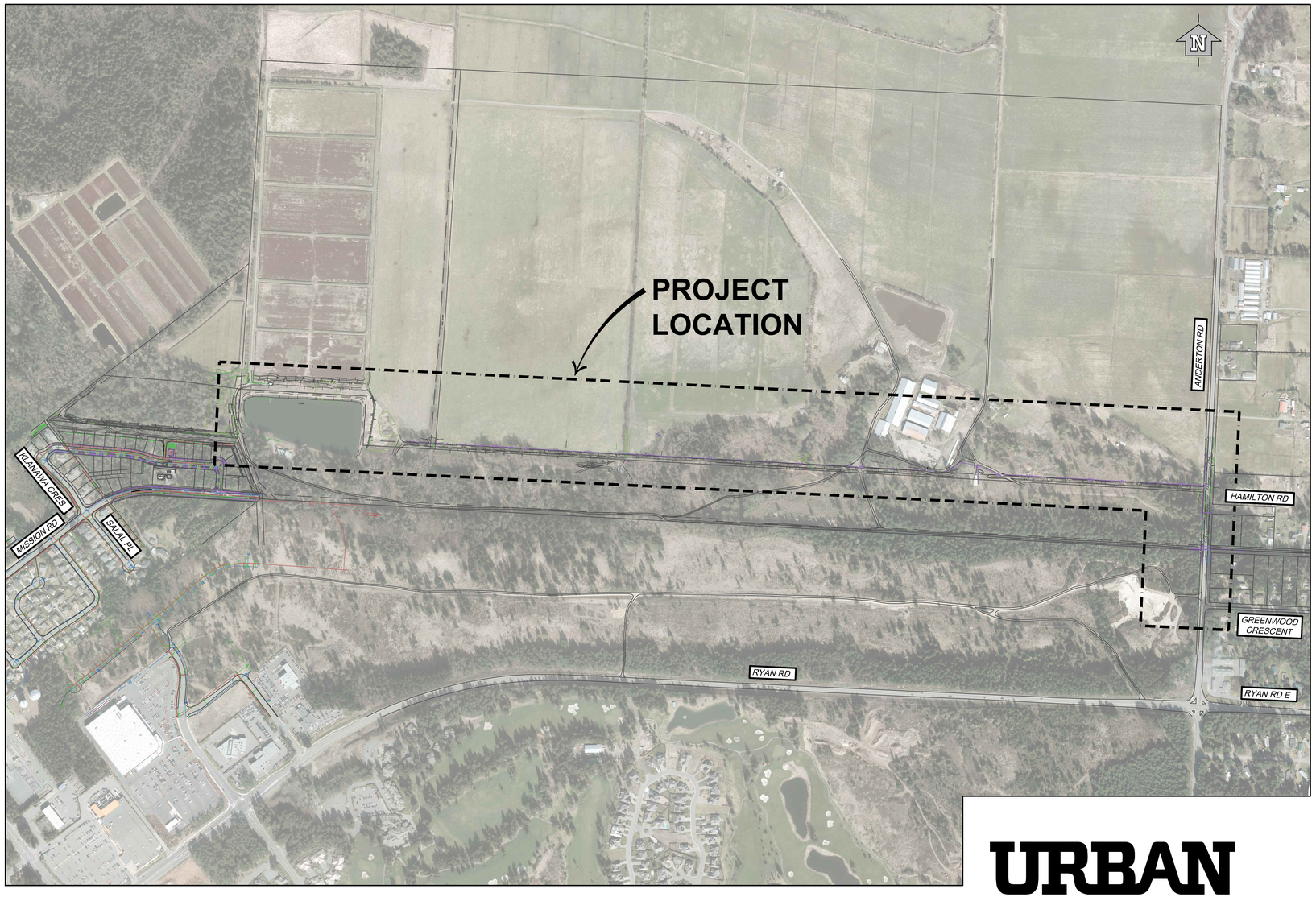
City of Courtenay Greenwood Trunk Sewers

CITY OF COURTENAY

City Contract No.: T20-11

ISSUED FOR TENDER
FEBRUARY 18, 2020
urbansystems.ca



SITE LOCATION
0m 50 100 150

URBAN systems

List of Drawings

/ CITY OF COURTENAY GREENWOOD TRUNK SEWERS / 3222.0048.01 / FEBRUARY 18, 2020

NOT FOR CONSTRUCTION

SANITARY MH & LS TABLE					
#	STATION	RIM	MH DIA	INV IN	INV OUT
SMH–2	1+020.511	43.736	1.200	S 42.486	N 42.481
SMH–3	1+099.122	38.011	1.200	S 36.234	N 36.214
SMH–4	1+154.454	35.532	1.200	S 34.169	E 34.139
SMH–5	1+302.454	34.644	1.200	W 33.177	E 33.172
SMH–6	1+449.642	33.068	1.200	W 31.748	S 31.718
SMH–7	1+504.582	33.534	1.200	N 31.533	S 31.513
SMH–8	1+587.773	35.115	1.200	N 31.239	E 31.209
LS–1	1+729.920	35.084	2.550	N 30.546	
SMH–9	1+729.966	34.617	1.200	W 30.676 E 30.565	S 30.560
SMH–10	1+923.887	34.073	1.200	E 31.242	W 31.237
SMH–11	2+088.276	33.288	1.200	E 31.650	W 31.645
SMH–12	2+281.670	35.403	1.200	E 33.290	W 33.285
SMH–13	2+378.129	35.597	1.200	E 33.585	W 33.580
SMH–14	2+499.092	38.982	1.200	E 37.250	W 37.230
SMH–15	2+632.283	40.733	1.200		W 38.708
SMH–16	3+416.042	37.926	1.500	NE 36.376	S 36.365 NW 36.365
SMH–17	3+421.994	38.429	1.500	N 36.200	

FUT SANITARY MH & LS TABLE					
#	STATION	RIM	MH DIA	INV IN	INV OUT
SMH–F01	2+831.621	39.972	1.200		E 38.144
SMH–F02	2+968.377	39.746	1.200	W 37.734	E 37.729
SMH–F03	3+046.813	39.332	1.200	W 36.729	E 36.724
SMH–F04	3+139.739	36.524	1.200	W 34.712	E 34.707
SMH–F05	3+196.851	33.373	1.200	W 31.611	E 31.606
SMH–F06	3+240.332	30.765	1.200	W 29.134	E 29.129
SMH–F07	3+274.526	30.068	1.200	W 28.200	S 28.150
LS–2	3+274.526	30.348	2.550	N 28.070	

STORM MISC TABLE								
#	LENGTH	SIZE	HW IN	INV IN	CENTER IN	HW OUT	INV OUT	CENTER OUT
CUL–1	11.843	0.600	HW–1	33.52	N 5509433.008 E 358584.883	HW–2	33.23	N 5509444.830 E 358585.599
CUL–2	22.747	0.600	HW–3	33.40	N 5509436.518 E 358606.712	HW–4	32.94	N 5509451.927 E 358623.446
CUL–3	22.494	0.600	HW–5	32.50	N 5509432.484 E 358624.069	HW–6	32.30	N 5509454.966 E 358624.840
CUL–4	22.898	0.450	HW–7	32.48	N 5509417.845 E 358874.949	HW–8	32.37	N 5509440.705 E 358876.268
CUL–5	23.626	0.300	HW–10	34.00	N 5509285.379 E 359065.089	HW–9	33.84	N 5509286.408 E 359041.486
CUL–6	10.242	0.300	HW–11	33.54	N 5509277.229 E 359237.399	HW–12	33.47	N 5509276.648 E 359247.625
CUL–7	10.987	0.300	HW–13	34.46	N 5509257.388 E 359594.035	HW–14	34.60	N 5509256.973 E 359605.014
CUL–8	9.819	0.300	HW–15	34.87	N 5509251.235 E 359690.985	HW–16	35.00	N 5509250.694 E 359700.789
CUL–9	10.691	0.300	HW–17	38.56	N 5509244.922 E 359811.259	HW–18	38.77	N 5509244.059 E 359821.915
CUL–10	8.068	0.300	HW–19	40.30	N 5509239.193 E 359909.803	HW–20	40.10	N 5509238.861 E 359917.863
CUL–11	9.448	0.300	HW–21	39.94	N 5509237.306 E 359945.036	HW–22	39.89	N 5509237.041 E 359954.480
CUL–12	8.090	0.300	HW–23	39.97	N 5509223.497 E 360200.181	HW–24	40.06	N 5509221.012 E 360207.880
CUL–13	4.248	0.400	TIE–IN–1	33.21	N 5509288.041 E 359011.515	HW–25	33.40	N 5509283.795 E 359011.396

GEOMETRY				
LINE #	LENGTH	DIRECTION	START POINT	END POINT
L1	20.511	N2° 41' 43.60"E	N 5509293.8398) E (358580.4580	N 5509314.3281) E (358581.4225
L2	78.611	N1° 38' 45.61"W	N 5509314.3281) E (358581.4225	N 5509392.9067) E (358579.1645
L3	55.332	N21° 11' 57.68"E	N 5509392.9067) E (358579.1645	N 5509444.4941) E (358599.1733
L4	152.672	S86° 41' 55.69"E	N 5509444.4941) E (358599.1733	N 5509435.7025) E (358751.5917
L5	142.516	S86° 41' 55.66"E	N 5509435.7025) E (358751.5917	N 5509427.4957) E (358893.8712
L6	54.940	S18° 36' 18.65"E	N 5509427.4957) E (358893.8712	N 5509375.4269) E (358911.3996
L7	83.192	S3° 11' 02.57"W	N 5509375.4269) E (358911.3996	N 5509292.3637) E (358906.7788
L8	108.880	S86° 48' 41.74"E	N 5509292.3637) E (358906.7788	N 5509286.3078) E (359015.4907
L9	227.233	S86° 48' 46.91"E	N 5509286.3078) E (359015.4907	N 5509273.6749) E (359242.3726
L10	164.388	S88° 17' 33.23"E	N 5509273.6749) E (359242.3726	N 5509268.7768) E (359406.6881
L11	193.394	S85° 33' 10.69"E	N 5509268.7768) E (359406.6881	N 5509253.7815) E (359599.5000
L12	217.422	S86° 48' 40.80"E	N 5509253.7815) E (359599.5000	N 5509241.6876) E (359816.5854
L13	806.013	S86° 48' 41.98"E	N 5509241.6876) E (359816.5854	N 5509196.8586) E (360621.3505
L14	110.938	S2° 24' 11.93"W	N 5509196.8586) E (360621.3505	N 5509086.0180) E (360616.6984
L15	5.952	S2° 35' 25.53"W	N 5509086.0180) E (360616.6984	N 5509080.0721) E (360616.4294

GENERAL NOTES:

1. ALL CONSTRUCTION AND MATERIALS TO BE IN ACCORDANCE WITH THE MOST CURRENT CITY OF COURTENAY ENGINEERING SPECIFICATIONS, MMCD PLATINUM EDITION 2009 SPECIFICATIONS AND DETAILS, AND THESE DRAWINGS AND SPECIFICATIONS.

2. ALL PRODUCTS TO BE IN ACCORDANCE WITH CITY OF COURTENAY APPROVED PRODUCT LIST WHERE NOT SPECIFICALLY IDENTIFIED.

3. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATION OF THE VARIOUS PARTS OF THE WORK.

4. CONTRACTOR TO COORDINATE AND BEAR ALL COSTS FOR MATERIAL TESTING, SUCH AS CONCRETE COMPRESSION STRENGTH, GRANULAR COMPACTION, AND ASPHALT DENSITY TESTS. RESULTS TO BE PROVIDED TO CONTRACT ADMINISTRATOR FOR QUALITY ASSURANCE PURPOSES.

