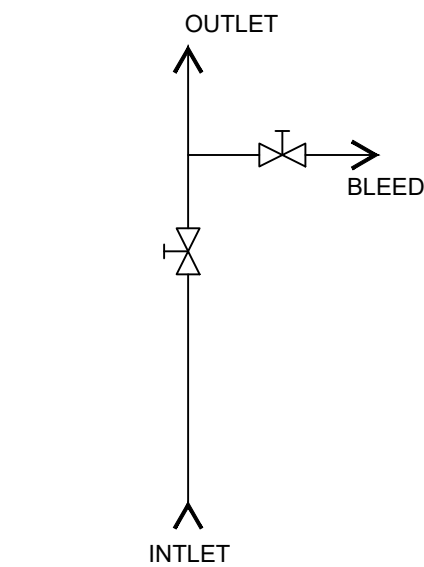


- APPLICATION:
1. CONNECTION OF PROCESS OR MECHANICAL PIPING PASSING THROUGH A TANK OR BUILDING WALL CONNECTING BELOW GRADE PIPING INSTALLED BY CIVIL.

4
P002

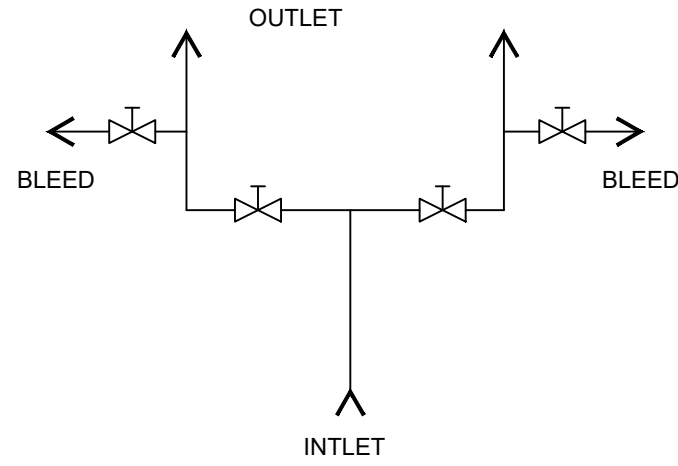
PIPE ENTERING / LEAVING BUILDING OR TANKS BELOW GRADE

SCALE: NTS



MANIFOLD FLOW SCHEMATIC

- PIPING AND INSTALLATION BY DIV. 15
- INSTALLATION REQUIREMENTS BY DIVISION 17.



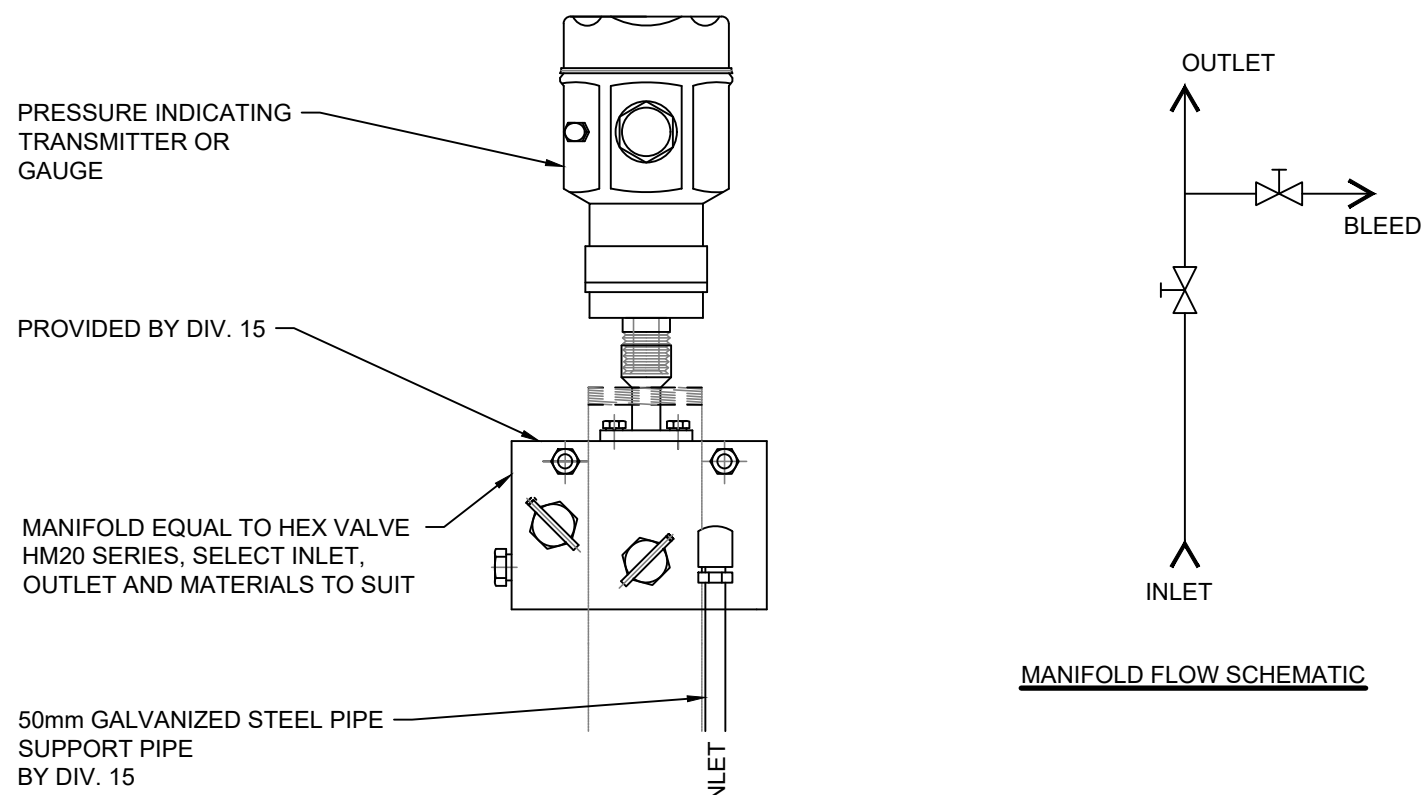
MANIFOLD FLOW SCHEMATIC

- PIPING AND INSTALLATION BY DIV. 15
- INSTALLATION REQUIREMENTS BY DIVISION 17.

5
PM002

SINGLE PRESSURE INSTRUMENT MOUNTING DETAIL HM20

SCALE: N.T.S.

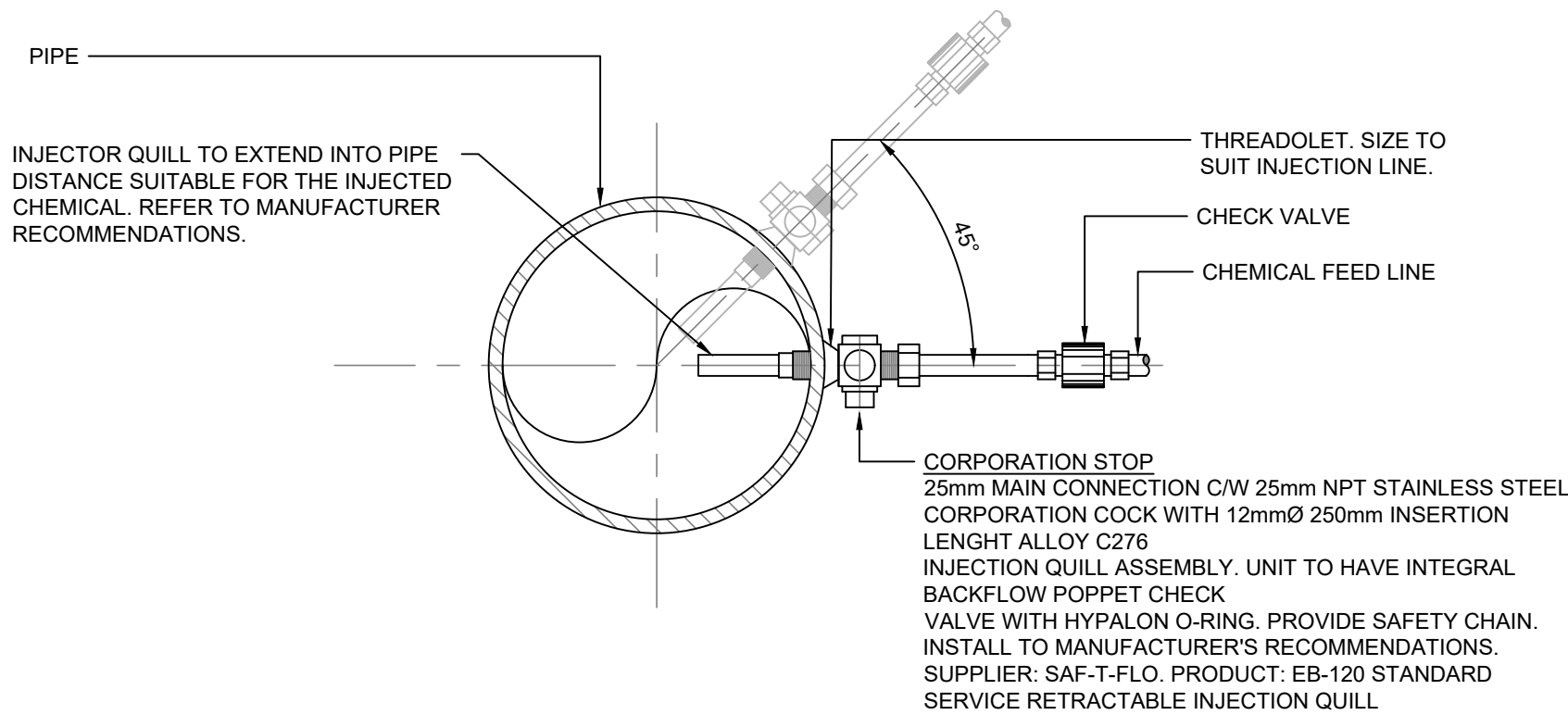


- NOTES:
1. PIPING AND INSTALLATION BY DIV. 15.
 2. INSTALLATION REQUIREMENTS BY DIVISION 17.

6
PM002

SINGLE PRESSURE INSTRUMENT MOUNTING DETAIL HM20

SCALE: NTS



7
P002

CHEMICAL INJECTION ASSEMBLY

SCALE: NTS

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SCALE: NTS



CONSULTANT: J.L. Richards



CONSULTANT: J.L. Richards

PROFESSIONAL STAMP PROJECT NORTH



PROJECT: 16953-134 - CASSELMAN MAIN SPS UPGRADE

16953-134 - CASSELMAN MAIN SPS UPGRADE

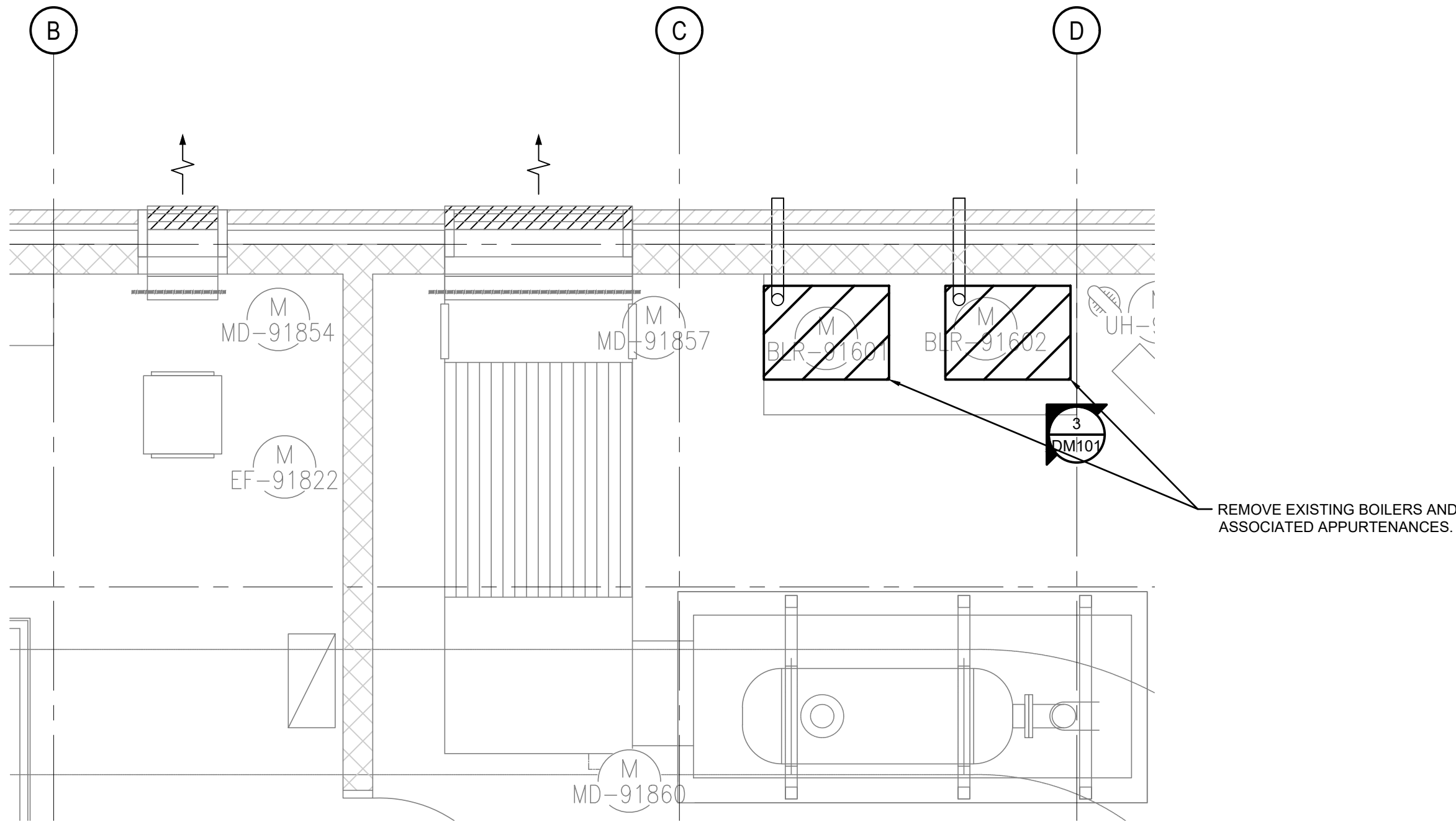
16 Brisson St, Casselman, ON K0A 1M0

DRAWING: PROCESS MECHANICAL STANDARD DETAILS

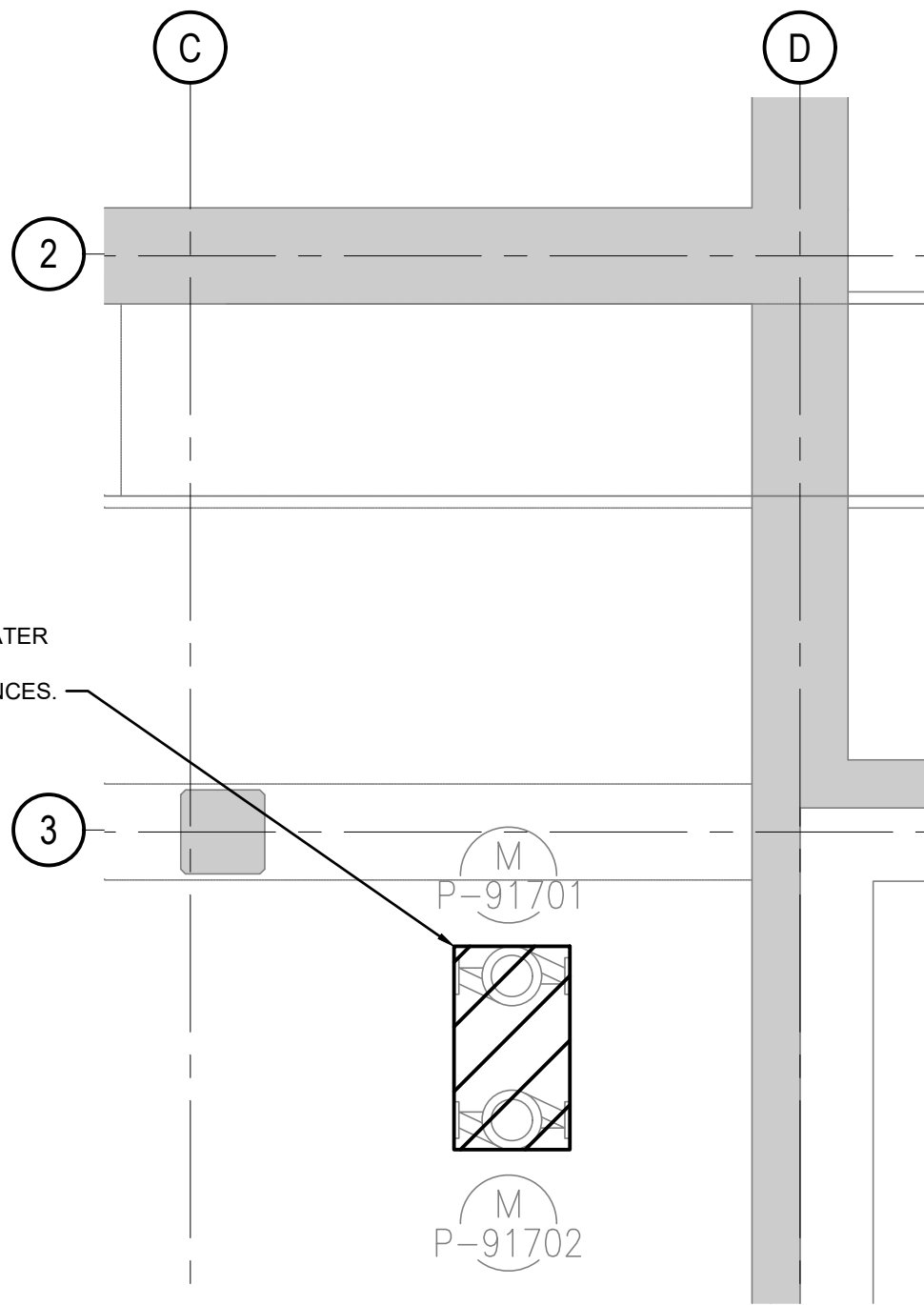
DESIGN: CW
DRAWN: EH
CHECKED: JW
JLR #: 16953-134

DRAWING #:
PM002

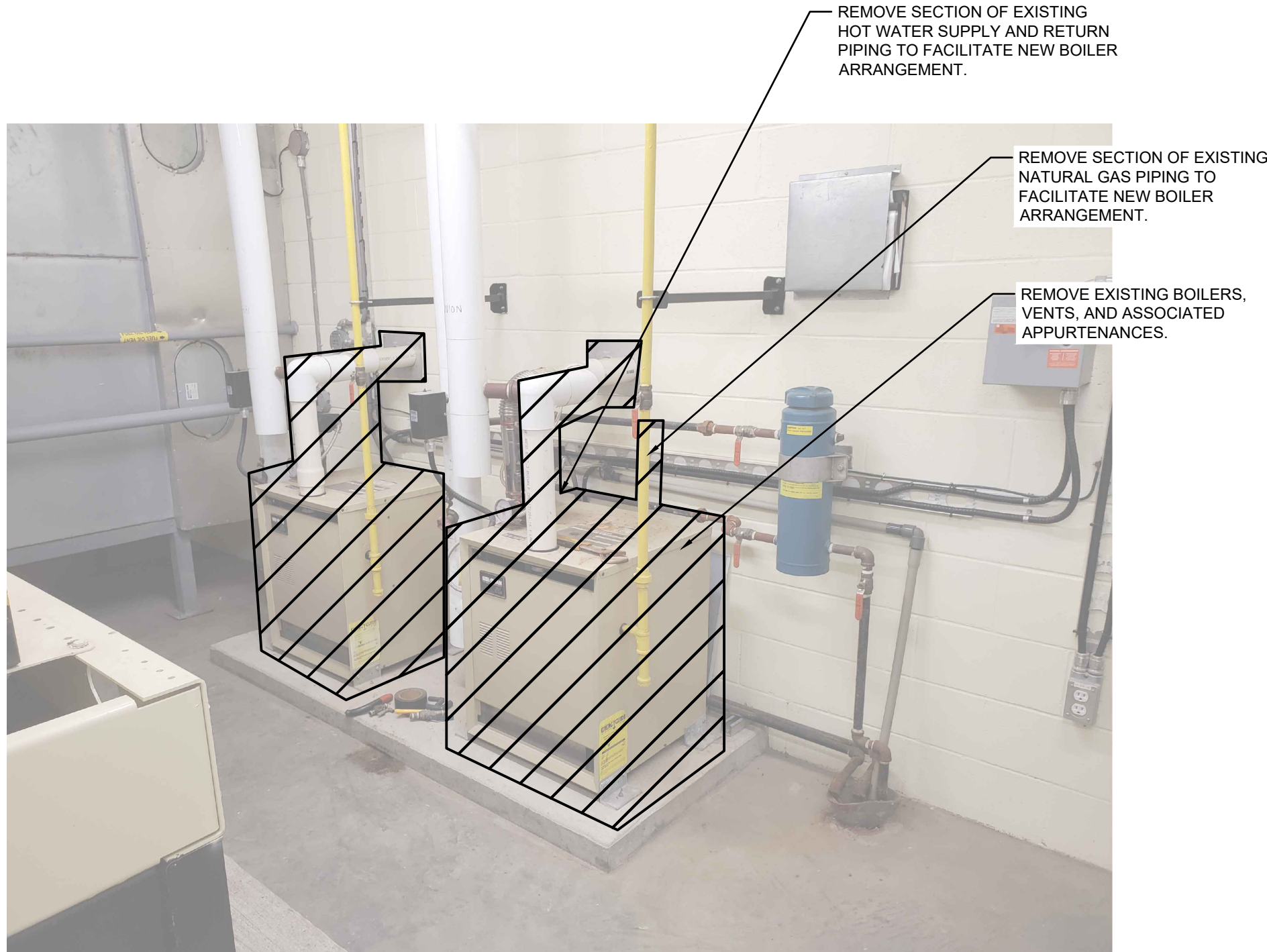
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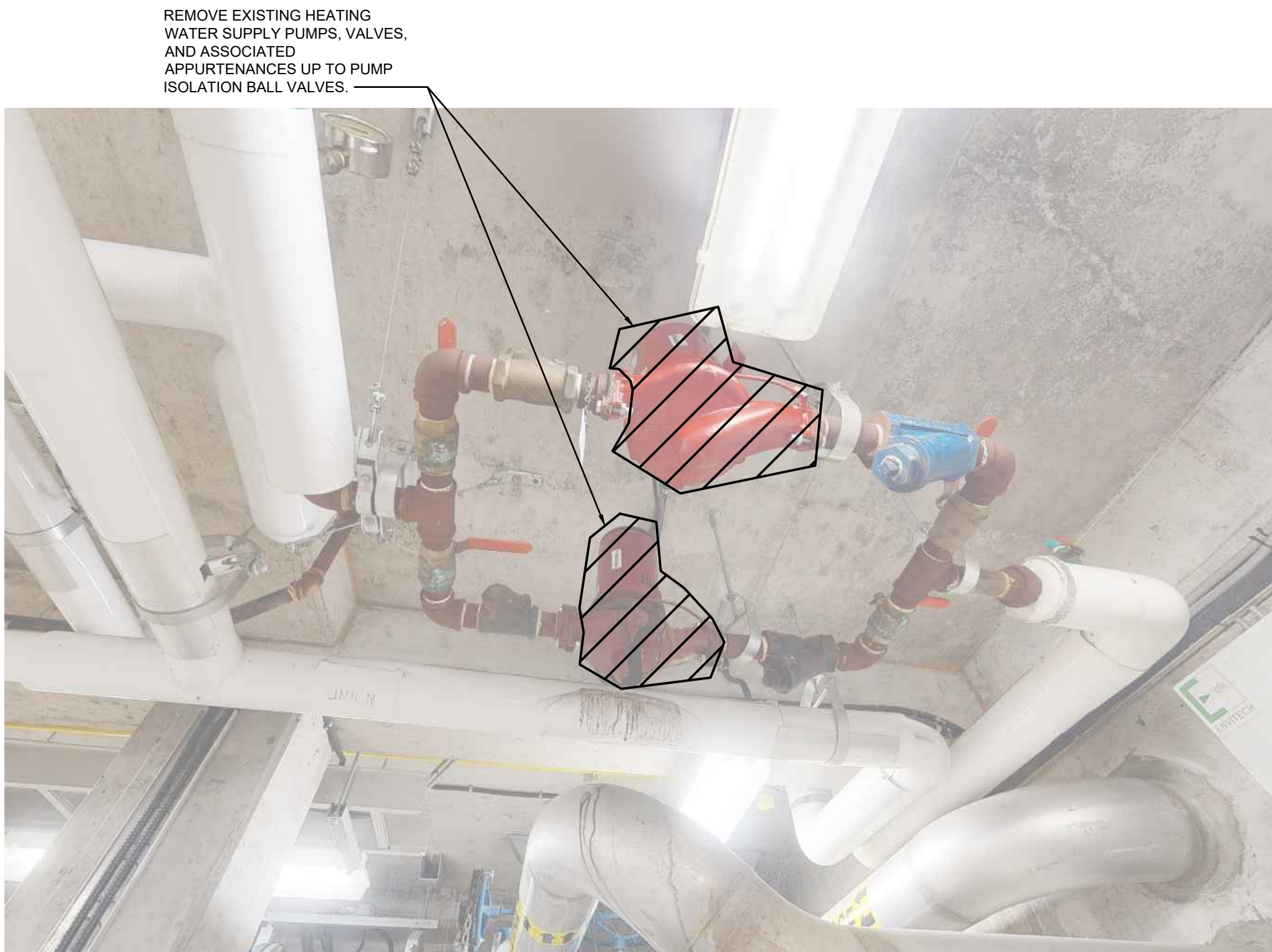
1 PARTIAL GROUND FLOOR PLAN DEMOLITION
DM101 SCALE: NTS



2 BASEMENT PLAN DEMOLITION
DM101 SCALE: NTS



3 BOILERS DEMOLITION
DM101 SCALE: NTS



4 HEATING WATER PUMPS DEMOLITION
DM101 SCALE: NTS

GENERAL NOTES:

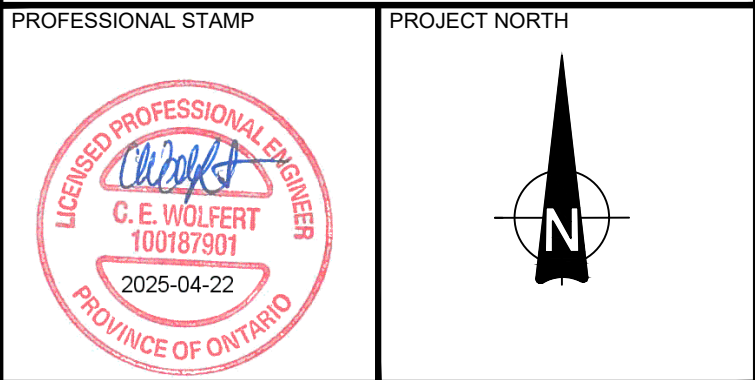
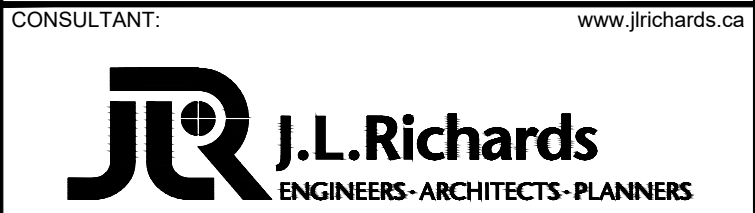
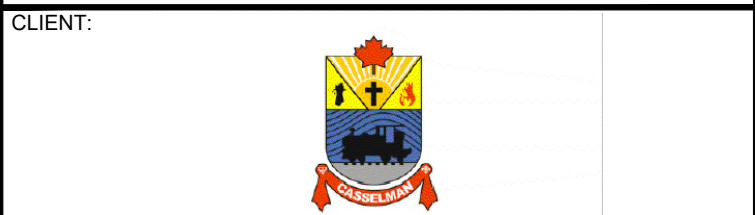
- DEMOLITION DRAWINGS ARE BASED ON ORIGINAL INSTALLATION AND DO NOT NECESSARILY REFLECT ALL DETAILS, PIPING, CONDUITS, ETC., TO BE REMOVED.
- CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS TO FAMILIARIZE THEMSELVES WITH THE SCOPE OF THE WORK PRIOR TO PROCEEDING.
- PRIOR TO COMMENCING DEMOLITION, THE OWNER, CONSULTANT, AND CONTRACTOR WILL TOUR THE SITE AND CONFIRM EXACT DEMOLITION SCOPE.
- UNLESS INDICATED OTHERWISE, ALL DEMOLISHED MATERIAL TO BE REMOVED FROM SITE AND DISPOSED OF IN AN APPROVED MANNER. REFER TO SECTION 01110 SUMMARY OF WORK FOR ITEMS TO BE SALVAGED AND TURNED OVER TO OWNER.
- REMOVE ANCHORS WHEN REMOVING SUPPORTS. DO NOT LEAVE ANY ANCHORS IN FLOOR. REPAIR ALL FLOORS AFTER REMOVALS.
- REMOVE ALL PIPING, CONDUITS, SUPPORTS, ETC. ASSOCIATED WITH REMOVED EQUIPMENT AND / OR MATERIALS. CUT FLUSH WITH, OR BELOW WHERE DETAILED. MAKE GOOD SURFACES.
- REMOVE ALL SUPPORTS, VALVES, ETC. ASSOCIATED WITH REMOVED PIPING. WHERE SECTIONS OF PARTIALLY DEMOLISHED PIPING IS TO REMAIN, PROVIDE PIPE CAP / BLIND FLANGE AT THE TERMINATION POINT OF THE DEMOLITION.
- REFER TO DRAWINGS OF EACH DISCIPLINE FOR TYPICAL DETAILS FOR MAKING GOOD SURFACES, TERMINATING PIPING, FILLING OPENINGS AND SLEEVES, ETC.
- REMOVE EXISTING PIPING ETC. MADE OBSOLETE BY NEW INSTALLATION.
- COORDINATE REMOVAL OF ALL POWER AND CONTROLS FOR MECHANICAL EQUIPMENT REMOVALS WITH DIVISION 16.

0	ISSUED FOR TENDER	23/04/25
No.	ISSUE / REVISION	DD/MM/YY

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SCALE: NTS

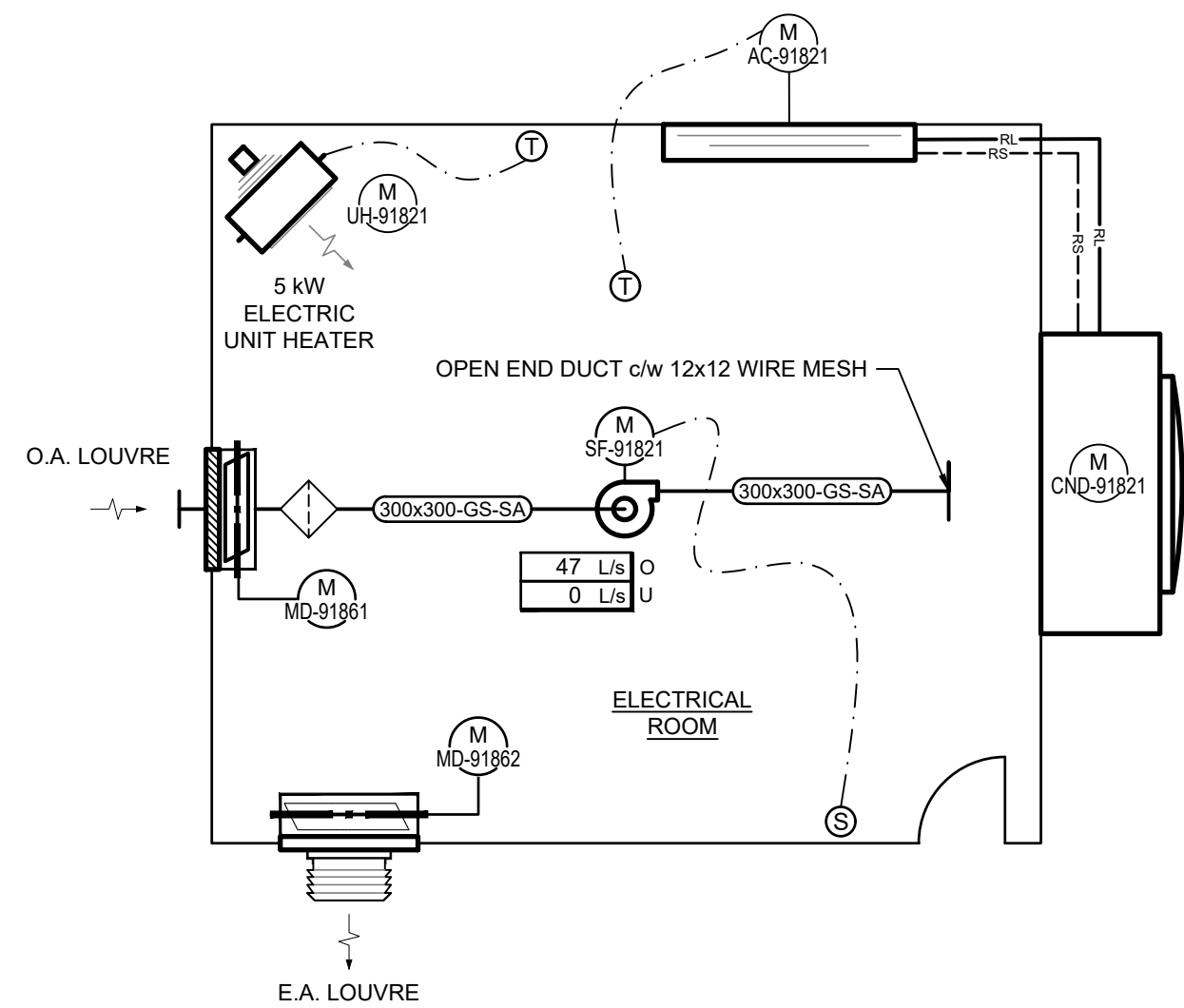


PROJECT: 16953-134 - CASSELMAN MAIN SPS UPGRADE
16 Brisson St, Casselman, ON K0A 1M0

DRAWING: DEMOLITION PLAN

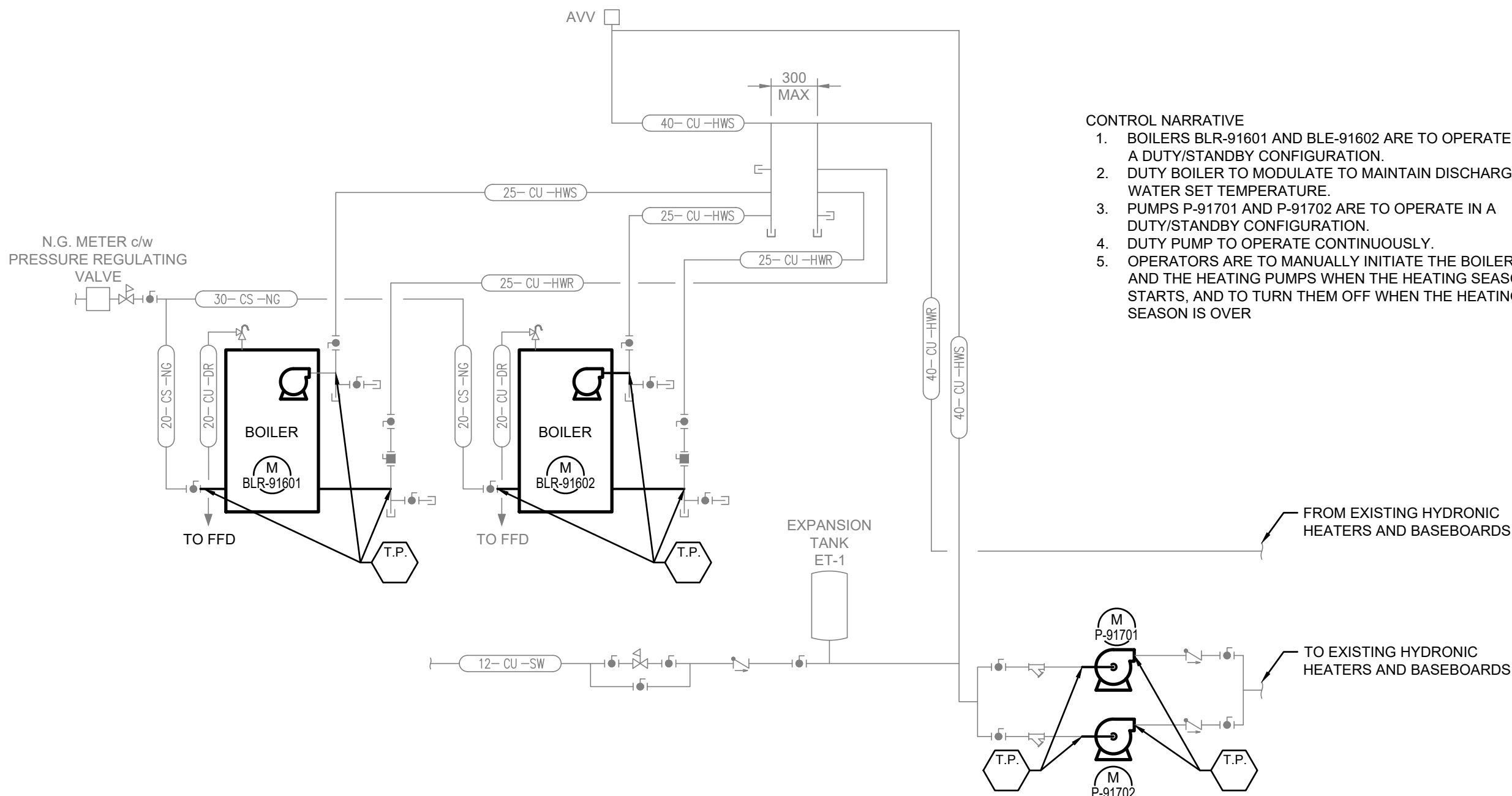
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DRAWN: EH	DM101
CHECKED: JW	
JLR #: 16953-134	

