



Environment and Climate
Change Canada
Real Property Management Division
Technical Services

Environnement et Changement
Climatique Canada
Division Gestion des Biens Immobilier
Services Techniques

BURLINGTON, ONTARIO
CANADA CENTRE FOR INLAND WATERS

BOILER ROOM SANITARY PIT
REFURBISHMENT

ECCC Proj. No.: CCIW-079

Canada

LIST OF DRAWINGS

ARCHITECTURAL

ELECTRICAL

- E000 ELECTRICAL GENERAL NOTES, LEGENDS, DRAWING LIST & SCHEDULE
- E300 ELECTRICAL POWER LAYOUT AND DETAILS PHASE-1
- E301 ELECTRICAL POWER LAYOUT AND DETAILS PHASE-2

MECHANICAL




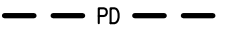
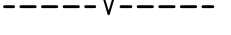




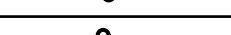
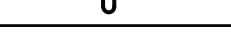

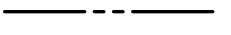



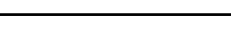
- M-100 LEGENDS AND EQUIPMENT SCHEDULE
- M-101 SCHEMATIC DETAILS AND CONTROL DIAGRAMS
- M-102 SPECIFICATIONS
- M-200 PLUMBING PLAN PHASE 1 SUMP PIT 'A' RESTORATION
- M-201 PLUMBING PLAN PHASE 2 SUMP PIT 'B' RESTORATION

STRUCTURAL

- S-100 STRUCTURAL


PLOT DATE: October 25, 2019

LEGEND – GENERAL			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	ISOLATION VALVE		PIPE UP
	GLOBE VALVE		PIPE DOWN
	LOCKABLE FLOW CONTROL VALVE		CAPPED PIPE
	BALL VALVE		DIRECTION OF FLOW
	CHECK VALVE		PIPE SLEEVE
	FLOAT VALVE		CONTINUOUS PIPE
	HOSE-END DRAIN VALVE		METER
	VALVED AND CAPPED PROVISION		UNION
	GATE VALVE AND FLOW SWITCH		STRAINER
	SHUT-OFF VALVE AND ACCESS PANEL		BACKFLOW PREVENTER
	BUTTERFLY VALVE		WATER FEEDER ASSEMBLY
	LOCKSHIELD VALVE		FLEXIBLE PIPE CONNECTION
	PLUG VALVE		PUMP
	PRESSURE REDUCING VALVE		PRESSURE GAUGE WITH COCK
	FLOW SWITCH		THERMOMETER
	FLOW METER, VENTURI		STARTER
	SOLENOID VALVE		FAN SPEED CONTROLLER
	CIRCUIT BALANCING VALVE	STB	SLEEVE THROUGH BEAM
	BALANCING VALVE (PLUG)	STW	SLEEVE THROUGH WALL
	NEEDLE VALVE	DTF	DOWN THROUGH FLOOR
	PRESSURE DIFFERENTIAL VALVE	CTE	CONNECT TO EXISTING
	SAFETY RELIEF VALVE	AP	ACCESS PANEL
		AD	ACCESS DOOR
	AUTOMATIC CONTROL VALVE		
	3 WAY BUTTERFLY CONTROL VALVE		
	MOTORIZED BUTTERFLY VALVE		
	VALVE IN RISER		
	BACKWATER VALVE INLINE		
	BACKWATER VALVE WITH ACCESS		

LEGEND – PLUMBING & DRAINAGE	
SYMBOL	DESCRIPTION
	SANITARY DRAIN
	BURIED SANITARY DRAIN
	PUMPED DRAIN
	PUMPED DRAIN UNDER FLOOR
	VENT PIPE
	DRAIN WITH CLEANOUT
	DRAIN WITH CLEANOUT UP TO FLOOR
	DRAIN WITH CLEANOUT UP TO FLOOR
	RUNNING TRAP WITH CLEANOUT
	RUNNING TRAP WITH CLEANOUT
	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
	PIPE UP
	PIPE DOWN
	CAPPED PIPE
	DIRECTION OF FLOW
	FLOOR DRAIN OR ROOF DRAIN
SS	SOIL STACK
WS	WASTE STACK
VS	VENT STACK
VTR	VENT THROUGH ROOF


PUMPS																						
TAG	SERVICE	LOCATION	MANUFACTURER	MODEL	FLUID	SERVICE DUTY	TYPE	CONTROL	1 PUMP				2 PUMPS				EFF %	RPM	ELECTRICAL DATA			REMARKS
									FLOW		HEAD		FLOW		HEAD				VOLTAGE	KW	HP	
									L/S	USGPM	M	ft.	L/S	USGPM	M	ft.						
P-S-1	SANITARY SUMP	SUMP PIT A	SULZER	AS 0631	SANITARY WATER	LEAD/LAG	SUBMERSIBLE	ULTRASONIC	9.3	148	6.4	21	17.0	270	7.6	25	90	3400	575/3/60	2.24	3.0	SULZER AS 0631 PUMP PACKAGE COMPLETE WITH LIFT FRAME AND BASE, ULTRASONIC SENSORS, AND CONTROL PANEL. REFER TO EQUIPMENT SPECIFICATIONS, SECTION 4 ON DRAWING M-102 FOR DETAILS
P-S-2	SANITARY SUMP	SUMP PIT A	SULZER	AS 0631	SANITARY WATER	LEAD/LAG	SUBMERSIBLE	ULTRASONIC									90	3400	575/3/60	2.24	3.0	
P-S-3	SANITARY SUMP	SUMP PIT B	SULZER	AS 0631	SANITARY WATER	OVERFLOW	SUBMERSIBLE	ULTRASONIC	9.0	142	7.6	25					90	3400	575/3/60	2.24	3.0	

NOTES:
SPECIFICATIONS BASED ON SULZER,
ACCEPTABLE ALTERNATES: GOULDS, ZOLLER



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Services Techniques



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0	PERMIT AND TENDER	MAY 24 2019
revision		date

Do not scale drawings.
Verify all dimensions and conditions on site and immediately notify the engineer of all discrepancies.

A

B

C

A Detail No.
No. du détail
B drawing no. – where detail required
dessin no. – où détail exigé
C drawing no. – where detailed
dessin no. – où détaillé

project title
titre du projet

BURLINGTON ONTARIO
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE RD
BURLINGTON, ONTARIO
BOILER ROOM SANITARY PIT
REFURBISHMENT

drawing title
titre du dessin

LEGENDS AND
EQUIPMENT SCHEDULE

drawn by
dessiné par

P.G., L.M.

designed by
conçu par

P.G., H.R.

approved by
approuvé par

-

tender
soumission

/ /

project manager
administrateur de projets

ROD KHALED

project date
date du projet

16 / FEB / 2018

project no.
no. du projet

CCIW-079

drawing no.
dessiné no.

17-167-020

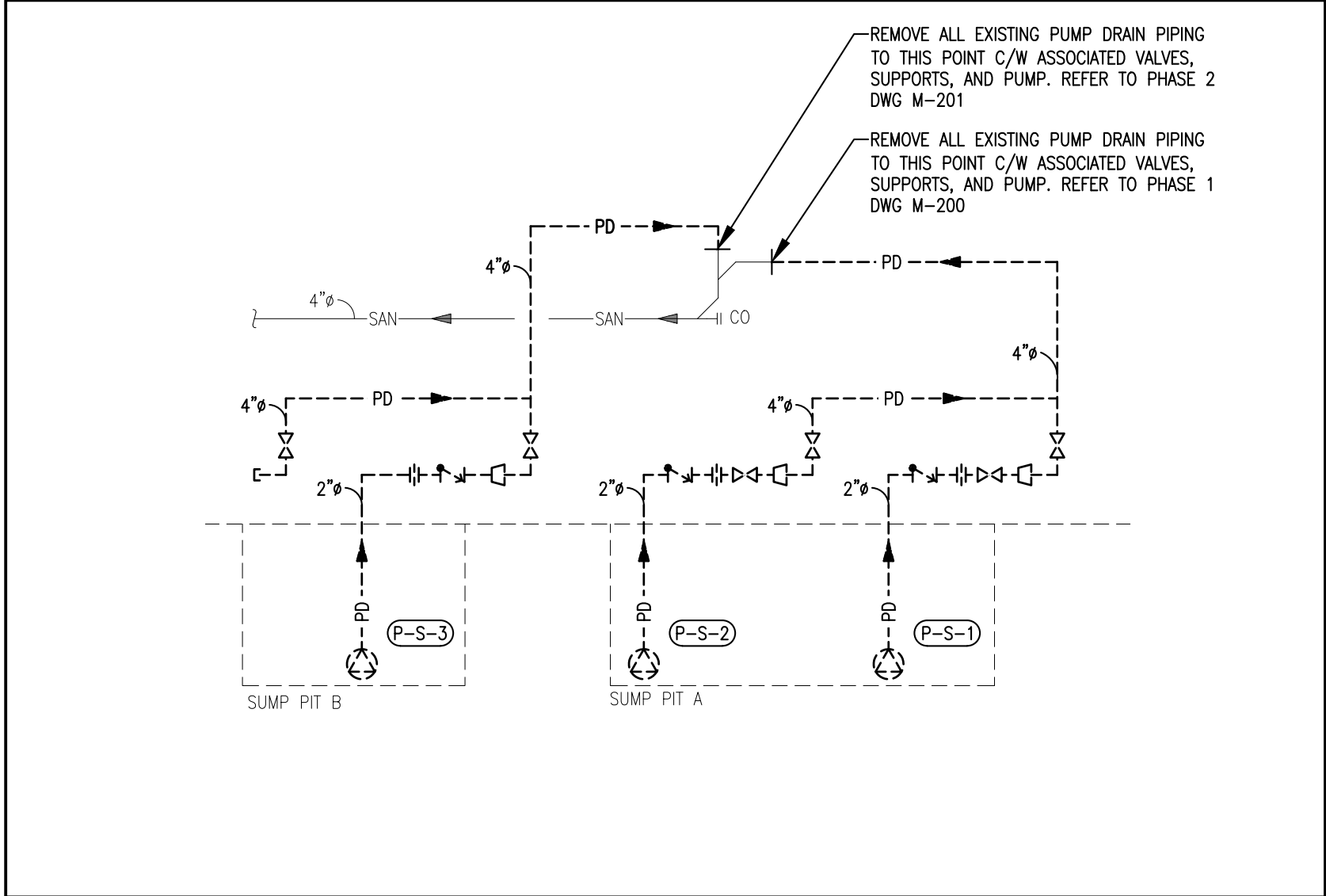
M-100

ORIGINAL SHEET SIZE: ARCH C

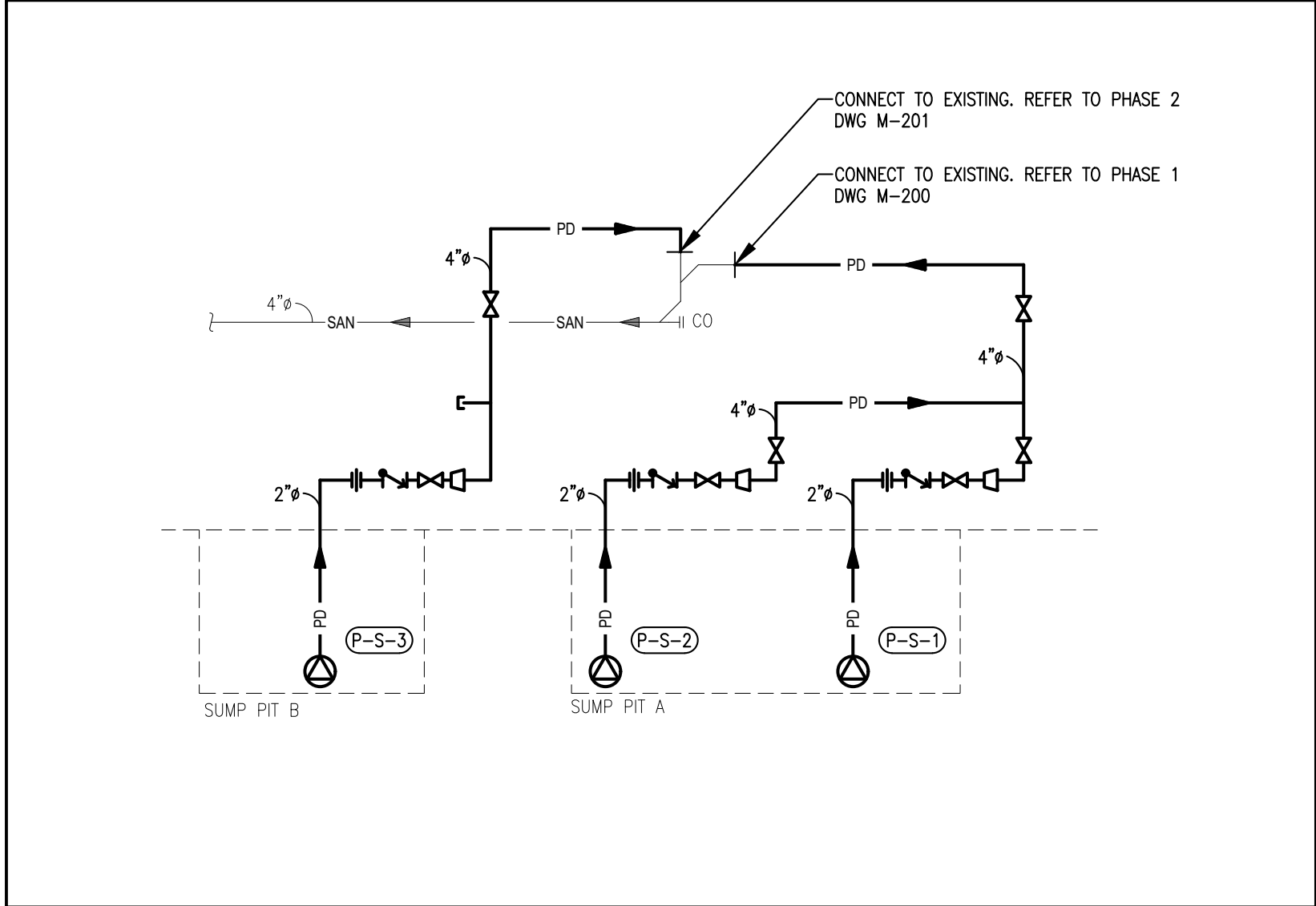
10" 5" 0

PLOT DATE: October 25, 2019

ORIGINAL SHEET SIZE: ARCH C



1 DEMOLITION SCHEMATIC
M101 SCALE: NTS

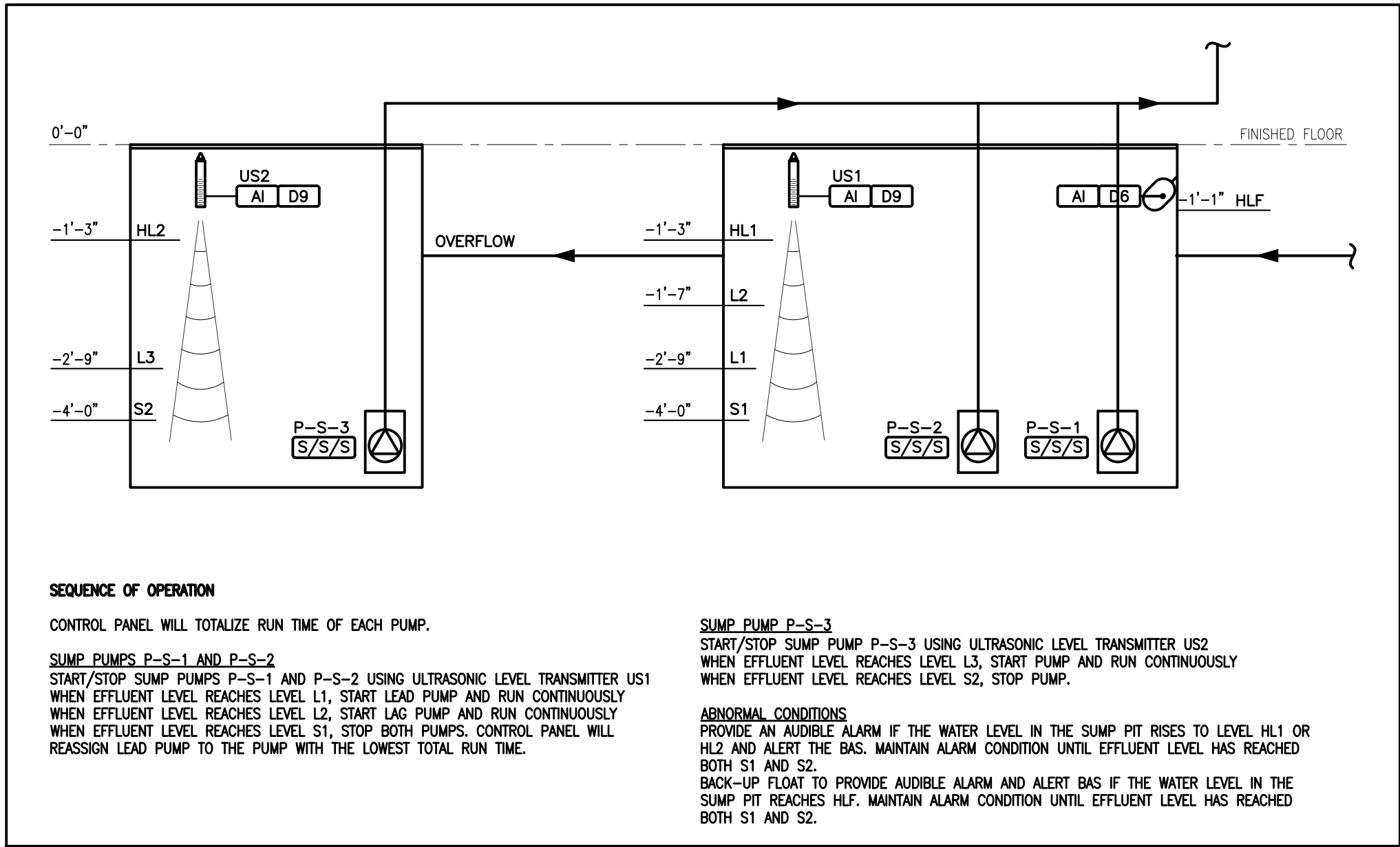


2 NEW SCHEMATIC
M101 SCALE: NTS

CONTROL LEGEND			
SENSOR AND INSTRUMENT CODES		ABBREVIATIONS	
C1	DIFFERENTIAL PRESSURE	ADJ	ADJUSTABLE
C2	PRESSURE SENSOR	AI	ANALOG INPUT
C3	STATIC PRESSURE SENSOR	AO	ANALOG OUTPUT
C4	PRESSURE SWITCH	BAS	BUILDING AUTOMATION SYSTEM
C5	WATERFLOW SWITCH	CACF	CENTRAL ALARM & CONTROL FACILITY
C9	PULSED OUTPUT FROM WATER METER	DI	DIGITAL INPUT
C11	CURRENT SENSOR	DO	DIGITAL OUTPUT
D1	MOTOR CONTROL RELAYS, START/STOP/STATUS TYPE	DP	DIFFERENTIAL PRESSURE
D2	CURRENT TRANSFORMERS AND RELAYS	FS	FLOW SENSOR
D3	MOTOR STATUS CONTACTS	HL	HIGH LIMIT
D4	DIFFERENTIAL PRESSURE SWITCH	LL	LOW LIMIT
D6	LEVEL SWITCH, FLOAT TYPE	LWT	LEAVING WATER TEMPERATURE
D7	DIFFERENTIAL PRESSURE TRANSMITTER	RTT	RUN TIME TOTALIZATION
D9	LEVEL TRANSMITTER- ULTRASONIC TYPE	STP	SETPOINT
K1	WATERFLOW TRANSMITTER, ANNUBAR TYPE		
K2	WATERFLOW TRANSMITTER, TURBINE TYPE		
G1	OUTPUT TO VALVE		
G2	OUTPUT TO DAMPER		
G3	START/STOP		
G4	OUTPUT TO VSD		
G5	FAULT INPUT		
G6	STATUS		
G8	ELECTRICAL POWER CONSUMPTION		

AO C6	SENSOR CODE	AO --	ANALOG OUTPUT TO CONTROLLED DEVICE WITHOUT ADDITIONAL SENSORS
S/S/S	START/STOP/STATUS RELAYS FOR MOTOR CONTROL		

CD-1 CONTROL DIAGRAM
M101 SCALE: NTS



CD-2 CONTROL DIAGRAM
M101 SCALE: NTS



0	PERMIT AND TENDER	MAY 24 2019
revision		date

Do not scale drawings. Verify all dimensions and conditions on site and immediately notify the engineer of all discrepancies.

