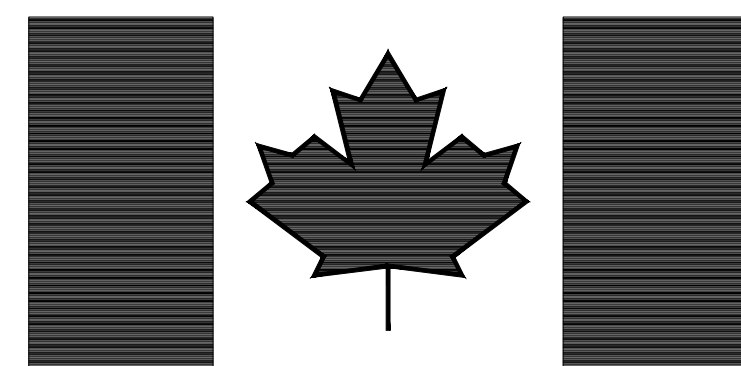




McElhanney

McElhanney Consulting Services Ltd.

for / pour



Parks Canada Agency
Western and Northern
Region

Parcs Canada
Région de l'Ouest et du
Nord

**ROCK CREEK CAMPGROUND
& DAY USE AREA
WATER TREATMENT SYSTEM**

**GRASSLANDS NATIONAL PARK, SK
PARKS CANADA PROJECT NO.: PRO#836**

DEC 2018

ROCK CREEK CAMPGROUND AND DAY USE AREA

WATER TREATMENT SYSTEM

GENERAL NOTES:

LOCATION, PLAN AND GENERAL NOTES

ELECTRICAL DRAWINGS:

- E0.1 DELETED
- E1.0 DELETED
- E2.0 DELETED
- E3.0 WATER TREATMENT SYSTEM PIPING AND INSTRUMENTATION DIAGRAM
- E4.0 WATER TREATMENT SYSTEM SPECIFICATION AND DETAILS
- E5.0 WATER TREATMENT BUILDING ELECTRICAL LAYOUTS & SCHEDULE

CIVIL DRAWINGS:

- C1.0 WATER SERVICE PLAN
- C2.0 RAW WATER SUPPLY LINE PLAN
- C3.0 WATER TREATMENT SYSTEM
- C4.0 WATER TREATMENT SYSTEM GENERAL NOTES
- C5.0 TANK DETAILS
- C6.0 GREY WATER DISTRIBUTION PROFILE
- C7.0 GREY WATER DISTRIBUTION DETAILS
- C8.0 GREY WATER DISTRIBUTION DETAILS

LANDSCAPE DRAWINGS:

- L1.0 OVERALL LAYOUT PLAN AND SILT FENCE DETAILS
- L2.0 GREY WATER DISPOSAL AND SURFACE TREATMENT
- L3.0 GRADING, LANDSCAPE PLANS AND DETAILS

STRUCTURAL DRAWINGS:

- S0.1 GENERAL NOTES
- S1.0 PLAN AND SECTION DETAILS
- S2.0 ELEVATION PLAN

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01	MAY.18.18	ISSUED FOR 90% CLIENT REVIEW	LJ	AT/MW

No.	Date/Date	Description/Description	Drawn by Dessiné par	Approved Approuvé
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Revision / Revision

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Client/client
<div> Parks Canada Agency Western and Northern Region</div> <div>L'Agence Parcs Canada Ouest et Nord du Canada</div>

Consultant's Name
Nom de l'expert-conseil



Project title/Titre du projet
ROCK CREEK CAMPGROUND AND DAY USE AREA WATER TREATMENT SYSTEM GRASSLANDS NATIONAL PARK, SK

Drawing title/Titre du dessin

LIST OF DRAWINGS

Surveyed by/Arpenté par N/A	Drawn by/Dessiné par LJ/GM	Date/Date NOVEMBER 23.18
Designed by/Concept par AT	Reviewed by/Revisé par MW	Scale/Echelle AS SHOWN

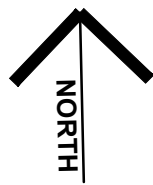
Parks Canada Project Manager/Administrateur de Projets Parcs Canada
COLIN SCHMIDT

Client Acceptance/Acceptation du client	Approved by/Approuvé par
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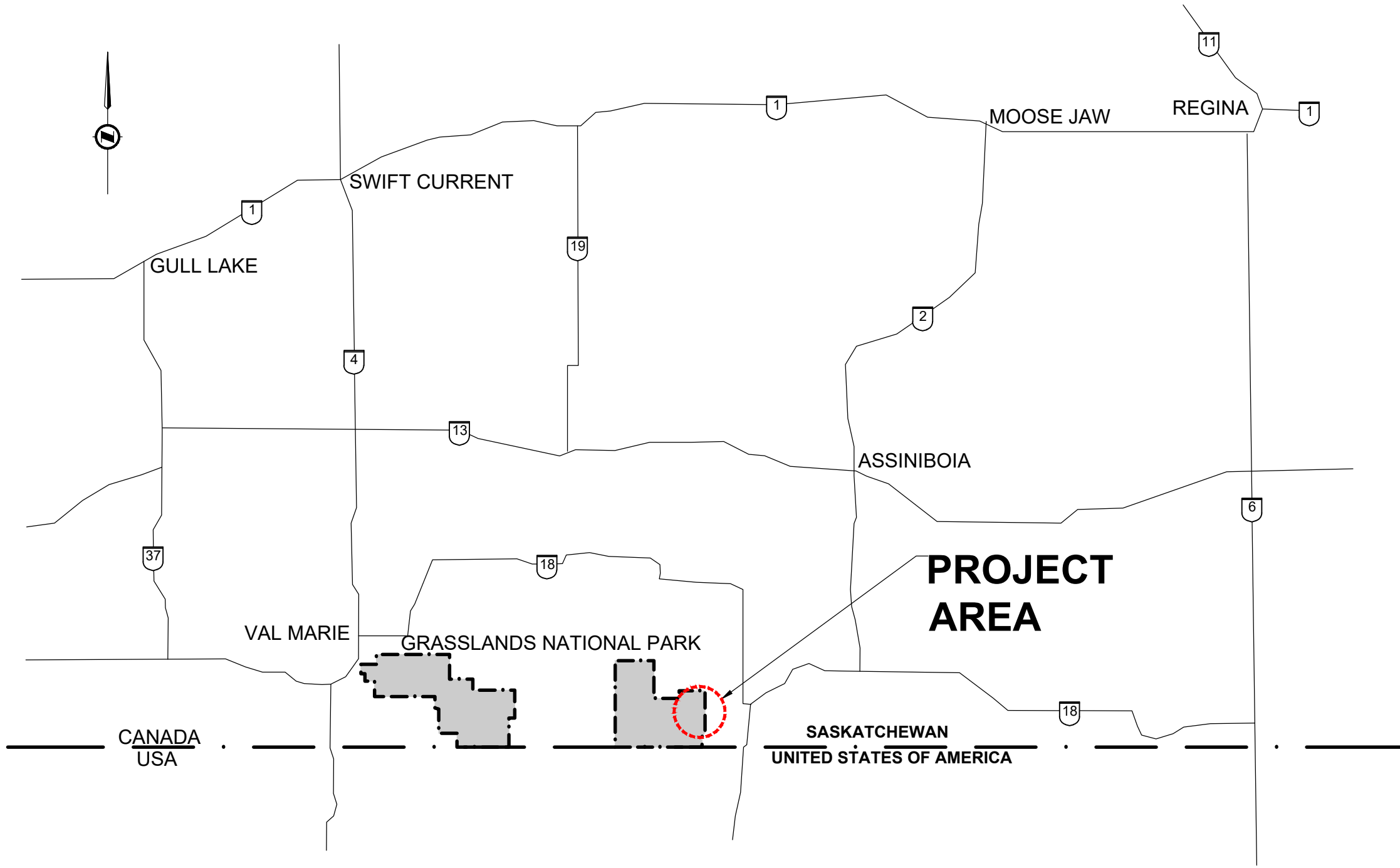
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Drawing Reference No./No. de référence du dessin
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GENERAL NOTES

- ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH CITY OF SASKATOON DESIGN & DEVELOPMENT STANDARDS MANUAL. UNLESS OTHERWISE NOTED. (AVAILABLE AT www.saskatoon.ca/business-development/development-regulations/specifications-standards/design-development-manual-new-neighbourhoods.com)
- THE EXISTING UTILITIES SHOWN ON THESE DRAWINGS ARE BASED ON FIELD SURVEYS AND VARIOUS AS-CONSTRUCTED DRAWINGS. NO LIABILITY IS ASSUMED BY THE ENGINEER OR OWNER FOR THE ACCURACY AND COMPLETENESS OF THE INFORMATION PRESENTED. THE CONTRACTOR SHALL BE RESPONSIBLE TO ARRANGE FOR SASK POWER, TELUS, SASKTEL, BELL, SASKENERGY, SHAW, AND OTHER SHALLOW UTILITIES TO LOCATE THEIR RESPECTIVE UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR TO INFORM THE ENGINEER OF ANY DISCREPANCIES WITHIN THESE PLANS PRIOR TO CONSTRUCTION.
- ALL DISTURBED AREAS TO BE RESTORED TO EQUAL OR BETTER CONDITION THAN EXISTING (INCLUDING LOAM AND SEEDING, IF APPROPRIATE). AT NO ADDITIONAL COST TO THE CLIENT.
- ALL COUPLINGS USED IN THE REPAIR, EXTEND OR INSTALLATION OF SANITARY, STORM AND CATCHBASIN LEADS SHALL BE THOSE THAT UTILIZE A STAINLESS STEEL SHEAR BAND. USE OF "ALL RUBBER" COUPLINGS IS NOT ACCEPTABLE.
- ALL EXISTING SIGN LOCATIONS TO BE RECORDED IN FIELD PRIOR TO SIGN REMOVAL. ALL SIGNS TO BE RE-INSTALLED AT EXISTING LOCATIONS UNLESS OTHERWISE NOTED (AT CONTRACTORS EXPENSE).
- ALL METAL CASTINGS FOR UNDERGROUND INFRASTRUCTURE (IE MANHOLES, CATCHBASINS, WATER VALVES, ETC) TO BE RAISED TO SUIT FINAL PAVEMENT GRADES. RAISING CATCH BASIN GRATES TO INCLUDE REMOVING AND REPLACING SHORT SECTIONS OF EX. CURB IF REQUIRED.
- ANY DAMAGES CAUSED TO EXISTING PRIVATE IRRIGATION SYSTEMS TO BE REPAIRED/RESTORED BY THE CONTRACTOR. CONTRACTOR TO VERIFY POTENTIAL IRRIGATION LOCATIONS PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL PROVIDE EMERGENCY ACCESS AT ALL TIMES DURING CONSTRUCTION.
- CONTRACTOR TO PROVIDE TRAFFIC CONTROL SIGNAGE/PERSONNEL AS REQUIRED. ALL TRAFFIC SIGNAGE TO BE AS PER THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR CANADA (CURRENT EDITION). OR AS APPROVED BY THE ENGINEER IN WRITING.
- CONTRACTOR TO VERIFY THAT SITE SAFETY FOR VEHICLE OPERATORS AND PEDESTRIANS IS MAINTAINED FROM THE END OF EACH WORK DAY, THROUGH THE NIGHT, AND UNTIL THE START OF THE NEXT WORK DAY BY USING FLASHING BEACONS, BARRICADES, SIGNAGE, DELINEATORS ETC., IN ACCORDANCE WITH CURRENT MINISTRY OF HIGHWAY AND INFRASTRUCTURE CONSTRUCTION ZONE SIGNAGE STANDARDS.
- CONTRACTOR TO ERECT ALL APPROPRIATE CONSTRUCTION ZONE SIGNAGE FENCING ETC. AND USE CERTIFIED FLAG PERSONNEL TO MAINTAIN SAFE AND EFFICIENT WORK SITE.
- THE CONTRACTOR WILL ASSUME "PRIME CONTRACTOR" STATUS AND WILL BE RESPONSIBLE FOR ALL MULTIPLE WORK PLACE SAFETY RESPONSIBILITIES FOR WORKERS AND ANY OTHER SITE VISITORS IN ACCORDANCE WITH WCB-OHS REGULATIONS.
- CONTRACTOR TO NOTIFY ALL EMERGENCY SERVICE AGENCIES, LOCAL TRANSIT AND THE WASTE REMOVAL CONTRACTOR OF THE SUBSEQUENT WORK AREA, SPEED REDUCTIONS, OR DETOURS WHICH MAY EFFECT TRAFFIC FLOW.
- CONTRACTOR TO ARRANGE FOR WORKS IN OR ABOUT EX. UTILITY POLES AND GUY WIRES WITH SASK POWER.
- CONTRACTOR TO SUBMIT AN EROSION AND SEDIMENT (E&S) CONTROL PLAN TO ENGINEER FOR REVIEW AND APPROVED, PRIOR TO WORK PROCEEDING. CONTRACTOR SHALL MAINTAIN THIS E&S PLAN THROUGHOUT THE DURATION OF WORK.



LOCATION PLAN
SCALE : N.T.S.

LEGEND

EXISTING		PROPOSED
	BUILDING	
	CURB & GUTTER	
	ELECTRICAL TRANSFORMER	
	ELECTRICAL JUNCTION BOX	
	FENCE	
	PATHWAY / SIDEWALK	
	ROAD CENTERLINE	
	SIGN (ONE POST)	
	CATCH BASIN	
	CATCH BASIN (GRADED TOP)	
	HYDRANT	
	PLUG	
	SANITARY SEWER MAIN & MH	
	STORM SEWER MAIN & MH	
	VALVE	
	WATERMAIN	
	WATERMAIN CROSSING	
	WATERMAIN TEE FITTING	
	GAS LINE	
	O/H ELECTRICAL LINE	
	U/G ELECTRICAL LINE	
	POWER POLE	
	STREETLIGHT	



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Client/Client			
		L'Agence Parcs Canada Ouest et Nord du Canada	


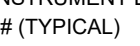

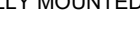
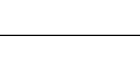


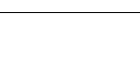








Consultant's Name Nom de l'expert-conseil	

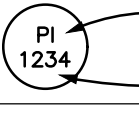


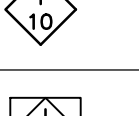
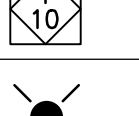
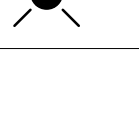
Project title/Titre du projet	
ROCK CREEK CAMPGROUND AND DAY USE AREA WATER TREATMENT SYSTEM GRASSLANDS NATIONAL PARK, SK	

Drawing title/Titre du dessin	
LOCATION PLAN AND GENERAL NOTES	

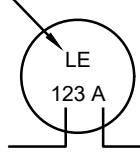
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P&ID SYMBOLS		
SYMBOL	DESCRIPTION	NOTES
--  --	NORMALLY OPEN GATE OR BALL VALVE	
--  --	NORMALLY CLOSED GATE OR BALL VALVE	
--  --	CHECK VALVE	
--  --	PRESSURE RELIEF VACUUM VENT	
--  --	PRESSURE REDUCING SELF CONTAINED	
--  --	MOTORIZED BALL VALVE	
--  --	AIR RELEASE VALVE	
--  --	MULTIFUNCTIONAL VALVE	
--  --	SAMPLE VALVE	
--  --	INJECTION VALVE	
--  --	REDUCER	
--  --	FLANGE CONNECTION	
	SUBMERSIBLE PUMP	
	DRAIN	
	SURGE TANK	
--  --	THREADED UNION	

TAG BALLOONS SYMBOL SCHEDULE		
SYMBOL	DESCRIPTION	NOTES
	TAG DESCRIPTOR (SEE INSTRUMENT LETTER IDENTIFICATION TABLE) LOOP # (TYPICAL)	
	LOCALLY MOUNTED DEVICE	
	CONTROL PANEL ANNUNCIATOR	
	SIGNAL TO INTERLOCK WITH INTERLOCK NUMBER	
	SIGNAL FROM INTERLOCK WITH INTERLOCK NUMBER	
	LOCALLY MOUNTED ALARM BEACON (SEE NOTE 15.6 IN SPECIFICATIONS ON SHEET E5.0)	

INSTRUMENT LETTER IDENTIFICATION		
FIRST-LETTER	SUCCEEDING-LETTERS	
MEASURED OR INITIATING VARIABLE	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION
A	ALARM	
B		
C	CONTROL	
D		
E	CURRENT	
F	FLOW	
G		
H	HAND	
I	INDICATE	
J		
K		
L	LEVEL	LIGHT
M		
N		
O		
P	PRESSURE	
Q	QUANTITY	
R		
S	SPEED	SWITCH
T		TRANSDUCER
U		
V	VOLTAGE	
W		
X		
Y	EVENT OR STATUS	
Z	POSITION	

INSTRUMENT SYMBOL IDENTIFICATION		
INSTRUMENT FUNCTION (SEE ABOVE TABLE)		MODIFIER SUFFIX IF REDUNDANT AND / OR MULTIPLE DEVICES PRESENT IN A COMMON LOOP.
DEVICE TAG/LOOP NUMBER		

- NOTES:
- UNASSIGNED IDENTIFICATION LETTERS ARE FOR CONTRACTORS USE
 - ALL DEVICES AND VARIABLES TO HAVE INSTRUMENT IDENTIFICATION AND LOOP NUMBER
 - CONTRACTOR TO PROVIDE AS BUILT DEVICE AND VARIABLE INSTRUMENT IDENTIFICATION UPON PROJECT COMPLETION
 - ALTERNATE DEVICE AND INSTRUMENT IDENTIFICATION MAY BE USED WITH ENGINEERS APPROVAL

MECHANICAL EQUIPMENT SCHEDULE															
UNIT No.	UNIT DESCRIPTION	LOCATION	LOAD			VOLT	PHASE	MOTOR STARTER	STARTER LOCATION	CONTROL	DISC. SWITCH	CIRCUIT No.	FEEDER	BREAKER	REMARKS
			HP	KW	FLA										
WP-1	WELL PUMP	WELL	1	--	--	240	1	X	WTR TRMT RM	LEVEL	X	4A-01.03	3c #1 AL	2P. 20A	CONTROLLED BY STORAGE TANK LEVEL SWITCH
DP-2	DISINFECTANT PUMP	WTR TRMT RM	--	FRAC	--	120	1	X	WTR TRMT RM	FLOW	--	4A-09	2c #12 CU	1P. 15A	CONTROLLED BY SYSTEM FLOW RATE
DP-1	DISTRIBUTION PUMP	STORAGE TANK	2	--	--	240	1	X	WTR TRMT RM	PRESSURE	X	4A-05.07	3c #10 CU	2P. 30A	CONTROLLED BY SYSTEM PRESSURE
BB-1	BASEBOARD HEATER	WTR TRMT RM	--	--	1.5	--	240	1	--	INTEGRAL	--	4A-02.04	2c #12 CU	2P. 15A	--
EF-1	EXHAUST FAN	WTR TRMT RM	FRAC	--	--	120	1	--	--	REVERSE 1 STAT	X	4A-11	2c #12 CU	1P. 15A	--
			--	--	--	--	--	--	--	--	--	--	--	--	--

NOTES:

1.

CONFIRM FINAL SIZES AND LOCATIONS OF ALL EQUIPMENT PRIOR TO ORDERING ELECTRICAL EQUIPMENT OR ROUGH-IN.

2.

ABOVE INFORMATION HAS BEEN PROVIDED FROM THE MECHANICAL DESIGNER AND ARCHITECT AND MAY NOT BE COMPLETE. ELECTRICAL CONTRACTOR SHALL REVIEW THE MECHANICAL AND ARCHITECTURAL DRAWINGS. SPECIFICATIONS AND ADDENDA FOR A COMPLETE LIST OF MECHANICAL EQUIPMENT BEFORE SUBMITTING TENDER. PROVIDE ELECTRICAL CONNECTION AND CONTROL AS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM AND INCLUDE ALL COSTS IN THE TENDER PRICE. CONTRACTOR TO CONFIRM STARTER AND CONTROL REQUIREMENTS WITH MECHANICAL DIVISION BEFORE SUBMITTING TENDER.

3.

ALL FEEDER AND BREAKER SIZES ARE TO BE CONFIRMED WITH MECHANICAL SHOP DRAWINGS PRIOR TO ORDERING EQUIPMENT. PROVIDE REQUIREMENTS FOR SUBMITTED ALTERNATE EQUIPMENT ARE THE RESPONSIBILITY OF THE CONTRACTOR(S) AND ASSOCIATED COSTS ARE THE RESPONSIBILITY OF THE CONTRACTOR(S).

REMARKS:

1.

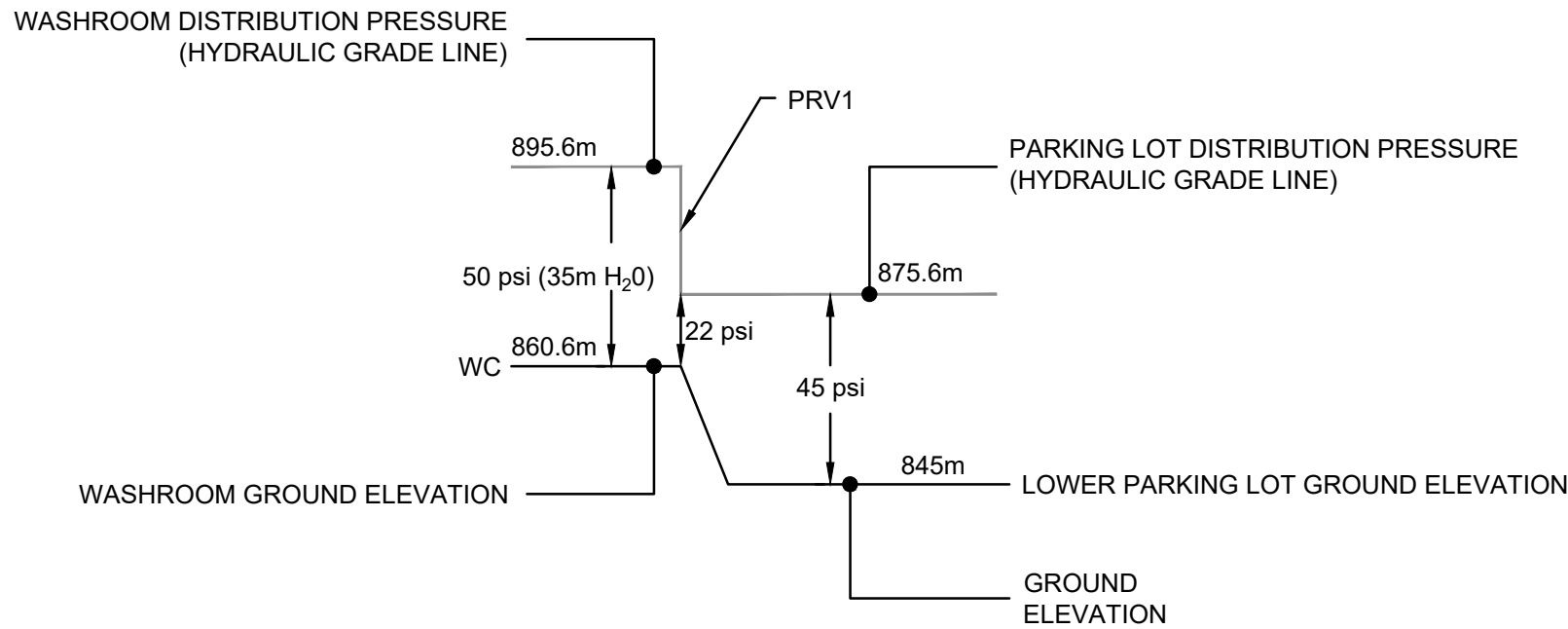
PROVIDE MARKUPS TO ENGINEER UPON COMPLETION FOR CIRCUIT NUMBERING.

2.

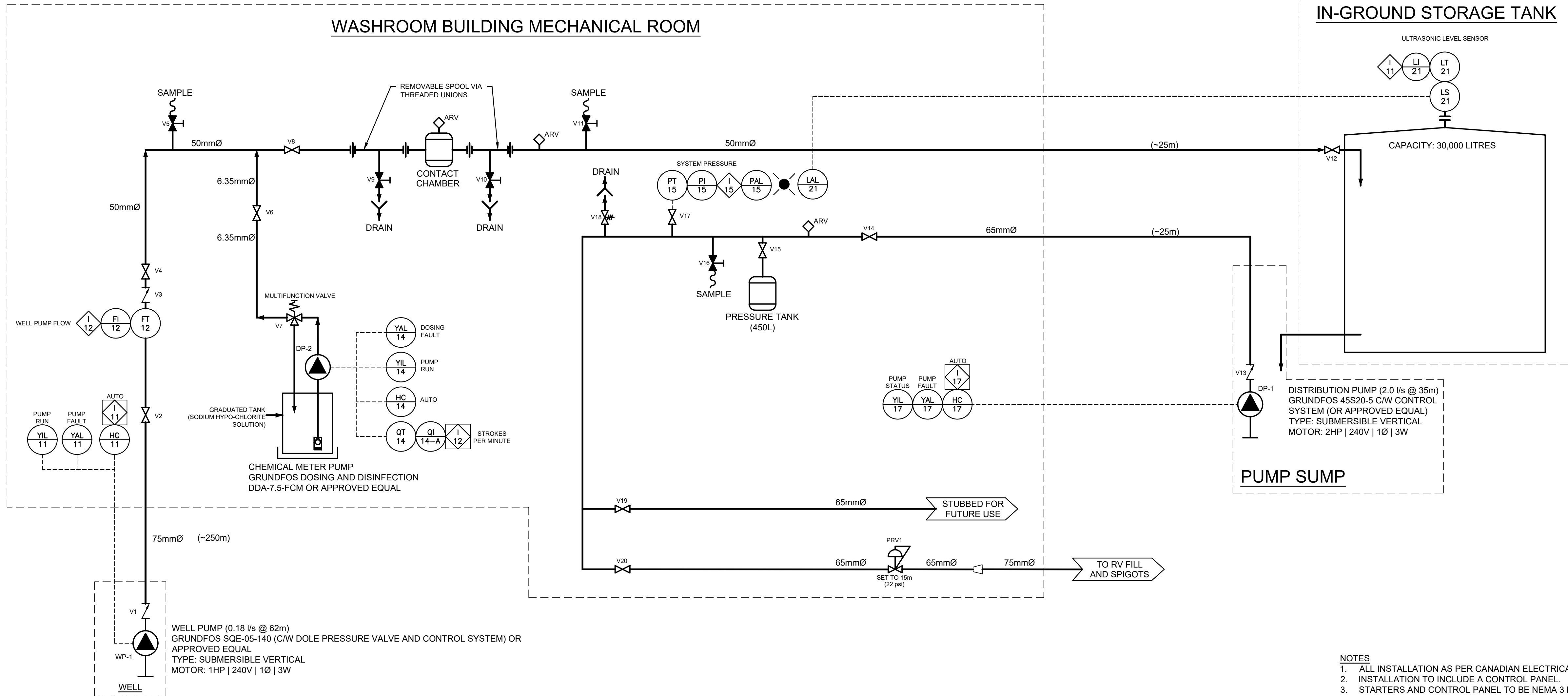
SUBMIT SHOP DRAWINGS FOR ALL EQUIPMENT FOR ENGINEERS APPROVAL PRIOR TO ORDER.

3.

SEE SHEET E4.0 AND 5.0 FOR PUMP CONTROL AND SYSTEM OPERATION



DISTRIBUTION PRESSURE (HYDRAULIC GRADE LINE DIAGRAM)



- NOTES
- ALL INSTALLATION AS PER CANADIAN ELECTRICAL CODE.
 - INSTALLATION TO INCLUDE A CONTROL PANEL
 - STARTERS AND CONTROL PANEL TO BE NEMA 3 RATED.
 - SEE SPECIFICATIONS ON SHEET E5.0 FOR CONTROL PANEL SPECIFICATIONS AND FUNCTIONAL DESCRIPTION.
 - SEE CIVIL DRAWINGS FOR EQUIPMENT AND INSTRUMENTATION INFORMATION AND SPECIFICATIONS.


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7	JUL.13.2018	ISSUED FOR TENDER	EH	TI
6	JUN.27.2018	ISSUED FOR TENDER	EH	LL
5	MAY.18.2018	ISSUED FOR 90% CLIENT REVIEW	TY	LL
4	AUG.18.2017	ISSUED FOR CONSTRUCTION	DM	LL

No.	Date/Date	Description/Description	Drawn by Dessiné par	Approved Approuvé
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Consultant's Name Nom de l'expert-conseil 

Project title/Titre du projet ROCK CREEK CAMPGROUND AND DAY USE AREA WATER TREATMENT SYSTEM GRASSLANDS NATIONAL PARK, SK
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WATER TREATMENT SYSTEM PIPING AND INSTRUMENTATION DIAGRAM
--

Surveyed by/Arpenté par N/A	Drawn by/Dessiné par EH	Date/Date NOV.16.2018
Designed by/Concept par EH	Reviewed by/Revisé par LL	Scale/Echelle

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Drawing Reference No./No. de référence du dessin 2711 16012 - 00		

1. SCOPE OF WORK

1.1. PROVIDE ALL NECESSARY LABOUR, MATERIAL, TOOLS, TRANSPORTATION, SERVICES AND FACILITIES REQUIRED FOR THE COMPLETE ELECTRICAL INSTALLATION AS SHOWN ON THE DRAWINGS AND AS SPECIFIED.

1.2. PROVIDE ALL NECESSARY LABOUR, MATERIALS, EQUIPMENT, DEVICES AND APPARATUS NOT MENTIONED IN THE SPECIFICATIONS, OR SHOWN ON THE DRAWINGS AS REQUIRED FOR THE COMPLETE ELECTRICAL INSTALLATION.
2. CODE, RULES AND REGULATIONS

2.1. ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE CANADIAN ELECTRICAL CODE, NATIONAL BUILDING CODE, AND APPLICABLE MUNICIPAL AND PROVINCIAL CODES, RULES AND REGULATIONS.

