CLIENT

TOWNSHIP OF ESQUIMALT

ADDRESS / CONTACT INFO.

1229 ESQUIMALT RD, ESQUIMALT, CB V9A 3P1

DESCRIPTION

UGANDA PUMP STATION UPGRADES

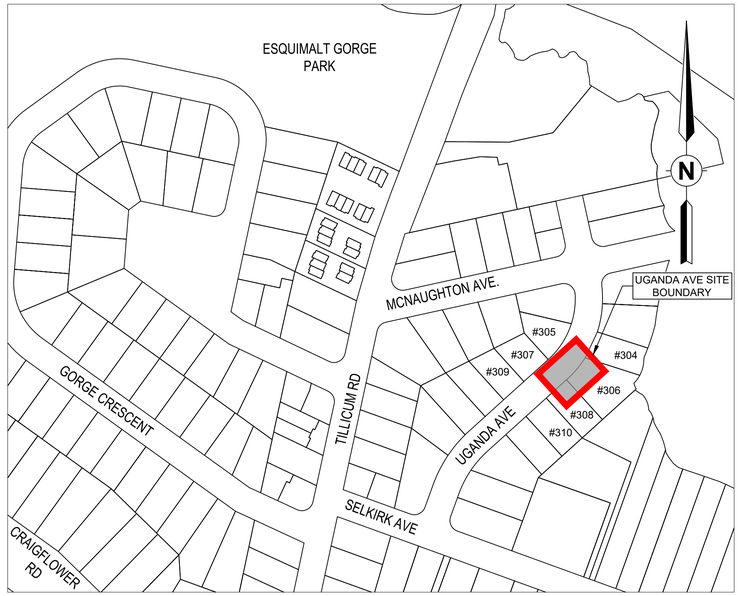
McELHANNEY PROJECT

2241-25014-00

STATUS

ISSUED FOR TENDER

KEY PLAN
N.T.S.



LOCATION PLAN
1:2000

DRAWING LIST								
SHEET #	SHEET TITLE	REVISIONS						
		PA	PB	PC	0	1	2	3
C-000	COVER PAGE				X			
C-001	GENERAL NOTES & LEGEND				X			
C-101	UGANDA LS SITE PLAN				X			
E-001	SYMBOLS & DRAWING INDEX				X			
E-002	ELECTRICAL SITE PLAN				X			
E-003	SINGLE LINE DIAGRAM				X			
E-004	KIOSK ELEVATIONS				X			
E-005	GENERATOR AND KIOSK DETAILS				X			
E-900	SPECIFICATIONS				X			
P-100	SCHEMATIC				X			
P-101	PIPE PLAN AND PROFILE				X			
S-000	SPECIFICATIONS				X			
S-001	SPECIFICATIONS				X			
S-100	PLANS				X			
S-300	SECTIONS				X			
S-500	DETAILS				X			
S-501	EQUIPMENT SLAB DETAILS				X			

McElhanney

500 - 3960 Quadra Street,
Victoria BC V8X 4A3
Tel. 250 370 9221

GENERAL NOTES:

1. CODES AND STANDARDS REFERENCED ON THE DRAWINGS SHALL BE THE EDITIONS LISTED IN TABLE 1.3.1.2. OF DIVISION B OF THE CURRENT EDITION OF THE BUILDING CODE UNLESS NOTED OTHERWISE. CODES AND STANDARDS NOT LISTED IN THE BUILDING CODE SHALL BE THE LATEST EDITIONS UNLESS NOTED OTHERWISE.
2. CONSTRUCTION SHALL COMPLY WITH THE CODES AND STANDARDS LISTED ON THE DRAWINGS AS WELL AS ALL APPLICABLE FEDERAL, PROVINCIAL AND MUNICIPAL 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 OF ANY DISCREPANCIES OR INCONSISTENCIES BETWEEN DRAWINGS.
5. DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. ELEVATIONS ARE IN METRES UNLESS NOTED OTHERWISE.
6. ONLY USE WRITTEN DIMENSIONS. DO NOT SCALE OFF THE DRAWINGS.
7. DRAWINGS SHALL NOT BE USED FOR CONSTRUCTION UNLESS MARKED ISSUED FOR CONSTRUCTION (IFC) AND SEALED BY A PROFESSIONAL ENGINEER.
8. THESE NOTES SHALL BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DOCUMENTS. THE MOST STRINGENT SPECIFICATIONS SHALL BE USED IF DISCREPANCIES OR INCONSISTENCIES ARE FOUND BETWEEN THE DRAWINGS AND OTHER CONTRACT DOCUMENTS, UNLESS APPROVED BY THE ENGINEER.
9. MATERIALS SHALL BE NEW AND BE PROTECTED FROM DAMAGE DURING SHIPPING, HANDLING, STORAGE AND INSTALLATION.
10. THESE DRAWINGS ARE FOR THE COMPLETED STRUCTURE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR DEMOLITION PROCEDURES, LIFT PLANS AND TEMPORARY SUPPORTS REQUIRED TO SUPPORT CONSTRUCTION LOADS AND TO KEEP THE STRUCTURE PLUMB AND LEVEL DURING CONSTRUCTION. THE CONTRACTOR'S RESPONSIBILITIES INCLUDE, BUT ARE NOT LIMITED TO THE DESIGN, INSTALLATION AND INSPECTION OF ALL TEMPORARY BRACING, FALSEWORK, FORMWORK, SHORING, AND RESHORING. DEMOLITION PROCEDURES, LIFT PLANS AND TEMPORARY SUPPORTS SHALL COMPLY WITH THE OCCUPATIONAL HEALTH AND SAFETY REGULATION (OSHR).
11. MATERIALS SHALL BE ORDERED IN A TIMELY MANNER TO ENSURE PROCUREMENT TIMES DO NOT NEGATIVELY IMPACT THE PROJECT SCHEDULE.
12. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL COMPONENTS AND THEIR ATTACHMENT DESIGNED BY THE CONTRACTOR'S ENGINEER TO THE ENGINEER FOR REVIEW AT LEAST TWO WEEKS PRIOR TO FABRICATION. THE DRAWINGS SHALL BE SEALED BY THE CONTRACTOR'S ENGINEER. THE SHOP DRAWINGS SHALL SHOW ALL DETAILS, MATERIAL SPECIFICATIONS AND DESIGN LOADS. THE CONTRACTOR'S ENGINEER SHALL PROVIDE SCHEDULES S-B FOR THEIR SCOPE OF WORK.
13. 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 FABRICATION OR ERECTION SHALL TAKE PLACE WITHOUT THE ENGINEER HAVING REVIEWED AND APPROVED THE SHOP AND ERECTION DRAWINGS.
14. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE CORRECTION OF DEFICIENCIES, AS DIRECTED BY THE ENGINEER.
15. 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 BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE FOR FIELD REVIEWS OF THE FOLLOWING:

   CONCRETE CUTTING, AFTER CUTTING
   STRUCTURAL STEEL, AFTER INSTALLATION BEFORE GROUTING

3. ALL WORK SHALL BE MADE ACCESSIBLE FOR FIELD REVIEWS. FAILURE TO GIVE THE 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 THE AUTHORITY HAVING JURISDISCTION (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 THEIR MANUFACTURE AND INSTALLATION PRIOR TO CONCEALMENT.
8. ADDITIONAL FIELD REVIEWS THAT ARE REQUIRED DUE TO DEFICIENT OR INCOMPLETE WORK SHALL BE AT THE CONTRACTOR'S EXPENSE.

CONCRETE NOTES

1. NO CONCRETE WORKS SHALL BE ALLOWED IF THE CURRENT TEMPERATURE ON SITE IS BELOW 5°C OR ABOVE 32°C.
2. IF TEMPERATURES ARE EXPECTED TO DROP BELOW FREEZING WITHIN THE 5 DAY WINDOW FOLLOWING A CONCRETE POUR A THERMO BLANKET WILL BE REQUIRED TO MAINTAIN CONCRETE TEMPERATURES.
3. IF CONCRETE IS POURED AT TEMPERATURES ABOVE 25°C IT SHALL BE SPRAYED WITH WATER 5 TIMES PER DAY AT REASONABLE INCREMENTS BETWEEN THE HOURS OF 10am AND 3pm.
4. CONCRETE WORKS TO BE COMPLETED DURING RAIN EVENTS MAY BE ALLOWED AT THE DISCRETION OF THE CONTRACT ADMINISTRATOR. IN THE EVENT THAT CONCRETE IS POURED OCCURRED DURING A RAIN EVENT THE CONTRACTOR SHALL PROVIDE A PLASTIC COVERING THAT IS MAINTAINED TO PROTECT THE CONCRETE FOR A MINIMUM OF 24 HOURS.
5. THE CONTRACTOR IS RESPONSIBLE FOR THE MONITORING OF FRESHLY POURED CONCRETE TO ENSURE NO DAMAGE IS CAUSED. ANY DAMAGE OR DEFACEMENT OF FRESHLY POURED SURFACES SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.

ENVIRONMENTAL NOTES

1. ALL INLET STRUCTURES IN PROXIMITY TO TRENCH WORK OR EXPOSED ROAD BASE WILL BE FITTED WITH MANUFACTURED INLET CONTROL DEVICES AND/OR 'FILTER SACK' TYPE CATCHBASIN CONTROL (OR APPROVED ALTERNATIVE). CONTROL DEVICES TO BE MAINTAINED AT A REASONABLE INTERVAL TO ACHIEVE A FULLY FUNCTIONAL STATE AT ALL TIMES.
2. INLET CONTROL DEVICES (I.E. FILTER SACKS) MUST HAVE A MINIMUM 8" DROP FROM SURFACE OF THE CATCHBASIN.
3. UNDER NO CIRCUMSTANCES ARE CATCHBASINS TO BE FITTED WITH GEOTEXTILE SHEATHS CUT FROM STOCKPILE ROLLS.
4. AVOID EARTH-DISTURBING ACTIVITIES DURING SUBSTANTIAL RAIN EVENTS.
5. AVOID STOCKPILING SOILS, SANDS AND OTHER ERODIBLE MATERIALS ONSITE. IT IS PREFERABLE TO 'HOT-LOAD' SOIL DIRECTLY INTO TRUCKS FOR OFFSITE DISPOSAL. IF TEMPORARY WASTE OR SOIL STOCKPILES ARE NECESSARY, MAKE SURE THEY ARE FULLY COVERED WITH TARPS AND WEIGHTED WITH SANDBAGS.
6. TRACKING OF SEDIMENT, SOIL AND/OR ROADBASE FROM WORKSITE TO VEHICLE TRAVEL LANES MUST BE PREVENTED.
7. ROADS MUST BE SWEPT CLEAN OF SOIL, LOOSE ROAD BASE, EARTH AND SEDIMENT. MECHANICAL SWEEPING IS PREFERRED TO MANUAL SWEEPING; HOWEVER, FREQUENT HAND SWEEPING IS PREFERABLE TO ONCE DAILY MECHANICAL SWEEPING.
8. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT NO SEDIMENT OR SEDIMENT-LADEN WATER IS DISCHARGED FROM THE WORKS TO THE OWNER'S DRAINAGE SYSTEM.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DEVELOP AND PROVIDE TO THE OWNER ONGOING ENVIRONMENTAL SUBMITTALS WITHIN 15 DAYS AFTER NOTICE OF AWARD:

   9.1 AN EMERGENCY PLAN THAT PROVIDES WRITTEN SAFE WORK PROCEDURES IN THE EVENT OF A SPILL.

   9.1.1 AN EMERGENCY SPILL KIT WILL BE KEPT ONSITE AT ALL TIMES THE CONTRACTOR IS OPERATING. SPILL KITS MUST INCLUDE BOOMS, SPILL PADS, GLOVES, AND CATCHBASIN BARRIERS, A SPILL KIT WITH AT LEAST 125 LITRES ABSORBENCY IS RECOMMENDED. SANDBAGS AND A SUPPLY OF SAND MUST BE KEPT ONSITE.

   9.2 AN EROSION AND SEDIMENT CONTROL PLAN (ESC).
10. THE CONTRACTOR IS TO HAVE ONSITE SODIUM THIOSULPHATE TO TREAT CHLORINATED WATER IN THE EVENT OF A WATER MAIN BREAK.
11. CONTRACTOR TO APPLY FOR AND OBTAIN ALL REGULATORY AND OPERATIONAL PERMITS. ROAD OCCUPATION PERMITS (ROPs) MUST BE APPLIED FOR. FEE FOR ROP PERMIT WILL BE WAIVED.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF ALL EXCAVATED MATERIAL UNSUITABLE FOR REUSE AT A SUITABLE OFF-SITE DISPOSAL AREA, IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
13. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY EXISTING ROAD SURFACES, SERVICES, SIGNS, LANDSCAPING, DRIVEWAY LETDOWNS, PRIVATE LANDSCAPING, OR PRIVATE IMPROVEMENTS THAT MAY BE DAMAGED AS A RESULT OF CONSTRUCTION. REPAIRS TO EXISTING TOWN SERVICES SUCH AS WATER, SANITARY SEWER, STORM SEWER, AND STREET OR TRAFFIC LIGHTING MAY BE MADE BY THE OWNER AT COST TO THE CONTRACTOR. REPAIRS TO EXISTING SURFACE WORKS MAY BE DONE BY THE CONTRACTOR AT THE DISCRETION OF THE CONTRACT ADMINISTRATOR.
14. THE LOCATION OF EXISTING UTILITIES IS COMPILED FROM OWNER AND UTILITY SUPPLIED RECORD DRAWINGS AND ARE CONSIDERED APPROXIMATE ONLY. THE EXACT LOCATION AND EXTENT OF UTILITIES SHOULD BE DETERMINED BY CONSULTING THE LOCAL AUTHORITIES AND UTILITY COMPANIES CONCERNED.
15. REPORT ANY DISCREPANCIES TO THE CONTRACT ADMINISTRATOR A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION TO ENSURE THAT THE LINE AND GRADE OF THE PROPOSED WORK CAN BE ADJUSTED TO SUIT FIELD CONDITIONS AS REQUIRED.
16. RESTORATION OF EXISTING DRIVEWAYS, CURBS, STAIRS AND WALKWAYS TO CONFORM TO TOWNSHIP OF ESQUIMALT SPECIFICATIONS AND TO BE INCIDENTAL TO UNIT PRICES IN THE CONTRACT.

LEGEND

LEGAL PROPERTY

EXISTING	PROPOSED	DESCRIPTION
		EASEMENT
		PROPERTY LINES

ROAD

EXISTING	PROPOSED	DESCRIPTION
		EDGE OF PAVEMENT

SANITARY SEWER

EXISTING	PROPOSED	DESCRIPTION
S	S	GRAVITY SEWER MAIN
FM	FM	FORCE MAIN
		SERVICE CONNECTION
Ⓢ		SEWER MANHOLE
	S	INSPECTION CHAMBER
		CLEANOUT

STORM SEWER

EXISTING	PROPOSED	DESCRIPTION
D	D	GRAVITY STORM MAIN/INVERT
CU	CU	CULVERT
		CB LEAD
Ⓓ		STORM MANHOLE
		INSPECTION CHAMBER
		CATCHBASIN
		CLEANOUT

WATER

EXISTING	PROPOSED	DESCRIPTION
W	W	WATERMAIN
		SERVICE CONNECTION
		WATER HYDRANT
t	t	CAP
		VALVE
Ⓦ		WATER MANHOLE

THIRD PARTY UTILITIES

EXISTING	PROPOSED	DESCRIPTION
E	E	OVERHEAD ELECTRICAL
G	G	GAS
T	T	OVERHEAD TEL
FO	FO	FIBRE-OPTIC
Ⓟ		POWER POLE
		GUY ANCHOR POLE
		GUY ANCHOR

SITE

EXISTING	PROPOSED	DESCRIPTION
		SIGN

Rev	Date	Description	Drawn	Design	App'd
0	2025-07-24	ISSUED FOR TENDER	NE	KW	MH

BENCHMARK
ALL ELEVATION REFER TO CONTROL MONUMENT: 84H0219 (GCM 914705)
LOCATED AT: N 5365476.074, E 470263.308
ELEVATION: 14.199

NOT TO SCALE

ORIGINAL DWG SIZE: ANSI D (22" x 34")

McElhanney
500 - 3960 Quadra Street,
Victoria BC V8X 4A3
Tel. 250 370 9221

PERMIT TO PRACTICE
McElhanney Ltd.
PERMIT NUMBER: 1003299
Engineers and Geoscientists of BC

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — K. R. WILLIAUME — 46260
2025-07-25
Approved Sealed

TOWNSHIP OF ESQUIMALT
1229 ESQUIMALT RD, ESQUIMALT, CB V9A 3P1

UGANDA PUMP STATION UPGRADES
CIVIL
GENERAL NOTES AND LEGEND

Drawing No. C-001
Project Number 2241-25014-00
Rev. 0

DESTROY ALL PRINTS BEARING PREVIOUS REVISION

PLAN VIP5484
LOT 14
311 UGANDA AVE

PLAN VIP5484
LOT 13
309 UGANDA AVE

PLAN VIP5484
LOT 12
307 UGANDA AVE

PLAN VIP5484
LOT 11
305 UGANDA AVE

EX. 60mmØ DP GAS

EX. 200mmØ VCP STM

EX. CONCRETE CURB

EX. GUTTER LINE

UGANDA AVE.