PLOT DATE: Tuesday, April 22, 2025 1:20:18 PM



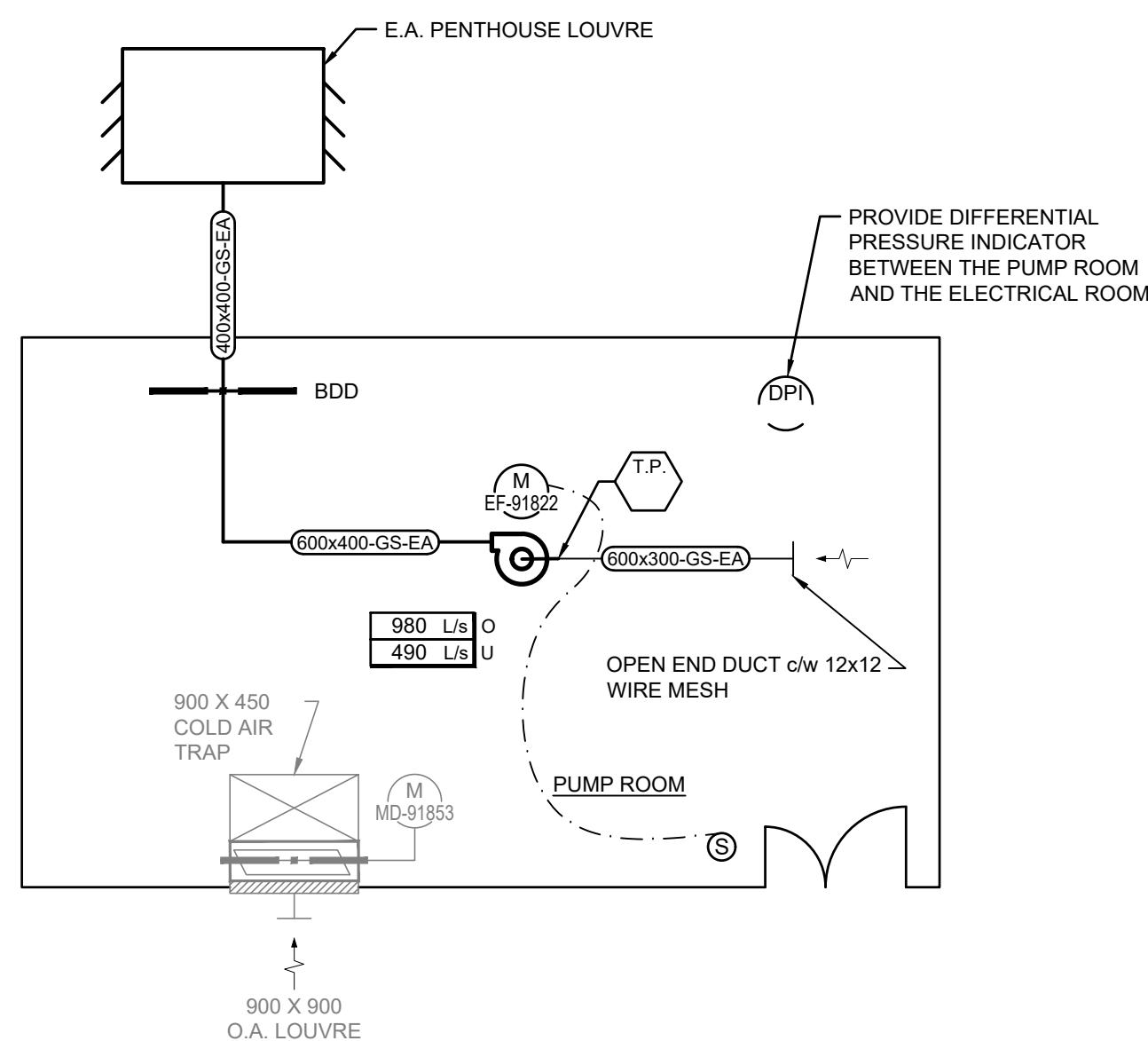
3 ELECTRICAL ROOM VENTILATION DIAGRAM
SCALE: NTS

- CONTROL NARRATIVE
- SUPPLY FAN SF-91821 TO ENERGIZE WHEN ELECTRICAL ROOM IS OCCUPIED, AND DE-ENERGIZED WHEN UNOCCUPIED.
 - WHEN SUPPLY FAN SF-91821 IS ENERGIZED, DAMPERS MD-91861 AND MD-91862 ARE TO BE OPEN. WHEN SUPPLY FAN SF-91821 IS DE-ENERGIZED, DAMPERS MD-91861 AND MD-91862 ARE TO BE CLOSED.
 - AIR CONDITIONING UNIT TO MODULATE AND TURN ON/OFF TO MAINTAIN ROOM TEMPERATURE SET POINT OF 25C.
 - UNIT HEATER UH-91821 TO MODULATE TO ENERGIZE AND DE-ENERGIZE TO MAINTAIN ROOM TEMPERATURE SET POINT OF 18C.



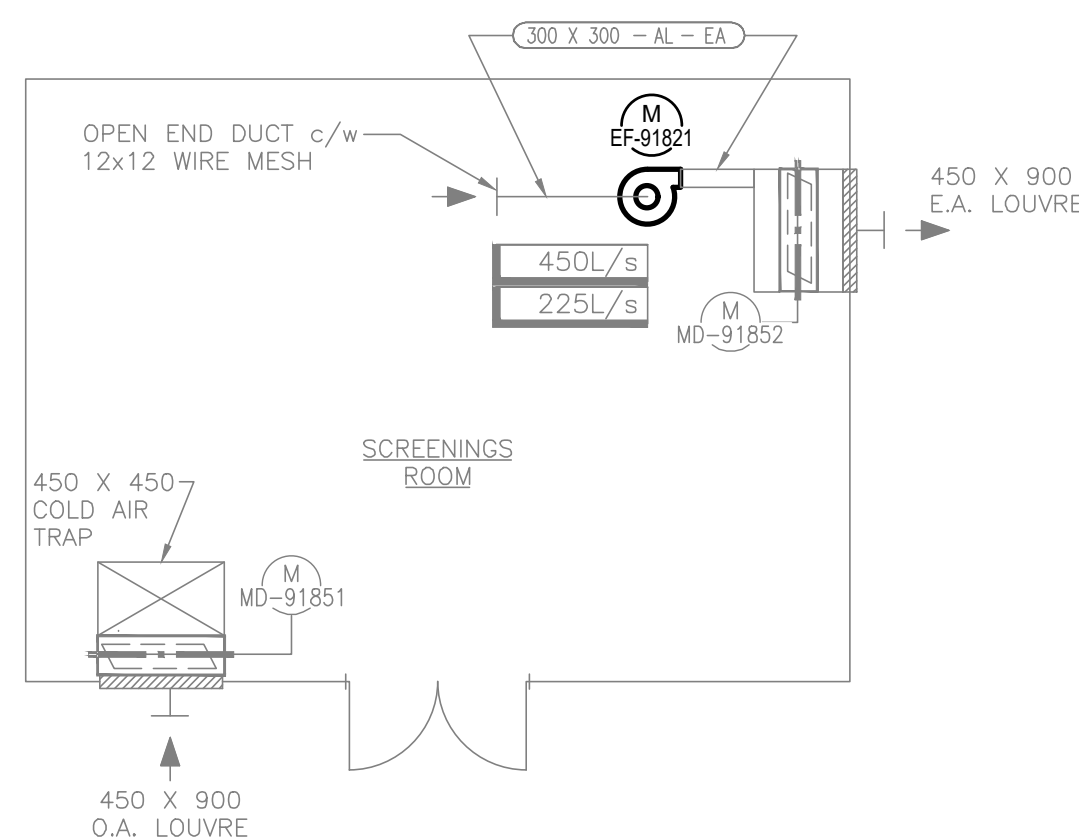
1 HYDRONIC HEATING BOILERS & PIPING DIAGRAM
SCALE: NTS

- CONTROL NARRATIVE
- BOILERS BLR-91601 AND BLR-91602 ARE TO OPERATE IN A DUTY/STANDBY CONFIGURATION.
 - DUTY BOILER TO MODULATE TO MAINTAIN DISCHARGE WATER SET TEMPERATURE.
 - PUMPS P-91701 AND P-91702 ARE TO OPERATE IN A DUTY/STANDBY CONFIGURATION.
 - DUTY PUMP TO OPERATE CONTINUOUSLY.
 - OPERATORS ARE TO MANUALLY INITIATE THE BOILERS AND THE HEATING PUMPS WHEN THE HEATING SEASON STARTS, AND TO TURN THEM OFF WHEN THE HEATING SEASON IS OVER.



2 PUMP ROOM VENTILATION DIAGRAM
SCALE: NTS

- CONTROL NARRATIVE
- EXHAUST FAN EF-91822 TO OPERATE CONTINUOUSLY AT ALL TIMES TO PROVIDE VENTILATION AND REMOVE AIRBORNE CONTAMINANTS FROM THE PUMP ROOM.
 - WHEN THE OUTDOOR TEMPERATURE IS ABOVE 10C THEN THE FAN IS TO OPERATE AT HIGH SPEED AT ALL TIMES.
 - WHEN THE OUTDOOR TEMPERATURE IS AT OR BELOW 10C THEN EF-91822 IS TO OPERATE AT HIGH SPEED WHEN THE SPACE IS OCCUPIED, AND LOW SPEED WHEN UNOCCUPIED.
 - WHEN EF-91853 IS ENERGIZED, MD-91853 IS TO BE OPEN. WHEN EF-91822 IS DE-ENERGIZED, MD-91853 IS CLOSED.



4 SCREENING ROOM VENTILATION DIAGRAM
SCALE: NTS

- CONTROL NARRATIVE
- EXHAUST FAN EF-91821 TO OPERATE CONTINUOUSLY AT ALL TIMES TO PROVIDE VENTILATION AND REMOVE AIRBORNE CONTAMINANTS FROM THE SCREENING ROOM.
 - WHEN THE OUTDOOR TEMPERATURE IS ABOVE 10C THEN THE FAN IS TO OPERATE AT HIGH SPEED AT ALL TIMES.
 - WHEN THE OUTDOOR TEMPERATURE IS AT OR BELOW 10C THEN EF-91821 IS TO OPERATE AT HIGH SPEED WHEN THE SPACE IS OCCUPIED, AND LOW SPEED WHEN UNOCCUPIED.
 - WHEN EF-91821 IS ENERGIZED, MD-91851 AND MD-91852 ARE TO BE OPEN. WHEN EF-91821 IS DE-ENERGIZED, MD-91853 AND MD-91852 ARE TO BE CLOSED.

0	ISSUED FOR TENDER	23/04/25
No.	ISSUE / REVISION	DD/MM/YY

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VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING.

SCALE: NTS

CLIENT:



CONSULTANT: www.jlrichards.ca

J.L. Richards
ENGINEERS - ARCHITECTS - PLANNERS

CONSULTANT:

PROFESSIONAL STAMP



PROJECT NORTH



PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 BRISSON ST, CASSELMAN, ON K0A 1M0

DRAWING:

MECHANICAL SCHEMATICS

DESIGN: CVR/CW

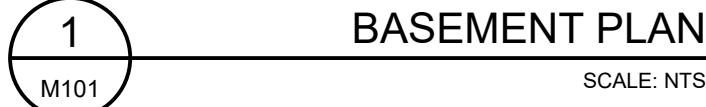
DRAWN: JV/EH

CHECKED: JW

JLR #: 16953-134

DRAWING #:

M101



DESIGN: CW	DRAWING #: <div style="font-size: 2em; font-weight: bold; text-align: center;">M102</div>
DRAWN: EH	
CHECKED: JW	
JLR #: 16953-134	



01
DE101

CAPACITOR CONTROL PANEL
DEMOLITION

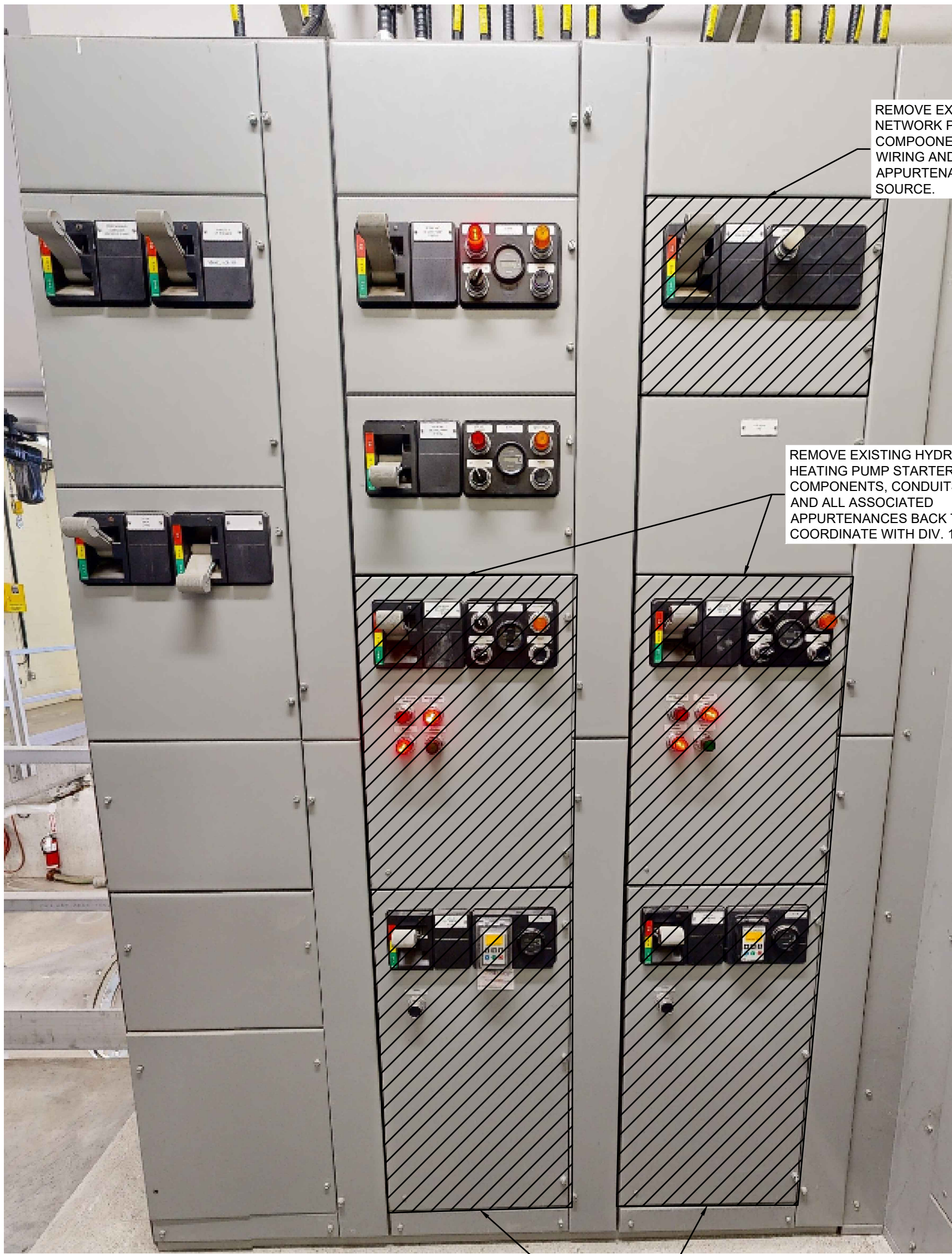
SCALE: N.T.S.



02
DE101

PLC CONTROL PANEL
DEMOLITION

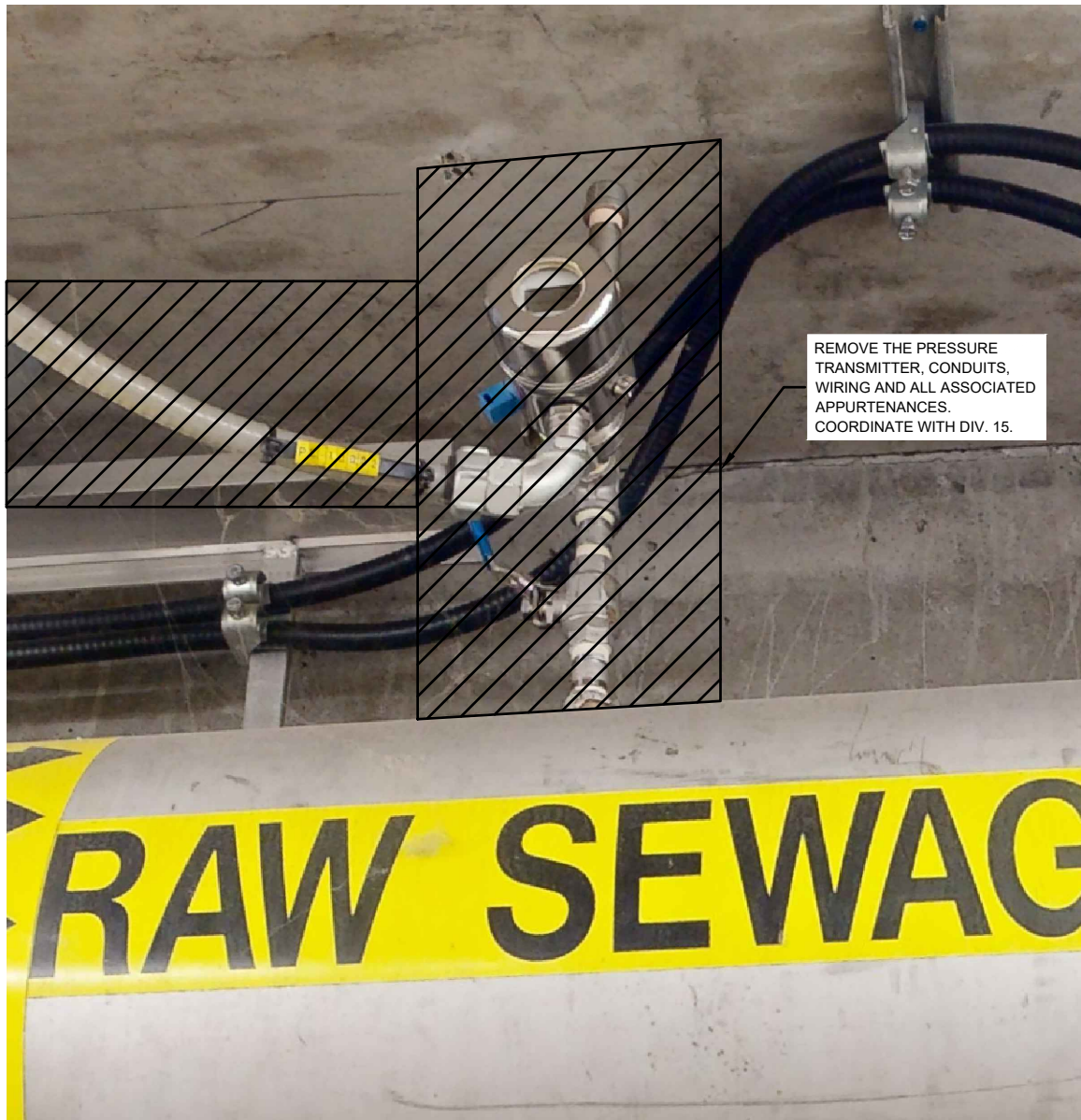
SCALE: N.T.S.



03
DE101

STARTER DEMOLITION
IN MCC-100

SCALE: N.T.S.



05
DE101

PRESSURE TRANSMITTER
DEMOLITION

SCALE: N.T.S.



04
DE101

GAS SENSOR
DEMOLITION

SCALE: N.T.S.

DEMOLITION NOTES:

- A. UNLESS INDICATED OTHERWISE REMOVE ALL ELECTRICAL AND CONTROL WIRING, CONDUITS, CABLE TRAYS, SUPPORTS ETC. BACK TO SOURCE PANELS.
- B. DEMOLITION DRAWINGS ARE BASED ON ORIGINAL INSTALLATION AND AS-CONSTRUCTED DRAWINGS, AND DO NOT NECESSARILY REFLECT ALL DETAILS, PIPING, CONDUITS, CABLE TRAYS, ETC. TO BE REMOVED. PICTURES MIGHT NOT REFLECT EXACT SITE CONDITION.
- C. CONTRACTOR TO VISIT SITE DURING TENDER TO DETERMINE EXACT SCOPE.
- D. UNLESS INDICATED OTHERWISE, ALL DEMOLISHED MATERIALS ARE TO BE REMOVED FROM SITE AND DISPOSED OF IN AN APPROVED MANNER.
- E. DEMOLISH ALL EXISTING ELECTRICAL EQUIPMENT, DEVICES, INSTRUMENTS, WIRING, CONDUITS AND ASSOCIATED APPURTENANCES MADE OBSOLETE BY NEW INSTALLATION.
- F. REFER TO DRAWINGS OF ALL DISCIPLINES FOR TYPICAL DETAILS FOR MAKING GOOD SURFACES, TERMINATING PIPING, FILLING OPENINGS AND SLEEVES, ETC.
- G. DEMOLISH ALL REDUNDANT CONDUITS, CABLE TRAYS, WIRING, SUPPORTS AND APPURTENANCES ASSOCIATED WITH THE REMOVAL OF EQUIPMENT, DEVICES, INSTRUMENTS AND LIGHTING.
- H. PATCH ALL CONDUIT OPENINGS IN WALLS AND CEILINGS AFFECTED BY THE REMOVAL OF ANY ELECTRICAL EQUIPMENT, WIRING, CONDUITS, OR APPURTENANCES.
- I. DEMOLISH WIRING BETWEEN PUMP STARTER INSIDE THE MCC.
- J. RELOCATE, SPlice, REPLACE AND MODIFY EXISTING WIRING AS REQUIRED TO FACILITATE CONSTRUCTION SEQUENCING AND TO MAINTAIN EXISTING SYSTEMS TO FACILITATE THE CONSTRUCTION ACTIVITIES.
- K. RE-COMMISSION ANY EXISTING OR ANY MODIFIED SYSTEMS TO CONFIRM PROPER OPERATION TO THE SATISFACTION OF THE OWNER.
- L. UNLESS INDICATED OTHERWISE, CONTRACTOR IS RESPONSIBLE FOR THE DEMOLITION OF ALL BELOW GRADE CONDUITS AND WIRES.
- M. CONTRACTOR TO TURN OVER ANY EXISTING EQUIPMENT TO THE OWNER.
- N. UPDATE PANEL SCHEDULES AND SUBMIT UPDATED PANEL SCHEDULES TO THE CONSULTANT.
- O. DEMOLITION TO BE PHASED TO MAINTAIN PLANT OPERATION AT ALL TIMES.
- P. REFER ALSO TO SECTION 16070 FOR ADDITIONAL DEMOLITION REQUIREMENTS.
- Q. REFER TO DP (PROCESS DEMOLITION) AND DM (MECHANICAL DEMOLITION) SERIES DRAWINGS FOR ADDITIONAL DEMOLITION SCOPE. COORDINATE WITH DIVISION 15.

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SCALE: N.T.S.

CLIENT:



CONSULTANT: www.jrichards.ca

JLR J.L.Richards
ENGINEERS-ARCHITECTS-PLANNERS

CONSULTANT:

PROFESSIONAL STAMP



PROJECT NORTH

PROJECT:

16953-134 - CASSELMAN MAIN SPS
UPGRADE

16 Brisson St, Casselman, ON K0A 1M0

DRAWING:

ELECTRICAL

DEMOLITION

DESIGN: CB

DRAWN: RH

CHECKED: LO

JLR #: 16953-134

DRAWING #:

DE101

[illegible]

A. REFER TO DRAWING DE101 FOR DEMOLITION.

- ① REMOVE EXISTING CAT5 ETHERNET CABLE BACK TO SOURCE. PROVIDE NEW CAT6 ETHERNET CABLE FOR EXISTING POWER MONITOR. REFER TO DRAWING N101.
- ② REMOVE EXISTING PLC CONTROL PANEL, WIRING AND ALL APPURTENANCES BACK TO SOURCE. PROVIDE NEW MCC CONTROL PANEL PER DRAWING I105.
- ③ REMOVE EXHAUST FAN STARTERS COMPONENTS INSIDE THE MCC. REMOVE ALL APPURTENANCES BACK TO SOURCE. NEW EXHAUST FAN STARTERS TO BE C/W VFD. REFER TO DRAWING E102.
- ④ REMOVE EXISTING DEVCENET NETWORK CABLES AND ALL APPURTENANCES BACK TO SOURCE. REMOVE EXISTING DEVCENET 24VDC POWER SUPPLY AND ALL APPURTENANCES BACK TO SOURCE.
- ⑤ REMOVE EXISTING PUMP STARTER COMPONENTS INSIDE THE MCC. WIRING AND ALL APPURTENANCES BACK TO SOURCE. REMOVE EXISTING STATIC CAPACITOR PANELS, WIRING AND ALL APPURTENANCES BACK TO SOURCE.

0	ISSUED FOR TENDER	23/04/25
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[illegible]


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SCALE: N.T.S.

CLIENT:

CONSULTANT: www.jlrichards.ca

CONSULTANT:

PROFESSIONAL STAMP	PROJECT NORTH
 <p>A circular professional engineer stamp from the Province of Ontario. The outer ring contains the text "LICENSED PROFESSIONAL ENGINEER" at the top and "PROVINCE OF ONTARIO" at the bottom. Inside the ring, the date "2025-04-23" is stamped. Below the date, the name "C. BULA-BULA" and the number "100540590" are printed. A blue ink signature is written across the bottom half of the stamp.</p>	

PROJECT:

16953-134 - CASSELMAN MAIN SPS
UPGRADE

16 Brisson St, Casselman, ON K0A 1M0

DRAWING:

ELECTRICAL

SINGLE LINE DIAGRAM - DEMO

DESIGN: CB	DRAWING #: DE102
DRAWN: RH	
CHECKED: LO	
JLR #: 16953-134	

- A. UNLESS INDICATED OTHERWISE REMOVE ALL ELECTRICAL AND CONTROL WIRING, CONDUITS, CABLE TRAYS, SUPPORTS ETC. BACK TO SOURCE PANELS.
- B. DEMOLITION DRAWINGS ARE BASED ON ORIGINAL INSTALLATION AND AS-CONSTRUCTED DRAWINGS, AND DO NOT NECESSARILY REFLECT ALL DETAILS, PIPING, CONDUITS, CABLE TRAYS, ETC. TO BE REMOVED. PICTURES MIGHT NOT REFLECT EXACT SITE CONDITION.
- C. CONTRACTOR TO VISIT SITE DURING TENDER TO DETERMINE EXACT SCOPE.
- D. UNLESS INDICATED OTHERWISE, ALL DEMOLISHED MATERIALS ARE TO BE REMOVED FROM SITE AND DISPOSED OF IN AN APPROVED MANNER.
- E. DEMOLISH ALL EXISTING ELECTRICAL EQUIPMENT, DEVICES, INSTRUMENTS, WIRING, CONDUITS AND ASSOCIATED APPURTENANCES MADE OBSOLETE BY NEW INSTALLATION.
- F. REFER TO DRAWINGS OF ALL DISCIPLINES FOR TYPICAL DETAILS FOR MAKING GOOD SURFACES, TERMINATING PIPING, FILLING OPENINGS AND SLEEVES, ETC.
- G. DEMOLISH ALL REDUNDANT CONDUITS, CABLE TRAYS, WIRING, SUPPORTS AND APPURTENANCES ASSOCIATED WITH THE REMOVAL OF EQUIPMENT, DEVICES, INSTRUMENTS AND LIGHTING.
- H. PATCH ALL CONDUIT OPENINGS IN WALLS AND CEILINGS AFFECTED BY THE REMOVAL OF ANY ELECTRICAL EQUIPMENT, WIRING, CONDUITS, OR APPURTENANCES.
- I. DEMOLISH WIRING BETWEEN PUMP STARTER INSIDE THE MCC.
- J. RELOCATE, SPLICE, REPLACE AND MODIFY EXISTING WIRING AS REQUIRED TO FACILITATE CONSTRUCTION SEQUENCING AND TO MAINTAIN EXISTING SYSTEMS TO FACILITATE THE CONSTRUCTION ACTIVITIES.
- K. RE-COMMISSION ANY EXISTING OR ANY MODIFIED SYSTEMS TO CONFIRM PROPER OPERATION TO THE SATISFACTION OF THE OWNER.
- L. UNLESS INDICATED OTHERWISE, CONTRACTOR IS RESPONSIBLE FOR THE DEMOLITION OF ALL BELOW GRADE CONDUITS AND WIRES.
- M. CONTRACTOR TO TURN OVER ANY EXISTING EQUIPMENT TO THE OWNER.
- N. UPDATE PANEL SCHEDULES AND SUBMIT UPDATED PANEL SCHEDULES TO THE CONSULTANT.
- O. DEMOLITION TO BE PHASED TO MAINTAIN PLANT OPERATION AT ALL TIMES.
- P. REFER ALSO TO SECTION 16070 FOR ADDITIONAL DEMOLITION REQUIREMENTS.
- Q. REFER TO DP (PROCESS DEMOLITION) AND DM (MECHANICAL DEMOLITION) SERIES DRAWINGS FOR ADDITIONAL DEMOLITION SCOPE. COORDINATE WITH DIVISION 15.

GENERAL NOTES:

GENERAL NOTES APPLY TO ALL ELECTRICAL DRAWINGS

- A. ALL EXXX AND IXXX TO BE READ IN CONJUNCTION WITH THIS DRAWING. SYMBOLS AND NOTES SHOWN ON THIS DRAWING APPLY TO THOSE DRAWINGS.
- B. NOT ALL SYMBOLS USED IN THE EXX AND DX DRAWINGS MAY BE SHOWN ON THIS LEGEND, IN SUCH CASES INDUSTRY STANDARD SYMBOLOGY WILL BE EMPLOYED AND A DESCRIPTION PROVIDED.
- C. ALL CABLES MAY NOT BE SHOWN, REFER TO SINGLE LINE AND BLOCK DIAGRAM.
- D. WHERE CABLE TRAYS ARE NOT PROVIDED FOR TECK CABLES PROVIDE UNISTRUT OR OTHER ACCEPTABLE BRACKETS TO SUPPORT CABLES FOR A NEAT AND TIDY WORKMANSHIP-LIKE INSTALLATION.





PROCESS PLANS




- A. REFER TO THE SINGLE LINE DIAGRAM, AND PANEL SCHEDULES, AND BLOCK DIAGRAM FOR WIRING REQUIREMENTS.
- B. ALL BRACKETS TO BE STAINLESS STEEL WITH STAINLESS STEEL HARDWARE, UNLESS OTHERWISE INDICATED.
- C. COORDINATE ALL CORING WITH STRUCTURAL. X-RAY CONCRETE PRIOR TO CORING. ENSURE NO STRUCTURAL STEEL IS DAMAGED.
- D. ALL CABLES RELATED TO THE PERTINENT DRAWING MAY NOT BE SHOWN.
- E. CONDUCTOR SIZES INDICATED IN THE CONTRACT DOCUMENTS ARE PROVIDED AS MINIMUM SIZES FOR TENDER PURPOSES ONLY. THE CONTRACTOR IS TO REVIEW AND PLAN FINAL CABLE ROUTING.
- F. PROVIDE MECHANICAL PROTECTION FOR ALL CABLES TO MEET THE LATEST REVISION OF THE ONTARIO ELECTRICAL SAFETY CODE.
- G. SURFACE MOUNTED CONDUITS TO BE PAINTED TO MATCH WALL/CEILING COLOUR.
- H. JUNCTION BOX, CONDUIT, TRAPEZE HANGER AND SUPPORT CHANNEL SYSTEMS ARE NOT PERMITTED TO BE INSTALLED AND / OR SECURED DIRECTLY TO UNDERSIDE OF STEEL ROOF DECK SYSTEM. ALL SUPPORT CHANNEL AND / OR TRAPEZE HANGERS TO BE SECURED TO THE STRUCTURAL CHANNEL JOISTS.

- I. ALL EQUIPMENT LOCAL DISCONNECTS MAY NOT BE SHOWN ON PLAN DRAWING, REFER TO SINGLE LINE DIAGRAMS, PID's, MID's, MOTOR STARTER AND CONTROL LIST WHERE SUCH DEVICE IS REQUIRED.
- J. WHERE INTRINSICALLY SAFE CIRCUITS ARE SPECIFIED TO BE PROVIDED, THE CONTRACTOR SHALL COORDINATE ALL PRODUCTS IN THE CIRCUIT WITH AN ENGINEER LICENSED IN THE PROVINCE OF ONTARIO AND PROVIDE ALL REQUIRED DOCUMENTATION NECESSARY TO DEMONSTRATE A SAFE SYSTEM INSTALLATION, COMPLETE WITH OPERATION AND MAINTENANCE DATA, TO THE SATISFACTION OF THE ELECTRICAL SAFETY AUTHORITY AS WELL AS THE CONSULTANT. REFER TO RULE 18-064 AND APPENDIX F OF THE ELECTRICAL SAFETY CODE.