2.2. PROVIDE ALL NECESSARY MATERIAL AND LABOUR REQUIRED TO MEET THE REQUIREMENTS OF THESE CODES, RULES AND REGULATIONS EVEN THOUGH THE WORK MAY NOT BE SHOWN ON THE DRAWINGS OR MENTIONED IN THE SPECIFICATIONS.
3. PERMITS AND FEES

3.1. OBTAIN ALL PERMITS AND PAY ALL FEES REQUIRED FOR THE ELECTRICAL INSTALLATION.
4. CO-OPERATION WITH OTHER TRADES

4.1. CHECK WITH OTHER TRADES TO AVOID DELAYS.
5. APPROVAL OF MATERIALS

5.1. ELECTRICAL EQUIPMENT SHALL BE NEW AND OF THE TYPE AND QUALITY SPECIFIED.
6. CERTIFICATION OF INSPECTION

6.1. OBTAIN A CERTIFICATE OF INSPECTION AND APPROVAL FROM THE ELECTRICAL INSPECTION DEPARTMENT HAVING JURISDICTION OVER THE WORK. CERTIFICATE OF INSPECTION SHALL BE SUBMITTED TO THE ARCHITECT OR ENGINEER/CONSULTANT ON COMPLETION OF THE WORK.
7. CLEAN UP

7.1. REMOVE ALL DEBRIS FROM THE SITE AS IT OCCURS, AND DO NOT ALLOW TO ACCUMULATE.

7.2. TOUCH UP WITH MATCHING PAINT ANY EQUIPMENT THAT HAS BEEN DAMAGED DURING CONSTRUCTION.
8. CONDUIT AND RACEWAY

8.1. DB2 PVC CONDUIT: FOR ALL EXPOSED AND UNDERGROUND CONDUIT EXPOSED TO MECHANICAL DAMAGE, (MINIMUM SIZE: 3/4" (19mm))

8.2. ELECTRICAL METALLIC TUBING (EMT): INTERIOR POWER BRANCH CIRCUITS WHERE RUN CONCEALED ABOVE SUSPENDED CEILING, IN STUD WALLS, FURRED SPACES, AND WHERE NOT EXPOSED TO MECHANICAL DAMAGE, OR ABOVE 6' (1830mm) FROM FLOOR. (MINIMUM SIZE: 3/4" (19mm))

8.3. FLEXIBLE METALLIC CONDUIT: IN DRY LOCATIONS, CONNECTION TO TRANSFORMERS, (6' (1830mm) MAX.), VIBRATING EQUIPMENT (24" (610mm) MAX) AND TO RECESSED LIGHTING FIXTURES

8.4. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT: IN DAMP AND WET LOCATIONS FOR CONNECTION TO ALL PUMP MOTORS, SOLENOID VALVES, AND SIMILAR DEVICES SHALL BE MADE USING LIQUID TIGHT FLEXIBLE METALLIC CONDUIT. PROVIDE SEPARATE GROUND WIRE INDEPENDENT OF CONDUIT, RUN INSIDE CONDUIT AND BONDED AT BOTH ENDS TO ENCLOSURES. MAXIMUM LENGTH OF 24" (610mm).

8.5. CONDUIT SYSTEM SHALL BE CONCEALED UNLESS EXPOSED WORK IS CLEARLY CALLED FOR ON DRAWINGS

8.6. CONDUITS SHALL BE TIGHTLY COVERED AND WELL PROTECTED DURING CONSTRUCTION USING METALLIC BUSHINGS AND BUSHING "PENNIES" TO SEAL OPEN END

8.7. IN ALL EMPTY CONDUITS OR DUCTS, INSTALL A 200 lb (90 kg) TENSILE STRENGTH POLYETHYLENE PULLING ROPE

8.8. CONDUIT SYSTEMS SHALL BE ELECTRICALLY CONTINUOUS THROUGHOUT. INSTALL CODE SIZED, INSULATED, COPPER, GREEN GROUNDING CONDUCTOR IN ALL CONDUIT RUNS PULLED WITH PHASE AND/OR NEUTRAL CONDUCTORS

8.9. LOCATIONS OF CONDUIT RUNS SHALL BE PLANNED IN ADVANCE OF THE INSTALLATION AND COORDINATED WITH THE DUCTWORK, PLUMBING, CEILING AND WALL CONSTRUCTION IN THE SAME AREAS AND SHALL NOT UNNECESSARILY CROSS OTHER CONDUITS OR PIPE, NOR PREVENT REMOVAL OF CEILING OR TILES OR PANELS, NOR BLOCK ACCESS TO MECHANICAL OR ELECTRICAL EQUIPMENT

8.10. WHERE PRACTICAL, INSTALL CONDUITS IN GROUPS, IN PARALLEL, FOR VERTICAL AND HORIZONTAL RUNS AND AT ELEVATIONS THAT AVOID UNNECESSARY OFFSETS

8.11. EXPOSED CONDUIT SHALL BE RUN PARALLEL OR AT RIGHT ANGLES TO THE CENTERLINES OF COLUMNS AND BEAMS

8.12. CONDUITS SHALL NOT BE PLACED CLOSER THAN 12" (300mm) FROM A PARALLEL HOT WATER

8.13. CONDUIT RUN IN UNDER FLOOR LAYER BELOW WOOD FLOORING SHALL NOT BE RUN IN SAME DIRECTION AS FLOORING

8.14. ALL RACEWAY SYSTEMS SHALL BE SECURED TO THE BUILDING STRUCTURES USING SPECIFIED FASTENERS, CLAMPS AND HANGERS SPACED ACCORDING TO CODE REQUIREMENTS

8.15. SUPPORT SINGLE RUNS OF CONDUIT USING ONE HOLE PIPE STRAPS. WHERE RUN HORIZONTALLY ON WALLS IN DAMP OR WET LOCATION, INSTALL "CLAMP-BACKS" TO SPACE CONDUIT OFF THE SURFACE

8.16. MULTIPLE CONDUIT RUNS SHALL BE SUPPORTED USING "TRAPEZE" HANGERS, FABRICATED FROM SPECIFIED CONSTRUCTION CHANNEL, MOUNTED TO 3/8" (9.5mm) DIAMETER, THREADED STEEL RODS SECURED TO BUILDING STRUCTURES. FASTEN CONDUIT TO CONSTRUCTING CHANNEL WITH STANDARD ONE HOLE PIPE CLAMPS OR THE EQUIVALENT

8.17. RACEWAYS SHALL BE JOINED USING SPECIFIED COUPLING OR TRANSITION COUPLINGS WHERE DISSIMILAR RACEWAY SYSTEMS ARE
- 8.18. JOINED.

8.19. CONDUITS SHALL BE SECURELY FASTENED TO CABINETS, BOXES, AND GUTTERS USING TWO LOCKNUTS AND AN INSULATING BUSHING OR SPECIFIED INSULATING CONNECTORS. INSTALL GROUNDING BUSHINGS OR BONDING JUMPERS ON ALL CONDUITS TERMINATING AT CONCENTRIC KNOCKOUTS.

8.20. CONDUIT TERMINATIONS EXPOSED AT WEATHERPROOF ENCLOSURES AND CAST OUTLET BOXES SHALL BE MADE WATERTIGHT USING SPECIFIED CONNECTORS AND HUBS.

8.21. INSTALL EXPANSION COUPLINGS WHERE ANY CONDUIT CROSSES A BUILDING SEPARATION OR EXPANSION JOINT.

8.22. ALL FLOOR PENETRATIONS SHALL BE SEALED WATER-TIGHT. MAINTAIN FIRE RATING AS REQUIRED.

8.23. FIRE-SAFE ALL RATED WALL PENETRATIONS USING 3M LISTED FIRE-SAFING SEALANTS AND ASSEMBLIES.
9. BOXES AND WIRING SERVICES

9.1. EXPOSED BOXES IN DAMP AND WET LOCATIONS SHALL BE CAST METAL WITH GASKETED CAST METAL COVER PLATES.

9.2. BOXES INSTALLED IN STUD WALLS SHALL BE EQUIPPED WITH BRACKETS DESIGNED FOR ATTACHING DIRECTLY TO THE STUDS OR SHALL BE MOUNTED ON HEAVY GAUGE GALVANIZED STEEL BOX SUPPORTS.
10. CABLE AND WIRE

10.1. CONDUCTORS SHALL NOT BE INSTALLED IN CONDUIT UNTIL ALL WORK OF ANY NATURE THAT MAY CAUSE DAMAGE IS COMPLETED. CARE SHALL BE TAKEN IN PULLING CONDUCTORS THAT INSULATION IS NOT DAMAGED. U.L. AND C.S.A. APPROVED NON-PETROLEUM BASE AND INSULATING TYPE PULLING COMPOUND SHALL BE USED AS NEEDED.

10.2. ALL CABLES SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS AND WARRANTY.

10.3. ALL ASPECTS OF SPLICING AND TERMINATING SHALL BE IN ACCORDANCE WITH CABLE MANUFACTURERS PUBLISHED PROCEDURES.

10.4. MAKE UP ALL SPLICES IN BOXES WITH CONNECTORS AS SPECIFIED HEREIN WITH SEPARATE TAILS OF CORRECT COLOR TO BE MADE UP TO SPLICE. PROVIDE AT LEAST 6" (150mm) OF TAILS PACKED IN BOX AFTER SPLICE IS MADE UP.

10.5. ALL WIRE AND CABLE IN PANELS, TERMINAL CABINETS AND EQUIPMENT ENCLOSURES SHALL BE BUNDLED AND CLAMPED.

10.6. ALL FEEDERS SHALL BE SIZED AS IDENTIFIED IN THE DRAWINGS.
11. PROTECTIVE DEVICES

11.1. CIRCUIT BREAKERS: MOLDED CASE, BOLT-ON, THERMAL MAGNETIC TYPE, 40 DEGREES C. AMBIENT TEMPERATURE COMPENSATED, FIXED MOUNTING, WITH QUICK-MAKE AND QUICK-BREAK SWITCHING MECHANISM MECHANICALLY TRIP-FREE FROM THE OPERATING HANDLE.

11.2. RATINGS: REFER TO DRAWINGS AND PANEL SCHEDULES FOR TRIP FRAME AND POLES REQUIRED. MINIMUM SHORT CIRCUIT RATING FOR 120/240 VOLT BREAKERS IS 10,000 A, IF NOT INDICATED OTHERWISE.

11.3. MANUAL MOTOR STARTERS: FRACTIONAL H.P. 1 PHASE MOTORS SHALL BE PROTECTED BY THERMAL O.L. RELAY INTEGRAL WITH THE DISCONNECT.
12. GROUNDING

12.1. ENCLOSURES OF EQUIPMENT, RACEWAYS, AND FIXTURES SHALL BE PERMANENTLY AND EFFECTIVELY GROUNDED. PROVIDE CODE-SIZED (UNLESS OTHERWISE INDICATED) COPPER, INSULATED GREEN EQUIPMENT GROUND WITH ALL BRANCH AND FEEDER CIRCUIT RUNS. EQUIPMENT GROUND SHALL ORIGINATE AT PANEL BOARD GROUND BUS AND SHALL BE BONDED TO ALL SWITCH AND RECEPTACLE BOXES AND ELECTRICAL EQUIPMENT ENCLOSURES.

12.2. BUILDING SERVICES SHALL BE GROUNDED TO BUILDING STEEL, TO COLD METALLIC WATER PIPING, AND GROUND RODS (3/4" (75mm) X 10' (3050mm) COPPER).
13. CONTROL PANEL

13.1. CONTRACTOR TO SUBMIT SHOP DRAWINGS PRIOR TO ORDERING.

13.2. PROVIDE A COMPLETE & OPERATIONAL CONTROL SYSTEM AS INDICATED ON THE DRAWINGS CONSISTING OF MASTER CONTROL UNIT, INPUT MODULES, OUTPUT MODULES, SENSORS, DISCRETE CONTROL DEVICES & ALL NECESSARY ACCESSORIES.

13.3. MASTER CONTROL UNIT (MCU) IS TO SCAN ANALOG & DIGITAL INPUTS, PERFORM CONTROL OF CONNECTED POINTS (ANALOG & DIGITAL), CONTROL OF CONNECTED SYSTEMS & EXECUTION OF OPTIMIZATION ROUTINES.

13.4. PROVIDE SURGE PROTECTION ON ALL INPUTS & OUTPUTS FROM FIELD WIRING DEVICES.

13.5. CONTROL SYSTEM ENCLOSURE TO BE WALL MOUNTED AND LOCKABLE.

13.6. ALL INDICATOR & ALARM LIGHTS ARE TO BE OF LED TYPE.

13.7. CONTROL PANEL TO INCLUDE DATA RECORDED FOR FLOW INFORMATION WITH REMOVABLE FLASH DRIVE

13.8. CONTROL PANEL TO INCLUDE POWER CIRCUIT FOR FLOW METER UPON PROJECT COMPLETION, PROVIDE HARD COPY OF SET POINTS AND CONTROL LOGIC FOR INTEGRATION INTO O&M MANUAL. PROVIDE ONE SOFT COPY OF FULL PROGRAMMING ON USB STICK FOR INCLUSION IN O&M MANUALS.
14. CONTROL PANEL FUNCTIONAL DESCRIPTION

14.1. WELL PUMP TO TURN ON WHEN IN-GROUND STORAGE TANK IS AT OR BELOW 80% FULL.

14.2. WELL PUMP TO TURN OFF WHEN IN-GROUND STORAGE TANK IS AT OR ABOVE 95% FULL.

14.3. SYSTEM PRESSURE TO BE REGULATED BY SUBMERSIBLE PUMP IN TREATED WATER TANK.

14.4. SYSTEM PRESSURE TO BE MONITORED AT OUTLET OF PRESSURE TANK.

14.4.1. DISTRIBUTION PUMP TO TURN ON WHEN SYSTEM PRESSURE GOES BELOW 45 psi (345 kpa).

14.4.2. DISTRIBUTION PUMP TO TURN OFF WHEN SYSTEM PRESSURE GOES ABOVE 55 psi (414 kpa).

14.5. DISINFECTANT SYSTEM TO BE FLOW CONTROLLED. CONFIRM FLOW
- 14.6. RATE AND DOSING RATE WITH ENGINEER PRIOR TO COMMISSIONING

14.7. PROVIDE FLASHING BEACON (WALL MOUNTED RED COLORED) FOR LOW STORAGE TANK LEVEL AND LOW SYSTEM PRESSURE.

14.8. PROVIDE MANUAL RESET AT BEACON

14.9. PROVIDE MANUAL RESET FOR ALL ALARMS.

14.10. PIPING AND INSTRUMENTATION DIAGRAM DESCRIBES INTENT OF OPERATION.

14.11. CONTRACTOR TO ISSUE MARKED UP RECORD DRAWINGS SHOWING ADDITIONS AND CHANGES REQUIRED FOR SYSTEM FUNCTIONALITY AS DESCRIBED IN THE FUNCTIONAL DESCRIPTION.

14.12. CONTACT CHAMBER TO BE SUITABLE TO DEVELOP A CT OF 12 ASSUMING A RESIDUAL DISINFECTANT CONCENTRATION OF 1.0 mg/L AT SAMPLE POINT AFTER THE CONTACT CHAMBER.

14.13. PUMP AND CONTROL SYSTEM TO BE AS NOTED OR APPROVED EQUAL.

14.14. PUMP AND CONTROL SYSTEM TO INCLUDE RUN DRY PROTECTION.

14.15. DISINFECTANT SYSTEM TO BE CALIBRATED TO DELIVER RESIDUAL CONCENTRATION OF 1.0MG/L AT SAMPLE POINT AFTER CONTACT CHAMBER AT FULL FLOW RATE.
15. PUMP STARTERS

15.1. PROVIDE PUMP STARTER FOR WELL PUMP AND DISTRIBUTION PUMP

15.2. STARTERS TO INCLUDE HAND/OFF/AUTO SWITCH, PUMP STATUS LIGHT, PUMP ALARM LIGHT, RUN DRY PROTECTION AND PUMP CONTROLS
16. IDENTIFICATION

16.1. IDENTIFY ALL PLACES OF ELECTRICAL EQUIPMENT (INCLUDING EACH AND EVERY RECEPTACLE) OTHER THAN CONDUITS AND CONDUCTORS WITH ENGRAVED LAMINATED PLASTIC NAMEPLATES OR BROTHER P-TOUCH LABELS HAVING 1/8" (3mm) MINIMUM HEIGHT. ATTACH ALL LAMACOID LABELS, UNLESS OTHERWISE DIRECTED WITH SILICONE CEMENT.

16.2. COLOURS OF LABELS TO BE AS FOLLOWS:

16.2.1. NORMAL POWER - BLACK LETTERING ON WHITE BACKGROUND

16.3. ALL JUNCTION AND PULLBOXES FOR CONDUITS, DUCTS AND OTHER RACEWAYS IN CONCEALED CEILING SPACES SHALL BE PERMANENTLY MARKED USING A BLACK FELT PEN AS FOLLOWS. (WHERE CEILING SPACE IS PAINTED OUT, PUT MARKING ON INSIDE OF COVERPLATES).

16.4. FOR POWER SHOW THE COMPLETE CIRCUIT NUMBER OF ALL ENCLOSED CIRCUITS.
17. MAINTENANCE MANUALS

17.1. PROVIDE OPERATION AND MAINTENANCE DATA FOR INCORPORATION INTO MAINTENANCE MANUALS AS FOLLOWS IN HARD COVER 3 RING BINDER C/W INDEX TAB SEPARATORS. PROVIDE THREE (3) HARD COPIES AND ONE (1) PDF SOFTCOPY. SOFTCOPY MAY BE SUBMITTED USING COMPACT DISC, USB FLASH DRIVE OR EMAIL.

17.2. TECHNICAL DATA, PRODUCT DATA, SUPPLEMENTED BY BULLETINS COMPONENT ILLUSTRATIONS, EXPLODED VIEWS, TECHNICAL DESCRIPTIONS OF ITEMS AND PARTS LISTS. (ADVERTISING OR SALES LITERATURE IS NOT ACCEPTABLE)

17.3. WIRING AND SCHEMATIC DIAGRAMS

17.4. NAMES AND ADDRESSES OF LOCAL SUPPLIERS FOR ITEMS INCLUDED IN MAINTENANCE MANUALS.


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4	AUG.18.2017	ISSUED FOR CONSTRUCTION	DH	LL

No.	Date/Date	Description/Description	Drawn by Dessiné par	Approved Approuvé
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Revision / Revision

Consultant's Stamp Sceau de l'expert-conseil	Eng. Stamp Sceau de l'ingénieur
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Client/client	<div><div></div><div><div>Parks Canada Agency Western and Northern Region</div><div>L'Agence Parcs Canada Ouest et Nord Région</div></div></div>
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Consultant's Name Nom de l'expert-conseil
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Project title/Titre du projet

ROCK CREEK CAMPGROUND
AND DAY USE AREA
WATER TREATMENT SYSTEM
GRASSLANDS NATIONAL PARK, SK

Drawing title/Titre du dessin

WATER TREATMENT SYSTEM
SPECIFICATIONS AND DETAILS

Surveyed by/Arpenté par N/A	Drawn by/Dessiné par EH	Date/Date NOV.16.2018
Designed by/Concept par EH	Reviewed by/Revisé par LL	Scale/Echelle

Parks Canada Project Manager/Administrateur de Projets Parcs Canada
COLIN SCHMIDT

Client Acceptance/Acceptation du client	Approved by/Approuvé par
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Parks Canada Responsible Officer/Agent Responsable Project No./No. du projet	Parks Canada Project Manager/Administrateur de Projets Asset No./No. du bien	Sheet No./ No. de la feuille
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Drawing Reference No./No. de référence du dessin
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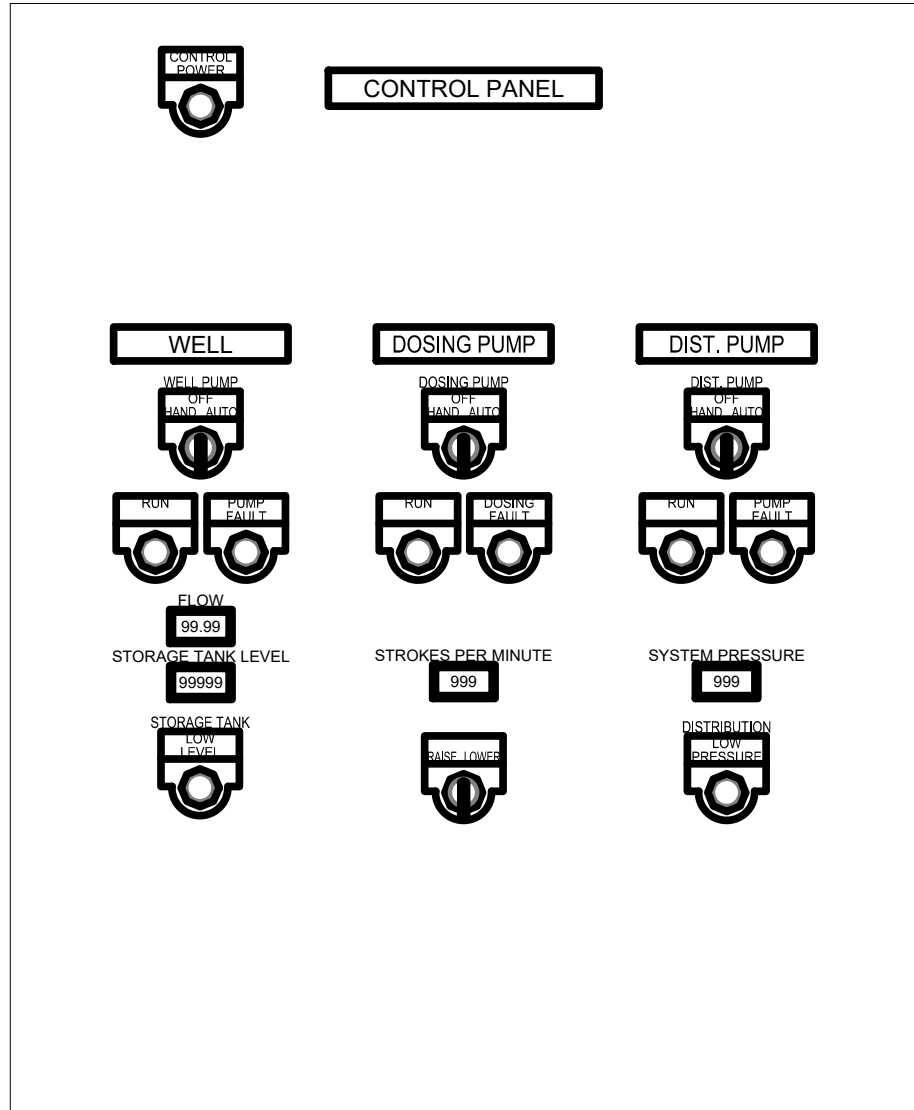
E4.0

POWER & COMMUNICATION SYMBOL SCHEDULE		
SYMBOL	DESCRIPTION	NOTES
WALL ABOVE COUNTER		
FLOOR		
CEILING		
15 AMP, 125V DUPLEX RECEPTACLE		
15 AMP, 125V DUPLEX GROUND FAULT RECEPTACLE (GFCI)		
15/20 AMP, 125V DUPLEX RECEPTACLE		
15/20 AMP, 125V DUPLEX GROUND FAULT RECEPTACLE (GFCI)		
MOTOR DISCONNECT SWITCH		
JUNCTION BOX		
PANELBOARD - REFER TO PANEL SCHEDULES FOR DETAILS		
EQUIPMENT TAG REFER TO MECHANICAL EQUIPMENT SCHEDULE		
LOCALLY MOUNTED ALARM BEACON		
THERMOSTAT		

LIGHTING SYMBOL SCHEDULE		
SYMBOL	DESCRIPTION	NOTES
LUMINAIRE OF TYPE 'A'	REFER TO LUMINAIRE SCHEDULE FOR DETAILS	
EXTERIOR WALL MOUNT LUMINAIRE OF TYPE 'A'	REFER TO LUMINAIRE SCHEDULE FOR DETAILS	
EMERGENCY LIGHTING - BATTERY PACK C/W TWO (2) 5W (350 LUMEN) LED HEADS		
LIGHTING SWITCH - LOW VOLTAGE UNLESS OTHERWISE NOTED		
OCCUPANCY SENSOR OF TYPE 'OS1'	REFER TO OCCUPANCY SENSOR SCHEDULE FOR DETAILS	
PC	PHOTOCELL	

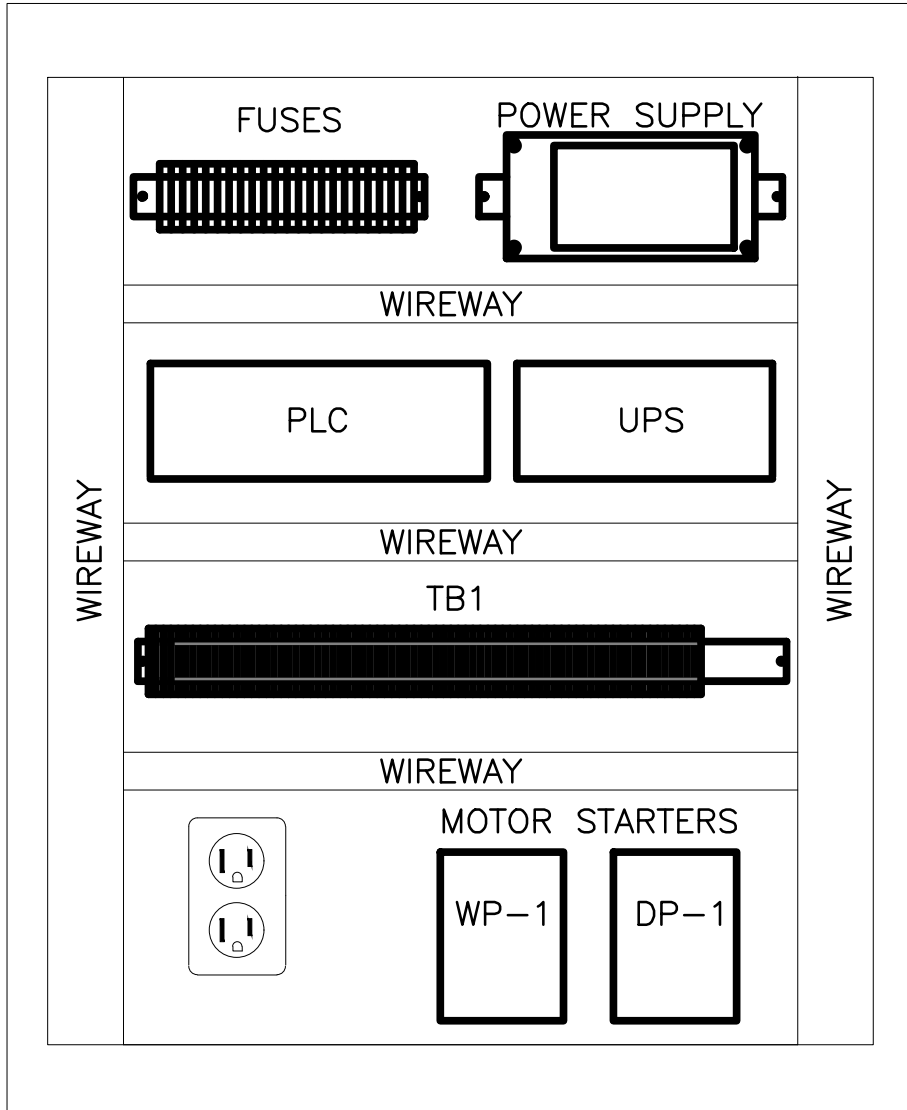
LUMINAIRE SCHEDULE				
TYPE	DESCRIPTION	LAMPING	MOUNTING	REMARKS
A	4' VAPOUR TIGHT STRIP LIGHT	LED 4,000 lm 4000 K	CEILING SURFACE	COOPER 4V72-LD4-4-FR50-UNV-L840-CD1- WL-U
B	WALL SCONCE WITH PHOTOCELL	LED 1,400 lm 3000K	WALL 2.5m AFG	COOPER XTOR1B-Y-PC1

PANEL 4A					
MOUNTING - SURFACE		FEEDER SIZE - 3c #3			
LOCATION - WATER TREATMENT BUILDING		VOLTAGE - 120/240V			
FEEDER PANEL- PANEL 4		MAIN BUS - 100A			
FEEDER BKR - 100A		MAIN BREAKER - 100A			
NOTE	DESCRIPTION	BKR	CIRCUIT	BKR	DESCRIPTION
--	WP-1	20 01	02 15	--	--
--		20 03	04 15	--	--
--	DP-1	30 05	06 20	--	--
--		30 07	08 15	--	--
--	DP-2	15 09	10 15	--	--
--	EF-1	15 11	12 --	--	--
--		-- 13	14 --	--	--
--		-- 15	16 --	--	--
--		-- 17	18 --	--	--
--		-- 19	20 --	--	--
--		-- 21	22 --	--	--
--		-- 23	24 15	--	--
--				--	EMERGENCY LIGHT

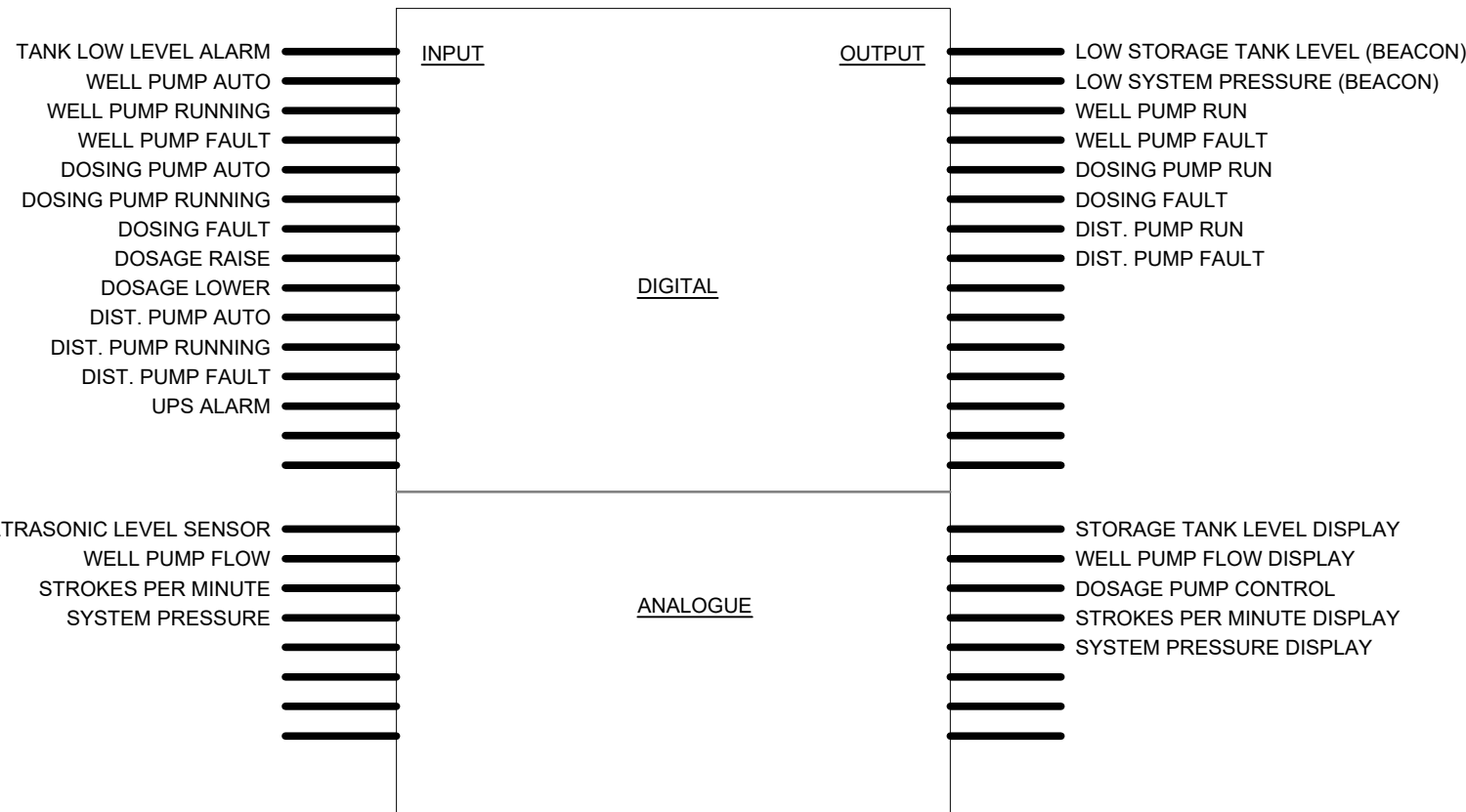


CONTROL PANEL COVER LAYOUT
SCALE: NOT TO SCALE

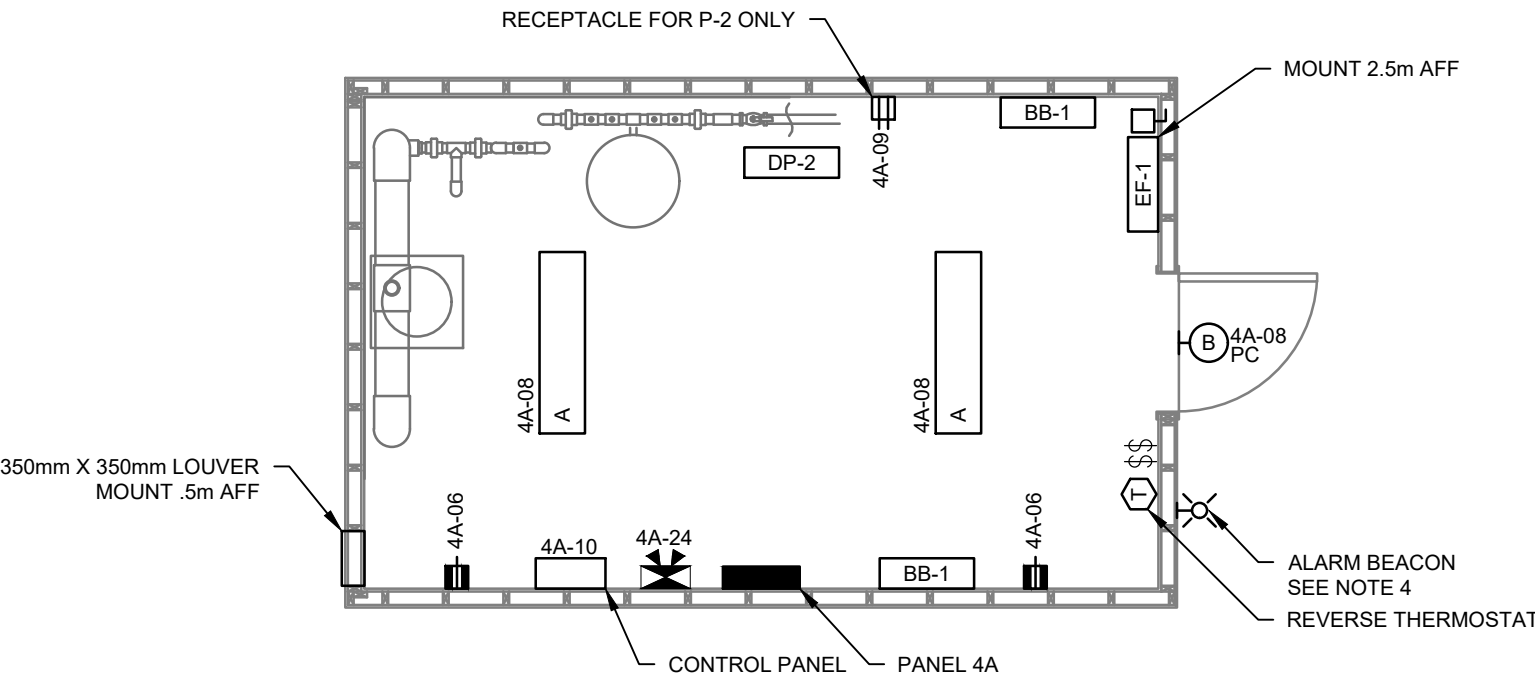
CONTROL PANEL NOTES:
1. EXACT SIZE AND LAYOUT OF CONTROL PANEL TO BE CONFIRMED BY PANEL MANUFACTURER. LAYOUT SHOWN IS SCHEMATIC ONLY.
2. CONTROL PANEL I/O DIAGRAM SHOWN IS REPRESENTATIVE OF INTENT. EXACT INPUTS AND OUTPUTS ARE TO BE CONFIRMED WITH OWNER REQUIREMENTS.