5. LOCATIONS OF EXISTING UTILITIES AND SERVICES SHOWN ON THESE DRAWINGS ARE DERIVED FROM CITY OF COURTENAY BASE DRAWING, AGENCY AS–BUILTS, AND SURVEY INFORMATION. NO GUARANTEE IS MADE AS TO THEIR ACCURACY. CONTRACTOR TO CONFIRM LOCATION OF ALL EXISTING UTILITIES AND SERVICES IN THE FIELD PRIOR TO CONSTRUCTION.

6. CONTACT BC ONE CALL (1–800–474–6886) BC HYDRO, TELUS, SHAW CABLE, FORTIS GAS AND CITY OF COURTENAY FOR UNDERGROUND UTILITY LOCATIONS PRIOR TO CONSTRUCTION.

7. THE CONTRACTOR IS RESPONSIBLE TO BRACE UTILITY POLES WHERE NECESSARY TO FACILITATE CONSTRUCTION, INCLUDING LIAISING AND OBTAINING APPROVAL FROM BC HYDRO. THE CONTRACTOR IS RESPONSIBLE TO IDENTIFY ALL LOCATIONS NECESSARY TO BRACE UTILITY POLES. NO ADDITIONAL PAYMENT WILL BE MADE TO BRACE UTILITY POLES.

8. DO NOT USE THESE DRAWINGS TO ESTABLISH PROPERTY LINES AND/OR ANY BOUNDARIES.

9. ALL PROPERTY PINS AND PLUGS ARE TO BE PROTECTED. THE CONTRACTOR WILL BE RESPONSIBLE, AT THEIR EXPENSE FOR REPLACEMENT OF ANY PINS OR PLUGS DISTURBED. THE WORK, IF REQUIRED, MUST BE PERFORMED BY A BCLS APPROVED BY THE CONTRACT ADMINISTRATOR.

10. THE CONTRACTOR SHALL ENSURE THAT ALL APPROVALS OR PERMITS REQUIRED, INCLUDING HAUL PERMITS, FOR THE PROPOSED WORKS HAVE BEEN OBTAINED FROM ALL AUTHORITIES AND AGENCIES PRIOR TO COMMENCEMENT OF WORK.

11. THE CONTRACTOR IS TO RETAIN A CERTIFIED ELECTRICAL SUBCONTRACTOR FOR ALL RELATED ELECTRICAL WORKS.

12. THE CONTRACTOR IS TO RESTORE ALL GROUND SURFACES TO ORIGINAL OR BETTER CONDITION. RESTORATION AREAS OUTSIDE OF EXISTING OR PROPOSED ROAD STRUCTURES TO BE MIN 150mm TOPSOIL AND SEED OR AS NOTED ON THE CONTRACT DRAWINGS. NO SEPARATE PAYMENT TO BE MADE FOR SURFACE RESTORATION, UNLESS OTHERWISE NOTED. DRAWINGS DO NOT SHOW ALL SURFACE FEATURES. TENDERS ARE ADVISED TO REVIEW THE SITE SURFACE FEATURES PRIOR TO SUBMITTING TENDER.

13. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE REPAIR OF ANY DAMAGE CAUSED TO EXISTING STREETS OR SERVICES OR SITE WORKS BY CONSTRUCTION EQUIPMENT AND/OR TRUCK HAULING MATERIALS TO THE SITE. THIS INCLUDES DAILY CLEANING OR SWEEPING EXISTING ROADS OF DIRT AND DEBRIS CAUSED BY CONSTRUCTION ACTIVITY.

14. ALL EXISTING ASPHALT TO BE SAW CUT SQUARE.

15. ASPHALT AND ROAD STRUCTURE RESTORATION ON ANDERTON ROAD MUST MATCH EXISTING CONDITIONS TO A MINIMUM OF:
–50mm SURFACE COURSE ASPHALT
–50mm BASE COURSE ASPHALT
–200mm OF GRANULAR BASE GRAVEL (COMPACTED TO A MIN 95% MPMDD)
–300mm OF GRANULAR SUB–BASE GRAVEL (COMPACTED A MIN 95% MPMDD)

16. TRAFFIC CONTROL IS THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL BE IN ACCORDANCE WITH WORK SAFE BC AND COMPLY WITH CITY OF COURTENAY REQUIREMENTS. A TRAFFIC MANAGEMENT PLAN MUST BE SUBMITTED TO THE CITY OF COURTENAY FOR REVIEW AND APPROVAL PRIOR TO THE START OF CONSTRUCTION.

17. SEE ENVIRONMENTAL SPECIFICATIONS REGARDING WORKING WITHIN AGRICULTURE LAND RESERVE, FISHERIES RESTRICTIONS AND FARMING REQUIREMENTS.

SANITARY SEWER NOTES:

1. ALL MAINS SHALL HAVE A MINIMUM 1.2m OF COVER WHERE UNDER ANDERTON ROAD, AND 1.0m OF COVER IN OTHER REGIONS, UNLESS OTHERWISE APPROVED BY THE CONTRACT ADMINISTRATOR.

2. ALL PIPING AND RELATED APPURTENANCES TO BE INSPECTED BY THE CONTRACT ADMINISTRATOR OR THEIR DELEGATE PRIOR TO BACKFILLING OF THE TRENCH.

3. FORCEMAIN PIPE JOINT DEFLECTIONS, WHERE IDENTIFIED ON THE CONTRACT DRAWINGS, ARE TO BE A MAXIMUM OF ONE HALF OF THE MANUFACTURERS RECOMMENDED MAXIMUM.

4. ALL PIPE MATERIALS SHALL BE:
– PVC SDR 35 FOR GRAVITY MAINS;
– C900 PVC DR 25 FOR FORCEMAINS;
– SCHEDULE 10 304 STAINLESS STEEL WHERE INDICATED FOR VALVE CHAMBER.

5. ALL MANHOLES TO BE CONSTRUCTED WITH WATERTIGHT DOBNEY C–18B OR C–23WT (OR APPROVED EQUIVALENT) LIDS.

ATTENTION
This drawing is prepared for the sole use of
No representations of any kind are made by Urban Systems Ltd. or its employees to any party with whom Urban Systems Ltd. does not have a contract.

WARNING
Utilities or structures shown on this drawing were compiled from information supplied by various parties and may not be complete or accurate. Expose and conclusively confirm the location in the field all underground utilities and structures indicated on this drawing, all underground utilities in the area of the proposed work and any utilities or structures reasonably apparent from an inspection of the proposed work. Urban Systems Ltd. assumes no responsibility for loss or damage caused by third party negligence or failure to comply with the above.

SURVEY INFORMATION
Prepared by: 3D Geomatics
Coordinate System: UTM NAD 83 Zone 10
Compilation Date: August 21, 2018

ISSUED FOR TENDER
FEBRUARY 18, 2020
urbansystems.ca

Professional Seals
PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA, E. D. SEARS
2020-02-21

#	Date	Issue / Revision	App
A	2018-12-20	Preliminary Design (Draft)	S.B.
B	2019-03-05	95% Design	S.B.
C	2019-04-18	100% Design	S.B.
D	2020-02-18	Tender	S.B.

CITY OF COURTENAY

URBAN systems

Scale 30m 0 30 60 90

Quality Control by S.Brubacher
Designed by M.Stafford
Drawn by D.Barry

City of Courtenay Greenwood Trunk Sewers
Index

Sheet Number 1 of 18
Project Number 3222.0048.01
Drawing Number C01
Revision D

NOT FOR CONSTRUCTION

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GENERAL

Callout Label — 1 / SHEET#

Detail Label — 1 / SHEET# — DETAIL DESCRIPTION

Section Indicator — A / SHEET#

Section Label — A / SHEET# — SECTION DESCRIPTION / SCALE

Sheet Match Line — 10+000 – SEE SHEET XX

Limit of Proposed Construction — LIMIT OF CONSTRUCTION 10+000

Project Boundary

Revision Identifier — 1

ROADS

	EXISTING	PROPOSED	FUTURE
Road Centre Line			
Edge of Gravel Road			
Edge of Pavement			
Edge of Road Shoulder			
Curb and Gutter			
Sign - Single Post			
Sign - Double Post			

PAVEMENT MARKINGS

	EXISTING	PROPOSED	FUTURE
Paintline - Continuity	3 3 3	3 3 3	3 3 3
Paintline - Lane Marking	6 3 6	6 3 6	6 3 6
Paintline - Intersection Tracking			
Paintline - Solid Yellow/White			
Universally Accessible Parking			
Informational Directional Arrows			
Painted Directional Arrows			
Bicycle Marker			

LEGAL & SURVEY

	EXISTING	PROPOSED	FUTURE
Block Line			
Lot Line			
Easement/Right-of-Way			
Control Point	CP No.		
Survey Monument	MON. No.		
Survey Spike	SPIKE		
Survey Iron Bar	BAR		
Iron Pin	IP		
Test Pit/Bore Hole	TH–No.		

TOPOGRAPHY & GRADING

	EXISTING	PROPOSED	FUTURE
Top			
Toe			
Breakline			
Major Contour Interval	500	500	500
Minor Contour Interval	495.5	495.5	495.5
Water Edge			
Center of Water Way			
Daylight Line			
Spot Elevation	× 682.04	× 681.270	× 681.760
Slope Arrow	2.0%	2.00%	2.00%

SANITARY

	EXISTING	PROPOSED	FUTURE
Main	S	S	S
Main (in profile)			
Force Main	FM	FM	FM
Service			
Manhole (arrow indicates incoming flow)	S1	S1	S1
High Point Manhole	S1	S1	S1
Clean Out	CO	CO	CO
Inspection Chamber	IC	IC	IC
Lift Station	LS	LS	LS
Manhole Vault			
Cap			
Cross			
Tee			
Reducer			
Coupling			
Valve			

STORM

	EXISTING	PROPOSED	FUTURE
Main	D	D	D
Main (in Profile)			
Service			
Catch Basin Lead	D	D	D
Ditch			
Grass Swale			
Concrete/Asphalt Swale			
Manhole (arrow indicates incoming flow)	D1	D1	D1
High Point Manhole	D1	D1	D1
Catch Basin Manhole	CBMH1	CBMH1	CBMH1
Catch Basin			
Inlet/Outlet Structure			
Cleanout	CO	CO	CO
Vault			
Culvert			
Cap			
Cross			
Tee			
Reducer			
Coupling			
Valve			

WATER

	EXISTING	PROPOSED	FUTURE
Main	W	W	W
Main (in Profile)			
Service			
Irrigation	IR	IR	IR
Hydrant			
Air Valve			
Blow-Off			
Curb Stop			
Manhole			
Meter	M	M	M
Cap			
Cross			
Tee			
Reducer			
Coupling			
Valve			

LANDSCAPE & VEGETATION

	EXISTING	PROPOSED	FUTURE
Treeline			
Coniferous Tree			
Deciduous Tree			
Tree of Unspecified Type			
Shrub			

SHALLOW UTILITIES

	EXISTING	PROPOSED	FUTURE
Electrical Line (Underground)	E	E	E
Overhead Utility Line	O/H	O/H	O/H
Conduits			
Gas Line	G	G	G
Telephone Line	T	T	T
Fibre Optic Line	FO	FO	FO
Cable Line	TV	TV	TV
Service Line			
Manhole			
Junction Box			
Electrical Tower Footing			
Street Light			
Utility Pole	UP	UP	UP
Utility Pole with Light			
Signal Light (Single)			
Signal Light (Double)			
Guy Anchor			
Kiosk	K	K	K
Vault (Underground)			
Gas Valve	G	G	G
Cabinet			
Pedestal			

STRUCTURES

	EXISTING	PROPOSED	FUTURE
Building Face			
Fence (Generic)	x x x	x x x	x x x
Fence (Barbed Wire)	xx xx xx	xx xx xx	xx xx xx
Fence (Chain Link)	◊ ◊ ◊	◊ ◊ ◊	◊ ◊ ◊
Fence (Wood Panel)	□ □ □	□ □ □	□ □ □
Fence (Post & Cable)	o o o	o o o	o o o
Railway Centre Line			
Retaining Wall			
Guardrail			
Mailbox			
Bollard			