HOUSE SERVICES PLANS



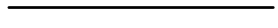


- A. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING CHAINS AND OTHER APPURTENANCES TO SECURE LIGHTING FIXTURES TO AVOID INTERFERENCES WITH MECHANICAL, ARCHITECTURAL AND STRUCTURAL ELEMENTS AND TO PREVENT SUCH ITEMS FROM DIMINISHING THE LIGHTING LEVELS, WHETHER IT IS CALLED FOR EXPLICITLY OR NOT IN THE DRAWINGS. ALL CHAINS FOR LIGHTING INSIDE PROCESS AND WET/DAMP AREAS SHALL BE STAINLESS STEEL ϕ W STAINLESS STEEL MOUNTING HARDWARE
- B. NO CABLING OR CONDUITS TO BE RUN HORIZONTALLY ON ANY EXTERIOR WALL. PENETRATE EXTERIOR WALL AT LOCATION WHERE DEVICE IS TO BE MOUNTED. THERE SHOULD BE NO VISIBLE HORIZONTAL CABLING OR CONDUITS ON BUILDING EXTERIOR.
- C. REFER TO PANEL SCHEDULES FOR BUILDING SERVICES LOADS.
- D. JUNCTION BOX, CONDUIT, TRAPEZE HANGER AND SUPPORT CHANNEL SYSTEMS ARE NOT PERMITTED TO BE INSTALLED AND / OR SECURED DIRECTLY TO UNDERSIDE OF STEEL ROOF DECK SYSTEM. ALL SUPPORT CHANNEL AND / OR TRAPEZE HANGERS TO STRUCTURAL OPEN WEB STEEL JOIST.
- E. PROVIDE MECHANICAL PROTECTION FOR ALL CABLES TO MEET THE LATEST REVISION OF THE ONTARIO ELECTRICAL SAFETY CODE.
- F. ALL DISCONNECTS FOR MECHANICAL LOADS MAY NOT BE SHOWN ON DRAWING, PROVIDE LOCAL DISCONNECTS PER THE LATEST REVISION OF THE ONTARIO ELECTRICAL SAFETY CODE. SINGLE LINE DIAGRAMS, PID's, MID's, MOTOR STARTER AND CONTROL LIST WHERE SUCH DEVICE IS REQUIRED.
- G. PROVIDE BRACKETS, AS REQUIRED, FOR DISCONNECTS AND ALL OTHER EQUIPMENT.
- H. COORDINATE LIGHTING MOUNTING HEIGHTS WITH MECHANICAL EQUIPMENT, LIGHTING NOT TO BE OBSTRUCTED OR INTERFERE WITH ANY MECHANICAL OR ELECTRICAL EQUIPMENT.
- I. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING CHAINS AND OTHER APPURTENANCES TO SECURE LIGHTING FIXTURES TO AVOID INTERFERENCES WITH MECHANICAL, ARCHITECTURAL AND STRUCTURAL ELEMENTS AND TO PREVENT SUCH ITEMS FROM DIMINISHING THE LIGHTING LEVELS, WHETHER IT IS CALLED FOR EXPLICITLY OR NOT IN THE DRAWINGS. REFER TO SECTION 16500, AS NOTED IN SECTION 16500, ALL CHAINS FOR LIGHTING INSIDE PROCESS AND WET/DAMP AREAS SHALL BE STAINLESS STEEL ϕ W STAINLESS STEEL MOUNTING HARDWARE.
- J. WALL MOUNTED EMERGENCY LIGHTS TO BE MOUNTED AT 2400mm A.F.F. COORDINATE WITH SITE CONDITIONS, THE ONTARIO ELECTRICAL SAFETY CODE REQUIRES RECEPTACLES TO WHICH UNIT EQUIPMENT IS TO BE CONNECTED SHALL NOT BE MORE THAN 1500mm FROM THE LOCATION OF THE UNIT EQUIPMENT, NOTE THAT SUCH RECEPTACLES MAY NOT BE SHOWN ON THE DRAWINGS. PROVIDE ALL SUCH RECEPTACLES.
- K. ALL DISCONNECTS FOR MECHANICAL LOADS MAY NOT BE SHOWN ON DRAWINGS, PROVIDE LOCAL DISCONNECTS TO MEET OR EXCEED THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE AND ITS BULLETINS, REFER TO SINGLE LINE DIAGRAMS, PID's, MID's, MOTOR STARTER AND CONTROL LIST AS WELL AS SPECIFICATION SECTION 16440 WHERE SUCH DEVICES ARE REQUIRED (FOR ANY REASON).
- L. PROVIDE STAINLESS STEEL BRACKETS AND FASTENERS, AS REQUIRED, FOR DISCONNECTS AND ALL OTHER EQUIPMENT.
- M. REFER TO ARCHITECTURAL DRAWINGS FOR EXTERIOR LIGHTING AND DEVICE MOUNTING HEIGHTS.
- N. UNLESS OTHERWISE INDICATED, SIZE ALL CONDUITS TO MEET OR EXCEED THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE AND ITS BULLETINS.
- O. PROVIDE A GROUND WIRE IN EACH CONDUIT CONTAINING POWER OR CONTROL CONDUCTORS. SIZE GROUND WIRES TO MEET OR EXCEED THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE AND ITS BULLETINS.

LUMINAIRE SCHEDULE			
TYPE:		SPECIFIED PRODUCT:	LAMP TYPE:
"A"		7' x 4' POLYCARBONATE HOUSING AND LENS WITH SEAMLESS GASKET, HIGH PERFORMANCE METAL REFLECTOR STAINLESS STEEL MOUNTING HARDWARE WITH TEN BUCKLE TYPE LATCHES, UV STABILIZED HIGH CLARITY LINEAR LENS, SEALED STRAIN RELIEF, CABLE GLAND KIT INCLUDED, INTEGRATED END ALIGNERS FOR ROW ALIGNMENT, SURFACE, CHAIN HUNG, IP65 RATED LED C/W LED DRIVER, LUMINAIRE TO BE CHAIN HUNG AT 3000mm A.F.F. UNLESS OTHERWISE INDICATED. LITHONIA: CSV-T L48 5000LM MVOLT 80CRI EATON METALUX: 4VT2-LD4-6-DR-W-UNV-L840-CD1-WL-U HUBBELL LIGHTING: LXEM-4-40-ML-RFP-U-SSL	LED 4100K, 5000-6000 LUMENS OUTPUT, 85CRI, 57 W
EBU		120V EMERGENCY LIGHTING 12 VOLT BATTERY PACK ϕ W INTEGRAL AND REMOTE HEADS, SEALED LONG LIFE (10 YEARS) BATTERY SIZED TO MAINTAIN LOAD FOR 1/2 HOUR MINIMUM. READY-LITE: LDX12-360/2LD9-XX STANPRO: SLC-12360-2SM-3LJ-WHT-XX AIMLITE: EBST-12360-2SM-3LJ-WHT-XX STANPRO: SCL-12360-2SM-3LJ-WHT	LED EQUIVALENT TO 18 WATT HALOGEN
E		SURFACE MOUNTED REMOTE HEADS, SINGLE OR DOUBLE AS INDICATED. READY-LITE: RMX-LD9-XX STANPRO: NX-8-12-6-LA-WH-XX AIMLITE: RMSMZ-6-12-3W-LJ-WHT-XX	LED EQUIVALENT TO 18 WATT HALOGEN
EXIT		PICTOGRAM EXIT SIGN, THE SIGN SHALL BE SUITABLE FOR WALL, END, OR CEILING MOUNT. THE FRAME AND BACKPLATE SHALL EACH BE OF ONE-PIECE STEEL CONSTRUCTION. THE FACEPLATE(S) SHALL BE CONSTRUCTED OF ROBUST CLEAR POLYCARBONATE PANELS WITH AN OPAQUE BORDER COLOURED FACTORY-WHITE. THE LIGHT SOURCE SHALL BE WHITE LIGHT EMITTING DIODES (LED) AND SHALL PROVIDE EVEN ILLUMINATION IN NORMAL AND EMERGENCY OPERATION, MOUNTING, ARROWS AND FACES AS REQUIRED. SIGN TO OPERATE FOR MINIMUM OF 90 MINUTES DURING AC FAILURE. EMERGH-LITE: ESXWI STANPRO: RMP-U-WH-UDC-XX AIMLITE: RPST-U-M-WHT-BAT OR APPROVED EQUAL	2.5 WATT LED PER FACE

PICTOGRAM RUNNING MAN EGRESS LEGEND			
EGRESS SIGN TYPE #	EGRESS SIGN PICTOGRAM IMAGE GRAPHICAL SYMBOLS AND DESCRIPTION	LEGEND: FACEPLATE(S)	LEGEND: MOUNTING TYPE
		S - SINGLE SIDED D - DOUBLE SIDED	W - WALL MOUNTED C - CEILING MOUNTED WITH CANOPY E - END MOUNTED U - UNIVERSAL MOUNTED WITH CANOPY(S) ST - STEM MOUNTED WITH TIGHT RAIN FITTING
x1	 RUNNING MAN IN DOORWAY	EGRESS SIGN IDENTIFICATION EXAMPLES LETTER DENOTES FACEPLATE (SINGLE SIDED) -LETTER DENOTES MOUNTING TYPE (WALL MOUNTED) S-x1-W -x# DENOTES EGRESS SIGN FACE PLATE TYPE PICTOGRAM IMAGE EXAMPLE #1 LETTER DENOTES FACEPLATE (DOUBLE SIDED) -LETTER DENOTES MOUNTING TYPE (CEILING MOUNTED WITH CANOPY) D-x2/x3-C -x# / x# DENOTES EGRESS SIGN FACEPLATE TYPES (PICTOGRAM IMAGE ON SIDE ONE AND PICTOGRAM IMAGE ON SIDE TWO) EXAMPLE #2	
x2	 RUNNING MAN IN DOORWAY WITH PROGRESS TO THE RIGHT 90° DIRECTIONAL ARROW		
x3	 RUNNING MAN IN DOORWAY WITH PROGRESS TO THE LEFT 90° DIRECTIONAL ARROW		

HOUSE SYSTEMS WIRING / CABLE GUIDES SCHEDULE		
COPPER CONDUCTORS IN A RACEWAY		
MAXIMUM CIRCUIT AMPERAGE	SINGLE PHASE CIRCUIT	THREE PHASE CIRCUIT
15 AMP	2 ϕ -#12 AWG RW90 + GND IN 21mm C	3 ϕ -#12 AWG RW90 + GND IN 21mm C
20 AMP	2 ϕ -#12 AWG RW90 + GND IN 21mm C	3 ϕ -#12 AWG RW90 + GND IN 21mm C
30 AMP	2 ϕ -#10 AWG RW90 + GND IN 21mm C	3 ϕ -#10 AWG RW90 + GND IN 21mm C





PROCESS AND HOUSE SERVICES CONDUIT REQUIREMENTS		
ROOM NUMBER	ROOM DESCRIPTION	CONDUIT TYPE
ALL SERIES	UNDERGROUND	RIGID PVC CONDUIT (RPVC)
ALL SERIES	EXTERIOR ABOVE GRADE	RIGID ALUMINIUM CONDUIT (RAC)
ALL SERIES	PUMP ROOM	RGS
ALL SERIES	ELECTRICAL ROOM	SURFACE MOUNT, EMT + LIQUID TIGHT FITTINGS
ALL SERIES	RATED AREA	OESC COMPLIANT RAC CONDUIT, BOXES AND FITTINGS















CABLE LEGEND:	
 Cat 6	CATEGORY 6
 DISCRETE	DISCRETE
 POWER	POWER
 ANALOG	ANALOG
 EXISTING	EXISTING








CIRCUIT NUMBERING FORMAT:




X#A.B	SWITCHED CIRCUIT (IF APPLICABLE)
	DIN CIRCUIT NUMBER
	PANEL NAME





ABBREVIATIONS	
A.F.F.	ABOVE FINISHED FLOOR
ATS	AUTOMATIC TRANSFER SWITCH
B.O.C.T.	BOTTOM OF CABLE TRAY ABOVE A.F.F
B.O.F.	BOTTOM OF FLOAT
DTT	DRY TYPE TRANSFORMER
E	EMERGENCY POWER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND CONDUCTOR
IG	ISOLATED GROUND
MCC	MOTOR CONTROL CENTRE
MCS	MOULDED CASE SWITCH
MIO	MODULAR PLC I/O
N	NORMAL POWER
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
O/C	OVER COUNTER
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
TL	TWIST LOCK
UPS	UNINTERRUPTIBLE POWER SUPPLY
WP	WEATHER PROOF


RECEPTACLE SYMBOLS	
	20A, 125V, NEMA 5-20R T-SLOT DUPLEX RECEPTACLE
	20A, 125V, NEMA 5-20R T-SLOT GFCI DUPLEX RECEPTACLE
	20A, 125V, NEMA 5-20R T-SLOT GFCI WP "IN USE" DUPLEX RECEPTACLE
	MISCELLANEOUS, TYPE AS INDICATED




POWER SYMBOLS	
	JUNCTION BOX (X INDICATES POWER, INTRINSICALLY SAFE, ANALOG OR DISCRETE)
	FUSED DISCONNECT SWITCH
	UNFUSED DISCONNECT SWITCH
	EXPLOSION PROOF UNFUSED DISCONNECT SWITCH
	MOTOR RATED TOGGLE SWITCH
	SINGLE PHASE MOTOR (INDICATED HP)
	THREE PHASE MOTOR (INDICATED HP)
	HARD WIRED
	PANELBOARD
	SURGE PROTECTIVE DEVICE
	CIRCUIT BREAKER
	GENERATOR
	POWER MONITOR WITH CT/PT
	EYS FITTING

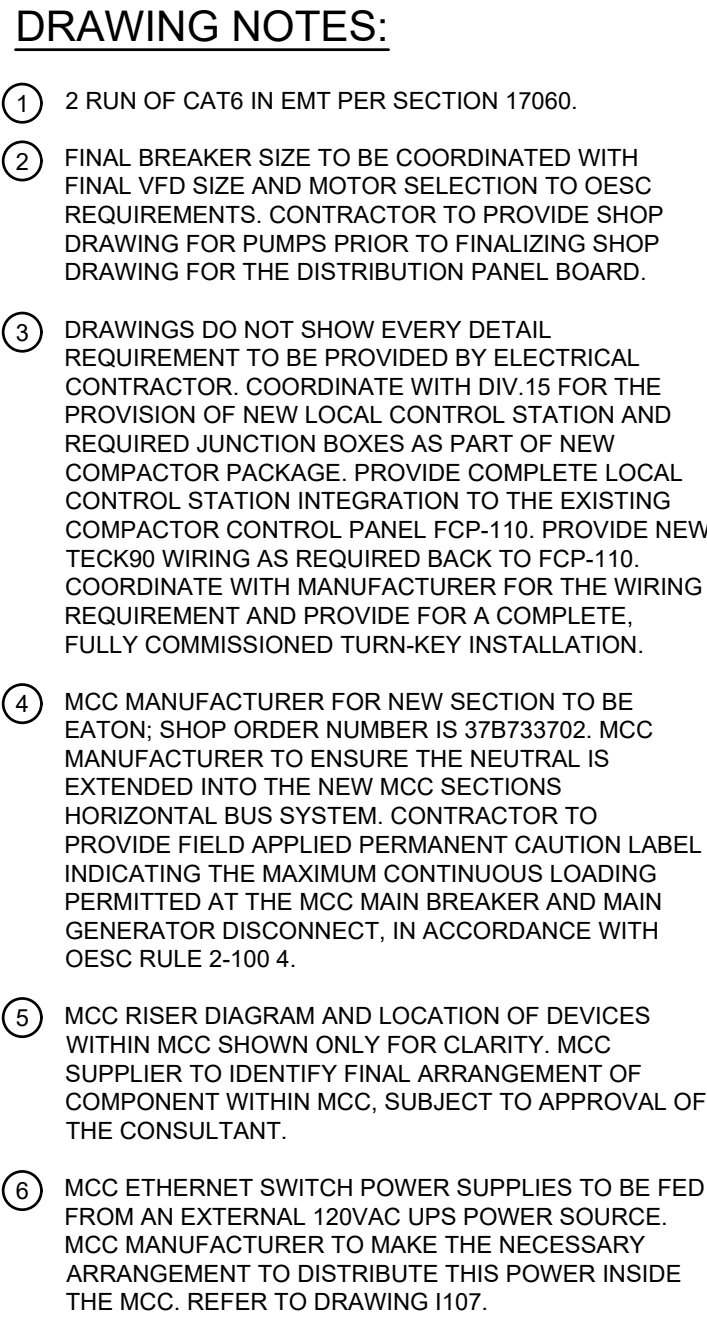
LIGHTING SYMBOLS	
	SWITCH (CIRCUIT AS INDICATED)
	3-WAY SWITCH (CIRCUIT AS INDICATED)
	MOTOR RATED SWITCH (CIRCUIT AS INDICATED)
	LED LIGHT FIXTURE, TYPE AS INDICATED
	DUAL HEAD EMERGENCY LIGHTING BATTERY UNIT
	DOUBLE REMOTE EMERGENCY LIGHT HEAD
	WALL MOUNTED EXIT SIGN




MISCELLANEOUS	
	THERMOSTAT
	VARIABLE FREQUENCY DRIVE
	ELECTRIC UNIT HEATER

INSTRUMENTATION SYMBOLS	
	SIGNALLING DEVICE
	MOTORIZED EQUIPMENT
	SOLENOID VALVE
	INSTRUMENT/DEVICE

COMMUNICATION SYMBOLS	
	COMBINATION TELEPHONE/ETHERNET OUTLET

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CONSULTANT:		
PROFESSIONAL STAMP		PROJECT NORTH
		
PROJECT:		
16953-134 - CASSELMAN MAIN SPS UPGRADE		
16 Brisson St, Casselman, ON K0A 1M0		
DRAWING:		
ELECTRICAL		
ELECTRICAL LEGEND & SCHEDULES		
DESIGN: CB		
DRAWN: RH	DRAWING #:	
CHECKED: LO		
JLR #:	16953-134	
		E101



		
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<div>PROFESSIONAL STAMP </div>		<div>PROJECT NORTH</div>
PROJECT:		
16953-134 - CASSELMAN MAIN SPS UPGRADE		
16 Brisson St, Casselman, ON K0A 1M0		
DRAWING:		
ELECTRICAL		
SINGLE LINE DIAGRAM		
DESIGN: CB		<div>DRAWING #:</div> <div>E102</div>
DRAWN: RH		
CHECKED: JJT		
JLR #: 16953-134		

File Location: P:\60001\6953-134 - Casselman Main SPS Upgrade\03-Production\08-Elect\6953-134 - TABLES OF PANELS AND DEVICES.dwg

TOTAL LINKS

TABLE OF PANEL AND ELECTRICAL EQUIPMENT											
DEVICE TAG IDENTIFIER	SERVICE DESCRIPTION	LOCATION	DWG DETAIL	DEVICE		FIELD WORK					
				VOLTS	Ø W	SUPPLY BY	INSTALL BY	WIRE BY	COMM. BY		
ACP 100	CONTROL PANEL	ELECTRICAL ROOM / CHEMICAL BUILDING	③	120	1 2	SI	E	E	E	G	
CP 101	SECURITY PANEL	ELECTRICAL ROOM / CHEMICAL BUILDING	01/1108, 02/E107	120	1 2	SI	E	E	E	G	
CP 2	METERING PUMP CONTROL PANEL	ELECTRICAL ROOM / CHEMICAL BUILDING	03/E201, I201	120	1 2	EX	EX	EX	EX		
CP 103	HEAT TRACE CONTROL PANEL	PUMP ROOM	01/E106	120	1 2	SI	E	E	E	G	
FCP 110	BAR SCREEN & COMPACTOR FIELD CONTROL PANEL (EXISTING)	PUMP ROOM	01/PID101, 01/E106	120	1 2	EX	EX	EX	EX		
FCP 130	FLOW INSTRUMENTATION PANEL (EXISTING)	PUMP ROOM	01/PID101, 01 & 02/E106, 01/1108	0	0 0	EX	EX	EX	EX		
FCP 140	GAS INSTRUMENTATION PANEL (EXISTING)	ELECTRICAL ROOM / CHEMICAL BUILDING	04/DE101, 01/PID101, 01 & 02/E107	0	0 0	EX	EX	EX	EX		
FCP 160	OCWA CONTROL PANEL ②	ELECTRICAL ROOM / CHEMICAL BUILDING	01/E106	120	1 2	EX	EX	EX	EX		
ISJB 100	INTRINSICALLY SAFE JUNCTION BOX	ELECTRICAL ROOM / CHEMICAL BUILDING	01/PID101, 02/E107, 01/1108	24	0 0	SI	E	E	E	G	
JB 100	JUNCTION BOX (FIELD WIRING CONNECTIONS)	ELECTRICAL ROOM / CHEMICAL BUILDING	02/E107, 01/1108	0	0 0	SI	E	E	E	G	
JBP 101	JUNCTION BOX FOR HEAT TRACE	EXTERIOR	01/E107	0	0 0	E	E	E	E	G	
JBa 07	JUNCTION BOX ON FCP-130 (EXISTING)	PUMP ROOM	01/E106, 02/E106	0	0 0	EX	EX	EX	EX		
JBd 07	JUNCTION BOX (EXISTING)	PUMP ROOM	01/E106	0	0 0	EX	EX	EX	EX		
JBd 10	JUNCTION BOX ON FCP-130 (EXISTING)	PUMP ROOM	01/E106, 02/E106, 01/1108	0	0 0	EX	EX	EX	EX		
LP 100	LIGHTING PANEL (EXISTING)	ELECTRICAL ROOM / CHEMICAL BUILDING	④	208	1 2	EX	EX	EX	EX		
MCC 100	MOTOR CONTROL CENTRE (EXISTING)	ELECTRICAL ROOM / CHEMICAL BUILDING		600	3 4	EX	EX	EX	EX		

TABLE OF PANELS AND ELECTRICAL EQUIPMENT

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01

E103

TABLE OF DEVICES													
DEVICE TAG IDENTIFIER	PREVIOUS TAG	COMPONENT CODE	DEVICE DESCRIPTION	ELEMENT TAG	INS. TYPE	LOCATION	OPERATION	NOTES	FIELD WORK				
									SUPPLY BY	INSTALL BY	WIRE BY	COMM. BY	
AIT 13011			PUMP ROOM GAS MONITOR (LEL) (EXISTING)	AE		ELECTRICAL ROOM	LEL	04/DE101, 01/E107, 02/E107	①	EX	EX	EX	EX
FIT 10001			EFFLUENT DISCHARGE FLOW INDICATE TRANSMITTER (EXISTING)	FE		PUMP ROOM		1/PID101, 01/E106, 02/E106		EX	EX	EX	EX
FIT 11001		F01	EFFLUENT DISCHARGE FLOW INDICATE TRANSMITTER	FE		PUMP ROOM	MAG	1/PID101, 01/E106, 02/E106, 01/1108		SI	E	E	G
KP 91001			TIME OR SCHEDULE POINT			PUMP ROOM		1108		SI	E	E	G
LIT 10003			SCREENING WET WELL LEVEL TRANSMITTER (EXISTING)	LE			RAD	1/PID101		EX	EX	EX	EX
LIT 10011			SCREENING UPSTREAM LEVEL TRANSMITTER (EXISTING)	LE				1/PID101, 01/E106		EX	EX	EX	EX
LIT 10012			SCREENING DOWNSTREAM LEVEL TRANSMITTER (EXISTING)	LE				1/PID101, 01/E106		EX	EX	EX	EX
LIT 30001			SCREENING SOUTH NATION RIVER LEVEL TRANSMITTER (EXISTING)	LE				1/PID101		EX	EX	EX	EX
LSH 10103			WET WELL EXISTING LEVEL SWITCH HIGH (EXISTING)					1/PID101		EX	EX	EX	EX
LSHH 10104			WET WELL LEVEL SWITCH GATE TRANSMITTER (EXISTING)					1/PID101		EX	EX	EX	EX
LSL 10101			WET WELL LEVEL SWITCH LOW (EXISTING)					1/PID101		EX	EX	EX	EX
LSLL 10105			WET WELL LEVEL SWITCH LOW LOW (EXISTING)					1/PID101		EX	EX	EX	EX
LSM 10102			WET WELL LEVEL SWITCH MIDDLE (EXISTING)					1/PID101		EX	EX	EX	EX
PIT 10001		P01	PRESSURE INDICATE TRANSMITTER			PUMP ROOM		1/PID101, 01/E106, 1108		SI	E	E	G
PIT 11001		P01	PRESSURE INDICATE TRANSMITTER	PE		PUMP ROOM		1/PID101, 1/P101, 01/E106		SI	E	E	G
SD 10001		T50	ELECTRICAL ROOM SMOKE DETECTOR			ELECTRICAL ROOM		02/E107, 1108		SI	E	E	G
TIT 10001		T01	TEMPERATURE INDICATE TRANSMITTER			ELECTRICAL ROOM	RTD	02/E107, 1108		SI	E	E	G
YAL 90011		O01	STACK LIGHT RED (ALARM)			EXTERIOR		01/E107		SI	E	E	G
YAL 90012		O01	STACK LIGHT AMBER (WARNING)			EXTERIOR		01/E107		SI	E	E	G
YAL 90021		O01	STACK LIGHT RED (ALARM)			EXTERIOR		01/E107		SI	E	E	G
YAL 90022		O01	STACK LIGHT AMBER (WARNING)			EXTERIOR		01/E107		SI	E	E	G

TABLE OF DEVICES

SCALE: N.T.S.

02

E103

MOTOR STARTER AND CONTROL LIST																												
GENERAL					MOTOR								CONTROL DETAILS & RESPONSIBILITIES															
													STARTER					AT MOTOR				AUTOMATION				COMMENTS		
DEVICE TAG	DESCRIPTION	GENERATOR SEQUENCE	DEVICE LOCATION	POWER SOURCE	VOLTAGE	PHASE	LOAD	SUPPLIED BY	INSTALLED BY	WIRED BY	COMMISSIONED BY	TYPE	DETAIL REFERENCE	SUPPLIED BY	INSTALLED BY	WIRED BY	COMMISSIONED BY	SUPPLIED BY	INSTALLED BY	WIRED BY	COMMISSIONED BY	SUPPLIED BY	INSTALLED BY	CONTROL WIRED BY	COMMISSIONED BY			
AC 91821		0	ELECTRICAL ROOM 105	LP 100	208	1	0.056 KW	M	E	E	G	INTEGRAL		M	E	E	G	M	E	E	G	E	E	E	G			
BLR 91601	BOILER	0	GENERATOR ROOM 104	LP 100	120	1	100 W	M	E	E	G	INTEGRAL		M	E	E	G	M	E	E	G	E	E	E	G			
BLR 91602	BOILER	0	GENERATOR ROOM 104	LP 100	120	1	100 W	M	E	E	G	INTEGRAL		M	E	E	G	M	E	E	G	E	E	E	G			
CND 91821	CONDENSER	0	EXTERIOR	LP 100	208	1	0	M	E	E	G	INTEGRAL		M	E	E	G	M	E	E	G	E	E	E	G			
EF 91821	EXHAUST FAN	0	SCREENING ROOM 106	MCC 100	600	3	0.5 HP	M	E	E	G	VFD		M	E	E	G	M	E	E	G	SI	E	E	G			
EF 91822	EXHAUST FAN	0	PUMP ROOM 001	MCC 100	600	3	0.5 HP	M	E	E	G	VFD		M	E	E	G	M	E	E	G	SI	E	E	G			
MD 91854	MOTORIZED DAMPER	0	PUMP ROOM 001	ACP 100	120	1	0	M	E	E	G	INTEGRAL		M	E	E	G	M	E	E	G	SI	E	E	G			
MD 91861	MOTORIZED DAMPER	0	ELECTRICAL ROOM 105	LP 100	120	1	0	M	E	E	G	INTEGRAL		M	E	E	G	M	E	E	G	SI	E	E	G			
MD 91862	MOTORIZED DAMPER	0	ELECTRICAL ROOM 105	LP 100	120	1	0	M	E	E	G	INTEGRAL		M	E	E	G	M	E	E	G	SI	E	E	G			
P 10011	SEWAGE LIFT PUMP (EXISTING)	0	PUMP ROOM 001	MCC 100	600	3	50 HP	EX	EX	EX	EX	VFD		M	E	E	G	M	E	E	G	SI	E	E	G			
P 10021	SEWAGE LIFT PUMP (EXISTING)	0	PUMP ROOM 001	MCC 100	600	3	50 HP	EX	EX	EX	EX	VFD		M	E	E	G	M	E	E	G	SI	E	E	G			
P 10031	SEWAGE LIFT PUMP	0	PUMP ROOM 001	MCC 100	600	3	50 HP	M	M	E	G	VFD		M	E	E	G	M	E	E	G	SI	E	E	G			
SC 10002	SCREENING COMPACTOR	0	SCREENING AREA 004	MCC 100	600	3	2 HP	M	M	E	G	INTEGRAL		M	E	E	G	M	E	E	G	SI	E	E	G			
SF 91821	SUPPLY FAN	0	ELECTRICAL ROOM 105	LP 100	120	1	0.25 HP	M	E	E	G	TOGGLE		M	E	E	G	M	E	E	G	E	E	E	G		DIV.16 TO PROVIDE CONDUIT, WIRING AND TOGGLE SWITCH	
UH 91821	UNIT HEATER	0	ELECTRICAL ROOM 105	MCC 100	600	3	5 KW	M	E	E	G	INTEGRAL		M	E	E	G	M	E	E	G	E	E	E	G		DIV.16 TO PROVIDE CONDUIT, WIRING AND THERMOSTAT	

MOTOR STARTER & CONTROL LIST

SCALE: N.T.S.

03

E103

DRAWING NOTES:

- EXISTING GAS SENSOR TO BE DEMOLISHED. SITE SI TO PROVIDE NEW SENSOR IN PUMP ROOM TO BE CONNECTED TO THE EXISTING PUMP ROOM GAS TRANSMITTER. REFER TO 04/DE101, 01/E107 & 02/E107.
- AVAILABLE EXISTING AS BUILT ACP-100 CONTROL PANEL SHOP DRAWING NOT SHOWING OCWA PANEL SIGNAL EXCHANGE. CONTRACTOR TO COORDINATE WITH SITE CONDITION FOR THE EXACT OCWA PANEL SIGNALS EXCHANGE FROM ACP-100 AND SUBMIT SHOP DRAWING WITH UPDATES.
- DWG DETAIL REFERENCE: 01/PID101, 02/DE101, 01 & 02/DE102, 01 & 02/E102, 01 & 02/E107, 1104 AND 01/1108
- DWG DETAIL REFERENCE: 03/DE101, 01 & 02/DE102, 01 & 02/E102, 01 & 02/E107 AND 01/1108

LEGEND

- G: GENERAL CONTRACTOR
E: ELECTRICAL CONTRACTOR
M: MECHANICAL CONTRACTOR
EX: EXISTING
SI: SYSTEM INTEGRATOR

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CONSULTANT:

PROFESSIONAL STAMP



PROJECT NORTH

PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 Brisson St, Casselman, ON K0A 1M0

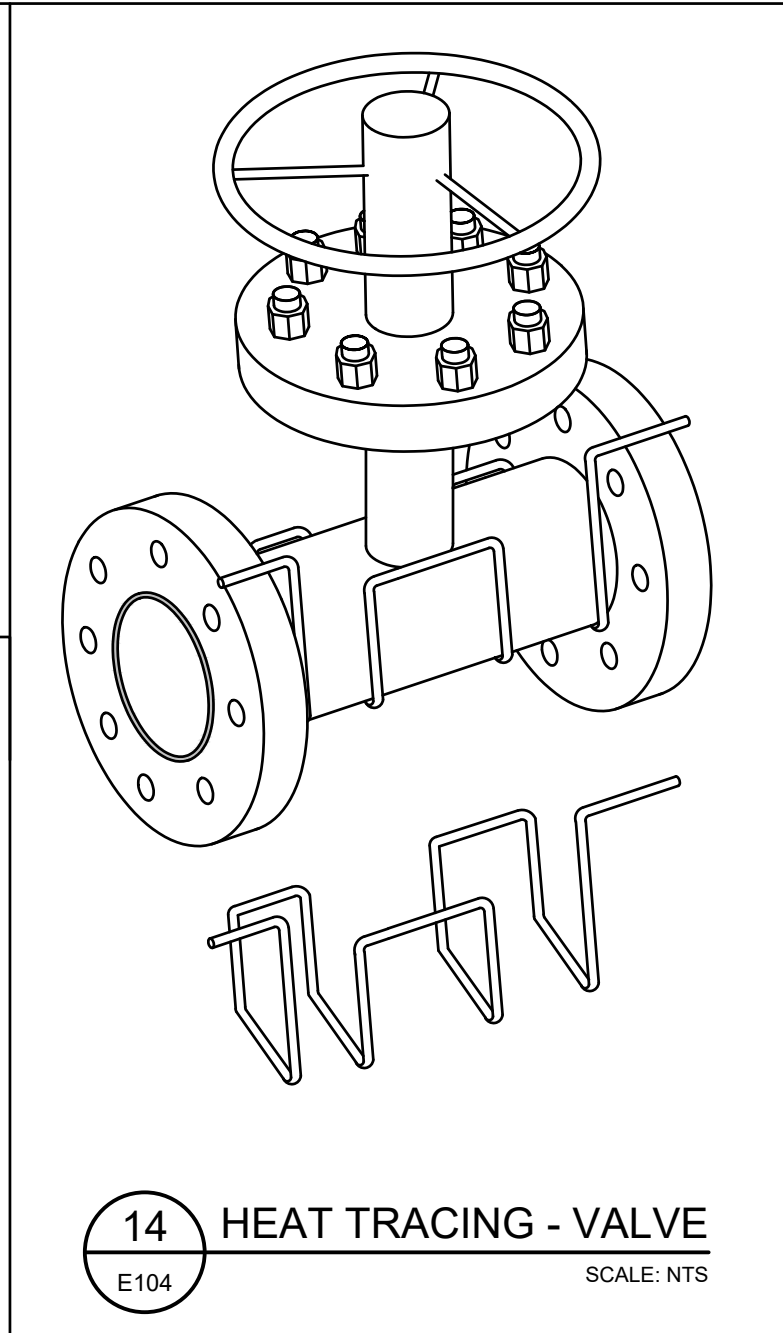
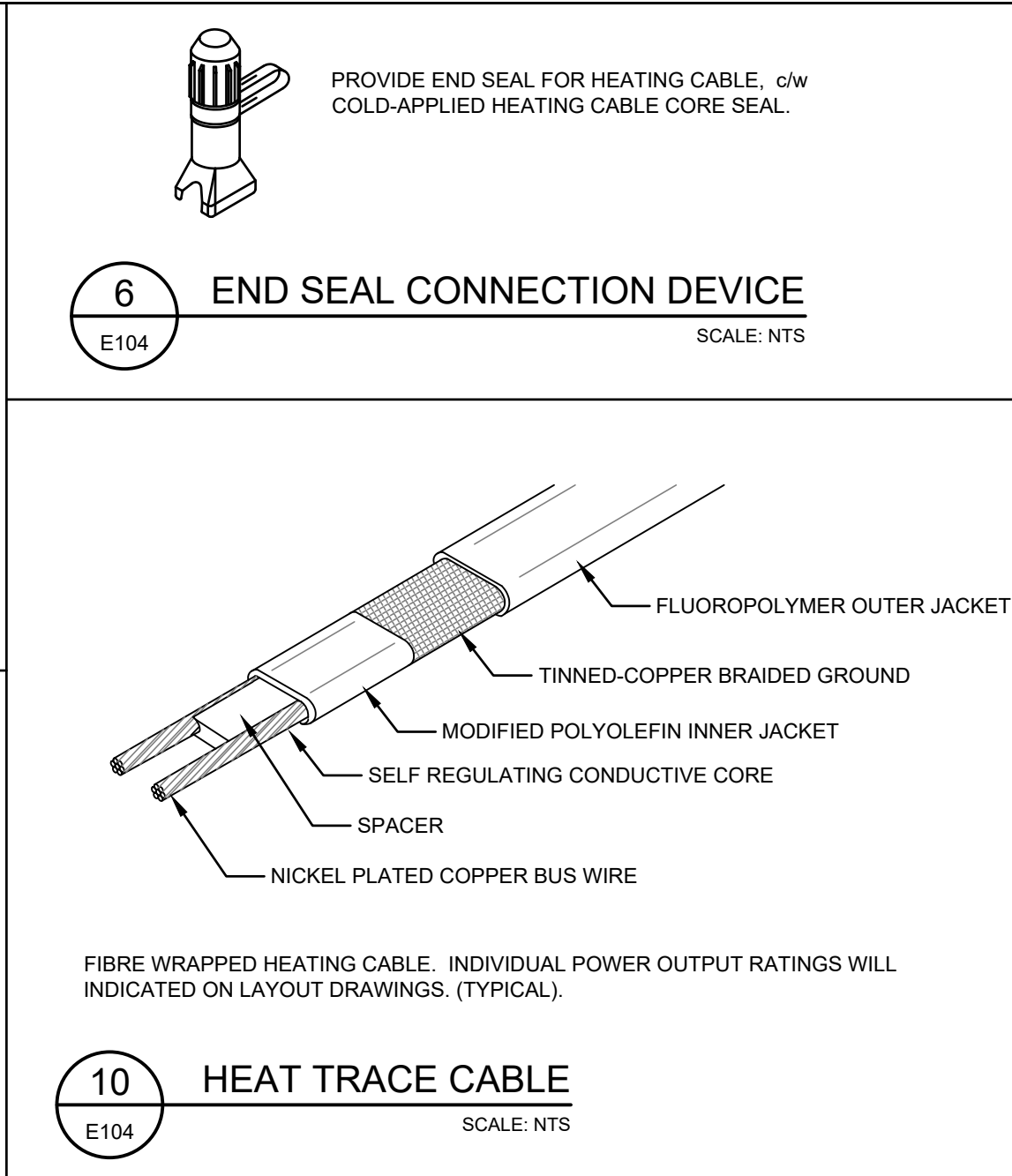
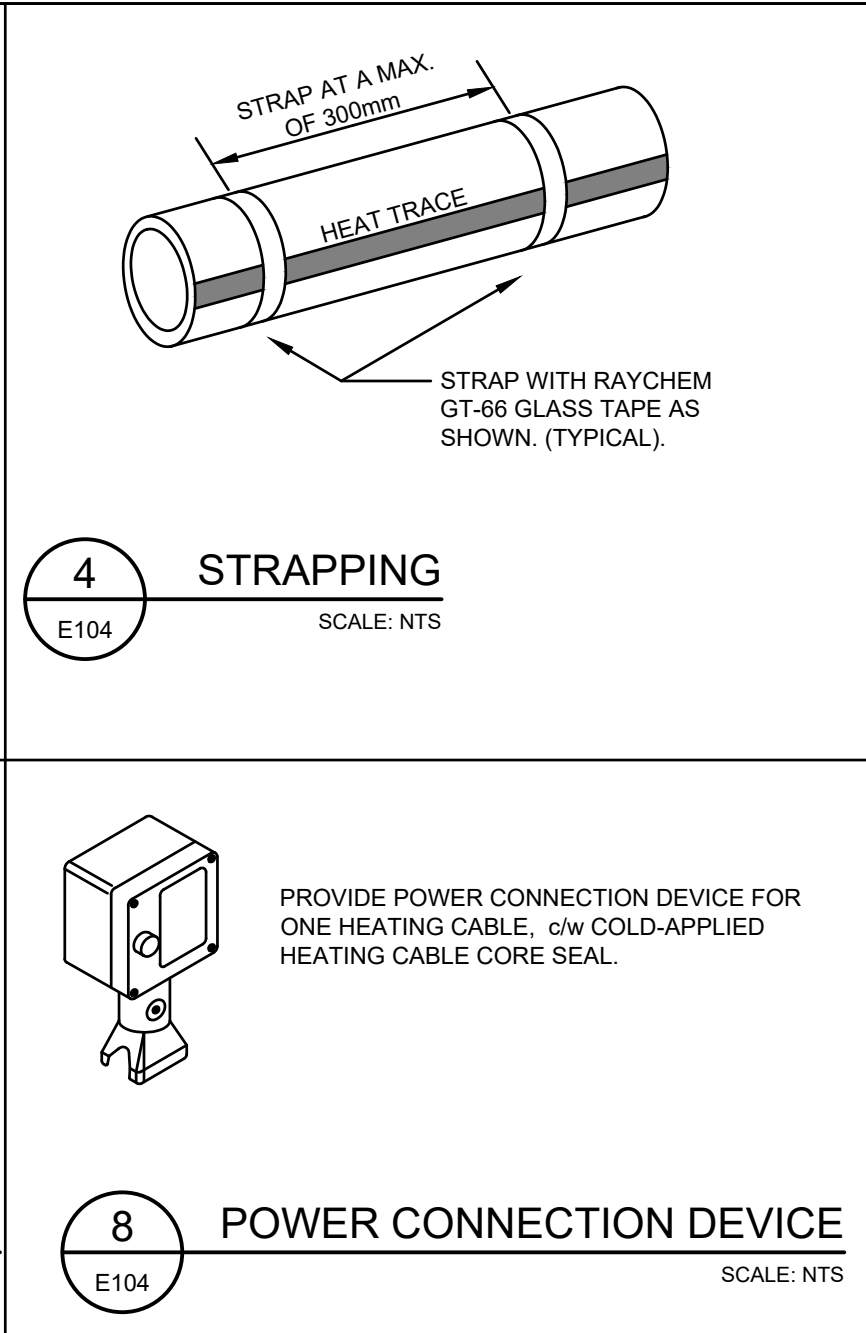
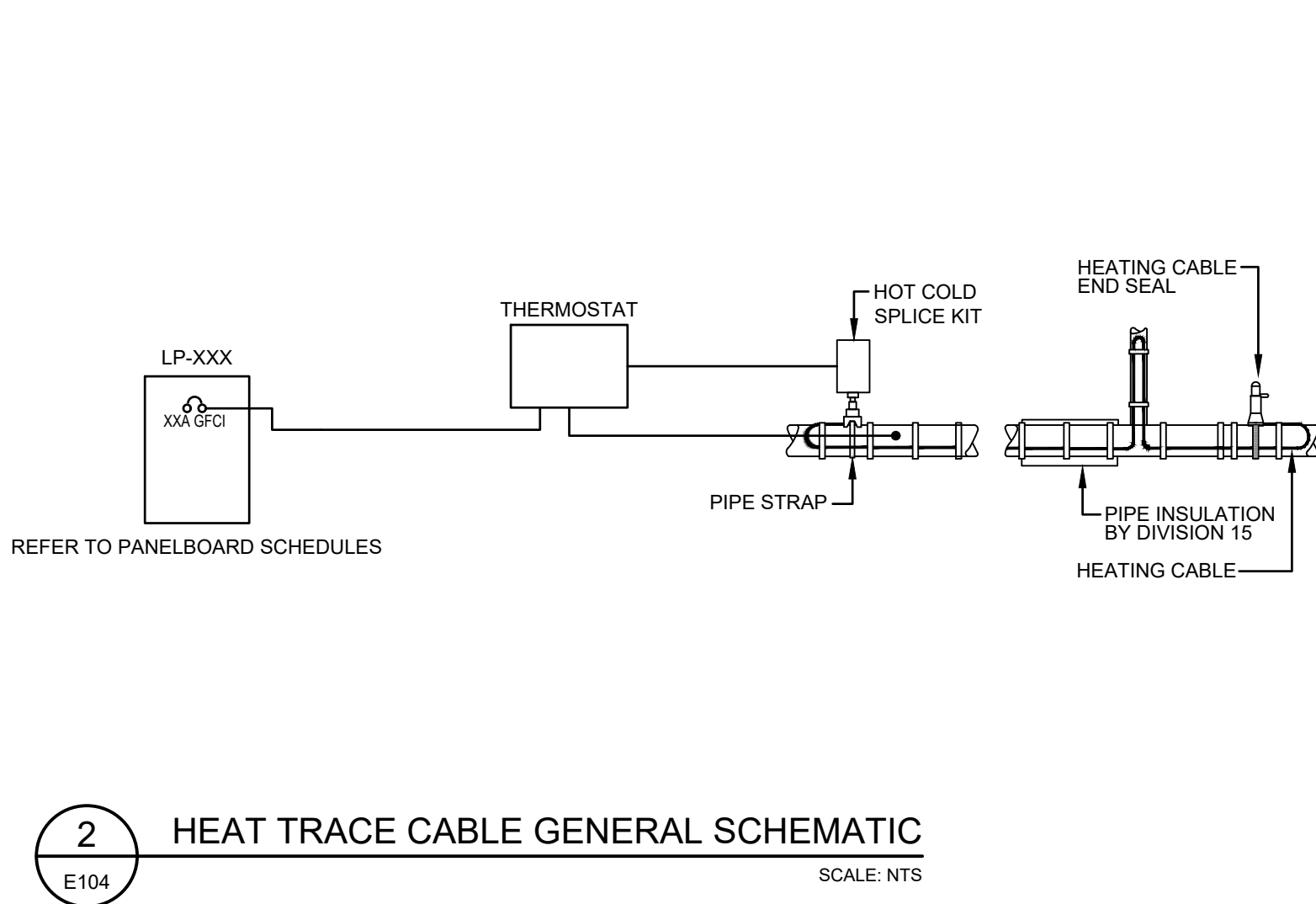
DRAWING:

ELECTRICAL

TABLES OF PANELS & DEVICES AND MOTOR STARTER & CONTROL LIST

DESIGN: CB	DRAWING #: E103
DRAWN: RH	
CHECKED: LO	
JLR #:	16953-134

PLOT DATE: Wednesday, April 23, 2025 10:43:22 AM



G: GENERAL CONTRACTOR
E: ELECTRICAL CONTRACTOR
M: MECHANICAL CONTRACTOR
EX: EXISTING
SI: SYSTEM INTEGRATOR

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CONSULTANT: www.jlrichards.ca

CONSULTANT

<p>PROFESSIONAL STAMP</p> 	<p>PROJECT NORTH</p>
---	----------------------

PROJECT

16 Brisson St, Casselman, ON K0A 1M0

ELECTRICAL

HEAT TRACE DETAILS

DESIGN:	CB
DRAWN:	RH
CHECKED:	LO
JLR #:	16953-134

DRAWING #:

E104



1. ELECTRONIC ETHERNET VFD DRIVE AS SPECIFIED IN SECTION 16B12.
2. PILOT LIGHTS TO BE "PUSH TO TEST" (P.T.T.) 120V LED LAMPS. LAMP COLOURS TO BE CONFIRMED PRIOR TO MANUFACTURING.
3. PROVIDE TERMINAL BLOCKS (DB) AS INDICATED. NUMBER OF TERMINALS AND MARKINGS TO SUIT.
4. SIZE CIRCUIT BREAKERS TO SUIT MOTOR LOADS.
5. VFD TO BE NEMA RATED, HEAVY DUTY. REFER TO SECTIONS 16B12
6. PROVIDE ADDITIONAL RELAY AS REQUIRED TO MEET OR EXCEED THE INTEND OF THIS LOGIC DIAGRAM.
7. FOR EACH STARTER, PROVIDE COOLING FAN AS PER VFD MANUFACTURER REQUIREMENTS. COOLING FAN TO RUN BY THERMOSTAT SETPOINT AS WELL WHEN VFD IS RUNNING.
8. FOR EACH STARTER, PROVIDE TERMINALS TO INTERLOCK THE STARTER VIA EXTERNAL HARDWIRED SIGNALS. CONTRACTOR TO PROVIDE JUMPS IF THE INTERLOCKS ARE NOT USED. PROGRAM THE STARTERS TO IMMEDIATELY SHUTDOWN IF THE INTERLOCKS ARE REMOVED.
9. COORDINATE THE SUPPLY OF PUMP MONITORING SYSTEM WITH PUMP WITH DIVISION 15. MINIMAX I MODULE TO BE MOUNTED ON MCC SECTION DOOR.
10. PROVIDE TWIN THERMOSTAT WITH FORM C CONTACT FOR PLC FAULT MONITORING.
11. VFD MODES:
 - AUTO MODE WITH 4-20 mA ANALOG INPUT SPEED FROM PLC.
 - BACKUP MODE WITH PRESET SPEED. SET PRESET SPEED AS PER MAXIMUM FLOW WHEN TWO (2) PUMPS ARE RUNNING.
 - HAND MODE WITH 0-10V ANALOG INPUT SPEED FROM POTENTIOMETER. HAND MODE OVERRIDES ALL OTHERS MODES.
12. WIRING LOGIC APPLIES TO ONE VFD MCC SECTION.
13. PROVIDE CTS (S), MOVs AND OTHER APPURTENANCES TO SUIT. INSTALL AS PER MANUFACTURER RECOMMENDATION.
14. VFD FAULT RESET VIA PUSH BUTTON ON VFD MCC SECTION DOOR AS WELL AS VIA ETHERNET.
15. MONITORING AND CONTROL OF VFD VIA HARDWIRED PLC I/O, AS INDICATED. MONITORING ALSO VIA ETHERNET.
16. ALL ALARMS TO BE WIRED IN A FAIL SAFE MANNER SUCH THAT SIGNAL IS ALWAYS PRESENT UNDER NORMAL WORKING CONDITIONS.
17. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL PLC WIRING DIAGRAMS, P&ID AND PROCESS LOGIC DRAWINGS.
18. PROGRAM THE VFD TO SEND FAULT / NOT READY SIGNAL IN THE EVENT OF 600VAC POWER FAILURE.
19. REFER TO DRAWING N101 NETWORK DIAGRAM.
20. PROVIDE TEMPERATURE MONITORING INSIDE PUMP VFD MCC SECTIONS TO THE PLC.

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SCALE:



J.L. Richards
ENGINEERS - ARCHITECTS - PLANNERS

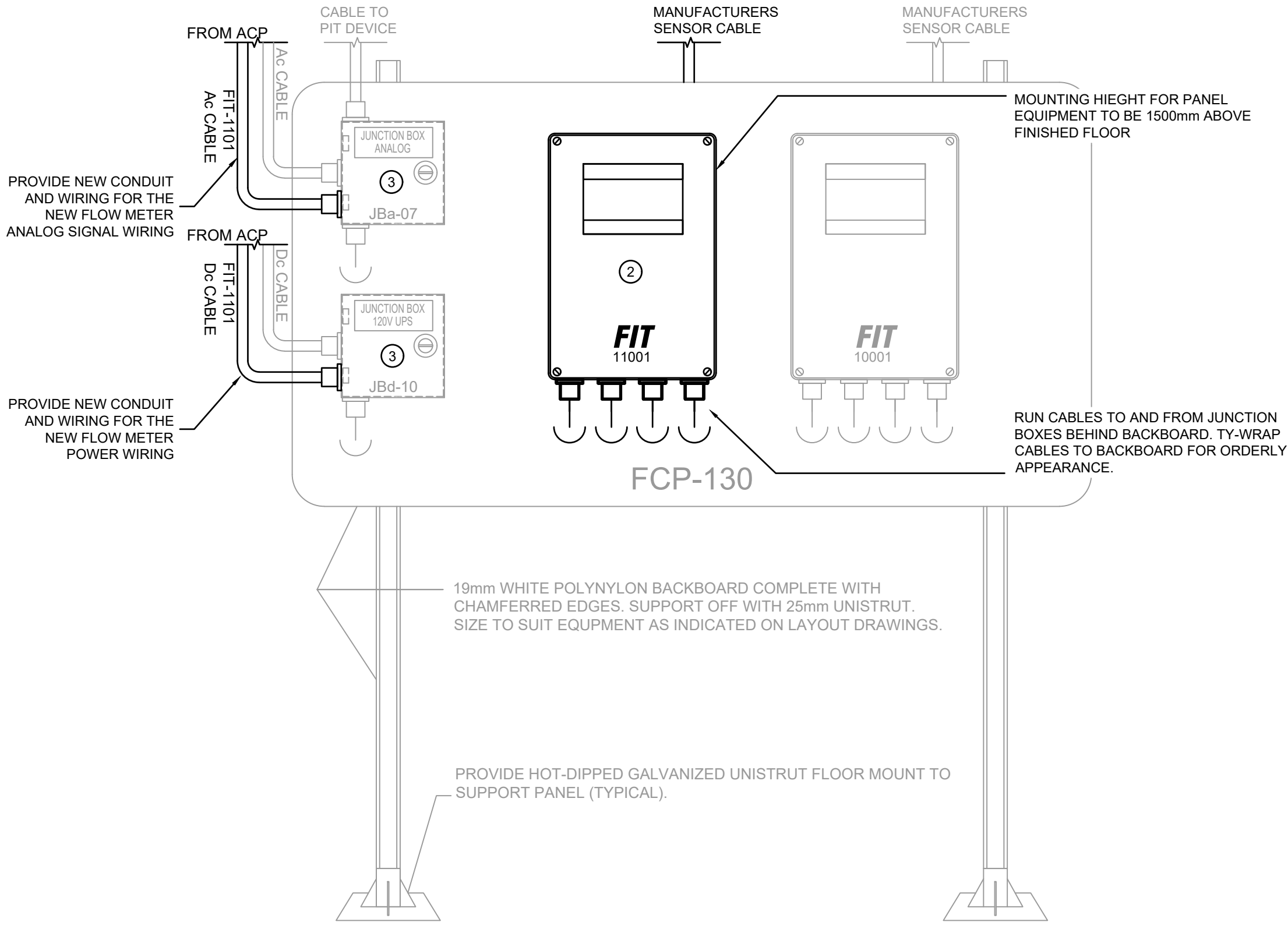
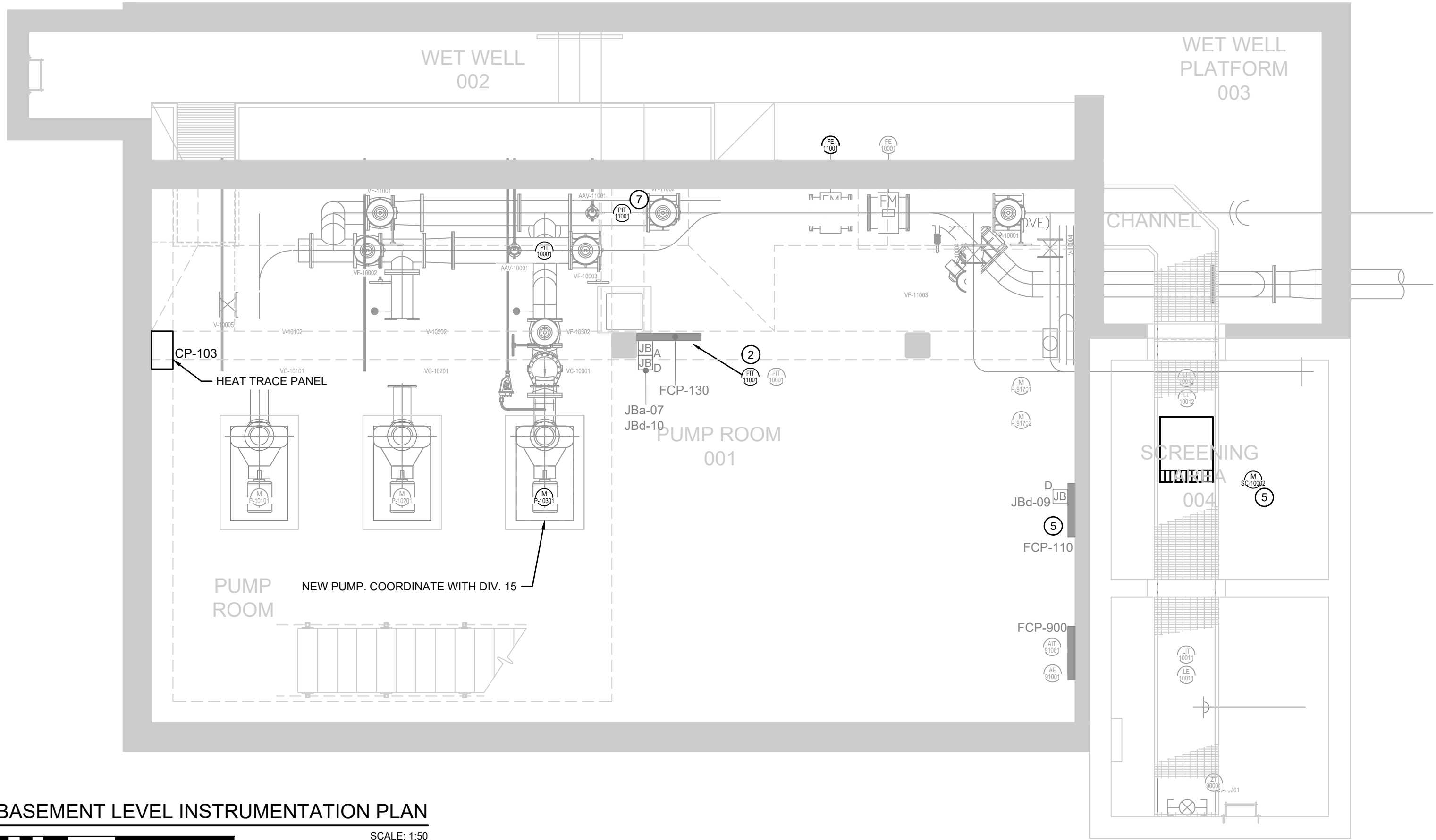
16953-134 - CASSELMAN MAIN SPS
UPGRADE

16 Brisson St, Casselman, ON K0A 1M0

DRAWING:

DRAWN: RH	DRAWING #: E105
CHECKED: LO	

JLR #: 16953-134



01 BASEMENT LEVEL INSTRUMENTATION PLAN
E106 SCALE: 1:50

02 FLOW INSTRUMENTATION PANEL
E106 SCALE: N.T.S.

LP-100

120/208 VOLT, 3P-4W
225 AMP MAINS
SURFACE MOUNTED

LOAD	DESCRIPTION	BRKR	CCT	CCT	BRKR	DESCRIPTION	LOAD
600	SCREENING RM JIB CRANE	15A, 1P	1	2	15A, 1P	LC1-1 / SCREENING LIGHTS	250
100	BOILER 1	15A, 1P	3	4	15A, 1P	LC1-2 / SCREENING RECPT	200
100	BOILER 2	15A, 1P	5	6	15A, 1P	LC2-1 / WET WELL LIGHTS	520
200	ENTRANCE HEATER	15A, 1P	7	8	15A, 1P	LC2-2 / WET WELL RECPT	200
200	DRY WELL RECEPTACLES	15A, 1P	9	10	15A, 1P	LC3-1 / GND FLR LIGHTS1	700
100	LAB/WASHROOM RECEPTACLES	15A, 1P	11	12	15A, 1P	LC3-2 / GND FLR LIGHTS2	650
200	PUMP ROOM RECEPTACLES	15A, 1P	13	14	15A, 1P	LC4-1 / DRY WELL LIGHTS1	400
200	GENERATOR ROOM RECEPTACLES	15A, 1P	15	16	15A, 1P	LC4-2 / DRY WELL LIGHTS2	250
100	GENERATOR BATTERY CHARGER	15A, 1P	17	18	15A, 1P	PUMP RM. ENTRANCE NIGHT LGT	64
400	ALL UNIT HEATERS	15A, 1P	19	20	15A, 1P	OUTSIDE LIGHTING	400
3000	3KW HOT WATER HEATER	20A 2P	21	22	30A 2P	LAUNDRY DRIER	5000
1000	GENERATOR BLOCK HEATER	15A, 1P	25	26	15A, 1P	SPARE	
200	WELL SAMPLER	15A, 1P	27	28	15A, 1P	OCWA PANEL	
	SPARE	15A, 1P	29	30	15A, 1P	HEAT TRACE (TC-100)	
	SPARE	15A, 1P	31	32	15A, 1P	ELECT. RM INTERIOR LIGHTS	
	ELECT. RM SUPPLY FAN & DAMPERS	15A, 1P	33	34	15A, 1P	SPARE	
	SPARE	15A, 1P	35	36	15A, 1P	SPARE	
		20A	37	38	30A, 1P	ACP-100	1000
2000	ELECTRIC HOIST	3P	39	40	30A, 2P	CONDENSER UNIT (CND-91821)	6000
			41	42			

TOTAL CONNECTED LOAD: XXXX Watts

PHASE LOAD TO BE FILLED IN BY CONTRACTOR:

LOAD PHASE A: LOAD PHASE B: LOAD PHASE C:

REMARKS

- ALL LOADS ARE IN WATTS, UNLESS OTHERWISE NOTED.
- DEDICATED CIRCUIT (RECEPTACLE OR HARDWIRED)
- GFI
- LOCKED
- ARC FAULT CIRCUIT INTERRUPTER
- DEDICATED NEUTRAL

03 PANEL SCHEDULE
E106 SCALE: N.T.S.

DRAWING NOTES:

- UPDATE EXISTING PANEL BREAKERS SCHEDULE AND LABELS TO REFLECT CHANGES MADE.
- INSTALL NEW FLOW TRANSMITTER ON EXISTING FLOW INSTRUMENTATION PANELBOARD. USE EXISTING JUNCTION BOXES FOR NEW FLOW TRANSMITTER WIRING. PROVIDE ADDITIONAL TERMINAL BLOCKS AND ALL OTHER APPURTENANCES AS REQUIRED. (SEE DETAIL 2/E106 FOR INSTRUMENTATION PANEL ELEVATION)
- PROVIDE ADDITIONAL TERMINAL BLOCKS AND ACCESSORIES INSIDE JUNCTION BOXES AS REQUIRED FOR NEW FLOWMETER WIRING.
- EXISTING EQUIPMENT CIRCUIT BREAKERS TO BE TAGGED AND LABELLED AS SPARE. MODIFY PANEL SCHEDULE PRINTOUT TABLE AS REQUIRED.
- DRAWING DO NOT SHOW EVERY DETAIL REQUIREMENT TO BE PROVIDED BY ELECTRICAL CONTRACTOR. COORDINATE WITH DIV.15 FOR THE PROVISION OF NEW LOCAL CONTROL STATION AND REQUIRED JUNCTION BOXES AS PART OF NEW COMPACTOR PACKAGE. PROVIDE COMPLETE LOCAL CONTROL STATION INTEGRATION TO THE EXISTING COMPACTOR CONTROL PANEL FCP-110. PROVIDE NEW TECK90 WIRING AS REQUIRED BACK TO FCP-110. COORDINATE WITH MANUFACTURER FOR THE WIRING REQUIREMENT AND PROVIDE FOR A COMPLETE, FULLY COMMISSIONED TURN-KEY INSTALLATION.
- PRIOR THE SHOP SUBMISSION, CONTRACTOR TO COORDINATE WITH HEAT TRACE MANUFACTURER TO PROVIDE GFCI AT THE PANEL IF NOT PROVIDED WITH HEAT TRACE PACKAGE.
- PROVIDE A NEW PRESSURE TRANSMITTER AND NEW WIRING BACK TO THE NEW PLC CONTROL PANEL. COORDINATE WITH DIV.15.

0	ISSUED FOR TENDER	23/04/25
No.	ISSUE / REVISION	DD/MM/YY

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VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING.

SCALE: AS SHOWN

CLIENT:



CONSULTANT: www.jrichards.ca

J.L. Richards
ENGINEERS • ARCHITECTS • PLANNERS

CONSULTANT:



PROJECT NORTH

PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 Brisson St, Casselman, ON K0A 1M0

DRAWING:

ELECTRICAL

PLANS, DETAILS & PANEL SCHEDULE - BASEMENT

DESIGN: CB

DRAWN: RH

CHECKED: LO

JLR #: 16953-134

DRAWING #:

E106

DRAWING NOTES - DEMOLITION

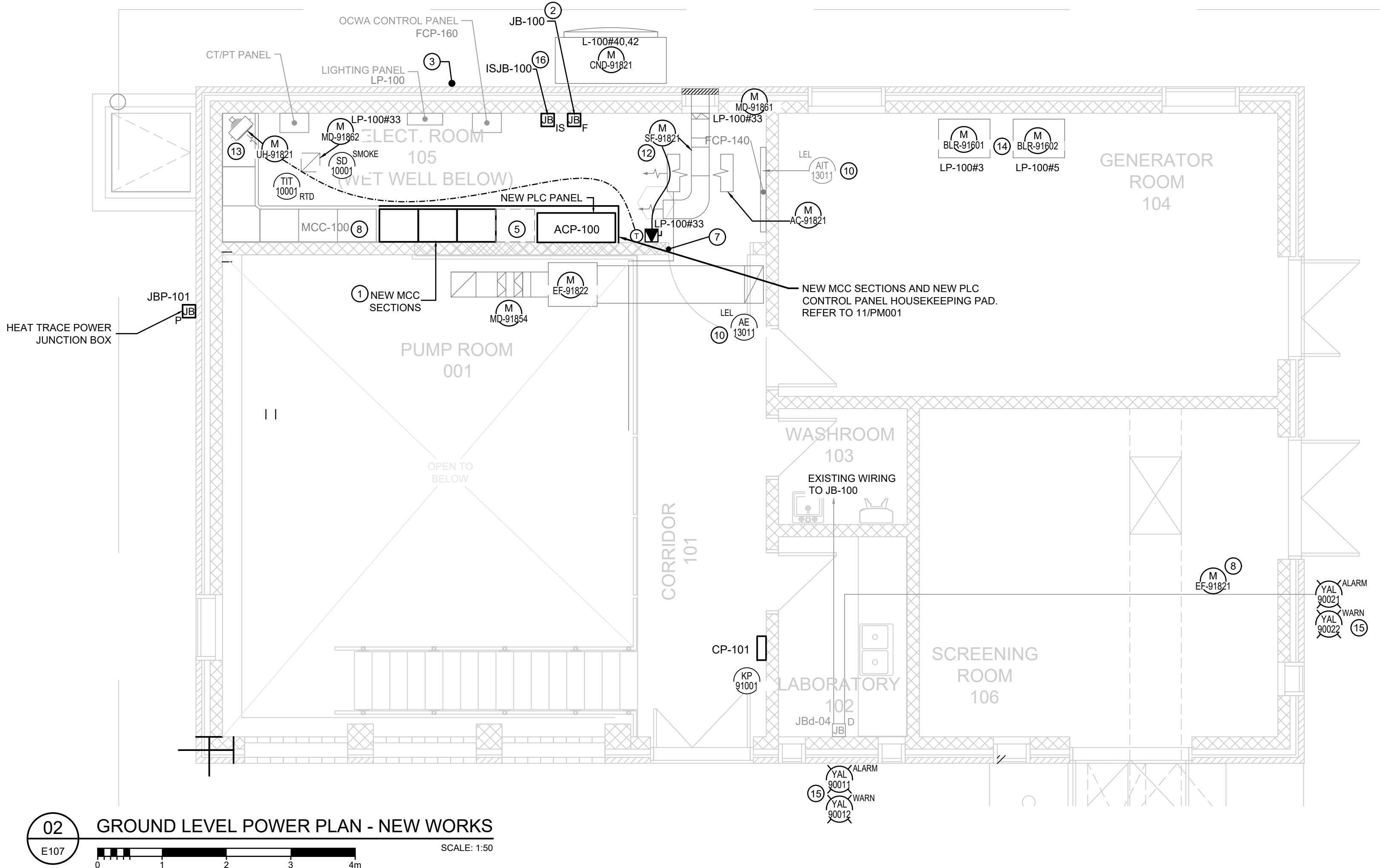
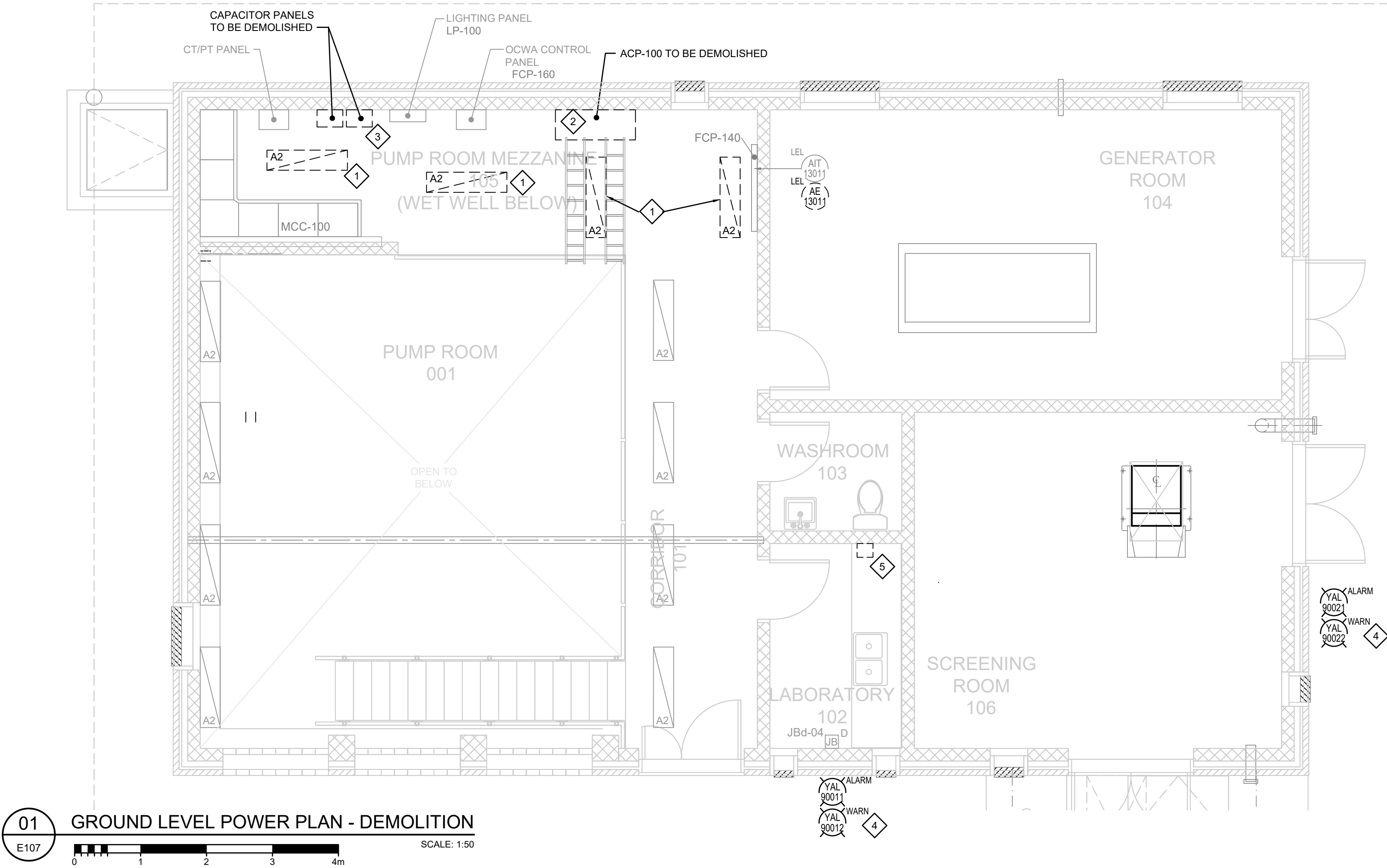
- 1 REMOVE EXISTING LIGHT FIXTURE INSIDE ELECTRICAL ROOM ALONG WITH THE ASSOCIATED CONDUITS, WIRING AND ALL ASSOCIATED APPURTENANCES. (TYP ALL)
- 2 EXISTING PLC CONTROL PANEL TO BE DEMOLISHED.
- 3 REMOVE EXISTING CAPACITOR CONTROL PANEL, CONDUIT, WIRING AND ALL ASSOCIATED APPURTENANCES BACK TO SOURCE.
- 4 REMOVE EXISTING EXTERIOR STACK LIGHTS AND ASSOCIATED APPURTENANCES. STACK LIGHTS ARE TO BE REPLACED IN-SITU.
- 5 REMOVE RJ45 ETHERNET WALL OUTLET, CONDUIT, AND CAT5 CABLE BACK TO SOURCE.

DRAWING NOTES - NEW:

- 11 INSTALL NEW MCC SECTIONS ON HOUSEKEEPING PAD. COORDINATE WITH DIVISION 2.
- 12 PROVIDE NEW JUNCTION BOX WITH NEW TERMINAL BLOCKS TO CONNECT EXISTING FIELD WIRING TO NEW PLC CONTROL PANEL. SIZE THE JUNCTION BOX TO SUIT. REFER TO DETAIL 06/1105
- 13 APPROXIMATE LOCATION OF EXTERIOR MOUNTED ANTENNA FOR THE GSM ROUTER. CONTRACTOR TO PROVIDE CONDUIT TO SUIT (MINIMUM OF 27MM). COORDINATE FINAL LOCATION OF THE ANTENNA WITH THE SYSTEM INTEGRATOR PRIOR TO INSTALLING CONDUIT. ALLOW FOR AN INCREASED LENGTH OF 25M IN ANY DIRECTION FROM THE PLC CONTROL PANEL.
- 14 RESERVED
- 15 SPACE FOR FUTURE MCC SECTION. CONTRACTOR TO LEAVE MINIMUM WIDTH OF 941 MM FOR FUTURE EQUIPMENT.
- 16 TYPICAL FOR 4 NEW LIGHT FIXTURES: PROVIDE NEW LIGHT FIXTURES FOR THE ELECTRICAL ROOM. REFER TO LUMINAIRE SCHEDULE. PROVIDE NEW LIGHT SWITCH, CONDUIT AND WIRING FOR ELECTRICAL ROOM NEW INTERIOR LIGHTS.
- 17 RELOCATE ALL ELECTRICAL EQUIPMENT THAT INTERFERE WITH THE EXTENDED WALL. COORDINATE WITH ARCHITECTURAL. EXTEND CONDUIT AND CABLE TRAY, AND PROVIDE NEW WIRING AS REQUIRED.
- 18 PROVIDE NEW VFD CABLE FOR THE NEW EXHAUST FAN. REFER TO SINGLE LINE DIAGRAM. COORDINATE WITH DIV.15.
- 19 PROVIDE DUAL HEAD EMERGENCY BATTERY UNIT C/W DUPLEX RECEPTACLE. RECEPTACLE TO BE MOUNTED ADJACENT TO EBU. COORDINATE FINAL LOCATION OF EMERGENCY LIGHT WITH SITE CONDITION IN A MANNER TO ILLUMINATE THE ROOM EXIT DOOR. COORDINATE WITH DIV.15.
- 20 PROVIDE NEW LEL GAS SENSOR IN PUMP ROOM BELOW FOR THE EXISTING MSA ULTIMA X SERIES GAS DETECTOR MONITOR LOCATED INSIDE THE ELECTRICAL ROOM. INTEGRAL CABLE LENGTH TO SUIT.
- 21 COORDINATE WITH OTHER DIVISION AND ARRANGE FOR OPENING IN NEW ELECTRICAL WALL. WIDTH AND DEPTH OF CABLE TRAY AND RUN TROUGH EXTENDED WALL OPENING.
- 22 PROVIDE A DPDT PADLOCKABLE MOTOR RATED TOGGLE SWITCH C/W INTEGRAL OIL. PER SECTION 16805 TO ISOLATE/DISCONNECT THIS FAN AND ASSOCIATED DAMPER. LOCATE THIS PADLOCKABLE TOGGLE SWITCH NEXT TO THE FAN AND LABEL WITH THE FAN TAG. WIRE THIS FAN TO RUN AND ASSOCIATED DAMPER TO OPEN WHEN THE TOGGLE SWITCH IS AT ON POSITION. IN ADDITION, INTERLOCK THIS FAN WITH MD-91861 SO THAT THE FAN DOES NOT RUN IF MD-91861 IS NOT CONFIRMED OPEN.
- 23 PROVIDE A DISCONNECT SWITCH FOR UNIT HEATER AS PER SECTION 16440.
- 24 CONTRACTOR TO COORDINATE WIRING CONNECTION FOR THE NEW BOILERS. ALLOW FOR AN INCREASE IN WIRING SIZE. WHERE EXISTING WIRING APPEARS TO BESHORT, PROVIDE JUNCTION BOX AS REQUIRED TO SPLICE ADDITIONAL WIRES. COORDINATE WITH DIV. 15.
- 25 PROVIDE NEW STACK LIGHTS AND NEW MOUNTING BRACKET. PROVIDE JUNCTION TO EXTEND THE WIRING TO SUIT REQUIREMENT FOR THE NEW EQUIPMENT. REFER TO DRAWINGS E107 & I104. STACK LIGHT PER ITEM 10.
- 26 CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING AND PROVIDING INTRINSICALLY SAFE BARRIER RELAYS AS NEEDED TO MEET THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE. THIS SHALL INCLUDE ALL REQUIRED DESIGN DOCUMENTATION AS MAY BE REQUESTED BY THE ELECTRICAL SAFETY AUTHORITY IN FINAL ACCEPTANCE OF THE PUMPING SYSTEM INSTALLATIONS. REFER TO DRAWING I105 FOR INTRINSICALLY SAFE BARRIER RELAY JUNCTION BOX DETAILS. INTRINSICALLY SAFE BARRIER JUNCTION BOX IS TO BE INSTALLED OUTSIDE OF CP-101

GENERAL NOTES:

- A. CONTRACTOR TO COORDINATE CABLE TRAY ROUTE WITH MECHANICAL AND ARCHITECTURAL.
- B. CABLE TRAY BRACKETS NOT TO EXTEND MORE THAN 500mm BEYOND CABLE TRAYS.
- C. COORDINATE FINAL DIMENSIONS OF HOUSEKEEPING PADS WITH ACTUAL EQUIPMENT DIMENSIONS. PROVIDE A MINIMUM OF 10mm CLEARANCE ON FRONT AND SIDES. EACH HOUSEKEEPING PAD TO BE 100mm HIGH.
- D. REFER TO 03/ E106 FOR L-100 PANEL SCHEDULE.
- E. PROVIDE NEW HEAT/SMOKE DETECTOR INSIDE ELECTRICAL ROOM. COORDINATE EXACT LOCATION AS PER SITE CONDITION. REFER TO SECTION 17100.