CONTROL PANEL LAYOUT
SCALE: NOT TO SCALE

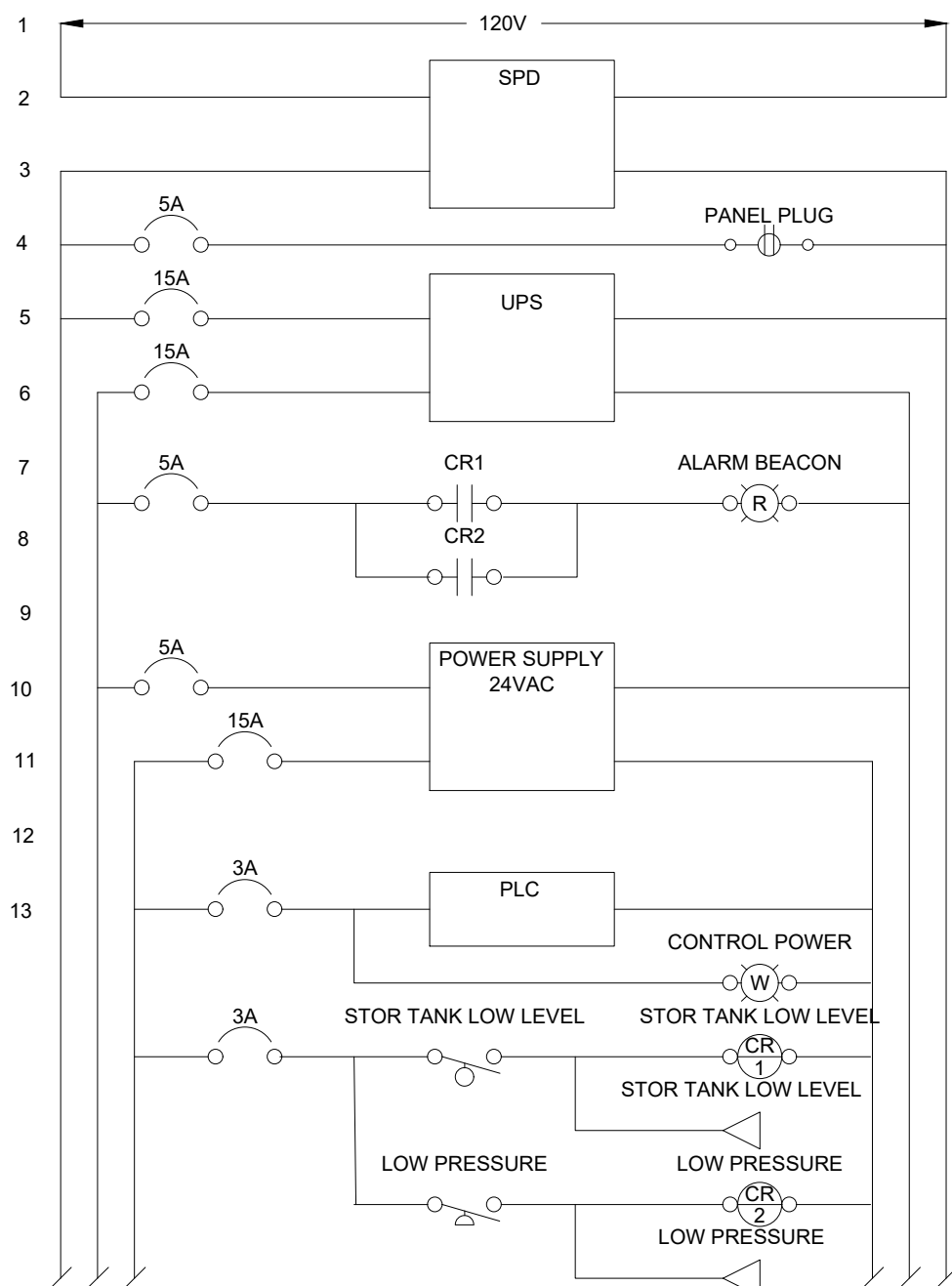


WATER TREATMENT SYSTEM CONTROLLER
BLOCK DIAGRAM
SCALE: NOT TO SCALE



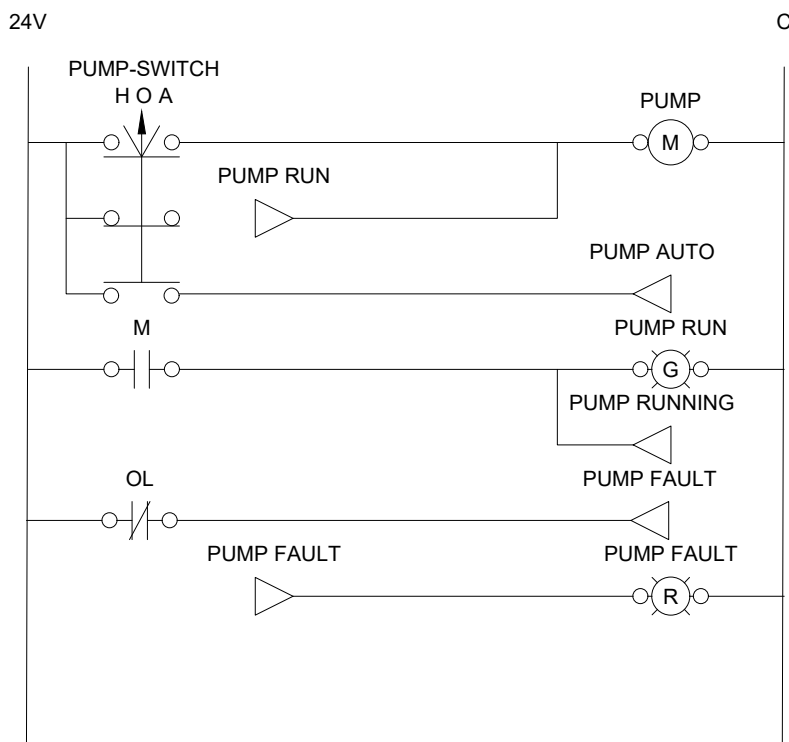
WATER TREATMENT BUILDING - PLAN VIEW
SCALE: 1:50

NOTES:
1. SEE E3.0 AND E4.0 FOR
1.1. PROCESS AND INSTRUMENTATION DIAGRAM
1.2. PIPING LAYOUT
1.3. SYSTEM OPERATION
2. ALL INSTALLATION AS PER CURRENT EDITION OF CANADIAN ELECTRICAL CODE
3. MINIMUM CABLE SIZE TO BE #12 AWG CU OR UNLESS OTHERWISE NOTED
4. ALARM BEACON TO BE FEDERAL SIGNAL SLM100R OR ENGINEER APPROVED EQUAL.
4.1. ALARM BEACON TO INDICATE LOW STORAGE TANK LEVEL & LOW SYSTEM PRESSURE.



CONTROL WIRING
SCALE: NOT TO SCALE

SEQUENCE OF OPERATION
1. REFER TO SPECIFICATIONS SECTION 14



TYPICAL PUMP CONTROL
SCALE: NOT TO SCALE

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Revision / Revision

Consultant's Stamp
Sceau de l'expert-conseil

Eng. Stamp
Sceau de l'ingénieur

Client/client
 Parks Canada
Agency
Western and
Northern Region
L'Agence Parcs
Canada
Ouest et Nord
Région

Consultant's Name
Nom de l'expert-conseil

McElhanny

Project title/Titre du projet
**ROCK CREEK CAMPGROUND
AND DAY USE AREA
WATER TREATMENT SYSTEM
GRASSLANDS NATIONAL PARK, SK**

Drawing title/Titre du dessin
**WATER TREATMENT BUILDING
ELECTRICAL LAYOUTS
& SCHEDULES**

Surveyed by/Arpenté par N/A	Drawn by/Dessiné par EH	Date/Date NOV.16.2018
Designed by/Concept par EH	Reviewed by/Revisé par LL	Scale/Echelle

Parks Canada Project Manager/Administrateur de Projets Parcs Canada
COLIN SCHMIDT

Client Acceptance/Acceptation du client
Approved by/Approuvé par

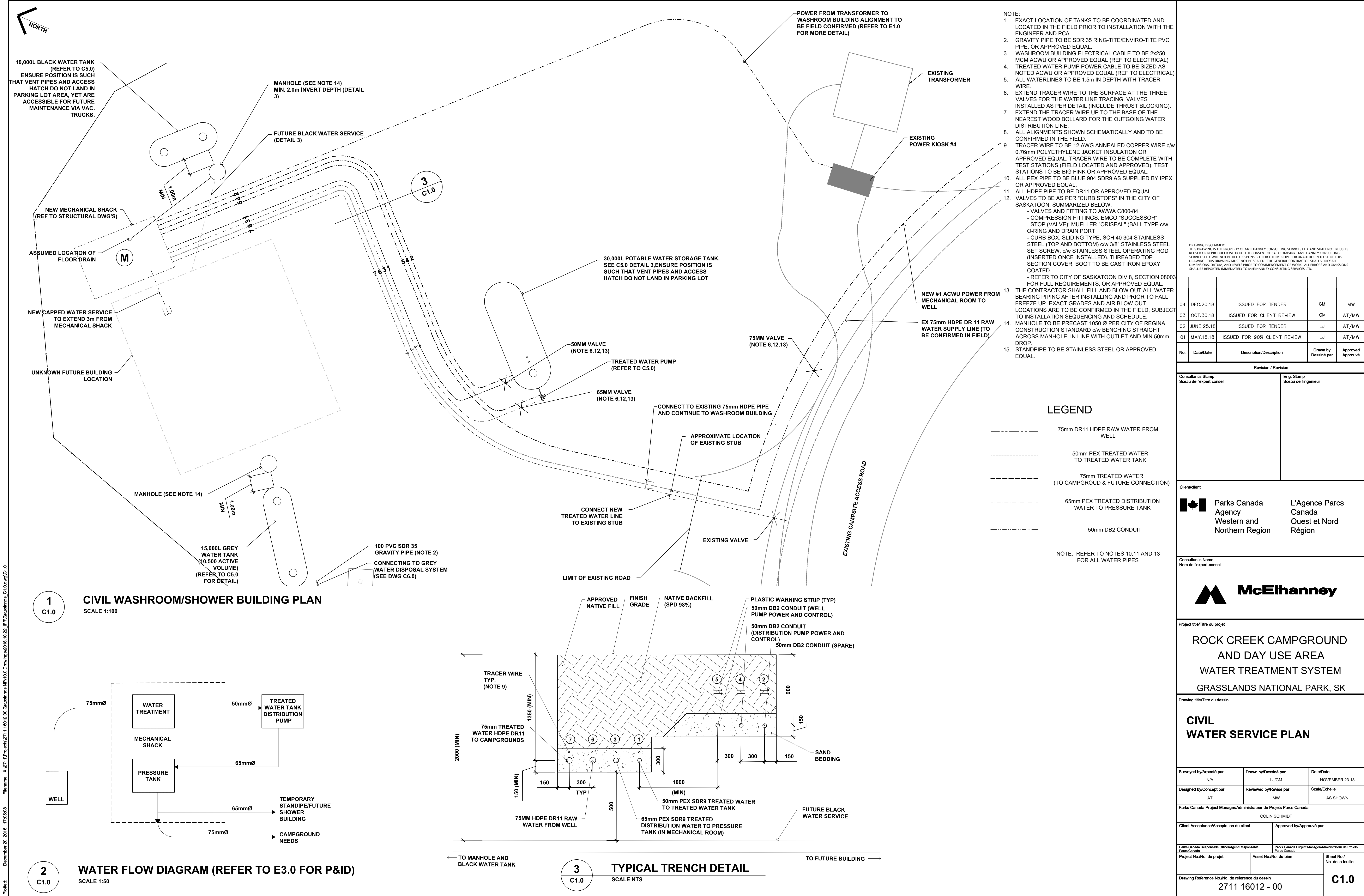
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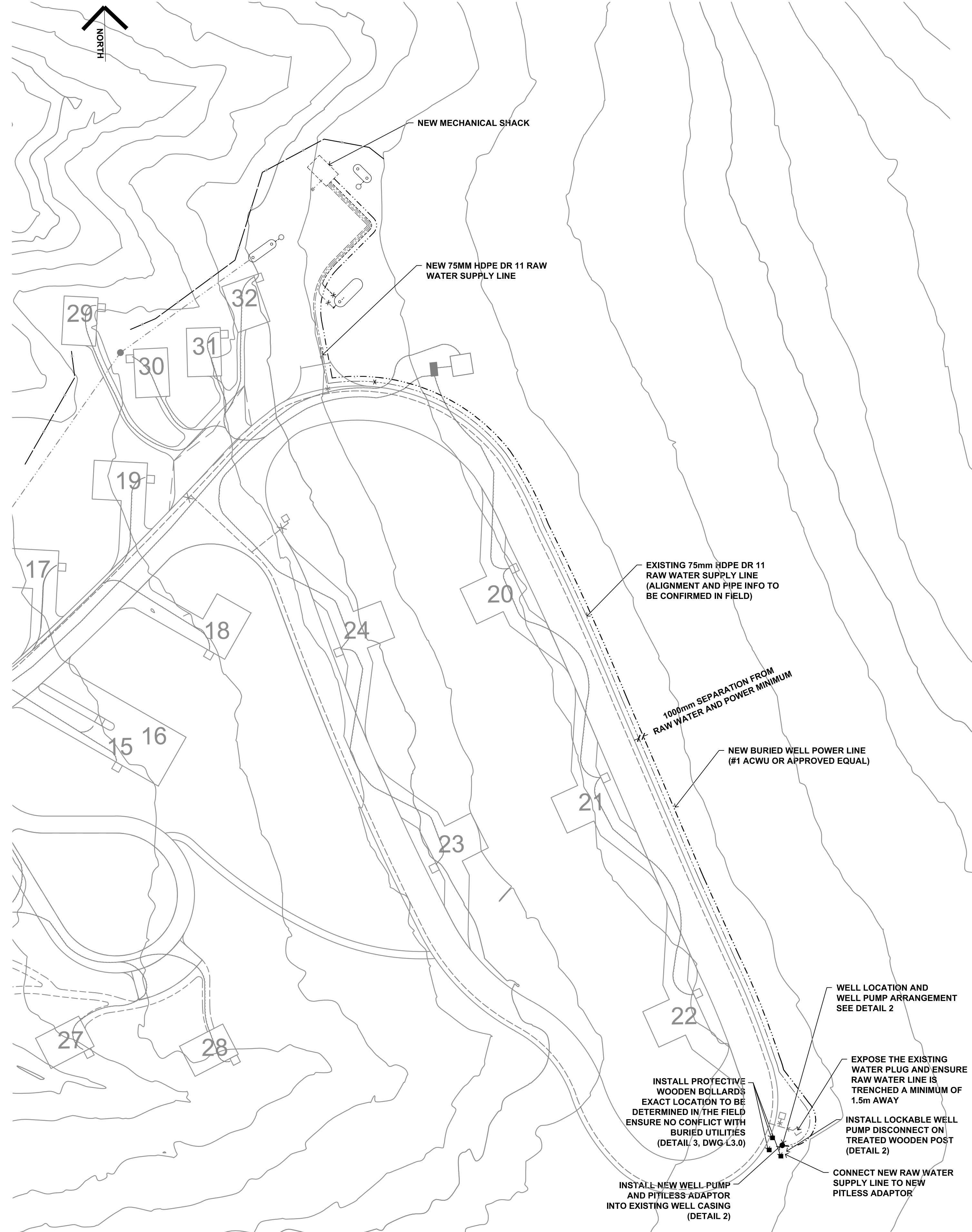
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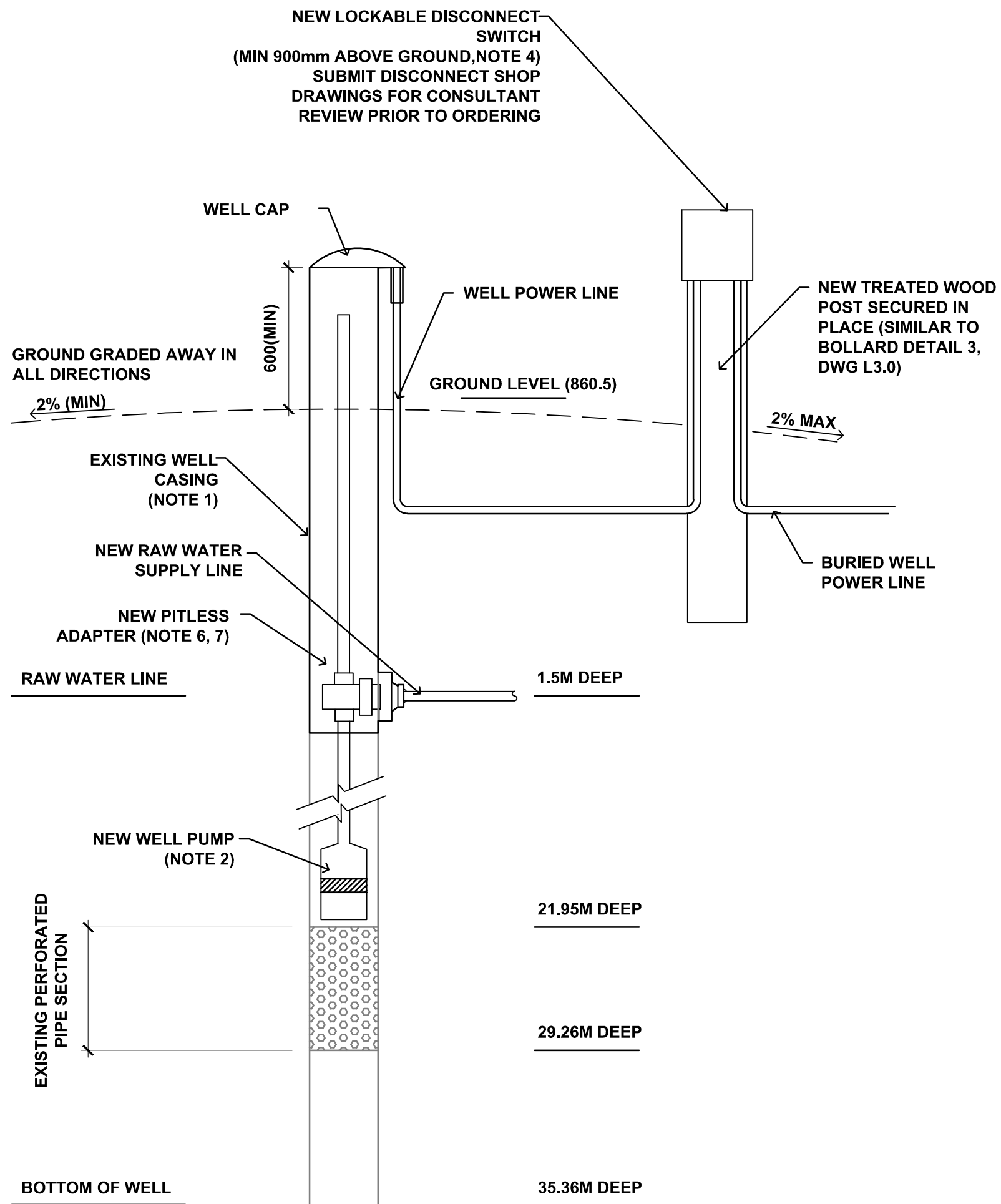
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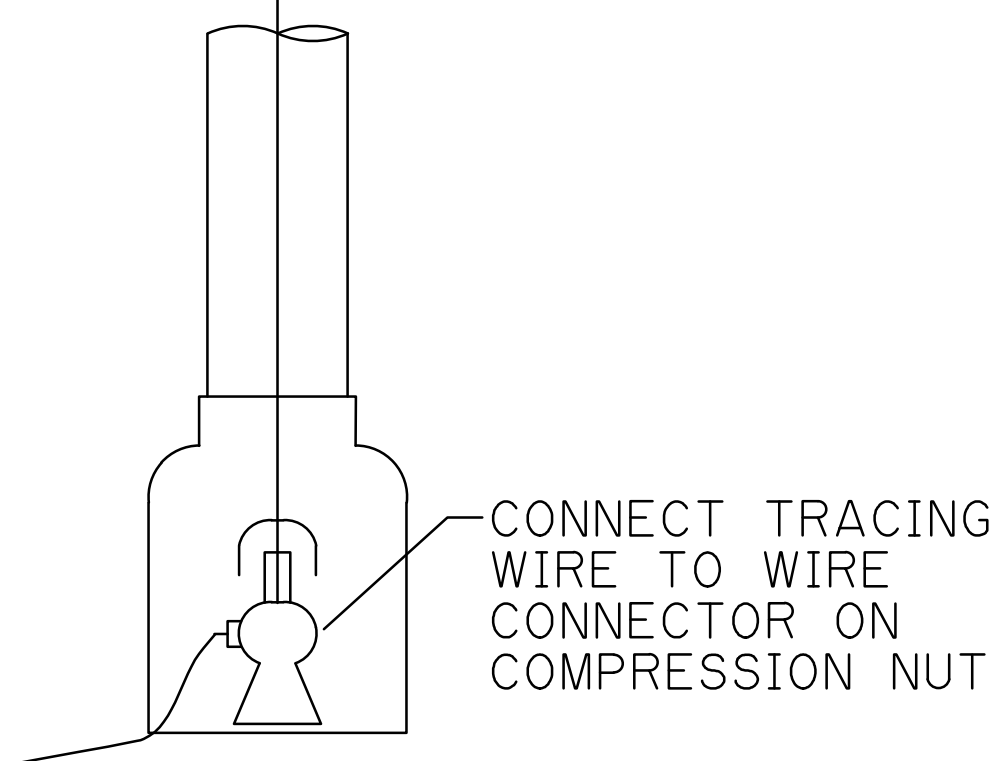
1
C2.0
RAW WATER SUPPLY LINE PLAN
SCALE 1:500

PUMPS: WELL PUMP (NOTE 2) X 1

Q: 0.18 L/S @ 62M
P: 240V, 1Ø, 1 HP
M: SQE 05-140 (GROUND FOS) OR APPROVED EQUAL
C/W COMPATIBLE CONTROLLER.



2
C2.0
WELL PROFILE (NOTE 1)
SCALE N.T.S.



3
C2.0
GROUND CLAMP DETAIL
N.T.S.

NOTES:

1. RUN TRACING WIRE AWG #12-7 STRAND RWU-90 (BLUE) ALONG THE TOP OF THE WATERMAIN. TAPE WRAP WIRE A MINIMUM OF EVERY 2 METRES.
2. TRACING WIRES AT THE TERMINATION POINT ARE TO BE STRIPPED TO MATCH THE APPROPRIATELY SIZED BURNDY CRIMP CONNECTOR AND CRIMPED WITH AN APPROVED TOOL. THE COMPLETED TERMINATION IS TO BE PROTECTED WITH A RAYCHEM MCK-1V OR 2V HEAT SHRINK KIT OR APPROVED EQUAL AND SECURED WITHIN 150mm OF THE END PLUG.

LEGEND

- PROPOSED TREATED WATER LINE
- EXISTING WELL LOCATION
- PROPOSED ELECTRICAL POWER LINE
- RAW WATER LINE

NOTE:

1. WELL PROFILE AS PER GROUNDWATER SOURCE DRILLING AND TESTING, PROGRAM ROCK CREEK CAMPGROUND (WATERLINE, NOV 2017)
2. SUITABLE TO RESTRICT FLOW TO 0.18L/S (MAXIMUM) OR APPROVED EQUAL. TO BE SUPPLIED AND INSTALLED c/w COMPATIBLE CONTROL SYSTEM (INCLUSIVE OF VFD OR SOFT START). CONTRACTOR TO SUBMIT DOCUMENTATION AND/OR SHOP DRAWINGS FOR APPROVED, PRIOR TO INSTALLATION.
3. RAW WATER SUPPLY PIPE TO BE HDPE DR 11 SUITABLE FOR POTABLE WATER USE OR APPROVED EQUAL. ALL FITTINGS TO BE COMPRESSION STYLE FITTING, SUITABLE FOR BURY.
4. LOCKABLE DISCONNECT SWITCH TO BE 20AMP 120/240V AS PER CANADIAN ELECTRICAL CODE AND APPLICABLE STANDARDS. NEMA 3R RATED. SUBMIT DISCONNECT SHOP DRAWINGS FOR CONSULTANT REVIEW PRIOR TO ORDER.
5. CONTRACTOR TO INSTALL NEW PUMP PITLESS ADAPTER AND ASSOCIATED APPURTENANCES INTO EXISTING WELL CASING (WHICH WAS INSTALLED BY OTHERS).
6. THE PITLESS ADAPTER TO BE A BAKER STANDARD INDUSTRIAL PITLESS UNIT (NSF 61 RATED) OR APPROVED EQUAL. EXCAVATION AROUND EXISTING WELL CASING TO BE UNDERTAKEN TO DEPTH OF 0.5m BELOW ANTICIPATED CUT DEPTH TO ENSURE NO CONTAMINATION ENTERS THE WELL. INSTALL AS PER MANUFACTURES DIRECTIONS.