COMMON ABBREVIATIONS

Abandoned	AB	Force Main	FM	Rollover Curb	RC
Alberta Survey Control Monument	ASCM	Future	FUT	Rolled Face	RF
Asbestos Cement	AC	Gas (Natural Gas)	G	Sanitary	SAN
Back of Walk	BW	High Density Polyethylene	HDPE	Separate Walk	SEP
Beginning of Curve	BC	Highway	HWY	Service	SERV
Bench Mark	BM	Horizontal Curve	HC	Sidewalk	WALK
Building	BLDG	Hub	H	South	S
Capacity	CAP	Hydrant	HYD	Southeast	SE
Cast Iron	CI	Inlet Control Device	ICD	Southwest	SW
Catch Basin	CB	Invert	INV	Specification	SPEC
Catch Basin Manhole	CBMH	Length of Curve	LC	Spiral to Curve	SC
Centre Line	℄	Lift Station	LS	Spiral to Tangent	ST
Certificate of Title	C OF T	Light Rail Transit	LRT	Spiral to Reverse Spiral	SRS
Clean Out	CO	Lip of Gutter	LG	Station	STA
Clearing & Grubbing	CL&GR	Manhole	MH	Storm	STM
Complete With	c/w	Municipal Reserve	MR	Straight Face	SF
Concrete	CON	North	N	Swale	SWL
Control	CTRL	Northeast	NE	Symbol	SYM
Corrugated Metal Pipe	CMP	Northwest	NW	Tangent	TAN
Culvert	CULV	Not to Scale	NTS	Tangent to Spiral	TS
Curb and Gutter	C&G	Number	No or #	Telephone	T
Curve to Spiral	CS	Offset	o/s	Temporary	TEMP
Degree	DEG or °	Pathway	PATH	Test Manhole	TMH
Delta	DL or Δ	Point of Intersection	PI	Top of Curb	TOC
Diameter	DIA or ⌀	Point of Common Curve	PCC	Top of Wall	TOW
Dimension	DIM	Point of Reverse Curve	PRC	Typical	TYP
Distance	DIST	Point On Curve	PC	Underground	UG
Drawing	DWG	Point On Tangent	PT	Utility Right-of-Way	URW
Dry Well	DW	Polyethylene	PE	Valve	V
Ductile Iron	DI	Polyvinyl Chloride	PVC	Velocity	VEL
East	E	Pressure Reducing Valve	PRV	Vertical	VERT
Edge of Gravel	EOG	Property Line	PL	Vertical Curve	VC
Edge of Pavement	EOP	Proposed	PR	Vitrified Clay Tile	VIT or VCT
Elevation	ELEV	Quantity	QTY	Volume	VOL
End of Curve	EC	Radius	R	Water	WAT
Environmental Reserve	ER	Railway	RWY	West	W
Existing	EX	Range	RGE	Weeping Tile Drain	WTD
Face of Curb	FC	Reducer	RED	Wheel Chair Ramp	WCR
Fibre Optic	FO	Reverse/Reversed	REV		
Flange	FL	Right-of-Way	ROW		

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PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — E. D. SEARS — 2020-02-21

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URBAN systems

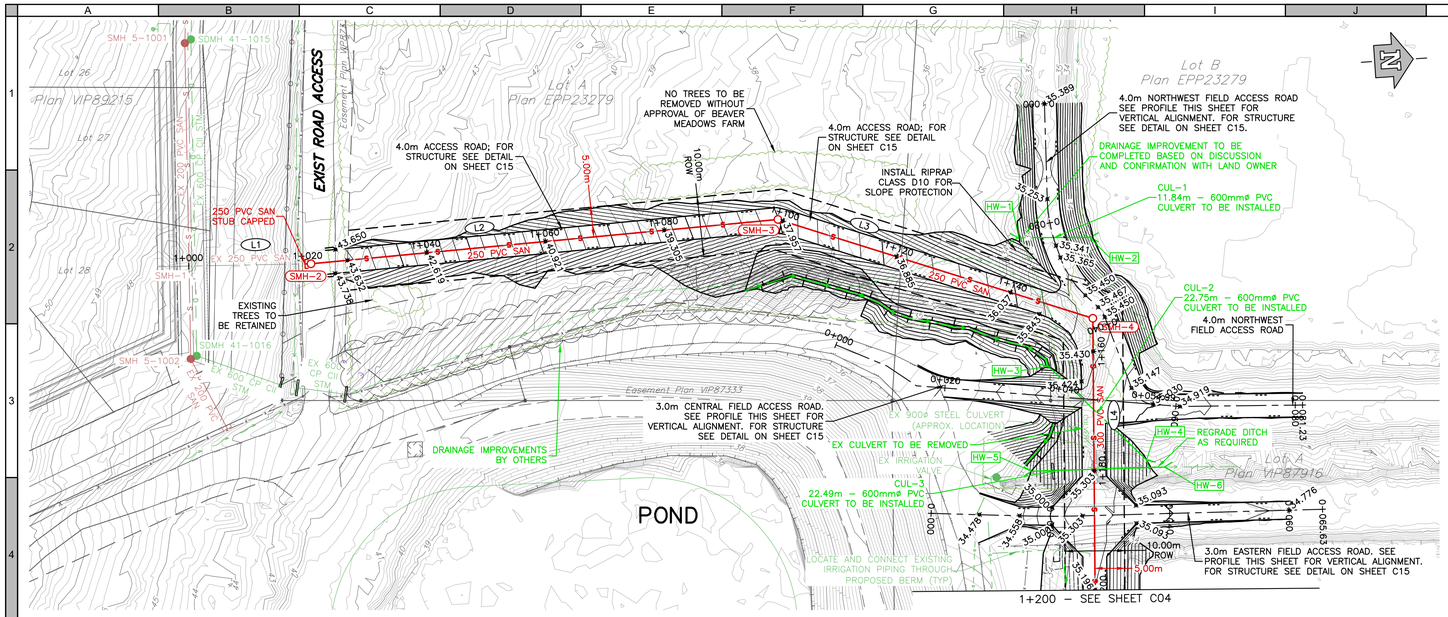
Scale: NOT TO SCALE

Quality Control by: S.Brubacher
Designed by: M.Stafford
Drawn by: D.Barry

City of Courtenay Greenwood Trunk Sewers
Legend

Sheet Number: 2 of 18
Project Number: 3222.0048.01
Drawing Number: C02
Revision: D

NOT FOR CONSTRUCTION



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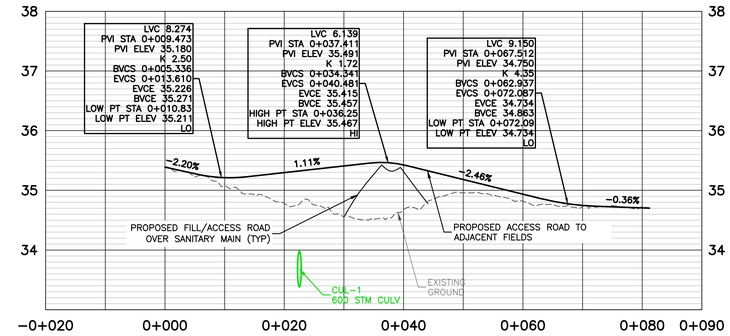
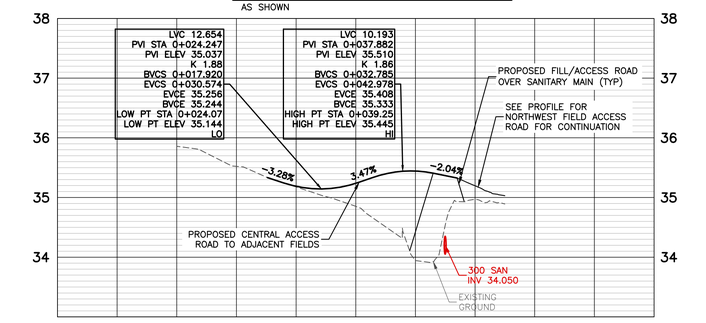
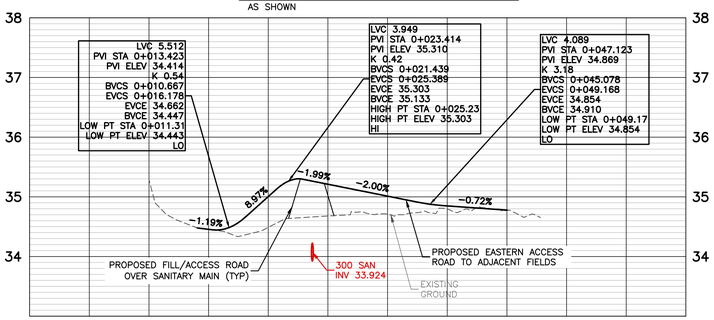
L2	1+020.511	1+099.122	78.611	358° 21' 14"	N 5509314.328 E 358581.423	N 5509392.907 E 358579.164
L3	1+099.122	1+154.454	55.332	021° 11' 58"	N 5509392.907 E 358579.164	N 5509444.494 E 358599.173
L4	1+154.454	1+307.126	152.672	093° 18' 04"	N 5509444.494 E 358599.173	N 5509435.703 E 358751.592



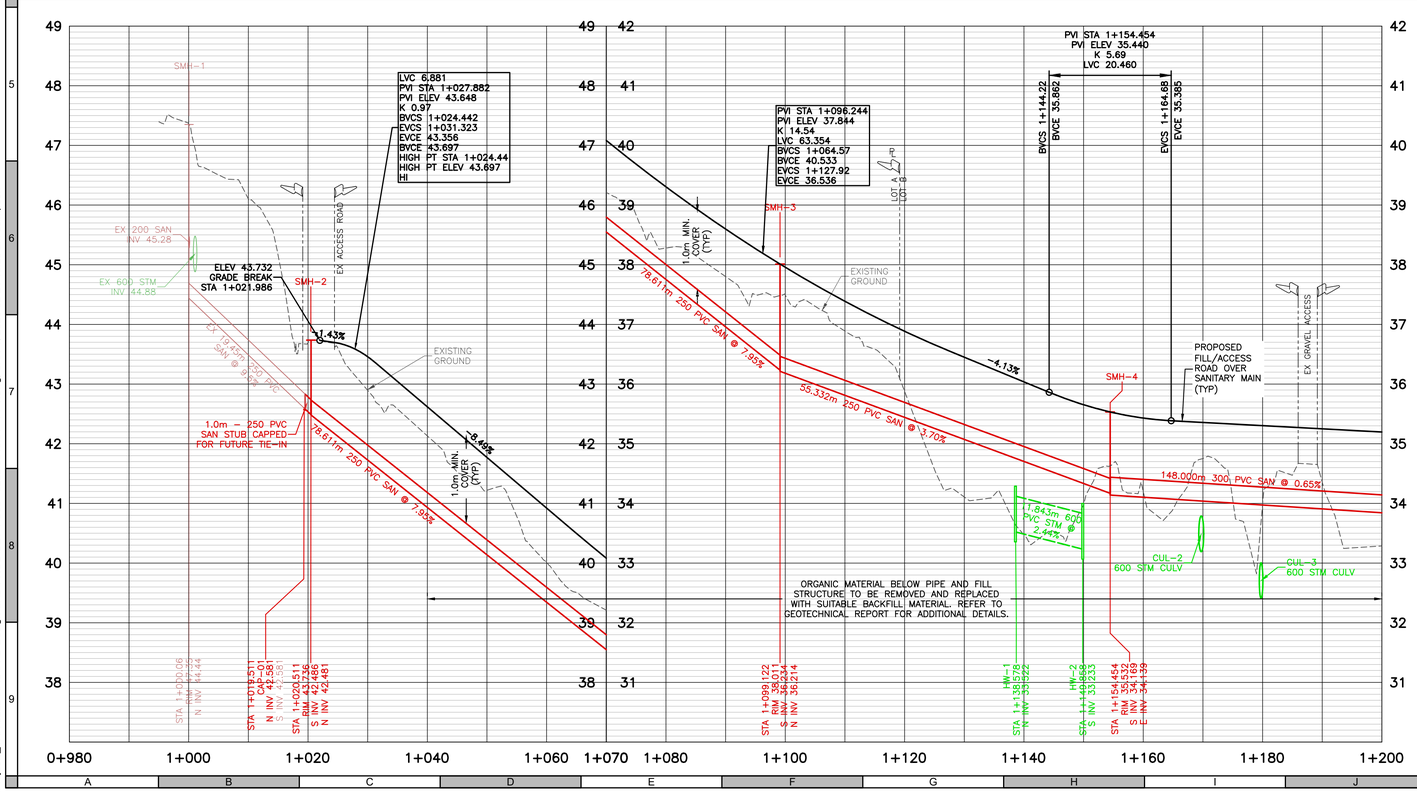
NORTHWEST FIELD ACCESS ROAD
AS SHOWN



CENTRAL ACCESS ROAD
AS SHOWN



EASTERN ACCESS ROAD
AS SHOWN



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SURVEY INFORMATION
Prepared by: 3D Geomatics
Coordinate System: UTM NAD 83 Zone 10
Compilation Date: August 21, 2018

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FEBRUARY 18, 2020
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Professional Seals
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA E. D. SEALIS
2020-02-21

#	Date	Issue / Revision	App
A	2018-12-20	Preliminary Design (Draft)	S.B.
B	2019-03-05	95% Design	S.B.
C	2019-04-18	100% Design	S.B.
D	2020-02-18	Tender	S.B.