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SCALE: AS SHOWN

CLIENT:



CONSULTANT: www.jrichards.ca

J.L. Richards
ENGINEERS - ARCHITECTS - PLANNERS

CONSULTANT:

PROFESSIONAL STAMP



PROJECT NORTH

PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 Brisson St, Casselman, ON K0A 1M0

DRAWING:

ELECTRICAL
PLANS DETAILS & PANEL SCHEDULE - GROUND LEVEL

DESIGN: CB

DRAWN: RH

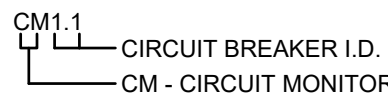
CHECKED: LO

JLR #: 16953-134

DRAWING #:

E107

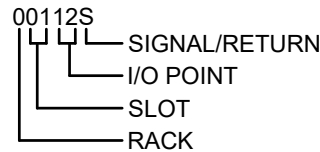
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NOTES:

1. UNUSED RELAYS TO BE LABELLED "SPARE".
2. RELAYS TO BE ARRANGED IN NUMERICAL ORDER FROM TOP TO BOTTOM (OR LEFT TO RIGHT). UNUSED RELAYS TO BE PLACED AT THE BOTTOM.

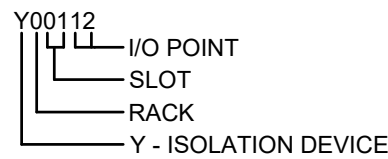
01 TYPICAL LABELLING OF CIRCUIT MONITORS
1101 SCALE: N.T.S.



NOTES:

1. TWO-TIER KNIFE DISCONNECT TERMINALS ARE USED. THE "SIGNAL" TERMINAL SHALL BE THE KNIFE TERMINAL (TOP TIER) AND THE "RETURN" TERMINAL SHALL BE THE BOTTOM (STRAIGHT-THROUGH) TERMINAL.
2. TERMINALS TO BE ARRANGED IN NUMERICAL ORDER FROM TOP TO BOTTOM (OR LEFT TO RIGHT).

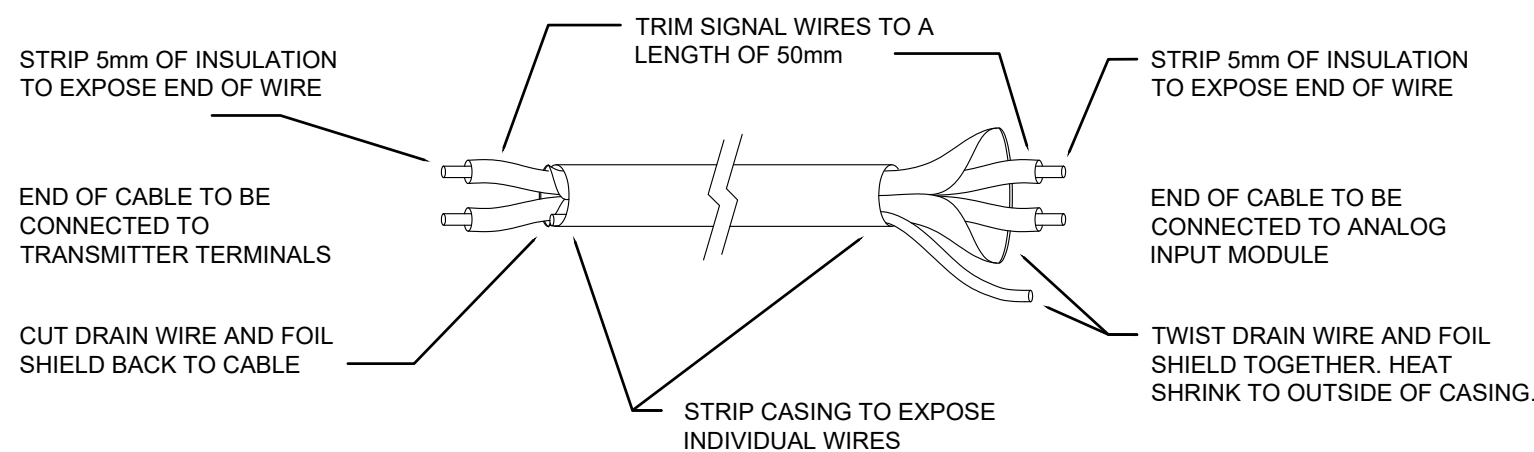
02 TYPICAL LABELLING OF I/O TERMINALS
1101 SCALE: N.T.S.



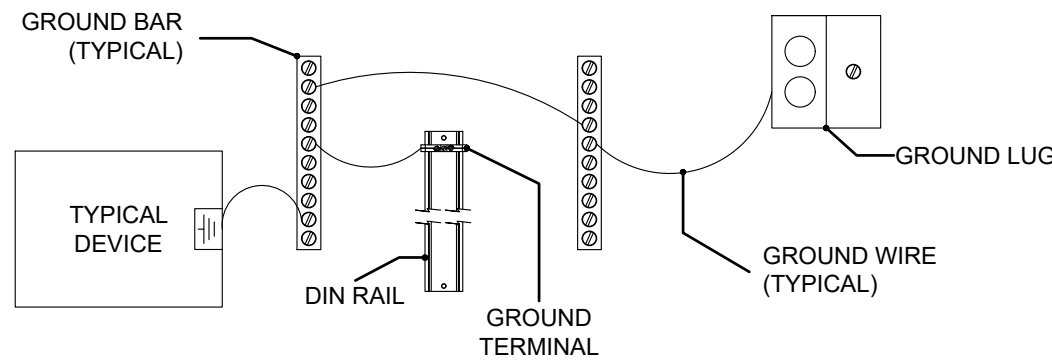
NOTES:

1. ISOLATORS TO BE ARRANGED IN NUMERICAL ORDER FROM TOP TO BOTTOM (OR LEFT TO RIGHT).

03 TYPICAL LABELLING OF ISOLATION DEVICES
1101 SCALE: N.T.S.



04 ANALOG PREPARATION DETAIL
1101 SCALE: N.T.S.



NOTES:

1. ENCLOSURE AND COMPONENTS TO BE BONDED AS PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE MANUFACTURER'S ACCESSORIES AS REQUIRED.
2. ENSURE BONDING IS IN ACCORDANCE WITH THE LATEST REVISION OF THE ONTARIO ELECTRICAL CODE.
3. ALL GROUND BARS TO BE BONDED WITH GROUND WIRE.
4. ALL ENCLOSURE DOORS AND PANELS TO BE BONDED.
5. EACH DIN RAIL TO BE BONDED WITH PHOENIX CONTACT USLKG 5 GROUND TERMINAL.

05 BONDING DETAIL
1101 SCALE: N.T.S.

GENERAL NOTES:

1. PROVIDE REQUIRED ACCESSORIES/COMPONENTS TO ASSURE IP2X DEGREE OF PROTECTION (FINGER-SAFE RATING) FOR ALL ENCLOSURES.
2. ENSURE THAT ENCLOSURE NEMA RATINGS ARE PRESERVED.
3. COORDINATE INSTALLATION OF DEVICES WITHIN THE ENCLOSURES TO ENSURE NO CONFLICTS NOR INTERFERENCES OCCUR DURING PANEL BUILDING AND BEFORE FINAL INSTALLATION OF DEVICES.
4. QUANTITIES TO BE DETERMINED FROM CONTRACT DOCUMENTS.
5. ENCLOSURES TO BE BUILT IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURERS OF THE COMPONENTS USED.
6. USE SUITABLE CONSTRUCTION GRADE ADHESIVE TO SECURE LAMACOIDS TO ENCLOSURES. ENSURE ADHESIVE IS RATED FOR THE INTENDED ENVIRONMENTAL CONDITIONS. SCREWS OR OTHER MEANS REQUIRING PUNCTURING OF THE ENCLOSURES/PANELS/DOORS, ARE NOT ACCEPTABLE.

INSPECTION:

1. ENCLOSURES TO PASS ESA INSPECTION. PROVIDE ESA LABELS IN CONSPICUOUS LOCATIONS.

PLC/MIO:

1. REFER TO THE PLC/MIO CONFIGURATION SCHEDULES FOR PLC/MIO CARD ARRANGEMENT.

INSTALLATION NOTES:

1. PROVIDE CABLE/CONDUIT ENTRIES ONLY AS REQUIRED.
2. UNLESS OTHERWISE INDICATED, 120VAC WIRING ENTER THE ENCLOSURE ON THE LEFT; 24VDC AND COMMUNICATION WIRING ENTER THE ENCLOSURE ON THE RIGHT. CABLE ENTRIES SHALL BE FROM TOP OR BOTTOM OF ENCLOSURES ONLY.
3. ENCLOSURE INSTALLER TO COVER ALL COMPONENTS IN THE ENCLOSURE TO PREVENT METAL FILINGS FROM ENTERING THE COMPONENTS DURING CABLE/CONDUIT INSTALLATION.
4. ENCLOSURES AND ALL COMPONENTS TO BE PROTECTED FROM FOREIGN PARTICLES DURING CONSTRUCTION.
5. AFTER INSTALLATION, ENCLOSURES TO BE CLEANED, INSIDE AND OUT, AND ALL DUCT COVERS REPLACED.
6. APPLY TOUCH-UP PAINT TO ALL EXPOSED ENCLOSURE AND PANEL AREAS THAT HAVE BEEN SCRATCHED, PENETRATED, ETC., TO PREVENT CORROSION. TOUCH-UP PAINT TO BE THE SAME COLOUR AS THE AREA AND TO BE SUPPLIED BY THE ENCLOSURE MANUFACTURER. APPLY TOUCH-UP PAINT AS PER MANUFACTURER'S RECOMMENDATIONS.

SPARE DIN RAIL SPACE:

1. PROVIDE SUFFICIENT SPARE DIN RAIL SPACE AS INDICATED.

LENGTH OF EXPOSED WIRES/CABLES:

1. LAYOUT THE COMPONENTS ON THE PANEL SUCH THAT THERE IS SUFFICIENT EXPOSED WIRE/CABLE BETWEEN THE COMPONENT AND THE WIRE DUCT TO FACILITATE COMFORTABLE HANDLING OF THE WIRE/CABLE AS WELL AS FULL EXPOSURE OF THE WIRE/CABLE LABEL. TYPICALLY, AN EXPOSED LENGTH OF AT LEAST 32mm IS RECOMMENDED.

JUMPERS:

1. GENERALLY, ALL JUMPERS SHALL BE INSULATED WIRE. COMB STYLE JUMPERS ARE NOT ACCEPTABLE UNLESS PRE-APPROVED BY THE ENGINEER. PROVIDE SHOP DRAWINGS DETAILING ALL ACCESSORIES TO BE USED FOR WIRING.
2. EACH WIRE JUMPER TO EXTEND INTO WIRING DUCT.

SHOP DRAWINGS:

1. CONSULT THE SHOP DRAWINGS OF ALL RELATED EQUIPMENT PRIOR TO PREPARING THE PANEL SHOP DRAWINGS.
2. SHOP DRAWINGS TO INCLUDE, BUT NOT LIMITED TO THE FOLLOWING:
 - 2.1. I/O DIAGRAMS
 - 2.2. DETAILED ENCLOSURE/PANEL LAYOUT DRAWINGS, LABELLING AND DIMENSIONS
 - 2.3. DETAILED WIRING DIAGRAMS, INCLUDING WIRE LABELS AND WIRE SPECIFICATIONS
 - 2.4. TAGS TO BE USED
 - 2.5. DETAILED SHOP DRAWINGS/DATA SHEET FOR EACH COMPONENT/ACCESSORY (INCLUDING WIRES AND CABLES) TO BE USED

VOLTAGE SEPARATION/ELECTROMAGNETIC INTERFERENCE (EMI):

1. ENSURE PROPER VOLTAGE SEPARATION IS OBSERVED.
2. ROUTE WIRES AND CABLES IN A MANNER SUCH THAT EMI IS MINIMIZED.
3. PROVIDE FERRITE COLLARS/BEADS AND OTHER ACCESSORIES AS REQUIRED TO MINIMIZE EMI.
4. FOLLOW MANUFACTURERS' RECOMMENDATIONS WITH RESPECT TO EMI.
5. ADVISE THE ENGINEER OF ANY ISSUES ARISING WITH RESPECT TO EMI.

WIRE LABELS:

1. INTERNAL PANEL WIRES TO BE LABELLED ACCORDING TO THE COMPONENT AT THE HIGHER POTENTIAL. INCLUDE TERMINAL DESIGNATION IN THE WIRE LABEL WHERE APPLICABLE. FOR EXAMPLE, A WIRE FROM CB1.1 THAT FEEDS THE 24VDC POWER SUPPLY SHOULD BE LABELLED AS "CB1.1". ALSO, A WIRE FROM TERMINAL 12 ON R100 THAT ACTIVATES ANOTHER RELAY SHOULD BE LABELLED AS "R100-12".
2. BOTH ENDS OF EACH WIRE TO BE LABELLED (WITH THE SAME LABEL).
3. WIRE LABEL MATERIAL TO BE APPROVED PRIOR TO INSTALLATION.

CIRCUIT BREAKERS AND SUPPLEMENTARY PROTECTORS:

1. SIZE CIRCUIT BREAKERS AND SUPPLEMENTARY PROTECTORS TO SUIT. PROVIDE SIZES IN SHOP DRAWINGS FOR REVIEW.

GENERAL LABELLING:

1. ALL COMPONENTS TO BE LABELLED AS SPECIFIED.
2. LABELS TO BE PRINTED BY MACHINE AND SHOULD BE DONE IN A NEAT ORGANIZED MANNER.
3. PHOENIX CONTACT DEVICES TO BE LABELLED USING PRE-APPROVED PHOENIX CONTACT LABELLING SYSTEMS.
4. WHERE PHOENIX CONTACT LABELLING SYSTEM IS NOT APPLICABLE, LABELLING SHALL BE DONE USING A BRADY STYLE SELF-ADHESIVE TAPE OR MANUFACTURER RECOMMENDED METHOD.
5. BOTH SIDES OF EACH TERMINAL TO BE LABELLED AS SHOWN, UNLESS OTHERWISE INDICATED.
6. LABEL EACH WIRE DUCT TO INDICATE THE WIRING CLASS (e.g. 120VAC, 24VDC, OR COMMUNICATIONS).

LOOSE COMPONENTS:

PROVIDE THE FOLLOWING LOOSE COMPONENTS IN A "ZIPLOCK" BAG SECURED INSIDE EACH CABINET:

- FIVE (5) OF EACH TYPE OF TERMINAL BLOCK
- TWO (2) OF EACH TYPE OF RELAY
- FOUR (4) SNAP-ON END BRACKETS
- ONE (1) ANALOG SIGNAL ISOLATING AMPLIFIER

ETHERNET PATCH CORDS:

1. PROVIDE SUFFICIENT NUMBER OF PATCH CORDS FOR INTERNAL ETHERNET CONNECTIONS. PATCH CORDS AS PER SECTION 17060.
2. SELECT PATCH CORD LENGTHS TO SUIT. PATCH CORDS TO BE AS SHORT AS POSSIBLE.
3. PROVIDE ONE (1) SPARE 2m PATCH CORD. PLACE IT IN THE ZIPLOCK BAG CONTAINING THE LOOSE COMPONENTS.
4. PROVIDE A LABEL FOR EACH END OF EACH PATCH CORD.

TELEPHONE PATCH CORDS:

1. PROVIDE TELEPHONE PATCH CORDS FOR AS REQUIRED FOR INTERNAL TELEPHONE CONNECTIONS - INCLUDING EQUIPMENT MOUNTED ON THE CABINET EXTERIOR. PATCH CORDS AS PER EQUIPMENT MANUFACTURERS' RECOMMENDATIONS.
2. PROVIDE A LABEL FOR EACH END OF EACH PATCH CORD.

FATORY ACCEPTANCE TEST (FAT)

1. SUBMIT DIGITAL PHOTOGRAPHS OF THE PANEL FOR REVIEW BEFORE SCHEDULING THE FAT TEST.
2. ADVISE THE ENGINEER TWO (2) WEEKS BEFORE REQUESTING THE FAT TEST.
3. ENCLOSURE TO BE FULLY ASSEMBLED PRIOR TO FAT TEST.
4. PANEL BUILDER TO PERFORM CERTAIN BASIC TESTS ON THE PANELS AND SUBMIT THE RESULTS TO THE ENGINEER PRIOR TO SCHEDULING A FAT TEST. THESE TESTS INCLUDE, BUT NOT LIMITED TO:
 - 4.1. "PULL TEST": ENSURE WIRES ARE SECURELY CONNECTED.
 - 4.2. RESISTANCE CHECKS. CHECK FOR CONTINUITY TO CONFIRM WIRING IS DONE AS INTENDED.
 - 4.3. VOLTAGE CHECKS. ENSURE THAT VOLTAGES MEET MANUFACTURERS' REQUIREMENTS.
5. FAT TEST SHALL INCLUDE, BUT NOT LIMITED TO THE FOLLOWING:
 - 5.1. GENERAL CONFORMANCE TO THE CONTRACT SPECIFICATIONS AND DRAWINGS.

0	ISSUED FOR TENDER	23/04/25
No.	ISSUE / REVISION	DD/MM/YY

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VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: N.T.S.

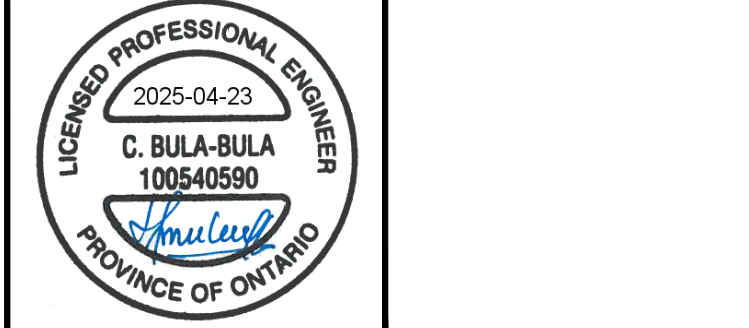


CONSULTANT: www.jrichards.ca



CONSULTANT:

PROFESSIONAL STAMP PROJECT NORTH



PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 Brisson St, Casselman, ON K0A 1M0

DRAWING:

ELECTRICAL
NOTES AND DETAILS

DESIGN: CB	DRAWING #:
DRAWN: RH	1101
CHECKED: LO	
JLR #: 16953-134	

PLOT DATE: Wednesday, April 23, 2025 10:43:18 AM

File Location: P:\60001\6953-134 - Casselman Main SPS Upgrade\03-Production\06-Elect\6953-134 - NOTES AND DETAILS.dwg

COMPONENT SUMMARY						
SLOT NUMB.	CATALOG NUMBER	MANUFACTURER	DESCRIPTION	IO TYPE	IO RACK	IO COUNT
0	1769-L3BERM	ABRA	CompactLogix Ethernet Processor, 3 MB Mem	Processor	0	
1	1769-IQ16	ABRA	16 Point 24VDC Input Module	Digital Input	0	16
2	1769-IQ16	ABRA	16 Point 24VDC Input Module	Digital Input	0	16
3	1769-IQ16	ABRA	16 Point 24VDC Input Module	Digital Input	0	16
	1769-PA4	ABRA	Power Supply 120V Input; 4A @ 5VDC, 2A 24VDC	Miscellaneous	0	
4	1769-IQ16	ABRA	16 Point 24VDC Input Module	Digital Input	0	16
5	1769-IQ16	ABRA	16 Point 24VDC Input Module	Digital Input	0	16
6	1769-QV16	ABRA	16 Point Relay Output Module	Digital Output	0	16
7	1769-QW16	ABRA	16 Point Relay Output Module	Digital Output	0	16
8	1769-QW16	ABRA	16 Point Relay Output Module	Digital Output	0	16
	1769-CRL1	ABRA	Right-To-Left bus Expansion Cable	Miscellaneous		
9	1769-IF8	ABRA	8 Channel Current Analog Input Module	Analog Input	1	8
10	1769-IF8	ABRA	8 Channel Current Analog Input Module	Analog Input	1	8
11	1769-IF8	ABRA	8 Channel Current Analog Input Module	Analog Input	1	8
12	1769-IF8	ABRA	8 Channel Current Analog Input Module	Analog Input	1	8
	1769-PA4	ABRA	Power Supply 120V Input; 4A @ 5VDC, 2A 24VDC	Miscellaneous	0	
13	1769-OF4CI	ABRA	4 Channel Current Isolated Analog Output Module	Analog Output	1	4
14	1769-OF4CI	ABRA	4 Channel Current Isolated Analog Output Module	Analog Output	1	4
15	1769-OF4CI	ABRA	4 Channel Current Isolated Analog Output Module	Analog Output	1	4
	1769-ECR	ABRA	Right End Cap Terminator	Miscellaneous	1	0

01

1102

ACP-100 PLC RACK COMPONENT SCHEDULE

COMPONENT I/O LIST										
CONTROLLER IO TAG	ISA TAG	EQUIPMENT	DESCRIPTION	LOCATION	OPERATION	RACK	SLOT	POINT	COMMENTS	
DI - 0	YS -	ACP-100	In PLC Mode	Electrical Room	1 = PLC	0	1	0		
DI - 1	YS -	FCP-150	Security Monitoring	Electrical Room		0	1	1		
DI - 2	YS -	FCP-150	Screening Room Lights On	Screening Room	1 = ON	0	1	2		
DI - 3	YS -	FCP-150	Wet Well Lights On	Wet Well	1 = ON	0	1	3		
DI - 4	YS -	FCP-150	Pump Room Lights On	Pump Room	1 = ON	0	1	4		
DI - 5	YS -	FCP-150	Dry Well Lights On	Electrical Room	1 = ON	0	1	5		
DI - 6	YS -	FCP-150	Security Enable Push Button	Electrical Room	1 = ENABLE	0	1	6		
DI - 7	YS -	MCC-100	Pump #1 In Auto	Pump Room	1 = AUTO	0	1	7		
DI - 8	YS	MCC-100	Pump #1 Running	Pump Room	1 = RUNNING	0	1	8		
DI - 9	YA -	MCC-100	Pump #1 Fault	Pump Room	1 = FAULT	0	1	9		
DI - 10	YS -	MCC-100	Pump #2 In Auto	Pump Room	1 = AUTO	0	1	10		
DI - 11	YS -	MCC-100	Pump #2 Running	Pump Room	1 = RUNNING	0	1	11		
DI - 12	YA -	MCC-100	Pump #2 Fault	Pump Room	1 = FAULT	0	1	12		
DI - 13	YS -	FCP-160	Screening In Auto	Screening Room	1 = AUTO	0	1	13		
DI - 14	YS	FCP-160	Screening Running	Screening Room	1 = RUNNING	0	1	14		
DI - 15	YA	FCP-160	Screening Fault	Screening Room	0 = FAULT	0	1	15		
DI - 16	YS -	FCP-160	Compactor In Auto	Screening Room	1 = AUTO	0	2	0		
DI - 17	YS -	FCP-160	Compactor Running	Screening Room	1 = RUNNING	0	2	1		
DI - 18	YA -	FCP-160	Compactor Fault	Screening Room	0 = FAULT	0	2	2		
DI - 19	LSLL	ACP-100	Wet Well Level Low-Low - Alarm	Wet Well	0 = ALARM	0	2	3		
DI - 20	LSL -	ACP-100	Wet Well Level Low - Stop Pumps	Wet Well	0 = STOP	0	2	4		
DI - 21	-					0	2	5		
DI - 22	LSH -	ACP-100	Wet Well Level High - Start Duty	Wet Well	0 = START	0	2	6		
DI - 23	LSHH -	ACP-100	Wet Well Level High-High - Alarm	Wet Well	0 = ALARM	0	2	7		
DI - 24	YA -	ACP-100	Critical Circuit Monitoring - Misc Controls	Electrical Room	0 = ALARM	0	2	8		
DI - 25	YA -	ACP-100	Critical Circuit Monitoring - Analog Outputs	Electrical Room	0 = ALARM	0	2	9		
DI - 26	YA -	ACP-100	Critical Circuit Monitoring - DC Power Supply Okay	Electrical Room	0 = ALARM	0	2	10		
DI - 27	YS	FCP-160	Screening Room Both Dampers Open	Screening Room	1 = OPEN	0	2	11		
DI - 28	YS -	ACP-100	Pump Room Both Dampers Open	Pump Room	1 = OPEN	0	2	12		
DI - 29	YS -	LCP-180	Generator Room Combustion Air Damper Open	Generator Room	1 = OPEN	0	2	13		
DI - 30	YS -	LCP-180	Generator Room Intake Air Damper Open	Generator Room	1 = OPEN	0	2	14		
DI - 31	YS	GEN-100	Generator Running	Generator Room	1 = RUNNING	0	2	15		
DI - 32	YS -	ATS-100	ATS In Normal Position	Electrical Room	1 = NORMAL	0	3	0		
DI - 33	YS -	ATS-100	ATS In Emergency Position	Electrical Room	1 = EMERG.	0	3	1		
DI - 34	YS -	ATS-100	Generator Run Contactor	Electrical Room	1 = RUN	0	3	2		
DI - 35	YS -	ATS-100	Force to Emergency	Electrical Room	1 = FORCED	0	3	3		
DI - 36	-					0	3	4		
DI - 37	-					0	3	5		
DI - 38	YS -	MCC-100	Pump #3 In Auto	Electrical Room	1 = AUTO	0	3	6		
DI - 39	YS -	MCC-100	Pump #3 Running	Electrical Room	1 = RUNNING	0	3	7		
DI - 40	YA -	MCC-100	Pump #3 Fault	Electrical Room	0 = FAULT	0	3	8		
DI - 41	YS -	MCC-100	Pump Room Fan #1 Running	Electrical Room	1 = RUNNING	0	3	9		
DI - 42	YS -	MCC-100	Screening Room Fan #2 Running	Screening Room	1 = RUNNING	0	3	10		
DI - 43						0	3	11		
DI - 44						0	3	12		
DI - 45						0	3	13		
DI - 46	YS	ACP-100	General Alarm Reset Push Button	Electrical Room	1 = RESET	0	3	14		
DI - 47	YA	ACP-100	Critical Circuit Monitoring - Float Relay Logic	Electrical Room	0 = ALARM	0	3	15		
DI - 48	YA	CP-103	Heat Trace Piping Status Alarm	Pump Room	0 = ALARM	0	4	0		
DI - 49						0	4	1		
DI - 50	YA	HD-10001	Electrical Room Heat/Smoke Detected Alarm	Electrical Room	0 = ALARM	0	4	2		
DI - 51						0	4	3		
DI - 52	YS -	MCC-100	Pump Room Fan #1 In Auto	Electrical Room	1 = AUTO	0	4	4		
DI - 53	YA	MCC-100	Pump Room Fan #1 In Fault	Electrical Room	0 = FAULT	0	4	5		
DI - 54	YA -	MCC-100	Screening Room Fan #1 In Auto	Electrical Room	1 = AUTO	0	4	6		
DI - 55	YA -	MCC-100	Screening Room Fan #1 In Fault	Electrical Room	0 = FAULT	0	4	7		
DI - 56	YS -	MCC-100	Electrical Room Fan #1 In Auto	Electrical Room	1 = AUTO	0	4	8		
DI - 57	YA	MCC-100	Electrical Room Fan #1 In Fault	Electrical Room	0 = FAULT	0	4	9		
DI - 58						0	4	10		
DI - 59						0	4	11		
DI - 60	YA	ACP-100	Heat Trace General Alarm	Pump Room	0 = ALARM	0	4	12		
DI - 61	YS	FS	Pump Room Exhaust Fan Flow Switch	Pump Room	1 = FLOW	0	4	13		
DI - 62						0	4	14		
DI - 63	YA	ACP-100	ACP-100 Control Panel Power Failure	Electrical Room	0 = ALARM	0	4	15		
DI - 64	YA	ACP-100	UPS-100 Power Failure	Electrical Room	0 = ALARM	0	5	0		
DI - 65	YA	ACP-100	UPS-100 On Battery	Electrical Room	0 = ALARM	0	5	1		
DI - 66	YA	ACP-100	UPS-100 Battery Low	Electrical Room	0 = LOW	0	5	2		
DI - 67	YA	ACP-100	UPS-100 General Fault	Electrical Room	0 = FAULT	0	5	3		
DI - 68						0	5	4		
DI - 69	YA	ACP-100	PLC Control Panel SPD Failure	Electrical Room	0 = FAULT	0	5	5		
DI - 70						0	5	6		
DI - 71						0	5	7		
DI - 72						0	5	8		
DI - 73						0	5	9		
DI - 74						0	5	10		
DI - 75						0	5	11		
DI - 76						0	5	12		
DI - 77						0	5	13		
DI - 78						0	5	14		
DI - 79						0	5	15		

02

1102

I/O LIST (1 OF 3)

GENERAL NOTES:

A. THIS PROVIDED IO LIST IS BASED ON EXISTING AS BUILT SHOP DRAWING AND MAY NOT REFLECT EXACT SITE CONDITION. CONTRACTOR TO COORDINATE WITH SITE CONDITION FOR THE EXACT IO ADDRESSING TO THE PLC AND SUBMIT SHOP DRAWING WITH UPDATED IO LIST.

0	ISSUED FOR TENDER	23/04/25
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No.	ISSUE / REVISION	DDMMYY
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SCALE: N.T.S.