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03	OCT.30.18	ISSUED FOR CLIENT REVIEW	GM	AT/MW
02	JUNE.25.18	ISSUED FOR TENDER	LJ	AT/MW
01	MAY.18.18	ISSUED FOR 90% CLIENT REVIEW	LJ	AT/MW

Revision / Revision				
Consultant's Stamp Sceau de l'expert-conseil		Eng. Stamp Sceau de l'ingénieur		

Client/client				
Parks Canada Agence Western and Northern Region		L'Agence Parcs Canada Ouest et Nord Région		

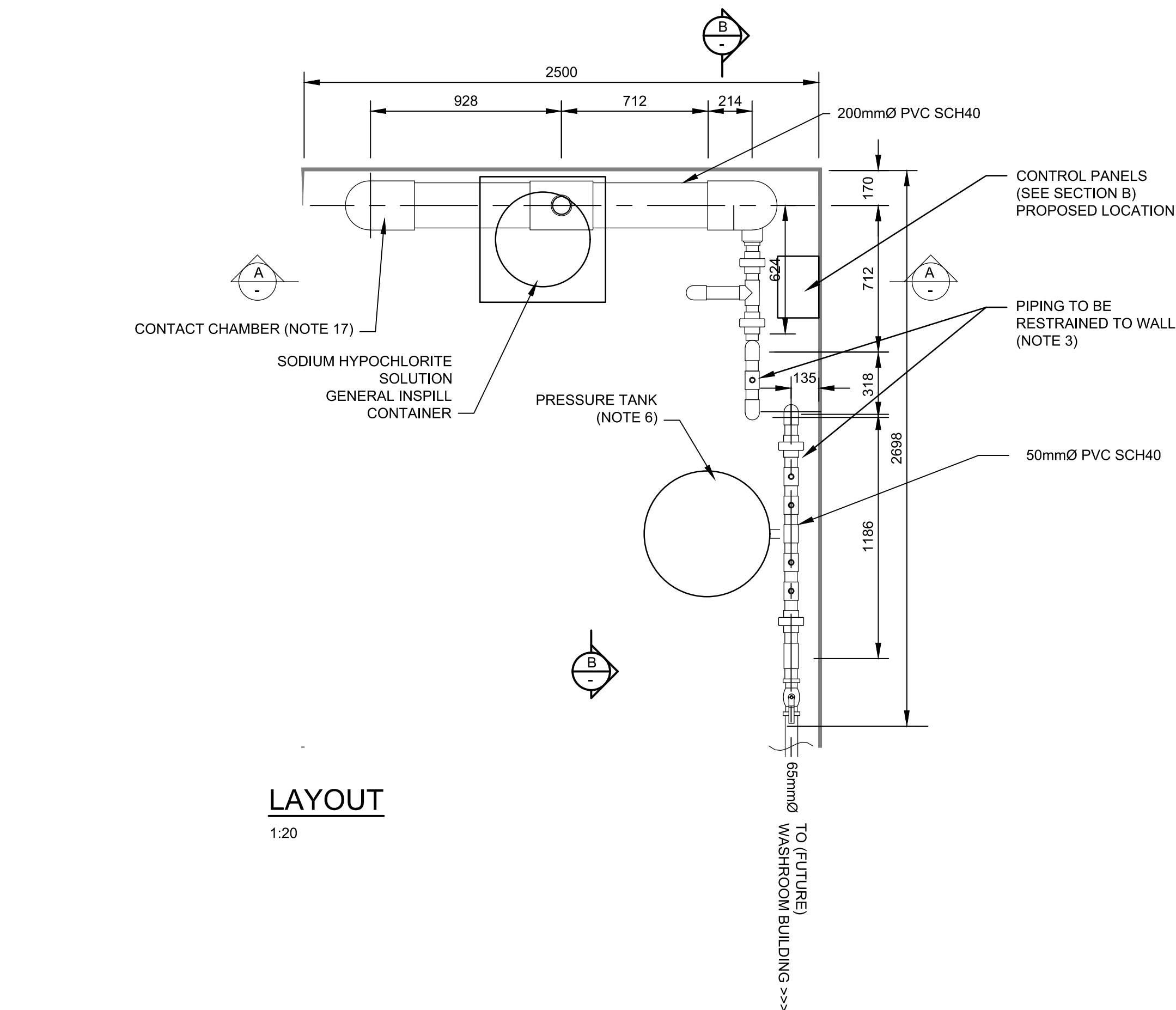
Consultant's Name Nom de l'expert-conseil		McElhanney		
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Project title/Titre du projet ROCK CREEK CAMPGROUND AND DAY USE AREA WATER TREATMENT SYSTEM GRASSLANDS NATIONAL PARK, SK				
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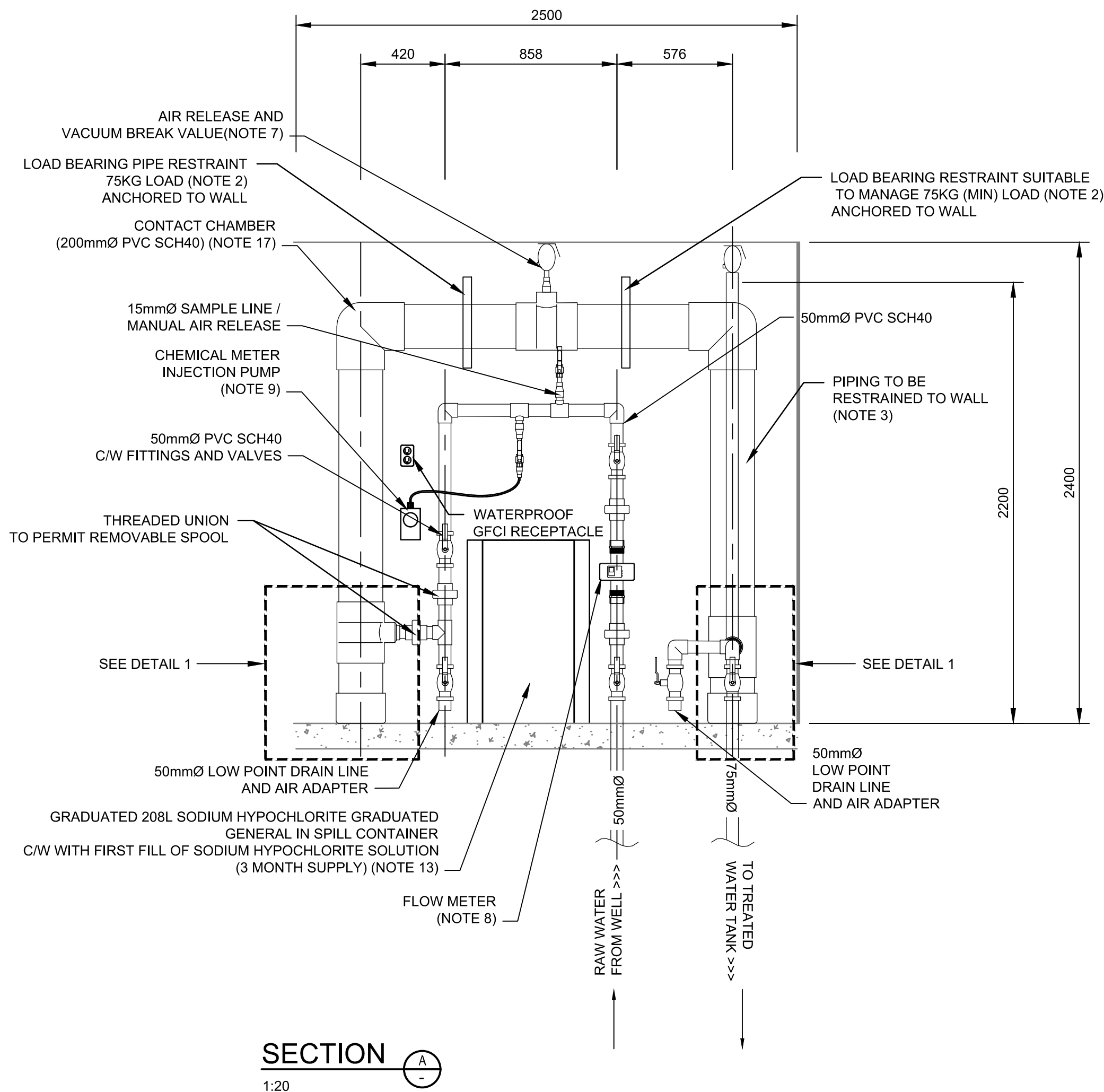
Drawing title/Titre du dessin CIVIL RAW WATER SUPPLY LINE PLAN				
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Surveyed by/Arpenté par N/A	Drawn by/Dessiné par LJ/GM	Date/Date NOVEMBER 23.18
Designed by/Concept par AT	Reviewed by/Revisé par MW	Scale/Echelle AS SHOWN

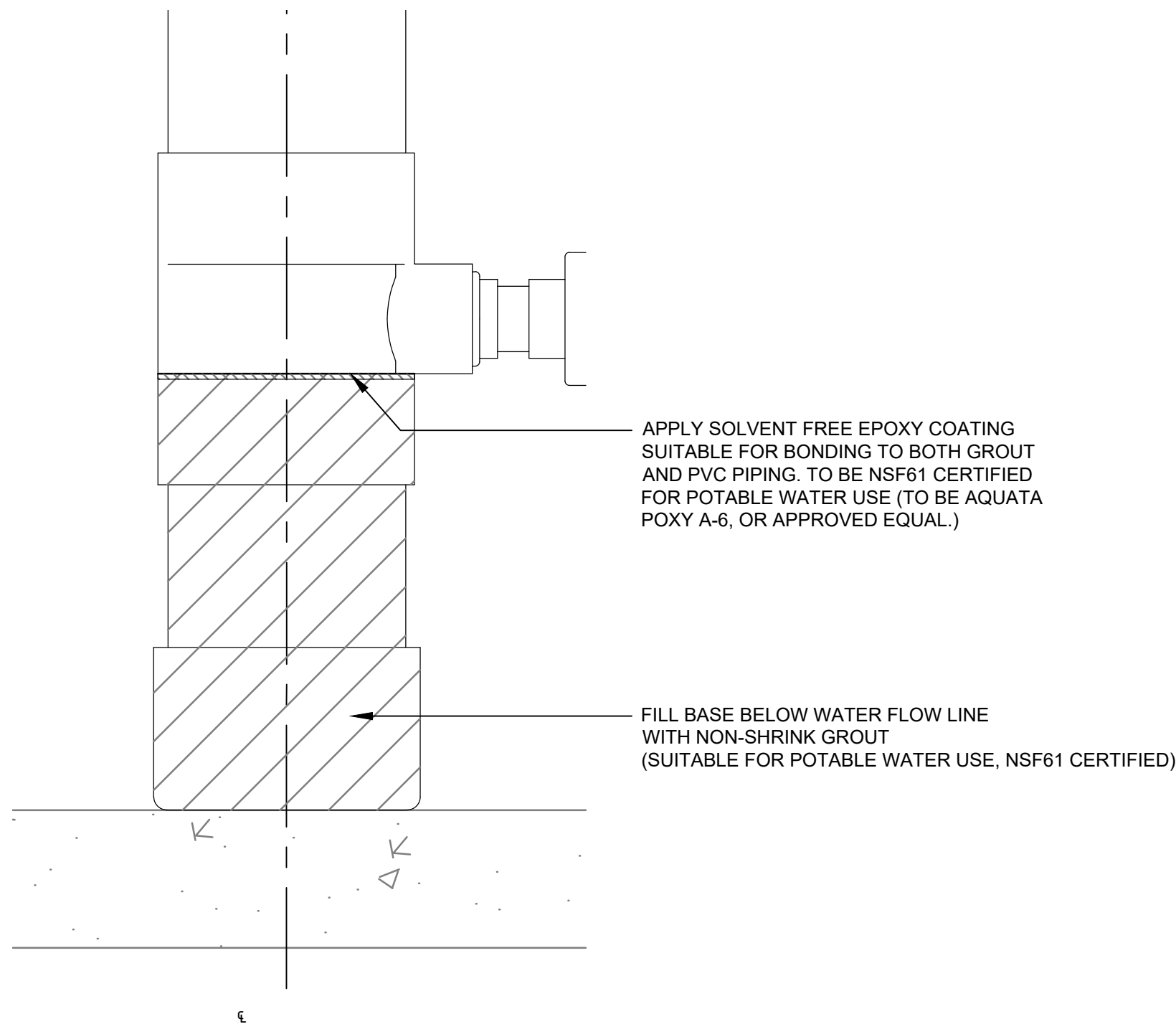
Parks Canada Project Manager/Administrateur de Projets Parcs Canada COLIN SCHMIDT		
Client Acceptance/Acceptation du client		Approved by/Approuvé par
Parks Canada Responsible Officer/Agent Responsable Parcs Canada		Parks Canada Project Manager/Administrateur de Projets Parcs Canada
Project No./No. du projet	Asset No./No. du bien	Sheet No / No. de la feuille
Drawing Reference No./No. de référence du dessin 2711 16012 - 00		C2.0



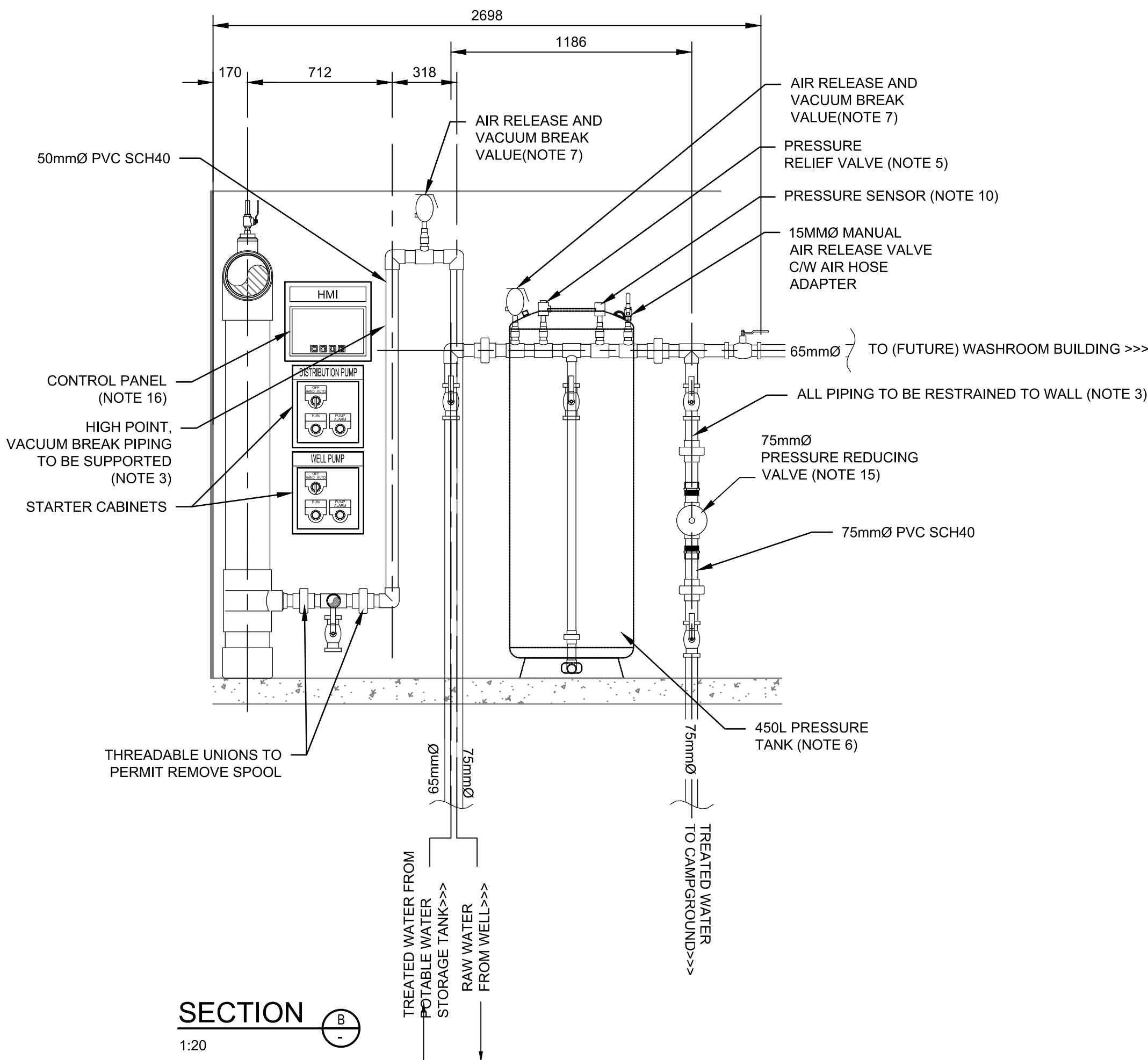
LAYOUT
 1:20



SECTION A
 1:20



DETAIL 1: CONCRETE/GROUT FILL OF UNUSED PIPING
 SCALE : 1:5



SECTION B
 1:20

- NOTE:
1. WATER TREATMENT SYSTEM IS LOCATED IN THE MECHANICAL ROOM AND EXACT LAYOUT TO BE COORDINATE WITH ARCHITECTURAL DRAWINGS.
 2. ALL DIMENSIONS TO BE FIELD VERIFIED AND SUBJECT TO SHOP DRAWINGS APPROVAL.
 3. RESTRAINTS AND PIPE SUPPORT TO BE AS PER LOCAL PLUMBING CODE AND SEISMIC REQUIREMENT ALL PIPING TO BE SUPPORTED AND ANCHORED TO WALL AND SUPPORTED APPROPRIATELY ON THE GROUND.
 4. ALL EQUIPMENT, PIPING, EPOXY, COATINGS AND ALL OTHER APPURTENANCES IN CONTACT WITH WATER TREATMENT SYSTEM TO BE NSF 61 CERTIFIED, SUITABLE FOR POTABLE WATER SERVICE.
 5. PRESSURE RELEASE VALVE TO BE FIELD SET TO 90PSI AND BE WATTS WAT-530-CK POP VALVE OR APPROVED EQUAL.
 6. PRESSURE TANK SHALL BE FLEX-LITE FL-40 (450LITER) OR APPROVED EQUAL.
 7. AIR RELEASE AND VACUUM BREAK VALVE TO BE ARI D-040 P75 (3/4 INCH MIP THREADED CONNECTION) OR APPROVED EQUAL.
 8. FLOW METER TO BE KRONE IFC 100 (COMPLETE WITH INTEGRAL CONVERTER, INSTANTANEOUS FLOW DISPLAY AND LINKED TO DATALOGGING CAPABLE DATA RECORDER WITH REMOVABLE MEMORY MEDIA) OR APPROVED EQUAL.
 9. CHEMICAL FEED PUMP TO BE GRUNDFOS CHEMICAL METER PUMP DDA7.5 (AS FCM CONFIGURATION OR APPROVED EQUAL).
 10. FOR PRESSURE SENSOR COMPATIBILITY, REFER TO ELECTRICAL DRAWINGS FOR SUITABILITY CONTROL LOGIC.
 11. ALL PIPING TO BE SCH 40 XIRTEC PVC PIPING OR APPROVED EQUAL. ALL PIPING AND SOLVENT TO BE NSF 61 CERTIFIED, SUITABLE FOR POTABLE WATER SYSTEMS.
 12. FOR ALL EQUIPMENT (AND APPROVED EQUALS), REFER TO ELECTRICAL DRAWINGS FOR OPERATION LOGIC INTENT, SPECIFICATIONS AND CONTROL SYSTEMS.
 13. SODIUM HYPOCHLORITE DISINFECTANT TO BE MINIMUM 6% SOLUTION (NSF 61 CERTIFIED) OR APPROVED EQUAL.
 14. ALL EQUIPMENT, PIPING AND APPURTENANCES TO BE RATED FOR MINIMUM 150 PSI OPERATOR UNLESS OTHERWISE NOTED.
 15. PRESSURE REDUCING VALVE TO WATTS USB (50mm) WATTS LF223S OR APPROVED EQUAL.
 16. CONTROL PANNELS TO BE NEMA 2, SUITABLE FOR SPLASH PROTECTION.
 17. CONTACT CHAMBER SUITABLE TO PROVIDE A CT VALUE OF 12 (ASSUMING 1.5 mg/L CL⁻¹, THIS IS APPROXIMATELY 8 MINUTES).

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Revision / Revision	
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Consultant's Name Nom de l'expert-conseil	
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Project title/Titre du projet	ROCK CREEK CAMPGROUND AND DAY USE AREA WATER TREATMENT SYSTEM GRASSLANDS NATIONAL PARK, SK
Drawing title/Titre du dessin	CIVIL WATER TREATMENT SYSTEM

Surveyed by/Arpenté par N/A	Drawn by/Dessiné par LJ/GM	Date/Date NOVEMBER 23.18
Designed by/Concept par AT	Reviewed by/Revisé par MW	Scale/Echelle AS SHOWN
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GENERAL NOTES

1. PROVIDE COMPLETE, FULLY TESTED BY THE AUTHORITY HAVING JURISDICTION AND OPERATIONAL MECHANICAL SYSTEMS TO MEET THE REQUIREMENTS DESCRIBED HEREIN AND IN COMPLETE ACCORDANCE WITH ALL APPLICABLE CODES AND ORDINANCES. THE MECHANICAL CONTRACTOR SHALL PROVIDE LABOR, MATERIALS, AND EQUIPMENT TO COMPLETE THE MECHANICAL WORK AS SPECIFIED.
2. THE DRAWINGS ACCOMPANYING THIS SPECIFICATION ARE TO BE CONSIDERED AS DIAGRAMMATIC ONLY AND DO NOT SHOW ALL THE STRUCTURAL AND CONSTRUCTION DETAILS. ANY INFORMATION INVOLVING BUILDING DIMENSIONS SHALL BE TAKEN FROM THE ARCHITECTURAL AND STRUCTURAL DRAWINGS AND SITE MEASUREMENTS.
3. THESE DRAWINGS AND SPECIFICATIONS SHALL BE CONSIDERED AN INTEGRAL PART OF THE CONTRACT DOCUMENTS. NEITHER THE DRAWINGS NOR THE SPECIFICATIONS SHALL BE USED ALONE. MISINTERPRETATION OF ANY REQUIREMENTS OF EITHER PLANS OR SPECIFICATIONS SHALL NOT CHANGE THE REQUIREMENTS OR INTENT OF THE SPECIFICATION FOR PROPER COMPLETION OF THE WORK TO THE FULL ACCEPTANCE OF THE CONSULTANT.
4. MOST STRINGENT REQUIREMENTS OF ALL SECTIONS SHALL BE ADHERED TO. SHOULD ANY DISCREPANCY APPEAR BETWEEN THESE SPECIFICATIONS AND THE DRAWINGS TO CAUSE DOUBT AS TO THE TRUE MEANING AND INTENT OF THE DRAWINGS AND SPECIFICATIONS, A RULING SHALL BE OBTAINED FROM THE CONSULTANT BEFORE SUBMITTING THE TENDER. IF THIS IS NOT DONE IT WILL BE ASSUMED THAT THE MORE EXPENSIVE ALTERNATIVE HAS BEEN INCLUDED IN THE CONTRACT.
5. ANY ERROR, INCONSISTENCY, CONFLICTS OR WORK NOT INDICATED IN THE CONTRACT DRAWINGS OR SPECIFICATIONS NOTED AFTER THE AWARD OF CONTRACT MUST BE REPORTED TO THE ATTENTION OF THE CONSULTANT BEFORE COMMENCING WORK.
6. CONTRACTOR TO PROVIDE CONSULTANT A MATERIALS AND LABOR BREAKDOWN FOR EACH ITEM LISTED ON CHANGE NOTICES. CONTRACTOR ALSO TO RECEIVE THE SAME FROM ALL AFFECTED SUB-TRADES AND INCLUDE IN THE BREAKDOWN SUBMITTED. ADDITIONAL INFORMATION SHALL BE PROVIDED AS PER CONSULTANT REQUEST.
7. FOLLOW MANUFACTURE'S RECOMMENDED INSTALLATION DETAILS AND PROCEDURES FOR EQUIPMENT, SUPPLEMENTED BY THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THESE DRAWINGS ARE NOT TO BE CONSIDERED DETAILED INSTALLATION INSTRUCTIONS.
8. ASSUME RESPONSIBILITY FOR DAMAGE CAUSED TO THE OWNER OR OTHERS BY IMPROPER WORK, PROTECT ALL WORK FROM DAMAGE.
9. INSTALL EQUIPMENT AND PIPING GENERALLY IN LOCATIONS AND ROUTES SHOWN CLOSE TO BUILDING STRUCTURE WITH MINIMUM INTERFERENCE WITH OTHER SERVICES OR FREE SPACE.
10. PROTECT ANY EXISTING SERVICES. AVOID SHUTDOWNS OF EXISTING SERVICES. IF SHUTDOWNS DURING NORMAL WORKING HOURS ARE UN-AVOIDABLE, THE EXACT LENGTH OF SHUTDOWN AND DURATION OF SHUTDOWN TO BE COORDINATED AND APPROVED BY OWNER'S CONSTRUCTION REPRESENTATIVE A MINIMUM OF ONE WEEK IN ADVANCE. EXACT LOCATIONS OF SERVICES ON SITE ARE TO BE VERIFIED PRIOR TO STARTING WORK.
11. ALL WORK TO BE BE COMPLETED IN AN ORGANIZED AND ORDERLY MANNER WITH ATTENTION ALSO DIRECTED TOWARDS CONSERVING HEADROOM AND AVOIDING INTERFERENCE WITH THE FREE USE OF SPACE IN WHICH THE WORK PASSES. ALL PIPES AT CEILING SHALL BE KEPT AS TIGHT AS POSSIBLE TO BEAMS OR OTHER LIMITING MEMBERS. ALL PIPES SHALL BE COORDINATED IN ELEVATION TO ENSURE THAT THEY ARE LOCATED IN THE CEILING SPACE PROVIDED UNLESS DETAILED AND DIMENSIONED OTHERWISE.
12. PROVIDE RESTRAINTS FOR ALL EQUIPMENT, PIPING, AND DUCTWORK WHEN REQUIRED BY CODE (INCLUDING SEISMIC, IF APPLICABLE).
13. FIELD VERIFY ALL BUILDING AND SITE DIMENSIONS PRIOR TO ANY FABRICATION AND INSTALLATION OF EQUIPMENT OR MATERIALS. NO ADDITIONAL CHARGE WILL BE ENTERTAINED FOR FAILURE TO VERIFY THESE DIMENSIONS ON SITE.
14. THE LAYOUT OF THE MECHANICAL SYSTEMS AND EQUIPMENT IS BASED UPON THE SPECIFIED MANUFACTURER'S PHYSICAL DIMENSIONS. IN SUBSTITUTING ALTERNATE OR EQUAL EQUIPMENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR EQUIPMENT LAYOUT AND PIPING CONNECTIONS. ANY COSTS TO ACCOMMODATE REVISIONS TO SUIT OTHER THAN SPECIFIED EQUIPMENT WILL NOT BE CONSIDERED ADDITIONAL COSTS.
15. INSTALL ALL MECHANICAL EQUIPMENT AND SERVICES IN ORDER THAT MAINTENANCE AND DISASSEMBLY WILL HAVE MINIMUM DISTURBANCE TO CONNECTING PIPING OR DUCT SYSTEMS.
16. COORDINATE WITH ALL OTHER SUB-TRADES AT THE START AND THROUGHOUT THE PROJECT TO PREVENT AVOIDABLE CONFLICTS. IF THERE IS A CONCERN OF CONFLICT, COORDINATE THROUGH GENERAL CONTRACTOR. IF CONFLICTS ARE UNAVOIDABLE, CONTACT ENGINEERS IMMEDIATELY TO ASSIST WITH A SOLUTION.
17. PROVIDE FIRE STOPPING MEASURES AT PENETRATIONS OF ALL RATED WALL ASSEMBLIES IN ACCORDANCE WITH APPLICABLE CODES AND STANDARDS.
18. COORDINATE LOCATION OF OPENINGS REQUIRED FOR WORK WITH RESPECTIVE TRADES AND CONTRACTORS.
19. DO NOT BURN, CUT OR REMOVE STRUCTURAL MEMBERS WITHOUT WRITTEN APPROVAL FROM STRUCTURAL CONSULTANT.
20. PROVIDE CLEARLY MARKED UP RECORD DRAWINGS IDENTIFYING SYSTEMS, THEIR COMPONENTS, DIMENSIONS, SIZES, ARRANGEMENTS, INVERTS, MATERIALS, ETC. DO NOT CONCEAL WORK UNTIL PIPING IS TESTED IN ACCORDANCE WITH THE AUTHORITY HAVING JURISDICTION AND REQUIRED INFORMATION IS RECORDED. INACCURATE ASSUMPTION OF INFORMATION BEING RECORDED IS UNACCEPTABLE, IN SUCH CASES, AND WHERE DEEMED NECESSARY BY THE OWNER, THE AFFECTED AREAS WILL BE UNCOVERED AND EXPOSED TO RECORD THE CORRECT INFORMATION, WHERE THIS OCCURS, AND THE RECORDED INFORMATION IS DIFFERENT FROM THE ACTUAL SITE CONDITIONS, THE CONTRACTOR WILL RECORD THE CORRECT INFORMATION AND THEN RE-FINISH, AT HIS/HER OWN EXPENSE, THE AFFECTED AREA(S) TO THE SATISFACTION OF THE OWNER.

EQUIPMENT AND MATERIALS

1. PROVIDE EQUIPMENT AS SPECIFIED ON DRAWINGS, OR EQUALS AS APPROVED BY ENGINEER. EQUIPMENT NOT SPECIFIED OR APPROVED AS EQUAL WILL BE REJECTED AT THE SHOP DRAWING REVIEW STAGE.
2. ALL EQUIPMENT AND MATERIALS TO MEET INDUSTRY TESTING STANDARDS, BE APPROPRIATELY RESTRAINED SEISMICALLY FOR THE LOCAL SEISMIC ZONE, AND TO BE COMPLETE WITH A MAINTENANCE/OPERATION MANUAL.
3. OPERATION AND MAINTENANCE MANUAL WILL INCLUDE :
 - DESCRIPTION AND INSTRUCTION OF OPERATION AND MAINTENANCE OF ALL MECHANICAL SYSTEMS
 - SHOP DRAWINGS OF ALL EQUIPMENT
 - LIST OF TAGGED VALVES/COMPONENTS
 - EXTENDED WARRANTIES
 - COPY OF RECORD DRAWINGS
 - LIST OF INSPECTION AND TEST CERTIFICATES
 - NAME OF ENGINEER, MECHANICAL CONTRACTOR, GENERAL CONTRACTOR AND PHONE NUMBERSMANUAL IS TO BE OF BINDER TYPE CONSTRUCTION PROVIDED WITH PERMANENT LABELS AFFIXED TO THE SPINE AND COVER. LABELS ARE TO HAVE PROJECT NAME, PROJECT DATE, MANUAL TITLE, OWNER, AND CONSULTANT NAMES. THREE (3) SETS ARE TO BE SUBMITTED PRIOR TO SUBSTANTIAL PERFORMANCE.
4. PERFORM ALL TESTING REQUIRED BY THE AUTHORITY HAVING JURISDICTION TESTING INCLUDES PRESSURE TESTING AND DISINFECTION FOLLOWED BY WATER SAMPLE TAKEN FROM THE END OF THE WATER TREATMENT SYSTEM , DEMONSTRATING MEETING POTABLE WATER SPECIFICATIONS.
5. PROMPTLY PROVIDE THE CONSULTANT WITH ALL TEST REPORTS. ALL TESTS SHALL BE DOCUMENTED AND WITNESSED BY THE OWNER OR THEIR REPRESENTATIVES, WITH MINIMUM 48HRS NOTICE.
6. PERFORM THE FOLLOWING TESTS:
 - 6.1. DOMESTIC WATER TEST TO MAXIMUM IN-SERVICE PRESSURE FOR AT LEAST TWO (2) HOURS (MAXIMUM SERVICE PRESSURE IS 70PSI) WITHOUT A DROP IN PRESSURE
 - 6.2. AIR TESTING IS NOT PERMITTED
7. PROVIDE ACCESS PANELS REQUIRED IN BUILDING CONSTRUCTION INCLUDING IN ARCHITECTURAL WALLS AND CEILINGS FOR ACCESS TO ANY CONCEALED MECHANICAL EQUIPMENT OR VALVE.
8. SUCH PANELS SHALL BE MANUFACTURED PANELS, WITH FASTENING DEVICES, APPROPRIATE TO THE CONSTRUCTION INVOLVED. PROVIDE ACCESS PANEL (305mm x 305mm FOR HAND ACCESS, OTHERWISE 460mm x 460mm MIN) IN WALL/CEILING TO ALL MECHANICAL SYSTEM COMPONENTS REQUIRING ACCESS.