URBAN systems

Scale H 5m 0 5 10 15
V 0.5m 0 0.5 1 1.5

Quality Control by S.Brubacher
Designed by M.Stafford
Drawn by D.Barry

City of Courtenay Greenwood Trunk Sewers
Sanitary Plan Profile
Station 1+000 to 1+200

Sheet Number 3 of 18
Project Number 3222.0048.01
Drawing Number C03
Revision D

NOT FOR CONSTRUCTION

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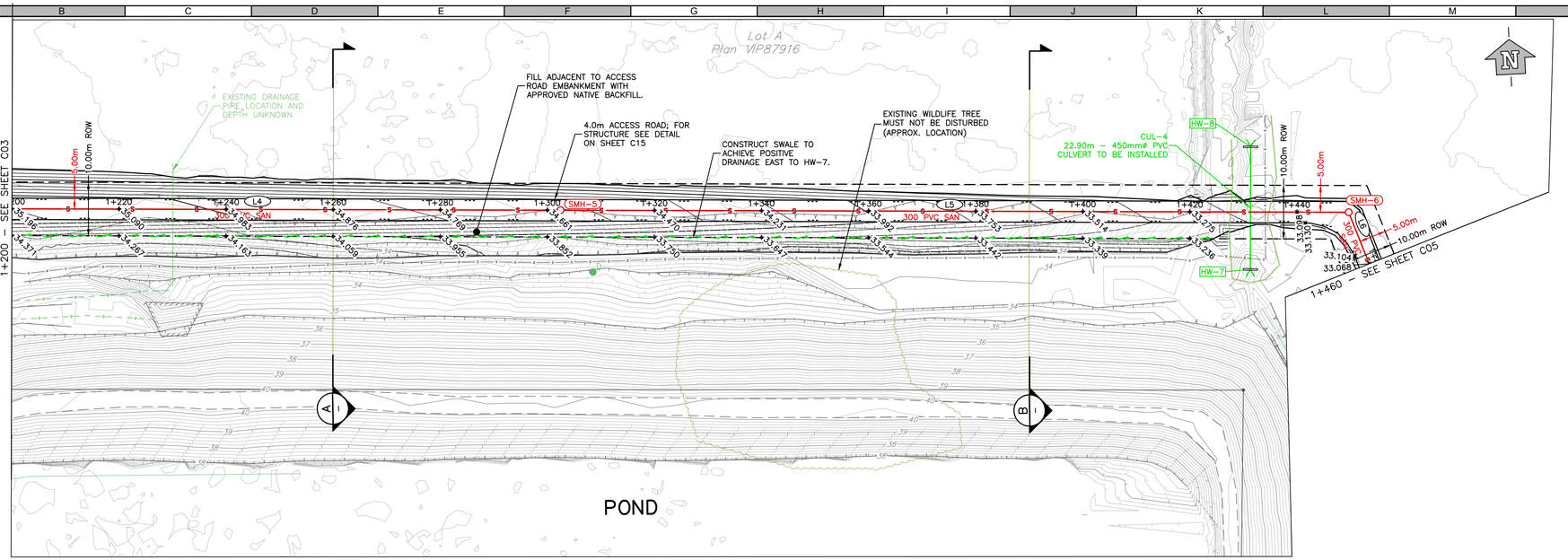
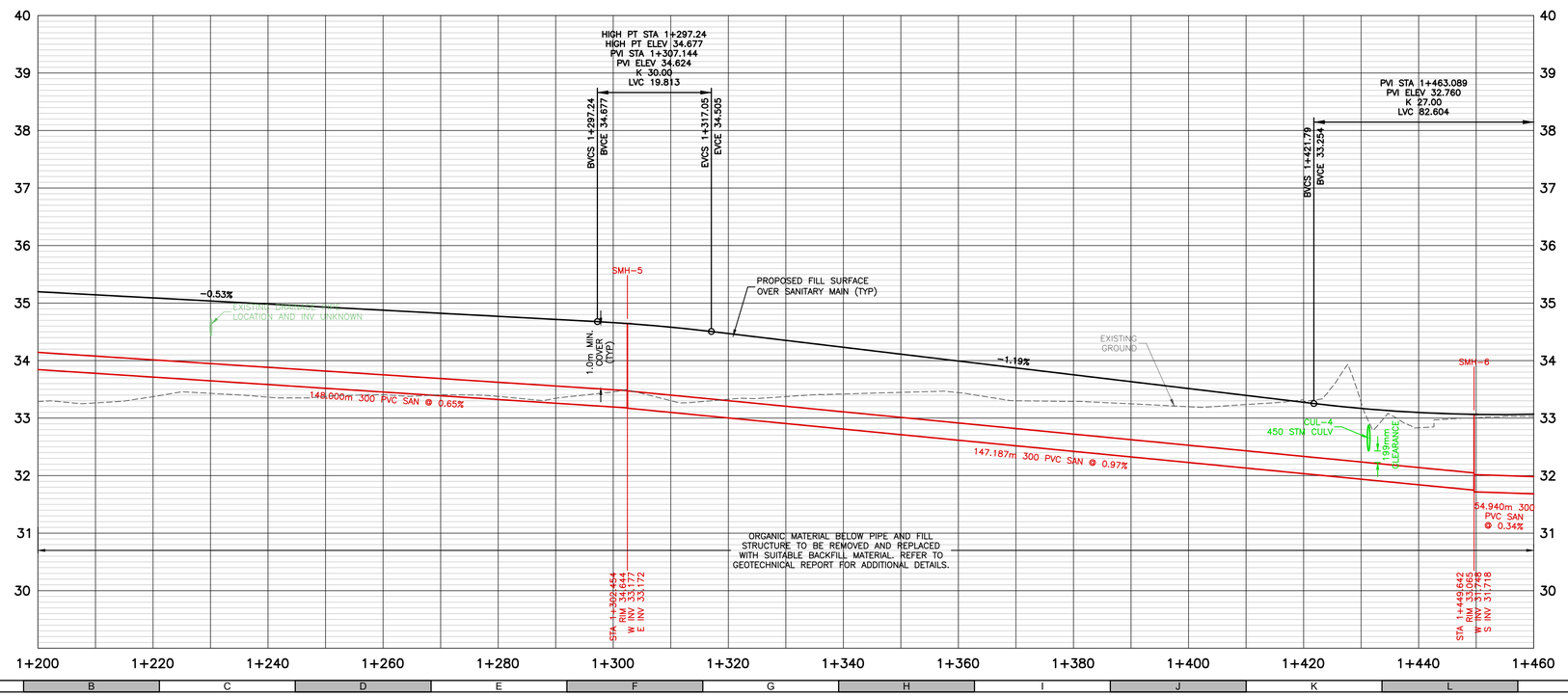
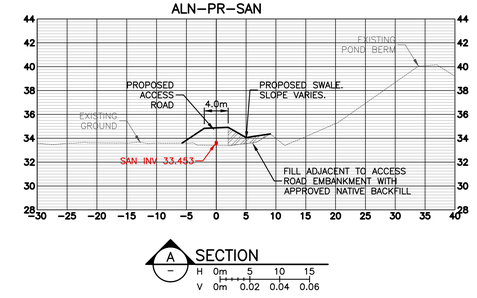


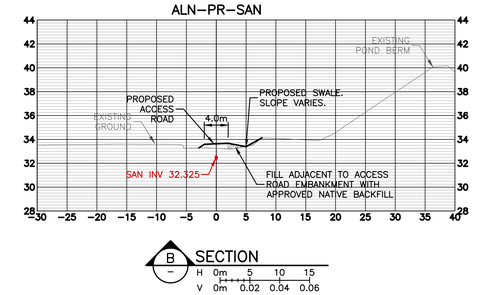
SANITARY MANHOLE TABLE					
#	STATION	RIM	MH DIA	INV IN	INV OUT
SMH-5	1+302.454	34.644	1.200	W 33.177	E 33.172
SMH-6	1+449.642	33.065	1.200	W 31.748	S 31.718

GEOMETRY						
	START	END	LENGTH	AZIMUTH/Δ	START	END
L4	1+154.454	1+307.126	152.672	093° 18' 04"	N 5509444.494 E 358599.173	N 5509435.703 E 358751.592
L5	1+307.126	1+449.642	142.516	093° 18' 04"	N 5509435.703 E 358751.592	N 5509427.496 E 358893.871
L6	1+449.642	1+504.582	54.940	161° 23' 41"	N 5509427.496 E 358893.871	N 5509375.427 E 358911.400

STORM MISC TABLE								
#	LENGTH	SIZE	HW IN	INV IN	CENTER IN	HW OUT	INV OUT	CENTER OUT
CUL-4	22.898	0.450	HW-7	32.483	N 5509417.845 E 358874.949	HW-8	32.367	N 5509440.705 E 358876.268







SURVEY INFORMATION
Prepared by: 3D Geomatics
Coordinate System: UTM NAD 83 Zone 10
Compilation Date: August 21, 2018

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Professional Seals
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA E. D. SEALS
2020-02-21

#	Date	Issue / Revision	App
A	2018-12-20	Preliminary Design (Draft)	S.B.
B	2019-03-05	95% Design	S.B.
C	2019-04-18	100% Design	S.B.
D	2020-02-18	Tender	S.B.