EX. CENTRE LINE OF ROAD

EX. 250mmØ SAN

EX. 250mmØ VCP STM

EX. 42mmØ DP GAS

CIVIL SCOPE

CONTRACTOR TO ENSURE DRAINAGE IS TOWARDS ROAD

EX. 150mmØ PVC W/M

EX. GUTTER LINE

EX. CONCRETE CURB

EX. CONCRETE DRIVEWAY

EX. ASPHALT DRIVEWAY

EX. ASPHALT DRIVEWAY

4.75

EX. 150mmØ CI SAN FM

EX. 150mmØ CI VCP STM

REFER TO SUPPLEMENTAL DETAIL DRAWING R-7301

(5) RELIANCE FOUNDRY BOULLARD SS. VERIFIED - REFER TO ELECTRICAL DRAWING FOR DETAIL

PROPOSED LOCATION FOR KIOSK AND GENERATOR - REFER TO ELECTRICAL DRAWINGS E-004 AND E-005 FOR DETAILS

REFER TO STRUCTURAL DRAWINGS FOR NEW HATCH DETAILS

CONDUIT TRENCH LOCATION TO BE VERIFIED - REFER TO ELECTRICAL DRAWING FOR DETAIL

PLAN VIP5484
LOT 3
304 UGANDA AVE

PLAN VIP5484
LOT 7
312 UGANDA AVE

PLAN VIP5484
LOT 6
310 UGANDA AVE

PLAN VIP5484
LOT 5
308 UGANDA AVE

PLAN VIP5484
LOT 4
306 UGANDA AVE

NOTES:

1. ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH MASTER MUNICIPAL CONSTRUCTION DOCUMENT 2019 AND ALL SUPPLEMENTARY UPDATES.
2. CONTRACTOR TO INSTALL ALL STRUCTURAL FILL AND COMPLETE ROUGH GRADING UP TO APPROXIMATELY 50-100mm BELOW FINISHED GROUND. FINAL GRADING IS BY OTHERS. SIDEWALK, PAVING, LANDSCAPING TO BE COMPLETED BY OTHERS.
3. BACKFILL CONSISTS OF SELECT GRANULAR SUBBASE AS PER MMCD 31 05 17 2.8 COMPACTED TO 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY PLACED IN 0.3m LIFTS.
4. ALL DIMENSIONS IN MILLIMETERS UNLESS NOTED OTHERWISE.

Rev	Date	Description	Drawn	Design	App'd
0	2025-07-24	ISSUED FOR TENDER	NE	KW	MH

BENCHMARK
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0 1:100 5

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PROVINCE OF BRITISH COLUMBIA
K. R. WILLIAUME
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TOWNSHIP OF ESQUIMALT
1229 ESQUIMALT RD, ESQUIMALT, CB V9A 3P1

UGANDA PUMP STATION UPGRADES
CIVIL
UGANDA LS SITE PLAN

Drawing No.
C-101

Project Number
2241-25014-00

Rev.
0

DESTROY ALL PRINTS BEARING PREVIOUS REVISION

CONTROL SYMBOL SCHEDULE

SYMBOL	DESCRIPTION	NOTES
	CONTACTOR - NORMALLY OPEN	
	CONTACTOR - NORMALLY CLOSED	
	TIMED RELAY CONTACT NORMALLY CLOSED - TIMED CLOSED	
	TIMED RELAY CONTACT NORMALLY OPEN - TIMED OPEN	
	TIMED RELAY CONTACT NORMALLY OPEN - TIMED CLOSED	
	TIMED RELAY CONTACT NORMALLY CLOSED - TIMED OPEN	
	LIMIT SWITCH - NORMALLY OPEN	
	LIMIT SWITCH - NORMALLY CLOSED	
	TEMPERATURE SWITCH - NORMALLY OPEN (CLOSES AT SETPOINT ON RISING TEMPERATURE)	
	TEMPERATURE SWITCH - NORMALLY CLOSED (CLOSES AT SETPOINT ON DROPPING TEMPERATURE)	
	FLOAT SWITCH - NORMALLY OPEN	
	FLOAT SWITCH - NORMALLY CLOSED	
	PRESSURE SWITCH - NORMALLY OPEN	
	PRESSURE SWITCH - NORMALLY CLOSED	
	PUSH BUTTON - 1 POLE - NORMALLY OPEN	
	PUSH BUTTON - 1 POLE - NORMALLY CLOSED	
#1 #2 1 2	ON/OFF SWITCH - 2 POSITION (SHOWN IN POSITION #1)	
H O A H A	ON/OFF SWITCH - 3 POSITION (SHOWN IN OFF POSITION)	
	POTENTIOMETER (10kΩ)	
M	MOTOR SOLENOID	
CR #	CONTROL RELAY SOLENOID	
R	LIGHT - LETTER INDICATES COLOUR	
	SOLENOID MOTOR	
	CONTROL TRANSFORMER	
##	TERMINAL BLOCK	
	DEVICE TERMINATION POINT	
AO:001	PLC OUTPUT	
DI:001	PLC INPUT	
	BREAKER	
	FUSED TERMINAL BLOCK	
	BUZZER	
LIT ###	ANALOG DEVICE	
DIALER	DIALER	
IS	ISOLATION BARRIER	

GREEN - ON (RUNNING)
RED - OFF (STOPPED
AMBER - TROUBLE
BLUE - STATUS

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 AMP, 125V DUPLEX ARC FAULT PROTECTED REC. (AFCI)	
					15/20 AMP, 125V DUPLEX RECEPTACLE	
					15/20 AMP, 125V DUPLEX GROUND FAULT RECEPTACLE (GFCI)	
					15/20 AMP, 125V DUPLEX ARC FAULT PROTECTED REC. (AFCI)	
					15 AMP, 125V QUAD RECEPTACLE	
					15/20 AMP, 125V QUAD RECEPTACLE	
					SPECIAL RECEPTACLE AS NOTED ON PLANS	
					SPECIAL POWER CONNECTION AS NOTED ON PLANS	
					50 AMP, 125/250V RANGE RECEPTACLE	
					TELEPHONE OUTLET	
					DATA OUTLET	
					COMBINATION COMMUNICATION OUTLET (#x TEL, #x DATA, #x HDMI/CATV)	
					TELEVISION OUTLET (HDMI / CATV AS NOTED)	
					SPECIAL COMMUNICATION OUTLET AS NOTED ON PLANS	
					PARKING PEDESTAL REFER TO DETAIL	
					MOTOR DISCONNECT SWITCH	
			JB		JUNCTION BOX	
					GROUND REFERENCE BUSBAR	
					PANELBOARD - REFER TO PANEL SCHEDULES FOR DETAILS	
					LOW VOLTAGE LIGHTING CONTROL PANEL	
			XX-XXX		EQUIPMENT TAG REFER TO MECHANICAL EQUIPMENT SCHEDULE	
			T		THERMOSTAT (T-STANDARD, RT-REVERSE ACTING, DH-DEHUMIDISTAT)	

ER - EXISTING TO REMAIN
RL - RELOCATE EXISTING DEVICE AS INDICATED
RM - REMOVE EXISTING DEVICE
RR - REMOVE EXISTING DEVICE AND REPLACE WITH NEW
WP - WEATHERPROOF ENCLOSURE

SINGLE LINE SYMBOL SCHEDULE

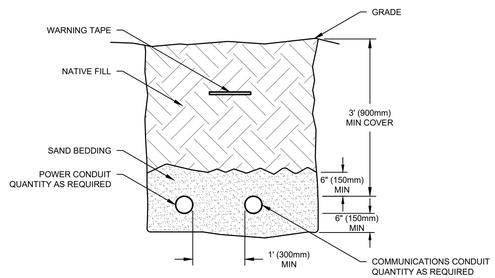
SYMBOL	DESCRIPTION	NOTES
	BREAKER	
	FUSE	
	DISCONNECT SWITCH	
	DISCONNECT SWITCH (FUSED) / FUSED SWITCH	
	FUSED CUTOUT (PRIVATE)	
	FUSED CUTOUT (SERVICE AUTHORITY)	
M	CURRENT TRANSFORMER (WITH METER) - LETTER DENOTES TYPE	
M	METER - LETTER DENOTES TYPE	
	TRANSFORMER	
	TRANSFORMER (Δ-Y)	
	TRANSFER SWITCH	
	MOTOR / EQUIPMENT	
MAIN	PANEL - MAIN BREAKER AS INDICATED	
	INDUCTIVE REACTOR	
	GENERATOR	
	LIGHTING ARRESTOR	
	GROUND	
3c #1/0	CONDUCTOR/FEEDER INFORMATION	

PANEL A

MOUNTING - WALL
LOCATION - ELECTRICAL KIOSK
FEEDER PANEL - 208V SPLITTER
FEEDER BKR - 100A 2P

FEEDER SIZE - 3c #3
VOLTAGE - 120/208 1Ø 3W
MAIN BUS - 100A
MAIN BREAKER - N/A

NOTE	DESCRIPTION	BKR	CIRCUIT		BKR	DESCRIPTION	NOTE
--	KIOSK LIGHTS & RECEPTACLES	15	01	02	15	SPARE	--
--	KIOSK HEATER	15	03	04	15	KIOSK HEATER	--
--		15	05	06	15		--
--	KIOSK COOLING FAN	15	07	08	15	KIOSK COOLING FAN	--
--	GENERATOR AUXILLIARY LOAD CENTER	40	09	10	15	SPARE	--
--		40	11	12	15	SPARE	--
--	CONTROL PANEL	15	13	14	15	CONTROL PANEL UPS	--
--	--	--	15	16	--	--	--
--	--	--	17	18	--	--	--
--	--	--	19	20	--	--	--
--	--	--	21	22	--	--	--
--	--	--	23	24	--	--	--
--	--	--	25	26	--	--	--
--	--	--	27	28	--	--	--
--	--	--	29	30	15	EMERGENCY LIGHTS	--



NOTE:
UNLESS OTHERWISE NOTED MAINTAIN A MINIMUM OF
300mm SPACING FROM ALL OTHER BURIED UTILITIES.

TYPICAL TRENCH DETAIL

SCALE: NTS

DRAWING LIST

NO.	TITLE	SCALE
E-001	ELECTRICAL SYMBOLS & DRAWING INDEX	NOT TO SCALE
E-002	PROPOSED ELECTRICAL SITE PLAN	1:25
E-003	EXISTING AND PROPOSED SINGLE LINE DIAGRAMS	NOT TO SCALE
E-004	KIOSK ELEVATIONS	1:10
E-005	GENERATOR AND KIOSK DETAILS	1:10
E-900	ELECTRICAL SPECIFICATIONS	NOT TO SCALE
--	--	--
--	--	--

Rev	Date	Description	Drawn	Design	App'd
0	2025-07-24	ISSUED FOR TENDER	SD	MB	MH

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35320
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TOWNSHIP OF ESQUIMALT
1229 ESQUIMALT ROAD, ESQUIMALT, BC V9A 3P1

UGANDA PUMP STATION UPGRADES
ELECTRICAL
SYMBOLS & DRAWING INDEX

Drawing No.
E-001

Project Number	Rev.
2241-25014-00	0

DESTROY ALL PRINTS BEARING PREVIOUS REVISION

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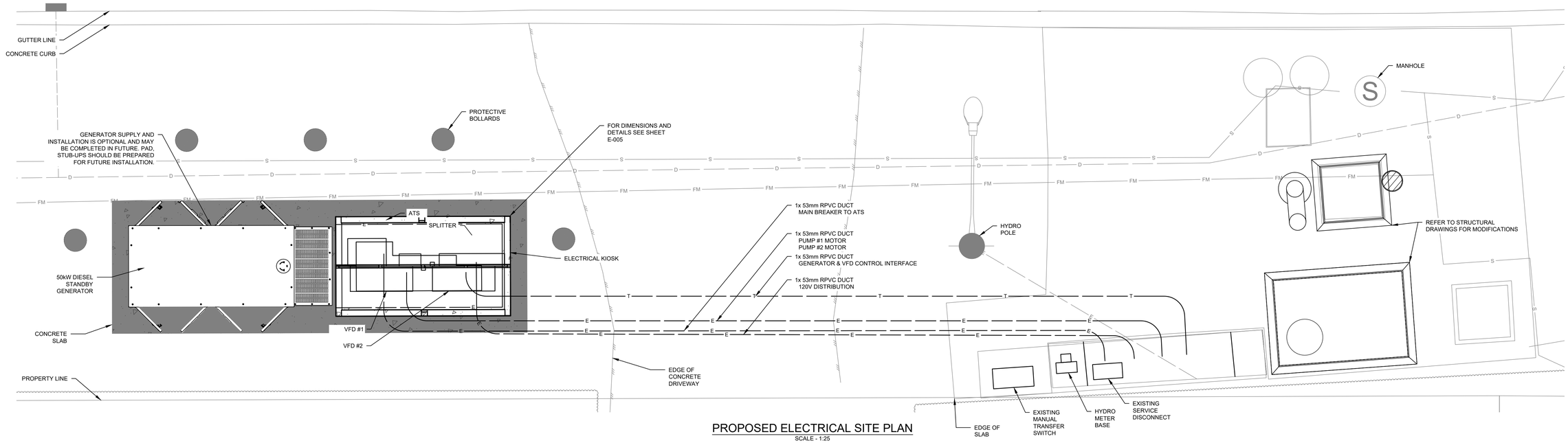

PROPOSED ELECTRICAL SITE PLAN

SCALE - 1:25

Rev	Date	Description	Drawn	Design	App'd
0	2025-07-24	ISSUED FOR TENDER	SD	MB	MH

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ORIGINAL DWG SIZE: ANSI D (22" x 34")

McElhanney

500 - 3960 Quadra Street,
Victoria BC V8X 4A3
Tel. 250 370 9221

PERMIT TO PRACTICE
McElhanney Ltd.
PERMIT NUMBER: 1003299
Engineers and Geoscientists of BC

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA
M. R. BARNES
33320
2025-07-25
Approved Sealed

TOWNSHIP OF ESQUIMALT
1229 ESQUIMALT ROAD, ESQUIMALT, BC V9A 3P1

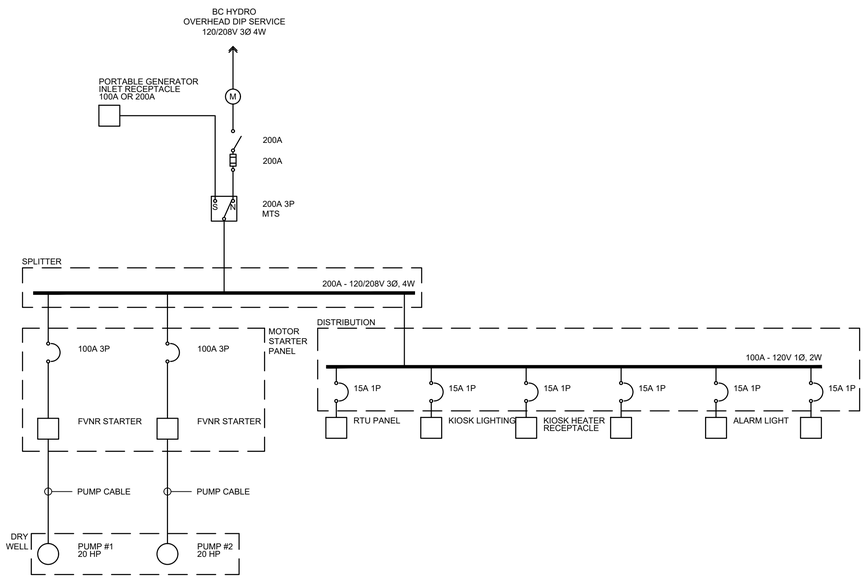
UGANDA PUMP STATION UPGRADES
ELECTRICAL
ELECTRICAL SITE PLAN

Drawing No.
E-002

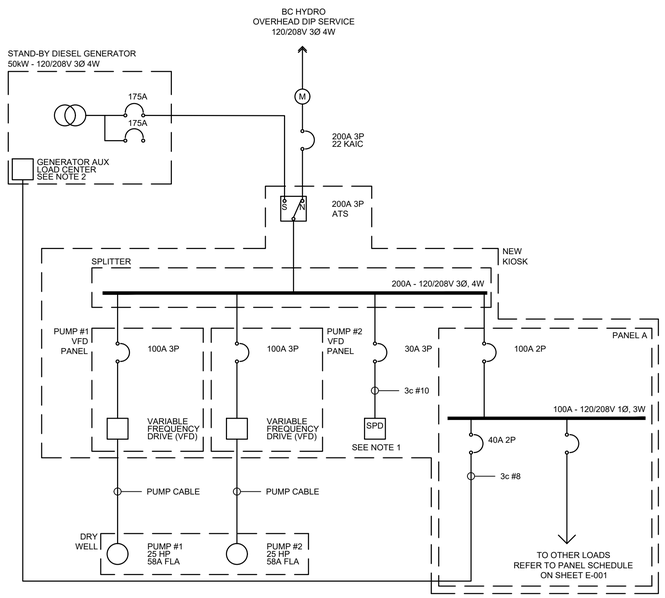
Project Number 2241-25014-00

Rev. 0

DESTROY ALL PRINTS BEARING PREVIOUS REVISION



EXISTING SINGLE LINE DIAGRAM
SCALE - NTS



PROPOSED SINGLE LINE DIAGRAM
SCALE - NTS

SINGLE LINE DIAGRAM NOTES:

1. SURGE PROTECTION DEVICE TO BE TOTAL PROTECTION SOLUTIONS TK-ST160-3Y208 OR APPROVED EQUAL.
2. GENERATOR ENCLOSURE SHALL COME WITH LOAD CENTER. ALL ENCLOSURE AUXILIARY LOADS (HEATER, LIGHTS, PLUG, DAMPERS, BATTERY CHARGER ETC.) TO BE WIRED TO GENERATOR LOAD CENTER.

INSTALLATION SEQUENCING NOTES:

1. NEW PUMPS TO BE INSTALLED AND RUN FROM EXISTING FULL VOLTAGE, NON-REVERSING MOTOR STARTERS IN EXISTING KIOSK.
2. EITHER MAIN SERVICE DISCONNECT TO BE REPLACED WITH SERVICE ENTRANCE RATED BREAKER IN EXISTING KIOSK, TO FEED ATS, OR MAIN SERVICE BREAKER INSTALLED IN NEW KIOSK (AS SHOWN ON E-004).
3. IF GENERATOR IS NOT INITIALLY INSTALLED, THE MTS COULD BE RE-PURPOSED FOR USE IN THE NEW KIOSK TEMPORARILY UNTIL THE GENERATOR AND ATS ARE PROCURED AND INSTALLED.
4. ALONGSIDE THE INSTALLATION AND COMMISSIONING OF THE VFDs IN THE NEW KIOSK (POTENTIALLY AFTER THE RAINY SEASON ONCE THE NEW PUMPS HAVE BEEN OPERATING SUCCESSFULLY), CONTROL PANEL HMI TO BE UPGRADED AND CONTROLS TO BE INTEGRATED WITH VFDs.