A	Detail No.
B	No. du détail
C	drawing no. - where detail required
	dessin no. - où détail exigé
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project title
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BURLINGTON **ONTARIO**
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE RD
BURLINGTON, ONTARIO
BOILER ROOM SANITARY PIT
REFURBISHMENT

drawing title
titre du dessin
SCHEMATIC, DETAILS
AND CONTROL
DIAGRAMS

drawn by
dessiné par
P.G., L.M.

designed by
conçu par
P.G., H.R.

approved by
approuvé par
-

tender
soumission
/ /
project manager
administrateur de projets
ROD KHALED

project date
date du projet
16 / FEB / 2018

project no.
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CCIW-079

drawing no.
dessiné no.
17-167-020 **M-101**

1. GENERAL
- 1.1. The scope of work is to provide mechanical services for the refurbishment of two (2) sanitary pits and associated pumps, pump controls and piping in the boiler room at the Canadian Centre for Inland Waters (CCIW).

1.2. Perform all mechanical work detailed on these drawings to provide a complete and fully functional operating system to the satisfaction of the owner and mechanical consultant.

1.3. Where there is discrepancy between specified, or scheduled equipment, and information indicated elsewhere on the drawings, the most stringent shall apply.

1.4. Where there is apparent discrepancy of any kind, between any drawings, equipment tables, schedules, specifications, or other bid documents, notify the Consultant, for direction and clarification during the tender period.

1.5. Consideration will not be granted for misunderstanding the intent of the contractual documents, the extent of work to be performed, or the intent required to provide complete and fully operational and controlled systems upon completion installation.

1.6. Specified work described or indicated on drawings does not delegate function to any specified subcontractor or identify absolute contractual limits between mechanical or subcontractors.

1.7. Arrange for milestone inspections. Contact ARC Engineering Tel: (905) 643-8530 E-mail: contact@arcengineering.ca.

1.8. As a minimum, base building standards shall form the basis for this construction. Comply with Landlord's requirements for system shutdown and connection.

1.9. Coordinate all work with base building work. Refer to base building drawings and specifications.

1.10. Codes and bylaws shall be strictly adhered to. Obtain necessary permits, approvals and inspections from the authorities having jurisdiction.

1.11. Permits and fees required by the authorities having jurisdiction shall be obtained and paid for by this contractor. Include all applicable taxes.

1.12. Existing site conditions affecting the work of this trade shall be reviewed prior to tender submission. Contractor shall conduct ongoing reviews during demolition and construction and immediately notify the consultants of any deviations from drawing dimensions/details/schematics. Failure to do so shall not relieve contractor of full contract responsibility.

1.13. Cutting, patching and core drilling required by this trade shall be paid for by this contractor. Provide details of new opening through structural components for engineer's approval. Incur all costs related for structural approval.

1.14. Fire stop shall be ULC listed for the required separation and provided at all pipe and duct penetrations through rated assemblies.

1.15. Premium time costs shall be included for work outside of normal working hours. Comply with construction schedule prepared by Management.

1.16. Flashing and counter flashing for exterior penetrations or water-proofed floors shall be provided under this contract.

1.17. Shop drawings shall be complete with contractors reviewed stamp. Submit four (4) copies and/or one (1) electronic copy of all shop drawings. Allow one (1) week for consultant's review.

1.18. Base bid equipment and suppliers in Base Building Mechanical Specifications shall apply to this contract.

1.19. If the Contractor chooses to submit alternates:

1.19.1. Contractor to submit alternates in addition to base bid products, and show savings by utilizing alternates. Where modifications to the work of Other Trades are required as a result or part of the alternative offered, include the cost of said modifications in the alternative price offered.

1.19.2. Contractor responsible for ensuring alternate equipment meets physical requirements of existing site conditions to remain and proposed design with respect to but not limited to: size, weight, service access clearances, duct connection arrangement, & air intake clearances.

1.19.3. Contractor responsible for ensuring alternate equipment meets functions and performance specifications specified in schedule and/or shown on Drawings.

1.20. Equipment substitutions after award of contract will not be considered without written explanation and consultant's written authorization. The quality and performance characteristics of substituted product shall be equivalent to the specified product. All substitute products shall be approved by consultants. Any additional costs incurred by all trades for substituted equipment installation must be incurred by this contract.

1.21. Control wiring and devices shall be provided under this contract.

1.22. Electrical devices shall be provided for all Division 15 equipment, including load side wiring, starters, disconnect, etc. Verify and coordinate voltage, phase, and short circuit interrupting capacity with the electrical contractor prior to ordering equipment. Provide conduit and wiring materials and methods in strict accordance with Division 16 requirements.

1.23. One (1) year written warranty shall be provided for the complete mechanical installation from date of acceptance.

1.24. CAD as-built drawings shall be completed utilizing AutoCAD. Record accurately installed work on white prints transferring to AutoCAD. Submit both copies.

1.25. Operating and maintenance manuals containing approved shop drawings, air and water balancing reports, equipment data sheets, written warranty, operating instructions and maintenance procedures shall be submitted to consultant for review. Manuals shall be separated with dividers in appropriate sections. Make all corrections requested by consultant and resubmit for review.

1.26. Training on the new installation shall be provided to the operation team.

1.27. Change Notice Quotations shall be submitted complete with cost breakdown of labour and materials. Failure to provide will result in rejection. All Mechanical Change Notices shall be priced in accordance with "MECHANICAL CONTRACTORS ASSOCIATION" (MCA) labour units strictly for labour.

1.28. Contractor shall comply with Client's health and safety requirements, including but not limited to, confined space work where applicable.
2. DEMOLITION
- 2.1. Provide labour, materials, products, equipment and services required to complete the demolition work specified herein.

2.2. Dispose, off site, of all debris in accordance with the jurisdictional authorities.

2.3. Removal and storage of salvageable items as directed by this specification section and the Owner of their representative.

2.4. Mechanical demolition work associated with this building is indicated on the demolition drawings and generally consists of the following:

- Plumbing and Drainage

- Building Control Systems

2.5. Disposed materials which have not been designated for salvage from the demolition shall become the property of the Contractor. Remove all material and debris from the site as quickly as possible and dispose of legally. Burning of debris or selling of materials on the site will not be permitted.

2.6. Present to the Owner existing equipment removed but not identified for salvage on site. Acceptance of removed equipment is at the discretion of the Owner. Remove such items from site when deemed unsuitable.

2.7. Conform to requirements of municipality's Works Department regarding disposal of waste materials.

2.8. Materials prohibited from municipality waste management facilities shall be removed from site and disposed to recycling companies specializing in recyclable materials.

2.9. Contractor shall be responsible for all fees required for the disposal of demolished materials, equipment, etc.

2.10. Store materials only in areas designated by the Owner and as permitted by the local jurisdictional authorities.

2.11. Contractor shall arrange with Owner to isolate smoke detectors in the boiler room when performing grinding or soldering.

3. PLUMBING SYSTEM
- 3.1. EXISTING SANITARY DRAIN locations and invert elevations shall be verified on site prior to commencement of work.

3.2. PIPING MATERIALS:

3.2.1. Drainage and Vent Piping (60mm [2-1/2"] and smaller):

3.2.1.1. Pumped and Gravity Sanitary piping, above ground – DWV copper pipe with drainage fittings and 50/50 solder joints.

3.2.1.2. Vent piping, above ground – DWV copper pipe with drainage fittings, 50/50 solder joints.

3.2.2. Drainage and Vent Piping (75mm [3"] and larger):

3.2.2.1. Pumped and Gravity Sanitary piping, above ground – Plastic piping conforming to PVC CAN/CSA B137.3– Rigid PVC pipe for pressure applications with solvent welded joints

3.2.2.2. Sanitary piping, below ground – Plastic piping conforming to PVC CAN/CSA B137.3– Rigid PVC pipe for pressure applications with solvent welded joints

3.2.2.3. Vent piping, above ground – Plastic piping conforming to PVC CAN/CSA B181.2 with drainage fittings and solvent welded joints

3.3. Lead-free Valves: (part numbers listed):

3.3.1. To 1379 kPa [200psi] working pressure, up to 50mm [2 in.] – soldered or threaded

3.3.1.1. Ball Valves – 150S/600 W.O.G. rated brass body to ASTM C49300 (Lead Free Brass), full port, PTFE seats, double "O" ring or teflon packing, forged brass C49300 solid ball, blowout proof stem, lever handle (Soldered – Kitz 859, Threaded – Kitz 858)

3.3.1.2. Check Valves – 125S/200 W.O.G. rated, bronze body to ASTM C89530 (lead free bronze), screwed cap C49300 (lead free brass), integral seat, PTFE disk (Swing "Y" pattern, soldered – Kitz 823T, swing "Y" pattern, threaded – Kitz 822T)

3.3.2. To 1379 kPa [200psi] working pressure, 65mm [2-1/2 in.] and larger – flanged

3.3.2.1. Ball Valves – 125/200 WOG, cast iron ASTM A126 Class B body, epoxy coated to NSF 61, 316 stainless steel stem, teflon fused ball, RPTFE seats, seals, and packing, full port up to 6", locking lever or gear operated (American Valve #4000)

3.4. Ball valves are to be solid ball style only.

3.5. Provide ball or butterfly valves for all shut-off requirements. Gate valves will not be approved.

3.6. Provide all bronze ball type shut off valves on main and branch lines and isolating valves for each individual plumbing fixture served.

3.7. Plumbing fixtures shall be new, of first quality, in perfect condition and installed in best workmanlike manner. Verify plumbing fixture quantities and locations with Designer's drawings. Reuse of domestic water heater is not permitted.

3.8. Provide di-electric couplings for connection of dissimilar piping materials.

3.9. Provide ULC classified firestopping products by 3M or HiHi which have been tested in accordance with CAN4-S115, install firestopping systems in accordance with the appropriate ULC system number for the products and type of penetration.

3.10. Ensure that fire ratings of floors and walls are maintained, fill spaces between openings and pipes passing through fire separations.

4. EQUIPMENT

4.1. SUBMERSIBLE PUMP

4.1.1. Pump capacity shall be as shown in the Pump Schedule.

4.1.2. Submersible pump system shall be base bid Sulzer. For consideration of alternatives cost savings must be presented at the time of closing. Contractors proposing alternative manufacturers are responsible for all costs for all trades and all costs for engineering design time as required associated with such a substitution. The dimensions, configurations, performance of equipment from alternative manufacturers must be as shown on the plans.

4.1.3. The impeller shall be constructed of corrosion resistant chilled gray iron and shall be semi- open, non-clogging, dynamically balanced multi-vane design. The impeller shall have a slip fit onto a shaft and drive key and shall be fastened by a stainless steel bolt.

4.1.4. The pump volute shall be constructed of gray cast iron with smooth internal surfaces free of rough spots or flashing. The volute shall have a horizontal discharge.

4.1.5. O-Rings and Fasteners: All mating surfaces of the pump and motor shall be machined and fitted with BUNA-N O-Rings where water sealing is required. Sealing shall be accomplished by the proper fitting of the parts not by compression or special torque requirements. All fasteners shall be 316 stainless steel.

4.1.6. Shaft and Bearings: The common pump and motor shaft shall be 420 stainless steel supported on the impeller end by a heavy duty single row ball bearing on 1.3 – 2.4 hp pumps, or a heavy duty double row ball bearing on 3.4 – 4 hp pumps. The opposite end of the shaft is supported on a sealed single row ball bearing (all motors).

4.1.7. Shaft Seals: Each pump shall be equipped with two (2) seals. The lower seal (pump side) shall be of the mechanical type with silicon carbide faces. The upper seal shall be a lip type seal. The seals shall be separated by an oil chamber providing cooling and lubrication of the seals, and a barrier between the pumped fluid, and the dry motor chamber.

4.1.8. Seal Failure Warning System: A probe shall be provided in the oil chamber to detect the presence of water in the oil. A solid-state device mounted in the pump control panel or in a separate enclosure shall send a low voltage, low amperage signal to the probe. If water enters the oil chamber in sufficient quantity to warrant concern, the probe shall activate a warning light in the control panel.

4.1.9. The motor shall be air-filled and shall have Class "F" insulation. The rotor and stator shall be enclosed in a cast iron outer housing. Bi-metallic thermal switches shall be imbedded in each phase of the winding to sense high temperature. The rating of the switch shall be 130°C +/- 5°C. The control circuit shall be connected through the bi-metallic switches so the motor is shut down should a high temperature condition exist. The switches shall be self-resetting when the motor cools. Power cable shall be UL and CSA approved.

4.1.10. All models shall be UL and CSA approved. All models shall be FM approved for Class I Division I Group C and D.

4.2. PUMP CONTROLLER

4.2.1. The microprocessor-based pump controller PC242 must be an electronic device to control a pumping station with up to 2 pumps. The start and stop settings of each pump must be freely adjustable from the menu, as the set-point relative to the high and low level alarms.

4.2.2. The controller will accept a connection from a level sensor, but it must be standardized in order to have it interface able to different types of level/pressure sensors using either standard 0/4–20mA inputs or float switch inputs. This operation will not require any external power supply, because the controller itself will supply the voltage of 24Vdc for the sensor.

4.2.3. The microprocessor-based pump controller PC242 must be an electronic device to control a pumping station with up to 2 pumps. The start and stop settings of each pump must be freely adjustable from the menu, as the set-point relative to the high and low level alarms.

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4.2.5. The controller must be available for integration into a control panel with NEMA protection. The terminals must be of plug-in type with screw connections, in order to easily terminate the final wiring.

4.2.6. All the information and parameters must be shown or modified directly via the front-panel graphical display keypad. The alarms and the pump status are shown on the front-panel as a dynamic real time display. The controller must be able to start alternating the external devices connected to the controller; the user is allowed to decide the type of alternation required. The alternation types must

- include runtime alternation (switches after a programmable number of running hours of the lead pump), asymmetrical alternation (switches after a programmable number of stops of the lead pump) and normal alternation (switches upon successive lead pump stops). This is important to maintain homogeneous starting number and the working hours of each pump. The maximum measurable level must be shown directly in feet. The level has to be measured with a 14 ½ bit resolution (equals to about 20.000 point); The microprocessor technology and high level resolution described previously must be able to calculate the inflow and the outflow of the pump pit along with the effective flow of each pump. The controller must be able to program the set-point about the low flow alarm for each pump. The controller must be able to indicate a low supply voltage, power failure, and microprocessor check sum error.

4.2.7. The controller must have analog inputs, 14 programmable digital inputs, and 6 digital outputs (potential free contact) described as follows:

4.2.7.1. DIGITAL INPUTS

4.2.7.1.1. Start Float/Run Confirmation – to confirm the real start of the pumps connected to each output; if the inputs are not utilized to confirm the start, the input must be used to indicate generic alarms and the forced disable of the pumps.

4.2.7.1.2. High Level Float – to activate the high level alarms received from the high level float in order to start eventual emergency sequences

4.2.7.1.3. Overflow Sensor – to indicate the exact overflow instant, in order to activate the overflow alarm input in order to increase the overflow number and duration and to start the eventual overflow flow calculation (and the total volume overflowed).

4.2.7.1.4. Motor protector (P1 and P2) – to indicate an overload condition

4.2.7.1.5. Manual start (P1 and P2) – to indicate that the H–O–A switch has been positioned to the hand mode; the switch will send an input per pump and to the mixer.

4.2.7.1.6. Run Indicator (P1 and P2) – to indicate a running condition on each pump.

4.2.7.1.7. Energy or rain meter (1 and 2) – an input originating from a pulsed channel device to relay precipitation or energy information.

4.2.7.1.8. Low Level Float – to activate the low level alarms from the float in order to initiate the associated alarm sequence.