INSPECTION

1. THE CONTRACTOR IS TO PROVIDE THE CONSULTANT REASONABLE NOTICE (48 HOURS FOR LOCAL SITES) PRIOR TO CALLING AN INSPECTION, CONCEALING OR BURYING WORK
2. THE CONTRACTOR SHALL NOTIFY THE CONSULTANT IN WRITING FOR THE FOLLOWING MINIMUM, BUT NOT LIMITED TO, INSPECTIONS: (REQUIRED TO PROVIDE A SCHEDULE 'C' FOR OCCUPANCY)
 - BELOW GRADE PIPING PRIOR TO BACKFILL
 - ALL HVAC AND PLUMBING ROUGH-IN PRIOR TO CONCEALMENT
 - FIRE STOPPING MEASURES
 - PRE OCCUPANCY INSPECTION
 - FINAL OCCUPANCY INSPECTION AND VERIFICATION OF ALL EQUIPMENT BEING FULLY OPERATIONAL
3. ALL WORK SHALL BE APPROVED BY ANY OTHER REGULATORY BODY HAVING JURISDICTION WHERE REQUIRED (PARKS CANADA).
4. THE CONTRACTOR IS TO PROVIDE COPIES OF ALL PERMITS, INSPECTION REPORTS AND CERTIFICATES FOR INSERTION INTO THE OPERATION AND MAINTENANCE MANUAL.
5. AFTER THE PRE-OCCUPANCY INSPECTION FOR SUBSTANTIAL PERFORMANCE ALL DOCUMENTATION SHALL BE SUBMITTED AND ALL DEFICIENCIES SHALL BE COMPLETED FOR THE FINAL INSPECTION.

TEMPORARY HEAT

1. MECHANICAL CONTRACTOR TO PROVIDE TEMPORARY HEAT AS REQUIRED TO PROTECT MECHANICAL SERVICES FROM FREEZING. DO NOT USE NEW EQUIPMENT AS WARANTEES CAN BE VOIDED FROM EXCESS DRYWALL DUST, ETC.



SUPPORT, ANCHORS AND SEALS

1. PROVIDE ALL NECESSARY SUPPORTS AND HANGERS TO SECURE MECHANICAL SYSTEMS AND EQUIPMENT.
2. PROVIDE CODE COMPLIANT FIRE STOPPING MEASURES AT ALL DUCT AND PIPING PENETRATIONS THROUGH RATED WALLS.
3. PROVIDE OVERSIZE HANGERS ON ALL COLD PIPES TO FIT OVER PIPE INSULATION WHERE REQUIRED.
4. PROVIDE ISOLATION AND PREVENT CONTACT WITH DISSIMILAR MATERIALS.
5. ALL EXPOSED PIPING PENETRATIONS SHALL BE PROVIDED WITH ESCUTCHEONS AT THE PENETRATION POINT .

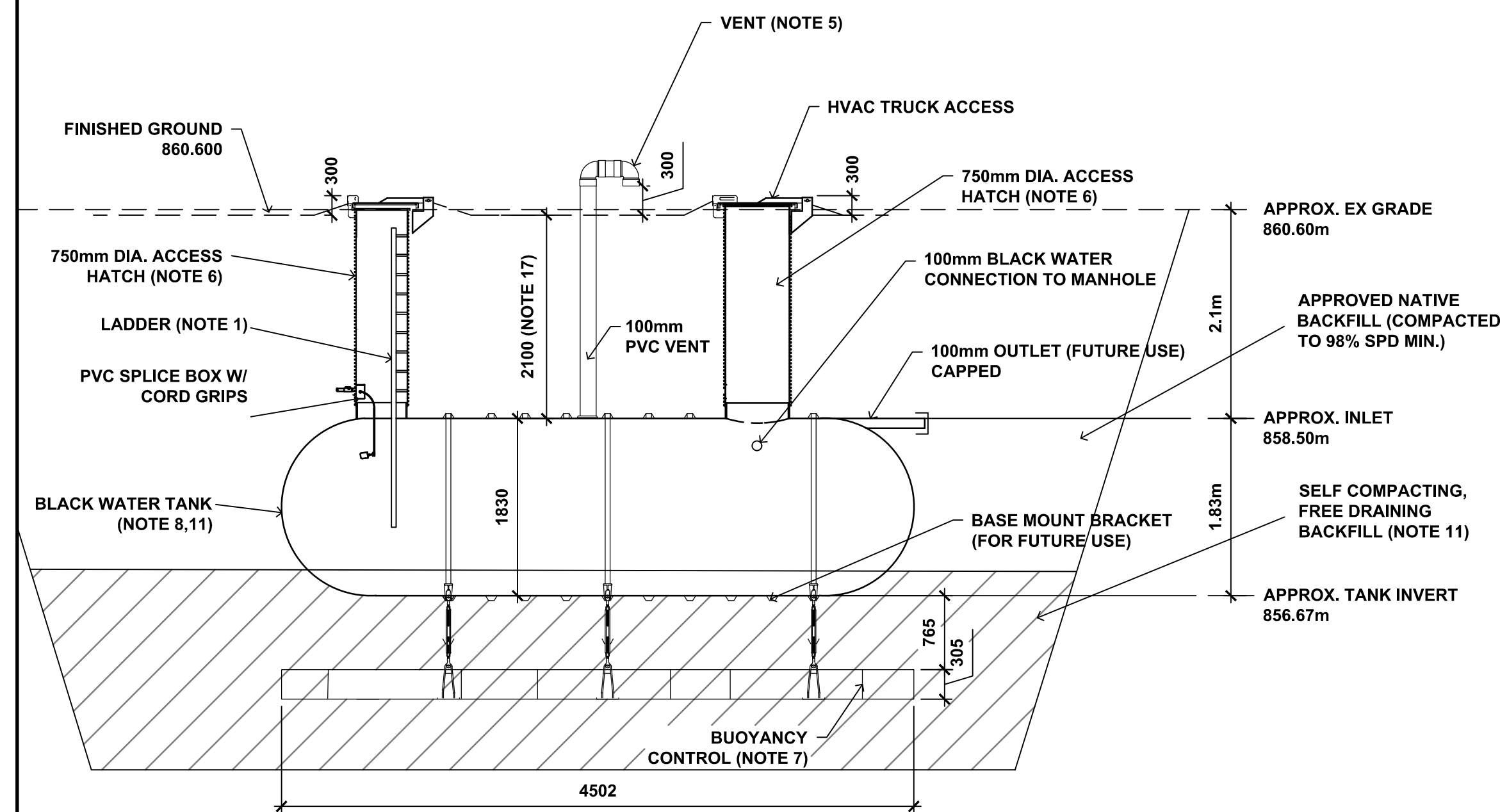
WATER TREATMENT PROCESS PIPING AND EQUIPMENT

1. PROVIDE ALL NECESSARY LABOUR, MATERIALS, TOOLS, TRANSPORTATION, SERVICES AND FACILITIES REQUIRED FOR THE COMPLETION OF THE PIPING, AND ASSOCIATED MECHANICAL AND PROCESS EQUIPMENT
2. PROVIDE ALL NECESSARY LABOUR, MATERIALS, EQUIPMENT, DEVICES AND APPURTENANCES NOT MENTIONED IN THE SPECIFICATIONS AND NOT SHOWN ON THE DRAWINGS TO COMPLETE THE MECHANICAL AND PROCESS
3. UPON COMPLETION OF ASSEMBLY AND OPERATIONAL TESTING, THE ENTIRE WATER TREATMENT PROCESS (FROM THE POINT OF CHEMICAL DISINFECTANT INJECTION TO THE POINT OF DISTRIBUTION TO THE REST OF THE WASHROOM BUILING/CAMPGROUND AND RV SPIGOT, IS TO BE DISINFECTED AS PER PCA REQUIREMENTS (IN ACCORDANCE WITH AWWA STANDARD FOR DISINFECTING WATER MAINS, C651).
4. EQUIPMENT AND PIPING ARE AS SPECIFIED ON THE DRAWINGS OR APPROVED EQUALS.
5. SHOP DRAWINGS ARE TO BE PROVIDED BY THE CONTRACTORS AND APPROVED BY THE CONSULTANT, PRIOR TO THE INSTALLATION OF EQUIPMENT PROCEEDS.
6. IN GENERAL, ALL WATER TREATMENT PROCESS PIPING AND EQUIPMENT IS TO BE NSF 61 COMPLIANT, AND APPROVED UNDER APPLICABLE CSA STANDARDS, SUITABLE FOR POTABLE WATER USE.
7. WATER TREATMENT PROCESS PIPING AND EQUIPMENT INCLUDES:
 - 7.1. PROCESS PIPING: THIS IS THE SMALL DIAMETER PIPING (50MM AND 65MM) USED BETWEEN THE PROCESS EQUIPMENTS. THIS INCLUDES ALL LINE, SAMPLE AND DRAIN POINT VALVES, FITTINGS, UNIONS, PIPE SUPPORTS AND OTHER APPURTENANCES RELATED TO THIS PIPING.
 - 7.2. CONTACT CHAMBER PIPING: THIS IS THE LARGE DIAMETER PIPING (200MM) USED TO DEVELOP THE CORRECT CONTACT TIME TO ENSURE WATER TREATMENT COMPLIANCE (AS PER PCA AND PROVINCIAL STANDARDS). THE CONTACT CHAMBER IS SHOWN ON THE DRAWINGS, SIZED TO ACHIEVE A CT RATING OF 12 (BASED ON 12MIN OF CONTACT WITH A CHLORINE CONCENTRATION OF 1.0MG/L). THIS INCLUDES ALL LINE, SAMPLE AND DRAIN POINT VALVES, FITTINGS, UNIONS, PIPE SUPPORTS AND OTHER APPURTENANCES RELATED TO THIS PIPING.
 - 7.3. AIR-VACUUM VALVES:THIS IS AN AIR VACUUM BREAK VALVE, SUITABLE FOR PRESSURIZED DRINKING WATER PIPING APPLICATION AND COMPLETE WITH A THREADABLE CONNECTION, INSTALLABLE AS PER MANUFACTURE RECOMMENDATIONS
 - 7.4. PRESSURE RELIEF VALVE: THIS IS A MECHANICAL "POP-VALVE" STYLE FITTING, COMPLETE WITH AN ADJUSTABLE PRESSURE SETTING, SUITABLE TO RELIVE EXCESSIVE PRESSURE IN THE SYSTEM AS A SAFETY PRECAUTION. SUITABLE FOR USE ON PRESSURIZED DRINKING WATER APPLICATIONS AND CSA COMPLIANT.
 - 7.5. PRESSURE REDUCING VALVE: THIS IS A MECHANICAL VALVE SUITABLE FOR MAINTAINING A CONSTANTS SUPPLY OF DRINKING WATER AT THE DESIRED REDUCED DISTRIBUTION PRESSURE. SUITABLE FOR OPERATION OVER THE ENTIRE OPERATING CONDITIONS CONDITIONS.
 - 7.6. PRESSURE TANK: BLADDER TYPE PRESSURE TANK, SIZED TO ACCOMMODATE A TWO MINUTES OF DISTRIBUTION PUMP RUN TIME WHILE PROVIDING CONSISTENT DISTRIBUTION PRESSURE TO THE WASHROOM/SHOWER BUILDING AND THE CAMPGROUND.
 - 7.7. CHEMICAL STORAGE TANK: THIS IS A GRADUATED TANK COMPLETE WITH IN-SPIL CONTAINMENT, SUITABLE TO CONTAIN DISINFECTANT CHEMICAL AND INTERFACE WITH THE CHEMICAL METER PUMP, AS SPECIFIED ON THE DRAWINGS.

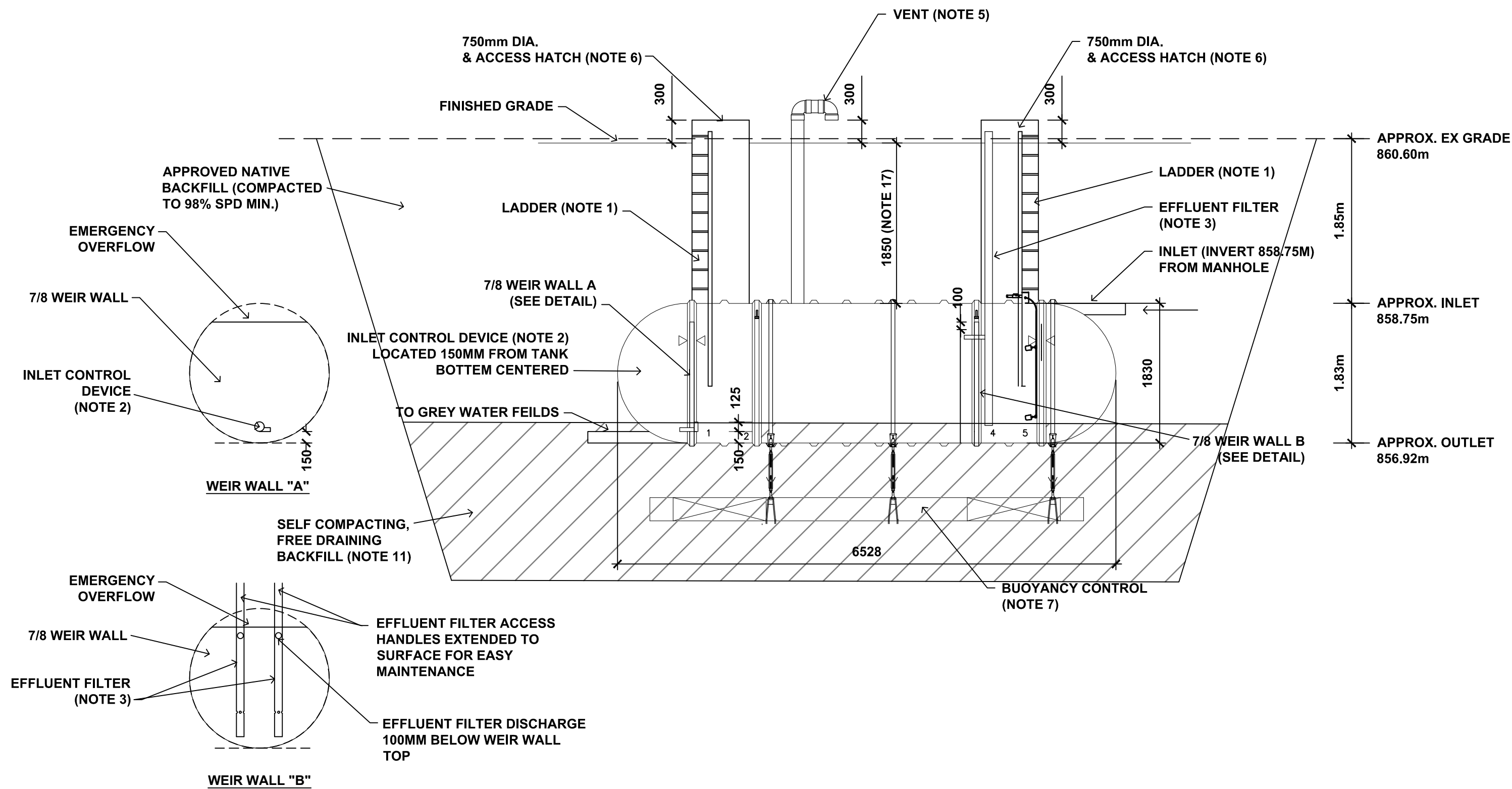
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Project title/Titre du projet				
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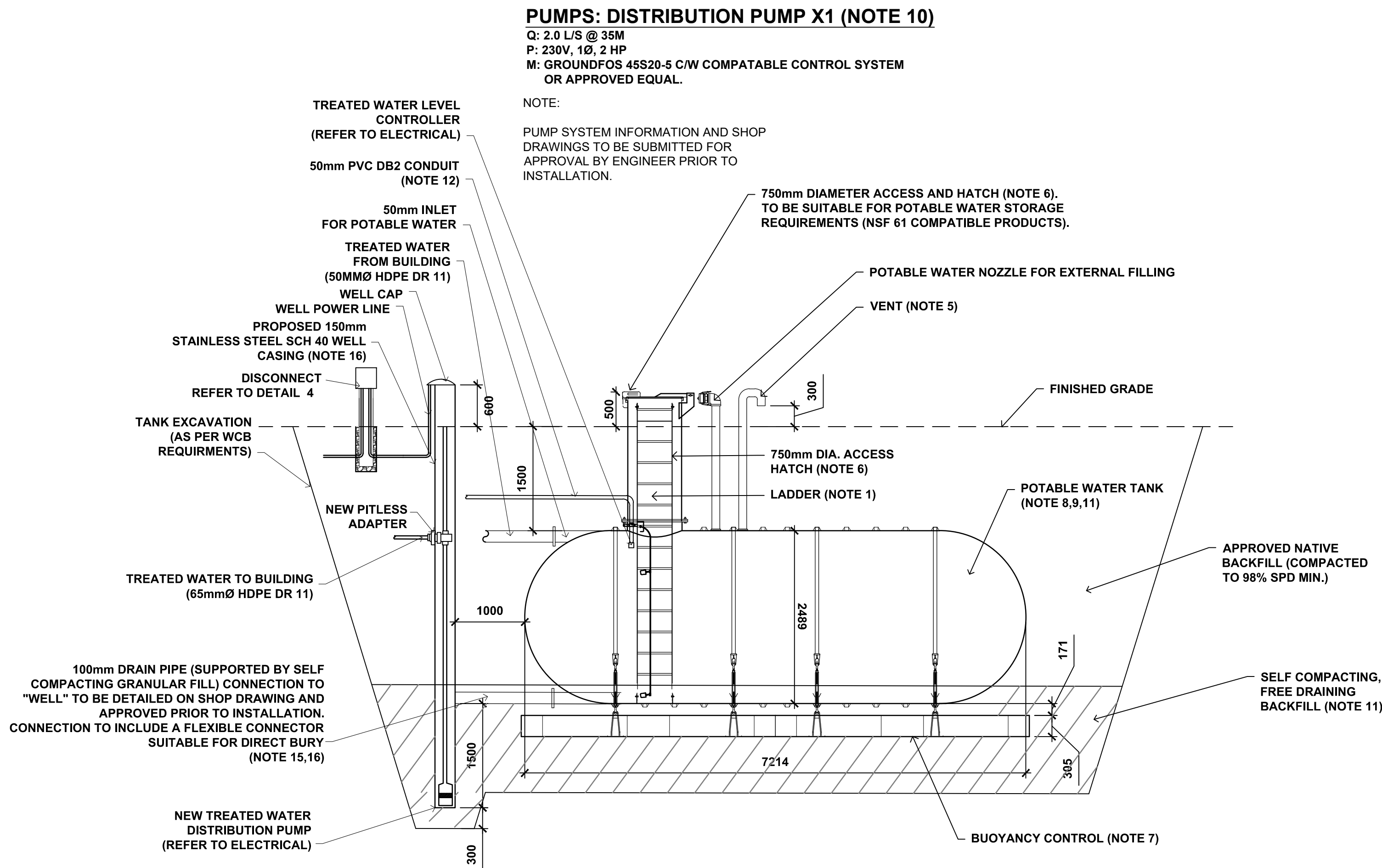
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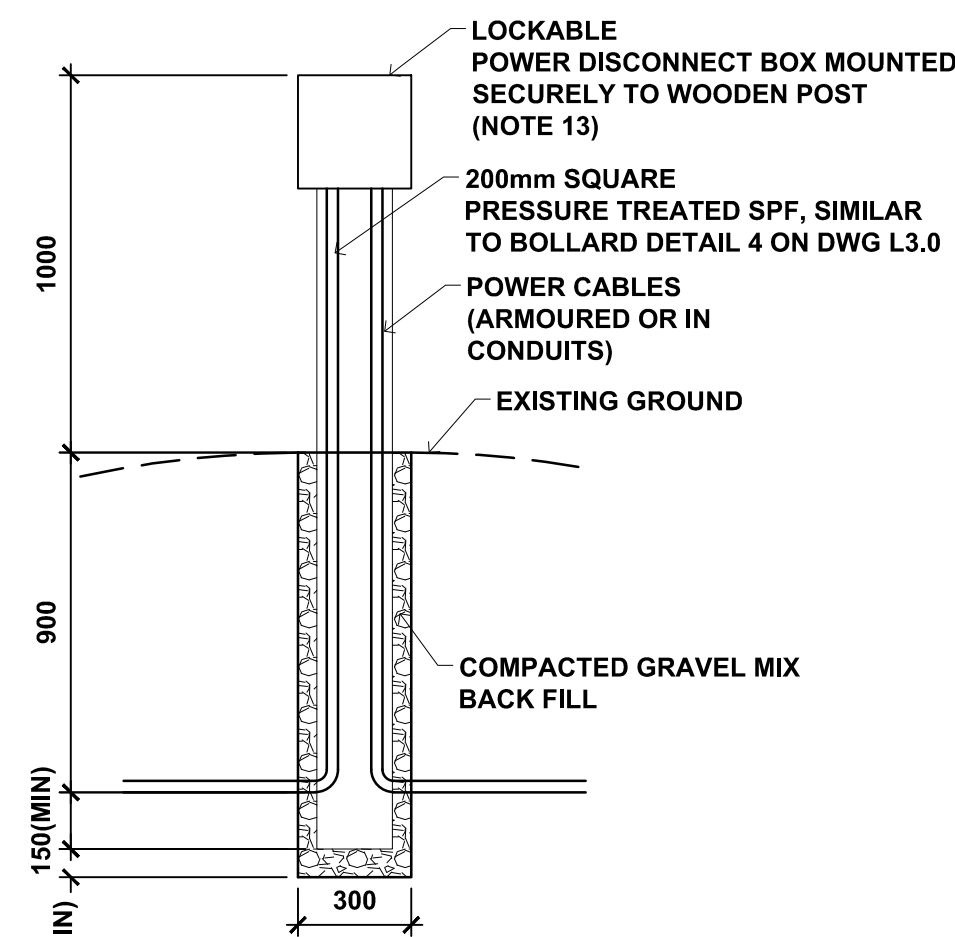
1
C5.0
BLACK WATER STORAGE TANK (10,000L)
SCALE 1:50



2
C5.0
GREY WATER DISTRIBUTION TANK (15,000L W/ 10,500L ACTIVE STORAGE)
SCALE 1:50



3
C5.0
POTABLE WATER STORAGE TANK (30,000L)
SCALE 1:50



4
C5.0
PUMP POWER DISCONNECT
(REFER TO ELECTRICAL) SCALE NTS

PUMPS: DISTRIBUTION PUMP X1 (NOTE 10)

Q: 2.0 L/S @ 35M
P: 230V, 1Ø, 2 HP
M: GROUND FOS 45S20-5 C/W COMPATIBLE CONTROL SYSTEM
OR APPROVED EQUAL.

NOTE:

PUMP SYSTEM INFORMATION AND SHOP DRAWINGS TO BE SUBMITTED FOR APPROVAL BY ENGINEER PRIOR TO INSTALLATION.

750mm DIAMETER ACCESS AND HATCH (NOTE 6). TO BE SUITABLE FOR POTABLE WATER STORAGE REQUIREMENTS (NSF 61 COMPATIBLE PRODUCTS).

POTABLE WATER NOZZLE FOR EXTERNAL FILLING

VENT (NOTE 5)

POTABLE WATER TANK (NOTE 8,9,11)

APPROVED NATIVE BACKFILL (COMPACTED TO 98% SPD MIN.)

SELF COMPACTING, FREE DRAINING BACKFILL (NOTE 11)

BUOYANCY CONTROL (NOTE 7)

NOTES:

- ACCESS LADDER TO BE TYPE 1A (EXTRA HEAVY DUTY) SUITABLE FOR 300LBS LOAD (AS PER THE AMERICAN LADDER INSTITUTE) INSTALLED TO WITHIN 300mm OF TANK BASE.
- INLET CONTROL DEVICE (ICD) TO BE HYDRO VEX MODEL 25 SVHV-1 OR APPROVED EQUAL.
- EFFLUENT FILTER TO BE ORENCO 4" BIO TUBE OR APPROVED EQUAL. ACCESS LEAVER TO BE EXTENDED TO SURFACE TO PERMIT FILTER CHANGES FROM THE SURFACE.
- ALL COMPONENTS TO BE INSTALLED AS PER THE MANUFACTURE RECOMMENDATIONS.
- VENT AND ASSOCIATED SCREENING TO BE STAINLESS STEEL AND 100mm DIA. SCREENING TO BE RODENT AND BIRD PROOF. COMPLETE W/ CHARCOAL FILTER (AS APPROVED BY THE ENGINEER) FOR ODDER MANAGEMENT.
- ACCESS TO BE 750mm DIA. FIBER GLASS RISER. HATCH ACCESS TO BE STAINLESS STEEL CHECKER PLATE, LOCKABLE / TAMPER PROOF, WATER TIGHT, AND HINGED ACCESS.
- BUOYANCY CONTROL SYSTEM TO BE AS SUPPLIED BY THE MANUFACTURER AND BUOYANCY CALCULATIONS ARE TO BE INCLUDED ON THE STAMPED TANK SHOP DRAWINGS (SEE NOTE 8).
- TANK TO BE FIBER GLASS TANK OR APPROVED EQUAL. CONTRACTOR TO SUPPLY SHOP DRAWINGS OF TANK AND ALL COMPONENTS, FOR APPROVAL PRIOR TO CONSTRUCTION COMPLETED.
- POTABLE WATER TANK AND ALL COMPONENTS, FITTINGS, ADHESIVES AND APPURTENANCES TO BE NSF 61 CERTIFIED FOR POTABLE WATER USE.
- PUMP INFORMATION TO BE SUBMITTED FOR APPROVAL PRIOR TO INSTALLATION.
- BACK FILL OF TANKS TO BE AS PER SUPPLIER REQUIREMENTS AND AS APPROVED BY THE ENGINEER. BACKFILL MATERIAL INFORMATION TO BE INCLUDED ON TANK SHOP DRAWING SUITABLE FOR TANK MANUFACTURES AND SITE GEOTECHNICAL NEEDS. IN GENERAL, BEDDING SHALL BE FREE DRAINING, SELF COMPACTING GRANULAR MATERIAL AS PER MANUFACTURERS SPECIFICATIONS AND REQUIREMENTS.
- TANK WALL PENETRATIONS TO BE AS PER MANUFACTURE RECOMMENDATIONS.
- LOCKABLE DISCONNECT SWITCH TO BE 30AMP 120 / 240V AS PER CANADIAN ELECTRICAL CODE AND APPLICABLE STANDARDS, NEMA 3R RATED.
- EXACT LOCATION OF TANKS TO BE DETERMINED IN FIELD.
- DRAIN PIPE TO BE SCH 40 STAINLESS STEEL.
- ALL FITTINGS ADHESIVES CONSTABLES AND APPURTENANCES ARE TO BE SUITABLE FOR POTABLE WATER USE.
- DEPTH OF TANK BURY IS BASED ON AN ASSUMED DEPTH OF FOOTING OF FUTURE WASHROOM/SHOWER BUILDING (BY OTHERS) WITH SERVICE PASSING UNDERNEATH FOOTING.
- THE MINIMUM ACCEPTABLE PRODUCT STANDARD OF DISTRIBUTION PUMP SYSTEM SHALL BE BAKER PITLESS BOOSTER PUMP STATION OR APPROVED EQUAL.