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TOWNSHIP OF ESQUIMALT
1229 ESQUIMALT ROAD, ESQUIMALT, BC V9A 3P1

UGANDA PUMP STATION UPGRADES
ELECTRICAL
SINGLE LINE DIAGRAM

Drawing No.
E-003

Project Number
2241-25014-00

Rev.
0

DESTROY ALL PRINTS BEARING PREVIOUS REVISION

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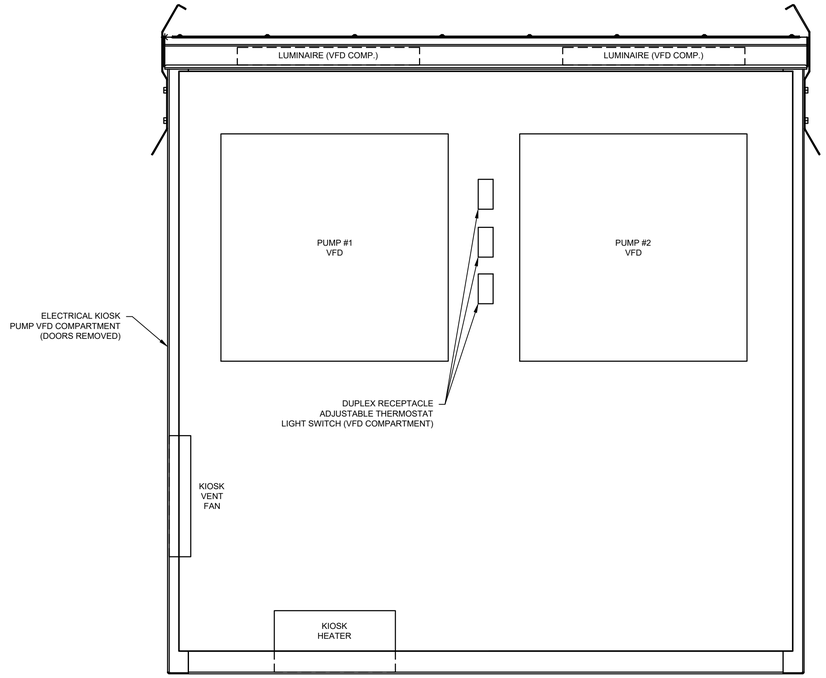
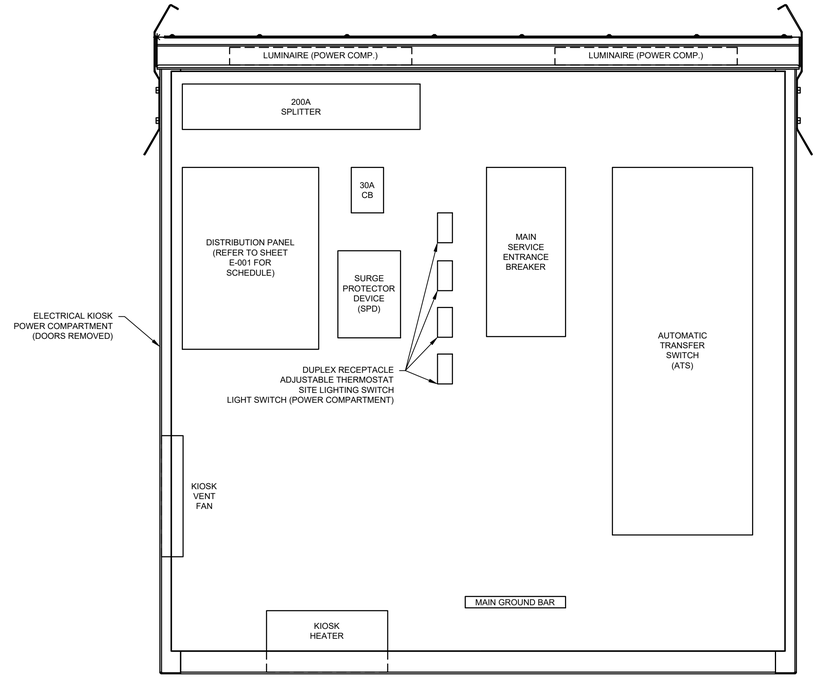
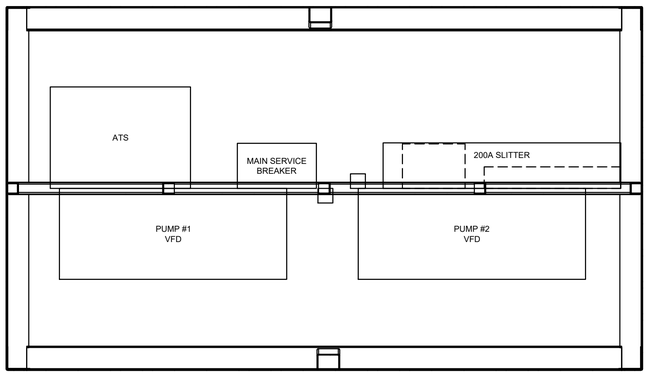
McElhanney ANSI D - 2025-01-10



KIOSK INTERIOR LAYOUT - VFD COMPARTMENT
SCALE - 1:10



KIOSK INTERIOR LAYOUT - POWER COMPARTMENT
SCALE - 1:10



KIOSK INTERIOR LAYOUT - PLAN VIEW
SCALE - 1:10

Rev	Date	Description	Drawn	Design	App'd
0	2025-07-24	ISSUED FOR TENDER	SD	MB	MH

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PROVINCE OF BRITISH COLUMBIA
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TOWNSHIP OF ESQUIMALT
1229 ESQUIMALT ROAD, ESQUIMALT, BC V9A 3P1

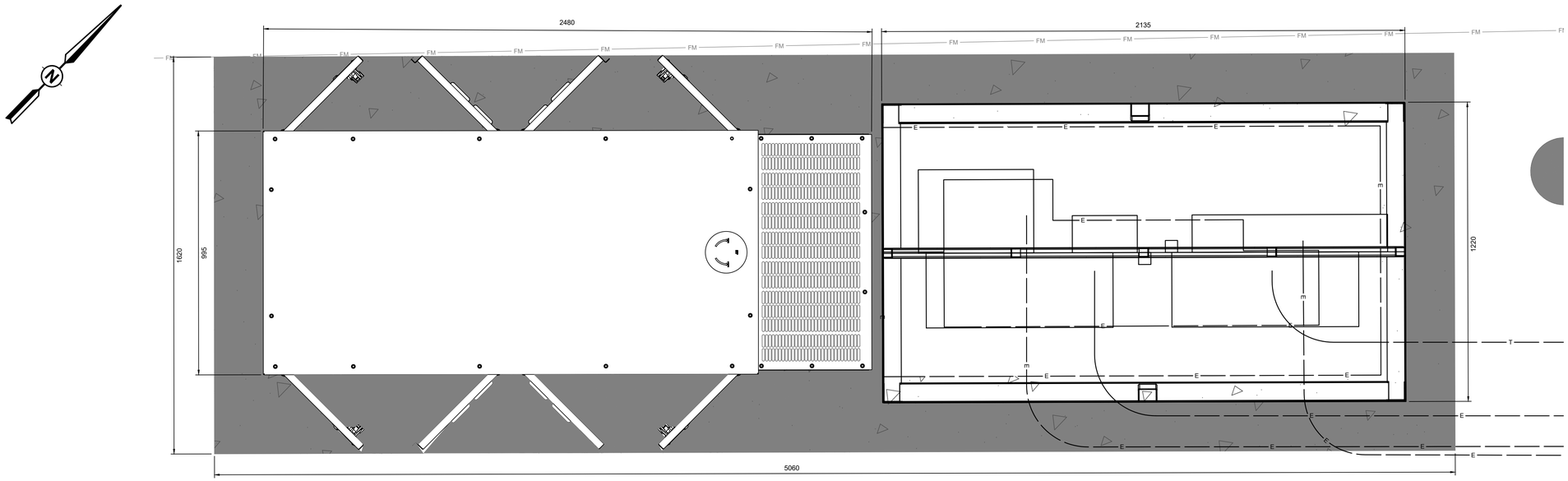
UGANDA PUMP STATION UPGRADES
ELECTRICAL
KIOSK ELEVATIONS

Drawing No.
E-004

Project Number
2241-25014-00

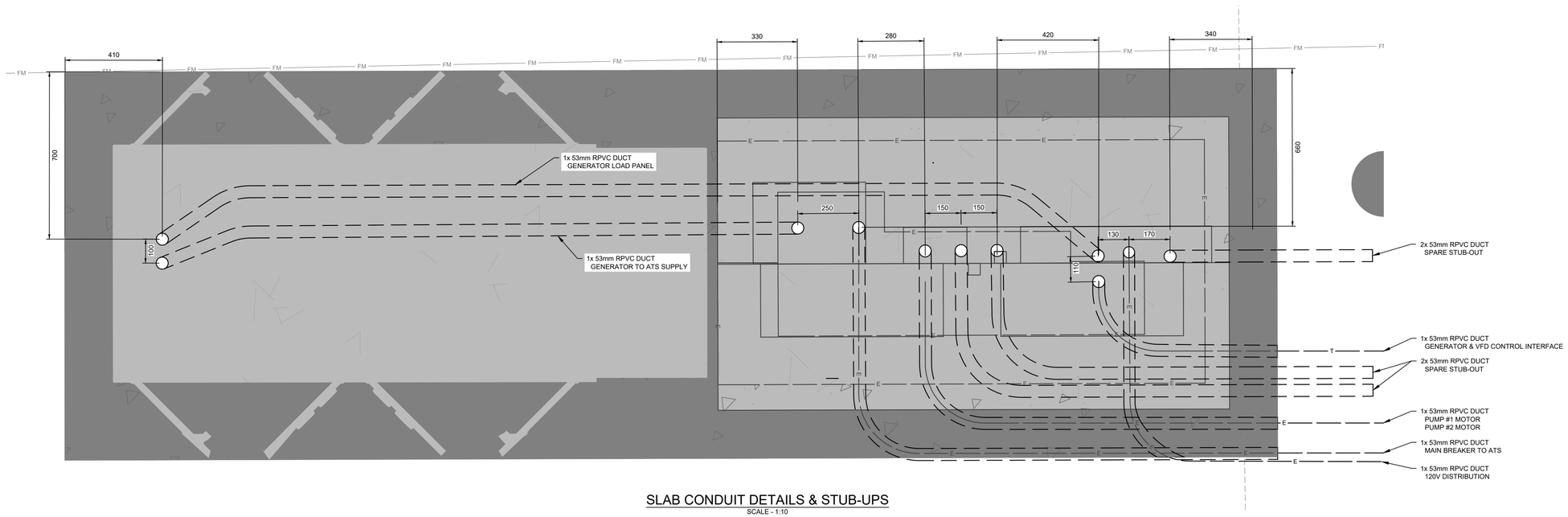
Rev.
0

DESTROY ALL PRINTS BEARING PREVIOUS REVISION



PROPOSED GENERATOR AND KIOSK

SCALE - 1:10



SLAB CONDUIT DETAILS & STUB-UPS

SCALE - 1:10

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TOWNSHIP OF ESQUIMALT
1229 ESQUIMALT ROAD, ESQUIMALT, BC V9A 3P1

UGANDA PUMP STATION UPGRADES
ELECTRICAL
GENERATOR & KIOSK DETAILS

Drawing No.
E-005

Project Number: 2241-25014-00
Rev.: 0

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.
5.2. SHOP DRAWINGS FOR ELECTRICAL EQUIPMENT AS REQUIRED BY THESE SPECIFICATIONS MUST BE SUBMITTED AND ACCEPTED BY THE ENGINEER PRIOR TO ORDERING.

6. 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 ENGINEER ON COMPLETION OF THE WORK.
6.2. PROJECT HOLD POINTS FOR ENGINEER INSPECTION:
6.2.1. PRIOR TO ENERGIZATION.
6.2.2. PRIOR TO COVER OF ROUGH-IN ELECTRICAL OR ANY PORTION THEREOF.
6.3. CONTRACTOR SHALL GIVE MINIMUM TEN (10) BUSINESS DAYS NOTICE TO ENGINEER FOR ALL INSPECTION HOLD POINTS LISTED ABOVE.

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. GUARANTEE
8.1. THE SATISFACTORY OPERATION OF ALL WORK AND APPARATUS INCLUDED AND INSTALLED UNDER THIS SECTION OF THE SPECIFICATION SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR UNLESS NOTED OTHERWISE.
8.2. REPLACE FORTHWITH, AT NO ADDITIONAL COST TO THE OWNER, ANY PART WHICH MAY PROVE TO BE DEFECTIVE WITHIN A PERIOD OF TWELVE MONTHS AFTER THE FINAL ACCEPTANCE OF THE COMPLETE BUILDING, PROVIDED THAT SUCH FAILURE IS NOT DUE TO ANY IMPROPER USAGE OR ORDINARY WEAR AND TEAR.
8.3. NO CERTIFICATE GIVEN, PAYMENT MADE, PARTIAL OR ENTIRE USE OF THE EQUIPMENT BY THE OWNER, SHALL BE CONSTRUED AS ACCEPTANCE OF DEFECTIVE WORK.

9. CONDUIT AND RACEWAY
9.1. RIGID STEEL CONDUIT: FOR ALL EXPOSED AND UNDERGROUND CONDUIT EXPOSED TO MECHANICAL DAMAGE. (MINIMUM SIZE: 3/4" (19mm))
9.2. ELECTRICAL METALLIC TUBING (EMT): INTERIOR POWER AND LIGHTING BRANCH CIRCUITS (MINIMUM SIZE: 3/4" (19mm))
9.3. FLEXIBLE METALLIC CONDUIT: IN DRY LOCATIONS, CONNECTION TO TRANSFORMERS, (6' (1830mm) MAX.), VIBRATING EQUIPMENT (24" (610mm) MAX) AND TO RECESSED LIGHTING FIXTURES.
9.4. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT: IN DAMP AND WET LOCATIONS FOR CONNECTION TO ALL PUMP MOTORS, SOLENOID VALVES, HVAC EQUIPMENT 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).
9.5. CONDUIT IN DIRECT CONTACT WITH EARTH TO BE RIGID PVC TYPE.
9.6. CONDUIT SYSTEM SHALL BE CONCEALED UNLESS EXPOSED WORK IS CLEARLY CALLED FOR ON DRAWINGS.
9.7. CONDUITS SHALL BE TIGHTLY COVERED AND WELL PROTECTED DURING CONSTRUCTION USING METALLIC BUSHINGS AND BUSHING "PENNIES" TO SEAL OPEN END.
9.8. IN ALL EMPTY CONDUITS OR DUCTS, INSTALL A 200 lb (90 kg) TENSILE STRENGTH POLYETHYLENE PULLING ROPE.
9.9. 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.
9.10. 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.
9.11. WHERE PRACTICAL, INSTALL CONDUITS IN GROUPS, IN PARALLEL, FOR VERTICAL AND HORIZONTAL RUNS AND AT ELEVATIONS THAT AVOID UNNECESSARY OFFSETS.
9.12. EXPOSED CONDUIT SHALL BE RUN PARALLEL OR AT RIGHT ANGLES TO THE CENTERLINES OF COLUMNS AND BEAMS.
9.13. CONDUITS SHALL NOT BE PLACED CLOSER THAN 12" (300mm) FROM A PARALLEL HOT WATER OR STEAM LINE OR 3" (75mm) FROM SUCH LINES CROSSING PERPENDICULAR TO THE RUNS.
9.14. ALL RACEWAY SYSTEMS SHALL BE SECURED TO THE BUILDING STRUCTURES USING SPECIFIED FASTENERS, CLAMPS AND HANGERS SPACED ACCORDING TO CODE REQUIREMENTS.
9.15. SUPPORT SINGLE RUNS OF CONDUIT USING ONE HOLE PIPE STRAPS.
9.16. RACEWAYS SHALL BE JOINED USING SPECIFIED COUPLING OR TRANSITION COUPLINGS WHERE DISSIMILAR RACEWAY SYSTEMS ARE JOINED.
9.17. 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.
9.18. CONDUIT TERMINATIONS EXPOSED AT WEATHERPROOF ENCLOSURES AND CAST OUTLET BOXES SHALL BE MADE WATERTIGHT USING SPECIFIED CONNECTORS AND HUBS.
9.19. INSTALL EXPANSION COUPLINGS WHERE ANY CONDUIT CROSSES A BUILDING SEPARATION OR EXPANSION JOINT.
9.20. ALL FLOOR PENETRATIONS SHALL BE SEALED WATER-TIGHT.