CLIENT:	
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CONSULTANT: www.jlrichards.ca



CONSULTANT:

PROFESSIONAL STAMP 	PROJECT NORTH
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PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 Brisson St, Casselman, ON K0A 1M0

DRAWING:

ELECTRICAL

PLC COMPONENTS AND IO LIST

DESIGN: CB	DRAWING #: <div>1102</div>
DRAWN: RH	
CHECKED: LO	
JLR #: 16953-134	

PLOT DATE: Wednesday, April 23, 2025 10:43:17 AM

File Location: P:\60001\6953-134 - Casselman Main SPS Upgrade\03-Production\06-Elect\6953-134 - NOTES AND DETAILS.dwg

COMPONENT I/O LIST										
CONTROLLER IO TAG	ISA TAG	EQUIPMENT	DESCRIPTION	LOCATION	OPERATION	RACK	SLOT	POINT	COMMENTS	
DO - 0	-		Turn Off All Station Lighting	Electrical Room		0	6	0		
DO - 1	-		High Gas Alarm Interlock	Electrical Room		0	6	1		
DO - 2			High Gas Warning Interlock	Electrical Room		0	6	2		
DO - 3			Alarm Buzzer	Electrical Room		0	6	3		
DO - 4	-		Pump #1 Run Command	Electrical Room		0	6	4		
DO - 5	-		Pump #2 Run Command	Electrical Room		0	6	5		
DO - 6			Screening Run Command	Electrical Room		0	6	6		
DO - 7	-		Compactor Run Command	Screening Room		0	6	7		
DO - 8	-		Generator Room Combustion Air Damper Open Command	Generator Room		0	6	8		
DO - 9	-		Generator Room Combustion Air Damper Close Command	Generator Room		0	6	9		
DO - 10	-					0	6	10		
DO - 11						0	6	11		
DO - 12			Pump #3 Run Command	Electrical Room		0	6	12		
DO - 13						0	6	13		
DO - 14			Screening Room Unit Heater UH-91742	Screening Room		0	6	14	See rung drawing rung 249 for Unit Heater Interlock wiring	
DO - 15			PLC Watchdog pulse	Electrical Room		0	6	15	Provide Watchdog Relay.	
DO - 16	YC		Pump Room Fan #1 Run Command Low Speed	Pump Room		0	7	0		
DO - 17			Pump Room Fan #1 Run Command High Speed	Pump Room		0	7	1		
DO - 18	YC		Pump Room Fan #1 Interlock	Pump Room		0	7	2		
DO - 19	YC		Screening Room Fan #2 Run Command Low Speed	Screening Room		0	7	3		
DO - 20			Screening Room Fan #1 Run Command High Speed	Screening Room		0	7	4		
DO - 21	YC		Screening Room Fan #2 Interlock	Screening Room		0	7	5		
DO - 22						0	7	6		
DO - 23						0	7	7		
DO - 24						0	7	8		
DO - 25						0	7	9		
DO - 26						0	7	10		
DO - 27						0	7	11		
DO - 28						0	7	12		
DO - 29						0	7	13		
DO - 30						0	7	14		
DO - 31						0	7	15		
DO - 32	YC	CP-101	Autodialer Zone #1	Electrical Room	0 = DIAL	0	8	0		
DO - 33	YC	CP-101	Autodialer Zone #2	Electrical Room	0 = DIAL	0	8	1		
DO - 34	YC	CP-101	Autodialer Zone #3	Electrical Room	0 = DIAL	0	8	2		
DO - 35	YC	CP-101	Autodialer Zone #4	Electrical Room	0 = DIAL	0	8	3		
DO - 36	YC	CP-101	Autodialer Zone #5	Electrical Room	0 = DIAL	0	8	4		
DO - 37	YC	CP-101	Autodialer Zone #6	Electrical Room	0 = DIAL	0	8	5		
DO - 38	YC	CP-101	Autodialer Zone #7	Electrical Room	0 = DIAL	0	8	6		
DO - 39	YC	CP-101	Autodialer Zone #8	Electrical Room	0 = DIAL	0	8	7		
DO - 40	YC	CP-101	Autodialer Zone #9	Electrical Room	0 = DIAL	0	8	8		
DO - 41	YC	CP-101	Autodialer Zone #10	Electrical Room	0 = DIAL	0	8	9		
DO - 42	YC	CP-101	Autodialer Zone #11	Electrical Room	0 = DIAL	0	8	10		
DO - 43	YC	CP-101	Autodialer Zone #12	Electrical Room	0 = DIAL	0	8	11		
DO - 44	YC	CP-101	Autodialer Zone #13	Electrical Room	0 = DIAL	0	8	12		
DO - 45	YC	CP-101	Autodialer Zone #14	Electrical Room	0 = DIAL	0	8	13		
DO - 46	YC	CP-101	Autodialer Zone #15	Electrical Room	0 = DIAL	0	8	14		
DO - 47	YC	CP-101	Autodialer Zone #16	Electrical Room	0 = DIAL	0	8	15		
AI - 0	AI -		Screening Room H2S Gas Monitor	Screening Room		1	9	0	Provide Analog Signal Isolator	
AI - 1	AI -		Screening Room LEL Gas Monitor	Screening Room		1	9	1	Provide Analog Signal Isolator	
AI - 2	TI		Screening Room Temperature	Screening Room		1	9	2	Provide Analog Signal Isolator	
AI - 3	AI		Pump Room LEL Gas Monitor	Pump Room		1	9	3	Provide Analog Signal Isolator	
AI - 4	TI		Pump Room Temperature	Pump Room		1	9	4	Provide Analog Signal Isolator	
AI - 5	TI		Generator Room Temperature	Generator Room		1	9	5	Provide Analog Signal Isolator	
AI - 6	LI		Generator Fuel Level	Generator Room		1	9	6	Provide Isolator/Duplicator for signal multiplexing with DISP-07. Refer Dwg 01/1105 & 01/1106	
AI - 7	LI		South Nalon River Level	Pump Room		1	9	7	Provide Analog Signal Isolator	
AI - 8	LI -		Pre-screening Level	Screening Room		1	10	0	Provide Analog Signal Isolator	
AI - 9	FI		Effluent Discharge Flow FM1	Pump Room		1	10	1	Provide Isolator/Duplicator for signal multiplexing with DISP-01. Refer Dwg 01/1105 & 01/1106	
AI - 10	PI -		Effluent Pressure FM1	Pump Room		1	10	2	Provide Isolator/Duplicator for signal multiplexing with DISP-03. Refer Dwg 01/1105 & 01/1106	
AI - 11	LI -		Wet Well Level	Wet Well		1	10	3	Provide Isolator/Duplicator for signal multiplexing with DISP-05. Refer Dwg 01/1105 & 01/1106	
AI - 12	FI -		Effluent Discharge Flow FM2	Pump Room		1	10	4	Provide Isolator/Duplicator for signal multiplexing with DISP-02. Refer Dwg 01/1105 & 01/1106	
AI - 13	PI		Effluent Pressure FM2	Pump Room		1	10	5	Provide Isolator/Duplicator for signal multiplexing with DISP-04. Refer Dwg 01/1105 & 01/1106	
AI - 14	LI		Post-screening Level	Screening Room		1	10	6	Provide Analog Signal Isolator	
AI - 15	AI		Residual Chlorine Analyzer	Pump Room		1	10	7	Provide Analog Signal Isolator	
AI - 16	TI -		Electrical Room Temperature	Electrical Room		1	11	0	Provide isolating amplifier	
AI - 17	SI		Pump #1 Speed Feedback	Electrical Room		1	11	1	Provide isolating amplifier	
AI - 18	SI		Pump #2 Speed Feedback	Electrical Room		1	11	2	Provide isolating amplifier	
AI - 19	SI		Pump #3 Speed Feedback	Electrical Room		1	11	3	Provide isolating amplifier	
AI - 20	SI -		Pump Room Fan #1 Speed Feedback	Electrical Room		1	11	4	Provide isolating amplifier	
AI - 21	SI		Screening Room Fan #2 Speed Feedback	Electrical Room		1	11	5	Provide isolating amplifier	
AI - 22						1	11	6		
AI - 23						1	11	7		
AI - 24						1	12	0		
AI - 25						1	12	1		
AI - 26	-					1	12	2		
AI - 27						1	12	3		
AI - 28						1	12	4		
AI - 29						1	12	5		
AI - 30						1	12	6		
AI - 31						1	12	7		



01
1103

I/O LIST (2 OF 3)

COMPONENT I/O LIST										
CONTROLLER IO TAG	ISA TAG	EQUIPMENT	DESCRIPTION	LOCATION	OPERATION	RACK	SLOT	POINT	COMMENTS	
AO - 0			Bypass Damper Position Command	Generator Room		1	13	0		
AO - 1	PC		Exhaust Damper Position Command	Generator Room		1	13	1		
AO - 2	LI -		Screening Differential Level Process Display DISP-06	Screening Room		1	13	2		
AO - 3						1	13	3		
AO - 4	SC		Pump #1 Speed Command	Electrical Room		1	14	4		
AO - 5	SC		Pump #2 Speed Command	Electrical Room		1	14	5		
AO - 6	SC		Pump #3 Speed Command	Electrical Room		1	14	6		
AO - 7						1	14	7		
AO - 8	SC		Pump Room Fan #1 Speed Command	Electrical Room		1	15	0		
AO - 9	SC		Screening Room Fan #2 Speed Command	Electrical Room		1	15	1		
AO - 10						1	15	2		
AO - 11						1	15	3		

02
1103

I/O LIST (3 OF 3)

0	ISSUED FOR TENDER	23/04/25		
No.	ISSUE / REVISION	DDMMYY		
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VERIFY SHEET SIZE AND SCALES. THE BAR TO THE RIGHT IS 25MM IF THIS IS A FULL SIZE DRAWING. 025mm				
SCALE: N.T.S.				
CLIENT: <div></div>				
CONSULTANT: J.L. Richards ENGINEERS - ARCHITECTS - PLANNERSwww.jrichards.ca				
CONSULTANT:				
PROFESSIONAL STAMP <div></div>	PROJECT NORTH			
PROJECT: <div>16953-134 - CASSELMAN MAIN SPS UPGRADE</div> <div>16 Brisson St, Casselman, ON K0A 1M0</div>				
DRAWING: <div>ELECTRICAL</div> <div>IO LIST</div>				
DESIGN: CB				
DRAWN: RH	DRAWING #:			
CHECKED: LO	1103			
JLR #:	16953-134			

PLOT DATE: Wednesday, April 23, 2025 10:43:37 AM

File Location: P:\60001\6953-134 - Casselman Main SPS Upgrade\03-Production\06-Elect\6953-134 - CONTROL PANEL BILL OF MATERIALS.dwg

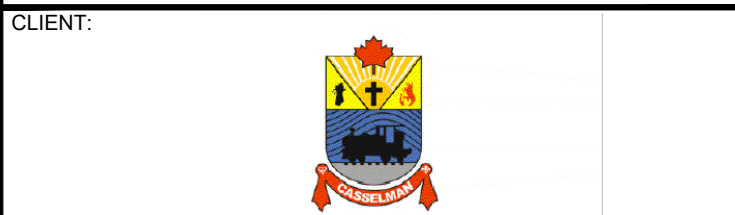
CONTROL PANELS BILL OF MATERIAL				
ITEM	MANUFACTURER	PART NUMBER	DESCRIPTION	COMMENTS
◊	HAMMOND	1418 TD FS SERIES	72" X 60" X 18" DOUBLE DOOR FREESTANDING NEMA 12 MILD STEEL GREY ENCLOSURE.	1. HOFFMAN EQUIVALENT IS ACCEPTABLE.
◊	HAMMOND	TO SUIT	72" X 60" STEEL REAR PANEL FOR 72" X 60" X 18" 1418Z SERIES ENCLOSURE.	1. HOFFMAN EQUIVALENT IS ACCEPTABLE.
◊	HAMMOND	TO SUIT	72" X 18" STEEL SIDE PANEL FOR 72" X 60" X 18" 1418Z SERIES ENCLOSURE.	1. HOFFMAN EQUIVALENT IS ACCEPTABLE.
◊	HAMMOND	FLK10LED	28" LED LIGHT KIT (120VAC)	1. PROVIDE REQUIRED MOUNTING APPURTENANCES. 2. HOFFMAN EQUIVALENT IS ACCEPTABLE.
◊	HAMMOND	FLKDS	REMOTE DOOR SWITCH C/W FORM C CONTACT	1. HOFFMAN EQUIVALENT IS ACCEPTABLE.
◊	HAMMOND	ECLIPSE ENSD SERIES	NEMA 4, ANSI 61 GREY, WALLMOUNT ENCLOSURE C/W MATCHING WHITE REAR PANEL. SIZE ENCLOSURE TO SUIT.	1. JUNIOR ECLIPSE EJ SERIES IS ACCEPTABLE. 2. HOFFMAN EQUIVALENT IS ACCEPTABLE.
◊	RALSTON	Z-5020	ANSI 61 GREY 18" X 18" LARGE FOLDING SHELF	
◊	HOFFMAN		SHEET POCKET. LARGE ENOUGH FOR UNFOLDED 11" X 17" SHEETS.	1. HAMMOND EQUIVALENT IS ACCEPTABLE.
◊	PRECISION DIGITAL	PD765 SERIES	PROCESS METER, TRIDENT X2 DISPLAY	
◊	EDWARDS SIGNALLING	200 SERIES	STACKLIGHT 200 SERIES, 70MM, 120VAC	1. ALLEN BRADLEY EQUIVALENT IS ACCEPTABLE.
◊	ALLEN-BRADLEY	PLC-100	PLC RACK. REFER TO DRAWING DETAIL XXX FOR RIO SCHEDULE	
◊	ALLEN-BRADLEY	1489-M1C SERIES	1-POLE MINIATURE CIRCUIT BREAKER (120VAC). PROVIDE 1489-AMCL1XX BUS BAR (XX IS NUMBER OF PINS)	1. SCHNEIDER EQUIVALENT IS ACCEPTABLE.
◊	ALLEN-BRADLEY	1492-D1C SERIES	1-POLE MINIATURE CIRCUIT BREAKER (24VDC). PROVIDE 1489-AMCL1XX BUS BAR (XX IS NUMBER OF PINS)	1. SCHNEIDER EQUIVALENT IS ACCEPTABLE.
◊	ALLEN-BRADLEY	800T SERIES	ALUMINIUM LEGEND PLATE (STANDARD SIZE). ENGRAVED BY MANUFACTURER.	
◊	ALLEN-BRADLEY	800TC SERIES	BLUE FLUSH HEAD MOMENTARY PUSHBUTTON	
◊	ALLEN-BRADLEY	800TC SERIES	FINGER-SAFE PUSH-TO-TEST PILOT LIGHT c/w 800T SERIES ALUMINIUM LEGEND PLATE	
◊	ALLEN-BRADLEY	800TC-U SERIES	SPEED POTENTIOMETER	
◊	ALLEN-BRADLEY	800TC SERIES	FINGER SAFE 3-POSITION SELECTOR SWITCH, BLACK W/ WHITE INSERT. NUMBER OF CONTACTS TO SUIT	
◊	ALLEN-BRADLEY	800TC SERIES	FINGER SAFE 2-POSITION SELECTOR SWITCH, BLACK W/ WHITE INSERT. NUMBER OF CONTACTS TO SUIT	
◊	ALLEN-BRADLEY	700-HK	24VDC SLIM RELAY, PROVIDE RETAINER CLIP, LED, PUSH-TO-TEST, MANUAL OVERRIDE. PROVIDE SURGE SUPPRESSOR MODULE TO SUIT. PROVIDE RELAY BASE 700-HN SERIES	
◊	ALLEN-BRADLEY	700-HC24A1-3-4	120VAC 4-POLE MINIATURE SQUARE BASE RELAY C/W PUSH-TO-TEST AND LED. PROVIDE 700-HN104 MINI 14-BLADE SOCKET AND 700-AV3R VARISTOR SURGE SUPPRESSOR W/ LED.	
◊	ALLEN-BRADLEY	100-C SERIES	UPS SWITCH CONTACTOR, NUMBER OF POWER AND AUXILIARY CONTACTS TO SUIT. PROVIDE AUXILIARY CONTACT 100-F SERIES FOR UPS POWER MONITORING BY THE PLC.	
◊	ALLEN-BRADLEY	700-FS SERIES	24VDC SIGNAL ON AND SIGNAL OFF WATCHDOG MONITOR	1. SELECT RELAY FUNCTION TO MONITOR PLC PULSE SIGNAL 25 SECONDS.
◊	ALLEN-BRADLEY	700-HR SERIES	GENERAL PURPOSE TIMER RELAY, 24VDC. PROVIDE 700-HN101 RELAY BASE SOCKET.	1. PROVIDE REQUIRED APPURTENANCES FOR MOUNTING HORIZONTALLY OR VERTICALLY, AS INDICATED.
◊	ALLEN-BRADLEY	199-DR1	35mm X 15mm SYMMETRICAL ZINC PLATED DIN RAIL. PROVIDE MATCHING STAND-OFFS AS REQUIRED TO RAISE HEIGHT OF COMPONENTS.	1. PHOENIX CONTACT EQUIVALENT IS ACCEPTABLE.
◊	ALLEN-BRADLEY	855P SERIES	PANEL MOUNT SIGNALING BUZZER, 80dB	1. MAPPLE SYSTEM HMI EQUIVALENT IS ACCEPTABLE
◊	ALLEN-BRADLEY	2711P SERIES	12 INCHES PANELVIEW 7 PLUS PERFORMANCE TERMINAL	1. MAPPLE SYSTEM HMI EQUIVALENT IS ACCEPTABLE
◊	ALLEN-BRADLEY	STRATIX 2500 SERIES	LIGHTLY MANAGED ETHERNET SWITCH	
◊	HAMMOND	ECLIPSE JUNIOR SERIES	NEMA 4X STAINLESS STEEL JUNCTION BOX	1. HOFFMAN EQUIVALENT IS ACCEPTABLE
◊	HUBBELL	DRUB15 SERIES	DIN RAIL UTILITY BOX COMPLETE WITH 5-15R DUPLEX RECEPTACLE. BUILT-IN GFCI WHERE INDICATED ON DRAWINGS.	
◊	HUBBELL	HBL SERIES	LOCKING DEVICES, TWIST-LOCK SINGLE FLUSH RECEPTACLE, 30A. PROVIDE ALL APPERTUNANCES AS REQUIRED.	
◊	RESERVED			
◊	PHOENIX CONTACT	QUINT-PS/ 1AC/24DC/ 20	SINGLE-PHASE PRIMARY-SWITCHED 20A 24VDC POWER SUPPLY	
◊	PHOENIX CONTACT	QUINT-DIODE/12-24DC/ 2X20/1X40	24VDC REDUNDANCY MODULE.	
◊	PHOENIX CONTACT	PLC-RSC-24DC/21	24VDC TERMINAL STYLE RELAY C/W 1 FORM C CONTACT, SCREW CONNECTION	
◊	PHOENIX CONTACT	PLC-RSC-120UC/21	120VAC TERMINAL STYLE RELAY C/W 1 FORM C CONTACT, SCREW CONNECTION	
◊	PHOENIX CONTACT	UT 4-L/HESILED 24	FUSE MODULAR TERMINAL BLOCK, PROVIDE 100mA GLASS FUSE FOR ALL ANALOG POINTS. 120KOHM, LED INDICATION FOR BLOWN FUSE.	
◊	PHOENIX CONTACT	UTTB 4	DOUBLE LEVEL TERMINAL BLOCK. PROVIDE END COVER TO SUIT.	
◊	PHOENIX CONTACT	UK 6 N	UNIVERSAL TERMINAL BLOCK, SCREW CONNECTION. PROVIDE END COVER TO SUIT.	1. USED FOR CONTROL PANEL POWER FEED
◊	PHOENIX CONTACT	UK 5 N	UNIVERSAL TERMINAL BLOCK, SCREW CONNECTION. PROVIDE END COVER TO SUIT.	1. USED FOR 120VAC/24VDC CONNECTIONS
◊	PHOENIX CONTACT	USLKG 6	GROUND TERMINAL BLOCK. SCREW CONNECTION. PROVIDE END COVER TO SUIT.	
◊	PHOENIX CONTACT	UTTB 4-MT	KNIFE DISCONNECT TERMINAL BLOCK, 30A. PROVIDE BLUE PLUG-IN BRIDGE TO SUIT. PROVIDE END COVER TO SUIT.	1. USED FOR RIO INPUTS.
◊	PHOENIX CONTACT	USLKG 5	GROUND TERMINAL BLOCK, SCREW CONNECTION. PROVIDE END COVER TO SUIT.	
◊	PHOENIX CONTACT	CLIPFIX 35	SNAP-ON END BRACKET	
◊	PHOENIX CONTACT	KLM + ESL 26X6	TERMINAL STRIP MARKERS / GROUP LABELS	
◊	PHOENIX CONTACT	MINI MCR-SL-UI-UI-NC	CONFIGURABLE ANALOG SIGNAL CONDITIONER	
◊	PHOENIX CONTACT	MINI MCR-SL-UI-2UI-NC	CONFIGURABLE ANALOG SIGNAL ISOLATING AMPLIFIER DUPLICATOR, SCREW CONNECTION	
◊	ALLEN BRADELY	800T	30mm TYPE 4 2-POS E-STOP BUTTON, PULL/TWIST RELEASE	
◊	TOTAL PROTECTION SOLUTIONS	TK-LTE120-30A-DIN2-RC	SURGE PROTECTIVE DEVICE, 40KA PER PHASE, 30A, 120VAC, C/W COMPONENT LEVEL FUSING	
◊	PANDUIT	F7X7LG6 SERIES	7" X 7" LIGHT GREY NARROW SLOT WIRING DUCT c/w MATCHING COVER. SIZED TO SUIT	1. SIZE TO SUIT
◊	PEPPERL+FUCHS	KFD2-SR2-Ex2.W	SWITCH AMPLIFIER, 2 CHANNELS ISOLATED BARRIER	
◊			COPPER GROUND BAR	
◊			ISOLATED COPPER GROUND BAR	
◊			50 MM X 150 MM LAMACOID WITH WHITE BACKGROUND AND BLACK 25mm HIGH CHARACTERS, SIZE TO SUIT	
◊			ESA SHOCK HAZARD STICKER	
◊	PHOENIX CONTACT	FL MGUARD 4350	INDUSTRIAL ROUTER, NAT. VPN, FIREWALL	
◊	EATON POWERWARE	9SX SERIES	REFER TO SECTION 17100	1. UPS MOUNTED INSIDE ACP-100
◊	EATON POWERWARE	RELAY MS	UPS RELAY CARD	

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No.	ISSUE / REVISION	DDMMYY

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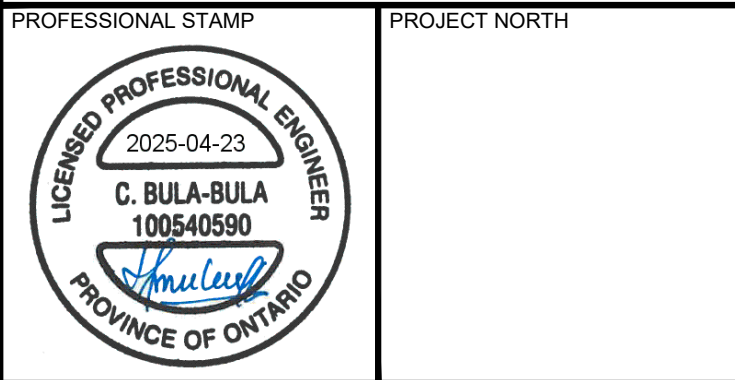
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CONSULTANT: www.jrichards.ca



CONSULTANT:



PROJECT:

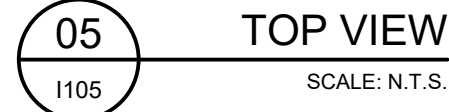
16953-134 - CASSELMAN MAIN SPS UPGRADE

16 Brisson St, Casselman, ON K0A 1M0

DRAWING:

ELECTRICAL

CONTOL PANEL BILL OF MATERIALS



- INTRINSICALLY SAFE
JUNCTION BOX DETAILS
- SCALE: N.T.S.

- | | |
|----------|-----------|
| DESIGN: | CB |
| DRAWN: | RH |
| CHECKED: | LO |
| JLR #: | 16953-134 |

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File Location: P:\16000\16953-134 - Casselman Main SPS Upgrade\03-Production\06-Elect\16953-134 - CONTROL PANEL LAYOUT.dwg

- A. PROVIDE ENOUGH TERMINALS TO TERMINATE ALL CONDUCTORS OF ALL CABLES CONNECTED TO THE JUNCTION BOX. REFER TO CABLE SCHEDULE.
- B. SIZE EACH JUNCTION BOX TO ACCOMMODATE THE NUMBER OF TERMINALS.
- C. SIZE THE DIN RAIL TO ACCOMMODATE THE NUMBER OF TERMINALS.
- D. ALTERNATIVE LAYOUT MAY BE CONSIDERED AT TIME OF SHOP DRAWINGS REVIEW.
- E. PROVIDE AT LEAST 50mm SPACE BETWEEN WIRE DUCT AND TERMINAL.
- F. TERMINAL BLOCKS TO BE LABELLED NUMERICALLY, STARTING AT 1 AND INCREMENTING BY 1.
- G. JUNCTION BOX WIRING SHALL BE IP2X. PROVIDE ALL ACCESSORIES REQUIRED FOR A IP2X RATING.
- H. PROVIDE A LAMACOID LABEL AS INDICATED ON THE DRAWINGS.

- I. USE SUITABLE CONSTRUCTION GRADE ADHESIVE TO SECURE LAMACOID TO JUNCTION BOX. ENSURE ADHESIVE IS RATED FOR THE INTENDED ENVIRONMENTAL CONDITIONS. SCREWS, OR OTHER MEANS REQUIRING PUNCTURING OF THE ENCLOSURE, IS NOT ACCEPTABLE.
- J. JUNCTION BOXES SERVICING POWER CABLES ARE TO HAVE TERMINAL BLOCKS SIZED TO SUIT.
- K. THIS JUNCTION BOX IS INTENDED TO INTRINSICALLY SAFE CIRCUIT FOR WET WELLS FLOATS.
- L. DUCTING FOR PLC COMMUNICATIONS CABLING TO BE ELEVATED USING PANEL STANDOFFS (OR EQUIVALENT). FINAL HEIGHT OF COMMUNICATIONS DUCTING TO MATCH THAT OF ADJACENT DUCTING. PLC I/O WIRING TO BE ROUTED BENEATH PLC COMMUNICATIONS DUCTING.
- M. SYSTEMS INTEGRATOR TO PROGRAM THE PLC TO DETECT LOSS OF COMMUNICATIONS WITH ALL NETWORK DEVICES AND ALARM ACCORDINGLY.

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SCALE: N.T.S.



J.L. Richards
ENGINEERS • ARCHITECTS • PLANNERS

PROFESSIONAL STAMP



16 Brisson St, Casselman, ON K0A 1M0

DRAWING: ELECTRICAL

CONTROL PANEL LAYOUT

DESIGN: CB

DRAWN: BH

CHECKED: 10

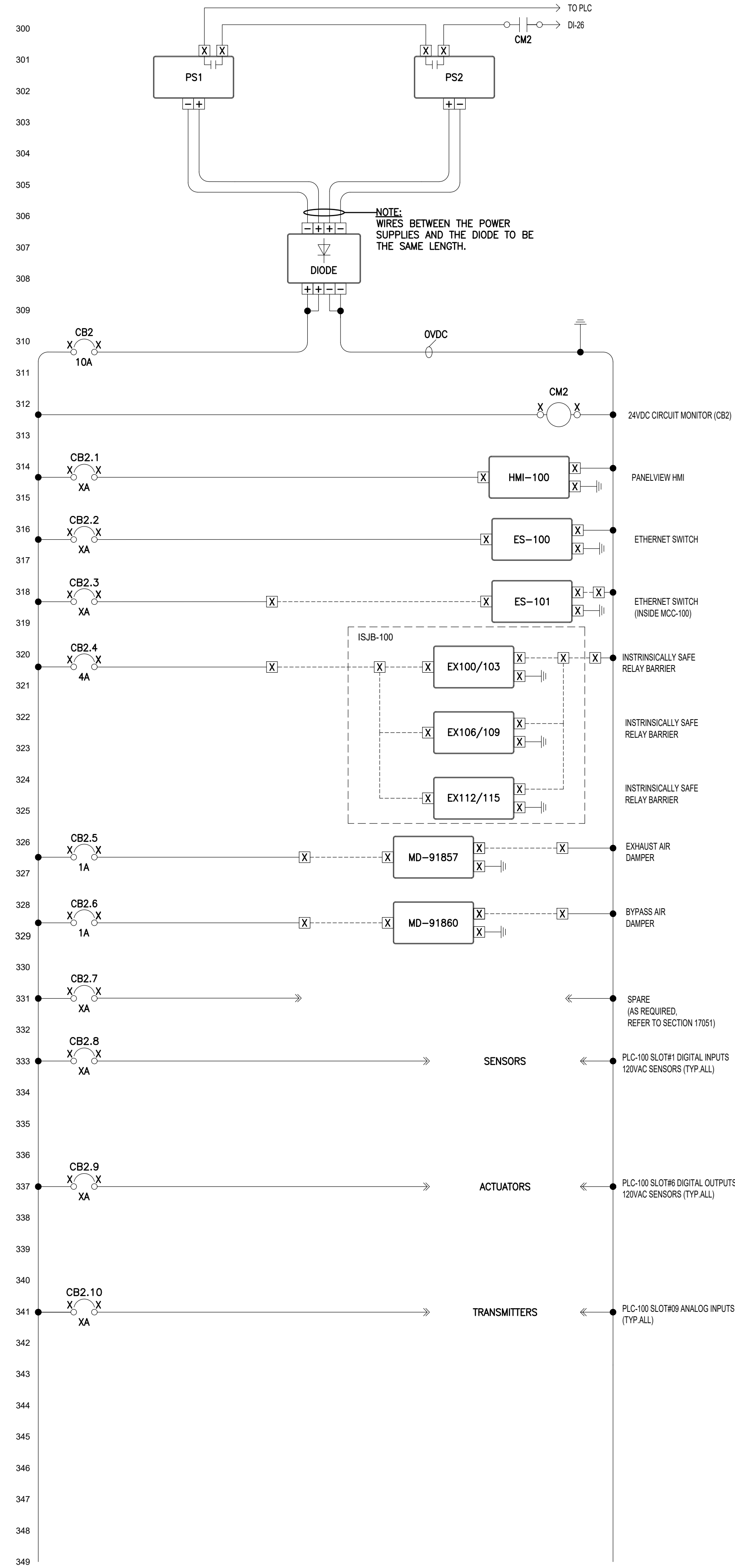
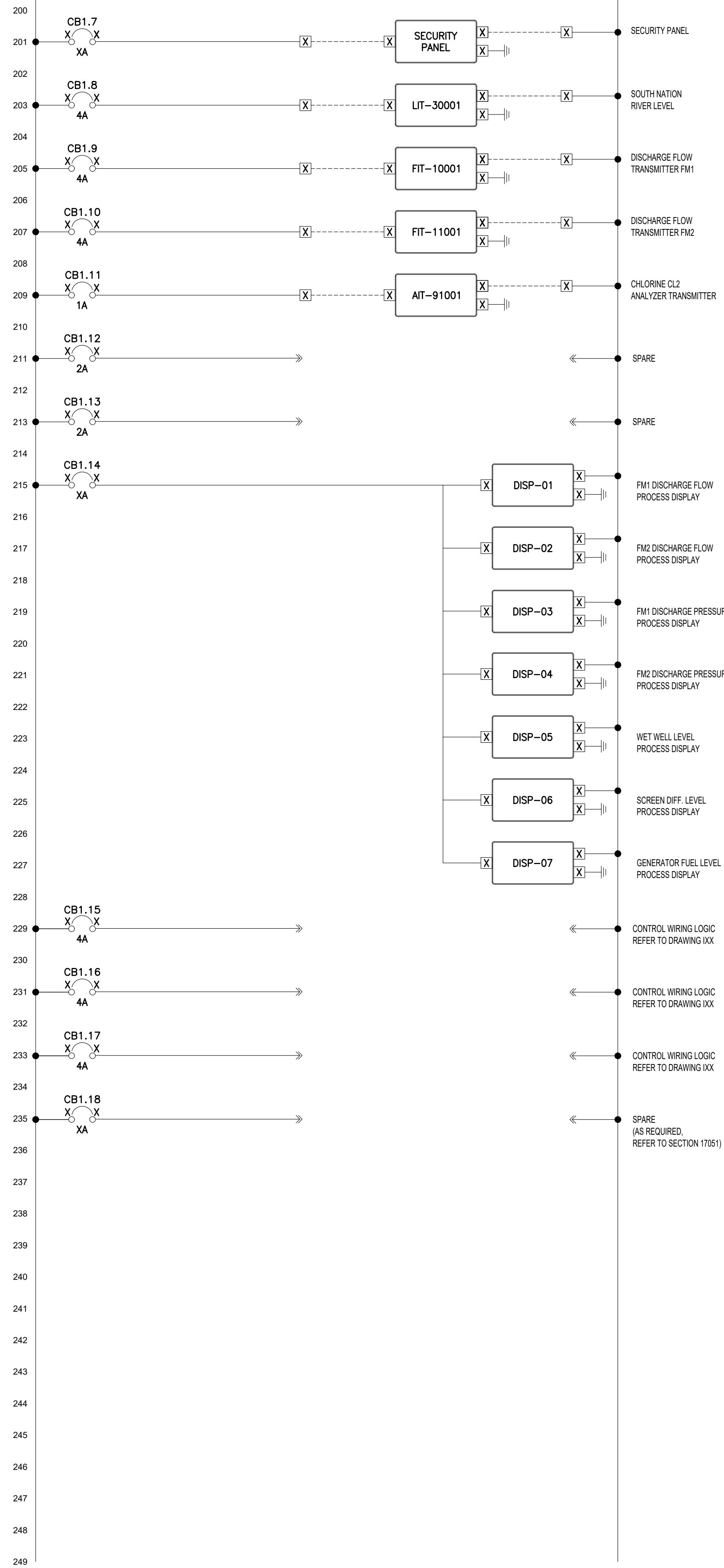
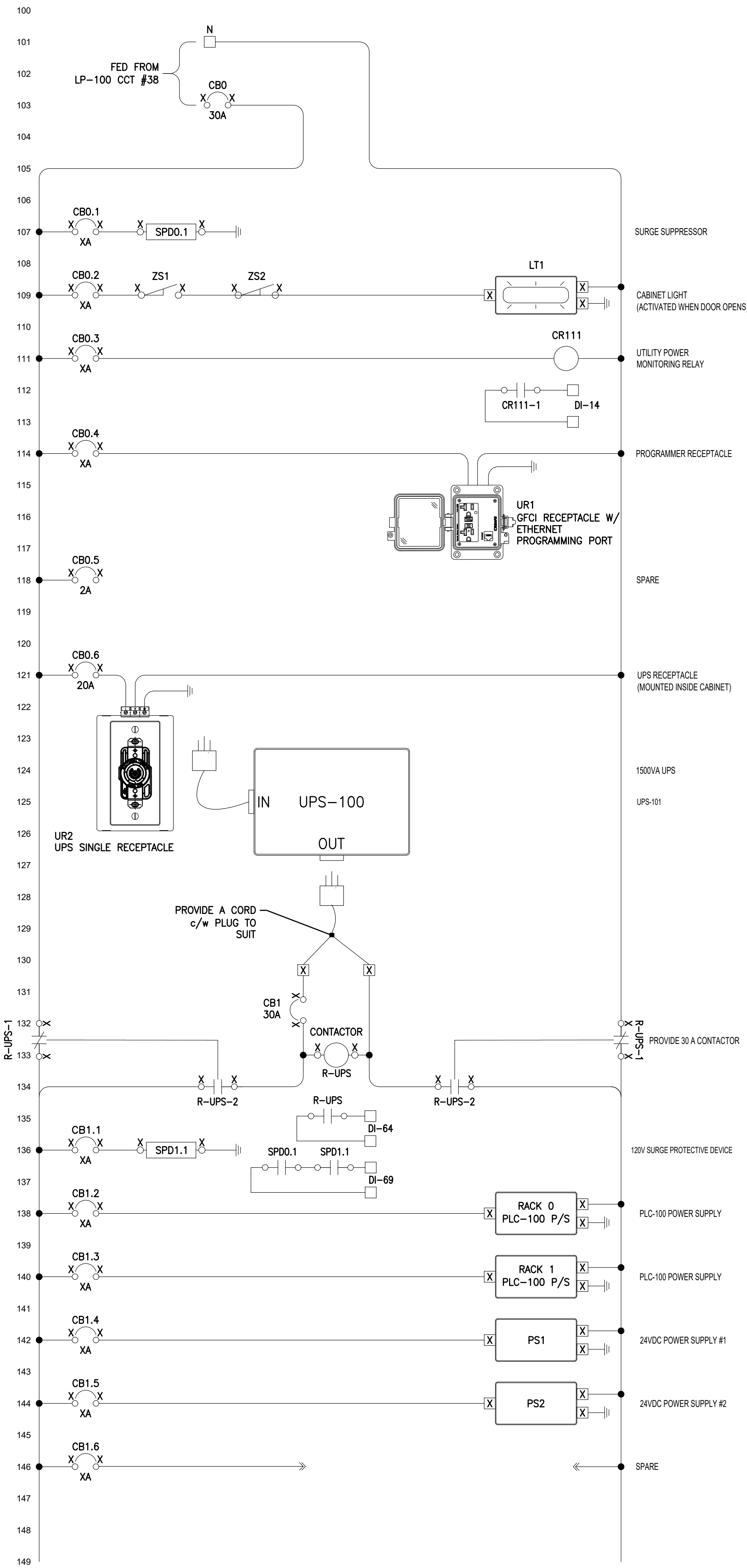
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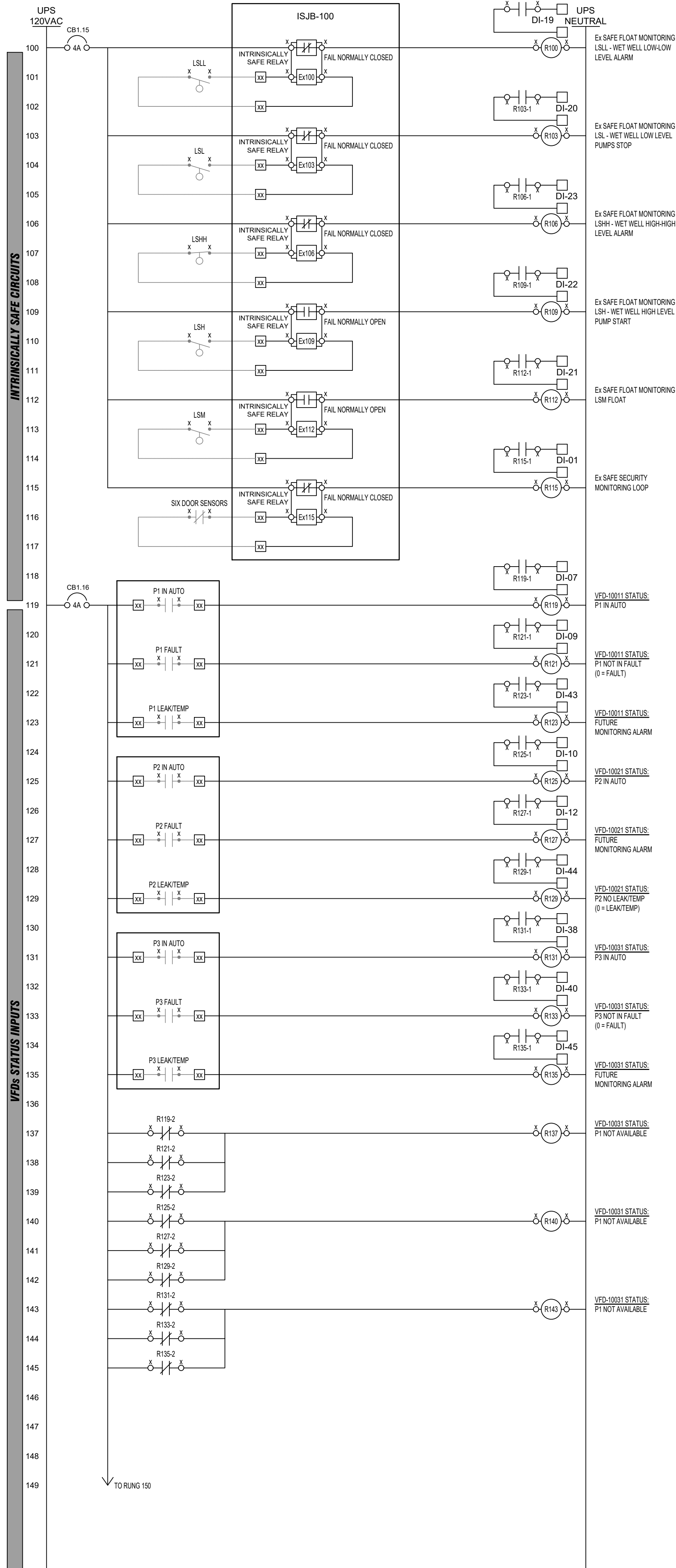
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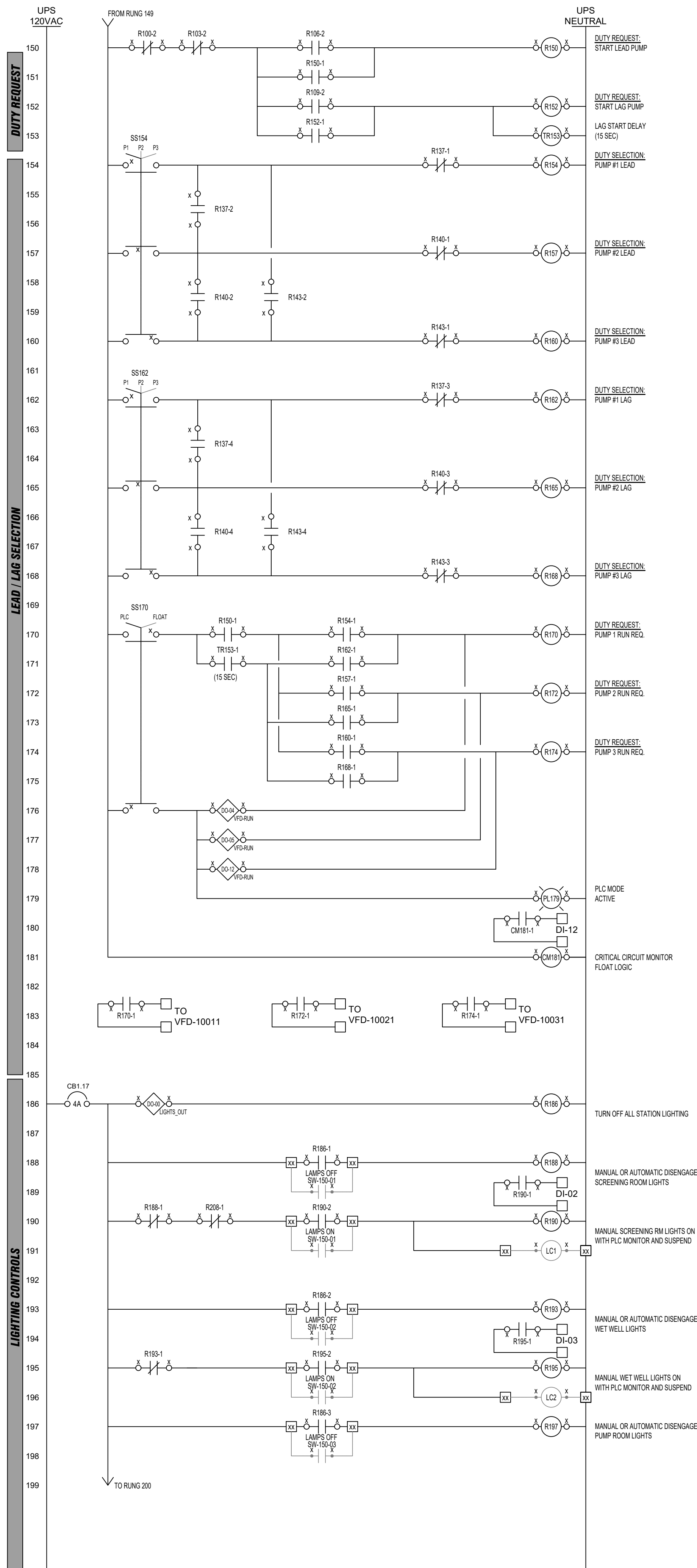
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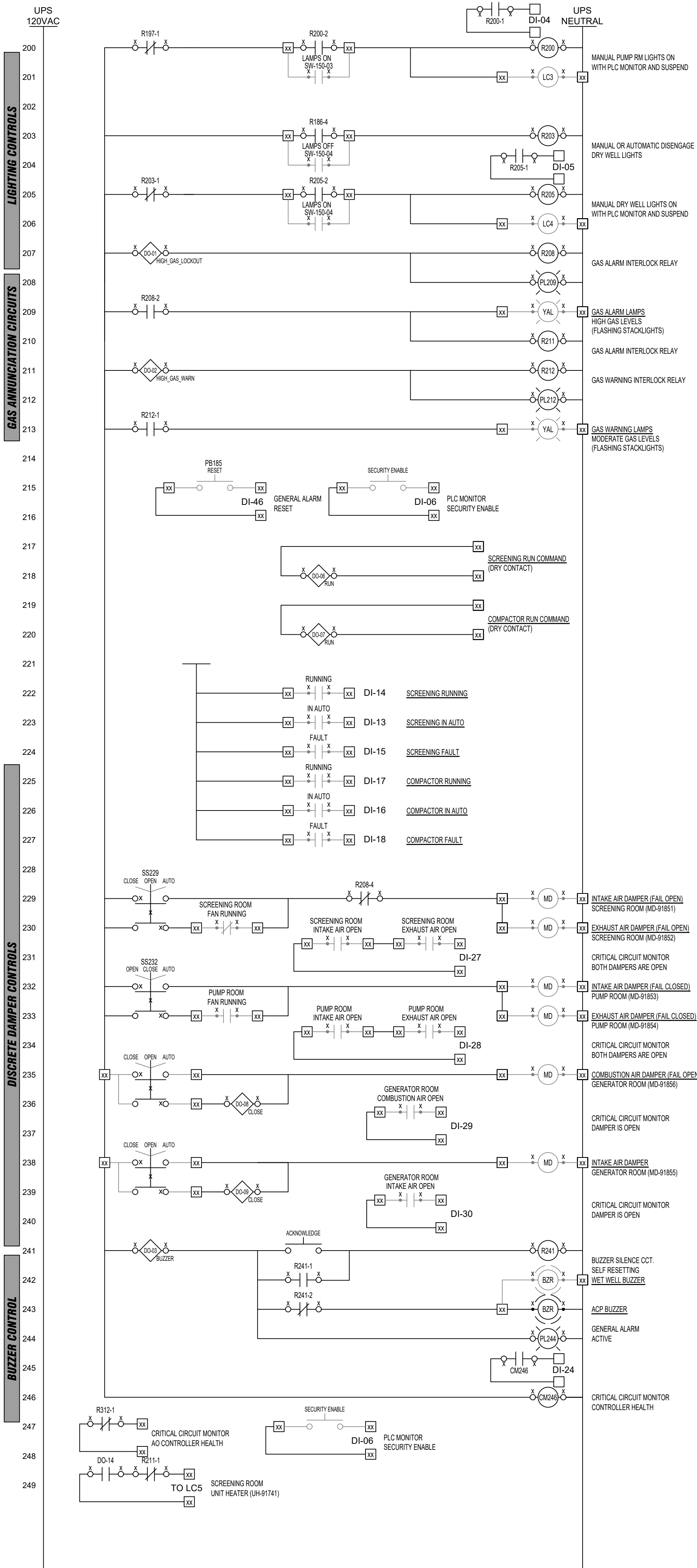
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SCALE: N.T.S.		
CLIENT:		
CONSULTANT:		
CONSULTANT:		
PROFESSIONAL STAMP		PROJECT NORTH
PROJECT:		
16953-134 - CASSELMAN MAIN SPS UPGRADE		
16 Brisson St, Casselman, ON K0A 1M0		
DRAWING:		
ELECCTRICAL		
CONTROL PANEL POWER WIRING LOGIC		
DESIGN: CB		
DRAWN: RH	DRAWING #:	
CHECKED: LO		
JLR #:	16953-134	1106