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No.	Date/Date	Description/Description	Drawn by Dessiné par	Approved Approuvé
04	DEC.20.18	ISSUED FOR TENDER	GM	MW
03	OCT.30.18	ISSUED FOR CLIENT REVIEW	GM	AT/MW
02	JUNE.25.18	ISSUED FOR TENDER	LJ	AT/MW
01	MAY.18.18	ISSUED FOR 90% CLIENT REVIEW	LJ	AT/MW

Revision / Revision				
Consultant's Stamp Sceau de l'expert-conseil		Eng. Stamp Sceau de l'ingénieur		

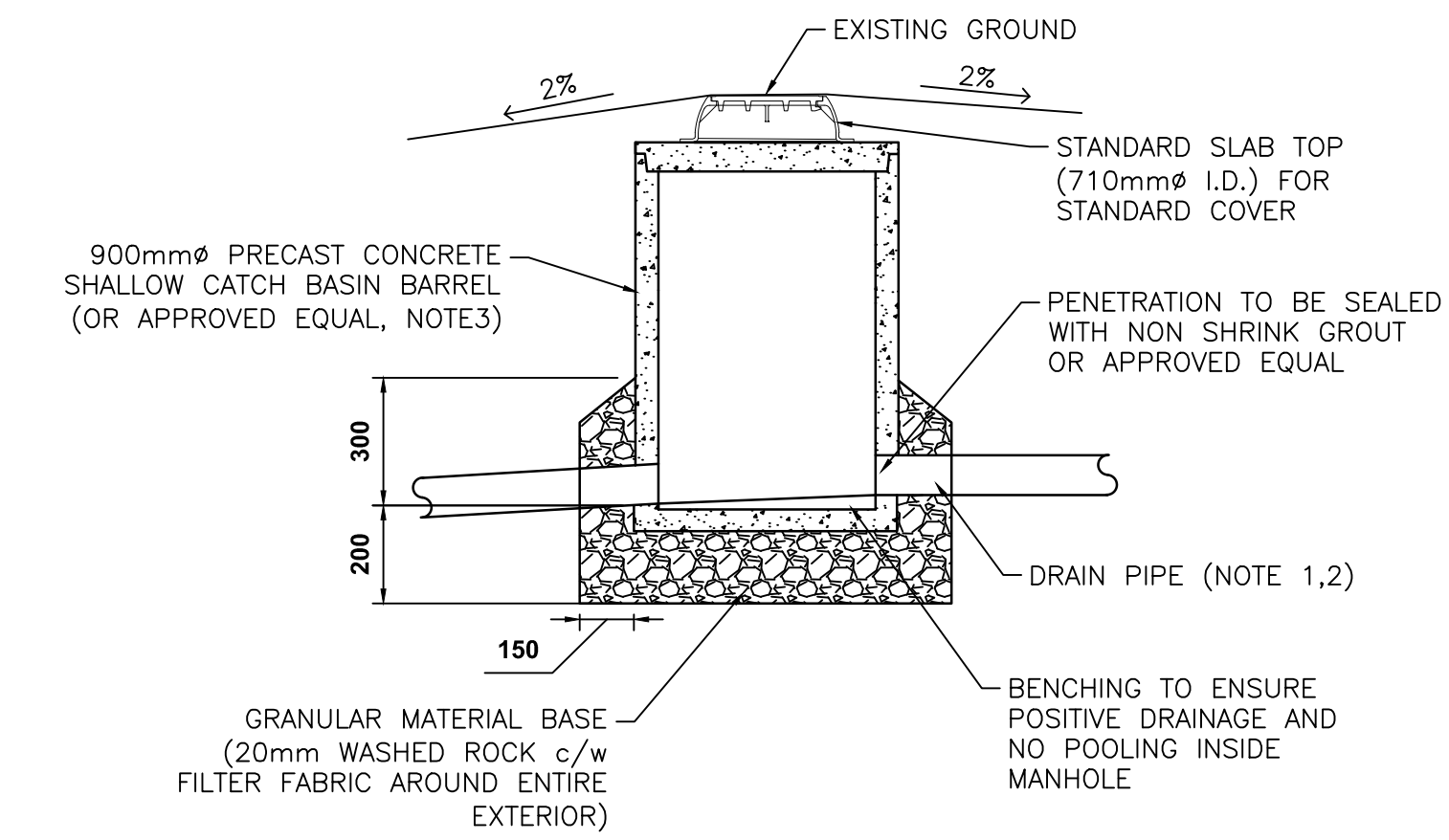
Client/client		
Parks Canada Agency Western and Northern Region		L'Agence Parcs Canada Ouest et Nord Région

Consultant's Name Nom de l'expert-conseil	
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Project title/Titre du projet	ROCK CREEK CAMPGROUND AND DAY USE AREA WATER TREATMENT SYSTEM GRASSLANDS NATIONAL PARK, SK
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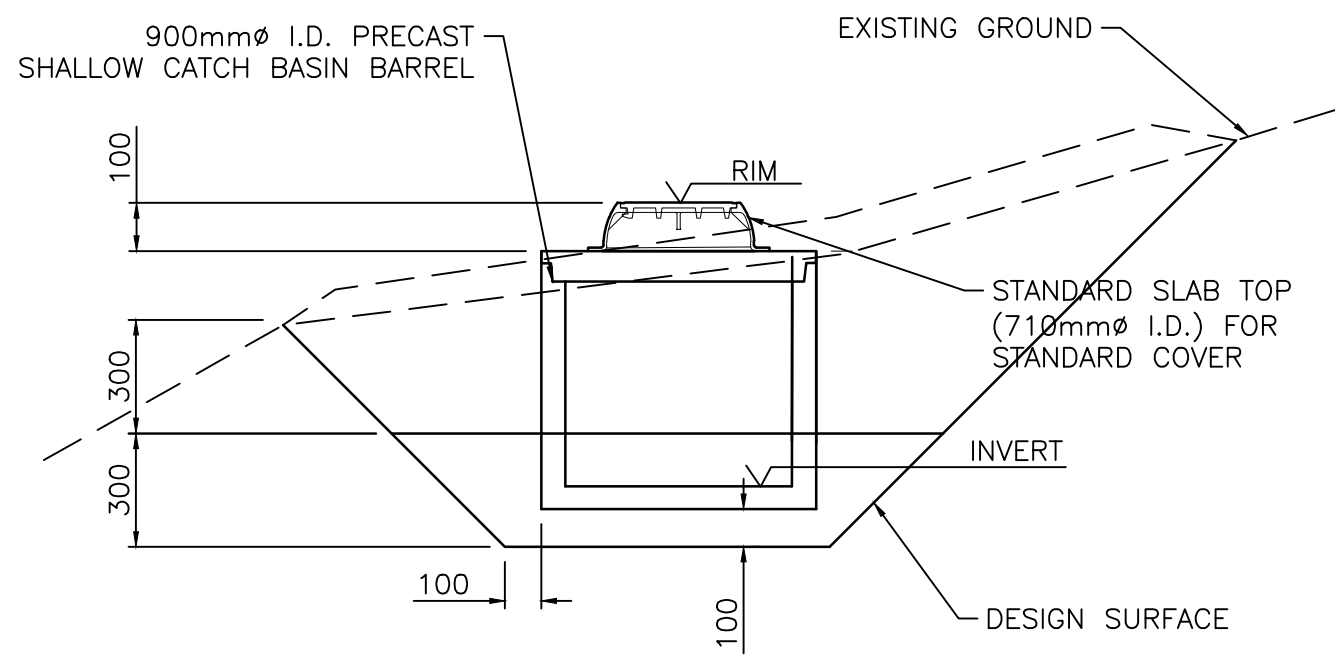
Drawing title/Titre du dessin	TANK DETAILS
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Surveyed by/Arpenté par N/A	Drawn by/Dessiné par LJ/GM	Date/Date NOVEMBER 23.18
Designed by/Concept par AT	Reviewed by/Revisé par MW	Scale/Echelle AS SHOWN
Parks Canada Project Manager/Administrateur de Projets Parcs Canada COLIN SCHMIDT		
Client Acceptance/Acceptation du client		Approved by/Approuvé par
Parks Canada Responsible Officer/Agent Responsable Parcs Canada		Parks Canada Project Manager/Administrateur de Projets Parcs Canada
Project No./No. du projet	Asset No./No. du bien	Sheet No./ No. de la feuille
Drawing Reference No./No. de référence du dessin 2711 16012 - 00		C5.0



2
C6.0

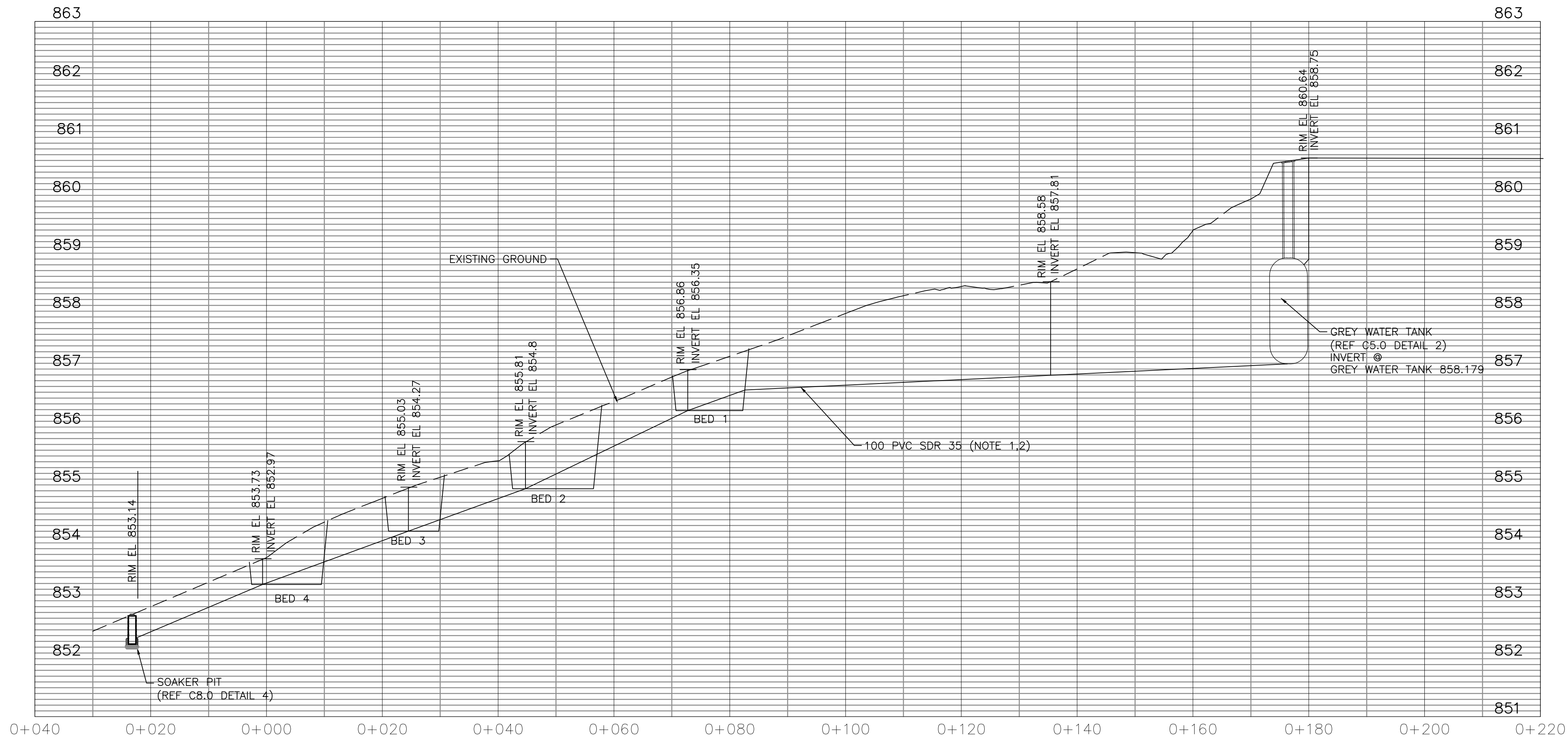
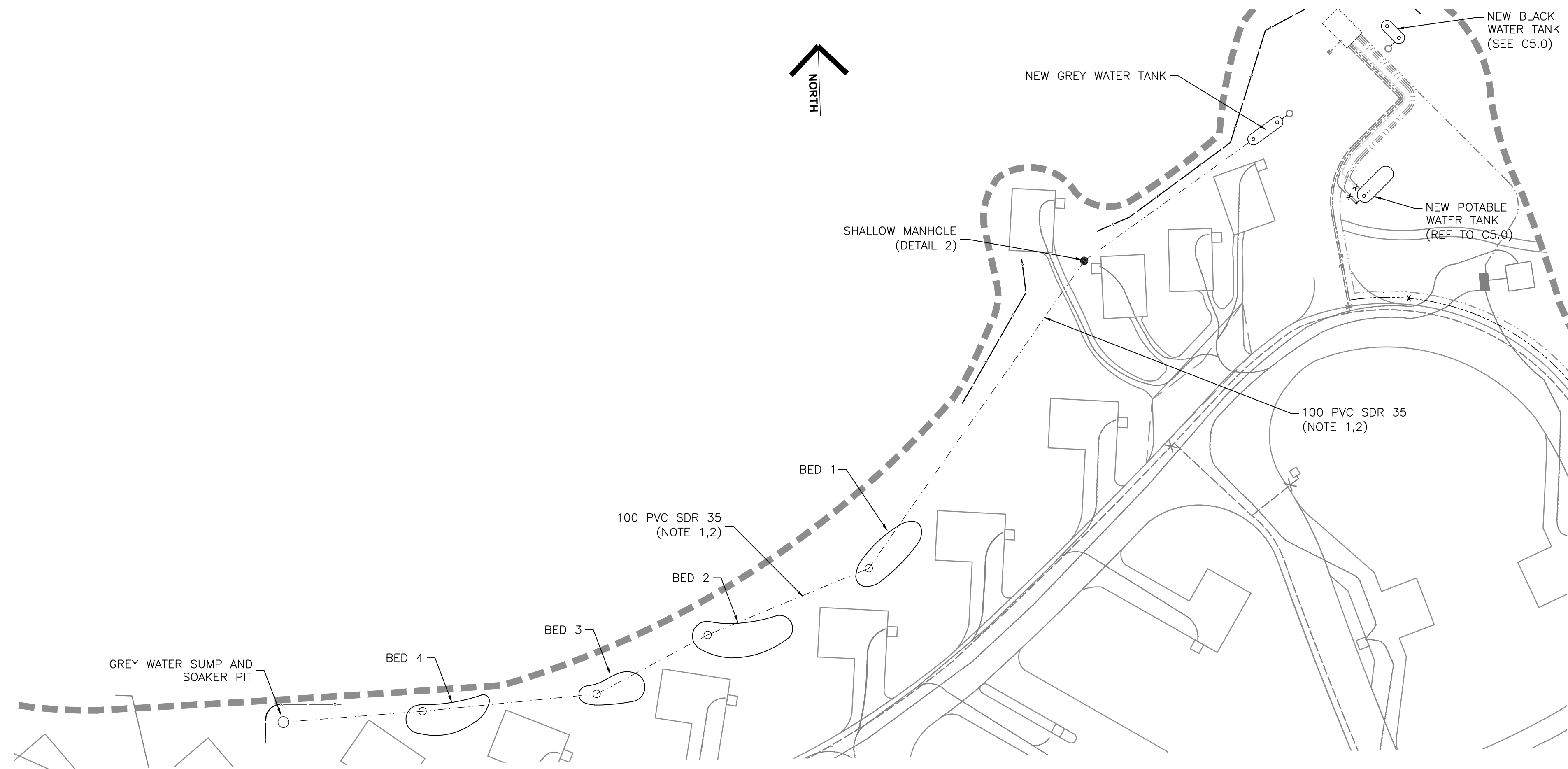
TYPICAL SHALLOW MANHOLE
SCALE 1:20



NOTE:
REFER TO DETAIL 1, DWG C7.0
FOR SOAKER BED DETAIL

3
C6.0

BED ELEVATION KEY
SCALE NTS



1
C6.0

PROFILE
SCALE H 1:500 V 1:50

- NOTE:
- GRAVITY DRAIN PIPE TO BE PVC SDR 35 RING -TITE OR ENVIRO-TITE AS SUPPLIED BY IPEX OR APPROVED EQUAL
 - PIPE CAN BE BED IN INSITU SOIL IF FREE FROM ROCKS, ORGANICS AND CLUMPS, (WELL GRADED). TO BE COMPLETED WITH CLAY PLUGS BETWEEN EACH MANHOLE TO ENSURE NO WATER MIGRATION ALONG PIPE ZONE
 - SHALLOW MANHOLE TO BE 900mmø PRECAST CONCRETE MANHOLE, AS SUPPLIED BY LAFARGE OR APPROVED EQUAL.
 - CONFIRM ALL ELEVATIONS ON SITE TO ENSURE POSITIVE DRAINAGE THROUGH PIPE SYSTEM. NOTIFY CONSULTANT IMMEDIATELY IF ELEVATION CONFLICTS EXIST.

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Revision / Revision	
Consultant's Stamp Sceau de l'expert-conseil	Eng. Stamp Sceau de l'ingénieur

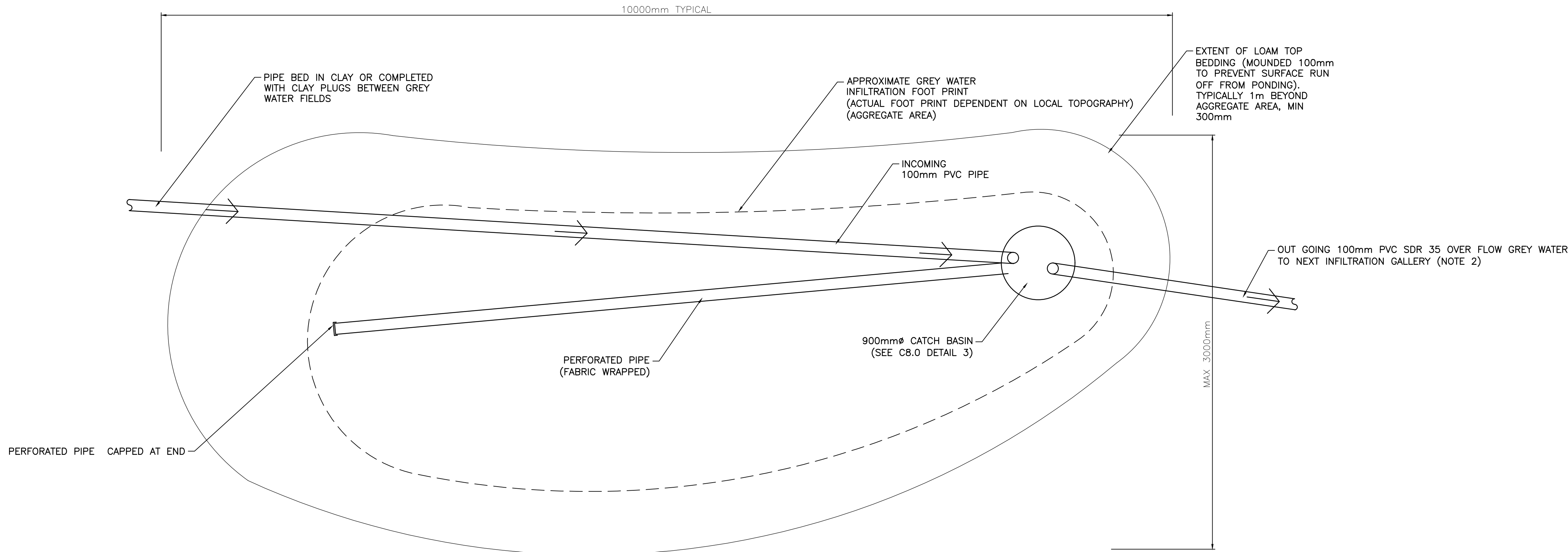
Client/client	Parks Canada Agency Western and Northern Region	L'Agence Parcs Canada Ouest et Nord Région
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Consultant's Name Nom de l'expert-conseil	McElhanney
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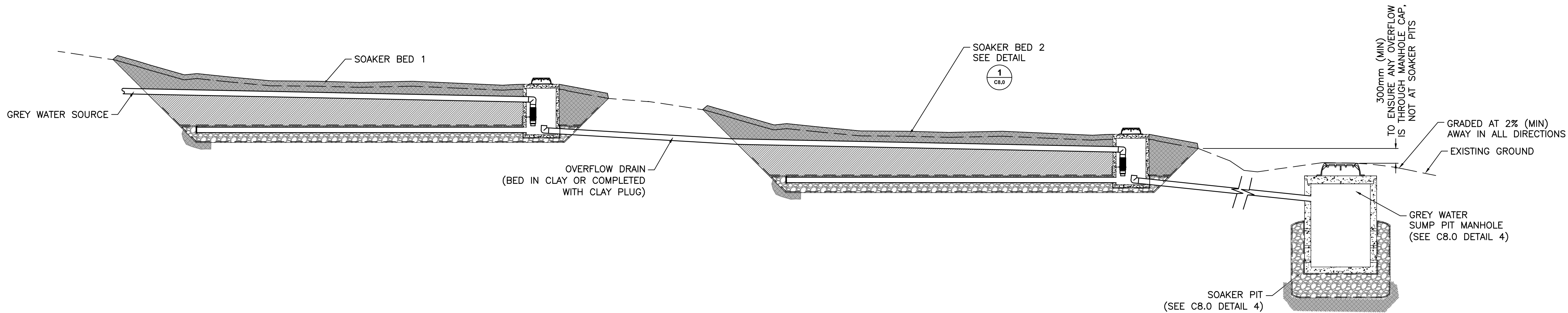
Project title/Titre du projet	ROCK CREEK CAMPGROUND AND DAY USE AREA WATER TREATMENT SYSTEM GRASSLANDS NATIONAL PARK, SK
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Drawing title/Titre du dessin	GREY WATER DISTRIBUTION PROFILE
-------------------------------	--

Surveyed by/Arpenté par N/A	Drawn by/Dessiné par LJ/GM	Date/Date NOVEMBER 23.18
Designed by/Concept par AT	Reviewed by/Revisé par MW	Scale/Echelle AS SHOWN
Parks Canada Project Manager/Administrateur de Projets Parcs Canada COLIN SCHMIDT		
Client Acceptance/Acceptation du client		Approved by/Approuvé par
Parks Canada Responsible Officer/Agent Responsable Parcs Canada	Parks Canada Project Manager/Administrateur de Projets Parcs Canada	
Project No./No. du projet	Asset No./No. du bien	Sheet No./ No. de la feuille
Drawing Reference No./No. de référence du dessin 2711 16012 - 00		C6.0



1
C7.0
TYPICAL GREY WATER SOAKER BED (PLAN)
SCALE 1:25




2
C7.0
CASCADING DESIGN (TYP.)
SCALE N.T.S

- NOTE:
- PERFORATED PIPE TO BE COMPLETELY WRAPPED IN FILTER FABRIC. MINIMUM ACCEPTABLE PRODUCT TO BE FABRIC WRAPPED MULTIFLOW SYSTEM OR SLOTED DR 35 DRAIN PIPE OR APPROVED EQUIVALENT.
 - PIPE TO BE PVC SDR 35 RING -TITE OR ENVIRO-TITE OR APPROVED EQUIVALENT.

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Revision / Revision	
Consultant's Stamp Sceau de l'expert-conseil	Eng. Stamp Sceau de l'ingénieur

Client/client	 Parks Canada Agency Western and Northern Region	L'Agence Parcs Canada Ouest et Nord Région
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Consultant's Name Nom de l'expert-conseil	
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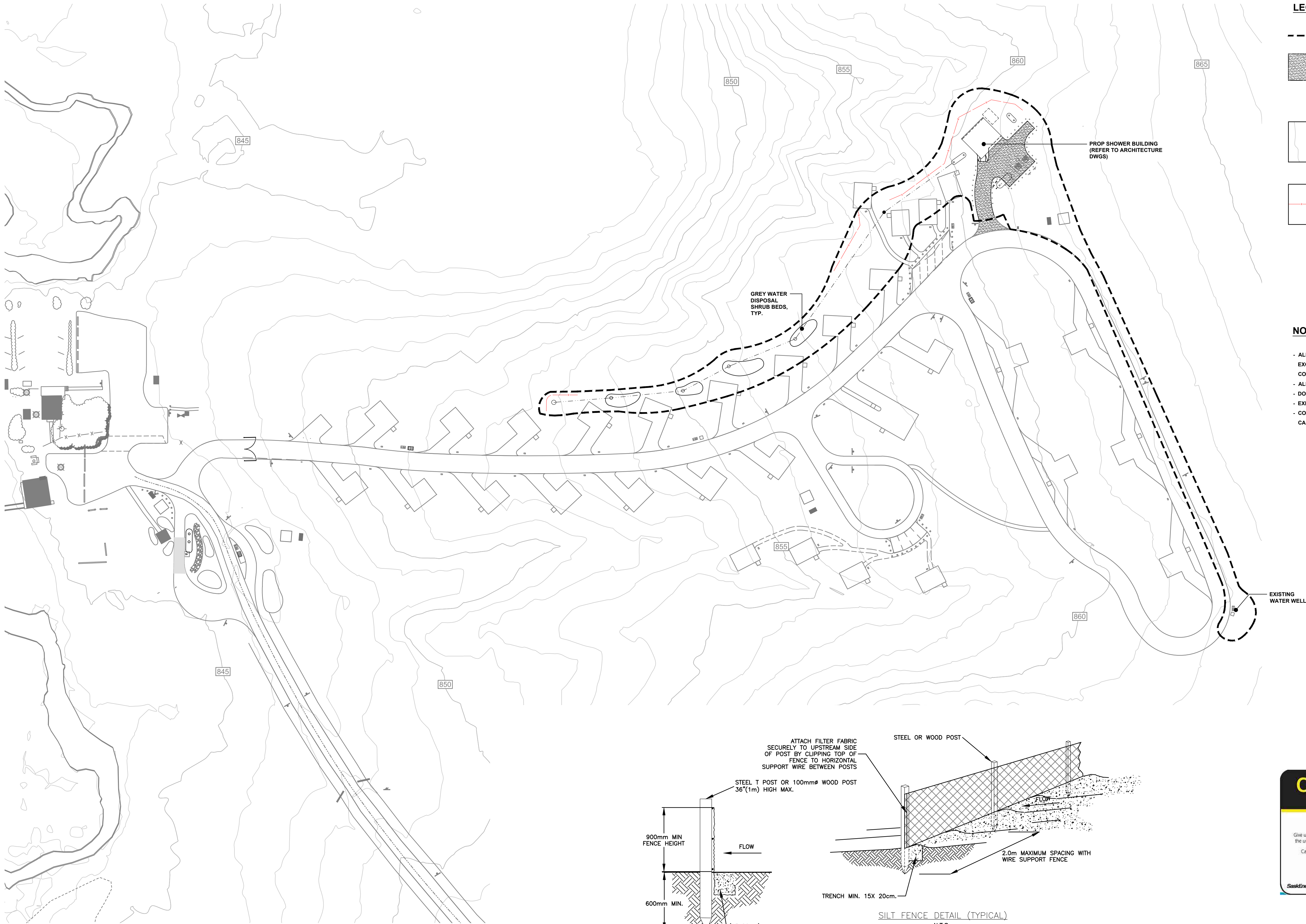
Project title/Titre du projet	ROCK CREEK CAMPGROUND AND DAY USE AREA WATER TREATMENT SYSTEM GRASSLANDS NATIONAL PARK,SK
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Drawing title/Titre du dessin	GREY WATER DISTRIBUTION DETAILS
-------------------------------	------------------------------------

Surveyed by/Arpenté par N/A	Drawn by/Dessiné par LJ/GM	Date/Date NOVEMBER 23.18
Designed by/Concept par AT	Reviewed by/Revisé par MW	Scale/Echelle AS SHOWN

Parks Canada Project Manager/Administrateur de Projets Parcs Canada COLIN SCHMIDT		
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Project No./No. du projet	Asset No./No. du bien	Sheet No./ No. de la feuille
Drawing Reference No./No. de référence du dessin 2711 16012 - 00		C7.0

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Plotter: December 20, 2018, 17:25:19



LEGEND

PROJECT LIMIT

GRAVEL ROADWAY; REFER TO CIVIL DRAWINGS.

TRAFFIC SIGN

CONTOURS (1.0m)

MIN. SILT FENCE PLACEMENT (REFER TO TYPICAL DETAILS) AND ULTIMATE FENCE PLACEMENT IS SUBJECT TO APPROVED ENVIRONMENTAL PROTECTION PLAN (TO BE SUBMITTED BY CONTRACTOR TO ENGINEER FOR APPROVAL).

- NOTES:**
- ALL UTILITIES MUST BE LOCATED IN FIELD PRIOR TO ANY EXCAVATION. ENSURE ALL UTILITY INSTALLATION HAVE BEEN COMPLETED PRIOR TO ANY CONSTRUCTION ACTIVITIES.

ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

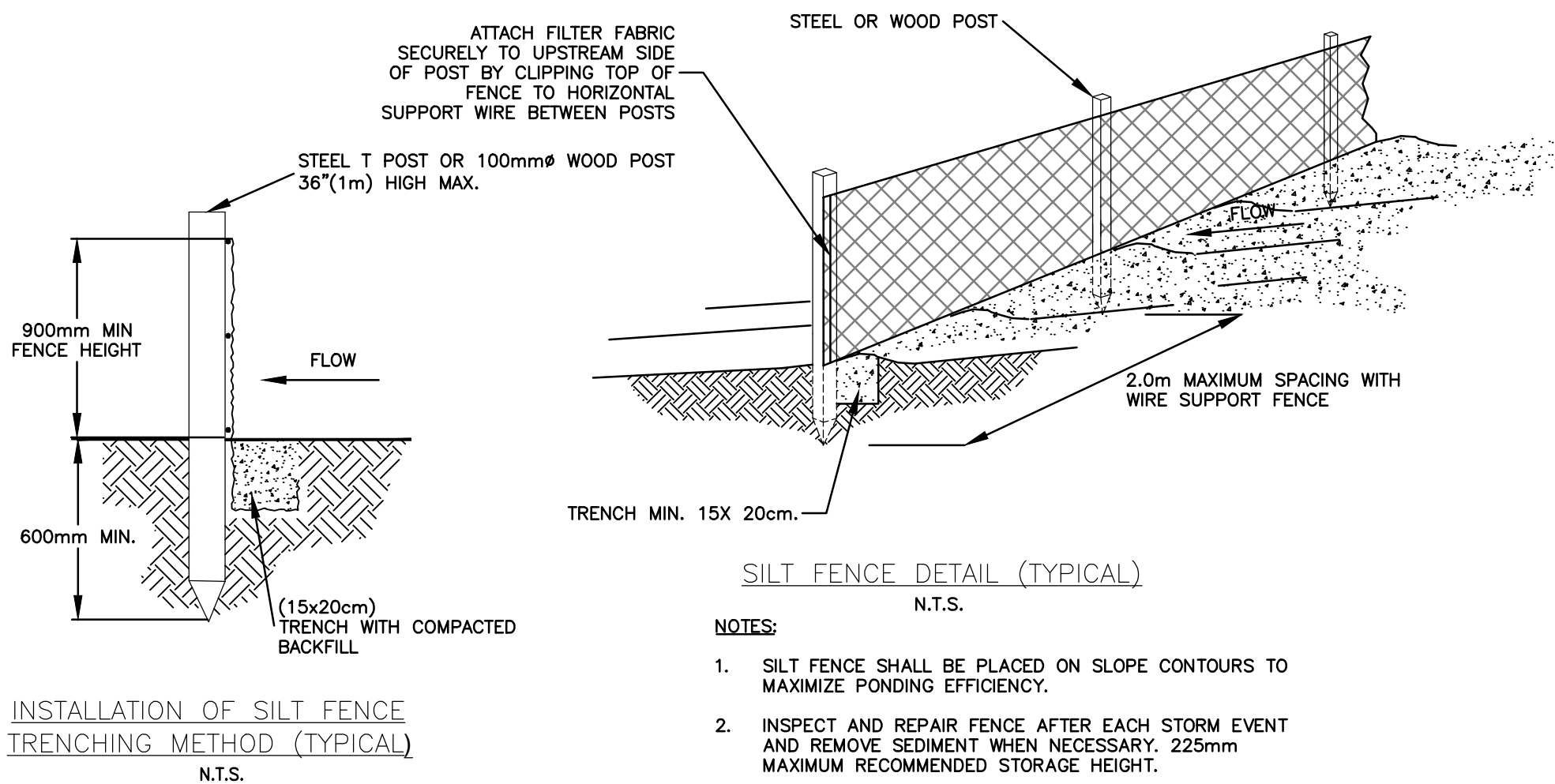
DO NOT SCALE FROM DRAWINGS.

EXISTING CAMPGROUND WAS CONSTRUCTED BY OTHERS IN 2017.

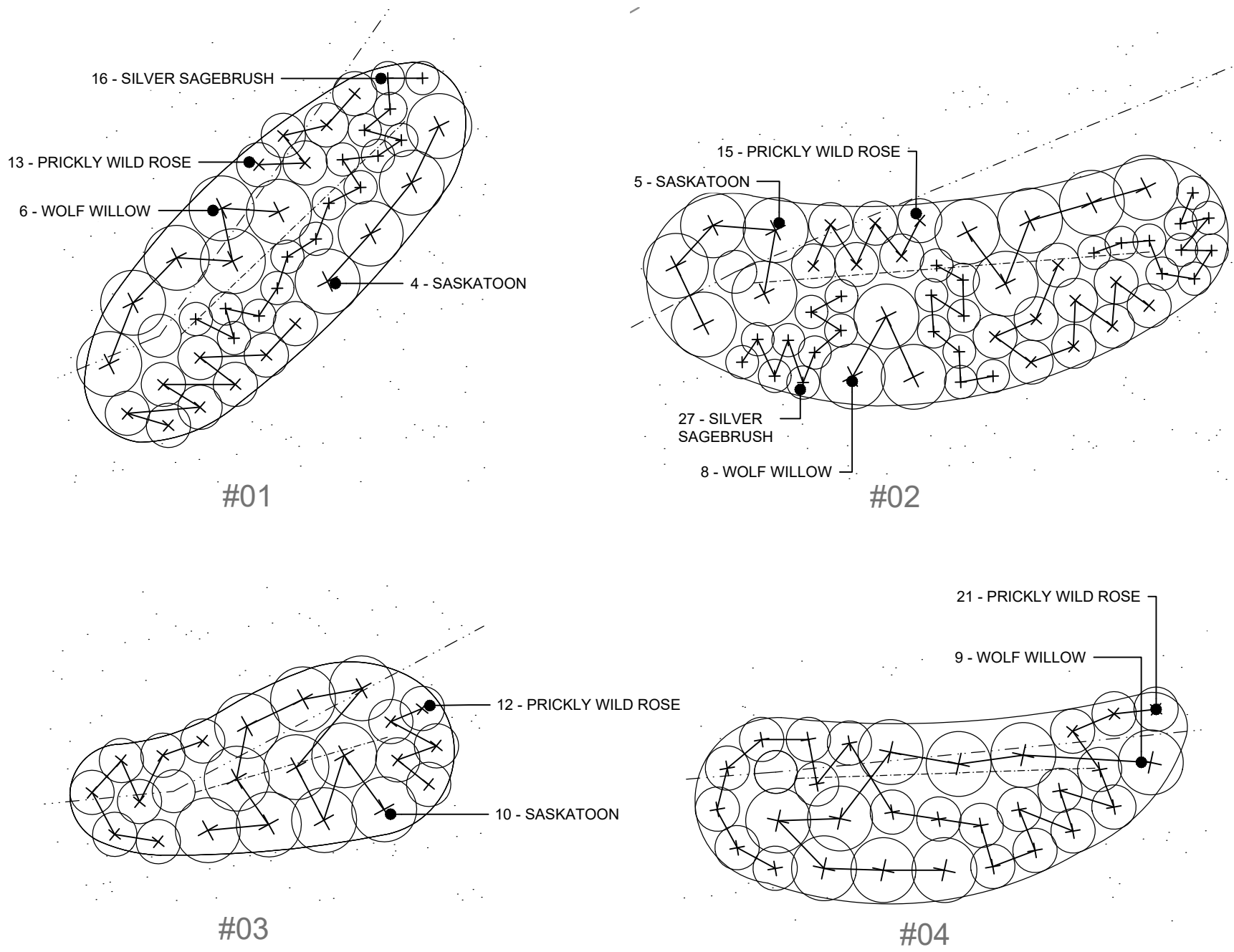
CONSTRUCTION ACTIVITIES TO MINIMIZE IMPACT ON CAMPGROUND OPERATIONS AND VISITORS.