10. BOXES AND WIRING SERVICES
10.1. ALL INTERIOR OUTLETS SHALL BE SURFACE MOUNTED. ALL OUTDOOR OUTLETS SHALL BE RECESSED.
10.2. EXPOSED OUTLET BOXES AND BOXES IN DAMP AND WET LOCATIONS SHALL BE CAST METAL WITH GASKETED CAST METAL COVER PLATES.
10.3. OUTLET BOXES SHALL BE INSTALLED AT THE LOCATIONS AND ELEVATIONS SHOWN ON THE DRAWINGS OR SPECIFIED HEREIN. MAKE ADJUSTMENTS TO LOCATIONS AS REQUIRED BY STRUCTURAL CONDITIONS AND TO SUIT COORDINATION REQUIREMENTS OF OTHER TRADES.
10.4. 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.
10.5. MOUNTING HEIGHTS: MOUNTING HEIGHTS FROM FINISHED FLOOR TO CENTER LINE OF DEVICE BOX SHALL BE AS FOLLOWS, AND IN ACCORDANCE WITH HANDICAPPED ACCESSIBILITY REQUIREMENTS OF GOVERNING CODE.
10.5.1. CONVENIENCE RECEPTACLE - 18" (455mm)
10.5.2. CONVENIENCE RECEPTACLE ABOVE COUNTER - 42" (1050mm)
10.5.3. LIGHT SWITCHES - 45" (1150mm)
10.5.4. TELEPHONE[DATA] OUTLET - 18" (455mm)
10.5.5. EMERGENCY LIGHT HEADS - 90" (2300mm)
10.5.6. LINE VOLTAGE THERMOSTATS - 60" (1520mm)

11. CABLE AND WIRE
11.1. COMPLETE INSULATION TESTING WITH 1KV MEGGER ON ALL CABLES AND WIRING WITH A RATED AMAPACITY EXCEEDING 100 A. ALL CABLES WITH FAILED INSULATION TESTS TO BE REPLACED AT NO COST. SUBMIT INSULATION TEST REPORTS TO ENGINEER FOR REVIEW.
11.1.1. MEGGER TESTING SHALL BE COMPLETED BETWEEN EACH CONDUCTOR AND FROM CONDUCTOR TO GROUND.
11.1.2. EACH TEST SHALL BE PERFORMED FOR MIN. 15 SECONDS.
11.1.3. INSULATION RESISTANCE SHALL BE >100 MΩ, AND NOT BE MORE THAN 20% DIFFERENT BETWEEN THE LOWEST AND HIGHEST CONDUCTOR IN A CABLE.
11.2. 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.
11.3. ALL CABLES SHALL BE INSTALLED AND TESTED IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS AND WARRANTY.
11.4. ALL ASPECTS OF SPLICING AND TERMINATING SHALL BE IN ACCORDANCE WITH CABLE MANUFACTURERS PUBLISHED PROCEDURES.
11.5. MAKE UP ALL SPLICES IN OUTLET 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.
11.6. ALL WIRE AND CABLE IN PANELS, TERMINAL CABINETS AND EQUIPMENT ENCLOSURES SHALL BE BUNDLED AND CLAMPED.
11.7. ALL FEEDERS LESS THAN 60A SHALL BE COPPER. FEEDERS LARGER THAN 60A MAY UTILIZE ALUMINIUM CONDUCTORS WITH ENGINEER APPROVAL.
11.8. MINIMUM WIRE SIZE SHALL BE:
11.8.1. POWER WIRING - NO. 12 AWG R(W)90 COPPER.
11.8.2. DIGITAL CONTROL WIRING - NO. 16 AWG R(W)90 COPPER.
11.8.3. ANALOG CONTROL WIRING - NO. 18 AWG TWISTED SHIELDED PAIR.

12. WIRING DEVICES
12.1. SWITCHES
12.1.1. SPECIFICATION GRADE, WHITE, TOGGLE STYLE AVAILABLE FOR BACK AND SIDE WIRING. 20A, 120V OR 347V, SINGLE POLE, DOUBLE POLE, THREE-WAY OR FOUR-WAY AS INDICATED.
12.2. RECEPTACLES
12.2.1. SPECIFICATION GRADE, WHITE, STANDARD STYLE, SIDE WIRE ONLY DUPLEX RECEPTACLE CSA TYPE 5-15R, 125V, 15A U-GROUNDED.
12.2.2. GROUND FAULT INTERRUPTER TYPE TO BE INDICATING, SPECIFICATION GRADE, IMPACT RESISTANT, U GROUND, COMPLETE WITH BREAKER AND RESET BUTTON.
12.2.3. INSTALL ALL RECEPTACLES IN THE VERTICAL PLANE UNLESS OTHERWISE NOTED.
12.2.4. ALL RECEPTACLES TO BE INSTALLED USING SIDE WIRING TERMINALS ONLY. BACK WIRING WILL NOT BE ACCEPTED.
12.3. COVER PLATES
12.3.1. GALVANIZED WITH ROUNDED CORNERS SUITABLE FOR SURFACE MOUNT BOXES.
12.3.2. WEATHERPROOF, DURABLE, 'IN-USE' RATED COVER PLATES COMPLETE WITH GASKETS FOR WP DUPLEX RECEPTACLES AS INDICATED.
12.3.3. INSTALL SINGLE THROW SWITCHES WITH HANDLE IN "UP" POSITION WHEN SWITCH CLOSED.
12.3.4. INSTALL RECEPTACLES/SWITCHES VERTICALLY IN GANG TYPE OUTLET BOX WHEN MORE THAN ONE RECEPTACLE IS REQUIRED IN ONE LOCATION.

13. PANEL BOARDS
13.1. SUBMIT SHOP DRAWINGS PRIOR TO ORDERING.
13.2. RATINGS: REFER TO PANEL SCHEDULES SHOWN ON DRAWING.
13.3. BACKFEED BREAKERS SHALL NOT BE UTILIZED IN PLACE OF A MAIN BREAKER.
13.4. FINISH: ALL PAINTED STEEL WORK SHALL BE TREATED WITH A PRIMER COAT AND FINISH COAT OF THE MANUFACTURER'S STANDARD GRAY COLOR OR ANSI 61.
13.5. PANEL BOARDS TO HAVE FLUSH DOORS WITH TWO KEYS FOR EACH PANEL BOARD (ALL KEYS TO BE ALIKE).
13.6. BUSSING
13.6.1. BUSSING SHALL BE RECTANGULAR CROSS SECTION FULL LENGTH TIN PLATED ALUMINUM.
13.6.2. EACH PANEL BOARD SHALL BE EQUIPPED WITH A GROUND BUS SECURED TO THE INTERIOR OF THE ENCLOSURE. THE BUS SHALL BE EQUAL TO THE PANEL BOARD NEUTRAL BUS AND SHALL HAVE A SEPARATE LUG FOR EACH GROUND CONDUCTOR. NOT MORE THAN ONE CONDUCTOR SHALL BE INSTALLED PER LUG.
13.6.3. PANEL BOARD DIRECTORIES: SHALL BE TYPEWRITTEN, ARRANGE IN NUMERICAL ORDER AND SHALL SHOW THE NUMBER OF THE CIRCUIT IS INDICATED. THE ROOM NUMBERS SHALL BE VERIFIED WITH THE OWNER AND SHALL NOT NECESSARILY BE THOSE USED IN THE DRAWINGS. MOUNT TWO COPIES OF DIRECTORIES INSIDE EACH PANEL BOARD.
13.6.4. ACCEPTABLE MANUFACTURERS: SIEMENS, EATON, SCHNEIDER CANADA.

14. PROTECTIVE DEVICES
14.1. 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.
14.2. 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.
14.3. PROVIDE GROUND FAULT CIRCUIT INTERRUPTION (GFCI) RATED CIRCUIT BREAKERS AS INDICATED IN DESIGN. GFCI BREAKERS TO BE RATED FOR PERSONNEL PROTECTION, CLASS A - CSA C22.2 #144, UNLESS OTHERWISE NOTED. GFCI BREAKERS TO HAVE AUTOMATIC SELF TESTING FUNCTIONALITY.

15. SURGE PROTECTION DEVICES (SPD)
15.1. SUBMIT SHOP DRAWINGS PRIOR TO ORDERING.
15.2. SPD SHALL PROVIDE ALL MODE (L-N, L-L, L-G, & N-G) PROTECTION, WITH STATUS INDICATOR LIGHTS FOR EACH PHASE.
15.3. SPD SHALL COME WITH MANUFACTURER 25 YEAR UNLIMITED FREE REPLACEMENT WARRANTY.
15.4. SPD SHALL BE FED FROM A DEDICATED OVERCURRENT DEVICE TO ALLOW FOR SERVICE AND REPLACEMENT WITHOUT INTERUPTING OVERALL BUILDING ELECTRICAL SERVICE.
15.5. SPD SHALL BE LOCATED AS CLOSE AS PRACTICAL TO THE UPSTREAM OVERCURRENT PROTECTION WITH THE FOLLOWING CONSIDERATIONS:
15.5.1. SHORTEST POSSIBLE CONDUCTOR RUNS.
15.5.2. MINIMUM BENDS IN CONDUCTORS. SHARP BENDS ARE NOT PERMITTED.
15.5.3. IF CONDUCTOR LENGTHS MUST EXCEED 12" (300mm), WIRING IS TO BE BRAIDED OR TWISTED AT A RATE OF 1x BRAID/TWIST PER 12" (300mm).
15.6. UPSTREAM OVERCURRENT PROTECTION SHALL BE SIZED AS PER MANUFACTURER RECOMMENDATIONS.
15.7. SPD FEEDER CONDUCTORS SHALL BE SIZED AS PER MANUFACTURER RECOMMENDATIONS.
15.8. SPD ALARM CONTACT SHALL BE MONITORED BY PLC. PROVIDE ALL REQUIRED WIRING AS REQUIRED FOR SPD MONITORING.
15.9. SPD SHALL BE LISTED WITH CERTIFICATION AGENCY ACCEPTABLE IN THE PROVINCE OF INSTALLATION, AND BE IN ACCORDANCE WITH THE LATEST EDITION OF ANSI/UL 1449.

16. GROUNDING
16.1. 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.
16.2. BUILDING SERVICES SHALL BE GROUNDED TO BUILDING STEEL, TO COLD METALLIC WATER PIPING, AND GROUND RODS (3/4" (75mm) X 10' (3050mm) COPPER).
16.3. CONNECT ALL BUILDING SERVICES TO PANEL GROUND BUS INCLUDING, BUT NOT LIMITED TO:
16.3.1. METALLIC PROCESS WATER/WASTEWATER PIPING AND ALL METALLIC SECTIONS OF PIPING ISOLATED BY NON-METALLIC PIPING & FITTINGS.
16.3.2. ALL CONNECTIONS TO GROUND BUS TO USE #6 RW90 COPPER GREEN INSULATED WIRING UNLESS OTHERWISE NOTED.
16.3.3. ALL CONNECTIONS TO GROUND BUS TO BE LABELLED ACCORDING TO PURPOSE.

17. CONTROL PANEL
17.1. SHOP DRAWINGS REQUIRED PRIOR TO ORDERING.
17.2. 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. INCLUDE HMI GRAPHIC DISPLAY PROGRAMMING.
17.3. 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.
17.4. HUMAN INTERFACE (HMI) TO ALLOW FOR REVISIONS TO SYSTEM PROGRAMMING, START/STOP POINTS, TIME/DATE, SCHEDULING (INCLUDING ADDITION OF NEW SCHEDULES), VIEW HISTORY, ADD/REMOVE SET POINTS & ALARM POINTS. HMI IS TO BE FULL COLOR, 7" (MINIMUM) TOUCH SCREEN MOUNTED TO CONTROL PANEL COVER.
17.5. PROVIDE SURGE PROTECTION ON ALL INPUTS & OUTPUTS FROM FIELD WIRING DEVICES.
17.6. SYSTEM TO BE CAPABLE OF AUTOMATIC DIAL OUT ON ALARM CONDITION OR USER SET POINT. PROVIDE ALL NECESSARY PROGRAMMING & COMMISSIONING OF ALARM DIALER.
17.7. CONTROL SYSTEM ENCLOSURE TO BE WALL MOUNTED AND LOCKABLE.
17.8. SYSTEM ENCLOSURE TO HAVE INTEGRATED UNINTERUPTIBLE POWER SUPPLE CAPABLE OF 30 MINUTES OF RUN-TIME FOR COMPLETE CONTROL SYSTEM.
17.9. ALL INDICATOR & ALARM LIGHTS ARE TO BE OF LED TYPE.
17.10. UPON PROJECT COMPLETION, PROVIDE HARD COPY OF SET POINTS AND CONTROL LOGIC FOR INTEGRATION INTO O&M MANUAL. PROVIDE THREE (3) SOFT COPIES OF FULL PROGRAMMING ON USB STICKS FOR INCLUSION IN O&M MANUALS.
17.11. CONTROL PANEL SHALL BE CSA CERTIFIED OR EQUIVALENT CERTIFICATION AGENCY ACCEPTABLE IN THE PROVINCE OF INSTALLATION.
17.12. PROVIDE SPARE PARTS FOR CONTROL PANEL. SPARE PARTS SHALL INCLUDE AT MINIMUM:
17.12.1. 5x GLASS FUSES OF EACH SIZE & RATING.
17.12.2. ONE SPARE RELAY OF EACH CONFIGURATION (COIL VOLTAGE, AND POLES).
17.12.3. ONE SPARE TIME DELAY RELAY.

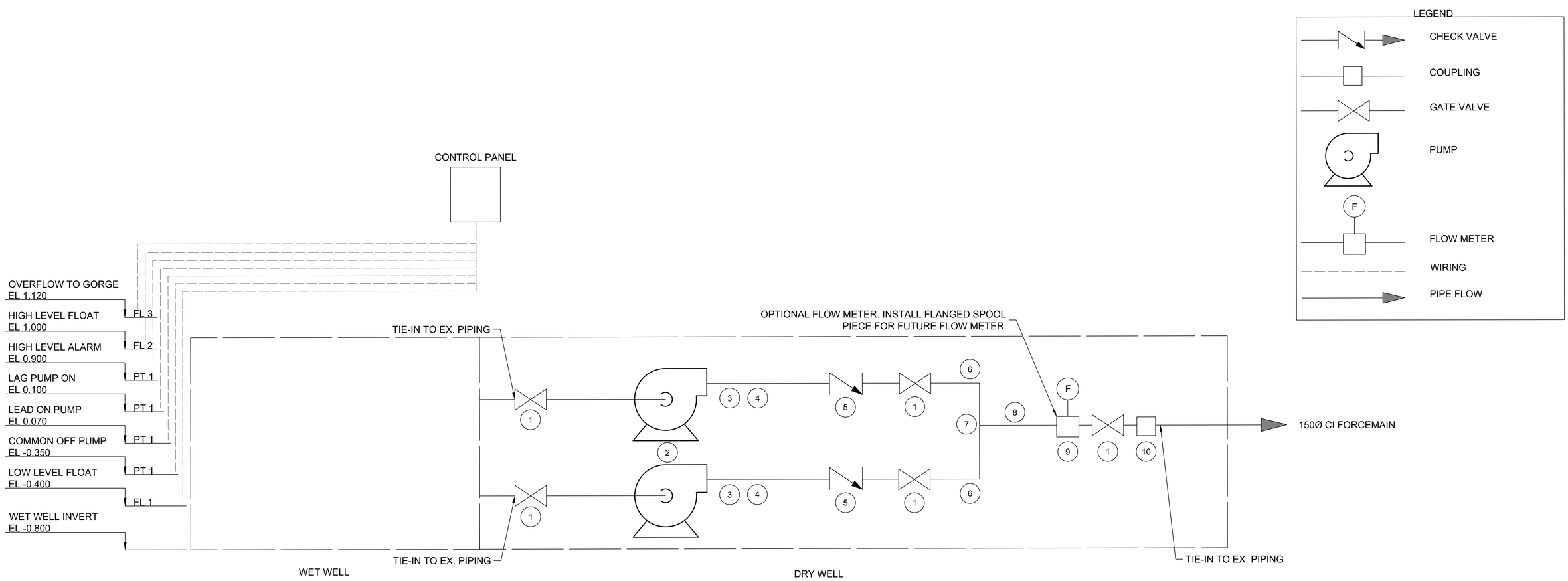
18. VARIABLE FREQUENCY DRIVES (VFD)
18.1. SHOP DRAWINGS REQUIRED PRIOR TO ORDERING.
18.2. VFD MANUFACTURER TO HAVE SERVICE, REPAIR AND TECHNICAL SUPPORT SERVICES AVAILABLE 24 HOURS A DAY, 7 DAYS A WEEK.
18.3. THE MANUFACTURER WARRANTS AND GUARANTEES THAT THE SUPPLIED VFD'S ARE NOT DEFECTIVE AND SHALL PROVIDE WARRANTY TO INCLUDE ALL PARTS, LABOUR AND TRAVEL EXPENSES ASSOCIATED WITH THE REPAIR OF ANY DEFECTS FOR A PERIOD OF 12 MONTHS AFTER THE OWNER UTILIZES THE EQUIPMENT OR PARTIAL / SUBSTANTIAL COMPLETION HAS BEEN ATTAINED - WHICHEVER COMES FIRST.
18.3.1. THIS PERIOD SHALL NOT EXCEED 18 MONTHS FROM THE DATE OF SHIPMENT OF THE VFD'S. THIS WARRANTY SHALL BE IN ADDITION TO ANY PROVIDED BY THE CONTRACTOR.
18.4. VFD'S SHALL PROVIDE FOR THE STARTING AND SPEED CONTROL OF STANDARD IEC OR NEMA MOTORS. THE VFD SHALL BE DIGITALLY CONTROLLED, USING PULSE WIDTH MODULATION (PWM).
18.5. THE VFDS SHALL BE BUILT TO COMPLY WITH CSA STANDARDS AND SHALL BE MARKED IN ACCORDANCE UL 61800-5-1.
18.6. PERFORMANCE REQUIREMENTS:
18.6.1. THE VFD SHALL BE RATED FOR THE NOMINAL INPUT VOLTAGE SPECIFIED OR SHOWN ON THE DRAWINGS. THE VFD SHALL HAVE A THREE-PHASE INPUT VOLTAGE TOLERANCE WITHIN -15% AND +10%.
18.6.2. THE DRIVE EFFICIENCY SHALL BE 97% OR BETTER AT FULL SPEED AND FULL LOAD. DISPLACEMENT POWER FACTOR SHALL BE NO LESS THAN 0.97 AT ALL SPEEDS AND LOADS.
18.6.3. OVERLOAD CAPACITY SHALL BE MINIMUM 110% NOMINAL CURRENT FOR 1 MINUTE.
18.7. PROTECTIVE FEATURES:
18.7.1. THE VFD SHALL BE UL 61800-5-1 LISTED FOR USE ON DISTRIBUTION SYSTEMS.
18.7.2. THE VFD SHALL BE PROTECTED AGAINST SHORT CIRCUITS, BETWEEN OUTPUT PHASES AND GROUND, AS WELL AS BETWEEN THE CONTROL I/O TERMINALS.
18.7.3. MOTOR PHASE LOSS PROTECTION SHALL BE PROVIDED.
18.7.4. (OPTIONAL)INPUT TERMINALS SHALL BE PROVIDED FOR CONNECTING A MOTOR THERMISTOR (PTC TYPE) TO THE VFD'S PROTECTIVE MONITORING CIRCUITRY.
18.8. CONTROL & COMMUNICATION INTERFACE:
18.8.1. THE VFD SHALL HAVE ETHERNET AS STANDARD, AND AT A MINIMUM HAVE MODBUS/TCP AND ETHERNET/IP EMBEDDED PROTOCOLS.
18.8.2. VFD ETHERNET PORTS SHALL BE IPV6 COMPLIANT, ALLOW FOR WEB SERVER ACCESS, AND PROVIDE NETWORK MANAGEMENT VIA SNMP AND CLOCK SYNCHRONIZATION.
18.9. USER INTERFACE:
18.9.1. A DETACHABLE TYPE 12 / IP65 RATED BACKLIT GRAPHICAL USER INTERFACE TERMINAL WITH KEYPAD SHALL BE PROVIDED FOR MONITORING, ANNUNCIATION, AND CONFIGURATION.
18.9.2. THE USER INTERFACE SHALL BE CAPABLE OF SAVING AND DOWNLOADING CONFIGURATIONS OF THE VFD, AS WELL AS TRANSFERING THEM TO OTHER VFDS.
18.10. PROVIDE DOOR MOUNTED MANUAL CONTROLS FOR EACH VFD AS PER THE DRAWINGS. USER INTERFACE TERMINAL FOR VFD TO BE MOUNTED ON VFD ENCLOSURE DOOR ABOVE MANUAL CONTROLS.
18.11. VFD INSTALLATION SHALL COMPLY WITH THE MANUFACTURER'S WRITTEN RECOMMENDATIONS AND SPECIFICATIONS, INCLUDING PRODUCT TECHNICAL BULLETINS, HANDLING, STORAGE, AND INSTALLATION INSTRUCTIONS.
18.12. THE CONTRACTOR SHALL SUBMIT A WRITTEN REPORT CERTIFYING THAT EACH VFD HAS BEEN INSTALLED, CONFIGURED, AND TESTED UNDER LOAD IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
18.13. VFD'S SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER. PRODUCTS AND MANUFACTURER'S SPECIFIED ARE TO ESTABLISH A STANDARD OF QUALITY FOR DESIGN, FUNCTION, MATERIALS AND APPEARANCE. PRODUCTS SHALL BE MODIFIED AS NECESSARY BY THE MANUFACTURER FOR COMPLIANCE WITH THE REQUIREMENTS.