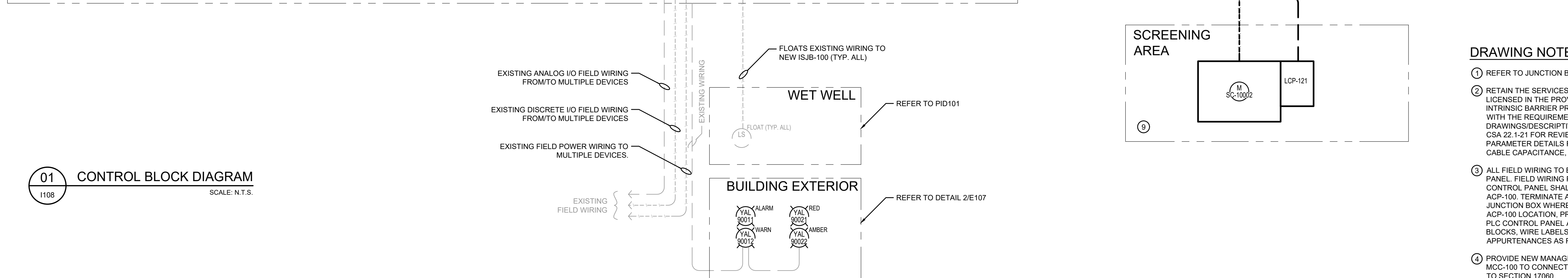


01 PROCESS PUMPS CONTROL LADDER DIAGRAM
SCALE: N.T.S.



02 PROCESS PUMPS CONTROL & MISCELLANEOUS SYSTEMS LADDER DIAGRAM
SCALE: N.T.S.



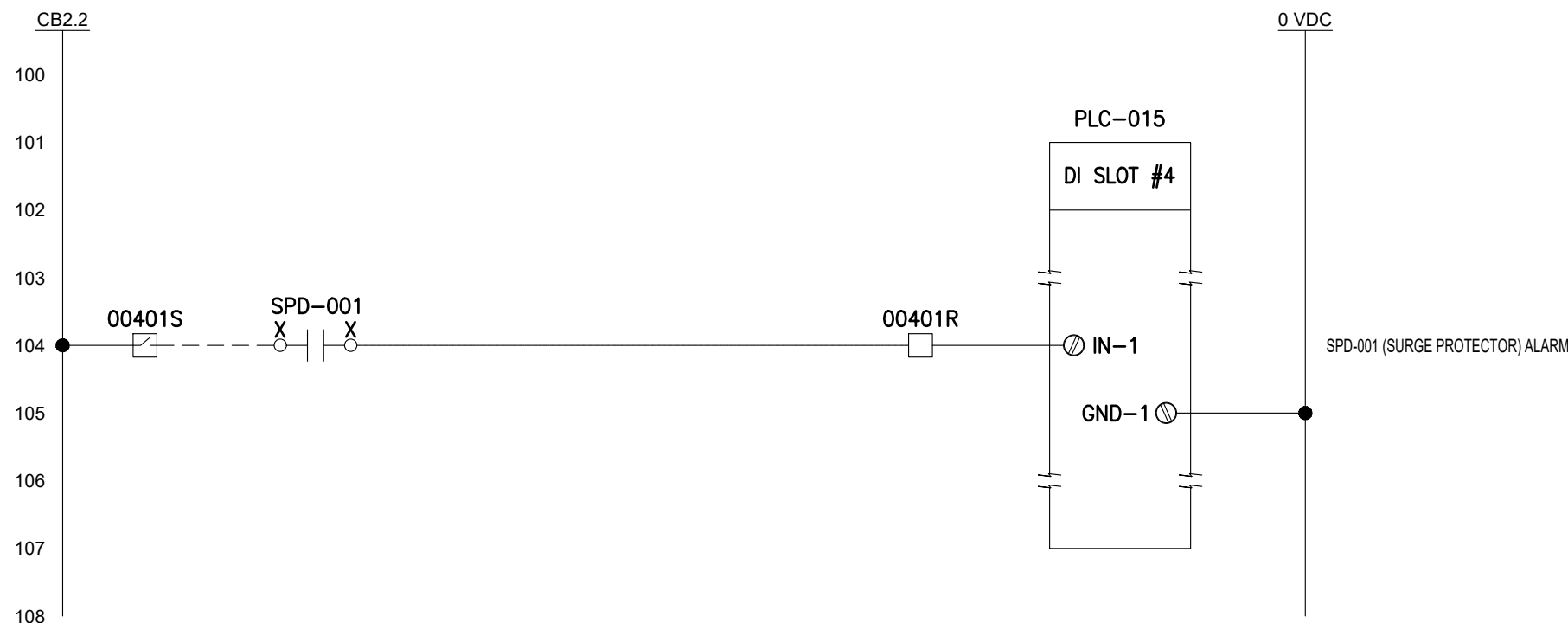


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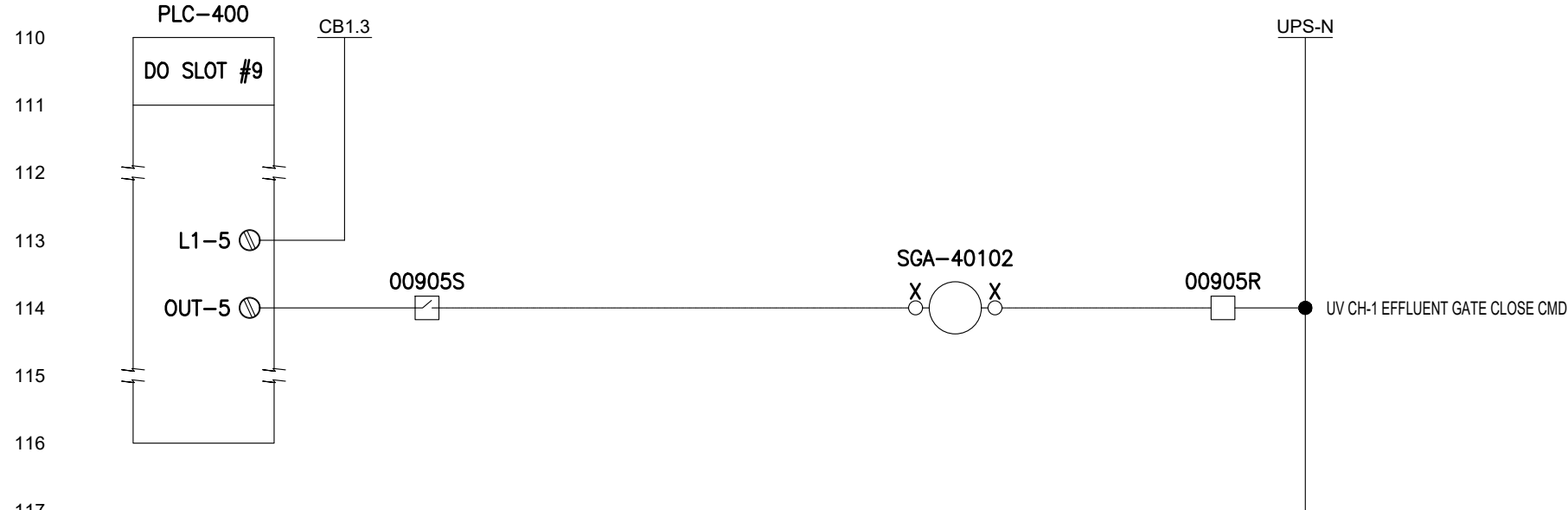
JLR #: 16953-134

⑨ DRAWINGS DO NOT SHOW EVERY DETAIL REQUIREMENT TO BE PROVIDED BY ELECTRICAL CONTRACTOR. COORDINATE WITH DIV. 15 FOR THE PROVISION OF NEW LOCAL CONTROL STATION AND REQUIRED JUNCTION BOXES AS PART OF NEW COMPACTOR. PROVIDE COORDINATE ELECTRICAL CONTROL STATION INTEGRATION TO THE EXISTING COMPACTOR CONTROL PANEL. FCP-1100. PROVIDE NEW TECK90 POWER AND CONTROL WIRING AS REQUIRED BACK TO FCP-1100. COORDINATE WITH MANUFACTURER FOR THE WIRING REQUIREMENT AND PROVIDE FOR A COMPLETE, FULLY COMMISSIONED TURN-KEY INSTALLATION. MIN. CABLE LENGTH TO BE COORDINATED WITH COMPACTOR MANUFACTURER. DIV. 15 REFER TO SECTION 16122 FOR THE CLASSIFIED AREA CABLE CONNECTIONS REQUIREMENTS.

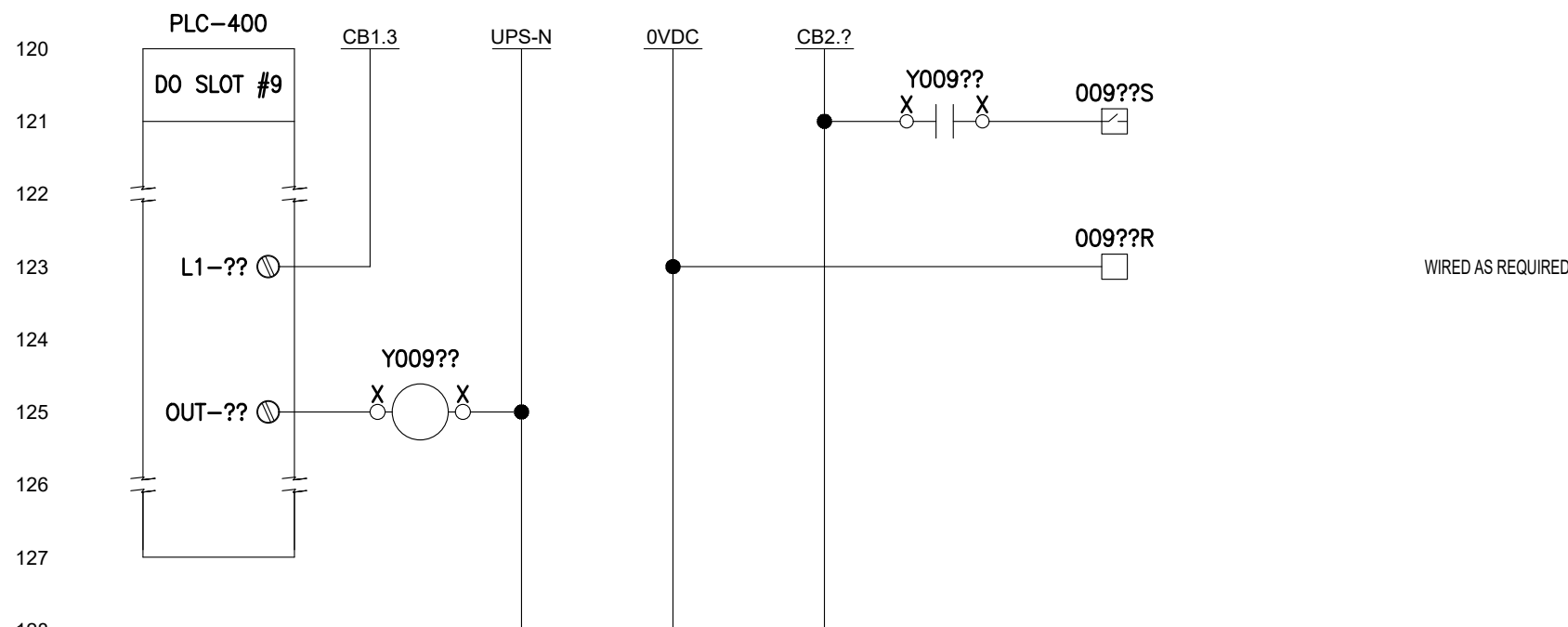
	CATEGORY 6
	DISCRETE
	POWER
	ANALOG
	EXISTING DISCRETE
	EXISTING ANALOG



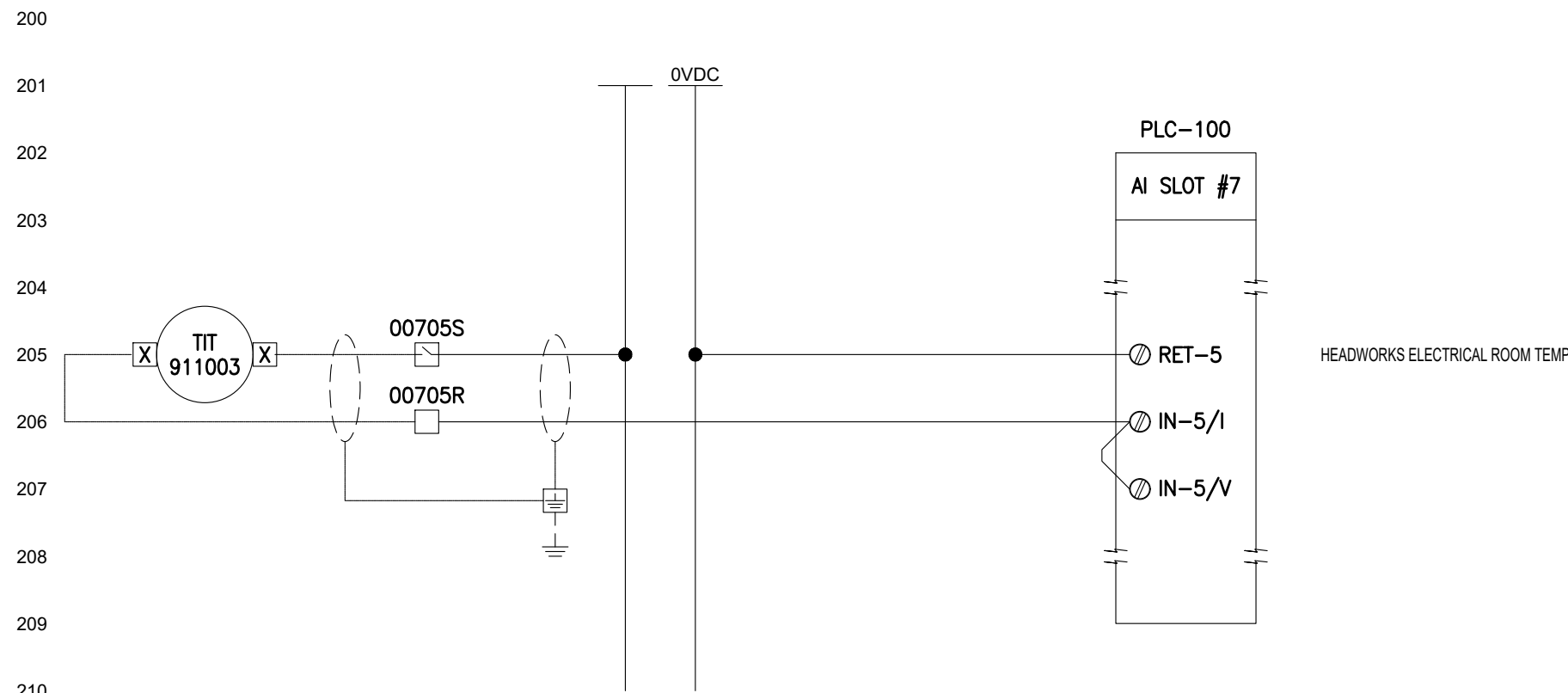
EXAMPLE DIGITAL INPUT WIRING



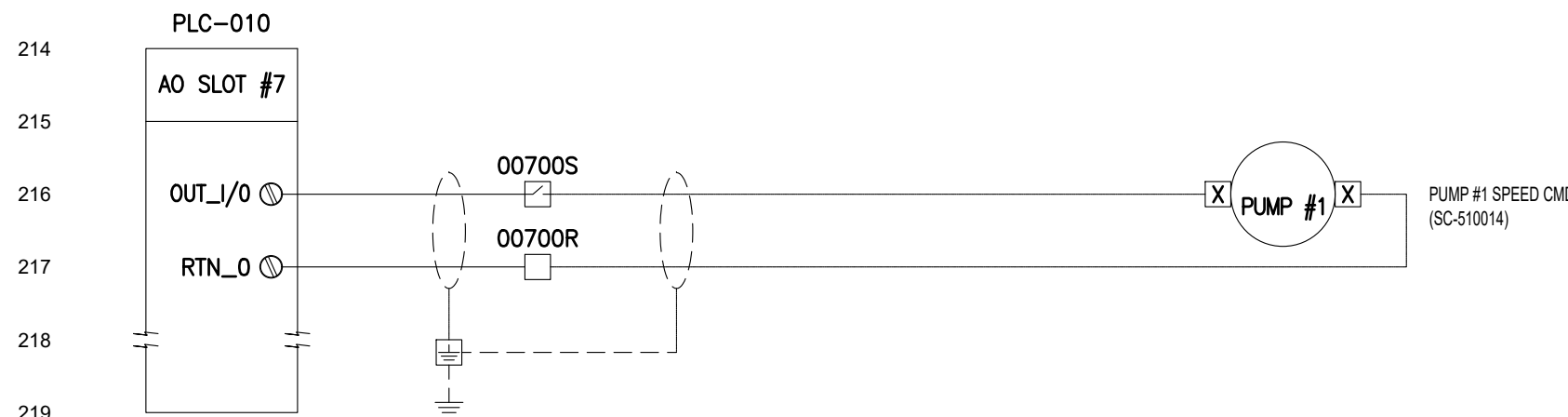
EXAMPLE DIGITAL OUTPUT WIRING



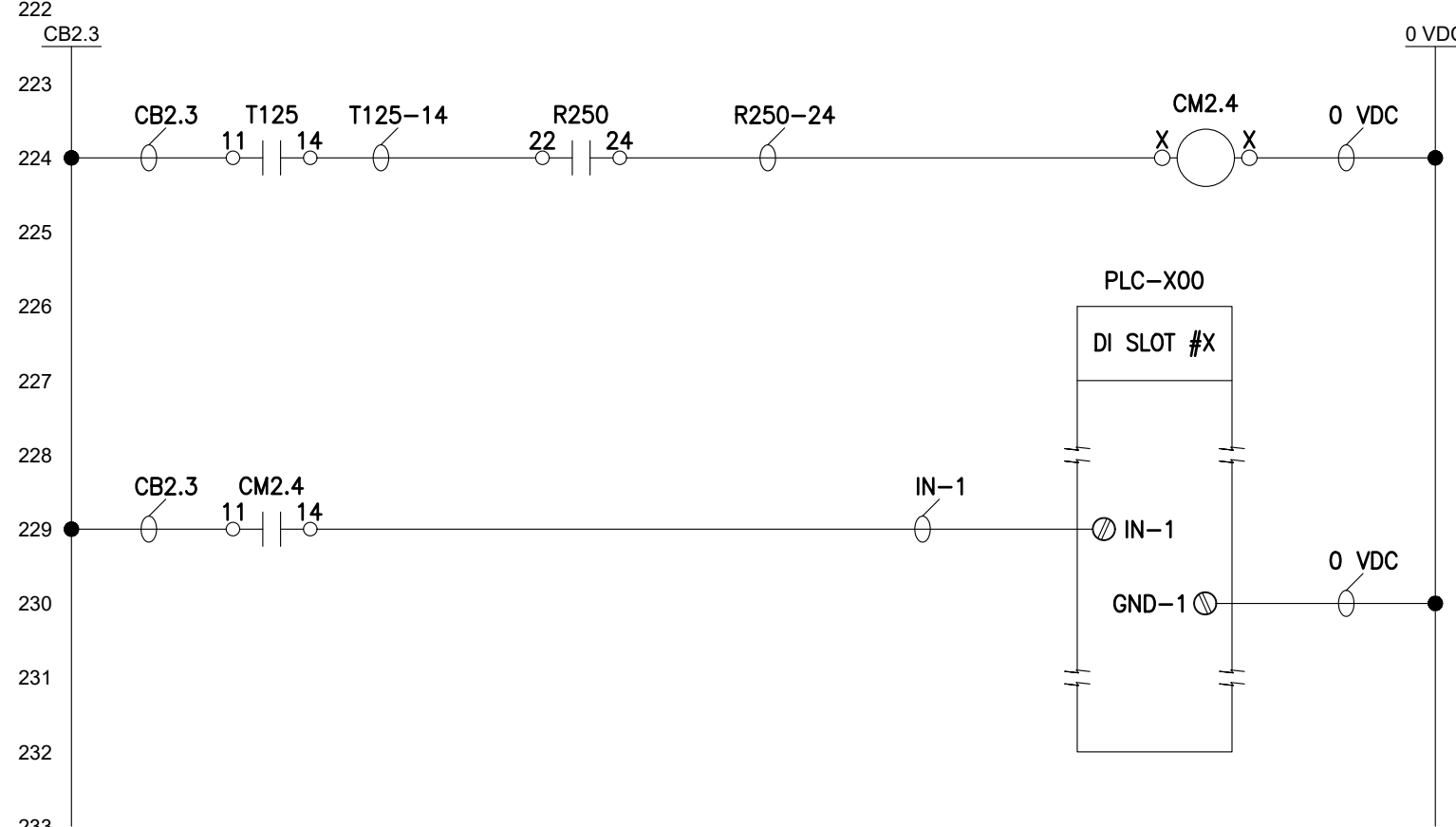
EXAMPLE DIGITAL OUTPUT WIRING WITH ISOLATION RELAY



EXAMPLE ANALOG INPUT WIRING (FOR 2-WIRE DEVICE)



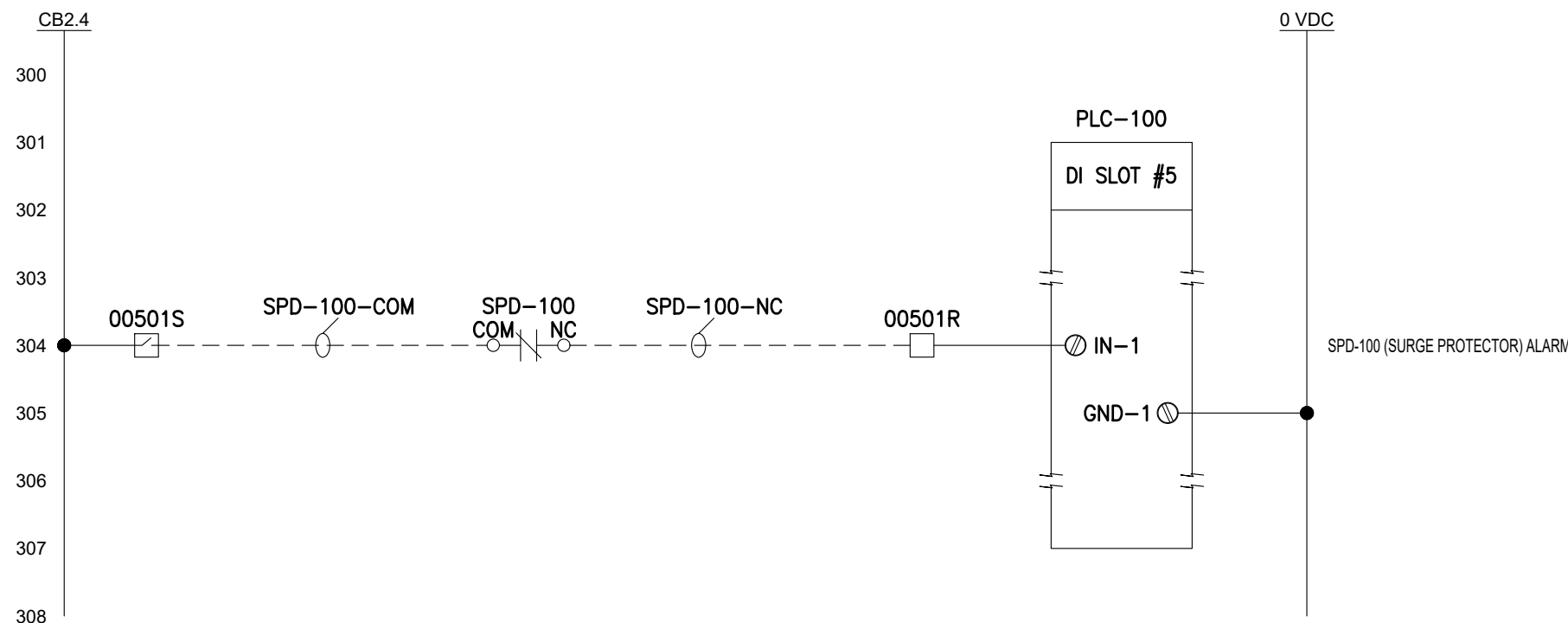
EXAMPLE ANALOG OUTPUT WIRING (FOR A LOAD OF 0-1000Q)



NOTES:

- INTERNAL PANEL WIRES TO BE LABELLED ACCORDING TO THE COMPONENT AT THE HIGHER POTENTIAL. THE EXCEPTION TO THIS BEING THE PLC I/O WIRING WHICH IS TO MATCH THE PLC I/O LABEL.
- INCLUDE TERMINAL DESIGNATION IN THE WIRE LABEL, WHERE APPLICABLE.
- BOTH ENDS OF EACH WIRE TO HAVE THE SAME LABEL.

EXAMPLE LABELLING OF INTERNAL PANEL WIRING



NOTES:

- FIELD WIRES TO BE LABELLED ACCORDING TO THE FIELD DEVICE TAG.
- INCLUDE TERMINAL DESIGNATION IN THE WIRE LABEL, WHERE APPLICABLE.
- BOTH ENDS OF EACH WIRE TO HAVE THE SAME LABEL.
- INCLUDE JUNCTION BOX TERMINALS, WHERE APPLICABLE.

EXAMPLE LABELLING OF FIELD WIRING

GENERAL NOTES:

- ALL WIRES TO BE TERMINATED USING CRIMP-ON FERRULES. ONLY ONE WIRE PER FERRULE. ENSURE ALL STRANDS OF THE WIRE ARE CRIMPED WITHIN THE FERRULE AND THAT THERE ARE NO STRAY STRANDS OF WIRE.
- NO MORE THAN TWO (2) WIRES TO BE CONNECTED TO THE SAME SIDE OF A TERMINAL. PROVIDE ADDITIONAL TERMINALS AS REQUIRED.
- WIRING TO BE IN ACCORDANCE WITH THE LATEST REVISION OF THE ONTARIO ELECTRICAL SAFETY CODE.
- FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION AND WIRING OF COMPONENTS.
- SECURE WIRES IN WIRE DUCT USING CABLE TIES. LEAVE ENOUGH SLACK ON THE CABLE TIES FOR WIRE MANIPULATION. REMOVE EXCESS CABLE TIE ENDS. CABLE TIE APPLICATION TO BE DONE IN A NEAT ORGANIZED MANNER.
- ALL PLC AND MIO I/O POINTS TO BE TERMINATED, INCLUDING SPARE I/O POINTS. REFER TO THE I/O SCHEDULES FOR A LISTING OF ALL I/O POINTS.
- THESE DRAWINGS TO BE READ IN CONJUNCTION WITH THE PLC/MIO I/O TABLES AND AS-BUILT DRAWINGS FOR THE EXISTING SYSTEM.
- PERFORM A "PULL TEST" ON EACH WIRE TO CONFIRM THAT IT IS SECURELY TERMINATED.
- LABEL EACH WIRE AS INDICATED.
- THE PANEL BUILDER IS RESPONSIBLE FOR IDENTIFYING THE CORRECT TERMINALS FOR ALL DEVICES WIRED IN EACH CONTROL PANEL AS WELL AS THOSE OF THE FIELD DEVICES WIRED TO EACH CONTROL PANEL. THE FINAL TERMINAL DESIGNATIONS ARE TO BE INCLUDED ON THE AS-BUILT DOCUMENTATION.
- ALL NEW ALARMS TO BE WIRED IN A FAIL-SAFE MANNER, SUCH THAT AN INPUT IS ALWAYS PRESENT ON THE PLC INPUT CARD, UNLESS THERE IS AN ALARM. FOR EXAMPLE, IN THE CASE OF THE UPS ALARMS SELECT THE CONTACT (FORM A OR FORM B) TO PROVIDE FAIL-SAFE WIRING. PROVIDE ALL RELAYS AND ACCESSORIES REQUIRED TO PROVIDE FAIL-SAFE WIRING.
- REFER TO THE I/O LIST FOR CIRCUIT MONITORING (POWER FAILURE RELAYS) INPUTS TO THE PLC/MIO. IN SOME CASES MORE THAN ONE RELAYS ARE USED TO MONITOR CIRCUITS FOR A PARTICULAR PLC OR MIO I/O CARD. IN SUCH CASES, THE RELAY CONTACTS SHALL BE WIRED IN SERIES.
- PROVIDE 24VDC DISCRETE INPUT AND OUTPUT WIRING AS REQUIRED FOR FIELD DEVICES.
- PROVIDE DRY CONTACT WIRING FOR THE DISCRETE OUTPUT CARDS OF EACH PLC AND MIO AS REQUIRED BY THE FIELD DEVICE/EQUIPMENT.
- PROVIDE LOOP POWERED OR FIELD POWERED WIRING FOR THE ANALOG INPUT CARDS OF EACH PLC AND MIO AS REQUIRED BY THE FIELD DEVICE/EQUIPMENT.
- REFER TO THE INSTALLATION DOCUMENTATION FOR THE REQUIREMENTS OF EACH FIELD DEVICE/EQUIPMENT.
- PROVIDE A TWO-TIER KNIFE TERMINAL BLOCK FOR EACH DISCRETE I/O. WIRE EACH DISCRETE I/O AS PER THE GENERAL INTENT OF THE EXAMPLES PROVIDED AND AS PER THE MANUFACTURERS' RECOMMENDATIONS. SOME DISCRETE I/O REQUIRE ISOLATION RELAYS. PROVIDE ALL SUCH RELAYS. THE ACCEPTABLE ISOLATION RELAYS ARE SPECIFIED IN THE CONTROL PANEL BILL OF MATERIALS.
- PROVIDE A TWO-TIER KNIFE TERMINAL BLOCK FOR EACH ANALOG I/O. WIRE EACH ANALOG I/O AS PER THE GENERAL INTENT OF THE EXAMPLES PROVIDED AND AS PER THE MANUFACTURERS' RECOMMENDATIONS. SOME ANALOG I/O REQUIRE ISOLATION AMPLIFIERS. PROVIDE ALL SUCH AMPLIFIERS. THE ACCEPTABLE ANALOG ISOLATING AMPLIFIERS ARE SPECIFIED IN THE CONTROL PANEL BILL OF MATERIALS.
- EACH DIN RAIL IN EACH CONTROL PANEL SHALL BE BONDED. REFER TO BONDING DETAIL. PROVIDE A GROUND TERMINAL FOR EACH DIN RAIL. GROUND TERMINALS NOT SHOWN ON LAYOUT DRAWINGS.
- BREAKERS TO BE "C CURVE" UNLESS OTHERWISE INDICATED. COORDINATE BREAKER SIZES AND CHARACTERISTICS WITH EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
- CIRCUIT BREAKERS AND CIRCUIT MONITORS TAGS TO BE SEQUENTIAL.
- PROVIDE ADDITIONAL BREAKERS AS REQUIRED FOR POWER DISTRIBUTION.
- PANEL BUILDER TO SIZE BREAKERS TO SUIT.
- PROVIDE (ADDITIONAL) RELAYS AND OTHER APPURTENANCES REQUIRED TO IMPLEMENT THE LOGIC SHOWN.
- PANEL BUILDER TO VERIFY THE WIRING REQUIREMENTS OF THE EXISTING SIGNALS PRIOR TO PREPARING SHOP DRAWINGS FOR THE NEW PLC PANELS.