URBAN systems

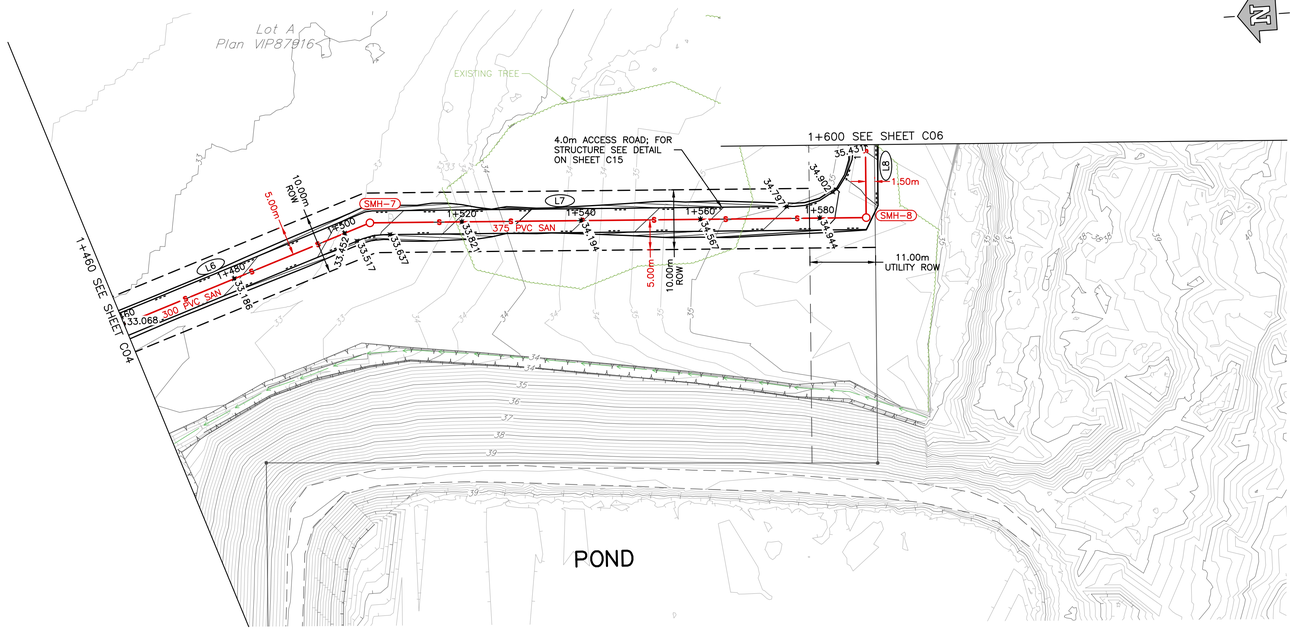
Scale H 5m 0 5 10 15
V 0.5m 0 0.5 1 1.5

Quality Control by S.Brubacher
Designed by M.Stafford
Drawn by D.Barry

City of Courtenay Greenwood Trunk Sewers
Sanitary Plan Profile
Station 1+200 to 1+460

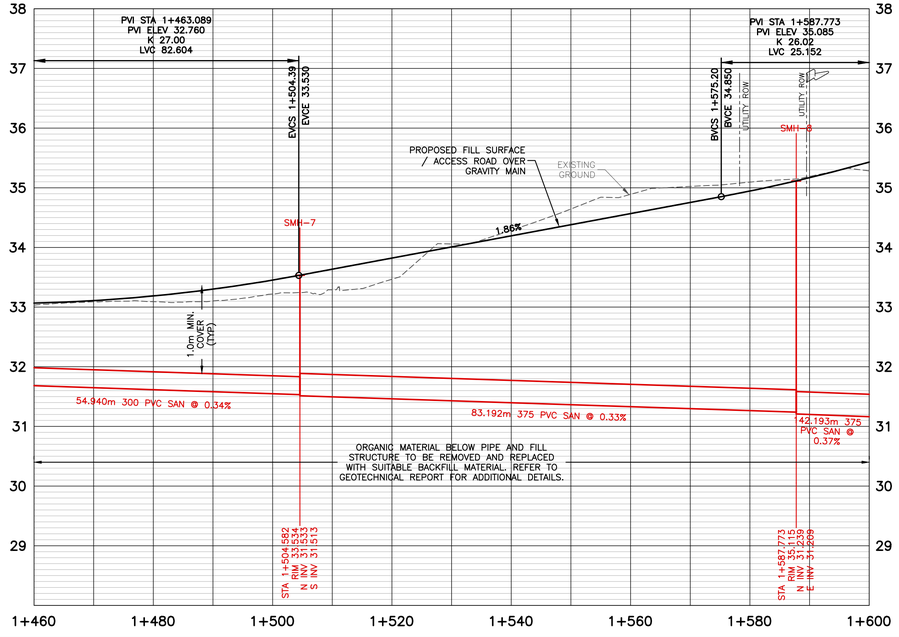
Sheet Number 4 of 18
Project Number 3222.0048.01
Drawing Number C04
Revision D

NOT FOR CONSTRUCTION



SANITARY MANHOLE TABLE					
#	STATION	RIM	MH DIA	INV IN	INV OUT
SMH-7	1+504.582	33.534	1.200	N 31.533	S 31.513
SMH-8	1+587.773	35.115	1.200	N 31.239	E 31.209

GEOMETRY						
	START	END	LENGTH	AZIMUTH/Δ	START	END
L6	1+449.642	1+504.582	54.940	161° 23' 41"	N 5509427.496 E 358893.871	N 5509375.427 E 358911.400
L7	1+504.582	1+587.773	83.192	183° 11' 03"	N 5509375.427 E 358911.400	N 5509292.364 E 358906.779
L8	1+587.773	1+696.654	108.880	093° 11' 18"	N 5509292.364 E 358906.779	N 5509286.308 E 359015.491



SURVEY INFORMATION
Prepared by: 3D Geomatics
Coordinate System: UTM NAD 83 Zone 10
Compilation Date: August 21, 2018

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PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA E. D. SEARS
2020-02-21

#	Date	Issue / Revision	App
A	2018-12-20	Preliminary Design (Draft)	S.B.
B	2019-03-05	95% Design	S.B.
C	2019-04-18	100% Design	S.B.
D	2020-02-18	Tender	S.B.

URBAN systems

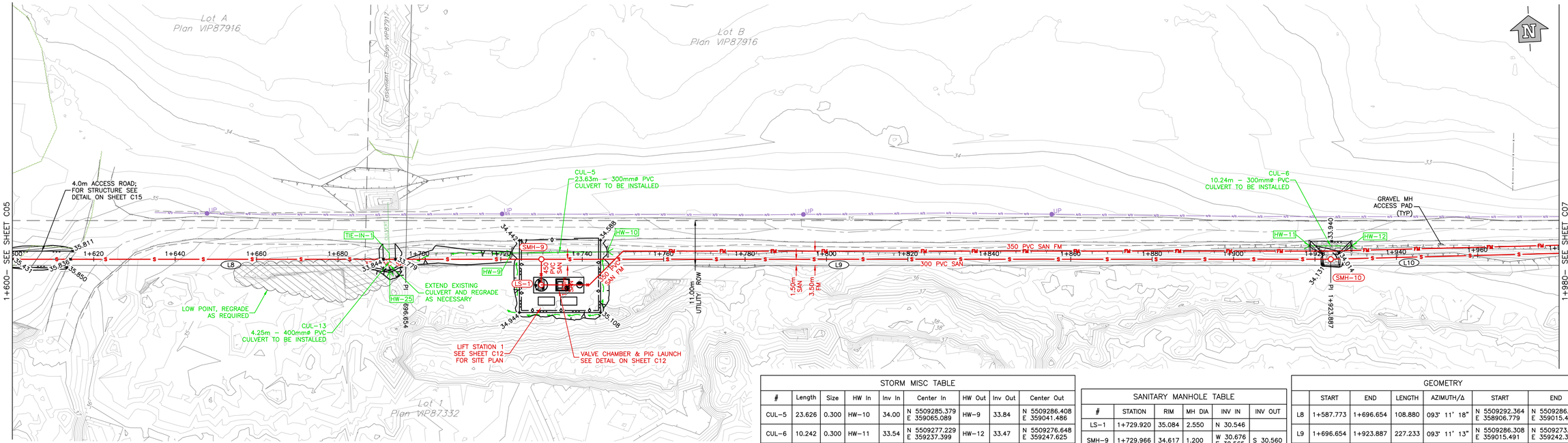
Scale H 5m 0 5 10 15
V 0.5m 0 0.5 1 1.5

Quality Control by S.Brubacher
Designed by M.Stafford
Drawn by D.Barry

City of Courtenay Greenwood Trunk Sewers
Sanitary Plan Profile
Station 1+460 to 1+600

Sheet Number 5 of 18
Project Number 3222.0048.01
Drawing Number C05
Revision D

NOT FOR CONSTRUCTION



STORM MISC TABLE

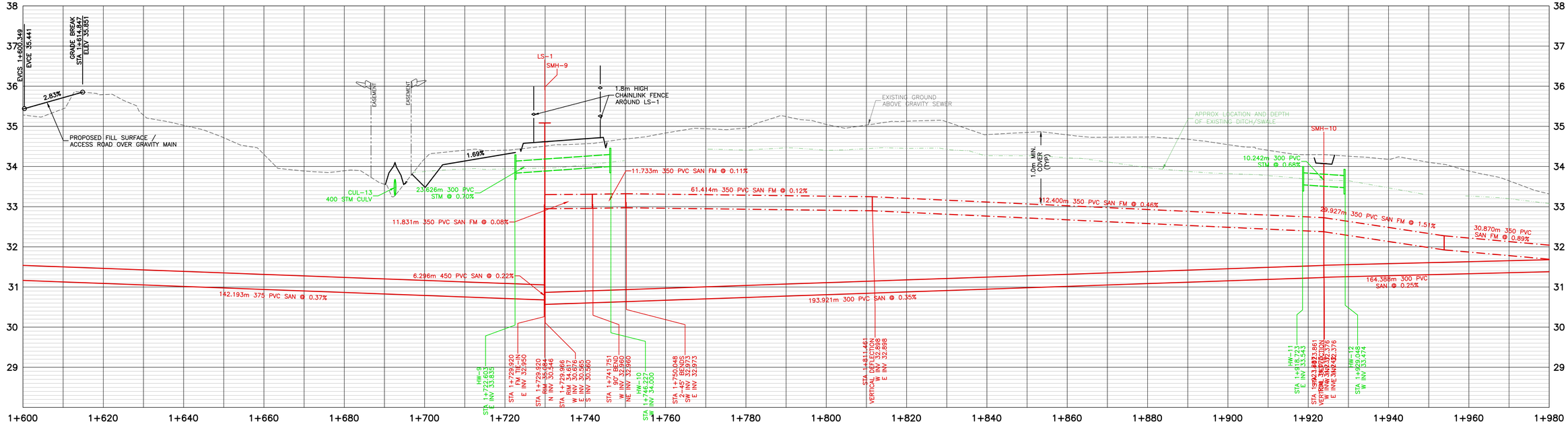
#	Length	Size	HW In	Inv In	Center In	HW Out	Inv Out	Center Out
CUL–5	23.626	0.300	HW–10	34.00	N 5509285.379 E 359065.089	HW–9	33.84	N 5509286.408 E 359041.486
CUL–6	10.242	0.300	HW–11	33.54	N 5509277.229 E 359237.399	HW–12	33.47	N 5509276.648 E 359247.625
CUL–13	4.248	0.400	TIE–IN–1	33.21	N 5509288.041 E 359011.515	HW–25	33.40	N 5509283.795 E 359011.396

SANITARY MANHOLE TABLE

#	STATION	RIM	MH DIA	INV IN	INV OUT
LS–1	1+729.920	35.084	2.550	N 30.546	
SMH–9	1+729.966	34.617	1.200	W 30.676 E 30.565	S 30.560
SMH–10	1+923.887	34.073	1.200	E 31.242	W 31.237

GEOMETRY

	START	END	LENGTH	AZIMUTH/Δ	START	END
L8	1+587.773	1+696.654	108.880	093° 11' 18"	N 5509292.364 E 358906.779	N 5509286.308 E 359015.491
L9	1+696.654	1+923.887	227.233	093° 11' 13"	N 5509286.308 E 359015.491	N 5509273.675 E 359242.373
L10	1+923.887	2+088.276	164.388	091° 42' 27"	N 5509273.675 E 359242.373	N 5509268.777 E 359406.688



SURVEY INFORMATION
Prepared by: 3D Geomatics
Coordinate System: UTM NAD 83 Zone 10
Compilation Date: August 21, 2018

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PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
E. D. SEARS
2020-02-21

#	Date	Issue / Revision	App
A	2018-12-20	Preliminary Design (Draft)	S.B.
B	2019-03-05	95% Design	S.B.
C	2019-04-18	100% Design	S.B.
D	2020-02-18	Tender	S.B.