19. LIGHTING FIXTURES
19.1. SUBMIT SHOP DRAWINGS PRIOR TO ORDERING.
19.2. ALL FIXTURES SHALL BE DLC APPROVED AND AS PER LUMINAIRE SCHEDULE.
19.3. LED FIXTURES:
19.3.1. LED FIXTURES SHALL BE 4000 DEGREE K UNLESS SPECIFIED OTHERWISE.
19.3.2. LUMEN OUTPUTS SHALL BE AS PER LUMINAIRE SCHEDULES. MINIMUM LUMENS PER WATT FOR ALL LED FIXTURES SHALL BE MINIMUM 90 LPW.
19.3.3. LED FIXTURE ARE TO HAVE A LP70 OF 50,000 HOURS OR GREATER.
19.4. FIXTURE INSTALLATION
19.4.1. CONTRACTOR SHALL BE RESPONSIBLE FOR HANDLING AND STORAGE. FIXTURES SHALL BE INSTALLED PLUMB, LEVEL, IN STRAIGHT LINES WITHOUT DISTORTION AND CLEAN.
19.4.2. INSTALL EACH FIXTURE IN A MANNER RECOMMENDED BY THE FIXTURE MANUFACTURER AND APPROVED BY THE OWNER'S REPRESENTATIVE. UNDER THIS SECTION OF THE WORK, FURNISH AND INSTALL ALL ADDITIONAL CEILING BRACING, HANGER SUPPORTS AND OTHER STRUCTURAL REINFORCEMENTS TO THE BUILDING REQUIRED TO PROPERLY AND SAFELY SUSPEND FIXTURES, ALL AS APPROVED BY THE ENGINEER.

20. GENERATOR
20.1. SUBMIT SHOP DRAWINGS PRIOR TO ORDERING EQUIPMENT.
20.2. GENERATOR IS TO BE STANDBY RATED FOR 50 kW AT 1800 RPM, 120/208V, 60HZ, 3PH, 4W, COMPLETE WITH 175A 3P OUTPUT BREAKER AND 175A 3P SECONDARY BREAKER FOR LOAD BANK CONNECTION.
20.3. GENERATOR SHALL COME COMPLETE WITH CONTROL PANEL. CONTROL PANEL IS TO INCLUDE LOW OIL PRESSURE, HIGH COOLANT TEMP, OVER-SPEED, OVER-CRANK SHUTDOWN, EMERGENCY STOP PUSHBUTTON, OUTPUT BREAKER STATUS, AUDIBLE ALARM BUZZER WITH SILENCING SWITCH, UNDER-VOLTAGE, OVER-VOLTAGE, UNDER FREQUENCY, OVER-FREQUENCY, OVERCURRENT & MINIMUM 15 POINT OUTPUT TO BUILDING PLC. ALARMS MAY BE INDICATED INDIVIDUALLY OR WITH USE OF ALARM LIGHT & BUZZER AND LCD DISPLAY.
20.4. LEVEL 2 SOUND ATTENUATION ENCLOSURE SHALL BE INCLUDED.
20.5. PROVIDE INTAKE AND EXHAUST OPENINGS, SIZED TO GENERATOR MANUFACTURER'S RECOMMENDATIONS, WITH AUTOMATIC MOTORIZED DAMPER, SILENCERS, HOOD AND BIRD SCREEN.
20.6. PROVIDE 12V (OR 24V) STARTING SYSTEM COMPLETE WITH ALL NECESSARY CHARGERS AND CONNECTIONS.
20.7. ACCESSORIES INCLUDING, BUT NOT LIMITED TO: EXHAUST THIMBLE AND RAIN CAP, SPRING ISOLATORS, BLOCK HEATER, SHALL BE PROVIDED FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM.
20.8. TESTING: FACTORY TEST IS TO BE PROVIDED BY MANUFACTURER.
20.9. ON SITE STARTUP AND COMMISSIONING IS TO BE PROVIDED AS PER MANUFACTURER'S RECOMMENDATIONS. ARRANGE AND PAY FOR ALL ASSOCIATED COSTS.
20.10. PROVIDE FULL LOAD TEST ON SITE AFTER INSTALLATION, AND AFTER PUMPS HAVE BEEN COMMISSIONED, USING A PORTABLE TEST BANK. SIMULATE POWER FAILURE, INCLUDING OPERATION OF TRANSFER SWITCH, AUTOMATIC STARTING CYCLE, AUTOMATIC SHUTDOWN AND RETURN TO NORMAL. FIELD TEST SHALL INCLUDED INCREMENTAL STEP LOADING, A MINIMUM 4 HOURS FULL LOAD TEST. VOLTAGE KILOWATTS, AMPERES, COOLANT TEMPERATURE, FREQUENCY, OIL PRESSURE AND AMBIENT TEMPERATURE SHALL BE RECORDED IN 20 MINUTE INTERVALS DURING THE FOUR HOUR TEST.
20.11. ON SITE LOAD TEST SCENARIOS TO BE TESTED INCLUDE, BUT ARE NOT LIMITED TO:
20.11.1. STATION LOADS (LIGHTING, HVAC, UPS ETC.).
20.11.2. LOAD, WHILE STARTING ONE PUMP, FOLLOWED BY A SECOND PUMP, REDUCING LOAD TO ONE PUMP AND STOPPING BOTH PUMPS.
20.12. GENERATOR IS TO BE GENERAC SD50 OR APPROVED EQUAL.
20.12.1. ALTERNATIVE ACCEPTABLE MANUFACTURERS INCLUDE: CUMMINS AND KOHLER.
20.13. AUTOMATIC TRANSFER SWITCH (ATS):
20.13.1. PROVIDE 200A, 120/208V, 3PH, 4W AUTOMATIC TRANSFER SWITCH.
20.13.2. TRANSFER SWITCH TO BE LOCATED IN ELECTRICAL KIOSK.
20.13.3. TRANSFER SWITCH TO HAVE FOUR POSITION SELECTOR SWITCH (TEST, AUTO, MANUAL, ENGINE START).

21. IDENTIFICATION
21.1. 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.
21.2. COLOURS OF LABELS TO BE AS FOLLOWS:
21.2.1. POWER - BLACK LETTERING ON WHITE BACKGROUND
21.2.2. LOW VOLTAGE - BLUE LETTERING ON WHITE BACKGROUND
21.3. 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).
21.4. FOR LIGHTING AND POWER SHOW THE COMPLETE CIRCUIT NUMBER OF ALL ENCLOSED CIRCUITS. FOR ALL CONTROL INDICATE THE TERMINAL / WIRE TAG.

22. RECORD DRAWING
22.1. ELECTRICAL CONTRACTOR TO PROVIDE AS-BUILT MARKUPS TO ENGINEER FOR RECORD DRAWINGS



MATERIALS LIST		
NO.	QTY	DESCRIPTION
1	5	150mm DEZURIK ECCENTRIC PLUG VALVE
2	2	FLYGT NT 3153 SH 3~ 275
3	2	80mm fxf 90 ELBOW
4	2	150mmx80mm REDUCER
5	2	150mm fxf VALMATIC 506C.3 SWING CHECK VALVE
6	2	150mm fxf 90 ELBOW
7	1	150mmx150mmx150mm fxfxf TEE
8	1	150mm 316 SS SCH 40 PIPE - LENGTHS TO SUIT
9	1	150mm fxf PROMAG W400 FLOW METER
10	1	150mm COUPLING - SS TO CI

NOTES:

1. DRAWING NOT TO SCALE.
2. DRAWING TO BE USED AS REFERENCE FOR PROCESS FLOW.

Rev	Date	Description	Drawn	Design	App'd
0	2025-07-24	ISSUED FOR TENDER	HR	KW	MH

BENCHMARK
ALL ELEVATION REFER TO CONTROL MONUMENT: 84H0219 (GCM 914705)
LOCATED AT: N 5365476.074, E 470263.308
ELEVATION: 14.199

ORIGINAL DWG SIZE: ANSI D (22" x 34")

McElhanney
500 - 3960 Quadra Street,
Victoria BC V8X 4A3
Tel. 250 370 9221

PERMIT TO PRACTICE
McElhanney Ltd.
PERMIT NUMBER: 1003299
Engineers and Geoscientists of BC

PROFESSIONAL ENGINEER · PROVINCE OF BRITISH COLUMBIA · K. R. WILLIAUME · 46993
2025-07-25
Approved Sealed

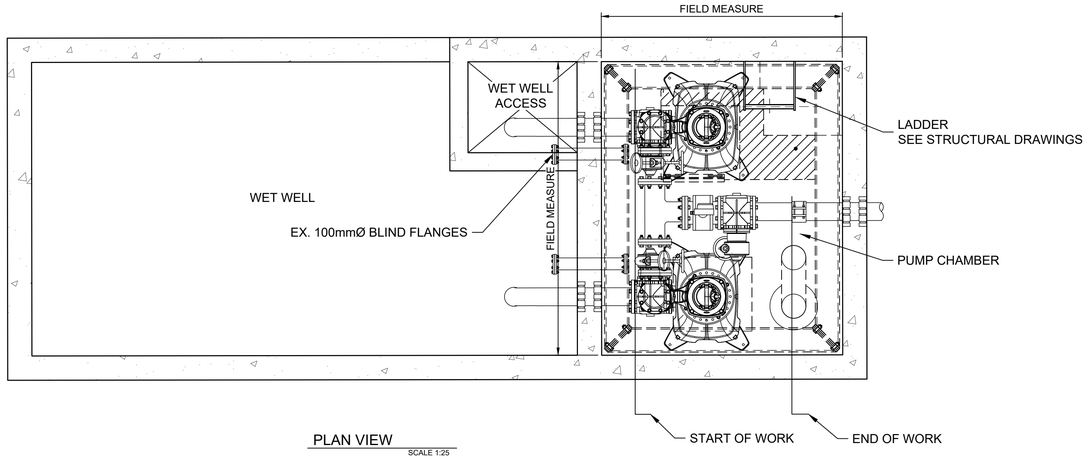
TOWNSHIP OF ESQUIMALT
1229 ESQUIMALT RD, ESQUIMALT, CB V9A 3P1

UGANDA PUMP STATION UPGRADES
PROCESS
SCHEMATIC

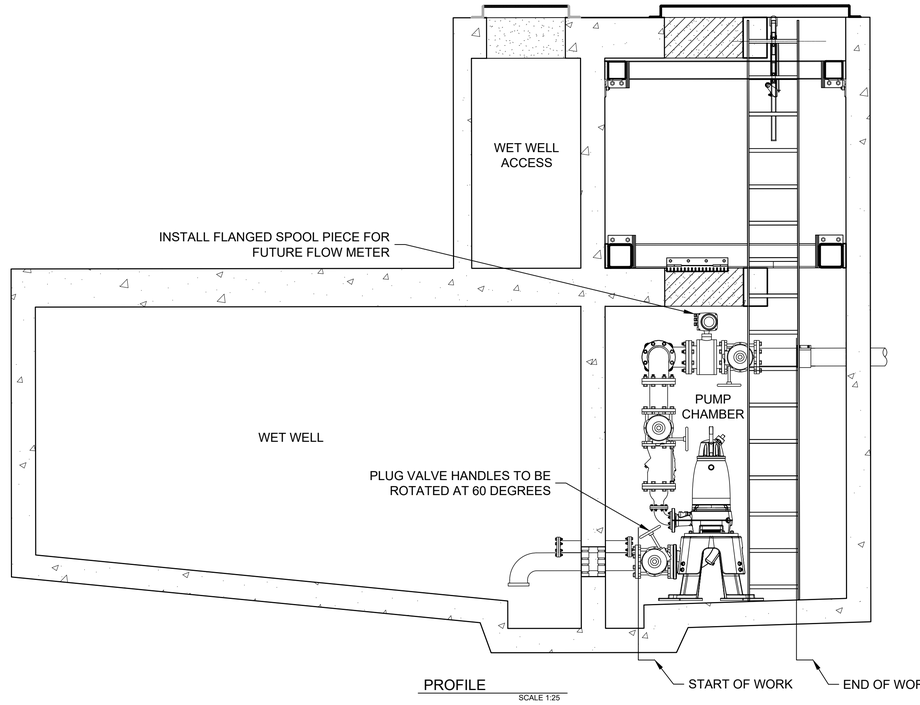
Drawing No.
P-100

Project Number 2241-25014-00
Rev. 0

DESTROY ALL PRINTS BEARING PREVIOUS REVISION



PLAN VIEW
SCALE 1:25



PROFILE
SCALE 1:25

NOTES:

1. CONTRACTOR TO FIELD VERIFY DIMENSIONS.
2. CONTRACTOR TO CONFIRM IN FIELD.
3. PIPING LAYOUT NOT FOR CONSTRUCTION AND TO BE USED AS REFERENCE. LAYOUT SUBJECT TO CHANGE BASED ON CONTRACTOR MEASUREMENTS.
4. PUMPS AND PIPE SUPPORTS TO BE SECURED TO FLOOR, CEILING, OR WALLS WHEN REQUIRED.
5. EXISTING GATE VALVES BETWEEN WET WELL AND PUMPS TO BE REMOVED.
6. NEW PLUG VALVES TO BE INSTALLED ON EXISTING FLANGE. BELIEVED TO BE 150 lb BOLT PATTERN, CONTRACTOR TO CONFIRM.

Rev	Date	Description	Drawn	Design	App'd
0	2025-07-24	ISSUED FOR TENDER	HR	KW	MH

BENCHMARK
ALL ELEVATION REFER TO CONTROL MONUMENT: 84H0219 (GCM 914705)
LOCATED AT: N 5365476.074, E 470263.308
ELEVATION: 14.199

0 1:25 1

ORIGINAL DWG SIZE: ANSI D (22" x 34")

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PERMIT TO PRACTICE
McElhanney Ltd.
PERMIT NUMBER: 1003299
Engineers and Geoscientists of BC

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
K. R. WILLIAUME
49360
2025-07-25
Approved Sealed

TOWNSHIP OF ESQUIMALT
1229 ESQUIMALT RD, ESQUIMALT, CB V9A 3P1

UGANDA PUMP STATION UPGRADES
PROCESS
PIPE PLAN AND PROFILE

Drawing No.
P-101

Project Number 2241-25014-00
Rev. 0

DATE: 2025-07-24, 22:20 FILE: \\comp\TAL-colo\2241\Projects\22412501400 Gosper Sewer and Uganda LS Upgrades\07_DRAWINGS\01_Sheets\25014-SK-100-2025-07-21.dwg

DESTROY ALL PRINTS BEARING PREVIOUS REVISION

DESIGN CRITERIA:

1. REFERENCE DRAWINGS:

   ToE RECORD DRAWINGS:

   UGANDA PUMP STATION COMPOSITE PLAN OF PROPOSED & EXISTING DATED DEC 1974
   UGANDA PUMP STATION SECTIONS A-A, B-B & C-C DATED 1983
   UGANDA SEWAGE LIFT STATION DRAWING 12-86 DATED JUL 1986

2. DESIGN STANDARDS:

LOADS:	BRITISH COLUMBIA BUILDING CODE 2024
CONCRETE:	CSA A23.3:19
STEEL:	CSA S16:19

3. CLIMATE & SEISMIC SITE DATA:

IMPORTANCE CATEGORY:	POST-DISASTER
SITE DESIGNATION:	E (ASSUMED)
SPECTRAL ACCELERATION (0.2 s):	1.890
SPECTRAL ACCELERATION (0.5 s):	2.000
SPECTRAL ACCELERATION (1.0 s):	1.440
PEAK GROUND ACCELERATION (PGA):	0.818

   THE PEAK GROUND ACCELERATIONS ARE ADJUSTED FOR THE SITE DESIGNATION.