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Revision / Revision					
Consultant's Stamp Sceau de l'expert-conseil					Eng. Stamp Sceau de l'ingénieur
Client/client					
<div><div></div><div>Parks Canada Agency Western and Northern Region</div></div> <div><div></div><div>L'Agence Parcs Canada Ouest et Nord du Canada</div></div>					
Consultant's Name Nom de l'expert-conseil					
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Project title/Titre du projet					
ROCK CREEK CAMPGROUND AND DAY USE AREA WATER TREATMENT SYSTEM GRASSLANDS NATIONAL PARK, SK					
Drawing title/Titre du dessin					
OVERALL LAYOUT PLAN AND SILT FENCE DETAILS					
Surveyed by/Arpenté par N/A		Drawn by/Dessiné par LJ/GM		Date/Date NOVEMBER 23.18	
Designed by/Concept par AT		Reviewed by/Revisé par MW		Scale/Echelle AS SHOWN	
Parks Canada Project Manager/Administrateur de Projets Parcs Canada COLIN SCHMIDT					
Client Acceptance/Acceptation du client		Approved by/Approuvé par			
Parks Canada Responsible Officer/Agent Responsable Parks Canada		Parks Canada Project Manager/Administrateur de Projets Parks Canada			
Project No./No. du projet		Asset No./No. du bien		Sheet No./ No. de la feuille	
Drawing Reference No./No. de référence du dessin 2711 16012 - 00					
L1.0					



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2
L2.0 **SHRUB BED PLANTING**
SCALE 1:150

PLANT SCHEDULE FOR L5.1

QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS
SHRUBS				
43	<i>Artemisia cana</i>	SILVER SAGEBRUSH	#5 CONT.	—
61	<i>Rosa acicularis</i>	PRICKLY WILD ROSE	#5 CONT.	—
19	<i>Amelanchier alnifolia</i>	SASKATOON	#5 CONT.	—
23	<i>Elaeagnus commutata</i>	WOLF WILLOW	#2 CONT.	—

**APPROX. INFILTRATION
FOOTPRINT OF BEDS**

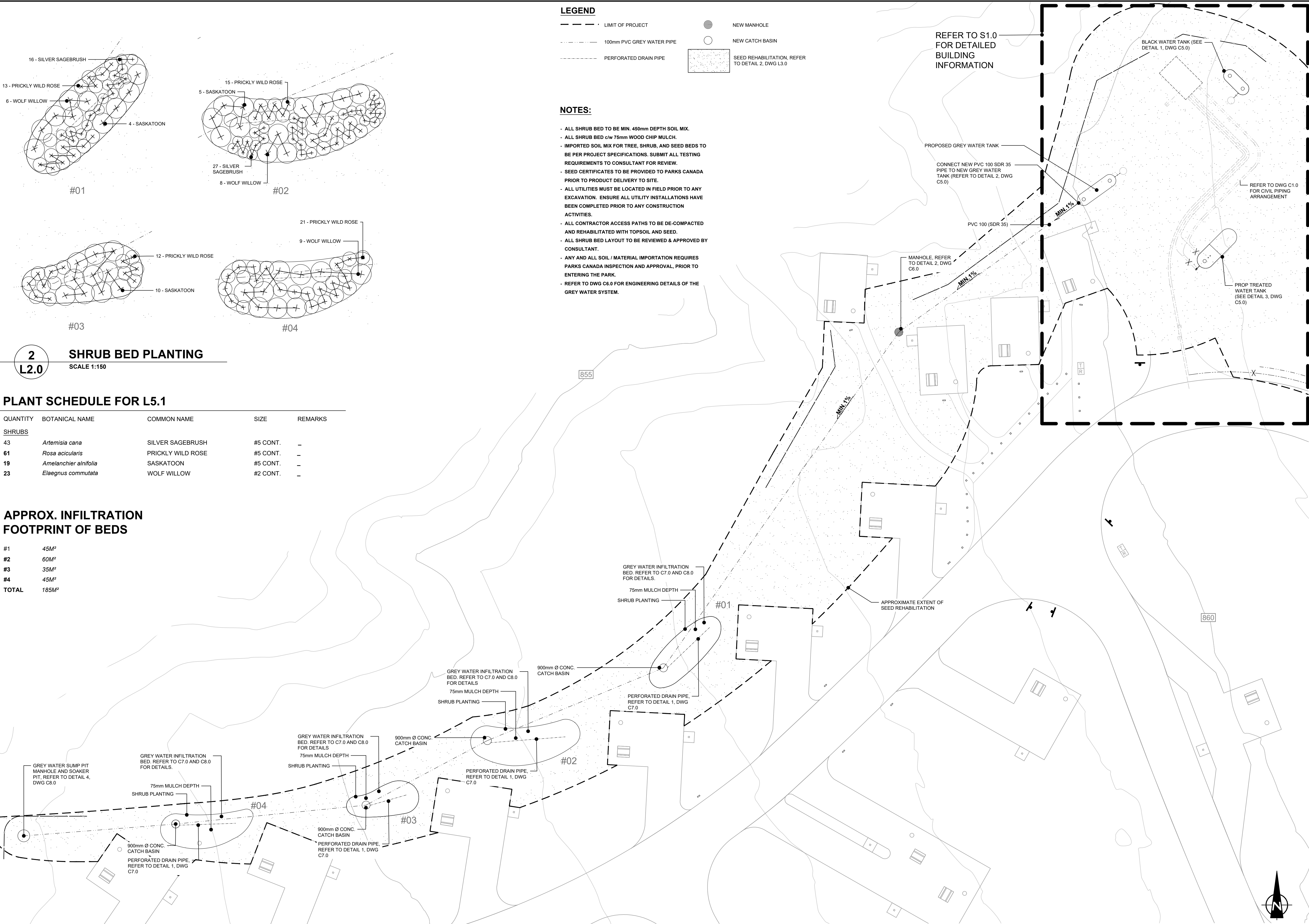
#1	45M ²
#2	60M ²
#3	35M ²
#4	45M ²
TOTAL	185M²

LEGEND

— — — — —	LIMIT OF PROJECT	●	NEW MANHOLE
- - - - -	100mm PVC GREY WATER PIPE	○	NEW CATCH BASIN
- - - - -	PERFORATED DRAIN PIPE	■	SEED REHABILITATION, REFER TO DETAIL 2, DWG L3.0

NOTES:

- ALL SHRUB BED TO BE MIN. 450mm DEPTH SOIL MIX.
- ALL SHRUB BED c/w 75mm WOOD CHIP MULCH.
- IMPORTED SOIL MIX FOR TREE, SHRUB, AND SEED BEDS TO BE PER PROJECT SPECIFICATIONS. SUBMIT ALL TESTING REQUIREMENTS TO CONSULTANT FOR REVIEW.
- SEED CERTIFICATES TO BE PROVIDED TO PARKS CANADA PRIOR TO PRODUCT DELIVERY TO SITE.
- ALL UTILITIES MUST BE LOCATED IN FIELD PRIOR TO ANY EXCAVATION. ENSURE ALL UTILITY INSTALLATIONS HAVE BEEN COMPLETED PRIOR TO ANY CONSTRUCTION ACTIVITIES.
- ALL CONTRACTOR ACCESS PATHS TO BE DE-COMPACTED AND REHABILITATED WITH TOPSOIL AND SEED.
- ALL SHRUB BED LAYOUT TO BE REVIEWED & APPROVED BY CONSULTANT.
- ANY AND ALL SOIL / MATERIAL IMPORTATION REQUIRES PARKS CANADA INSPECTION AND APPROVAL, PRIOR TO ENTERING THE PARK.
- REFER TO DWG C6.0 FOR ENGINEERING DETAILS OF THE GREY WATER SYSTEM.



REFER TO S1.0
FOR DETAILED
BUILDING
INFORMATION

NOT FOR CONSTRUCTION

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Revision / Revision

Consultant's Stamp Sceau de l'expert-conseil	Eng. Stamp Sceau de l'ingénieur
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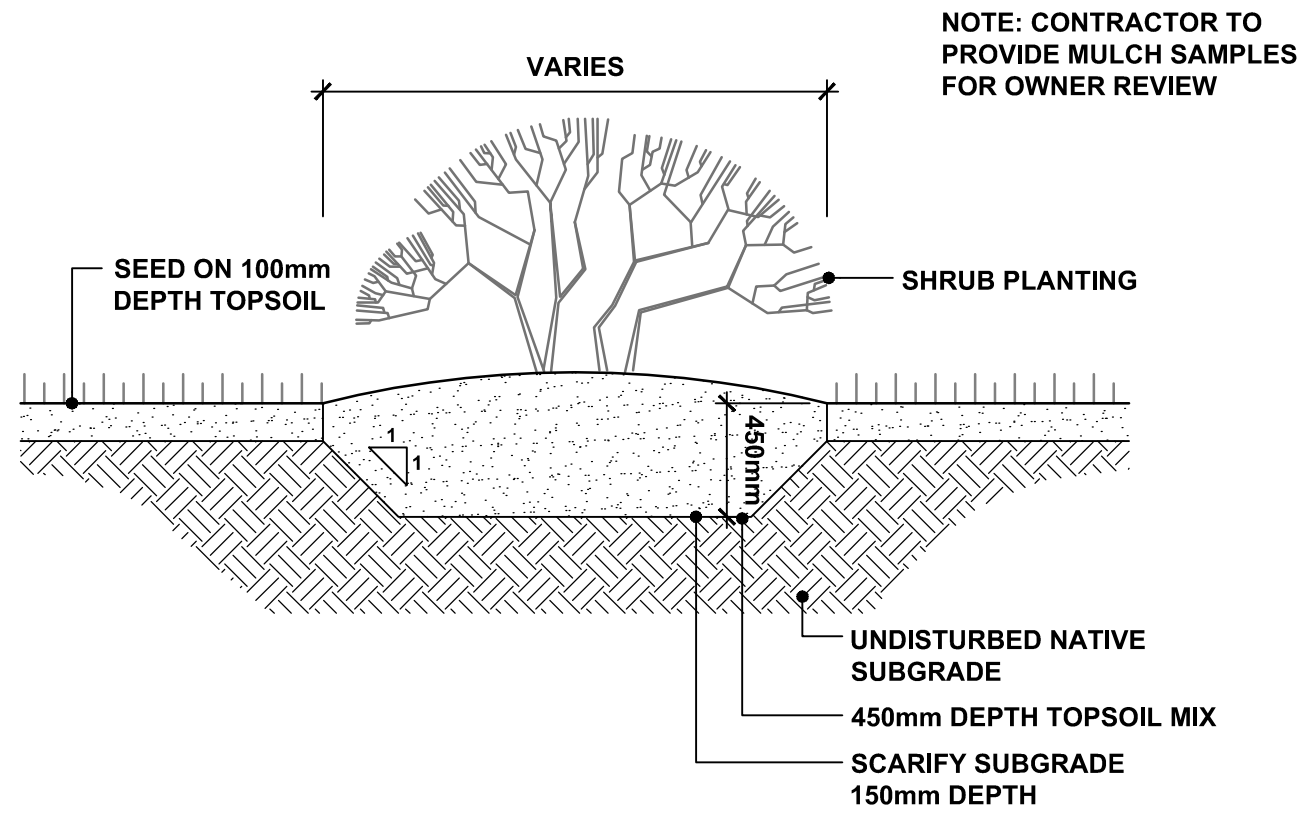
Client/client	
Parks Canada Agency Western and Northern Region	L'Agence Parcs Canada Ouest et Nord du Canada

Consultant's Name Nom de l'expert-conseil	
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Project title/Titre du projet
**ROCK CREEK CAMPGROUND
AND DAY USE AREA
WATER TREATMENT SYSTEM
GRASSLANDS NATIONAL PARK, SK**

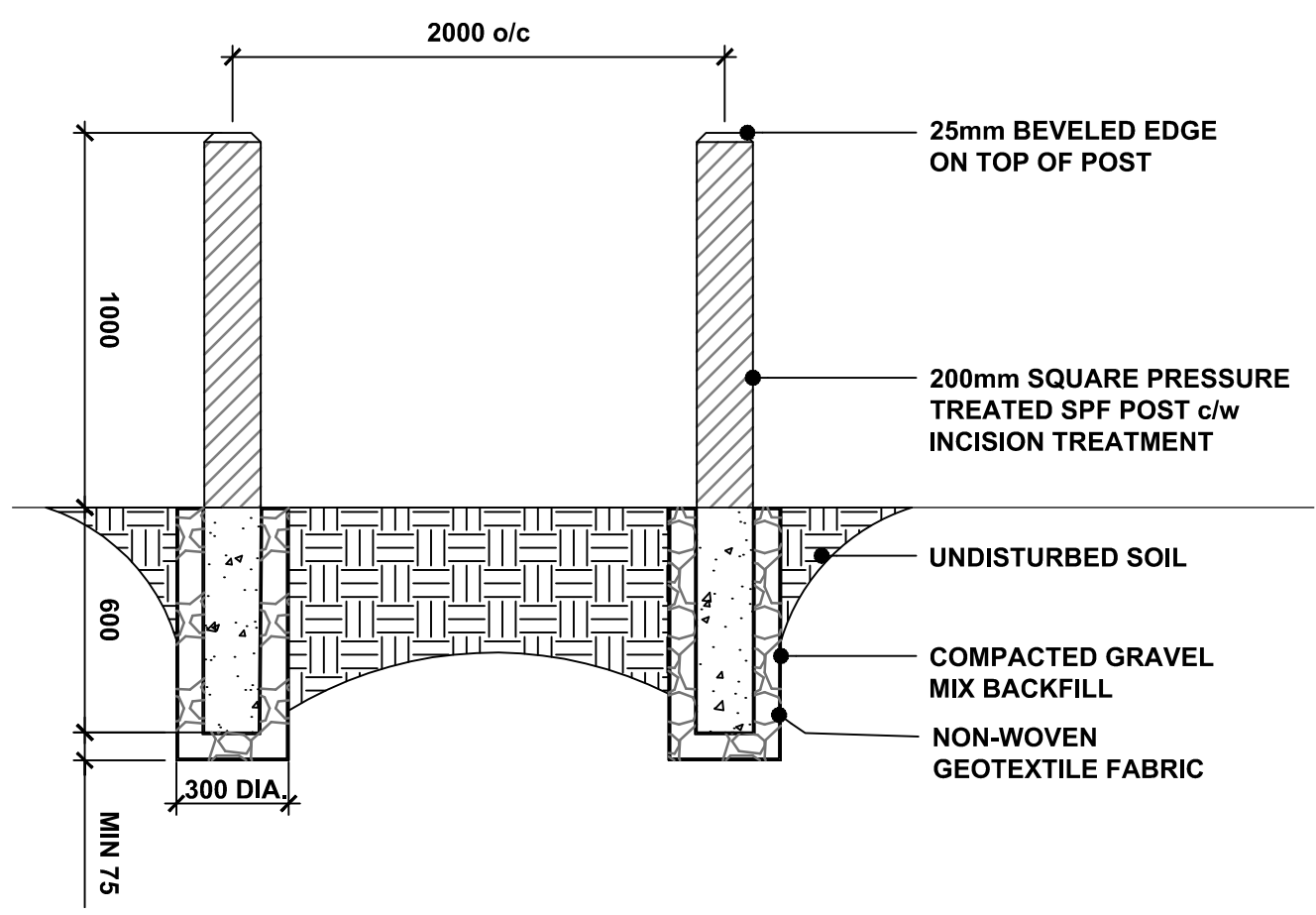
Drawing title/Titre du dessin
**GREY WATER DISPOSAL AND
SURFACE TREATMENT**

Surveyed by/Arpenté par N/A	Drawn by/Dessiné par LJ/GM	Date/Date NOVEMBER 23.18
Designed by/Concept par AT	Reviewed by/Revisé par MW	Scale/Echelle AS SHOWN
Parks Canada Project Manager/Administrateur de Projets Parcs Canada COLIN SCHMIDT		
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Project No./No. du projet	Asset No./No. du bien	Sheet No./ No. de la feuille
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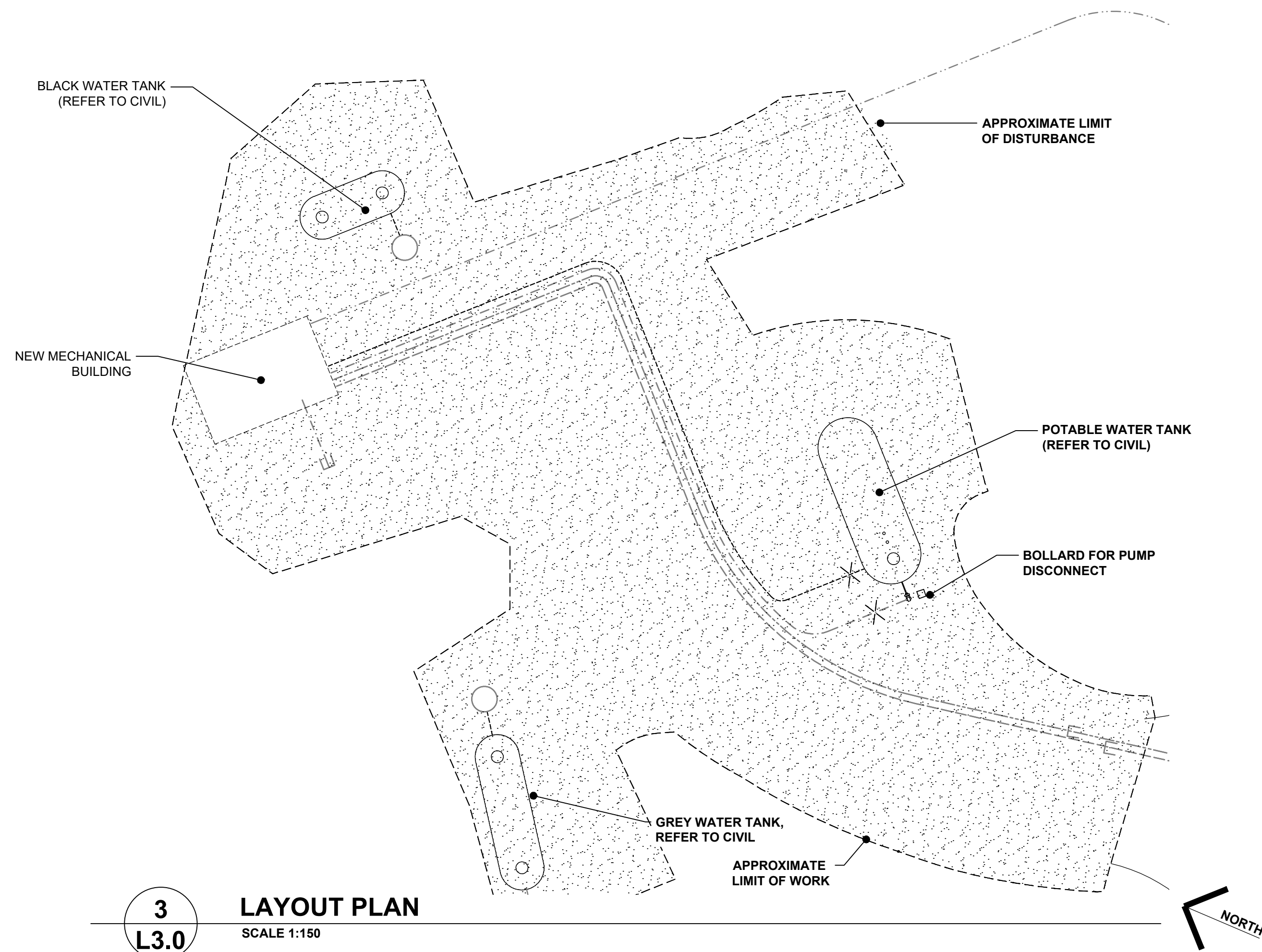
1
L3.0

SHRUB BED
SCALE 1:20



2
L3.0

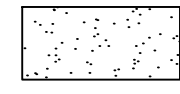

WOOD BOLLARD
SCALE 1:20



3
L3.0

LAYOUT PLAN
SCALE 1:150

LEGEND

-  SEED REHAB, REFER TO DTL 2, L3.0
-  BOLLARD

NOTES:

- IMPORTED SOIL MIX FOR SEED BEDS TO BE PER PROJECT SPECIFICATIONS.
- SEED CERTIFICATES TO BE PROVIDED TO PARKS CANADA PRIOR TO PRODUCT DELIVERY TO SITE.
- TOPSOIL - REQUIRES PCA APPROVAL OF SOURCE BEFORE ARRIVING ON SITE.
- ALL UTILITIES MUST BE LOCATED IN FIELD PRIOR TO ANY EXCAVATION. ENSURE ALL UTILITY INSTALLATIONS HAVE BEEN COMPLETED PRIOR TO ANY CONSTRUCTION ACTIVITIES.
- ALL CONTRACTOR ACCESS PATHS TO BE DE-COMPACTED AND REHABILITATED WITH TOPSOIL AND SEED.


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Revision / Revision				
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Consultant's Stamp Sceau de l'expert-conseil	Eng. Stamp Sceau de l'ingénieur
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Client/client	 Parks Canada Agence Western and Northern Region	L'Agence Parcs Canada Ouest et Nord Région
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Consultant's Name Nom de l'expert-conseil
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Project title/Titre du projet
ROCK CREEK CAMPGROUND AND DAY USE AREA WATER TREATMENT SYSTEM GRASSLANDS NATIONAL PARK, SK

Drawing title/Titre du dessin

**GRADING, LANDSCAPE PLANS
& DETAILS**

Surveyed by/Arpenté par N/A	Drawn by/Dessiné par LJ/GM	Date/Date NOVEMBER 23.18
Designed by/Concept par AT	Reviewed by/Revisé par MW	Scale/Echelle AS SHOWN

Parks Canada Project Manager/Administrateur de Projets Parcs Canada COLIN SCHMIDT	
--	--

Client Acceptance/Acceptation du client	Approved by/Approuvé par
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Parks Canada Responsible Officer/Agent Responsable Project No./No. du projet	Parks Canada Project Manager/Administrateur de Projets Asset No./No. du bien	Sheet No./ No. de la feuille
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Drawing Reference No./No. de référence du dessin 2711 16012 - 00	L3.0
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December 20, 2018 - 17:42:42
 Filename: X:\2711\Projects\2711_16012 00 Grasslands NP\10.0 Drawings\10.8 Structural\2711_16012 S01 S02.dwg\$01
 Plotter:

DESIGN CRITERIA:

1. DESIGN STANDARDS:
- BUILDING:

NATIONAL BUILDING CODE OF CANADA 2015 PART 9

2. CLIMATE DATA:

GROUND SNOW LOAD (1/50):

1.6 kPa (33 psf)

ASSOCIATED RAIN LOAD (1/50):

0.1 kPa (2 psf)

3. DESIGN LOADS:

ROOF SNOW/LIVE LOAD:

1.0 kPa (20 psf)

ROOF SERVICE LOAD:

0.5 kPa (10 psf)

FLOOR LIVE LOAD:

16.8 kPa (350 psf)

4. GEOTECHNICAL:

ALLOWABLE BEARING PRESSURE:

65 kPa (1,350 kPa)

FACTORED BEARING RESISTANCE:

100 kPa (2,000 kPa)

THE DESIGN IS BASED ON THE TECHNICAL MEMO “RE: ROCK CREEK CAMPGROUND, SHOWER BUILDING, FOUNDATION REVIEW, ADDITIONAL GEOTECHNICAL RECOMMENDATIONS, GRASSLAND NATIONAL PARK, SASK” PREPARED BY McELHANNEY CONSULTING SERVICES LTD ON MAY 24, 2018.

THE ENGINEER SHALL BE NOTIFIED IF THE ENCOUNTERED BEARING CAPACITIES ARE LESS THAN THE VALUES LISTED ABOVE.

5. THE CONTRACTOR SHALL ENSURE THAT CONSTRUCTION LOADS DO NOT EXCEED THE DESIGN LOADS LISTED ABOVE.

GENERAL

1. CODES AND STANDARDS REFERENCED ON THE DRAWINGS SHALL BE THE EDITIONS LISTED IN TABLE 1.3.1.2. OF THE NATIONAL BUILDING CODE OF CANADA 2015.
2. CONSTRUCTION SHALL COMPLY WITH THE CODES AND STANDARDS LISTED ON THE DRAWINGS AS WELL AS ALL APPLICABLE FEDERAL, PROVINCIAL AND MUNICPAL REGULATIONS AND BYLAWS.
3. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS BEFORE COMMENCING ANY WORK AND NOTIFY THE ENGINEER OF ANY ERRORS OR OMISSIONS.
4. THE CONTRACTOR SHALL COMPARE ALL RELATED DRAWINGS BEFORE COMMENCING ANY WORK AND NOTIFY THE ENGINEER IF ANY DISCREPANCIES OR INCONSISTENCIES BETWEEN CIVIL, ARCHITECTURAL, STRUCTURAL, MECHANICAL AND ELECTRICAL DRAWINGS.
5. DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE. ELEVATIONS ARE IN METRES UNLESS NOTED OTHERWISE.
6. ONLY USE WRITTEN DIMENSIONS. DO NO SCALE OFF THE DRAWINGS.
7. ONLY BUILD FROM ISSUED FOR CONSTRUCTION (IFC) DRAWINGS.
8. THE SUPPLY OF RECORD DRAWINGS IS WITHIN THE SCOPE OF SERVICES.
9. THESE NOTES SHALL BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DOCUMENTS. THE MORE STRINGENT SPECIFICATIONS SHALL BE USED IF DISCREPANCIES OR INCONSISTENCIES ARE FOUND BETWEEN THE DRAWINGS AND OTHER CONTRACT DOCUMENTS, UNLESS APPROVED BY THE ENGINEER.
10. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE CORRECTION OF DEFICIENCIES, AS DIRECTED BY THE ENGINEER.
11. THESE DRAWINGS ARE FOR THE COMPLETED STRUCTURE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, INSTALLATION AND INSPECTION OF ALL TEMPORARY BRACING, FALSEWORK, FORMWORK, SHORING AND RESHORING REQUIRED TO SUPPORT CONSTRUCTION LOADS AND TO KEEP THE STRUCTURE PLUMB AND LEVEL DURING CONSTRUCTION. TEMPORARY SUPPORTS SHALL COMPLY WITH THE OCCUPATIONAL HEALTH AND SAFETY (OHS) REGULATION.
12. THE REVIEW OF SHOP DRAWINGS BY THE ENGINEER IS FOR THE SOLE PURPOSE OF REVIEWING GENERAL CONFORMANCE WITH THE DESIGN CONCEPTS ONLY. THE DETAILED DESIGN REMAINS THE RESPONSIBILITY OF THE FABRICATOR/CONTRACTOR. ALL PORTIONS SHALL BE ERECTED AND ASSEMBLED IN ACCORDANCE WITH APPROVED SHOP AND ERECTION DRAWINGS. NO ERECTION OR FABRICATION SHALL TAKE PLACE WITHOUT THE ENGINEER HAVING REVIEWED AND APPROVED THE SHOP AND ERECTION DRAWINGS.
13. DO NOT INSTALL OPENINGS, SET INSERTS, DRILL OR ATTACH TO STRUCTURAL ELEMENTS WITHOUT AUTHORIZATION FROM THE ENGINEER, UNLESS NOTED ON DRAWINGS.

FIELD REVIEWS:

1. THE ENGINEER SHALL BE NOTIFIED OF THE CONSTRUCTION SCHEDULE IN ORDER TO SCHEDULE FIELD REVIEWS. IF THE ENGINEER IS NOT AFFORDED THE OPPORTUNITY TO REVIEW THE STRUCTURAL WORKS PRIOR TO CONCEALMENT, THEN FINAL CERTIFICATION OF THE PROJECT WILL NOT BE ISSUED.
2. THE ENGINEER SHALL THE BE NOTIFIED AT LEAST 24 HOURS IN ADVANCE FOR INSPECTION AND APPROVAL OF THE FOLLOWING:
- FOUNDATION SOILS, BEFORE BACKFILLING OR CONCRETING

REINFORCING STEEL, BEFORE CONCRETING/GROUTING

WOOD FRAMING, DIAPHRAGMS & SHEAR WALLS, BEFORE CONCEALMENT
3. ALL WORK SHALL BE MADE ACCESSIBLE FOR INSPECTION. FAILURE TO GIVE REQUIRED NOTIFICATION AND ACCESSIBILITY MAY RESULT IN THE ENGINEER REQUIRING THE REMOVAL AND REPLACEMENT OF THE WORK AT THE CONTRACTOR'S EXPENSE.
4. THE CONTRACTOR SHALL REVIEW SUB-CONTRACTORS' WORK PRIOR TO THE ENGINEER'S FIELD REVIEW.

5. FIELD REVIEWS ARE PROVIDED ONLY FOR THE WORK SHOWN ON THE STRUCTURAL DRAWINGS PREPARED BY THE ENGINEER. REVIEWS ARE PERIODIC AND AT THE PROFESSIONAL JUDGEMENT OF THE ENGINEER TO DETERMINE THAT THE WORK IS IN GENERAL CONFORMANCE WITH THE DRAWINGS AND CONTRACT DOCUMENTS, AND TO FACILITATE COMPLETION OF THE LETTERS OF ASSURANCE REQUIRED BY AUTHORITY HAVING JURISDICTION (AHJ).
6. FIELD REVIEWS SHALL NOT RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY AND OBLIGATION TO COMPLY WITH DRAWINGS AND CONTRACT DOCUMENTS. QUALITY CONTROL REMAINS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
7. MANUFACTURERS OF ELEMENTS DESIGNED BY THEIR ENGINEER, FOR EXAMPLE TRUSSES, SHALL PROVIDE SEALED CERTIFICATION FOR THE MANUFACTURE AND THE INSTALLATION PRIOR TO CONCEALMENT.
8. ADDITIONAL FIELD REVIEWS REQUIRED DUE TO DEFICIENT OR INCOMPLETE WORK WILL BE AT THE CONTRACTOR'S EXPENSE.