CITY OF COURTENAY

URBAN systems

Scale H 5m 0 5 10 15
V 0.5m 0 0.5 1 1.5

Quality Control by S.Brubacher
Designed by M.Stafford
Drawn by D.Barry

City of Courtenay Greenwood Trunk Sewers
Sanitary Plan Profile
Station 1+600 to 1+980

Sheet Number 6 of 18
Project Number 3222.0048.01
Drawing Number C06
Revision D

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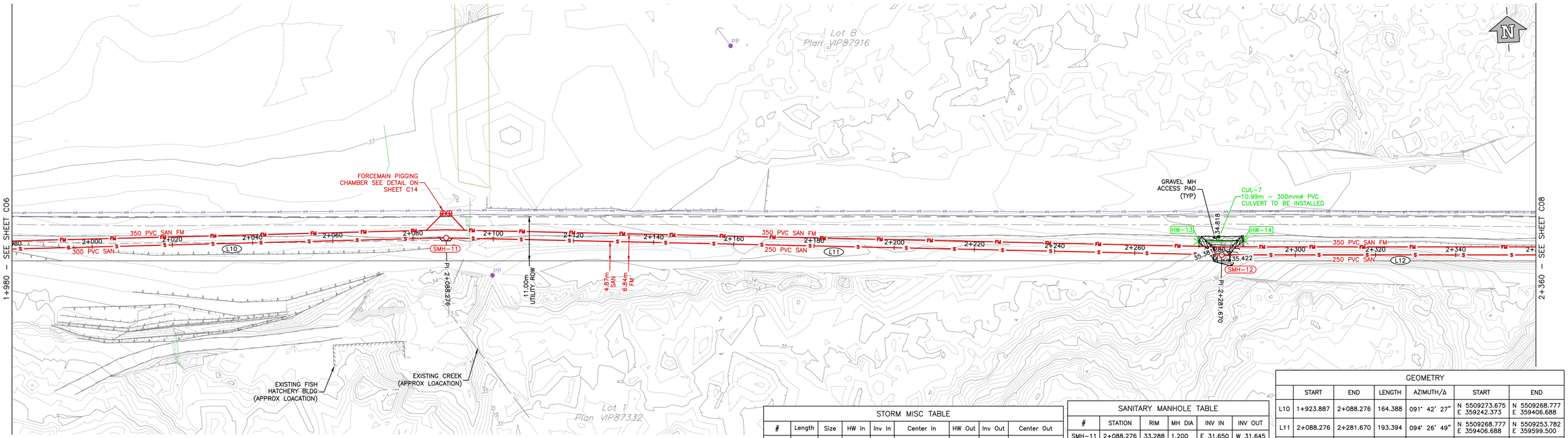
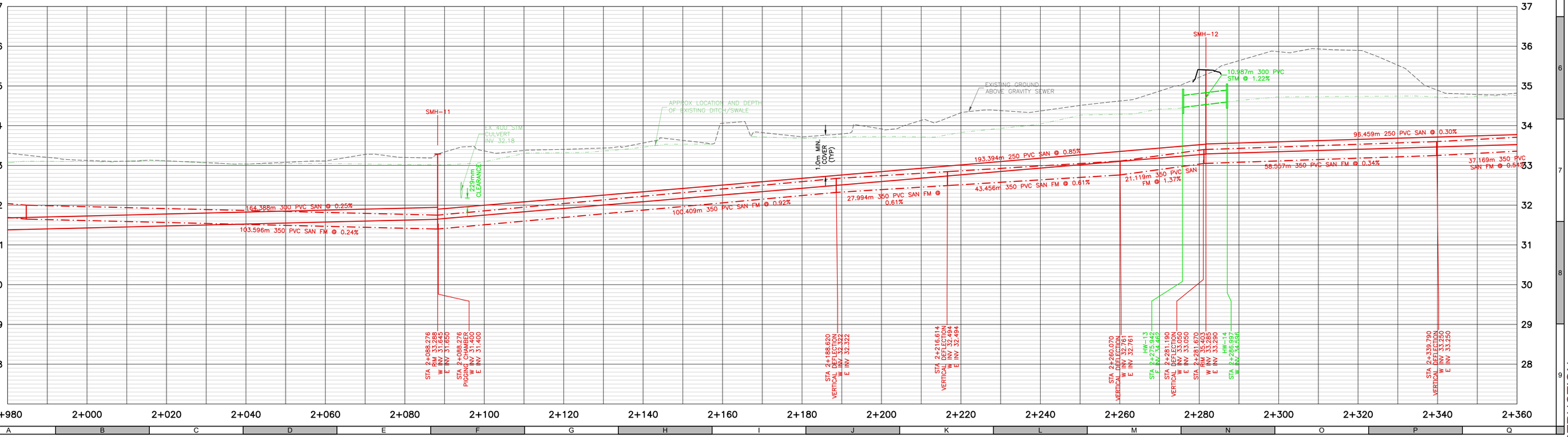


STORM MISC TABLE								
#	Length	Size	HW In	Inv In	Center In	HW Out	Inv Out	Center Out
CUL-7	10.987	0.300	HW-13	34.46	N 5509257.388 E 359594.035	HW-14	34.60	N 5509256.973 E 359605.014

SANITARY MANHOLE TABLE					
#	STATION	RIM	MH DIA	INV IN	INV OUT
SMH-11	2+088.276	33.288	1.200	E 31.650	W 31.645
SMH-12	2+281.670	35.403	1.200	E 33.290	W 33.285

GEOMETRY						
	START	END	LENGTH	AZIMUTH/Δ	START	END
L10	1+923.887	2+088.276	164.388	091° 42' 27"	N 5509273.675 E 359242.373	N 5509268.777 E 359406.688
L11	2+088.276	2+281.670	193.394	094° 26' 49"	N 5509268.777 E 359406.688	N 5509253.782 E 359599.500
L12	2+281.670	2+499.092	217.422	093° 11' 19"	N 5509253.782 E 359599.500	N 5509241.688 E 359816.585



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SURVEY INFORMATION
Prepared by: 3D Geomatics
Coordinate System: UTM NAD 83 Zone 10
Compilation Date: August 21, 2018

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PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA
E. D. SEALS
2020-02-21

#	Date	Issue / Revision	App
A	2018-12-20	Preliminary Design (Draft)	S.B.
B	2019-03-05	95% Design	S.B.
C	2019-04-18	100% Design	S.B.
D	2020-02-18	Tender	S.B.

URBAN systems

Scale H 5m 0 5 10 15
V 0.5m 0 0.5 1 1.5

Quality Control by	S.Brubacher
Designed by	M.Stafford
Drawn by	D.Barry

City of Courtenay Greenwood Trunk Sewers
Sanitary Plan Profile
Station 1+980 to 2+360

Sheet Number		7 of 18
Project Number	Drawing Number	Revision
3222.0048.01	C07	D

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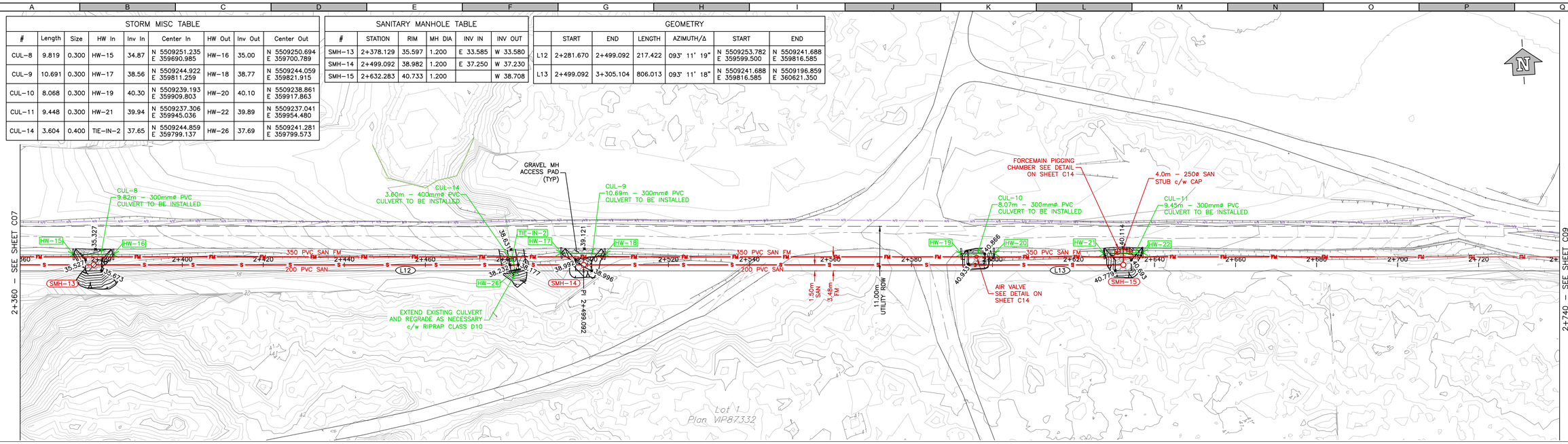
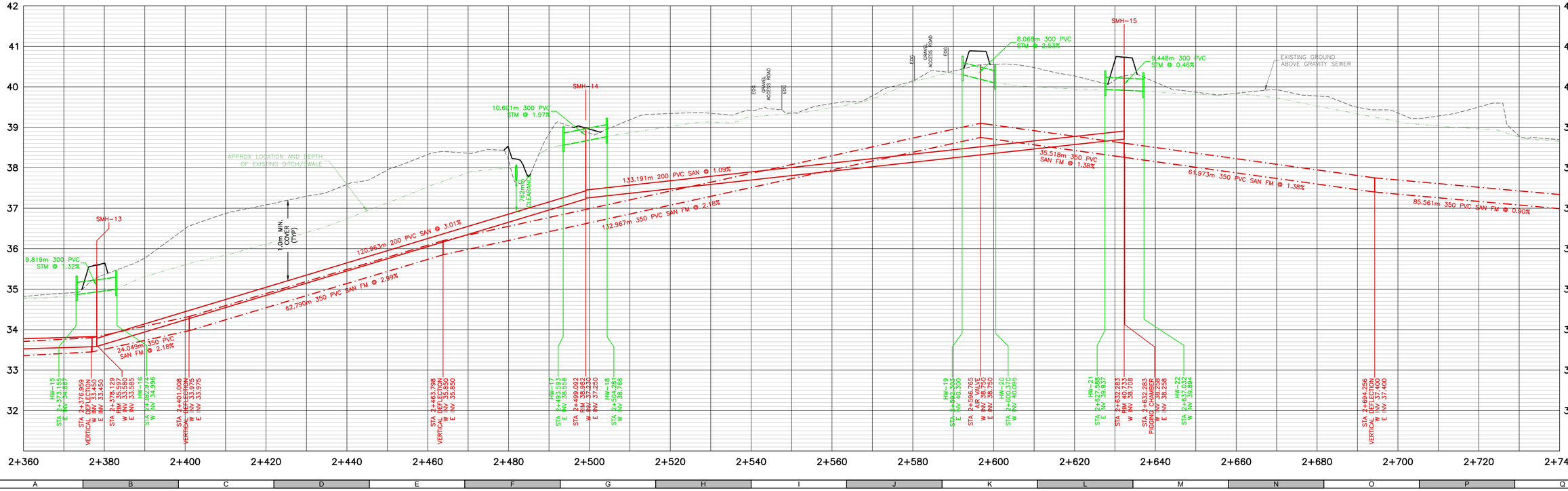
STORM MISC TABLE								
#	Length	Size	HW In	Inv In	Center In	HW Out	Inv Out	Center Out
CUL–8	9.819	0.300	HW–15	34.87	N 5509251.235 E 359690.985	HW–16	35.00	N 5509250.694 E 359700.789
CUL–9	10.691	0.300	HW–17	38.56	N 5509244.922 E 359811.259	HW–18	38.77	N 5509244.059 E 359821.915
CUL–10	8.068	0.300	HW–19	40.30	N 5509239.193 E 359909.803	HW–20	40.10	N 5509238.861 E 359917.863
CUL–11	9.448	0.300	HW–21	39.94	N 5509237.306 E 359945.036	HW–22	39.89	N 5509237.041 E 359954.480
CUL–14	3.604	0.400	TIE–IN–2	37.65	N 5509244.859 E 359799.137	HW–26	37.69	N 5509241.281 E 359799.573