   SEISMIC CATEGORY: SC4

4. IMPORTANCE FACTORS:

	ULS	SLS
EARTHQUAKE LOAD:	1.5	1.0

5. DESIGN LOADS PUMP STATON:

LIVE LOAD:	12 kPa (250 psf) GROUND 7.2 kPa (150 psf) ROOF HATCHES 3.6 kPa (75 psf) INTERMEDIATE PLATFORM
CONCENTRATED LIVE LOAD:	1.3 kN (300 lbs) OVER 200 mm (8") SQUARE (ROOF HATCHES & INT. PLATFORM)

6. DESIGN LOADS GENERATOR:

   GENERATOR WEIGHT: 1,500 kg (3,300 lbs) EXCL. FUEL

   NOTE: THE GENERATOR SLAB IS ONLY DESIGNED TO WITHSTAND DEAD AND WIND LOADS. IT IS NOT DESIGNED TO WITHSTAND EARTHQUAKE LOADS WITHOUT THE RISK OF SLIDING AND OVERTURNING DUE TO SITE CONSTRAINTS.

7. GEOTECHNICAL PARAMETERS PUMP STATION:

UNIT WEIGHT OF SOIL:	20 kN/m^3 (127 pcf) (ASSUMED)
ANGLE OF INTERNAL FRICTION OF SOIL:	50 ° (ASSUMED)
AT-REST EARTH PRESSURE COEFFICIENT:	0.50
SITE ADJUSTED PGA:	0.82

   THE STATIC AND SEISMIC EARTH PRESSURES ON THE LIFT STATION WERE DETERMINED IN ACCORDANCE WITH SECTION 18.3.7 OF THE CANADIAN FOUNDATION ENGINEERING MANUAL, 5TH EDITION, USING THE ASSUMED PARAMETERS LISTED ABOVE.

8. GEOTECHNICAL PARAMETERS GENERATOR:

FACTORED BEARING RESISTANCE:	50 kPa SLS (ASSUMED) 70 kPa ULS (ASSUMED)
MODULUS OF SUBGRADE REACTION:	54 MPa/m (100 psi/in) (ASSUMED)

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

9. 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 DIVISION B OF THE CURRENT EDITION OF THE BUILDING CODE UNLESS NOTED OTHERWISE. CODES AND STANDARDS NOT LISTED IN THE BUILDING CODE SHALL BE THE LATEST EDITIONS UNLESS NOTED OTHERWISE.
2. CONSTRUCTION SHALL COMPLY WITH THE CODES AND STANDARDS LISTED ON THE DRAWINGS AS WELL AS ALL APPLICABLE FEDERAL, PROVINCIAL AND MUNICIPAL 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 OF ANY DISCREPANCIES OR INCONSISTENCIES BETWEEN DRAWINGS.
5. DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. ELEVATIONS ARE IN METRES UNLESS NOTED OTHERWISE.
6. ONLY USE WRITTEN DIMENSIONS. DO NOT SCALE OFF THE DRAWINGS.
7. DRAWINGS SHALL NOT BE USED FOR CONSTRUCTION UNLESS MARKED ISSUED FOR CONSTRUCTION (IFC) AND SEALED BY A PROFESSIONAL ENGINEER.
8. THESE NOTES SHALL BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DOCUMENTS. THE MOST STRINGENT SPECIFICATIONS SHALL BE USED IF DISCREPANCIES OR INCONSISTENCIES ARE FOUND BETWEEN THE DRAWINGS AND OTHER CONTRACT DOCUMENTS, UNLESS APPROVED BY THE ENGINEER.
9. MATERIALS SHALL BE NEW AND BE PROTECTED FROM DAMAGE DURING SHIPPING, HANDLING, STORAGE AND INSTALLATION.
10. THESE DRAWINGS ARE FOR THE COMPLETED STRUCTURE ONLY. THE CONTRACTOR IS RESPONSIBLE FOR DEMOLITION PROCEDURES, LIFT PLANS AND TEMPORARY SUPPORTS REQUIRED TO SUPPORT CONSTRUCTION LOADS AND TO KEEP THE STRUCTURE PLUMB AND LEVEL DURING CONSTRUCTION. THE CONTRACTOR'S RESPONSIBILITIES INCLUDE, BUT ARE NOT LIMITED TO THE DESIGN, INSTALLATION AND INSPECTION OF ALL TEMPORARY BRACING, FALSEWORK, FORMWORK, SHORING, AND RESHORING. DEMOLITION PROCEDURES, LIFT PLANS AND TEMPORARY SUPPORTS SHALL COMPLY WITH THE OCCUPATIONAL HEALTH AND SAFETY REGULATION (OSHR).
11. MATERIALS SHALL BE ORDERED IN A TIMELY MANNER TO ENSURE PROCUREMENT TIMES DO NOT NEGATIVELY IMPACT THE PROJECT SCHEDULE.
12. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL COMPONENTS AND THEIR ATTACHMENT DESIGNED BY THE CONTRACTOR'S ENGINEER TO THE ENGINEER FOR REVIEW AT LEAST TWO WEEKS PRIOR TO FABRICATION. THE DRAWINGS SHALL BE SEALED BY THE CONTRACTOR'S ENGINEER. THE SHOP DRAWINGS SHALL SHOW ALL DETAILS, MATERIAL SPECIFICATIONS AND DESIGN LOADS. THE CONTRACTOR'S ENGINEER SHALL PROVIDE SCHEDULES S-B FOR THEIR SCOPE OF WORK.
13. 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 FABRICATION OR ERECTION SHALL TAKE PLACE WITHOUT THE ENGINEER HAVING REVIEWED AND APPROVED THE SHOP AND ERECTION DRAWINGS.
14. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE CORRECTION OF DEFICIENCIES, AS DIRECTED BY THE ENGINEER.
15. 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 BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE FOR FIELD REVIEWS OF THE FOLLOWING:

   FOUNDATION SOILS, BEFORE CONCRETING
   REINFORCING STEEL, BEFORE CONCRETING
   CONCRETE CUTTING, AFTER CUTTING
   STRUCTURAL STEEL, AFTER INSTALLATION BEFORE GROUTING

3. ALL WORK SHALL BE MADE ACCESSIBLE FOR FIELD REVIEWS. FAILURE TO GIVE THE 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 THE AUTHORITY HAVING JURISDISCTION (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 THEIR MANUFACTURE AND INSTALLATION PRIOR TO CONCEALMENT.
8. ADDITIONAL FIELD REVIEWS THAT ARE REQUIRED DUE TO DEFICIENT OR INCOMPLETE WORK SHALL BE AT THE CONTRACTOR'S EXPENSE.

REINFORCING STEEL:

1. REINFORCING STEEL SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH CSA-A23.1 AND THE RISC MANUAL OF STANDARD PRACTICE.
2. REINFORCING STEEL SHALL CONFORM TO CSA-G30.18 GRADE 400 UNLESS NOTED OTHERWISE.
3. REINFORCING STEEL SHALL BE CLEAN AND FREE OF MUD, OIL, EXCESSIVE RUST, MILL SCALE OR DAMAGE.
4. REINFORCING STEEL SHALL BE ACCURATELY PLACED, SECURED, AND SUPPORTED TO ENSURE PROPER CONCRETE COVER AND SPACING WITHIN ALLOWABLE TOLERANCES BEFORE AND DURING CONCRETING. TIE WIRES SHALL BE 1.3 mm DIAMETER (16 ga) BLACK ANNEALED WIRE. REINFORCING STEEL IN SLABS SHALL BE SUPPORTED BY SUITABLE SUPPORTS AT MAXIMUM 1.2 m (4'-0") ON CENTRE. BAR SUPPORTS SHALL BE MADE OF PRECAST CONCRETE, PLASTIC OR STEEL.
5. PROVIDE CLEAR CONCRETE COVER FOR REINFORCING STEEL IN CAST-IN-PLACE CONCRETE AS FOLLOWS, UNLESS NOTED OTHERWISE:

CONCRETE CAST AGAINST GROUND:	75 mm (3")
EXPOSED TO CHLORIDES/SEWAGE/MANURE:	60 mm (2 3/8")
EXPOSED TO FREEZING/THAWING/SULPHATE:	40 mm (1 1/2")

6. REINFORCING STEEL SHALL BE PLACED WITHIN THE FOLLOWING TOLERANCES:

BAR SPACING:	± 30 mm (1 1/8")
LOCATION OF BAR ENDS & BENDS:	± 50 mm (2") ± 20 mm (3/4") AT DISCONTINUED BARS
CONCRETE COVER:	± 12 mm (1/2")

   CONCRETE COVER SHALL NOT BE REDUCED BY MORE THAN 1/3 OF THE SPECIFIED COVER.

7. REINFORCING STEEL SHALL BE CONTINUOUS, AND ADEQUATELY LAPPED AT SPLICES.
8. MINIMUM LAP LENGTHS SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:

10M:	450 mm (1'-6")
15M:	600 mm (2'-0")

9. OPENINGS IN WALLS AND SLABS WITH A MAXIMUM DIMENSION LARGER THAN 150 mm (6") SHALL HAVE (1) ADDITIONAL BAR ON EACH SIDE OF THE OPENING, WHICH EXTENDS 600 mm (24") PAST THE OPENING, AND (4) ADDITIONAL 1,200 mm (48") LONG DIAGONAL BARS ARRANGED IN A DIAMOND SHAPE IN EACH LAYER UNLESS NOTED OTHERWISE. THE DIAMETER OF THE ADDITIONAL BARS SHALL MATCH THE DIAMETER OF THE REINFORCING STEEL MAT.
10. REENTRANT CORNERS IN WALLS AND SLABS SHALL HAVE AN ADDITIONAL 1,200 mm (48") LONG DIAGONAL BAR IN EACH LAYER UNLESS NOTED OTHERWISE. THE DIAMETER OF THE ADDITIONAL BARS SHALL MATCH THE DIAMETER OF THE REINFORCING STEEL MAT.
11. CONCRETE OR GROUT 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.

CAST-IN-PLACE CONCRETE:

1. CONCRETE SHALL BE MIXED, PLACED, FINISHED AND CURED IN ACCORDANCE WITH CSA-A23.1.
2. CONCRETE SHALL BE NORMAL WEIGHT CONCRETE, CONTAIN MAXIMUM 20 mm (3/4") AGGREGATE, EXCEPT CONCRETE SLABS ON STEEL DECKING SHALL CONTAIN MAXIMUM 12 mm (1/2") AGGREGATE, AND CONFORM TO THE FOLLOWING SPECIFICATIONS UNLESS NOTED OTHERWISE:

ELEMENT	EXPOSURE	STRENGTH	MAX W/C	SLUMP*	AIR	CURING TYPE
EXTERIOR SLABS-ON-GRADE	C-2	32 MPa	0.45	25–75 mm	5–8%	2

   * SUPERPLASTICIZER SHALL BE ADDED AFTER SLUMP HAS BEEN MEASURED.

3. THE CONTRACTOR SHALL SUBMIT MIX DESIGNS TO THE ENGINEER FOR REVIEW AT LEAST TWO WEEKS PRIOR TO PLACING.
4. THE USE OF ADMIXTURES OTHER THAN AIR ENTRAINMENT, STANDARD WATER REDUCERS, OR SUPER PLASTICIZERS IS NOT PERMITTED UNLESS SPECIFIED OR AUTHORIZED BY THE ENGINEER.
5. WATER SHALL NOT BE ADDED TO THE CONCRETE AFTER LEAVING THE BATCH PLANT.
6. CONCRETE SHALL BE COMPLETELY DISCHARGED WITHIN 120 MINUTES OF INITIAL MIXING. CONCRETE SHALL BE REJECTED IF THIS TIME LIMIT CANNOT BE MET.
7. LAITANCE SHALL BE REMOVED, AGGREGATE SHALL BE PARTIALLY EXPOSED, AND THE SURFACE SHALL BE ROUGHENED TO A FULL AMPLITUDE OF AT LEAST 5 mm (3/16") WHERE FRESH CONCRETE IS CAST AGAINST HARDENED CONCRETE. THE HARDENED CONCRETE SHALL BE SATURATED WITH WATER AND BE IN A DAMP CONDITION WITH NO FREE SURFACE WATER (SATURATED SURFACE DRY) IMMEDIATELY BEFORE PLACING FRESH CONCRETE.
8. VERTICAL AND HORIZONTAL CONCRETE ELEMENTS SHALL BE PLUMB AND LEVEL WITH A TOLERANCE OF 1:400, BUT NO MORE THAN 40 mm (1 1/2") OVER THE TOTAL HEIGHT OR LENGTH OF THE STRUCTURE. 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:

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")

9. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 20 mm (3/4") CHAMFER UNLESS NOTED OTHERWISE. STAIR NOSINGS SHALL HAVE A 6 mm (1/4") TO 10 mm (3/8") CHAMFER OR FILLET.
10. CONCRETE SHALL BE CONSOLIDATED USING MECHANICAL VIBRATORS.
11. OPENINGS, BLOCKOUTS, OR EMBEDDED HARDWARE SHALL NOT BE INSTALLED UNLESS SPECIFIED OR AUTHORIZED BY THE ENGINEER.
12. AIR-ENTRAINED CONCRETE SHALL BE FINISHED WITH A FLOAT OR BROOM. AIR-ENTRAINED CONCRETE SHALL NOT BE FINISHED WITH A STEEL TROWEL.
13. CONCRETE FINISHES SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:

    EXTERIOR SLABS: BROOM FINISH

14. CONCRETE CURING TYPE 1 SHALL BE CURED FOR A MINIMUM OF 3 DAYS OR UNTIL THE CONCRETE HAS REACHED 40% OF ITS DESIGN STRENGTH. CONCRETE CURING TYPE 2 SHALL BE CURED FOR A MINIMUM OF 7 DAYS OR UNTIL THE CONCRETE HAS REACHED 70% OF ITS DESIGN STRENGTH. REFER TO THE CONCRETE SPECIFICATION TABLE ON THIS DRAWING FOR SPECIFIED CURING TYPES.
15. CONCRETE CURING SHALL COMMENCE USING ONE OF THE FOLLOWING METHODS AS SOON AS THE CONCRETE HAS HARDENED SUFFICIENTLY:

    CURING COMPOUNDS
    PONDING OR CONTINUOUS SPRINKLING WITH WATER
    APPLYING WATER AND COVERING WITH LAPPED POLYETHYLENE SHEETS
    APPLYING WATER AND COVERING WITH ABSORPTIVE BURLAP FABRIC
    FORMS IN CONTACT WITH CONCRETE SURFACE

COLD WEATHER CONCRETING:

1. COLD WEATHER CONCRETING, I.E. WHEN THERE IS A PROBABILITY OF THE AIR TEMPERATURE FALLING BELOW 5 °C WITHIN 24 HOURS OF PLACING, SHALL BE CARRIED OUT IN ACCORDANCE WITH CSA-A23.1, ACI 306R AND THE SPECIFICATIONS LISTED BELOW.
2. SNOW AND ICE SHALL BE REMOVED FROM ALL SURFACES THAT CONCRETE WILL BE PLACED AGAINST. DE-ICING SALTS SHALL NOT BE USED.
3. CONCRETE SHALL HAVE A MINIMUM TEMPERATURE OF 10°C, WHICH SHALL BE MAINTAINED FOR THE DURATION OF THE REQUIRED CURING PERIOD. AGGREGATE AND MIXING WATER SHALL BE HEATED AS REQUIRED. THE CONTRACTOR SHALL COVER, INSULATE AND HEAT THE CONCRETE AS REQUIRED.
4. CONCRETE SHALL NOT BE PLACED AGAINST SURFACES OR REINFORCING STEEL WITH A TEMPERATURE OF LESS THAN 5 °C. SLABS THINNER THAN 1 m (40") SHALL NOT BE PLACED AGAINST SURFACES OR REINFORCING STEEL WITH A TEMPERATURE OF LESS THAN 10 °C.
5. COVERS SHALL NOT BE REMOVED AFTER THE HEATING IS SHUT OFF UNTIL THE CONCRETE HAS COOLED DOWN TO NO MORE THAN 12 °C ABOVE AIR TEMPERATURE.

HOT WEATHER CONCRETING:

1. HOT WEATHER CONCRETING, I.E. WHEN THERE IS A PROBABILITY OF THE AIR TEMPERATURE RISING ABOVE 27 °C DURING THE PLACING, SHALL BE CARRIED OUT IN ACCORDANCE WITH CSA-A23.1, ACI 305 AND THE SPECIFICATIONS LISTED BELOW.
2. THE CONCRETE TEMPERATURE SHALL KEPT AS CLOSE AS POSSIBLE TO THE MINIMUM TEMPERATURE OF 10°C AND SHALL NOT EXCEED THE FOLLOWING MAXIMUM TEMPERATURES DURING THE PLACING. IN NO CASE SHALL THE TEMPERATURE OF HIGH-PERFORMANCE CONCRETE EXCEED 25 °C.