4.2.7.1.9. Man on site – to indicate that panel has been switched to man on site status

4.2.7.2. DIGITAL OUTPUTS

4.2.7.2.8. Pump Control (P1 and P2) – with internal relay to start and stop the pumps of the electro-mechanical devices controlled by the equipment.

4.2.7.2.9. Common Alarm Output – with internal relay to be used for indicating alarms to the device or in the plant based on settings

4.2.7.2.10. Mixer Control – to be used for start/stop of mixers depending on settings.

4.2.7.2.11. Motor Protector Reset – to be used for resetting of electronic motor protector.

4.2.7.2.12. Alarm indication – programmable output to be used to reset motor protector/modern supply.

4.2.7.3. DIGITAL OUTPUTS

4.2.7.3.8. Sensor – input from the pressure transducer type sensor. The range is programmable from 0–20mA or 4–20mA to indicate pit level. The readout must be selectable either metric or US units.

4.2.7.3.9. Motor current – input from the motor to monitor current. The range is programmable from 0–20mA or 4–20mA. The readout will be in amperes.

4.2.7.3.10. Pressure – input from a 0–20mA or 4–20mA sensor to indicate line pressure. The readout must be selectable either metric or US units.

4.2.7.3.11. Temperature – input from a PT100 or PTC type RTD sensor. The inputs are from each pump. The readout must be selectable either metric or US units.

4.2.7.3.12. The controller must also include seal sensor inputs for sensing moisture in the pump. The input must be capable of receiving an input from a di-electrode probe measuring resistivity in the oil chamber of the pump. The input can be programmed to just indicate an alarm or to shut down the pump in case of failure.

4.2.7.3.13. The controller must be able to log in certain values to establish trending. It must be able to interface to a programming tool such as Aquaprog software or Aquaweb to display and print the trend curves. The interface will be via the service port. An optional modem can be used for dial-up or mobile GSM telephone line. In that case dynamic graphical software can be utilized to view in real time the plant status (measured level, pumps running or in failure, calculated flows, alarms, etc.). In both cases, the communication standard for data transmission is the COM1L/modbus protocol.

4.2.7.3.14. The standard supply voltage must be 24VDC or 12VDC by mean external battery. The temperature operative range must be 32° F up to +150° F.

4.3. ULTRASONIC LEVEL MEASURING TRANSDUCERS

4.3.1. Provide a Siemens model XPS–15 ultrasonic level measuring transducer, capable with the Sulzer PC 242 controller. Housing shall be constructed of PVDF. The transducer shall be complete with a submergence shield.

4.4. DUPLEX CONTROL PANEL AND ALARM

4.4.1. Duplex Indoor NEMA 4 enclosure with main disconnect, IEC rated motor contractors, overload protection, float control logic, pump terminal blocks, float switch terminal blocks, dry contact terminal blocks, ground lugs, pump run lights, high level light and alarm bell, dry contacts for remove alarm, hand-off-auto switches, mechanical alternator, alarm test and acknowledge switches, audible high water alarm buzzer, steel enclosures, pump overload fault lockout, transfer alarm – manual resets, four (4) float circuitry, manual reset alarm and four (4) floats to control the following functions: Stop Pumps; Start Lead Pump; Start Lag Pump; High Water Alarm;

4.4.2. Control panel shall require only a single power supply by the Electrical Division. All conduit shall enter from the bottom only.

4.4.3. The switching mechanism connected to one of the floats shall be a mechanical alternator. Action of the alternator shall be to alternate the lead pump in sequential starts. The switching mechanism connected to the other float shall start both pumps should the water level rise above the operating level of the alternator float.

4.4.4. Provide a high water alarm switch complete with transformer, audible buzzer, and auxiliary contacts for wiring to the building BAS system.


4.4.5. Control panel shall have following operating logic: When H–O–A switch is put at Auto position, the lead pump shall start at 'Start pump' level. Lag pump shall start if the liquid level reaches 'Start Lag Pump' level. Both pumps shall stop at 'Stop Pump' level. The pumps shall alternate every cycle. If the liquid level rises to 'High Water Alarm' level, the buzzer should be activated together with dry contact for BAS monitoring. Each level shall have individual float for automatic pump operation.

4.5. INSTALLATION

4.5.1. Provide ball valves, check valve and union or flange as applicable on pump discharge pipes and union or flange as applicable on vent pipe for sanitary pits.


4.5.2. Check valves downstream of pumps shall be swing type with external lever and adjustable weight.

4.5.3. If the main control panel is shipped without a splitter to serve the alarm panel, supply and install an additional junction box before the control panel to serve all related panels.



Environment and Climate Change Canada
Real Property Management Division
Technical Services

Environnement et Changement Climatique Canada
Division Gestion des Biens Immobilier
Services Techniques




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revision		date
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A Detail No.
No. du détail
B drawing no. – where detail required
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project title
titre du projet
BURLINGTON ONTARIO
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE RD
BURLINGTON, ONTARIO
BOILER ROOM SANITARY PIT
REFURBISHMENT

drawing title
titre du dessin

SPECIFICATIONS

drawn by
dessiné par
P.G., L.M.

designed by
conc par
P.G., H.R.

approved by
approuvé par
-

tender
soumission
/ /
project manager
administrateur
de projets
ROD KHALED

project date
date du projet
16 / FEB / 2018

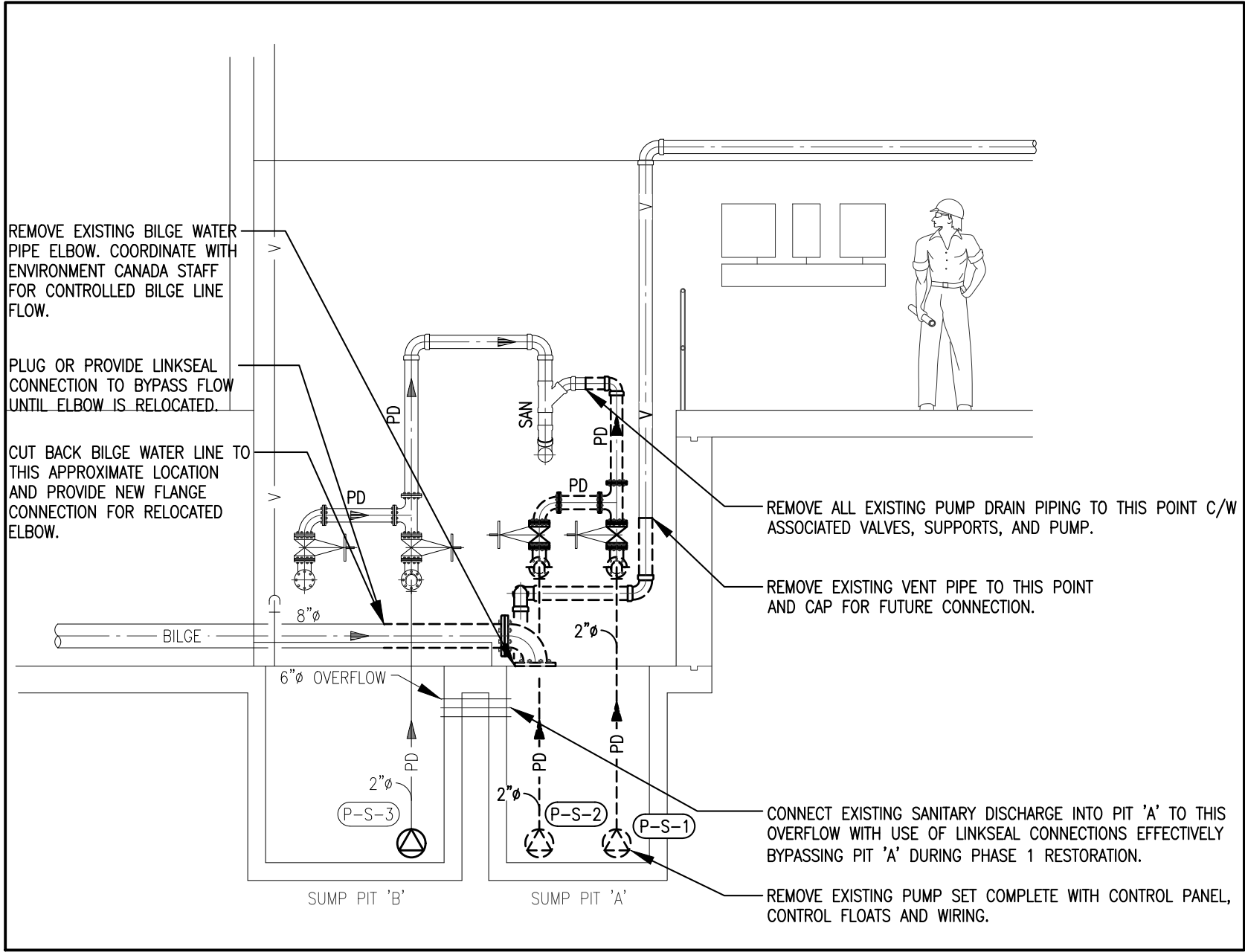
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no. du projet
CCIW-079

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dessiné no.
17-167-020 M-102

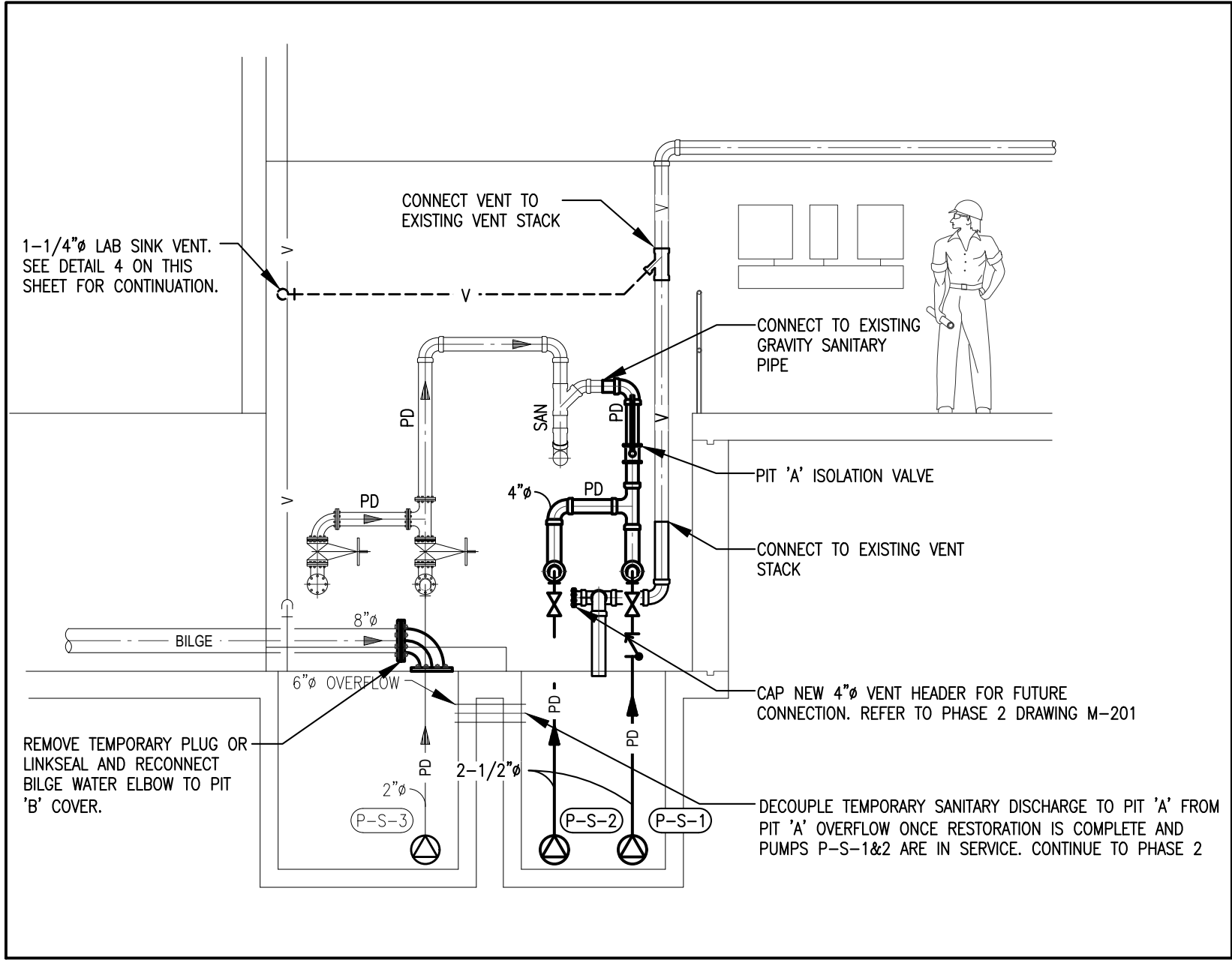
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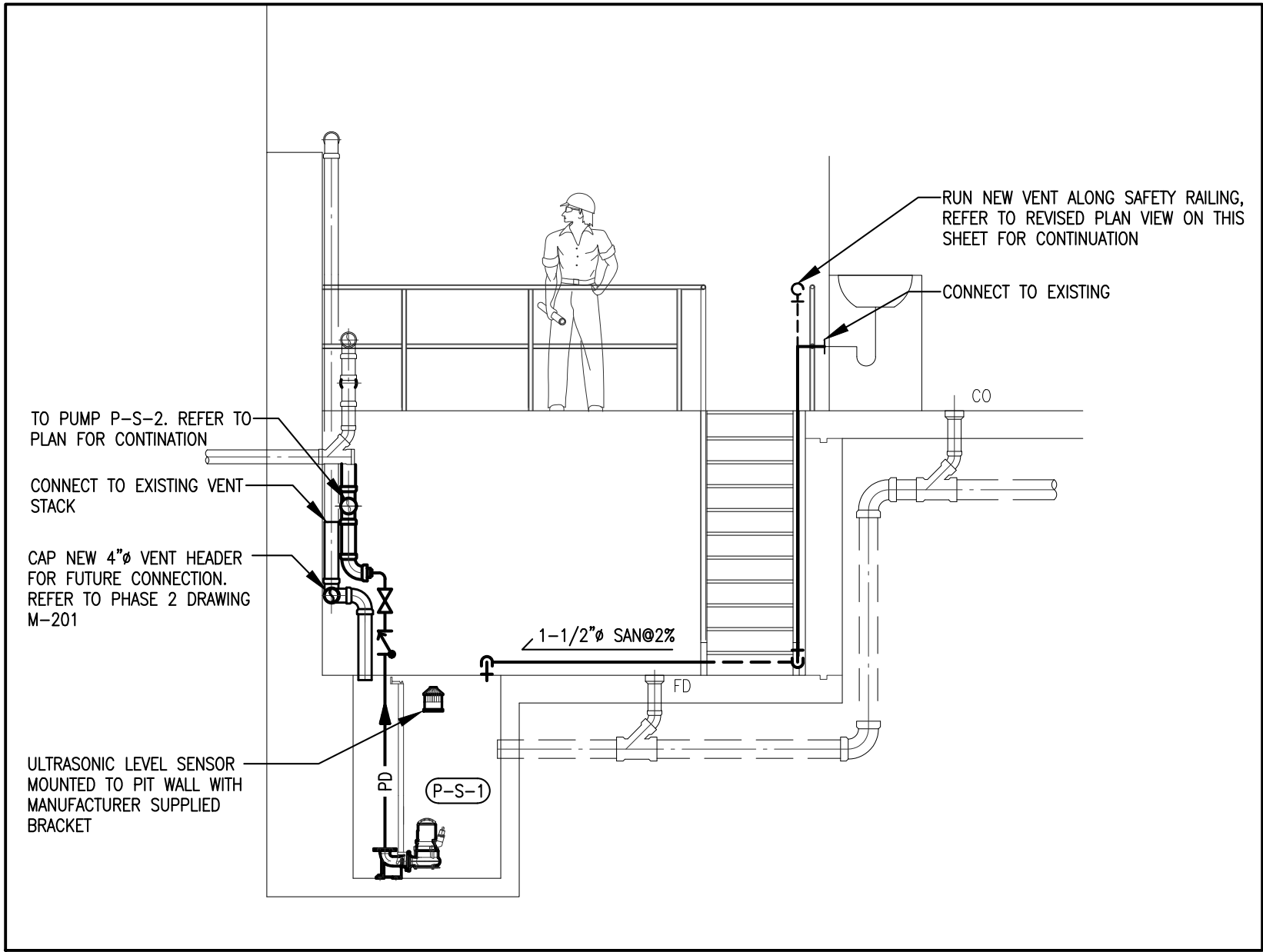
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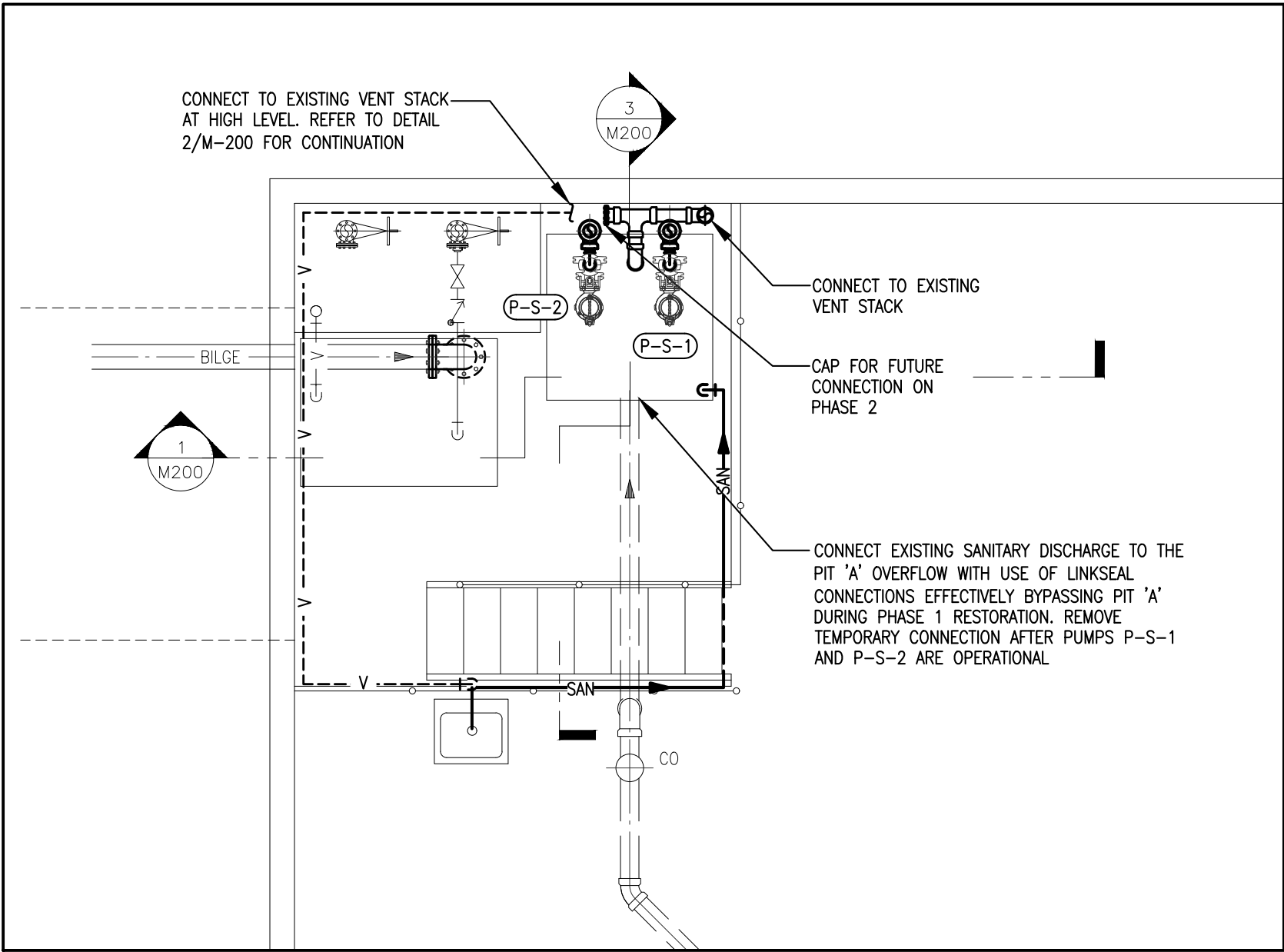
1 DEMO PHASE 1 - PUMPED SANITARY PIPING SECTION
M200 SCALE: 1/4" = 1'-0"