SANITARY MANHOLE TABLE					
#	STATION	RIM	MH DIA	INV IN	INV OUT
SMH–13	2+378.129	35.597	1.200	E 33.585	W 33.580
SMH–14	2+499.092	38.982	1.200	E 37.250	W 37.230
SMH–15	2+632.283	40.733	1.200		W 38.708

GEOMETRY						
	START	END	LENGTH	AZIMUTH/Δ	START	END
L12	2+281.670	2+499.092	217.422	093° 11' 19"	N 5509253.782 E 359599.500	N 5509241.688 E 359816.585
L13	2+499.092	3+305.104	806.013	093° 11' 18"	N 5509241.688 E 359816.585	N 5509196.859 E 360621.350





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SURVEY INFORMATION
Prepared by: 3D Geomatics
Coordinate System: UTM NAD 83 Zone 10
Compilation Date: August 21, 2018

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FEBRUARY 18, 2020
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Professional Seals
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA E. D. SEABS 39819 ENGINEER
2020-02-21

#	Date	Issue / Revision	App
A	2018-12-20	Preliminary Design (Draft)	S.B.
B	2019-03-05	95% Design	S.B.
C	2019-04-18	100% Design	S.B.
D	2020-02-18	Tender	S.B.

URBAN systems

Scale H 5m 0 5 10 15
V 0.5m 0 0.5 1 1.5

Quality Control by	S.Brubacher
Designed by	M.Stafford
Drawn by	D.Barry

City of Courtenay Greenwood Trunk Sewers
Sanitary Plan Profile
Station 2+360 to 2+740

Sheet Number		8 of 18
Project Number	Drawing Number	Revision
3222.0048.01	C08	D

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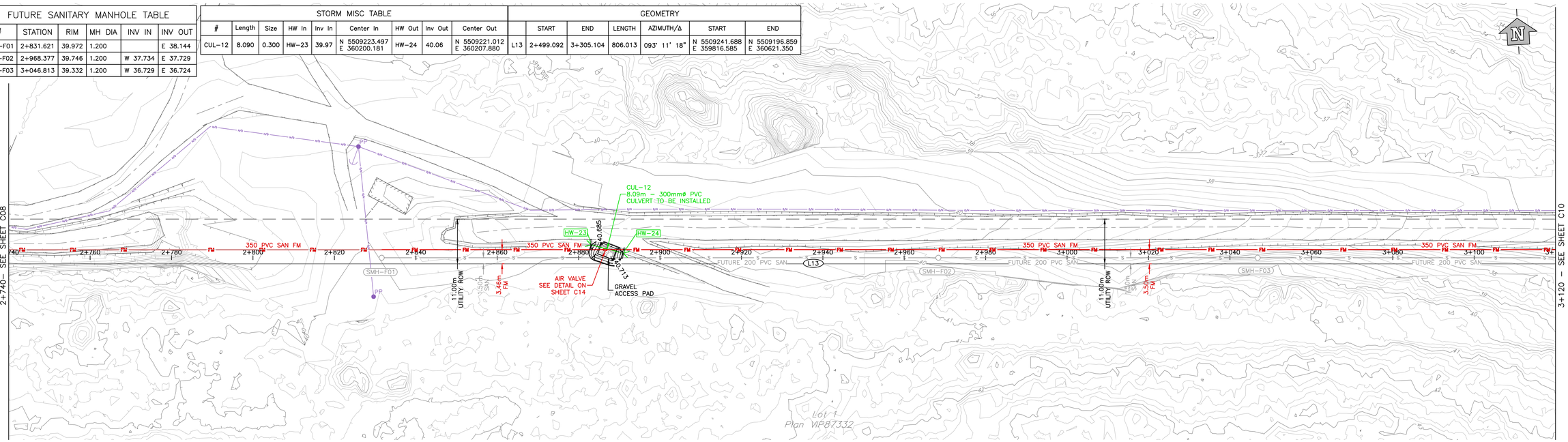
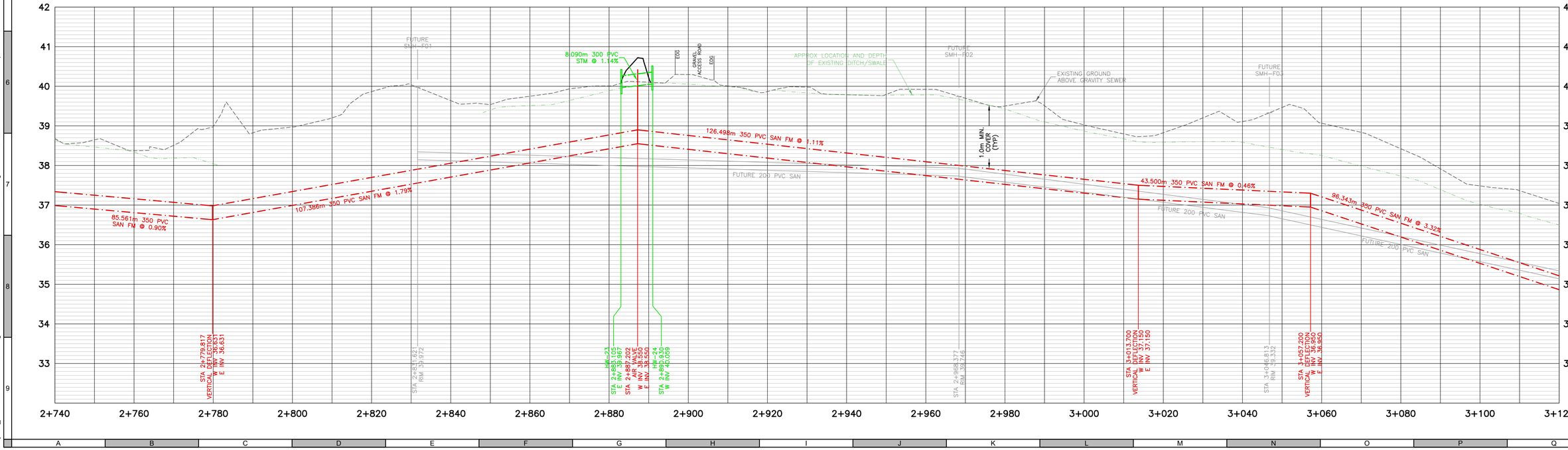
FUTURE SANITARY MANHOLE TABLE					
#	STATION	RIM	MH DIA	INV IN	INV OUT
SMH-F01	2+831.621	39.972	1.200		E 38.144
SMH-F02	2+968.377	39.746	1.200	W 37.734	E 37.729
SMH-F03	3+046.813	39.332	1.200	W 36.729	E 36.724

STORM MISC TABLE									
#	Length	Size	HW In	Inv In	Center In	HW Out	Inv Out	Center Out
CUL-12	8.090	0.300	HW-23	39.97	N 5509223.497 E 360200.181	HW-24	40.06	N 5509221.012 E 360207.880

GEOMETRY						
	START	END	LENGTH	AZIMUTH/Δ	START	END
L13	2+499.092	3+305.104	806.013	093° 11' 18"	N 5509241.688 E 359816.585	N 5509196.859 E 360621.350





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SURVEY INFORMATION
Prepared by: 3D Geomatics
Coordinate System: UTM NAD 83 Zone 10
Compilation Date: August 21, 2018

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FEBRUARY 18, 2020
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Professional Seals
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA E. D. SEABS 39844 ENGINEER
2020-02-21

#	Date	Issue / Revision	App
A	2018-12-20	Preliminary Design (Draft)	S.B.
B	2019-03-05	95% Design	S.B.
C	2019-04-18	100% Design	S.B.
D	2020-02-18	Tender	S.B.

URBAN systems

Scale H 5m 0 5 10 15
V 0.5m 0 0.5 1 1.5

Quality Control by S.Brubacher
Designed by M.Stafford
Drawn by D.Barry

City of Courtenay Greenwood Trunk Sewers
Sanitary Plan Profile
Station 2+740 to 3+120

Sheet Number 9 of 18
Project Number 3222.0048.01
Drawing Number C09
Revision D

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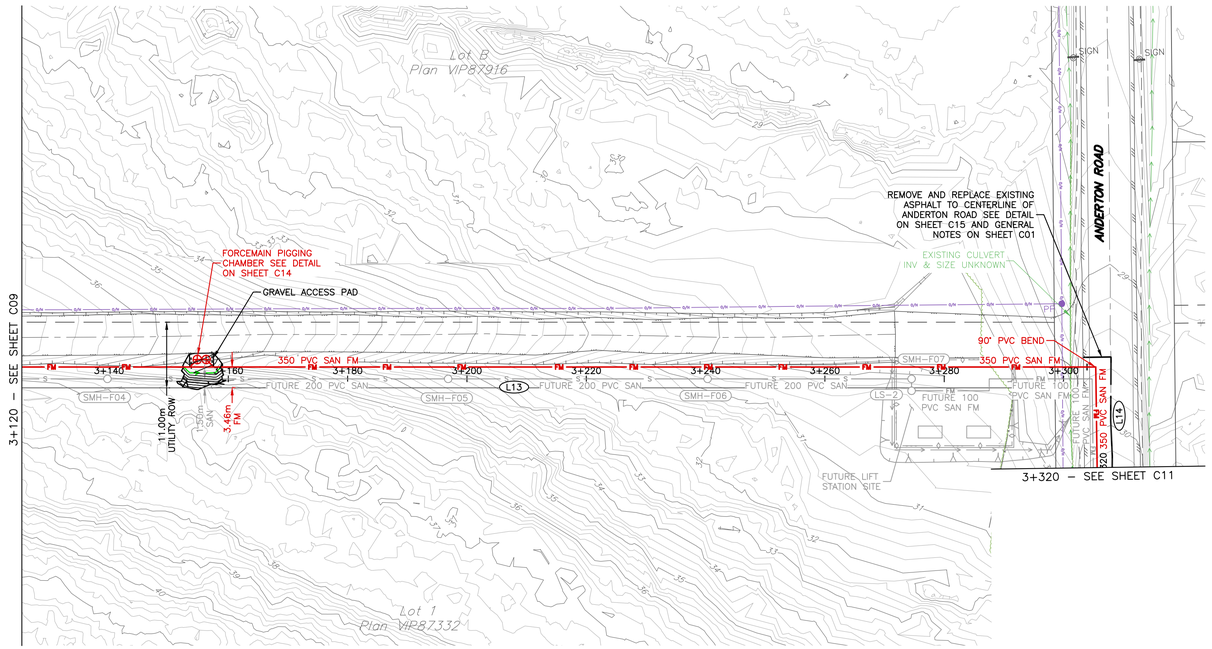