THICKNESS OF CONCRETE	MAXIMUM TEMPERATURE
< 0.3 m (1')	32 °C
≥ 0.3 m (1') & < 1.0 m (3'-3")	30 °C
≥ 1.0 m (3'-3") & < 2.0 m (6'-6")	25 °C
≥ 2.0 m (6'-6")	20 °C

3. ALL MATERIALS AND EQUIPMENT NEEDED FOR ADEQUATE PROTECTION SHALL BE ON HAND AND READY FOR USE BEFORE COMMENDING PLACEMENT.
4. FRESHLY PLACED CONCRETE SHALL BE PROTECTED AGAINST HIGH TEMPERATURES USING ONE OR MORE OF THE FOLLOWING MEASURES:

   LOWERING THE CONCRETE TEMPERATURE
   PLACING AND FINISHING CONCRETE AT NIGHT OR EARLY IN THE MORNING
   MODIFYING THE CONCRETE MIX TO IMPROVE SURFACE BLEEDING
   APPLYING FINE MIST WATER FOG SPRAY IMMEDIATELY AFTER PLACEMENT AND BETWEEN FINISHING OPERATIONS
   BEGINNING CURING IMMEDIATELY AFTER FINAL FINISHING
   REDUCING EXPOSURE OF FRESH CONCRETE TO DIRECT SUNLIGHT AND/OR WIND

CONCRETE TESTING:

1. CONCRETE SHALL BE TESTED IN ACCORDANCE WITH CSA-A23.2 BY A TESTING AGENCY CERTIFIED IN ACCORDANCE WITH CSA-A283.
2. THE CONTRACTOR SHALL COOPERATE WITH, AND PROVIDE CONCRETE FOR, THE CONCRETE TESTING.
3. SLUMP SHALL BE TESTED BEFORE SUPER PLASTICIZER IS ADDED ON SITE.
4. A MINIMUM OF 1 SET OF 3 TEST CYLINDERS SHALL BE CAST FOR EVERY 100 m^3 (130 yd^3) OF EACH TYPE OF CAST-IN-PLACE CONCRETE, PER SUPPLIER, PER DAY. 1 CYLINDER SHALL BE TESTED AT 7 DAYS, AND 2 SHALL BE TESTED AT 28 DAYS. COPIES OF THE TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER AND SHALL IDENTIFY THE LOCATION WITHIN THE STRUCTURE WHERE THE CONCRETE WAS PLACED.
5. CONCRETE TESTING, INCLUDING SUBSEQUENT TESTING REQUIRED BECAUSE OF SUBSTANDARD CONCRETE, SHALL BE CARRIED OUT AT THE CONTRACTOR'S EXPENSE.

Rev	Date	Description	Drawn	Design	App'd
0	2025-07-24	ISSUED FOR TENDER	TRM	SF	MH

ORIGINAL DWG SIZE: ANSI D (22" x 34")

McElhanney
500 - 3960 Quadra Street,
Victoria BC V8X 4A3
Tel. 250 370 9221

PERMIT TO PRACTICE
McElhanney Ltd.
PERMIT NUMBER: 1003299
Engineers and Geoscientists of BC

2025-07-25
PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — S. FREITAG # 46802
Approved Sealed

TOWNSHIP OF ESQUIMALT

1229 EQUIMALT ROAD, ESQUIMALT, BC V9A 3P1

UGANDA PUMP STATION UPGRADES STRUCTURAL SPECIFICATIONS

Drawing No. **S-000**

Project Number: 2241-25014-00
Rev.: 0

STRUCTURAL STEEL:

1. STRUCTURAL STEEL SHALL BE DESIGNED, FABRICATED AND INSTALLED IN ACCORDANCE WITH CSA-S16 AND THE CISC CODE OF STANDARD PRACTICE.
2. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING UNLESS NOTED OTHERWISE:

BARS & PLATES:	CSA-G40.21 GRADE 300W
BEAMS & TEES:	CSA-G40.21 GRADE 350W OR ASTM A992
HSS:	CSA-G40.21 GRADE 350W OR ASTM A1085
ANGLES & CHANNELS:	CSA-G40.21 GRADE 350W
PIPES:	ASTM A53 GRADE B
STRUCTURAL BOLTS:	ASTM F3125 GRADE A325
ANCHOR BOLTS:	ASTM F1554 GRADE 36

3. STRUCTURAL STEEL SHALL BE WELDED IN ACCORDANCE WITH CSA-W59 BY COMPANIES AND WELDERS CERTIFIED TO CSA-W47.1 BY CWB.
4. WELDS SHALL BE MADE USING E49XX (E70XX) ELECTRODES OR BETTER UNLESS NOTED OTHERWISE.
5. FILLET WELDS SHALL HAVE THE FOLLOWING MINIMUM THICKNESSES, BUT NEED NOT EXCEED THE THICKNESS OF THE THINNER PART JOINED:

t ≤ 12 mm (1/2")	5 mm (3/16")
12 mm (1/2") < t ≤ 20 mm (3/4")	6 mm (1/4")
20 mm (3/4") < t	8 mm (5/16")

6. FIELD WELDING IS NOT PERMITTED UNLESS SPECIFIED OR AUTHORIZED BY THE ENGINEER.
7. WELDS SHALL BE INSPECTED BY A WELDING INSPECTION ORGANIZATION CERTIFIED TO CSA-W178.1 AND A WELDING INSPECTOR CERTIFIED TO CSA-W178.2 AS FOLLOWS:

ALL WELDS:	100% VISUAL

THE TEST REPORTS SHALL BE SUBMITTED TO THE ENGINEER.

8. STRUCTURAL STEEL SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH CSA-G164 UNLESS NOTED OTHERWISE. GALVANIZED STRUCTURAL STEEL SHALL BE DETAILED IN ACCORDANCE WITH THE AGA DESIGN GUIDE TO ALLOW PROPER DRAINAGE AND VENTING.
9. FASTENERS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153.
10. DAMAGED GALVANIZING SHALL BE TOUCHED UP WITH TWO COATS OF LANCO GALVACON GC-243 COLD GALVANIZING COMPOUND OR APPROVED EQUIVALENT IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
11. HSS SECTIONS SHALL BE PROVIDED WITH SEAL-WELDED CAP PLATES AT OPEN ENDS AND DRAIN HOLES AT THE BASE.
12. BEARING PLATES AND BASE PLATES SUPPORTED BY CONCRETE SHALL BE GROUTED SOLID WITH NON-METALLIC, NON-SHRINK GROUT HAVING A 7-DAY COMPRESSIVE STRENGTH OF AT LEAST 40 MPa (5,800 psi) IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
13. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL STRUCTURAL STEEL TO THE ENGINEER FOR REVIEW AT LEAST TWO WEEKS PRIOR TO FABRICATION. THE DRAWINGS OF STRUCTURAL COMPONENTS NOT DESIGNED BY THE EINGINEER SHALL BE SEALED BY THE FABRICATOR'S ENGINEER. THE SHOP DRAWINGS SHALL SHOW ALL DETAILS, MATERIAL SPECIFICATIONS AND DESIGN LOADS.
14. THE CONTRACTOR SHALL SUBMIT MILL CERTIFICATES FOR ALL STRUCTURAL STEEL TO THE ENGINEER.
15. THE CONTRACTOR SHALL REVIEW THE ARCHITECTURAL DRAWINGS FOR MISCELLANEOUS STEEL COMPONENTS. ALL STEEL COMPONENTS NOT SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE CONSIDERED SECONDARY COMPONENTS. REFER TO NOTES FOR "SECONDARY COMPONENTS AND THEIR ATTACHMENTS".

STAINLESS STEEL:

1. STAINLESS STEEL SHALL BE DESIGNED AND FABRICATED IN ACCORDANCE WITH THE AISC STEEL DESIGN GUIDE 27.
2. STAINLESS STEEL SHALL CONFORM TO THE FOLLOWING UNLESS NOTED OTHERWISE:

PLATES:	ASTM A240 TYPE UNS30403 (304L)
BARS & STRUCTURAL SHAPES:	ASTM A276 TYPE UNS30403 (304L)
HSS:	ASTM A269 TYPE UNS30403 (304L)
BOLTS & RODS:	ASTM F593 OR ASTM B193

3. STAINLESS STEEL SHALL BE CUT AND GROUND WITH CONSUMABLES SUITABLE FOR STAINLESS STEEL.
4. STAINLESS STEEL SHALL BE WELDED IN ACCORDANCE WITH CSA-W59 AND AWS D1.6 BY COMPANIES AND WELDERS CERTIFIED TO CSA-W47.1 ANNEX K BY CWB.
5. FILLET WELDS SHALL HAVE THE FOLLOWING MINIMUM THICKNESSES, BUT NEED NOT EXCEED THE THICKNESS OF THE THINNER PART JOINED:

t ≤ 12 mm (1/2")	5 mm (3/16")
12 mm (1/2") < t ≤ 20 mm (3/4")	6 mm (1/4")
20 mm (3/4") < t	8 mm (5/16")

6. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL STAINLESS STEEL TO THE ENGINEER FOR REVIEW AT LEAST TWO WEEKS PRIOR TO FABRICATION. THE DRAWINGS SHALL BE SEALED BY THE FABRICATOR'S ENGINEER. THE SHOP DRAWINGS SHALL SHOW ALL DETAILS, MATERIAL SPECIFICATIONS AND DESIGN LOADS.
7. STAINLESS STEEL SHALL BE DEGREASED AND PICKLED AFTER FABRICATION AND PRIOR TO SHIPPING.
8. STAINLESS STEEL SHALL BE RIGGED AND BLOCKED WITH STAINLESS STEEL OR NON-FERROUS MATERIAL TO ELIMINATE THE RISK OF EMBEDDING IRON INTO THE SURFACE. STAINLESS STEEL SHALL NOT BE IN DIRECT CONTACT WITH MILD STEEL.
9. DISSIMILAR METALS IN CONTACT WITH STAINLESS STEEL SHALL BE PROTECTED FROM CORROSION WHERE THEY ARE EXPOSED TO AGGRESSIVE ENVIRONMENTS OR IN MOIST CONDITIONS.

ALUMINUM:

1. ALUMINUM SHALL BE DESIGNED IN ACCORANCE WITH CSA-S157.
2. ALUMINUM SHALL BE FABRICATED IN ACCORANCE WITH CSA-S16, EXCEPT AS MODIFIED BY CSA-S157 AND THE FOLLOWING NOTES.
3. ALUMINUM SHALL CONFORM TO THE FOLLOWING UNLESS NOTED OTHERWISE:

PLATES:	ASTM B209 TYPE 6061-T6 OR -T651
BARS & STRUCTURAL SHAPES:	ASTM B308 TYPE 6061-T6
TUBES & PIPES:	ASTM B429 TYPE 6061-T6
BAR GRATING:	ASTM B221 TYPE 6063-T5 & -T6
LADDER RUNGS:	ASTM B209 TYPE 5052 H32

4. FASTENERS FOR ALUMINUM SHALL CONFORM TO THE FOLLOWING UNLESS NOTED OTHERWISE:

GALVANIZED BOLTS:	ASTM F3125 GRADE 325 & ASTM A153
STAINLESS STEEL BOLTS:	ASTM F593 OR ASTM B193

5. ALUMINUM SHALL BE WELDED IN ACCORDANCE WITH CSA-W59.2 BY COMPANIES CERTIFIED TO CSA-W47.2.
6. WELDS SHALL BE MADE USING 4043 OR 5356 WELD FILLER METAL UNLESS NOTED OTHERWISE.
7. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL ALUMINUM TO THE ENGINEER FOR REVIEW AT LEAST TWO WEEKS PRIOR TO FABRICATION. THE DRAWINGS SHALL BE SEALED BY THE FABRICATOR'S ENGINEER. THE SHOP DRAWINGS SHALL SHOW ALL DETAILS, MATERIAL SPECIFICATIONS AND DESIGN LOADS.
8. ALUMINUM SHALL BE PROTECTED FROM CORROSION WHERE IT IS EXPOSED TO AGGRESSIVE ENVIRONMENTS OR IN CONTACT WITH DISSIMILAR METALS IN MOIST CONDITIONS. ALUMINUM IN CONTACT WITH OR EMBEDDED IN CONCRETE SHALL BE COATED WITH A HEAVY COAT OF ALKALI-RESISTANT BITUMINOUS PAINT LIKE COAL TAR EPOXY.

POST-INSTALLED ANCHORS:

1. POST-INSTALLED ANCHORS SHALL BE BY HILTI, SIKA, SIMPSON STRONG-TIE OR APPROVED EQUIVALENT.
2. POST-INSTALLED ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
3. ADHESIVE ANCHORS SHALL BE INSTALLED BY CERTIFIED INSTALLERS. THE CONTRACTOR SHALL SUBMIT CERTIFICATION FOR PERSONNEL WHO INSTALL ADHESIVE ANCHORS HORIZONTALLY OR UPWARDLY INCLINED AND SUBJECTED TO SUSTAINED TENSION LOADS TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF INSTALLING ANCHORS. THE CONTRACTOR MAY ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ADHESIVE ANCHORS.
4. ADHESIVE ANCHORS SHALL HAVE THE FOLLOWING MINIMUM EMBEDMENT UNLESS NOTED OTHERWISE:

10 mm (3/8") THREADED ROD:	75 mm (3")
13 mm (1/2") THREADED ROD:	100 mm (4")
16 mm (5/8") THREADED ROD:	125 mm (5")
19 mm (3/4") THREADED ROD:	150 mm (6")
22 mm (7/8") THREADED ROD:	175 mm (7")
25 mm (1") THREADED ROD:	200 mm (8")
32 mm (1 1/4") THREADED ROD:	250 mm (10")

FIXED LADDERS:

1. FIXED LADDERS AND THEIR ATTACHMENT SHALL BE DESIGNED AND FABRICATED TO ANSI-ASC A14.3, PIP STE05501 AND STF05501, EXCEPT THAT REFERENCES SHALL BE REPLACED WITH APPLICABLE CANADIAN STANDARDS.
2. LADDERS EXCEEDING 6 m (20') IN HEIGHT SHALL HAVE LADDER CAGES.
3. LADDERS BELOW FLOOR AND ROOF HATCHES SHALL HAVE RETRACTABLE SAFETY EXTENSIONS EXTENDING 1,070 mm (42") ABOVE THE LADDER.
4. INTERIOR LADDERS INCLUDING HARDWARE AND ACCESSORIES SUBMERGED IN POTABLE WATER SHALL BE TYPE 304 STAINLESS STEEL UNLESS NOTED OTHERWISE.

ROOF HATCHES:

1. ROOF HATCHES SHALL BE BY BILCO, USF FABRICATION, XYLEM OR APPROVED EQUIVALENT.
2. ROOF HATCHES SHALL BE DESIGNED, MANUFACTURED, TESTED AND INSTALLED IN ACCORDANCE WITH ASTM C1802.
3. ROOF HATCHES SHALL BE ALUMINUM WITH TYPE 316 STAINLESS STEEL HARDWARE.
4. ROOF HATCHES SHALL BE RATED FOR A MINIMUM LIVE LOAD OF 7.2 kPa (150 psf) UNLESS NOTED OTHERWISE.
5. ROOF HATCHES SHALL HAVE A WEATHER TIGHT EXTRUDED RESILIENT ELASTOMERIC GASKET WITH FULL RECOVERY AFTER 50% COMPRESSION.
6. ROOR HATCHES WITH EXTERNAL MOUNTING SECURED SHALL BE FASTENED WITH TAMPER PROOF FASTENERS.
7. ROOF HATCHES SHALL HAVE THE FOLLOWING ACCESSORIES:

LATCH:	RECESSED CYLINDER LOCK OPERABLE FROM OUTSIDE AND INSIDE
HOLD OPEN DEVICE:	HOLD OPEN OPERATING ARM WITH VINYL GRIP HANDLE ALLOWING ONE HANDED RELEASE
LIFT ASSIST:	GAS SHOCK
FALL THROUGH PROTECTION:	SAFETY GRATE WITH HOLD OPEN DEVICE SAFETY ORANGE FINISH COMPLYING WITH OCCUPATIONAL HEALTH AND SAFETY (OHS) REGULATION
INSULATION:	NOT REQUIRED

8. ROOF HATCHES SHALL BE INSTALLED WITH A CONTINUOUS BUTYL SEALANT BETWEEN THE HATCH FLANGE AND THE MOUNTING SURFACE.

SECONDARY COMPONENTS & THEIR ATTACHMENT:

1. SECONDARY COMPONENTS AND THEIR ATTACHMENT, INCLUDING, BUT NOT LIMITED TO THE FOLLOWING, SHALL BE DESIGNED IN ACCORDANCE WITH PART 4 OF THE BUILDING CODE BY THE CONTRACTOR'S ENGINEER AT THE CONTRACTOR'S EXPENSE:

   LADDERS
   ANCHORAGE & SEISMIC RESTRAINTS OF ARCHITECTURAL, MECHANICAL AND ELECTRICAL ELEMENTS

2. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL SECONDARY COMPONENTS AND THEIR ATTACHMENT TO THE ENGINEER FOR REVIEW AT LEAST TWO WEEKS PRIOR TO FABRICATION. THE DRAWINGS SHALL BE SEALED BY THE CONTRACTOR'S ENGINEER. THE SHOP DRAWINGS SHALL SHOW ALL DETAILS, MATERIAL SPECIFICATIONS AND DESIGN LOADS. THE CONTRACTOR'S ENGINEER SHALL CARRY OUT FIELD REVIEWS AND CERTIFY THAT THE WORK WAS COMPLETED IN ACCORDANCE WITH THE SHOP DRAWINGS AND ALL OTHER STRUCTURAL REQUIREMENTS.
3. THE CONTRACTOR'S ENGINEER IS RESPONSIBLE FOR THE PROTECTION OF CONNECTIONS OF DISSIMILAR METALS FROM CORROSION.