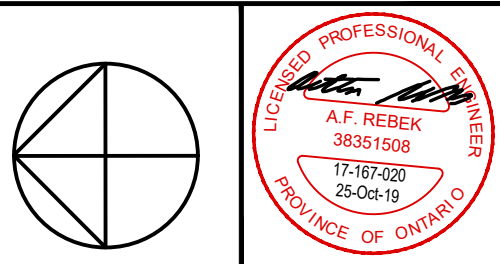
2 NEW PHASE 1 - PUMPED SANITARY PIPING SECTION
M200 SCALE: 1/4" = 1'-0"



3 NEW SECTION THRU SUMP PIT 'A'
M200 SCALE: 1/4" = 1'-0"



4 NEW PLAN VIEW - PHASE 1
M200 SCALE: 1/4" = 1'-0"



GENERAL NOTES:
CONTRACTOR TO PROVIDE DETAILED PHASING PLAN
FOR CONSULTANT / CLIENT REVIEW PRIOR TO
START OF WORK.
CONTRACTOR TO FOLLOW CANADIAN CENTRE FOR
INLAND WATERS LOCKOUT PROCEDURES AND
COORDINATE SHUTDOWNS WITH OPERATIONS
PERSONNEL.

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revision		date

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BURLINGTON **ONTARIO**
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE RD
BURLINGTON, ONTARIO
BOILER ROOM SANITARY PIT
REFURBISHMENT

drawing title
titre du dessin
PLUMBING PLAN
PHASE 1 - SUMP PIT 'A'
RESTORATION

drawn by
dessiné par P.G., L.M.

designed by
conçu par P.G., H.R.

approved by
approuvé par

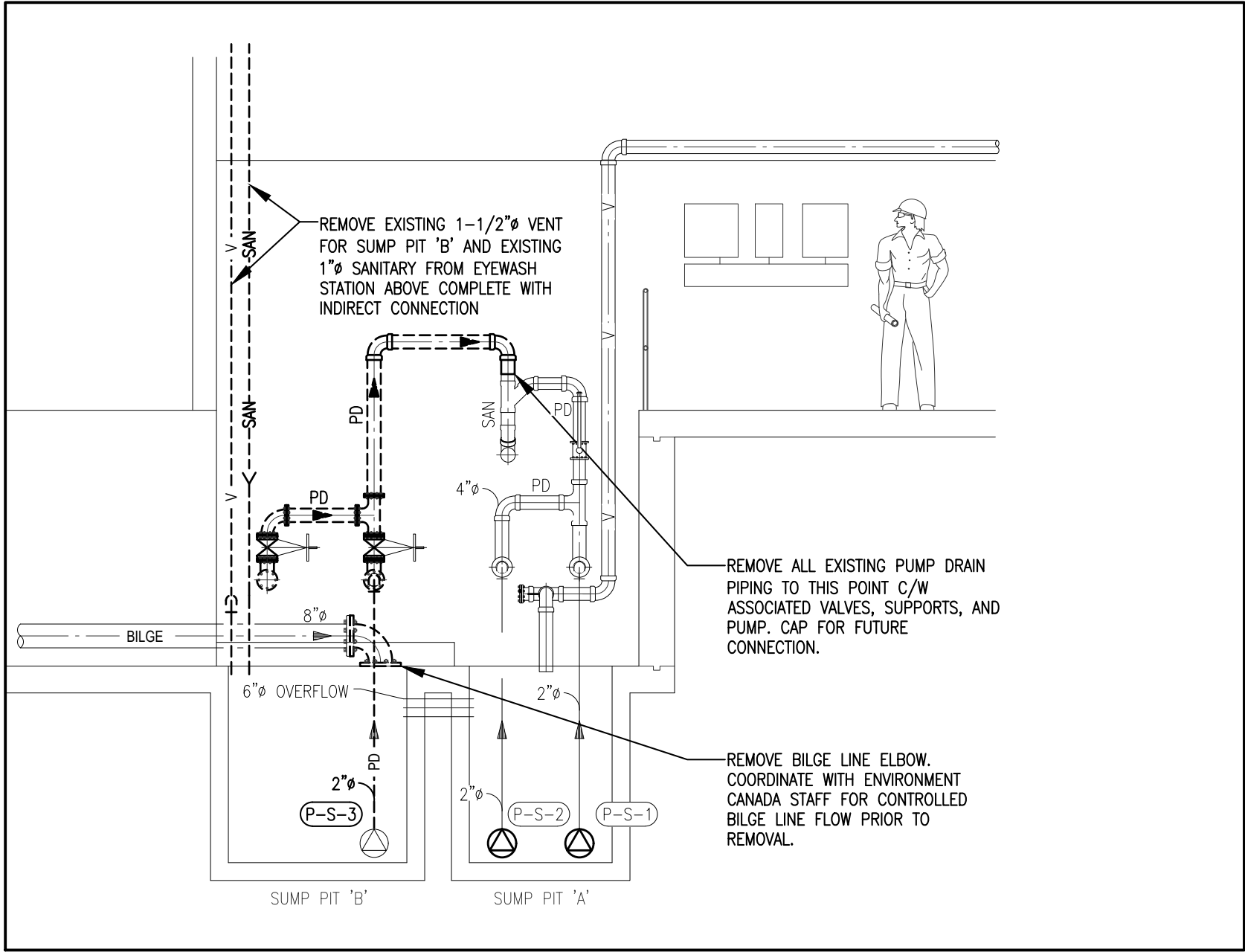
tender
soumission / / project manager
administrateur de projets
ROD KHALED

project date
date du projet 16 / FEB / 2018

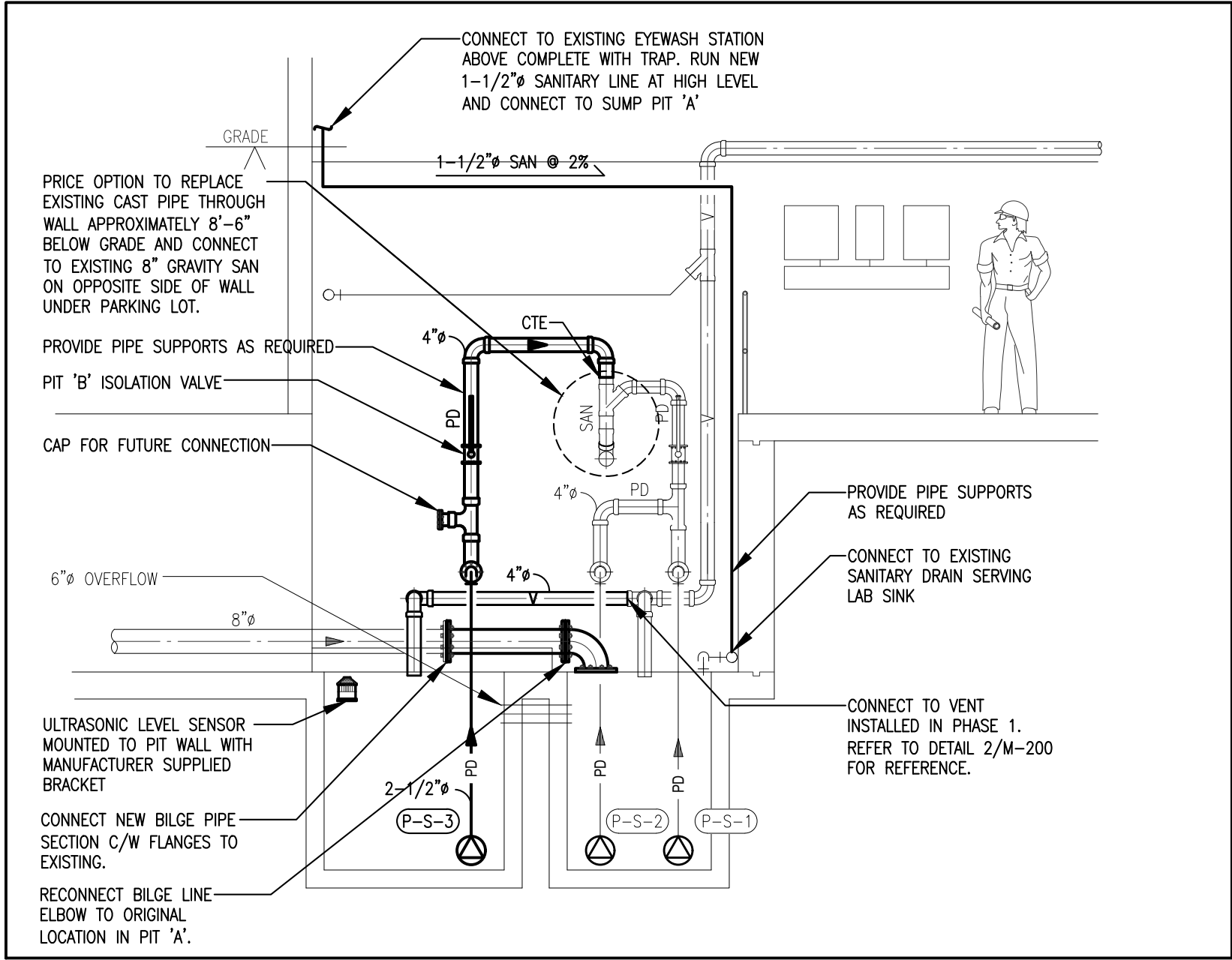
project no.
no. du projet CCIW-079

drawing no.
dessiné no. 17-167-020 **M-200**

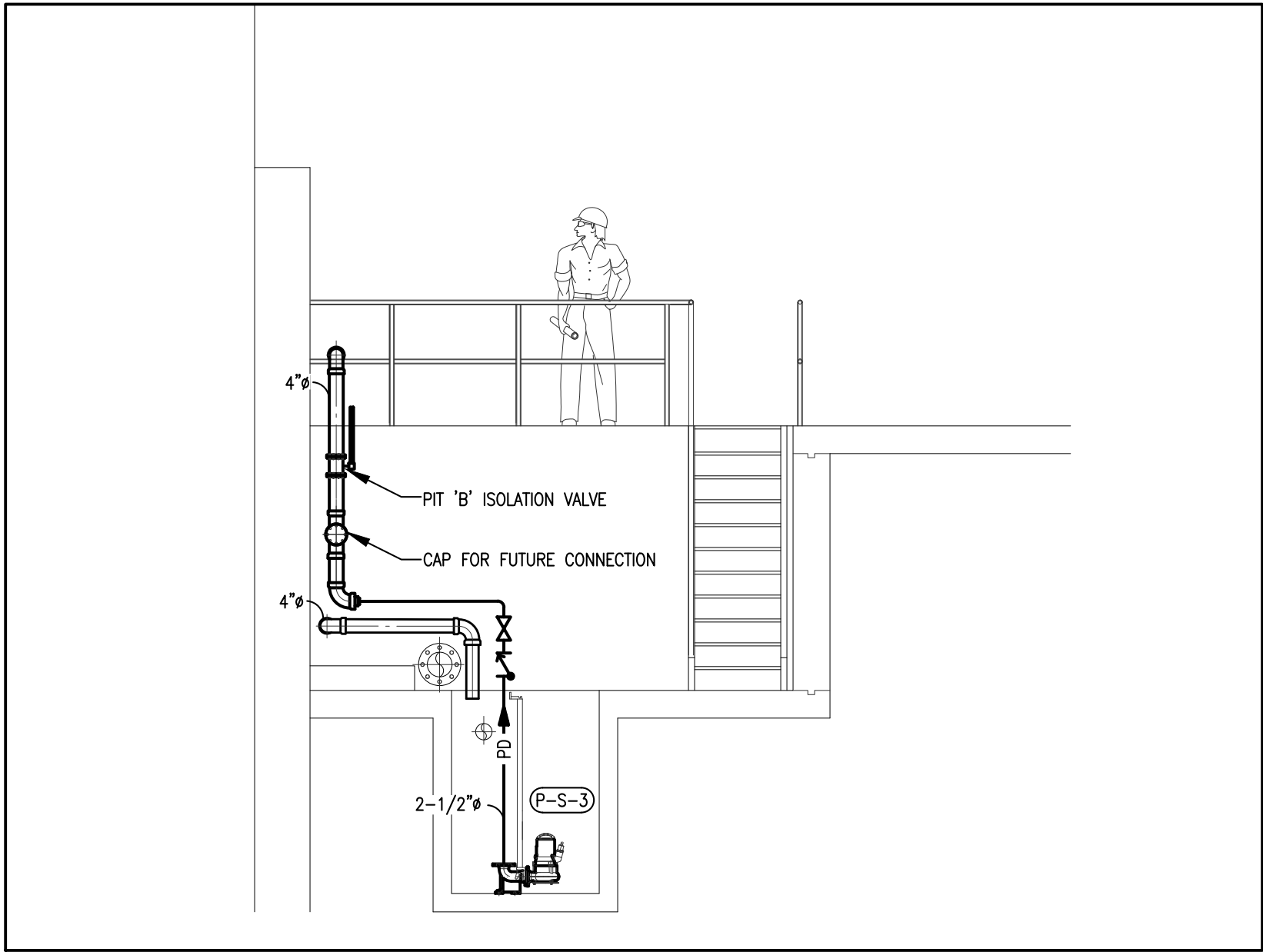
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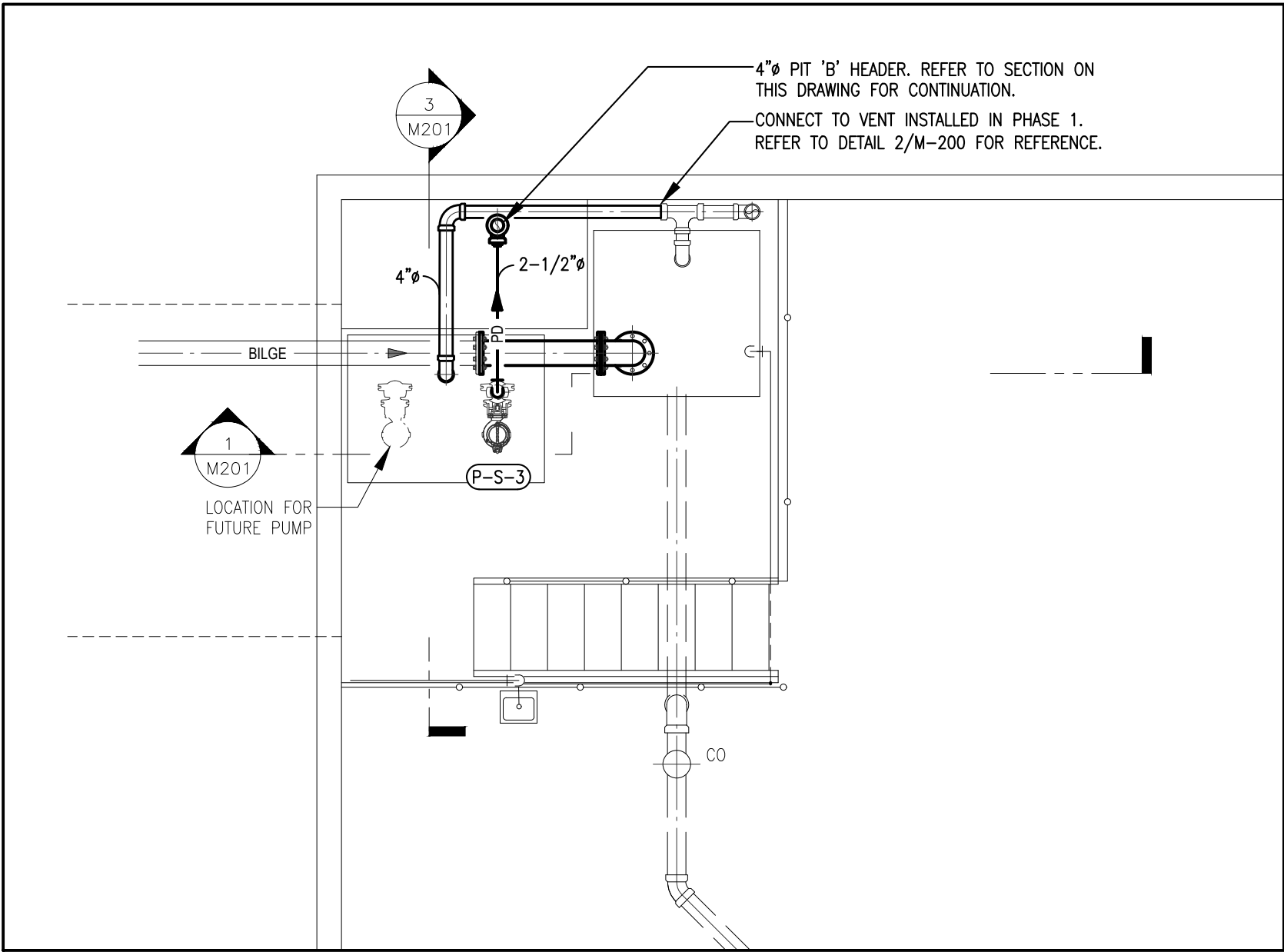
1 DEMO PHASE 2 - PUMPED SANITARY PIPING SECTION
M201 SCALE: 1/4" = 1'-0"



2 NEW PHASE 2 - PUMPED SANITARY PIPING SECTION
M201 SCALE: 1/4" = 1'-0"



3 NEW SECTION THRU SUMP PIT 'A'
M201 SCALE: 1/4" = 1'-0"



4 NEW PLAN VIEW - PHASE 2
M201 SCALE: 1/4" = 1'-0"

GENERAL NOTES:
CONTRACTOR TO FOLLOW CANADIAN CENTRE FOR
INLAND WATERS LOCKOUT PROCEDURES AND
COORDINATE SHUTDOWNS WITH OPERATIONS
PERSONNEL.