FOUNDATIONS:

1. THE FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL MEMO LISTED IN THE GENERAL NOTES.
2. THE RECOMMENDATIONS GIVEN IN THE GEOTECHNICAL REPORT SHALL BE FOLLOWED FOR SOIL PREPARATION AND DRAINAGE.
3. THE CONTRACTOR SHALL ORGANIZE GEOTECHNICAL REVIEWS AND CONFIRMATION OF THE BEARING CAPACITY PRIOR TO PLACING FOUNDATIONS.
4. THE CONTRACTOR IS RESPONSIBLE FOR TEMPORARY SITE DRAINAGE AND STABILITY OF EXCAVATIONS.
5. IF ANY FOOTING DEPTHS OR ELEVATIONS ARE SHOWN, THEY ARE FOR BIDDING PURPOSES ONLY AND ARE NOT FINAL. DEPTHS AND ELEVATIONS MAY VARY DUE TO SITE CONDITIONS.
6. SOIL SURFACES FOR BEARING SHALL BE PROTECTED AGAINST FREEZING PRIOR TO AND AFTER FOOTINGS ARE PLACED.
7. FOOTINGS SHALL BE CENTERED UNDER COLUMNS AND WALLS UNLESS NOTED OTHERWISE.
8. DOWELS OR ANCHOR BOLTS SHALL BE SECURED IN PLACE BEFORE POURING CONCRETE. TEMPLATES SHALL BE USED WHERE REQUIRED TO ENSURE CORRECT PLACEMENT.

REINFORCING STEEL:

1. REINFORCING STEEL SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH CSA-A23.1.
2. REINFORCING STEEL SHALL CONFORM TO CSA-G30.18 GRADE 400 UNLESS NOTED OTHERWISE.
3. REINFORCING STEEL SHALL NOT BE WELDED UNLESS SPECIFIED OR AUTHORIZED BY THE ENGINEER. WELDING SHALL CONFORM TO CSA-W186.
4. REINFORCING STEEL SHALL BE CLEAN AND FREE OF MUD, OIL, EXCESSIVE RUST OR MILL SCALE, AND DAMAGE.
5. REINFORCING STEEL SHALL BE ACCURATELY PLACED, SECURED AND SUPPORTED TO ENSURE PROPER CONCRETE COVER AND SPACING WITHIN ALLOWABLE TOLERANCES BEFORE AND DURING CONCRETING. REINFORCING STEEL IN SLABS SHALL BE SUPPORTED BY SUITABLE SUPPORTS AT MAXIMUM 1.2 m (4') ON CENTRE. BAR SUPPORTS SHALL BE MADE OF PRECAST CONCRETE, PLASTIC OR STEEL.
6. PROVIDE CLEAR CONCRETE COVER FOR REINFORCING STEEL AS FOLLOWS UNLESS NOTED OTHERWISE:
- CONCRETE CAST AGAINST GROUND:

75 mm (3")

EXPOSED TO CHLORIDES/MANURE:

60 mm (2 3/8")

EXPOSED:

40 mm (1 1/2")

NOT EXPOSED:

30 mm (1 1/8")

7. REINFORCING STEEL SHALL BE BENT AS FOLLOWS UNLESS NOTED OTHERWISE:
- 10M:

70 mm (2 3/4")

15M:

100 mm (4")

8. REINFORCING STEEL SHALL BE CONTINUOUS AND ADEQUATELY LAPPED AT SPLICES.
9. MINIMUM LAP LENGTHS SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:
- 10M:

380 mm (15")

15M:

570 mm (22")
10. SPLICES ARE NOT PERMITTED WHERE BAR LENGTHS HAVE BEEN SPECIFIED ON THE DRAWINGS UNLESS AUTHORIZED BY THE ENGINEER.
11. OPENINGS IN WALLS AND SLABS SHALL HAVE AN ADDITIONAL 15M BAR ON EACH SIDE OF THE OPENING EXTENDING 600 mm (24") PAST THE OPENING AND 4 ADDITIONAL 1,200 mm (48") LONG 15M DIAGONAL BARS IN EACH LAYER UNLESS NOTED OTHERWISE.
12. CONCRETE SHALL NOT BE POURED UNTIL REINFORCING STEEL HAS BEEN REVIEWED BY THE ENGINEER AND FOUND TO BE IN GENERAL CONFORMANCE WITH THE DRAWINGS AND CONTRACT DOCUMENTS.
13. CONSTRUCTION JOINTS IN SLAB AND BEAM POURS ARE NOT PERMITTED UNLESS SPECIFIED OR AUTHORIZED BY THE ENGINEER.

CONCRETE:

1. CONCRETE SHALL BE MIXED, PLACED, FINISHED AND CURED IN ACCORDANCE WITH CSA-A23.1.
2. CONCRETE SHALL CONFORM TO THE FOLLOWING UNLESS NOTED OTHERWISE:

- EXPOSURE CLASS:
- S-3
- CEMENT:
- HS
- 56-DAY COMPRESSIVE STRENGTH:
- 30 MPa
- MAXIMUM W/C RATIO:
- 0.50
- MAXIMUM AGGREGATE SIZE:
- 20 mm (3/4")
- AIR CONTENT:
- 4% - 7%
- SLUMP:
- 75 - 100 mm (3" - 4")*
- CURING TYPE:
- 1 (3 DAYS MINIMUM)

*BEFORE ADDING SUPER PLASTICIZER

3. THE USE OF ADMIXTURES OTHER THAN AIR ENTRAINMENT, STANDARD WATER REDUCERS OR SUPER PLASTICIZERS IS NOT PERMITTED UNLESS SPECIFIED OR AUTHORIZED BY THE ENGINEER.
4. WATER SHALL NOT BE ADDED TO THE CONCRETE AFTER LEAVING THE BATCH PLANT.
5. CONCRETE SHALL BE REJECTED WHEN TIME BETWEEN BATCHING AND PLACING EXCEEDS 1 HOUR AND 20 MINUTES.
6. FORMWORK SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH PART 20 OF THE OSH REGULATION AND CSA-S269.3.
7. VERTICAL AND HORIZONTAL CONCRETE ELEMENTS SHALL BE PLUMB AND LEVEL WITH A MAXIMUM TOLERANCE OF 1:400, BUT NO MORE THAN 40 mm (1 1/2") OVER THE TOTAL HEIGHT AND LENGTH OF THE STRUCTURE RESPECTIVELY. THE AVERAGE THICKNESS OF SLABS ON GRADE SHALL BE WITHIN ± 10 mm (3/8"). CROSS-SECTIONAL DIMENSIONS OF CONCRETE ELEMENTS OTHER THAN SLABS ON GRADE SHALL BE WITHIN THE FOLLOWING MAXIMUM TOLERANCES:

- LESS THAN 0.3 m (12") THICK:
- ± 8 mm (5/16")
- 0.3 m (12") TO 1 m (39") THICK:
- ± 12 mm (1/2")
- MORE THAN 1 m (39") THICK:
- ± 20 mm (3/4")

8. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 20 mm (3/4") CHAMFER.
9. CONCRETE SHALL BE CONSOLIDATED USING MECHANICAL VIBRATORS.
10. OPENINGS, BLOCKOUTS AND EMBEDDED HARDWARE SHALL NOT BE INSTALLED UNLESS SPECIFIED OR AUTHORIZED BY THE ENGINEER.
11. FORMWORK SHALL BE LEFT IN PLACE UNTIL THE CONCRETE HAS ATTAINED SUFFICIENT STRENGTH TO SUPPORT ITS OWN WEIGHT AND CONSTRUCTION LOADS.
12. CONCRETE SEALER, IF SPECIFIED, SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.

WOOD:

1. WOOD CONSTRUCTION SHALL CONFORM TO PART 9 OF THE NATIONAL BUILDING CODE OF CANADA.
2. SAWN LUMBER SHALL CONFORM TO CSA-O141 AND BE OF THE FOLLOWING SPECIES AND GRADES UNLESS NOTED OTHERWISE:

- TIMBER:
- D.FIR-LARCH No. 2 OR BETTER
- DIMENSION LUMBER:
- S-P-F No. 2 OR BETTER

3. SHEATHING SHALL BE EXTERIOR GRADE AND CONFORM TO THE FOLLOWING UNLESS NOTED OTHERWISE:

- DOUGLAS FIR PLYWOOD (DFP):
- CSA-O121
- CANADIAN SOFTWOOD PLYWOOD (CSP):
- CSA-O151
- ORIENTATED STRAND BOARD (OSB):
- CSA-O325

4. FASTENERS FOR WOOD CONNECTION SHALL CONFORM TO THE FOLLOWING:

- LAG BOLTS:
- ASME B18.2.1 & SAE J429 GRADE 1
- BOLTS:
- ASTM A307

5. FASTENERS FOR PRESERVATIVE-TREATED (PT) WOOD AND EXTERIOR CONNECTIONS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153 UNLESS NOTED OTHERWISE.
6. SHEATHING SHALL BE INSTALLED WITH FACE GRAIN RUNNING PERPENDICULAR TO FRAMING MEMBERS IN A STAGGERED PATTERN.
7. SHEATHING SHALL BE NAILED TO FRAMING MEMBERS WITH 2 1/2" NAILS AT 150 mm (6") ON CENTRE ON ALL PANEL EDGES AND 300 mm (12") ON CENTRE AT INTERMEDIATE BEARING MEMBERS UNLESS NOTED OTHERWISE. PANEL EDGES SHALL BE BLOCKED AS SPECIFIED IN WOOD DIAPHRAGM NOTES.
8. JOIST SPACES SHALL BE FULLY BLOCKED BELOW POINT LOADS.
9. 2-PLY JOISTS SHALL BE INSTALLED UNDER NON-LOAD BEARING PARTITION WALLS RUNNING PARALLEL TO THE JOISTS UNLESS NOTED OTHERWISE.
10. 2-PLY CRIPPLE STUDS SHALL BE INSTALLED UNDER LINTELS UNLESS NOTED OTHERWISE.
11. BUILT-UP BEAMS SHALL BE SUPPORTED BY STUDS WITH A MATCHING NUMBER OF PLIES NAILED TOGETHER AS A BUILT-UP POST, WHICH SHALL BE CARRIED DOWN TO THE FOUNDATION UNLESS NOTED OTHERWISE.
12. SILL GASKETS SHALL BE INSTALLED UNDER WOOD SILL PLATES IN CONTACT WITH CONCRETE. PEEL AND STICK MEMBRANE SHALL BE INSTALLED UNDER OTHER WOOD SURFACES IN CONTACT WITH CONCRETE.

INSULATION:


1. RIGID INSULATION SHALL BE EXTRUDED POLYSTYRENE (XPS) CONFORMING TO CAN/ULS-S701 TYPE 4.
2. BATT INSULATION SHALL BE MINERAL FIBRE INSULATION CONFORMING TO CAN/ULS-S702 TYPE 1.

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02	DEC.20.18	ISSUED FOR TENDER	TRM	SF
01	NOV.09.18	ISSUED FOR INTERNAL REVIEW	TRM	SF
No.	Date/Date	Description/Description	Drawn by Dessiné par	Approved Approuvé

Revision / Revision				

Consultant's Stamp Sceau de l'expert-conseil	Eng. Stamp Sceau de l'ingénieur
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Client/client	<div> <div>  <div> <div>Parks Canada</div> <div>Agency</div> <div>Western and Northern Region</div> </div> </div> <div> <div>L'Agence Parcs Canada</div> <div>Ouest et Nord Région</div> </div> </div>
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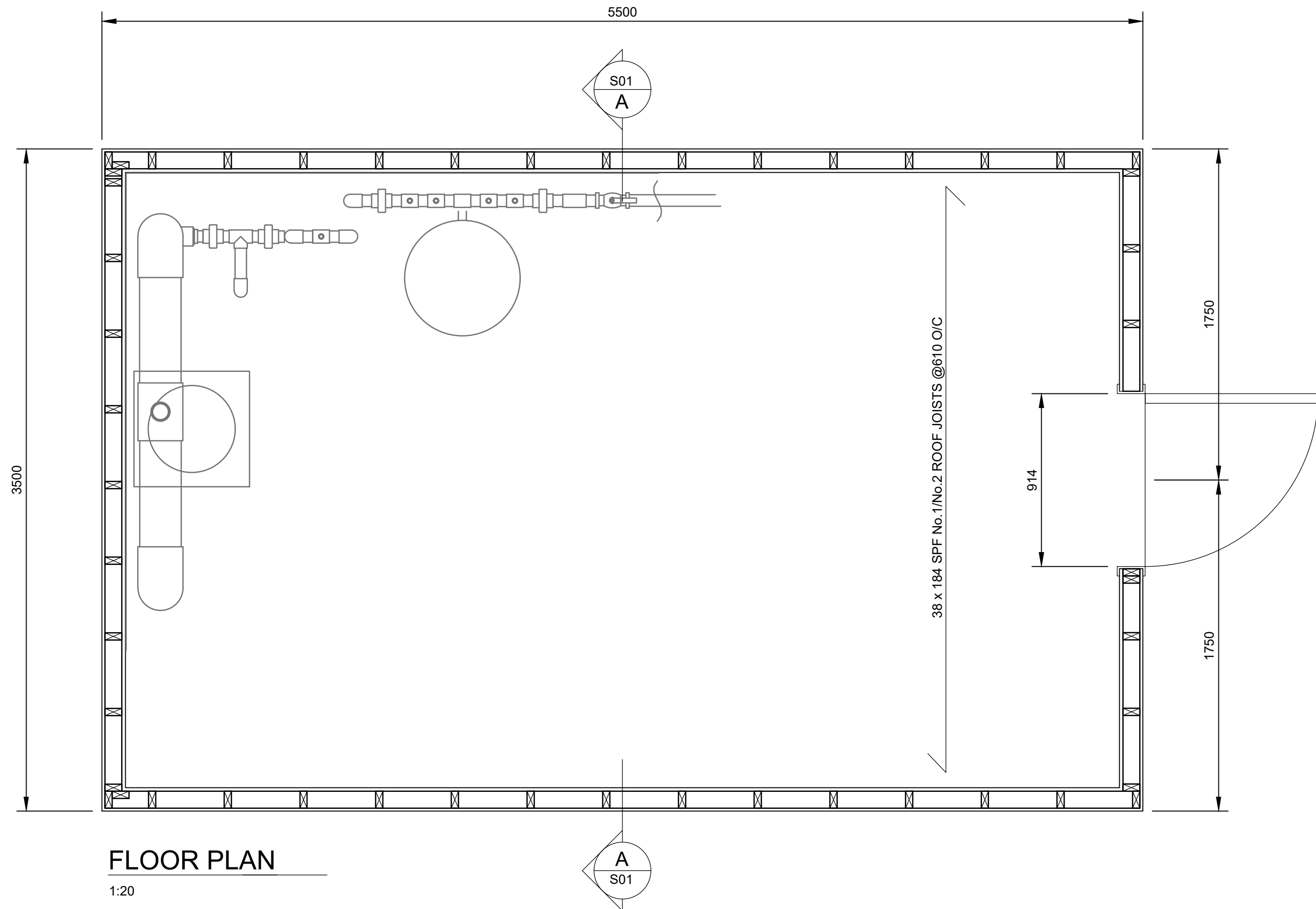
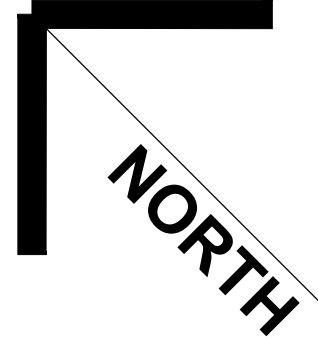
Consultant's Name Nom de l'expert-conseil


Project title/Titre du projet
<div> <div> <div>ROCK CREEK CAMPGROUND</div> <div>AND DAY USE AREA</div> <div>WATER TREATMENT SYSTEM</div> <div>GRASSLANDS NATIONAL PARK, SK</div> </div> </div>

Drawing title/Titre du dessin
<div>GENERAL NOTES</div>

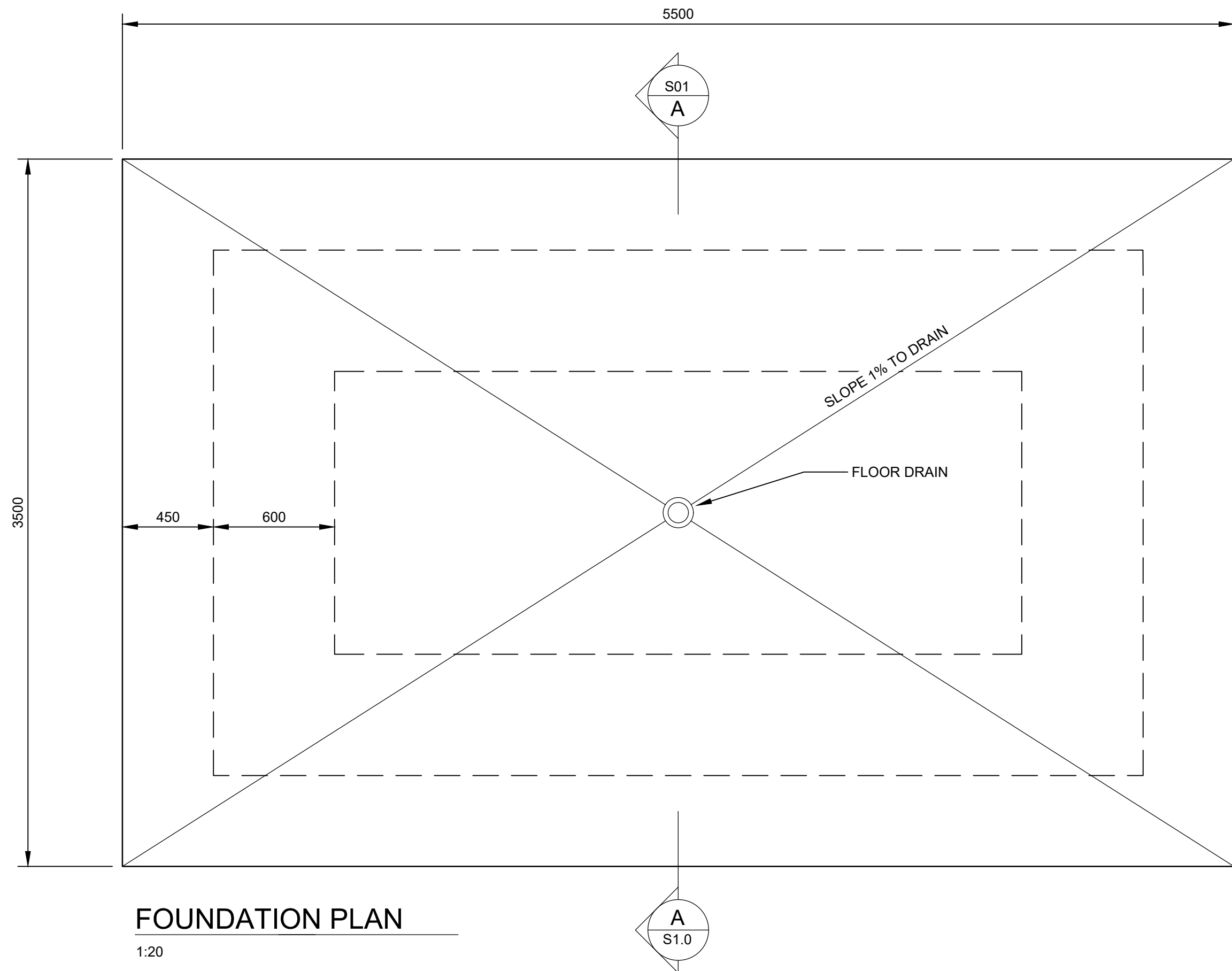
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N/A	TRM	2018-11-09
Designed by/Concept par	Reviewed by/Revisé par	Scale/Echelle
SF	SF	NTS
Parks Canada Project Manager/Administrateur de Projets Parcs Canada		
COLIN SCHMIDT		
Client Acceptance/Acceptation du client		Approved by/Approuvé par
Parks Canada Responsible Officer/Agent Responsable	Parks Canada Project Manager/Administrateur de Projets Parcs Canada	
Project No./No. du projet	Asset No./No. du-bien	Sheet No./No. de la feuille
2711-16012		S0.1
Drawing Reference No./No. de référence du dessin		

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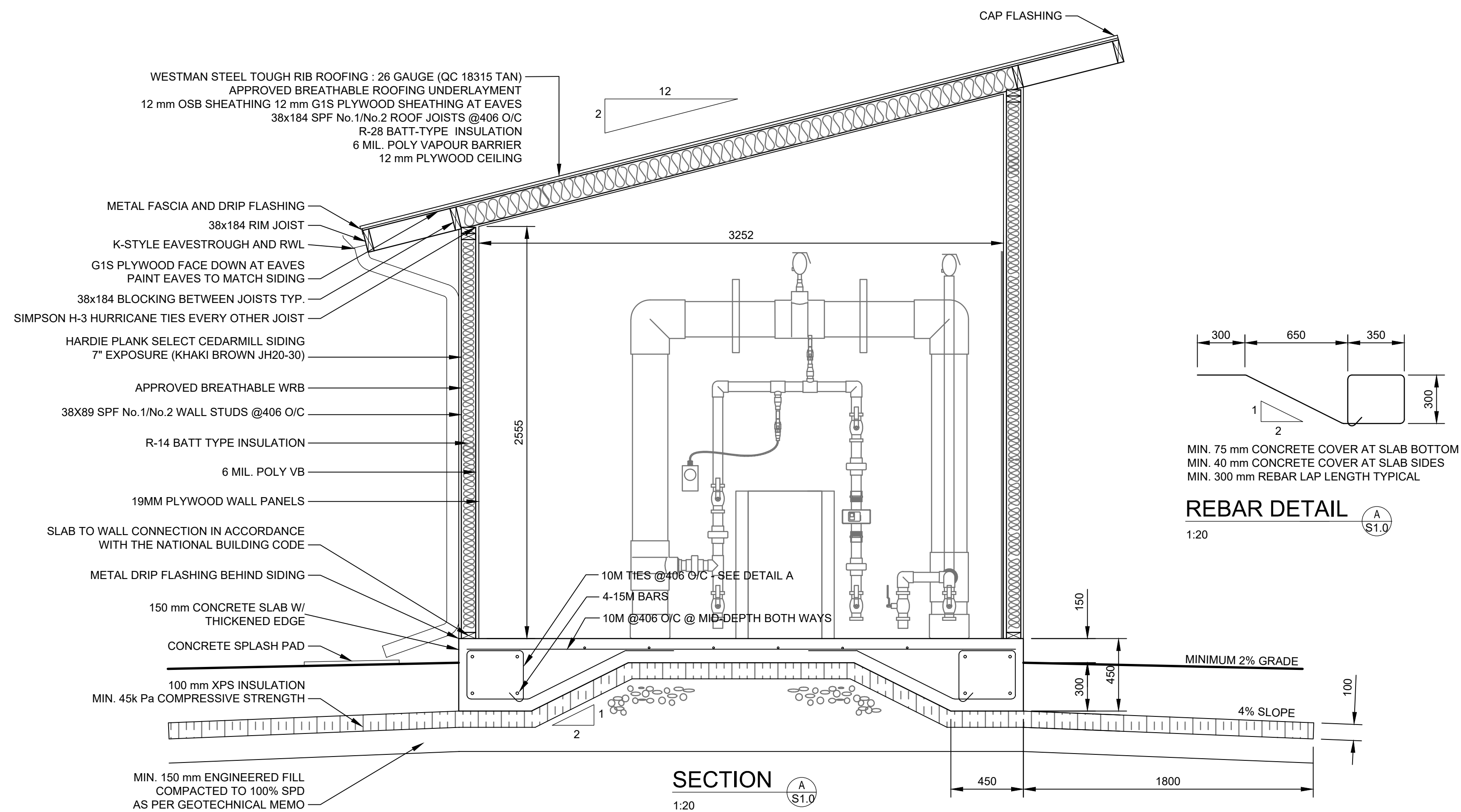
FLOOR PLAN

1:20



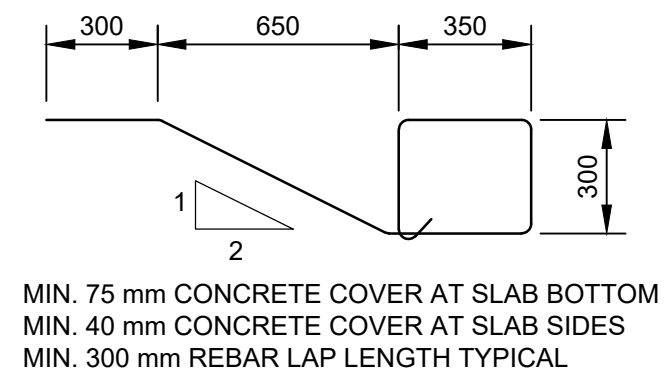
FOUNDATION PLAN

1:20



SECTION

1:20



REBAR DETAIL

1:20

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Consultant's Name
Nom de l'expert-conseil



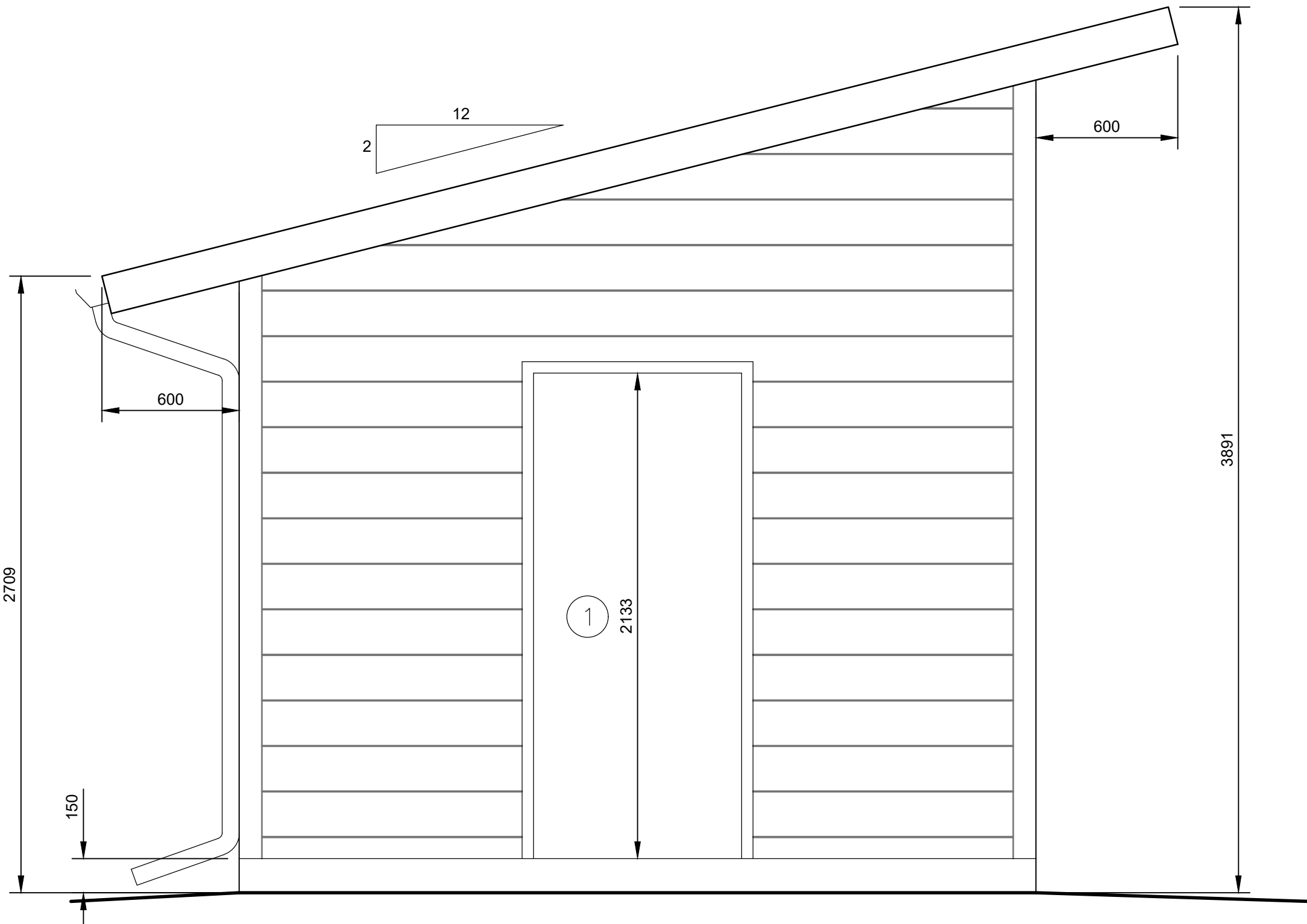
Project title/Titre du projet
**ROCK CREEK CAMPGROUND
AND DAY USE AREA
WATER TREATMENT SYSTEM
GRASSLANDS NATIONAL PARK, SK**

Drawing title/Titre du dessin

PLANS AND SECTION

Surveyed by/Arpenté par N/A	Drawn by/Dessiné par TRM	Date/Date 2018.11.09
Designed by/Concept par SF	Reviewed by/Revisé par SF	Scale/Echelle 1:20
Parks Canada Project Manager/Administrateur de Projets Parcs Canada COLIN SCHMIDT		
Client Acceptance/Acceptation du client		Approved by/Approuvé par
Parks Canada Responsible Officer/Agent Responsable Parcs Canada		Parks Canada Project Manager/Administrateur de Projets Parcs Canada
Project No./No. du projet 2711-16012	Asset No./No. de bien	Sheet No./ No. de la feuille S1.0
Drawing Reference No./No. de référence du dessin		

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 Plotted:



FRONT ELEVATION

1:20



SIDE ELEVATION

1:20

DOOR SCHEDULE	
MARK	DETAILS
①	914x2133 INSULATED HOLLOW METAL DOOR c/w (3) BUTT HINGES, METAL THRESHOLD, PERIMETER WEATHER STRIP, PASSAGE HANDLE SET, DEADBOLT (PAINT COLOUR TO MATCH SIDING)

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	<p>Parks Canada Agency Western and Northern Region</p>	<p>L'Agence Parcs Canada Ouest et Nord Région</p>

Consultant's Name Nom de l'expert-conseil
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Project title/Titre du projet
ROCK CREEK CAMPGROUND AND DAY USE AREA WATER TREATMENT SYSTEM GRASSLANDS NATIONAL PARK, SK

Drawing title/Titre du dessin

ELEVATIONS

Surveyed by/Arpenté par N/A	Drawn by/Dessiné par TRM	Date/Date 2018-11-09
Designed by/Concept par SF	Reviewed by/Revisé par SF	Scale/Echelle 1:20

Parks Canada Project Manager/Administrateur de Projets Parcs Canada COLIN SCHMIDT	
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Client Acceptance/Acceptation du client	Approved by/Approuvé par
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Project No./No. du projet 2711-16012	Asset No./No. du bien

Drawing Reference No./No. de référence du dessin	Sheet No./ No. de la feuille S2.0
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