Rev	Date	Description	Drawn	Design	App'd
0	2025-07-24	ISSUED FOR TENDER	TRM	SF	MH

ORIGINAL DWG SIZE: ANSI D (22" x 34")

McElhanney
500 - 3960 Quadra Street,
Victoria BC V8X 4A3
Tel. 250 370 9221

PERMIT TO PRACTICE
McElhanney Ltd.
PERMIT NUMBER: 1003299
Engineers and Geoscientists of BC

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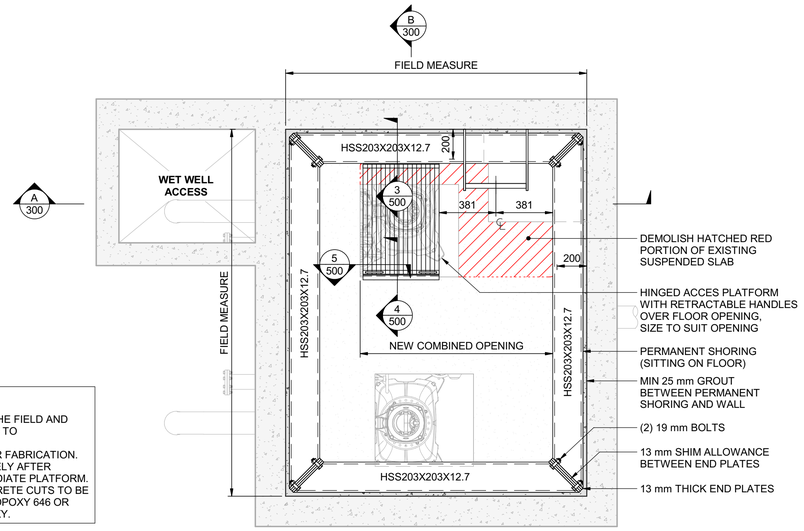
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
S. FREITAG
46802
Approved Sealed

TOWNSHIP OF ESQUIMALT
1229 ESQUIMALT ROAD, ESQUIMALT, BC V9A 3P1

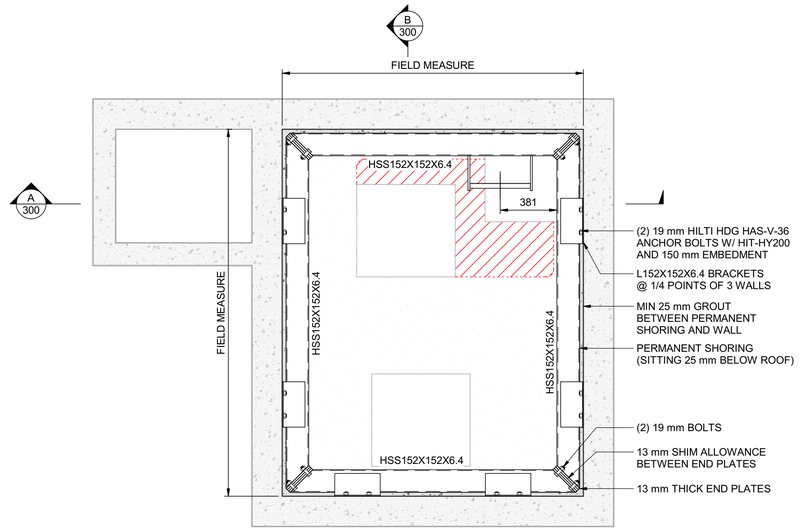
UGANDA PUMP STATION UPGRADES
STRUCTURAL SPECIFICATIONS

Drawing No.
S-001

Project Number: 2241-25014-00
Rev.: 0



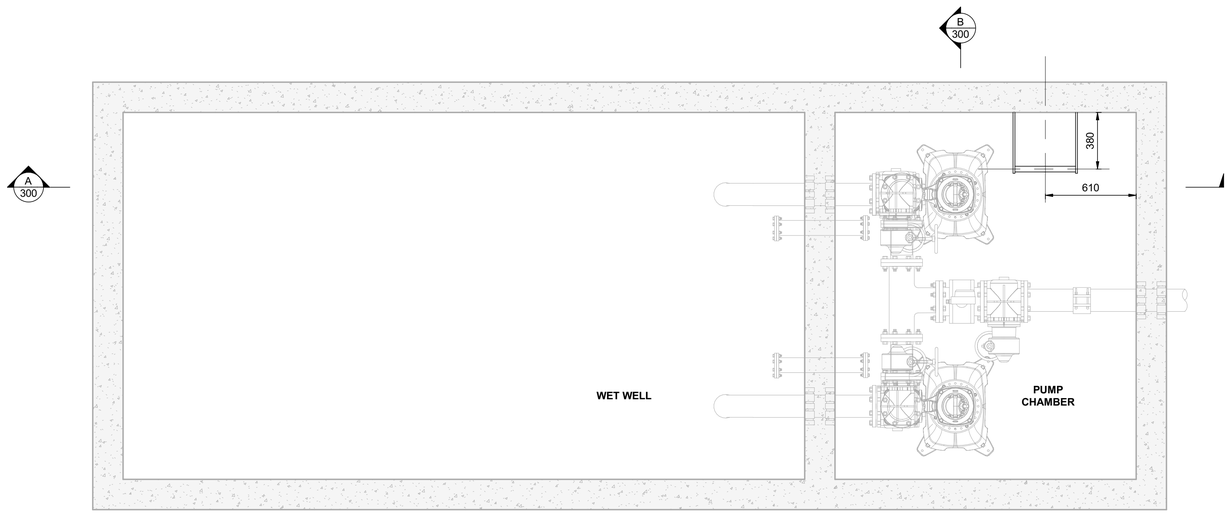
INTERMEDIATE FLOOR PLAN
SCALE 1 : 20



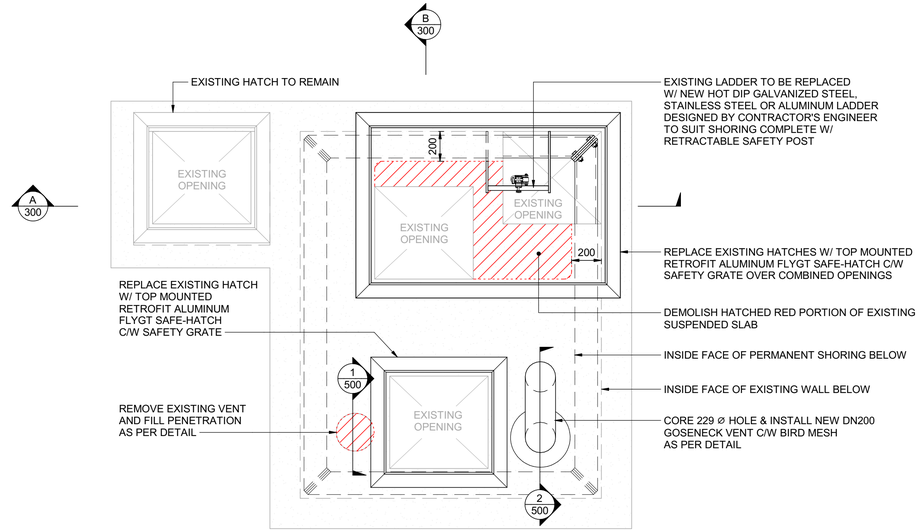
REFLECTED CEILING PLAN
SCALE 1 : 20

NOTES:

1. CONTRACTOR TO CONFIRM DIMENSIONS IN THE FIELD AND SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO COMMENCING FABRICATION.
2. ALL STEEL TO BE HOT DIP GALVANIZED AFTER FABRICATION.
3. STEEL SHORING TO BE INSTALLED IMMEDIATELY AFTER CUTTING ADDITIONAL OPENINGS IN INTERMEDIATE PLATFORM.
4. ALL EXPOSED REINFORCING STEEL AT CONCRETE CUTS TO BE COATED W/ GREY SHERWIN-WILLIAMS MACROPOXY 646 OR APPROVED EQUAL SURFACE TOLERANT EPOXY.



LOWER FLOOR PLAN
SCALE 1 : 20



ROOF PLAN
SCALE 1 : 20

Rev	Date	Description	Drawn	Design	App'd
0	2025-07-24	ISSUED FOR TENDER	TRM	SF	MH

0 1:20 1 m

ORIGINAL DWG SIZE: ANSI D (22" x 34")

McElhanney
500 - 3960 Quadra Street,
Victoria BC V8X 4A3
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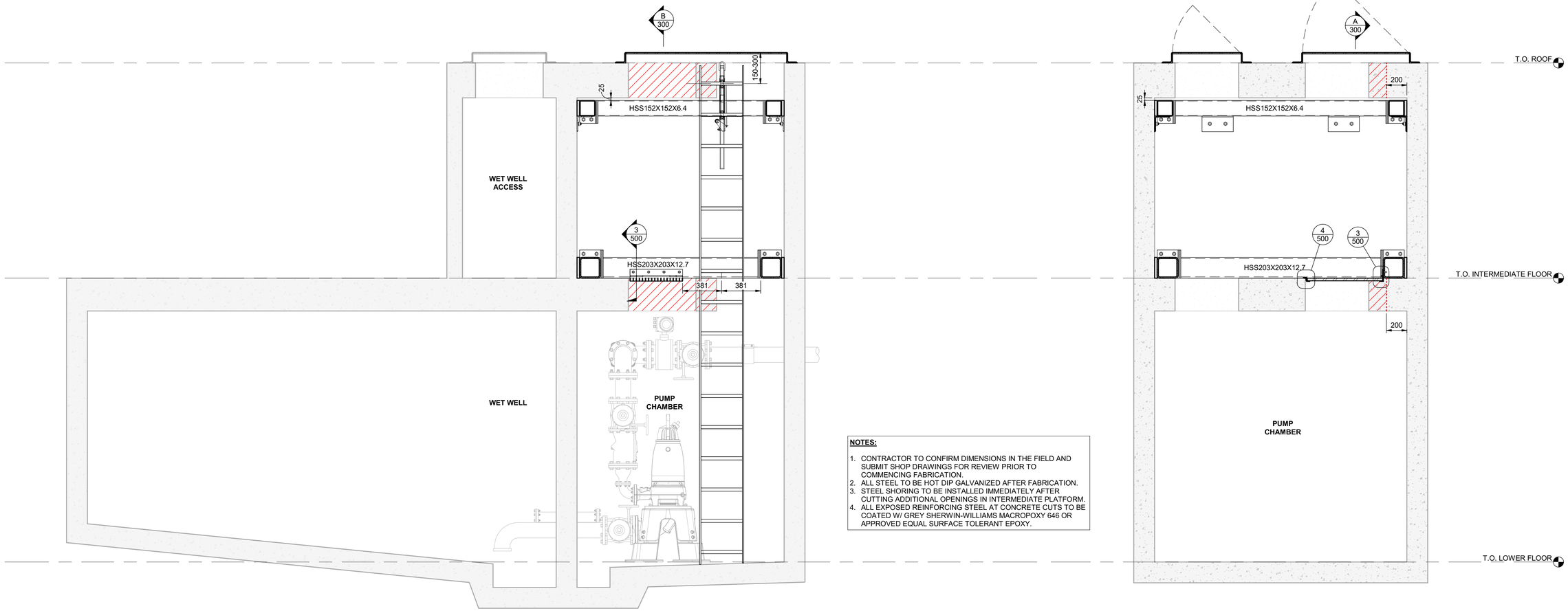
TOWNSHIP OF ESQUIMALT
1229 EQUIMALT ROAD, ESQUIMALT, BC V9A 3P1

UGANDA PUMP STATION UPGRADES STRUCTURAL PLANS

Drawing No.
S-100

Project Number
2241-25014-00

Rev.
0



NOTES:

1. CONTRACTOR TO CONFIRM DIMENSIONS IN THE FIELD AND SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO COMMENCING FABRICATION.
2. ALL STEEL TO BE HOT DIP GALVANIZED AFTER FABRICATION.
3. STEEL SHORING TO BE INSTALLED IMMEDIATELY AFTER CUTTING ADDITIONAL OPENINGS IN INTERMEDIATE PLATFORM.
4. ALL EXPOSED REINFORCING STEEL AT CONCRETE CUTS TO BE COATED W/ GREY SHERWIN-WILLIAMS MACROPOXY 646 OR APPROVED EQUAL SURFACE TOLERANT EPOXY.

A/100 SECTION A
SCALE 1 : 20

B/100 SECTION B
SCALE 1 : 20

Rev	Date	Description	Drawn	Design	App'd
0	2025-07-24	ISSUED FOR TENDER	TRM	SF	MH

0 1:20 1 m

ORIGINAL DWG SIZE: ANSI D (22" x 34")

McElhanney
500 - 3960 Quadra Street,
Victoria BC V8X 4A3
Tel. 250 370 9221

PERMIT TO PRACTICE
McElhanney Ltd.
PERMIT NUMBER: 1003299
Engineers and Geoscientists of BC

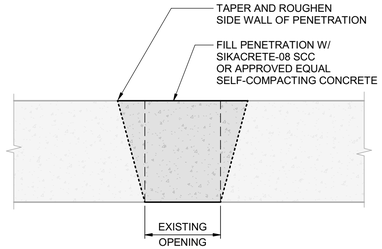
2025-07-25
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
S. FREITAG
46802
Approved Sealed

TOWNSHIP OF ESQUIMALT
1229 EQUIMALT ROAD, ESQUIMALT, BC V9A 3P1

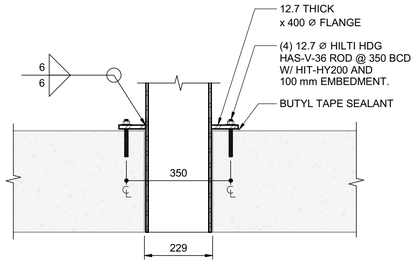
UGANDA PUMP STATION UPGRADES
STRUCTURAL
SECTIONS

Drawing No.
S-300

Project Number: 2241-25014-00
Rev.: 0



1/100 PLUG DETAIL
SCALE 1 : 10



2/100 VENT DETAIL
SCALE 1 : 10

NOTES:

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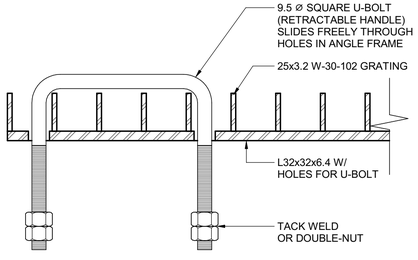
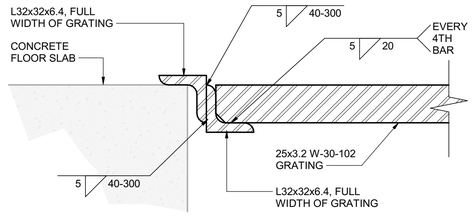
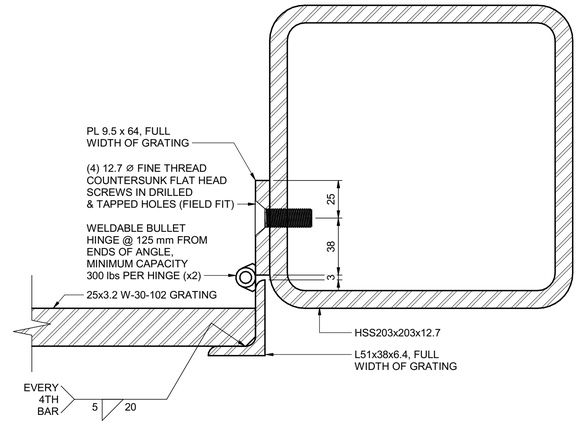


5/100 HANDLE DETAIL
SCALE 1 : 2



4/100 BEARING EDGE DETAIL
SCALE 1 : 2



3/100 HINGE DETAIL
SCALE 1 : 2

Rev	Date	Description	Drawn	Design	App'd
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0 1:20 1 m

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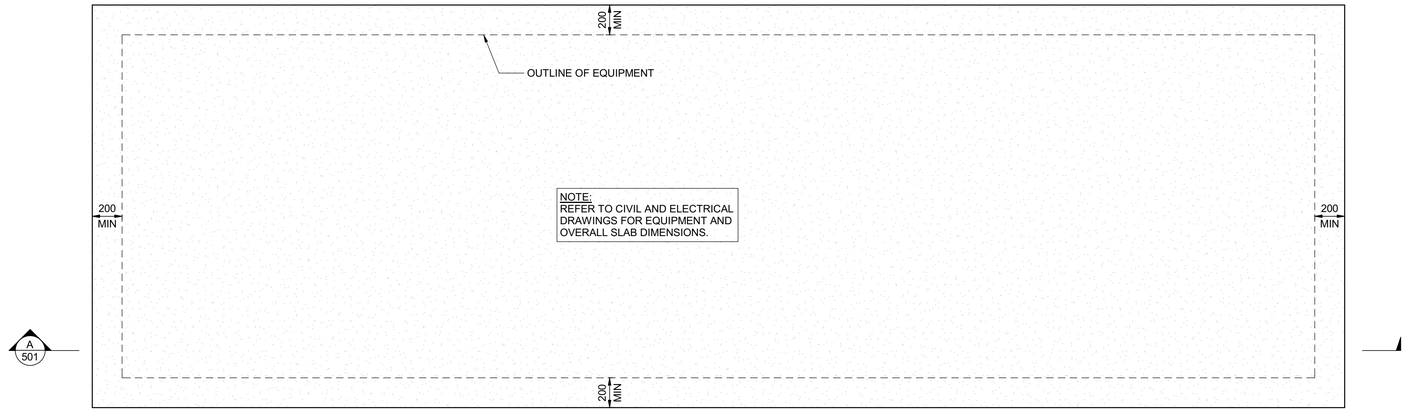
UGANDA PUMP STATION UPGRADES
STRUCTURAL
DETAILS

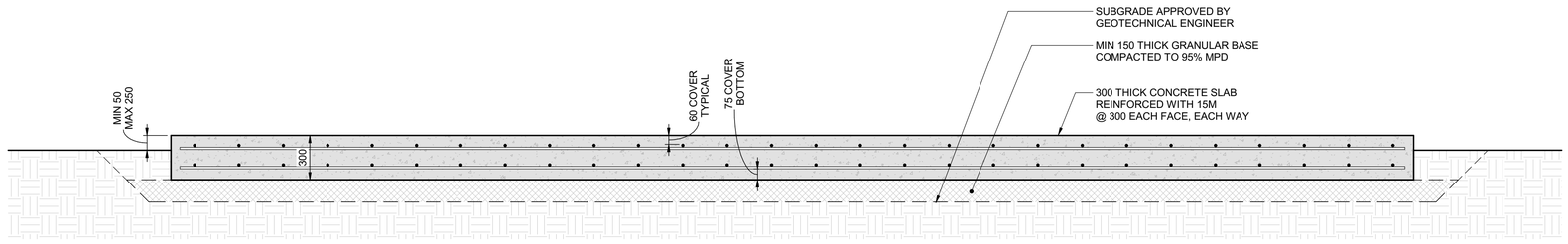
Drawing No.
S-500

Project Number
2241-25014-00

Rev.
0



1 EQUIPMENT SLAB PLAN
SCALE N.T.S.



A/501 EQUIPMENT SLAB SECTION
SCALE N.T.S.

Rev	Date	Description	Drawn	Design	App'd
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UGANDA PUMP STATION UPGRADES
STRUCTURAL
EQUIPMENT SLAB DETAILS

Drawing No.
S-501

Project Number
2241-25014-00

Rev.
0