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867 LAKESHORE RD
BURLINGTON, ONTARIO
**BOILER ROOM SANITARY PIT
REFURBISHMENT**

drawing title
titre du dessin
**PLUMBING PLAN
PHASE 2 - SUMP PIT 'B'
RESTORATION**

drawn by
dessiné par P.G., L.M.

designed by
conçu par P.G., H.R.

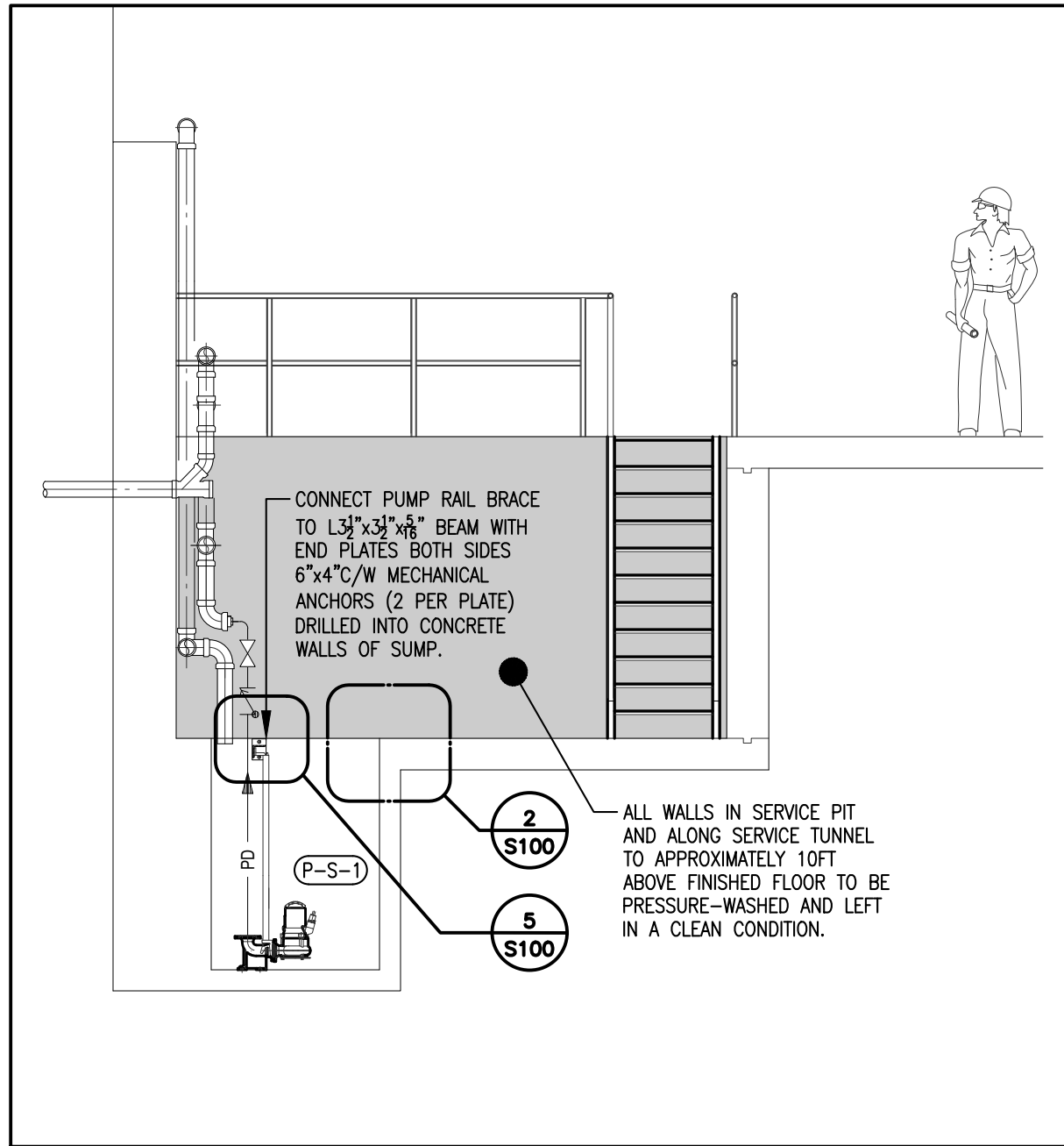
approved by
approuvé par

tender
soumission / / project manager
administrateur de projets
ROD KHALED

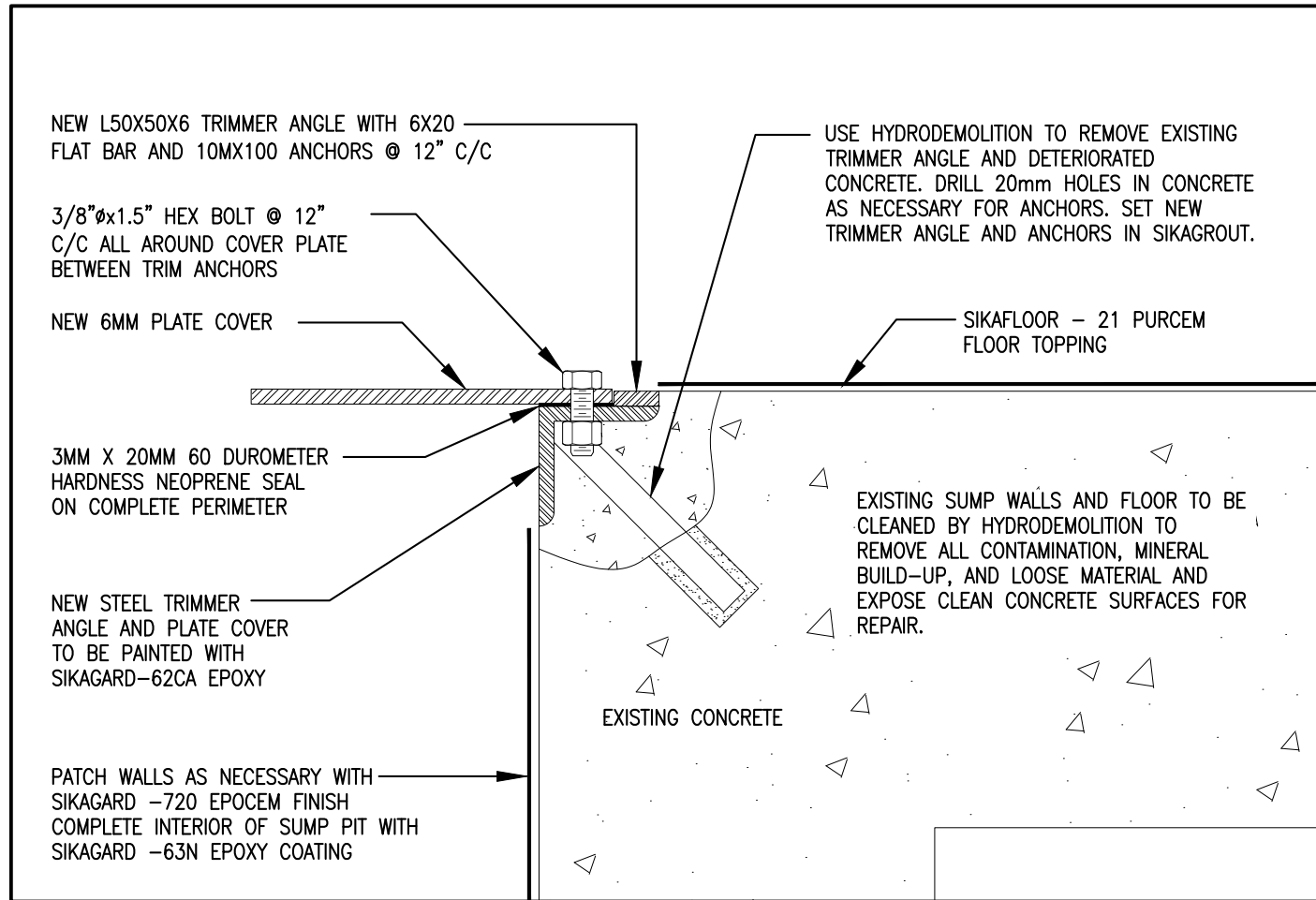
project date
date du projet 16 / FEB / 2018

project no.
no. du projet CCIW-079

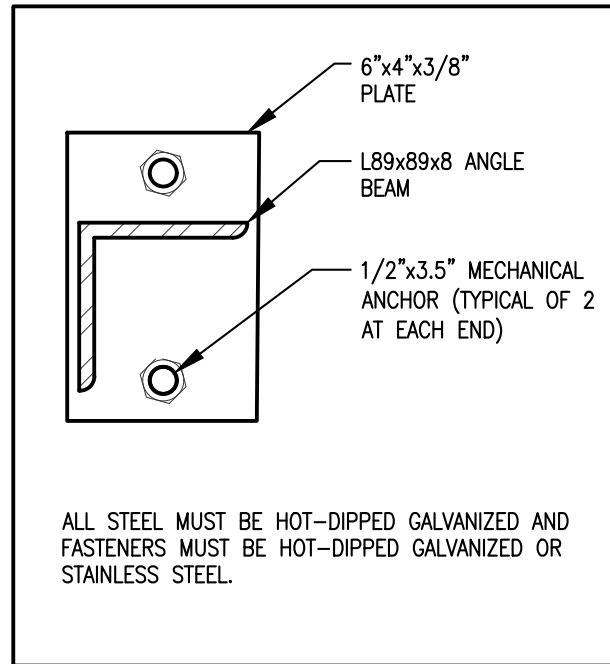
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dessiné no. 17-167-020 **M-201**



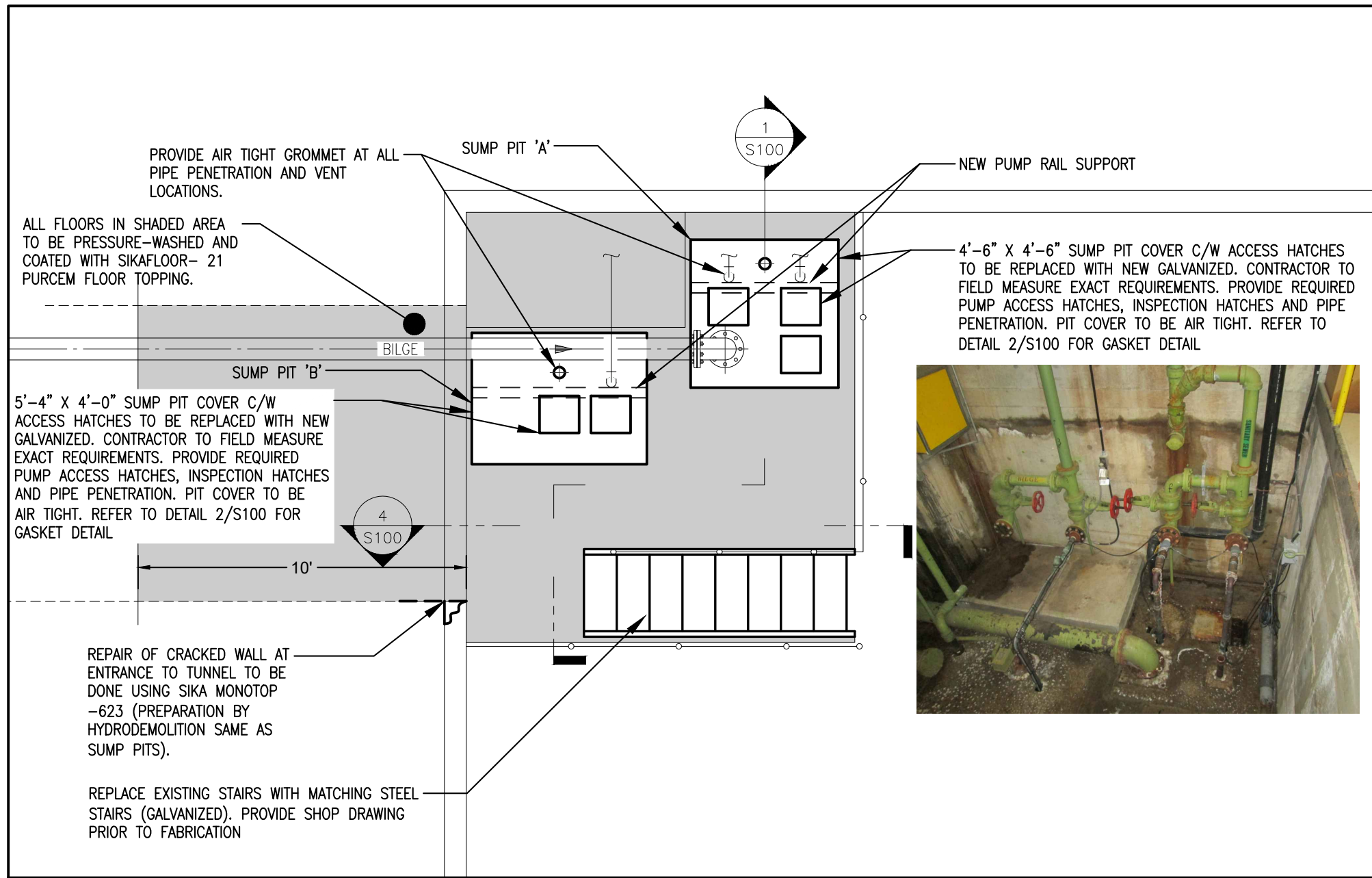
1 PUMPED SANITARY PIPING SECTION
S100 SCALE: 1/4" = 1'-0"



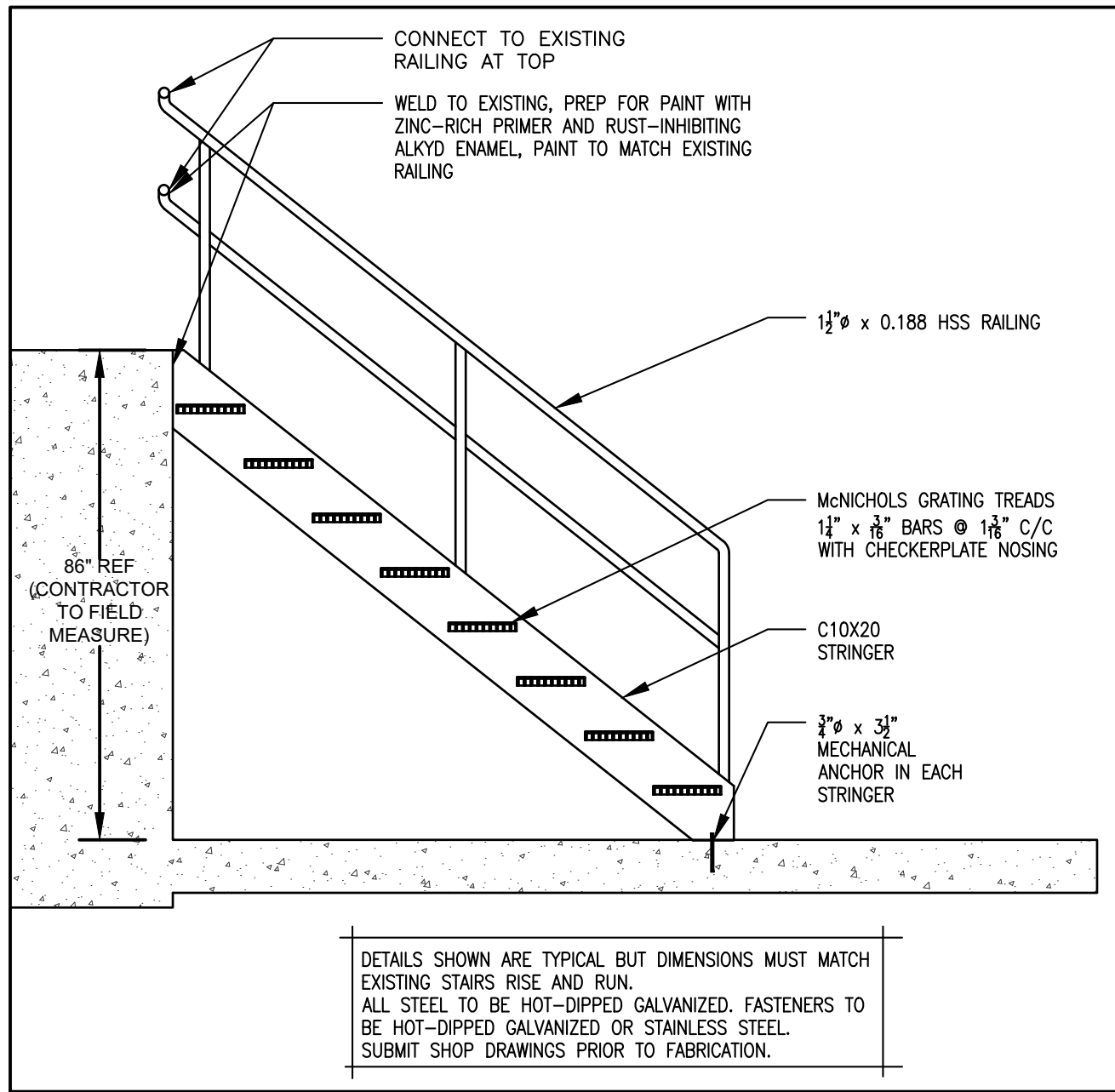
2 SUMP PIT 'A' & 'B' TRIM AND FINISHING DETAIL
S100 SCALE: 1" = 1'-0"