POWER AND CONTROL WIRE (INTERNAL TO ENCLOSURE) SPECIFICATIONS:

- SIZE:
- USE A MINIMUM OF 14AWG FOR POWER WIRING, EXCEPT AS OTHERWISE NOTED.
 - USE A MINIMUM OF 16AWG FOR CONTROL WIRING, EXCEPT AS OTHERWISE NOTED.

- COLOUR:
- 24VAC/120VAC (NON-UPS): BLACK (LINE); WHITE (NEUTRAL).
 - 24VAC/120VAC (UPS): ORANGE (LINE); GREY (NEUTRAL).
 - 24VDC: YELLOW (+VE); BROWN (-VE).
 - GROUND: GREEN.
 - INTRINSIC SAFETY: BLUE.

- TYPE:
- EACH POWER AND CONTROL WIRE TO MEET THE FOLLOWING SPECIFICATIONS:
 - RW 90, 600V RATED
 - COPPER CONDUCTOR WITH XLP INSULATION
 - 90°C WET OR DRY
 - IN ACCORDANCE WITH CSA C22.2 No. 38
 - ANIXTER 60CL SERIES SINGLE STRANDED CONDUCTOR

ANALOG WIRE (INTERNAL TO ENCLOSURE) SPECIFICATIONS:

- TYPE:
- BELDEN 8761 FOR PAIRS
 - BELDEN 22860 FOR TRIADS

NOTES:

- WIRE TO MEET THE REQUIREMENTS OF THE COMPONENT MANUFACTURERS.
- PROVIDE SHOP DRAWINGS FOR WIRES TO BE USED.

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SCALE: N.T.S.

CLIENT:

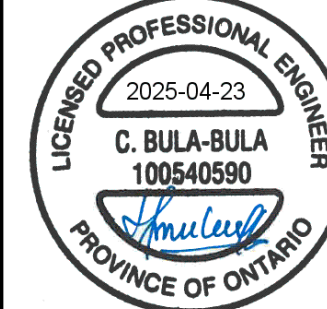


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PROJECT NORTH

PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 Brisson St, Casselman, ON K0A 1M0

DRAWING:

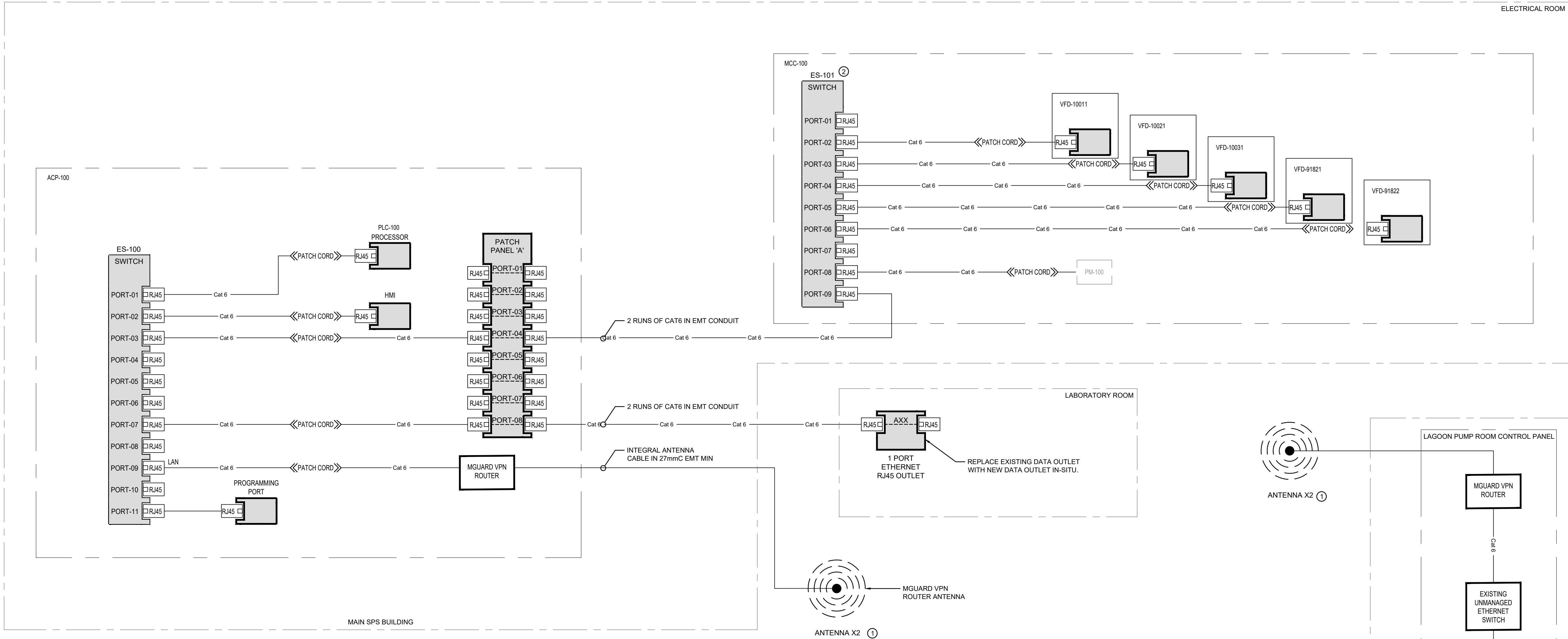
ELECTRICAL

TYPICAL CONTROL WIRING
EXAMPLE

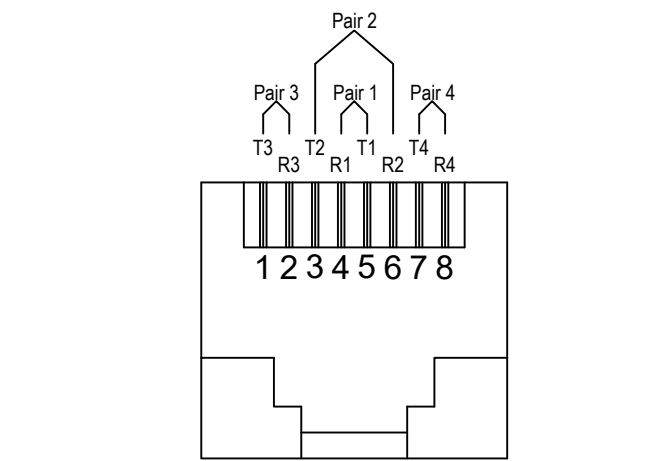
DESIGN: CB
DRAWN: RH
CHECKED: LO
JLR #: 16953-134

DRAWING #:

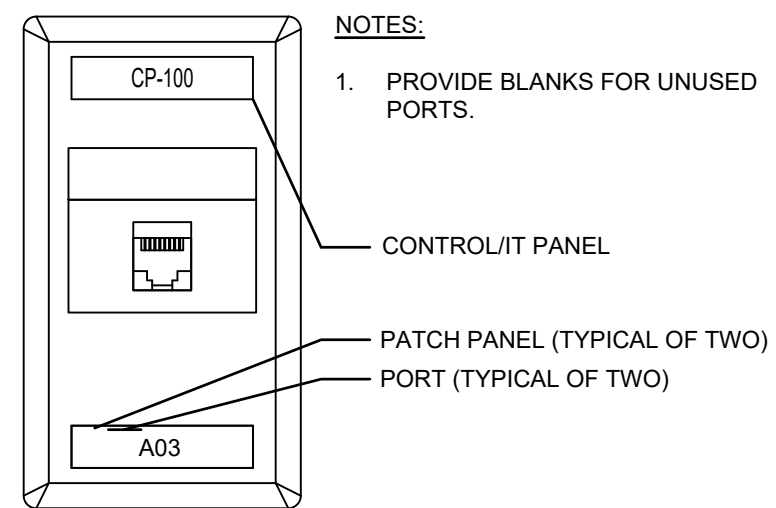
1109



01 NETWORK BLOCK DIAGRAM
SCALE: N.T.S.



02 T568A WIRING FORMAT
SCALE: N.T.S.



03 TYPICAL DATA OUTLET FACEPLATE LABELLING
SCALE: N.T.S.

- DRAWING NOTES:**
- APPROXIMATE LOCATION OF EXTERIOR MOUNTED ANTENNA FOR THE GSM ROUTER CONNECTION. CONTRACTOR TO PROVIDE CONDUIT TO SUIT (MINIMUM OF 27MM), COORDINATE EXACT LOCATION OF THE ANTENNA AS PER CELLULAR TOWER.
 - PROVIDE NEW MANAGED ETHERNET SWITCH INSIDE MCC-100. ETHERNET SWITCH TO BE UPS POWERED FROM ACP-100, REFER TO DRAWING I106. NUMBER OF RJ45 PORT TO SUIT.

GENERAL NOTES:

- REFER TO DRAWING ### FOR ELECTRICAL LEGEND
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL PLC WIRING DIAGRAMS, P&ID DRAWINGS, PROCESS LAYOUT DRAWINGS AND CONTROL BLOCK DIAGRAM.
- CONTRACTOR TO ORDER APPROPRIATE LENGTH OF CAT6 AND FIBER CABLE.
- UNLESS NOTED OTHERWISE, ALL NETWORK DEVICES AND SCADA EQUIPMENT ARE TO BE UPS POWERED. ALL NETWORK EQUIPMENT SCADA COMPUTER, PROVIDE UPS FOR OFFICE DESK. UPS PER ITEM 70.
- PROVIDE BLANKS FOR USED PORTS.

0	ISSUED FOR TENDER	23/04/25
No.	ISSUE / REVISION	DD/MM/YY

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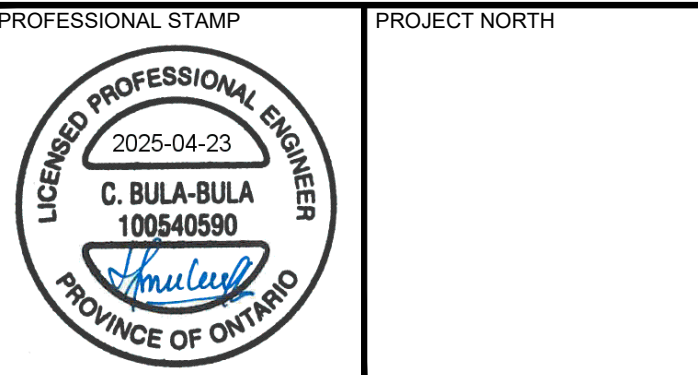
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SCALE: N.T.S.



CONSULTANT: J.L. Richards ENGINEERS - ARCHITECTS - PLANNERS

CONSULTANT:



PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 Brisson St, Casselman, ON K0A 1M0

DRAWING:

ELECTRICAL

NETWORK BLOCK DIAGRAM

DESIGN: CB	DRAWING #:
DRAWN: RH	
CHECKED: LO	
JLR #:	16953-134

N101



REMOVE ALL SLC PLC RACK COMPONENTS AND ALL ASSOCIATED APPURTENANCES. PROVIDE A NEW PLC RACK. REFER TO DETAIL 2/201 FOR PLC COMPONENTS SCHEDULE.

REMOVE MULTISMART CONTROLLER COMPONENTS AND ALL ASSOCIATED APPURTENANCES.

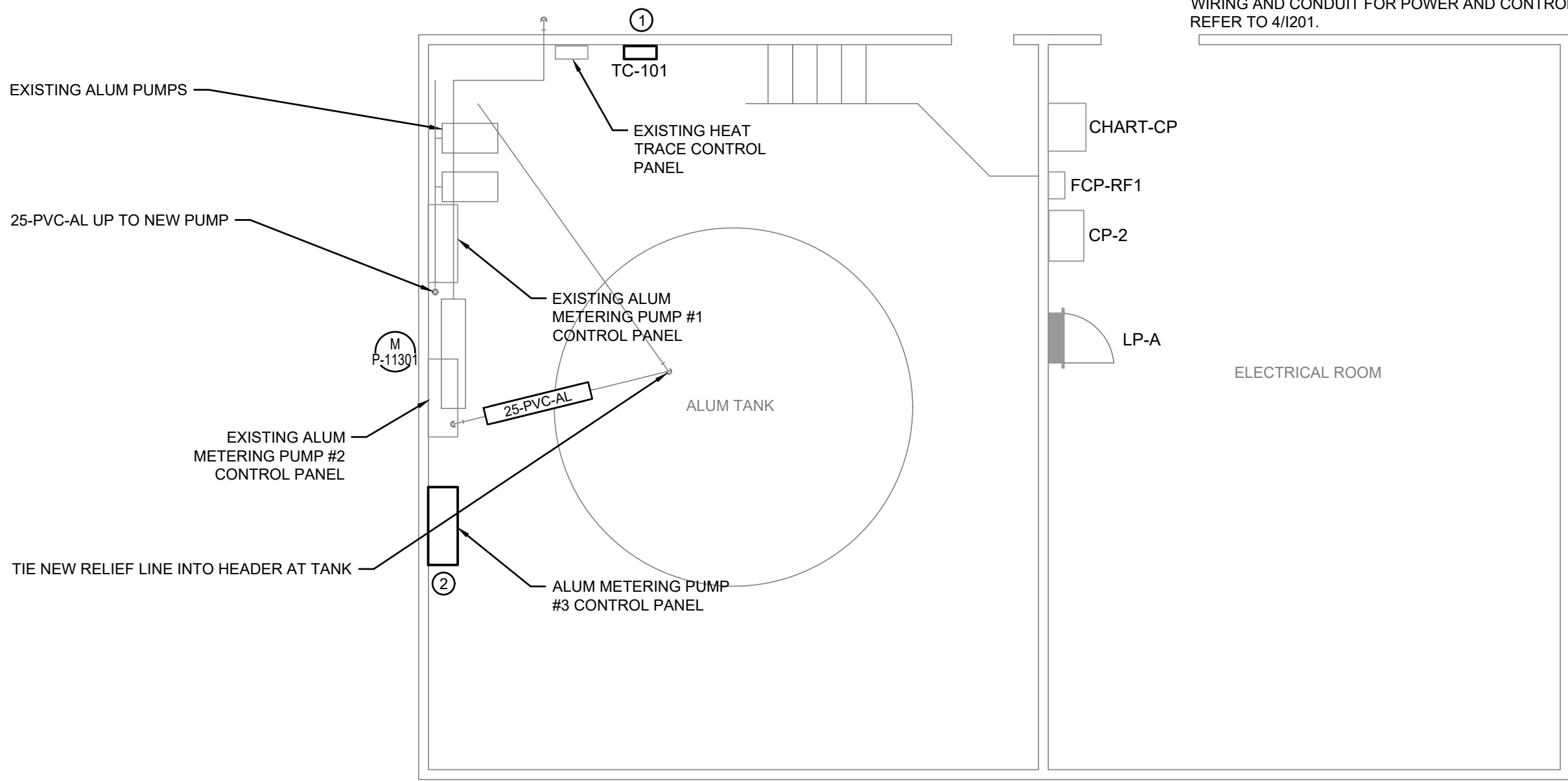
CP-2 EXISTING METERING PUMP CONTROL PANEL REMOVAL

SCALE: N.T.S.

01
DE101

DEMOLITION NOTES:

- UNLESS INDICATED OTHERWISE REMOVE ALL ELECTRICAL AND CONTROL WIRING, CONDUITS, CABLE TRAYS, SUPPORTS ETC. BACK TO SOURCE PANELS.
- DEMOLITION DRAWINGS ARE BASED ON ORIGINAL INSTALLATION AND AS-CONSTRUCTED DRAWINGS, AND DO NOT NECESSARILY REFLECT ALL DETAILS, PIPING, CONDUITS, CABLE TRAYS, ETC. TO BE REMOVED. PICTURES MIGHT NOT REFLECT EXACT SITE CONDITION.
- CONTRACTOR TO VISIT SITE DURING TENDER TO DETERMINE EXACT SCOPE.
- UNLESS INDICATED OTHERWISE, ALL DEMOLISHED MATERIALS ARE TO BE REMOVED FROM SITE AND DISPOSED OF IN AN APPROVED MANNER.
- DEMOLISH ALL EXISTING ELECTRICAL EQUIPMENT, DEVICES, INSTRUMENTS, WIRING, CONDUITS AND ASSOCIATED APPURTENANCES MADE OBSOLETE BY NEW INSTALLATION.
- REFER TO DRAWINGS OF ALL DISCIPLINES FOR TYPICAL DETAILS FOR MAKING GOOD SURFACES, TERMINATING PIPING, FILLING OPENINGS AND SLEEVES, ETC.
- DEMOLISH ALL REDUNDANT CONDUITS, CABLE TRAYS, WIRING, SUPPORTS AND APPURTENANCES ASSOCIATED WITH THE REMOVAL OF EQUIPMENT, DEVICES, INSTRUMENTS AND LIGHTING.
- PATCH ALL CONDUIT OPENINGS IN WALLS AND CEILINGS AFFECTED BY THE REMOVAL OF ANY ELECTRICAL EQUIPMENT, WIRING, CONDUITS, OR APPURTENANCES.
- DEMOLISH WIRING BETWEEN PUMP STARTER INSIDE THE MCC.
- RELOCATE, SPLICE, REPLACE AND MODIFY EXISTING WIRING AS REQUIRED TO FACILITATE CONSTRUCTION SEQUENCING AND TO MAINTAIN EXISTING SYSTEMS TO FACILITATE THE CONSTRUCTION ACTIVITIES.
- RE-COMMISSION ANY EXISTING OR ANY MODIFIED SYSTEMS TO CONFIRM PROPER OPERATION TO THE SATISFACTION OF THE OWNER.
- UNLESS INDICATED OTHERWISE, CONTRACTOR IS RESPONSIBLE FOR THE DEMOLITION OF ALL BELOW GRADE CONDUITS AND WIRES.
- CONTRACTOR TO TURN OVER ANY EXISTING EQUIPMENT TO THE OWNER.
- UPDATE PANEL SCHEDULES AND SUBMIT UPDATED PANEL SCHEDULES TO THE CONSULTANT.
- DEMOLITION TO BE PHASED TO MAINTAIN PLANT OPERATION AT ALL TIMES.
- REFER ALSO TO SECTION 16070 FOR ADDITIONAL DEMOLITION REQUIREMENTS.
- REFER TO DP (PROCESS DEMOLITION) AND DM (MECHANICAL DEMOLITION) SERIES DRAWINGS FOR ADDITIONAL DEMOLITION SCOPE. COORDINATE WITH DIVISION 15.



DRAWING NOTES:

- HEAT TRACE CONTROLLER AND ALL HEAT TRACE APPURTENANCES TO BE SUPPLIED BY DIVISION 02. CONTRACTOR TO PROVIDE CONDUIT AND WIRING FOR POWER AND CONTROL. COORDINATE WITH DIV 02.
- COORDINATE THE SUPPLY OF THE ALUM METERING PUMP #3 WITH DIV. 15. CONTRACTOR TO PROVIDE WIRING AND CONDUIT FOR POWER AND CONTROLS. REFER TO 4/201.

02
E201
ALUM/BLOWER BUILDING
SCALE: 1:50

LP-A

120/208 VOLT, 3P-4W
60 AMP MAINS
SURFACE MOUNTED

DESCRIPTION	BRKR	CCT	CCT	BRKR	DESCRIPTION
RECEPTACLES ALUM ROOM	15A,1P	1	2	15A,1P	RECEPTACLES BLOWER ROOM
ALUM ROOM LIGHTS/EMERG LGT	15A,1P	3	4	15A,1P	BLOWER ROOM LIGHT/EMERG LGT
ALUM FED PUMP #1	15A,1P	5	6	15A,1P	OUTDOOR LIGHTS
ALUM FED PUMP #2	15A,1P	7	8	15A,1P	ALUM FED PUMP #3
ALUM ROOM VENTILATION	15A,1P	9	10	15A,1P	WATER PUMP
FCP-RF1 CONTROL PANEL	15A,1P	11	12	15A,1P	CP-EF1, MD-1, MD-2
HEAT TRACE	20A,1P	13	14	30A,1P	CP-2
ALUM ROOM HEAT TRACE	20A,1P	15	16	20A,1P	CP-3
	30A,1P	17	18	20A,1P	HEAT TRACE (TC-101)
	60A,1P	19	20	20A,1P	
	60A,1P	21	22	20A,1P	
	60A,1P	23	24	20A,1P	
	60A,1P	25	26		
		27	28		
		29	30		
		31	32		
		33	34		
		35	36		
		37	38		
		39	40		
		41	42		

TOTAL CONNECTED LOAD: XXXX Watts

PHASE LOAD TO BE FILLED IN BY CONTRACTOR:

LOAD PHASE A: _____ LOAD PHASE B: _____ LOAD PHASE C: _____

REMARKS

- ALL LOADS ARE IN WATTS, UNLESS OTHERWISE NOTED.
- † DEDICATED CIRCUIT (RECEPTACLE OR HARDWIRED)
- * GFI
- LOCKED
- ▲ ARC FAULT CIRCUIT INTERRUPTER
- †† DEDICATED NEUTRAL

03
E201
LP-A PANEL SCHEDULE
SCALE: N.T.S.

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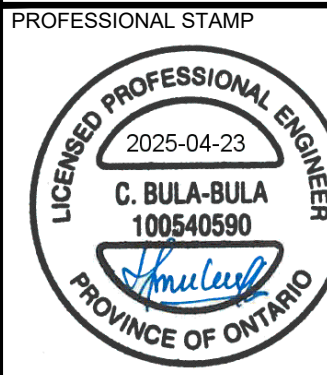
SCALE: N.T.S.

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CONSULTANT: www.jrichards.ca

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PROJECT NORTH

PROJECT:

16953-134 - CASSELMAN MAIN SPS UPGRADE

16 Brisson St, Casselman, ON K0A 1M0

DRAWING:

ELECTRICAL
LAGOON
DEMOLITION

DESIGN: CB

DRAWN: RH

CHECKED: LO

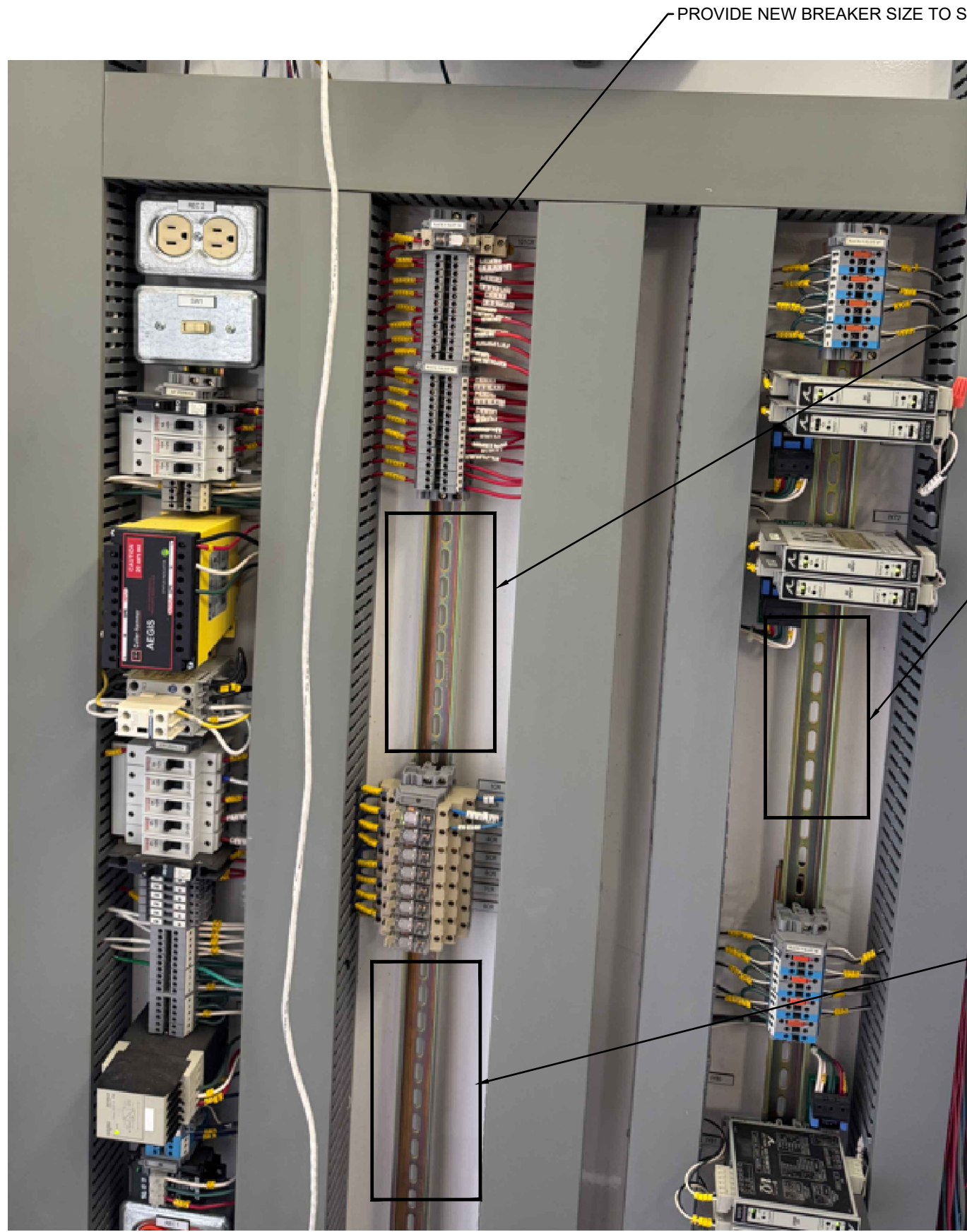
JLR #: 16953-134

DRAWING #:

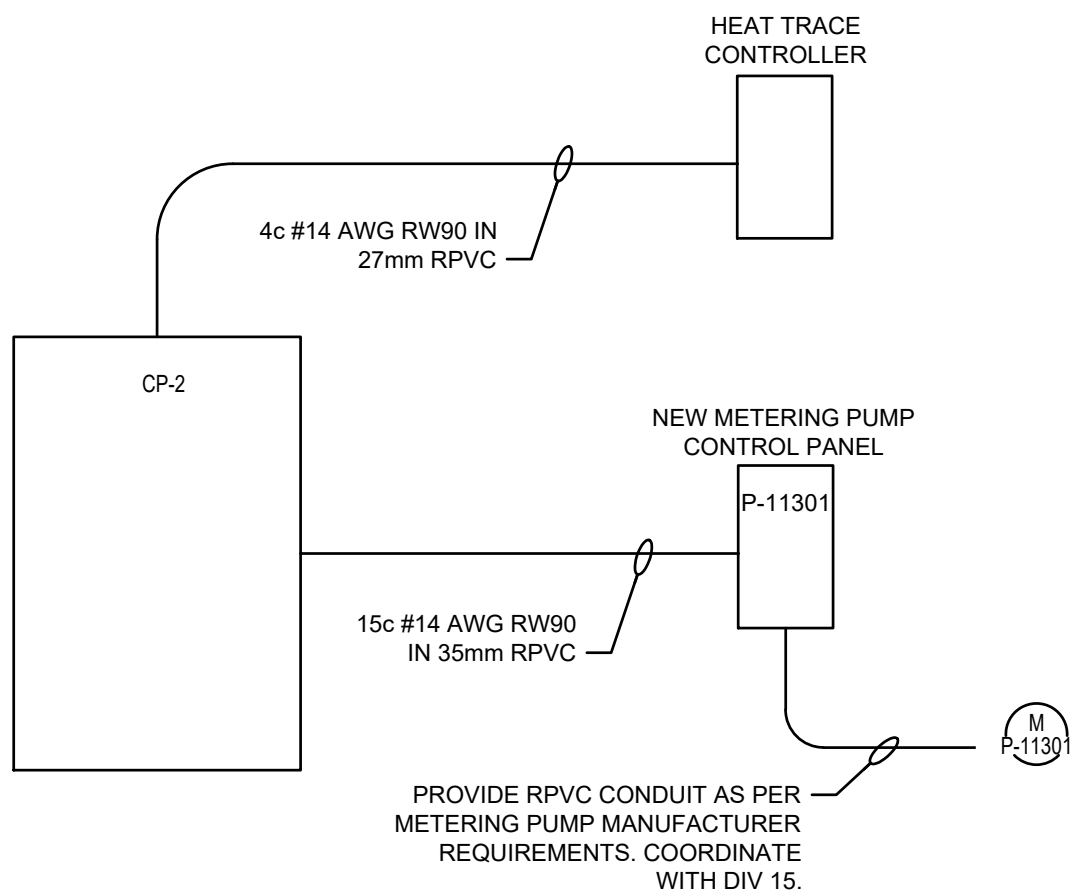
E201

COMPONENT SUMMARY						
SLOT NUMB.	CATALOG NUMBER	MANUFACTURER	DESCRIPTION	IO TYPE	IO RACK	IO COUNT
0	1769-L33ER	AB/RA	CompactLogix Ethernet Processor, 2 MB Mem	Processor	0	
1	1769-IA8I	AB/RA	8 Point 120VAC Input Module	Digital Input	0	8
2	1769-IA8I	AB/RA	8 Point 120VAC Input Module	Digital Input	0	8
3	1769-OB8	AB/RA	8 Point 24VDC DC Source Output Module	Digital Input	0	8
	1769-PA4	AB/RA	Power Supply 120V Input; 4A @ 5VDC, 2A 24VDC	Miscellaneous	0	
4	1769-IF4	AB/RA	4 Channel Current Analog Input Module	Analog Input	1	4
5	1769-OF4CI	AB/RA	4 Channel Current Isolated Analog Output Module	Analog Output	1	4
	1769-ECR	AB/RA	Right End Cap Terminator	Miscellaneous	1	0

CP-2 EXISTING METERING PUMP
CONTROL PANEL COMPONENTS SCHEDULE



CP-2 EXISTING METERING PUMP CONTROL
PANEL - NEW WORKS DETAILS



CHEMICAL BUILDING
CONTROL BLOCK DETAILS

N.T.S.

COMPONENT I/O LIST										
CONTROLLER IO TAG	ISA TAG	EQUIPMENT	DESCRIPTION	LOCATION	OPERATION	RACK	SLOT	POINT	COMMENTS	
DI - 0			Radio Link Fault Status			0	1	0		
DI - 1			Alum Storage Room Door Opened Status			0	1	1		
DI - 2			Blower Room Door Opened Status			0	1	2		
DI - 3			Alum Spill Containment Area Sump Level Switch			0	1	3		
DI - 4			Blower 1 Run Status			0	1	4		
DI - 5			Blower 1 General Alarm (Future)			0	1	5		
DI - 6			Blower 1 Run Status			0	1	6		
DI - 7			Blower 1 General Alarm (Future)			0	1	7		
DI - 8			Alum Metering Pump #1 AP-0303 Run Status			0	1	8		
DI - 9			Alum Metering Pump #1 AP-0303 Control Status			0	1	9		
DI - 10			Alum Metering Pump #1 AP-0303 General Alarm			0	1	10		
DI - 11			Alum Metering Pump #2 AP-0303 Run Status			0	1	11		
DI - 12			Alum Metering Pump #2 AP-0303 Control Status			0	1	12		
DI - 13			Alum Metering Pump #2 AP-0303 General Alarm			0	1	13		
DI - 14			Veolia General Process Alarm			0	1	14		
DI - 15			Veolia General HVAC Alarm			0	1	15		
DI 0			Alum Metering Pump #3 AP-0303 Run Status	Chemical Room		0	2	0	New Discrete Input	
DI 1			Alum Metering Pump #3 AP-0303 Control Status	Chemical Room		0	2	1	New Discrete Input	
DI 2			Alum Metering Pump #3 AP-0303 General Alarm	Chemical Room		0	2	2	New Discrete Input	
DI 3						0	2	3		
DI 4			Heat Trace General Alarm (Existing)	Chemical Room		0	2	4	New Discrete Input	
DI 5			Heat Trace General Alarm (TC-101)	Chemical Room		0	2	5	New Discrete Input	
DI 6						0	2	6		
DI 7						0	2	7		
DI 8						0	2	8		
DI 9						0	2	9		
DI 10						0	2	10		
DI 11						0	2	11		
DI 12						0	2	12		
DI 13						0	2	13		
DI 14						0	2	14		
DI 15						0	2	15		
DO - 0			Alum Metering Pump #1 AP-0303 Run/Start/Stop Command			0	3	0		
DO - 1			Alum Metering Pump #2 AP-0303 Run/Start/Stop Command			0	3	1		
DO - 2			Alum Metering Pump #3 AP-0303 Run/Start/Stop Command	Chemical Room		0	3	2	New Discrete Input	
DO - 3						0	3	3		
DO - 4						0	3	4		
DO - 5						0	3	5		
DO - 6						0	3	6		
DO - 7						0	3	7		
AI - 0			Alum Storage Tank Room Temperature			1	4	0		
AI - 1			Alum Storage Tank Level			1	4	1		
AI - 2			Alum Metering Pump #1 Speed Feedback			1	4	2		
AI - 3			Alum Metering Pump #2 Speed Feedback			1	4	3		
AI 4			Alum Metering Pump #3 Speed Feedback	Chemical Room			4	4	New Analog Input	
AI 5								4	5	
AI 6								4	6	
AI 7								4	7	
AO - 0			Alum Metering Pump #1 AP-0303 Speed Command			1	5	0		
AO - 1			Alum Metering Pump #2 AP-0303 Speed Command			1	5	1		
AO - 2			Alum Metering Pump #3 AP-0303 Speed Command	Chemical Room		1	5	2	New Analog Output	
AO - 3						1	5	3		

CP-2 EXISTING METERING PUMP
I/O LIST

CONOL PANEL - IO LIST

GENERAL NOTES:

- A. REPLACE EXISTING SLC PLC RACK WITH COMPACT LOGIX PLC IO RACK. USE EXISTING IO CARD WIRING FOR THE NEW REMOTE RACK IO CARDS. CONVERT THE EXISTING SLC PLC LOGIC IN THE NEW COMPACT LOGIX PLC. REFER TO EXISTING IO LIST AND NEW IO. UPDATE THE IO LIST AS REQUIRED.
- B. REFER TO SECTION 17002 FOR DETAILED SYSTEM INTEGRATION SCOPE OF WORK.
- C. UPDATE AND PROVIDE MODIFIED SHOP DRAWING THAT INCLUDE NEW CHANGES FOR CONSULTANT APPROVAL. REFER TO SECTION 17003.
- D. SYSTEM INTEGRATOR IS TO RE-PROGRAM EXISTING HMI AT THE METERING PLC CONTROL PANEL TO INCORPORATE ADDITIONAL CHEMICAL PUMP. NEW CONTROLLER INTEGRATION AND ALL OTHER PERTINENT CHANGES WITHIN THE SYSTEM. PROGRAM ALARM AND TRENDS. COORDINATE WITH DIV.15.
- E. PROVIDE COMPLETE, FULLY COMMISSIONED TURN-KEY INSTALLATION OF THE CHART RECORDER PANEL (CHART CP) THIS INCLUDES BUT NOT LIMITED TO EXISTING ALARM, PROCESS DATA MONITORING AND ANY EXISTING COMMUNICATION TO THE MAIN PUMPING STATION NEW PLC CONTROL PANEL (ACP-100).
- F. CONTRACTOR IS RESPONSIBLE TO PROVIDE FOR A COMPLETE, FULLY COMMISSIONED TURN-KEY COMMUNICATION INSTALLATION BETWEEN MAIN PUMPING STATION LAGOON FACILITY AND WATER TREATMENT PLANT AS REQUIRED.

0 ISSUED FOR TENDER 23/04/25

No. ISSUE / REVISION DDMMYY

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SCALE: N.T.S.

CLIENT:



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PROJECT NORTH

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UPGRADE

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DRAWING:

ELECTRICAL
LAGOON
IO LIST

DESIGN: CB

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CHECKED: LO

JLR #: 16953-134

DRAWING #:

1201