5 RAIL SUPPORT
S100 SCALE: 3" = 1'-0"



3 PUMPED SANITARY PIPING SECTION
S100 SCALE: 1/4" = 1'-0"



4 STAIR DETAIL
S100 SCALE: 1/2" = 1'-0"

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drawing title
titre du dessin

STRUCTURAL PLAN

drawn by
dessiné par P.G., L.M.

designed by
conc par P.G., H.R.

approved by
approuvé par

tender
soumission / / project manager
administrateur de projets
ROD KHALED

project date
date du projet 16 / FEB / 2018

project no.
no. du projet CCIW-079

drawing no.
dessiné no. 17-167-020 S-100

DEMOLITION NOTES
1. THE CONTRACTOR SHALL ARRANGE TO TOUR THE FACILITY WITH MAINTENANCE STAFF PRIOR TO SUBMITTING A BID ON THE PROJECT.
2. DURING THE CONTRACTORS SITE TOUR THEY SHALL BECOME FAMILIAR WITH THE EXISTING BUILDING CONSTRUCTION AND THE LOCATIONS OF THE EXISTING COMMUNICATION CLOSETS, LOCAL POWER PANELS, FIRE ALARM AND OTHER SYSTEMS BEING WORKED ON AS PART OF THIS CONTRACT.
3. THE CONTRACTOR AND MAINTENANCE STAFF SHALL OPEN EXISTING PANELS AND SYSTEMS TO BECOME FAMILIAR WITH THE EXISTING SYSTEMS AND TO DETERMINE THE FULL SCOPE OF WORK REQUIRED TO CARRY OUT THE PROJECT. THE CONTRACTOR SHALL PROVIDE NEW BREAKERS, DATA/VOICE COMPONENTS, FIRE ALARM DEVICES, LIGHTING SYSTEM COMPONENTS, ETC TO FACILITATE A COMPLETE AND FUNCTIONING SYSTEM AT PROJECT COMPLETION.
4. THE CONTRACTOR SHALL MEASURE OFF ANY DISTANCES NOT INDICATED FOR HOME RUNNING NEW SERVICES (POWER, FIRE ALARM, SECURITY ETC) AND INCLUDE MATERIALS AND LABOUR REQUIRED IN THEIR BID PRICE.
5. COORDINATE ALL DEMOLITION WITH GENERAL CONTRACTOR. EVERY EFFORT HAS BEEN MADE TO OUTLINE THE DEMOLITION SCOPE OF WORK, HOWEVER THE DEMOLITION DRAWINGS REPRESENT ONLY THE GENERAL LOCATION AND NUMBER OF FITTINGS, FIXTURES, DEVICES, EQUIPMENT ETC. TO ASSIST IN EVALUATING THE DEMOLITION SCOPE OF WORK. DRAWINGS ARE BASED ON PREVIOUS AS-BUILTS OR FIELD EVALUATIONS.
6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VISIT THE SITE DURING THE TENDER PERIOD TO DETERMINE THE EXACT SCOPE OF DEMOLITION WORK, QUANTITIES AND THOROUGHLY UNDERSTAND THE SITE CONDITIONS FOR CARRYING OUT THE SAME. REQUESTS FOR EXTRAS DUE TO FAILURE TO PROPERLY EVALUATE THE CONDITIONS THAT AFFECT DEMOLITION SCOPE OF WORK WILL NOT BE CONSIDERED.
7. CONTRACTOR IS RESPONSIBLE TO ALLOW FOR ASBESTOS REMOVALS WORK, PATCH & REPAIR, AND RESTORATION OF FIRE-SEPARATIONS AS REQUIRED FOR INSTALLATION OF MECHANICAL & ELECTRICAL OUTLETS IN WALLS AND EXTERIOR WALLS.
8. UNLESS EXISTING CIRCUITS NUMBERS ARE INDICATED ON THE DEMOLITION PLANS, ALL CIRCUITS SHOWN ON THE NEW LAYOUTS ARE NEW CIRCUITS. EXCEPTIONS TO THIS INCLUDE CIRCUITS SHOWN ON THE DEMOLITION PLAN AND AGAIN ON THE NEW LAYOUT. THE CIRCUIT SHOWN BOTH TIMES IS EXISTING AND LOCALIZED IN THE AREA OF WORK. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING FOR ALL NEW CIRCUITS: NEW CONDUIT, WIRING, BREAKERS, SUPPORTS, BACKBOXES, FACEPLATES, RECEPTACLES, ETC FOR A COMPLETE SYSTEM.
9. EXISTING CIRCUITS BEING REUSED WILL BE INDICATED BY A CIRCUIT NUMBER (IE 2A15) OR A GENERIC NUMBER (IE CCT7). CCT 7 INDICATES THAT THE LIGHTING OR DEVICE IS TO BE CONNECTED TO 1 OF 7 EXISTING CIRCUITS IN THE AREA THAT HAS BECOME FREE AFTER DEMOLITION. THE CONTRACTOR SHALL BALANCE LOADS AND SHUFFLE BREAKERS AFTER THE PANEL LOADS HAVE BEEN CONNECTED TO EQUALLY LOAD EACH PHASE.
10. WHERE EXISTING LIGHTING CIRCUITS HAVE BEEN REUSED, CONTRACTOR SHALL VERIFY EXISTING VOLTAGE OF CIRCUITS PRIOR TO SUBMITTING ANY SHOP DRAWINGS OR ORDERING OF FIXTURES, SENSORS, CONTROLS, ETC. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES IN FIXTURE VOLTAGE AND EXISTING CIRCUIT VOLTAGE.

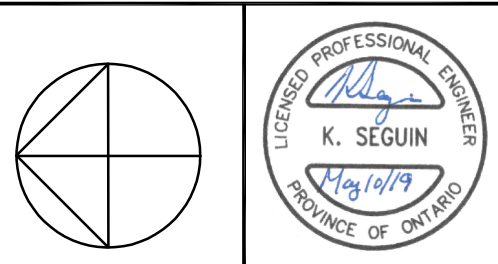
LEGEND	
THIS LEGEND REPRESENTS THE SYMBOLS COMMONLY USED. NOT ALL SYMBOLS MAY APPEAR ON THE DRAWINGS. SHOULD A SYMBOL BE FOUND ON THE DRAWING AND NOT APPEARING ON THE LEGEND, THE CONTRACTOR SHALL SUBMIT A QUESTION TO HAVE THE SYMBOL CLARIFIED IN AN ADDENDUM PRIOR TO SUBMITTING A BID.	
ABBREVIATIONS	
20A	DENOTES 5-20R DEVICE
AC	ABOVE COUNTER
ADO	AUTOMATIC DOOR OPENER
AE	APPROVED EQUAL
AFF	ABOVE FINISHED FLOOR
AN	FIRE ALARM ANNUNCIATOR
BED	RECEPTACLE DEDICATED FOR PATIENT BED
BH	BASEBOARD HEATER
CB	CIRCUIT BREAKER
ER	EXISTING TO BE RELOCATED
EX	EXISTING TO REMAIN
FH	FORCED-AIR HEATER
GFI	EQUIPMENT SO NOTED TO BE SUPPLIED WITH A GROUND FAULT CIRCUIT INTERRUPTER
HSKP	HOUSEKEEPING
JB	JUNCTION BOX
PD	POWER DOOR
R	RELAY WITH AUXILIARY CONTACTS
REL	RELOCATED ITEM IN NEW LOCATION
REM	EXISTING TO BE REMOVED IN IT'S ENTIRETY
T	TRANSFORMER
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
W	WALL MOUNT - VERIFY HEIGHT
WP	EQUIPMENT SO NOTED TO BE SUPPLIED WITH THE MANUFACTURER'S WEATHER-PROOFING OPTION(S)
③	KEYNOTE - SEE KEYNOTE No. 3 ON DRAWINGS
③	KEYNOTE - SEE KEYNOTE No. 3 ON DRAWINGS

WIRING DEVICES	
	SPECIAL RECEPTACLE. REFER TO NOTES OR DESCRIPTION FOR TYPE
	125 VOLT, 2-POLE, 3-WIRE, STRAIGHT BLADE RECEPTACLE. 15 AMP SIMPLEX UNO.
	125 VOLT, 2-POLE, 3-WIRE, STRAIGHT BLADE RECEPTACLE. 15 AMP DUPLEX UNO.
	125 VOLT, 2-POLE, 3-WIRE, STRAIGHT BLADE RECEPTACLE. 15 AMP DUPLEX CONTROLLED BY OCCUPANCY SENSOR (AUTO ON/OFF)
	2x 125 VOLT, 2-POLE, 3-WIRE, STRAIGHT BLADE RECEPTACLE. 15 AMP DUPLEX UNO.
	125/250 VOLT, 3-POLE, 4-WIRE, STRAIGHT BLADE RECEPTACLE, AMPERAGE AS NOTED
	125 VOLT, 2-POLE, 3-WIRE, STRAIGHT BLADE RECEPTACLE. 15 AMP DUPLEX UNO ON EMERGENCY OR UPS POWER
	125 VOLT, 2-POLE, 3-WIRE, STRAIGHT BLADE HALF-SWITCHED RECEPTACLE. 15 AMP DUPLEX CONTROLLED VIA LOCAL SWITCH
	VERTICAL LINE THROUGH ANY RECEPTACLE SYMBOL INDICATES A NON-STANDARD MOUNTING HEIGHT THAT MUST BE FIELD DETERMINED.
	125 VOLT, 2-POLE, 3-WIRE, STRAIGHT BLADE RECEPTACLE. 15 AMP DUPLEX FOR SYSTEMS FURNITURE
	125 VOLT, 2-POLE, 3-WIRE, STRAIGHT BLADE RECEPTACLE. 15 AMP DUPLEX FOR SYSTEMS FURNITURE CONTROLLED BY OCCUPANCY SENSOR (AUTO ON/OFF)
	125 VOLT, 2-POLE, 3-WIRE, STRAIGHT BLADE RECEPTACLE. 15 AMP DUPLEX FOR SYSTEMS FURNITURE ON EMERGENCY OR UPS POWER
	RECEPTACLES MOUNTED IN 2 CHANNEL RACEWAY
	TYPICAL RECEPTACLE NOTES. CIRCUITING: B-PANELBOARD I.D., 1-BRANCH CIRCUIT. SUBSCRIPT: XX-CURRENT RATING (IF NOTED).

POWER LAYOUT	
	DISCONNECT SWITCH (DS)
	COMBINATION STARTER (CS)
	MAGNETIC STARTER (MG)
	MANUAL STARTER (MS)
	POWER PANEL - EXISTING
	POWER PANEL - NEW
	POWER TRANSFORMER
	ELECTRIC HEATING EQUIPMENT
	EQUIPMENT SUPPLIED BY OTHERS REQUIRING ELECTRICAL POWER CONNECTION REFER TO EQUIPMENT SCHEDULE
	EQUIPMENT SUPPLIED BY OWNER REQUIRING ELECTRICAL POWER CONNECTION REFER TO OWNER EQUIPMENT SCHEDULE
	MECHANICAL EQUIPMENT/MOTOR REQUIRING ELECTRICAL POWER
	ALL MODES OF OPERATION OF EQUIPMENT SO NOTED TO BE SHUT DOWN BY THE ALARM CONDITION OF THE FIRE ALARM CONTROL PANEL.
	PUSH BUTTON
	PUSH BUTTON STATION
	THERMOSTAT
	TIME CLOCK
	JIFFY POLE
	120V HARDWIRE CONNECTION
	208V, 1Ø HARDWIRE CONNECTION
	208V, 3Ø HARDWIRE CONNECTION
	600V, 3Ø HARDWIRE CONNECTION
	JUNCTION BOX
	HAND DRYER
	FLOOR BOX

GENERAL NOTES
1. THE ELECTRICAL DRAWINGS REPRESENT A PORTION OF THE CONTRACT. THE CONTRACTOR IS TO FAMILIARIZE THEMSELV WITH ALL OF THE DRAWINGS IN THE PACKAGE AS SOME WORK MAY BE SHOWN ON OTHER DRAWINGS IN THE PACKAGE. CONTRACTOR IS TO DETERMINE FULL EXTENT OF PROJECT PRIOR TO SUBMITTING BID.
2. THE DRAWINGS ARE NOT TO BE SCALED FOR INSTALLATION PURPOSES. ALL MEASUREMENTS ARE TO BE OBTAINED FROM ARCHITECTURAL PLANS, ELEVATIONS, SHOP DRAWINGS OR BE OBTAINED FROM FIELD MEASUREMENTS.
3. CONTRACTOR IS TO REVIEW ARCHITECTURAL DRAWINGS AND PROVIDE ALL NECESSARY PARTS AND ACCESSORIES AND FIRESTOPPING AS REQUIRED TO CONFORM WITH ARCHITECTURAL FIRE RATINGS.
4. CONTRACTOR IS TO REMOVE ALL EXISTING DEAD AND ABANDONED CONDUIT AND WIRING BACK TO SOURCE. WHERE NOT POSSIBLE TO REMOVE EXISTING CONDUIT, CONDUIT IS TO BE LEFT BEHIND AND EXISTING WIRE IS TO BE REMOVED AND REPLACED WITH A PULL ROPE.
5. CONTRACTOR IS TO PROVIDE ELECTRONIC CAD 'AS-BUILT' DRAWINGS IN DWG AND PDF FORMAT AT THE COMPLETION OF THE PROJECT. CAD FILES ARE TO BE AUTOCAD 2010.
6. UNLESS NOTED OTHERWISE ALL WIRING SHALL BE IN CONDUIT AND CONCEALED IN WALLS AND CEILING SPACES. BX IS PERMITTED IN SPECIAL CIRCUMSTANCES AND SHORT DROPS FROM JUNCTION BOXES TO LIGHT FIXTURES, REFER TO SPECIFICATIONS. CONDUIT RUNS ARE TO BE PARALLEL TO WALL STUDS AND DROP FROM JUNCTION BOXES MOUNTED IN THE CEILING SPACE. HORIZONTAL RUNS IN WALLS WILL ONLY BE ACCEPTED UNDER SPECIAL CIRCUMSTANCES (IE OFFSET TO AVOID STRUCTURAL ABOVE) WITH WRITTEN APPROVAL FROM THE OWNER/CONSULTANT.
7. ALL DATA/COMM WIRING FROM EACH OUTLET IS TO BE PROVIDED IN MIN. 1" (25mm) CONDUITS FROM OUTLET TO THE SOURCE (RACK AND/OR BIX BLOCK). CONTRACTOR CAN GROUP CABLING AND INSTALL A LARGER RUN BACK TO THE SOURCE. WHERE CABLE IS PERMITTED TO RUN FREE-AIR; A CONDUIT SHALL BE INSTALLED FROM THE OUTLET INTO AN ACCESSIBLE CEILING SPACE. PROVIDE BUSHINGS AT TOP OF WALL AND TRANSITION TO J-HOOKS (WITHIN ROOM) OR CABLE TRAY (AT CORRIDOR). CABLE IS NOT PERMITTED TO BE LAYING ON CEILING. COMM WIRING SHALL BE IN CONDUIT FOR ALL EXPOSED AREAS. FREE AIR COMM WIRING TRANSITIONING FROM ACCESSIBLE CEILINGS TO EXPOSED CEILINGS SHALL BE IN CONDUIT THROUGHOUT THE EXPOSED AREA. PROVIDE 12" (300mm) STUBS INTO THE EXPOSED AREAS WITH BUSHINGS. CONDUIT SHALL NOT EXCEED 40% FILL.
8. UNLESS SPECIFICALLY NOTED AS "CABLING BY OTHERS", THE CONTRACTOR SHALL INCLUDE FOR ALL CABLING TO DEVICES, OUTLETS, ETC AS SHOWN FOR A COMPLETE AND FUNCTIONING SYSTEM(S).
9. CONTRACTOR IS TO MAINTAIN POWER AND COMMUNICATION CIRCUITS IN AREAS OUTSIDE OF THE CONSTRUCTION AREA. PROVIDE TEMPORARY CONNECTIONS AS REQUIRED, COORDINATE WITH OWNER.
10. EQUIPMENT BEING REMOVED AND NOT BEING REUSED REMAIN THE PROPERTY OF THE OWNER AND IS TO BE STORED ON SITE. ANY EQUIPMENT THE OWNER DEEMS NO INTEREST IN IS TO BE DISPOSED OF IN A LAWFUL AND SAFE MANNER BY THIS TRADE.
11. CONTRACTOR IS TO REFER TO ARCHITECTURAL PLANS AND CEILING LAYOUTS TO VERIFY THAT NO INTERFERENCES EXIST PRIOR TO THE INSTALLATION OF FIXTURES AND DEVICES IN WALLS AND CEILINGS.

DRAWING LIST
17-167-020 E000 GENERAL NOTES, LEGENDS, DRAWING LIST & SCHEDULES
17-167-020 E300 ELECTRICAL POWER LAYOUT AND DETAILS PHASE-1
17-167-020 E301 ELECTRICAL POWER LAYOUT AND DETAILS PHASE-2



0	PERMIT & TENDER ISSUE	MAY 10 2019
C	REISSUED FOR REVIEW	MAR 02 2018
B	REISSUED FOR REVIEW	FEB 20 2018
A	ISSUED FOR REVIEW	FEB 16 2018
revision		date

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REFURBISHMENT

drawing title
titre du dessin

GENERAL NOTES, LEGENDS, DRAWING LIST & SCHEDULES

drawn by
dessine par K.R.

designed by
conc par D.P.

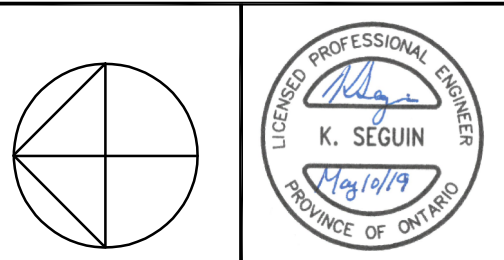
approved by
approuve par K.S.

tender
soumission / / project manager
administrateur de projets
ROD KHALED

project date
date du projet 16 / FEB / 2018

project no.
no. du projet CCIW-079

drawing no.
dessine no. 17-167-020 E000



0	PERMIT & TENDER ISSUE	MAY 10 2019
C	REISSUED FOR REVIEW	MAR 02 2018
B	REISSUED FOR REVIEW	FEB 20 2018
A	ISSUED FOR REVIEW	FEB 16 2018
revision		date

Do not scale drawings.
Verify all dimensions and conditions on site and
immediately notify the engineer of all discrepancies.

A	Detail No. No. du détail
B	drawing no. — where detail required dessin no. — où détail exigé
C	drawing no. — where detailed dessin no. — où détaillé

project title
titre du projet
BURLINGTON ONTARIO
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE RD
BURLINGTON, ONTARIO
BOILER ROOM SANITARY PIT
REFURBISHMENT

drawing title
titre du dessin
**ELECTRICAL POWER
LAYOUT AND DETAILS
PHASE-1**

drawn by
dessiné par
K.R.

designed by
conçu par
D.P.

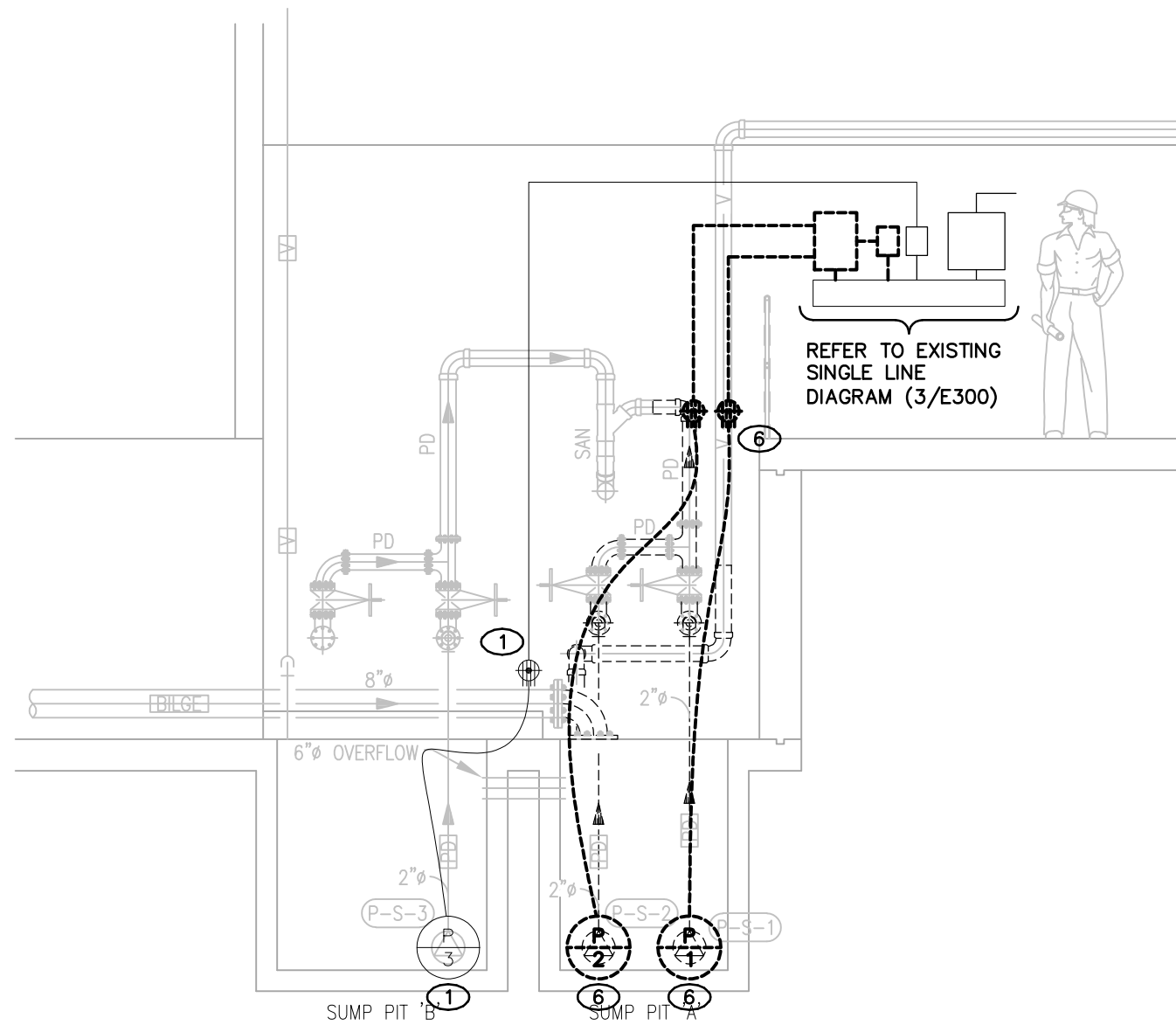
approved by
approuvé par
K.S.

tender
soumission
/ /
project manager
administrateur
de projets
ROD KHALED

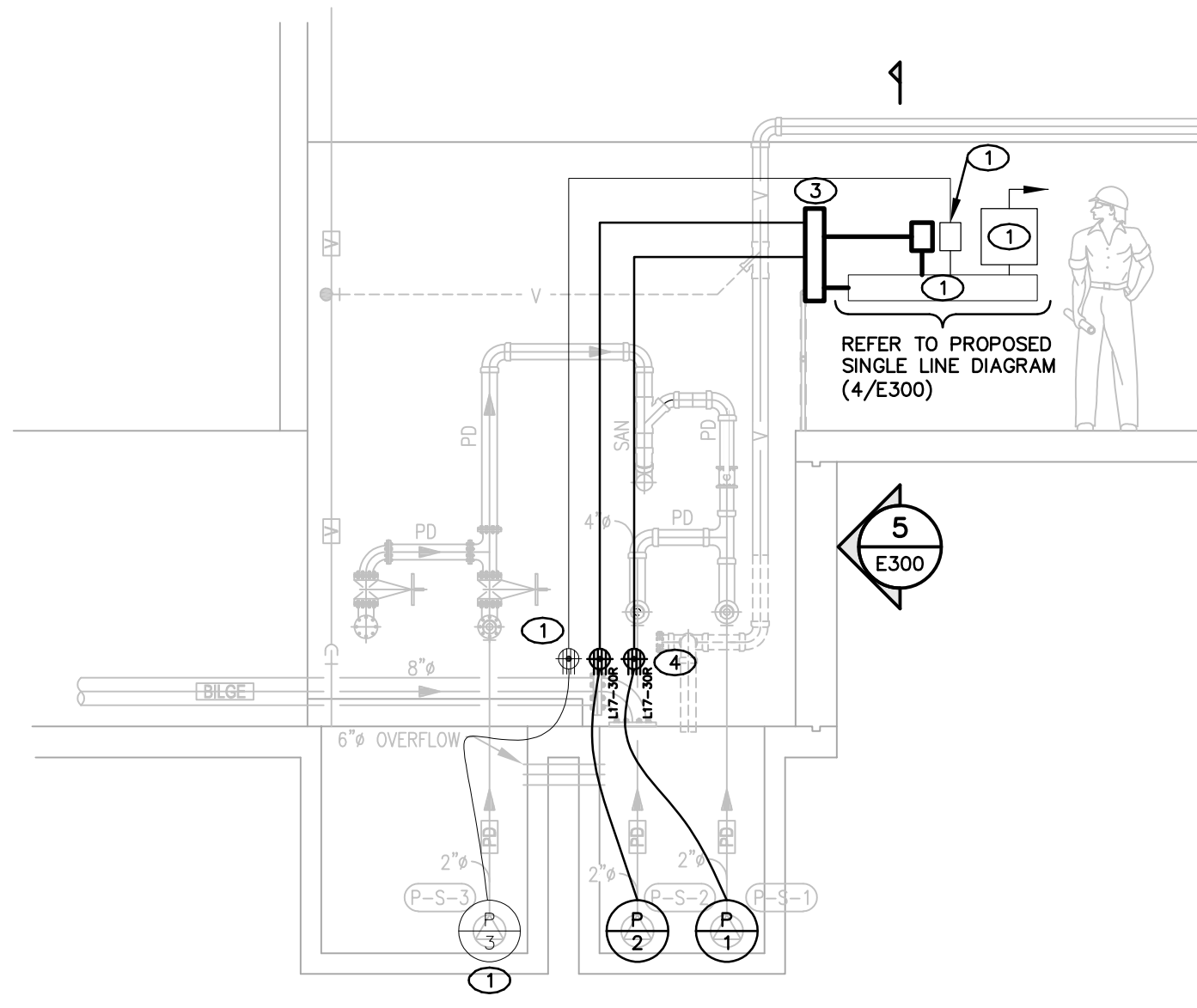
project date
date du projet
16 / FEB / 2018

project no.
no. du projet
CCIW-079

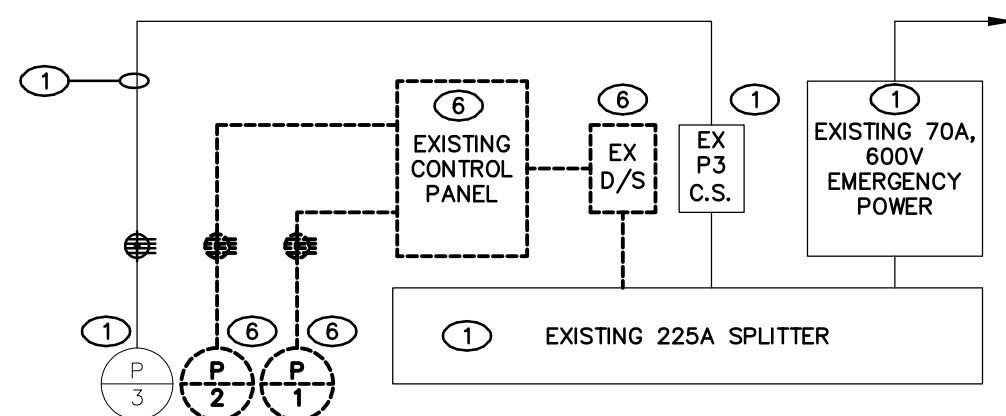
drawing no.
dessiné no.
17-167-020 **E300**



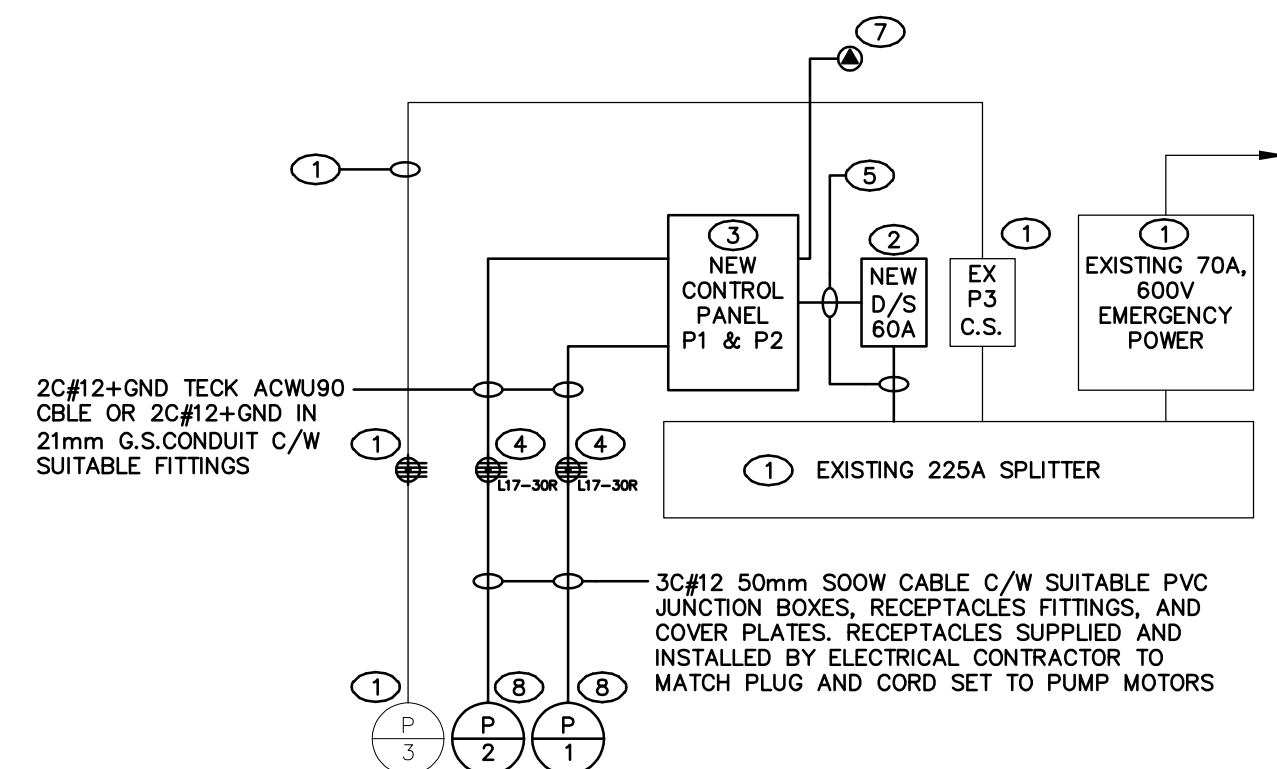
1 PHASE-1, ELECTRICAL DEMOLITION
E300 SCALE: 1/4"=1'-0"



2 PHASE-1, NEW ELECTRICAL LAYOUT
E300 SCALE: 1/4"=1'-0"



3 PHASE-1, EXISTING SINGLE LINE DIAGRAM, DEMOLITION
E300 SCALE: 1/4"=1'-0"



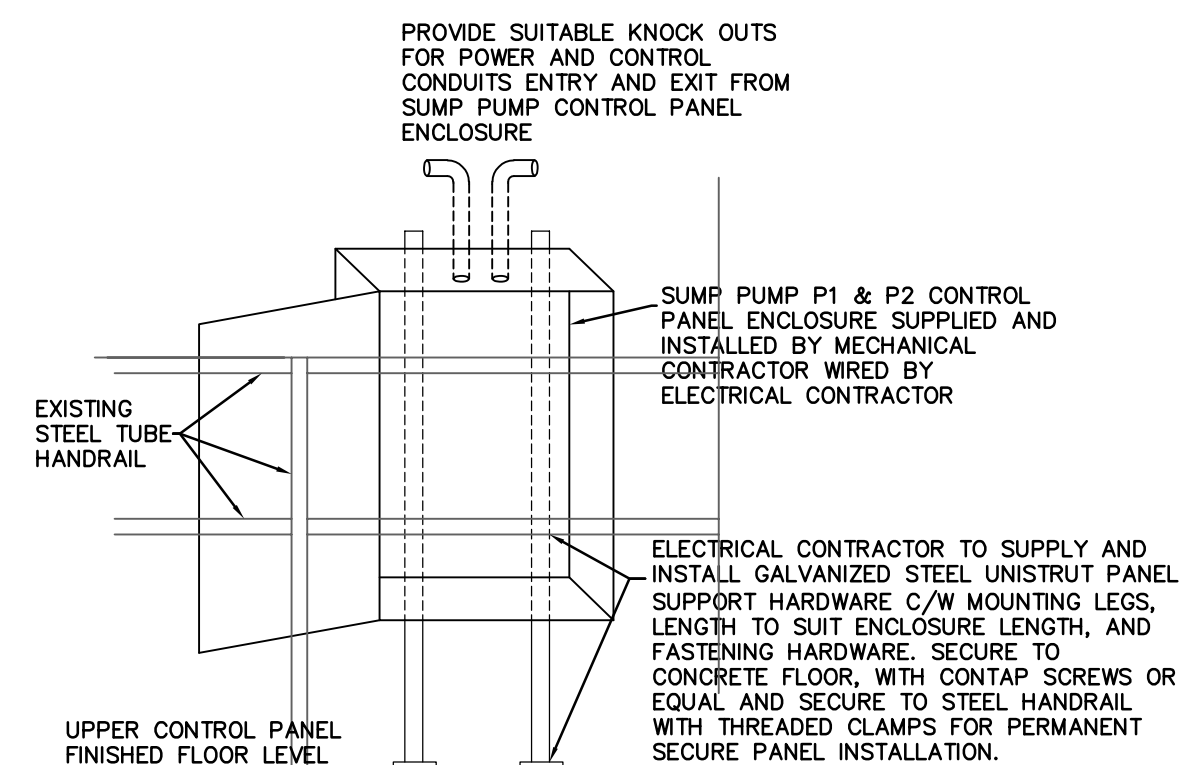
4 PHASE-1, NEW SINGLE LINE DIAGRAM
E300 SCALE: 1/4"=1'-0"

DRAWING NOTES:

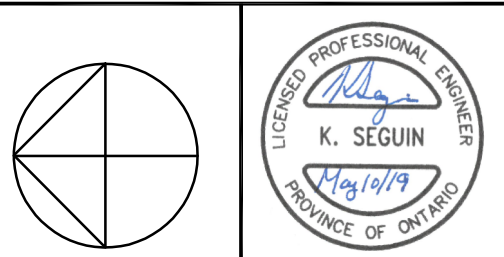
- EXISTING ELECTRICAL EQUIPMENT, DEVICE, OR WIRING TO REMAIN.
- SUPPLY AND INSTALL NEW 30A, 600V, 3 POLE FUSED DISCONNECT SWITCH C/W 3-20A FUSES.
- NEW SUMP PUMP CONTROL PANEL SUPPLIED AND INSTALLED BY OTHERS (MECHANICAL CONTRACTOR), WIRED BY ELECTRICAL CONTRACTOR. TO BE MOUNTED ON UNISTRUT STEEL SUPPORTS ORIENTATED 90 DEGREES TO WALL SEE DETAIL No.5
- SUPPLY AND INSTALL 30A, 600V, 3Ø NEMA L17-30R TWIST LOCK RECEPTACLE C/W PVC WETHERPROOF BOX AND IN-USE COVER PLATE.
- 3C#10 + GND IN 21mm CONDUIT
- EXISTING EQUIPMENT TO BE REMOVED IN PHASE-1. DISCONNECT AT SOURCE, MAKE SAFE AND REMOVE.
- SUPPLY AND INSTALL 120V, 15A CIRCUIT (2C#12+GRD IN 21mmC) TERMINATED IN JUNCTION BOX FOR 120V POWER SUPPLY TO CONTROL PANELS. CONNECT EACH CONTROL PANEL TO 120V JUNCTION BOX.
- SUMP PUMPS P1 & P2 SUPPLIED AND INSTALLED BY OTHERS. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL FLEXIBLE SOOW CORD OF SUITABLE LENGTH AND PLUG ASSEMBLY.

PHASING SEQUENCE - PHASE 1:

- PUMP P3 TO STAY OPERATIONAL UNTIL REPLACEMENT PUMPS P1 & P2 ARE COMPLETE AND OPERATIONAL.
- EXISTING PUMPS P3 TO BE DEMOLISHED AND REPLACED WITH NEW DISTRIBUTION AS SHOWN UPON COMPLETION AND COMMISSIONING OF PUMPS P1 & P2.
- PUMP P3 TO BE DEMOLISHED AND REPLACED. (SEE DRAWING E301). LOCATIONS OF CONTROL PANELS, DISCONNECT SWITCHES AND DISTRIBUTION CONDUITS ARE SHOWN DIAGRAMMATICAL REFERENCE. DUE TO THE UNIQUE PHASING OF THIS PROJECT ELECTRICAL CONTRACTOR SHALL COORDINATE EQUIPMENT LOCATION WITH PROJECT PHASING AND ARRANGE AND INSTALL EQUIPMENT FOR "BEST FIT" IN SPACE PROVIDED, SUPPLY AND INSTALL UNISTRUT, AND/OR STEEL SUPPORT AS REQUIRED TO MOUNT EQUIPMENT NEAR ADJACENT STEEL HAND RAIL SEE DETAIL No.5.



5 SUGGESTED P1&P2 SUMP PUMP CONTROL PANEL MOUNTING DETAIL ON HAND RAIL
E300 SCALE: N.T.S.



0	PERMIT & TENDER ISSUE	MAY 10, 2019
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B	drawing no. — where detail required dessin no. — où détail exigé
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project title
titre du projet
BURLINGTON ONTARIO
CANADA CENTRE FOR INLAND WATERS
867 LAKESHORE RD
BURLINGTON, ONTARIO
**BOILER ROOM SANITARY PIT
REFURBISHMENT**

drawing title
titre du dessin
**ELECTRICAL POWER
LAYOUT AND DETAILS
PHASE-2**

drawn by
dessiné par
K.R.

designed by
conçu par
D.P.

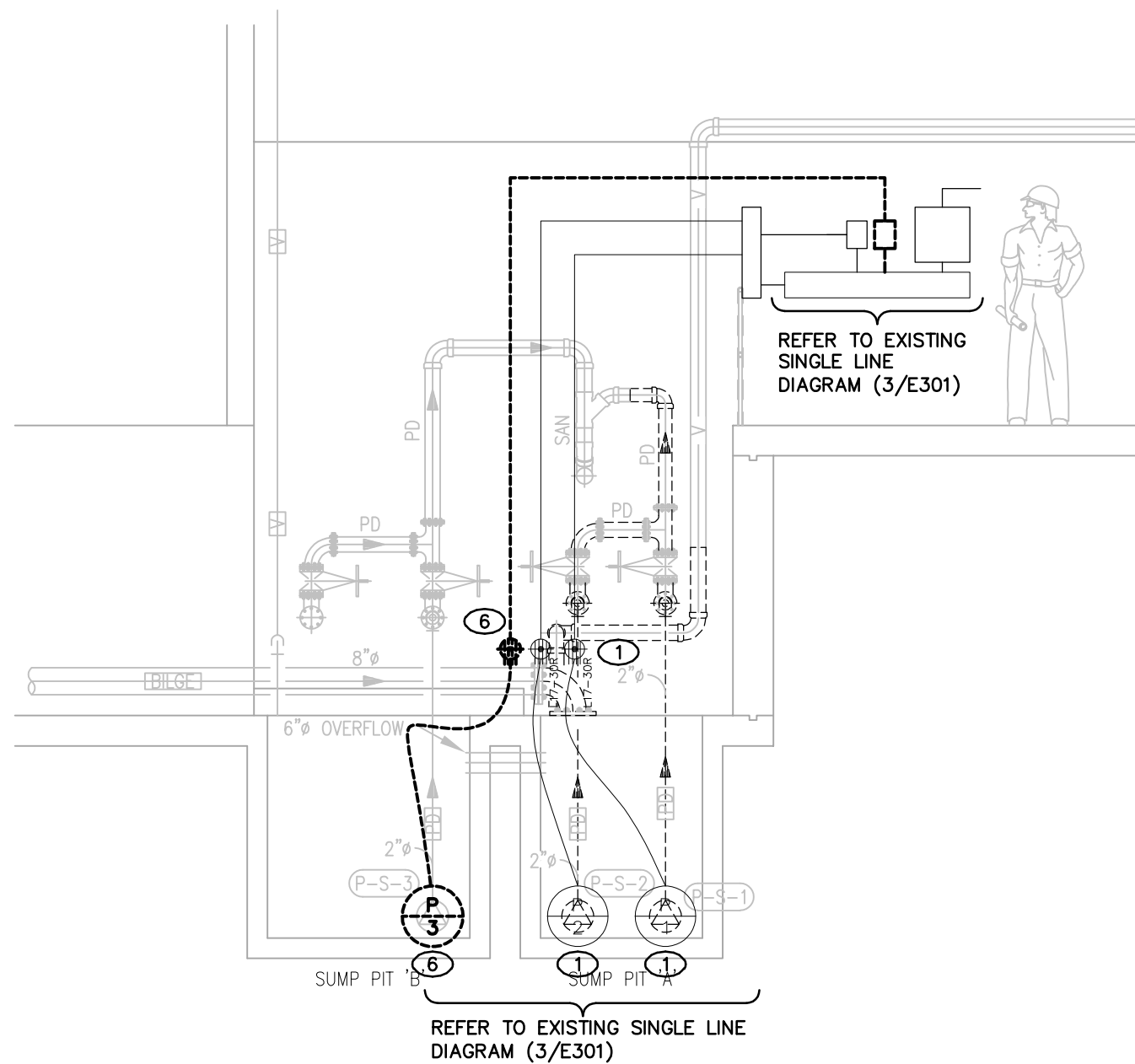
approved by
approuvé par
K.S.

tender
soumission
/ /
project manager
administrateur
de projets
ROD KHALED

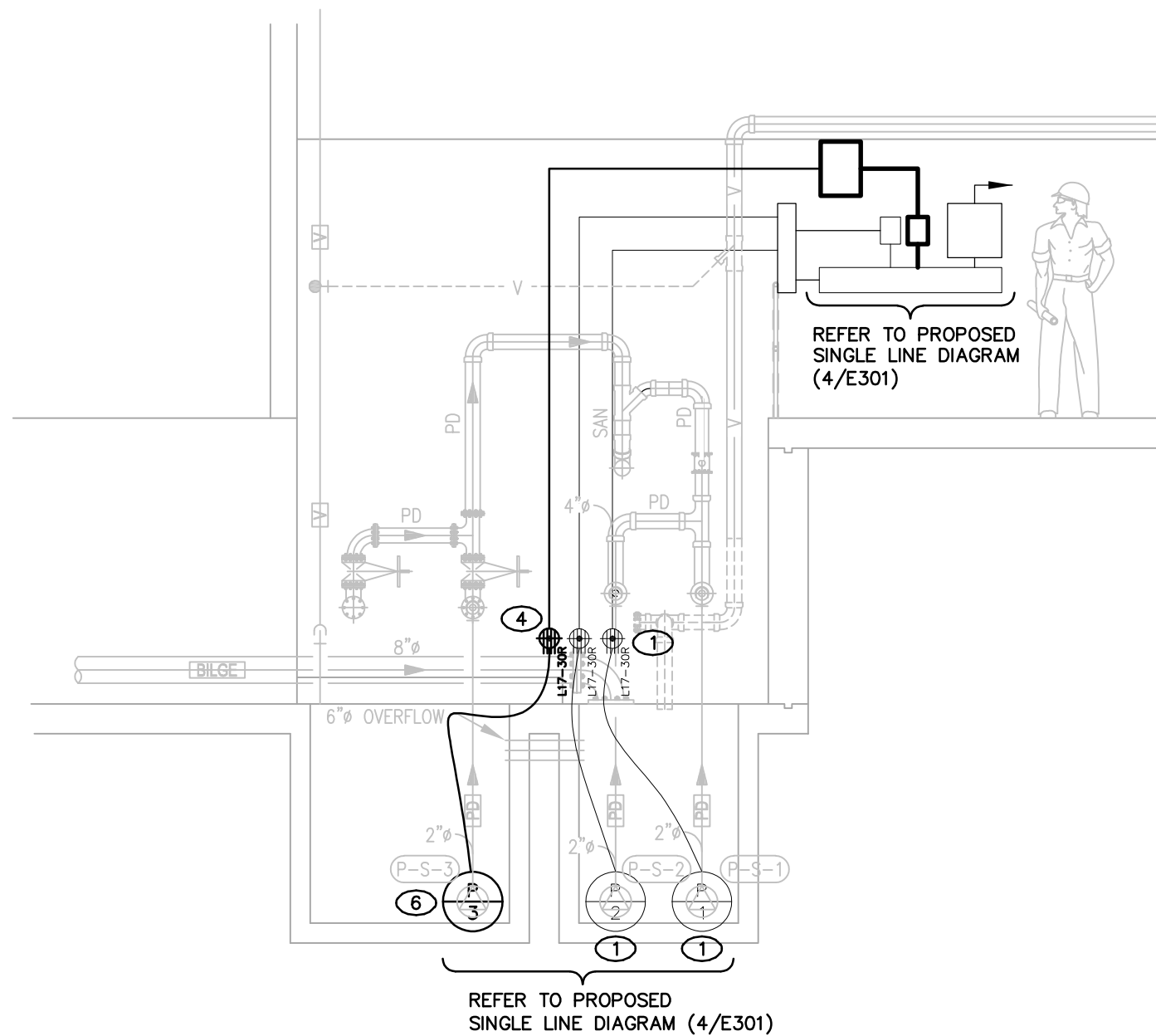
project date
date du projet
16 / FEB / 2018

project no.
no. du projet
CCIW-079

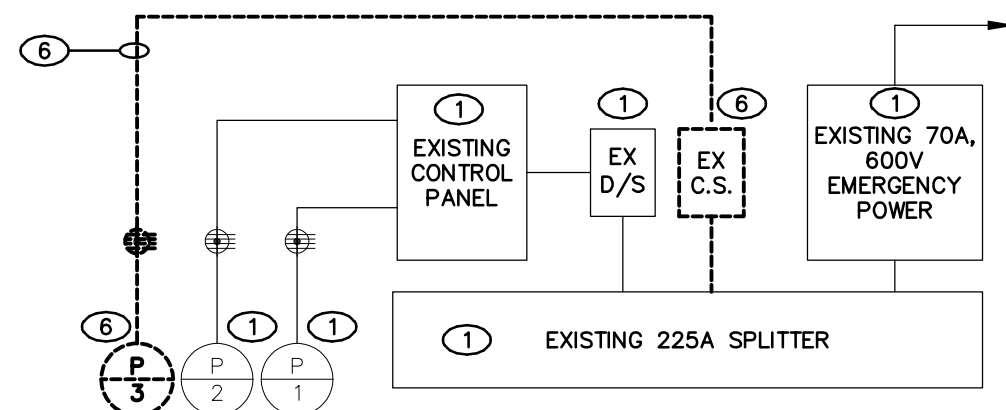
drawing no.
dessiné no.
17-167-020 **E301**



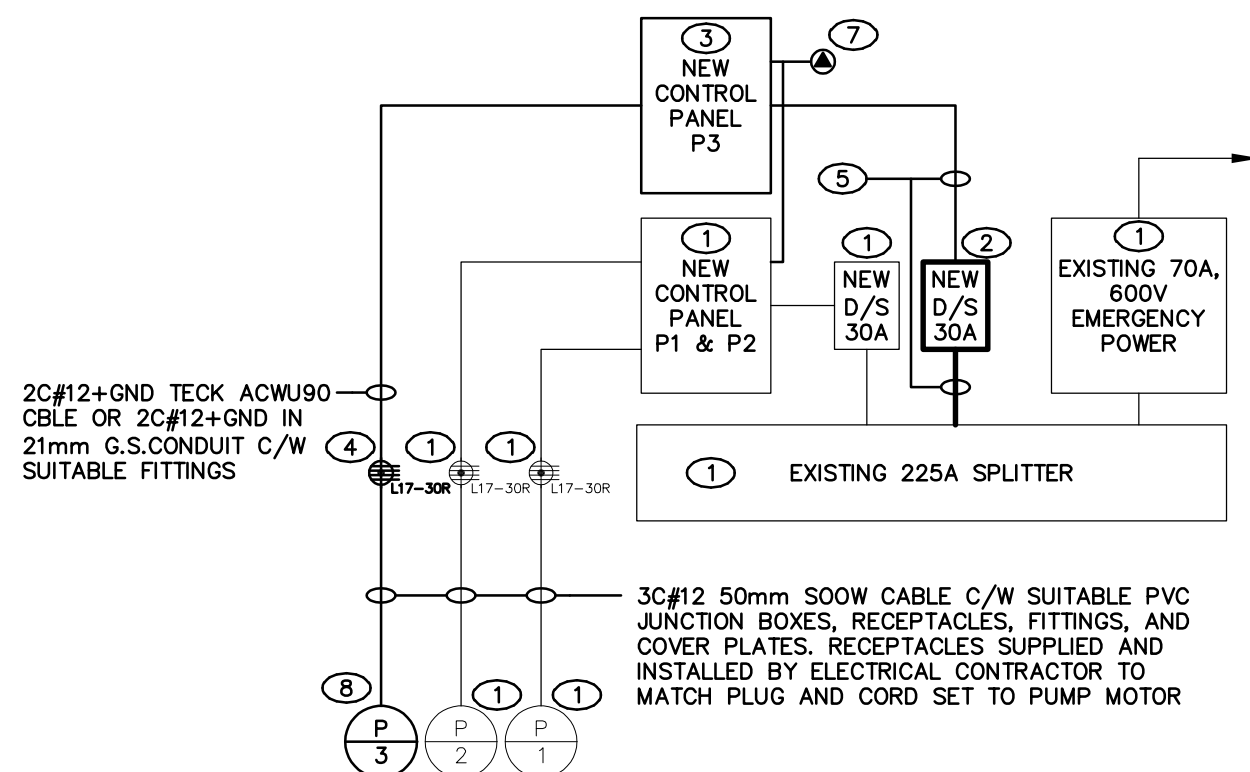
1 PHASE-2, ELECTRICAL DEMOLITION
E301 SCALE: 1/4"=1'-0"



2 PHASE-2, NEW ELECTRICAL LAYOUT
E301 SCALE: 1/4"=1'-0"



3 PHASE-2 EXISTING SINGLE LINE DIAGRAM, DEMOLITION
E301 SCALE: 1/4"=1'-0"



4 PHASE-2, NEW SINGLE LINE DIAGRAM
E301 SCALE: 1/4"=1'-0"

DRAWING NOTES:

- EXISTING ELECTRICAL EQUIPMENT, DEVICE, OR WIRING TO REMAIN.
- SUPPLY AND INSTALL NEW 30A, 600V, 3 POLE FUSED DISCONNECT SWITCH C/W 3-15A FUSES.
- NEW SUMP PUMP CONTROL PANEL SUPPLIED AND INSTALLED BY OTHERS (MECHANICAL CONTRACTOR), WIRED BY ELECTRICAL CONTRACTOR.
- SUPPLY AND INSTALL 30A, 600V, 3Ø NEMA L17-30R TWIST LOCK RECEPTACLE C/W BOX AND COVER.
- 3C#12 + GND IN 21mm CONDUIT
- EXISTING EQUIPMENT TO BE REMOVED IN PHASE-2. DISCONNECT AT SOURCE, MAKE SAFE AND REMOVE.
- SUPPLY AND INSTALL 120V, 15A CIRCUIT TERMINATED IN JUNCTION BOX FOR 120V POWER SUPPLY TO CONTROL PANELS. CONNECT EACH CONTROL PANEL TO 120V JUNCTION BOX.
- SUMP PUMP P3 SUPPLIED AND INSTALLED BY OTHERS. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL FLEXIBLE SOOW CORD OF SUITABLE LENGTH AND PLUG ASSEMBLY.

SEQUENCE — PHASE 2:

- PUMPS P1 & P2 REPLACEMENT WORK MUST BE COMPLETED AND PUMPS FULLY OPERATIONAL PRIOR TO COMMENCING DEMOLITION OF PUMP P3. ONE SANITARY PUMP MUST REMAIN OPERATIONAL AT ALL TIMES DURING RENOVATION
- EXISTING PUMPS P3 TO BE DEMOLISHED AND REPLACED WITH NEW DISTRIBUTION AS SHOWN.
- LOCATIONS OF CONTROL PANELS, DISCONNECT SWITCHES AND DISTRIBUTION CONDUITS ARE SHOWN DIAGRAMMATICAL REFERENCE. DUE TO THE UNIQUE PHASING OF THIS PROJECT ELECTRICAL CONTRACTOR SHALL COORDINATE EQUIPMENT LOCATION WITH PROJECT PHASING AND ARRANGE AND INSTALL EQUIPMENT FOR "BEST FIT" IN SPACE PROVIDED, OTHER WISE SUPPLY AND INSTALL UNISTRUT, AND/OR STEEL SUPPORT AS REQUIRED TO MOUNT EQUIPMENT NEAR ADJACENT STEEL HAND RAIL. REFER TO DETAIL No. 5 ON DRAWING E300.