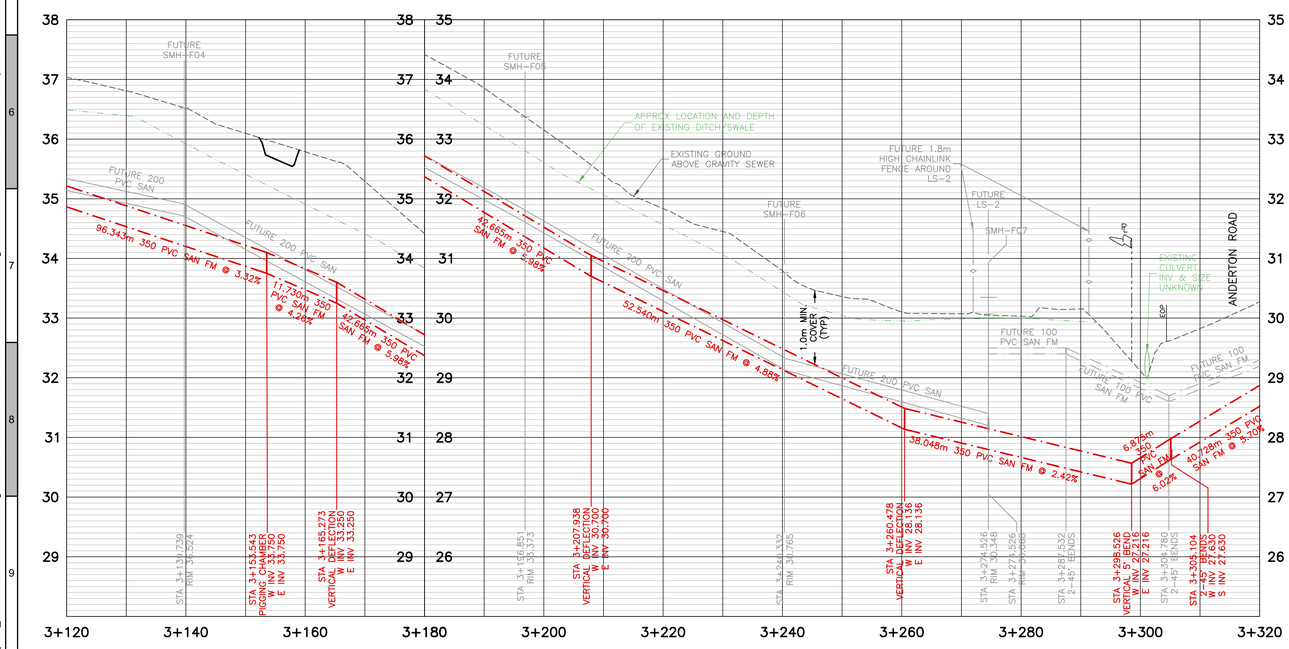

FUTURE SANITARY MANHOLE TABLE					
#	STATION	RIM	MH DIA	INV IN	INV OUT
LS–2	3+274.526	30.348	2.550	N 28.070	
SMH–F04	3+139.739	36.524	1.200	W 34.712	E 34.707
SMH–F05	3+196.851	33.373	1.200	W 31.611	E 31.606
SMH–F06	3+240.332	30.765	1.200	W 29.134	E 29.129
SMH–F07	3+274.526	30.068	1.200	W 28.200	S 28.150

GEOMETRY						
	START	END	LENGTH	AZIMUTH/Δ	START	END
L13	2+499.092	3+305.104	806.013	093° 11' 18"	N 5509241.688 E 359816.585	N 5509196.859 E 360621.350
L14	3+305.104	3+416.042	110.938	182° 24' 12"	N 5509196.859 E 360621.350	N 5509086.018 E 360616.698

SURVEY INFORMATION
Prepared by: 3D Geomatics
Coordinate System: UTM NAD 83 Zone 10
Compilation Date: August 21, 2018

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PROFESSIONAL ENGINEER
2020-02-21

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C	2019-04-18	100% Design	S.B.
D	2020-02-18	Tender	S.B.

URBAN systems

Scale H 5m 0 5 10 15
V 0.5m 0 0.5 1 1.5

Quality Control by	S.Brubacher
Designed by	M.Stafford
Drawn by	D.Barry

City of Courtenay Greenwood Trunk Sewers
Sanitary Plan Profile
Station 3+120 to 3+320

Sheet Number		10 of 18
Project Number	Drawing Number	Revision
3222.0048.01	C10	D

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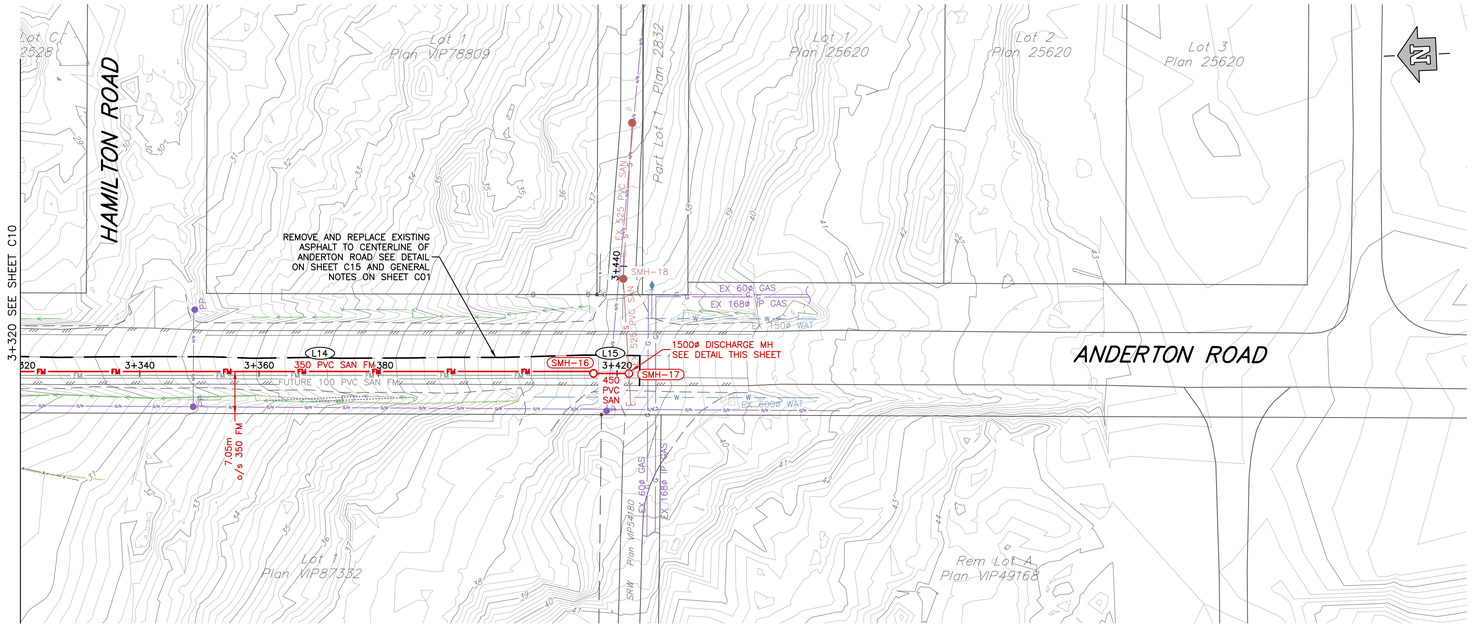
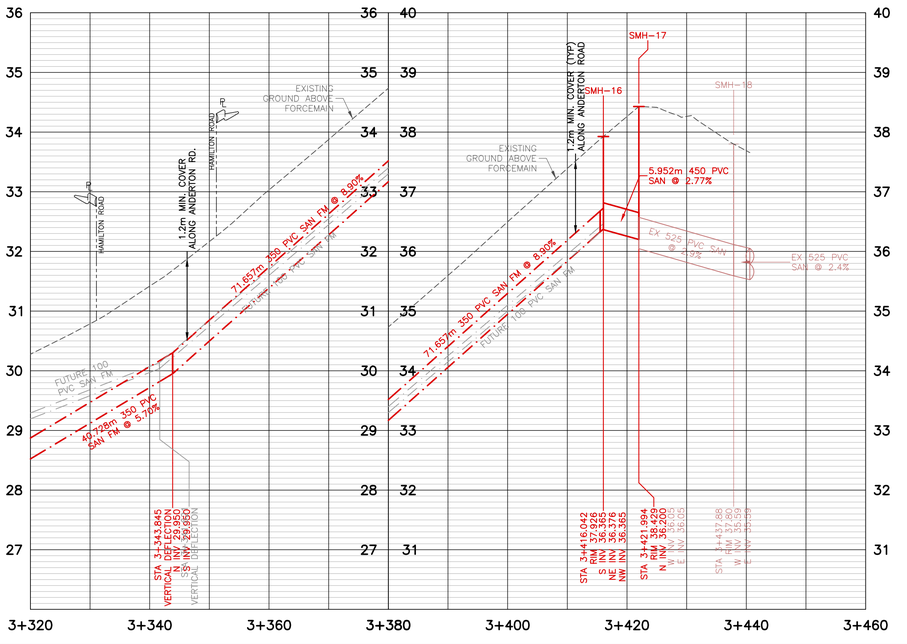
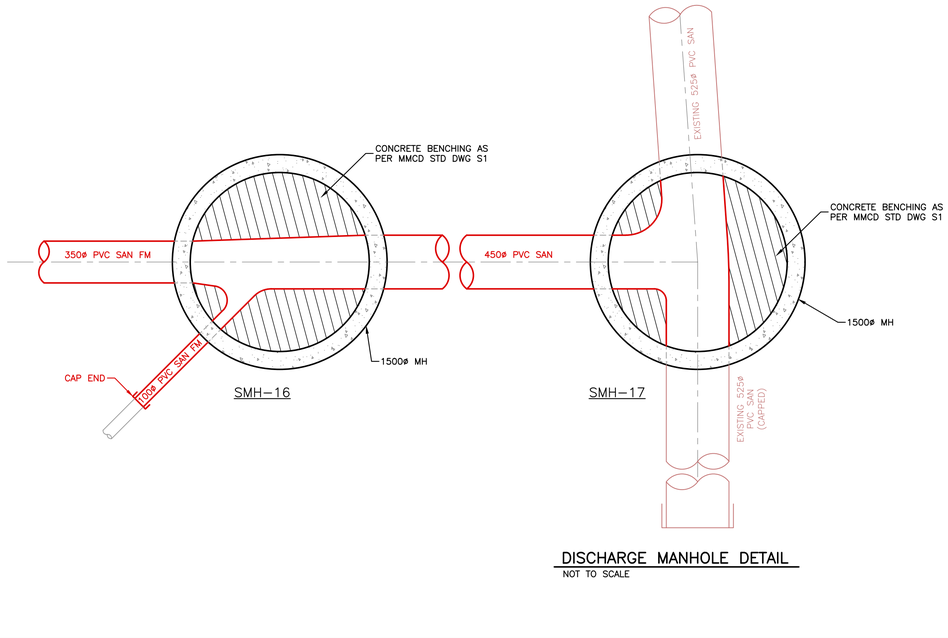


GEOMETRY						
	START	END	LENGTH	AZIMUTH/Δ	START	END
L14	3+305.104	3+416.042	110.938	182° 24' 12"	N 5509196.859 E 360621.350	N 5509086.018 E 360616.698
L15	3+416.042	3+421.994	5.952	182° 35' 26"	N 5509086.018 E 360616.698	N 5509080.072 E 360616.429

SANITARY MANHOLE TABLE					
#	STATION	RIM	MH DIA	INV IN	INV OUT
SMH-16	3+416.042	37.926	1.500	NE 36.376	S 36.365 NW 36.365
SMH-17	3+421.994	38.429	1.500	N 36.200	





DISCHARGE MANHOLE DETAIL
NOT TO SCALE

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WARNING
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URBAN systems

Scale H 5m 0 5 10 15
V 0.5m 0 0.5 1 1.5

Quality Control by S.Brubacher
Designed by M.Stafford
Drawn by D.Barry

City of Courtenay Greenwood Trunk Sewers
Sanitary Plan Profile
Station 3+320 to 3+460

Sheet Number 11 of 18
Project Number 3222.0048.01
Drawing Number C11
Revision D

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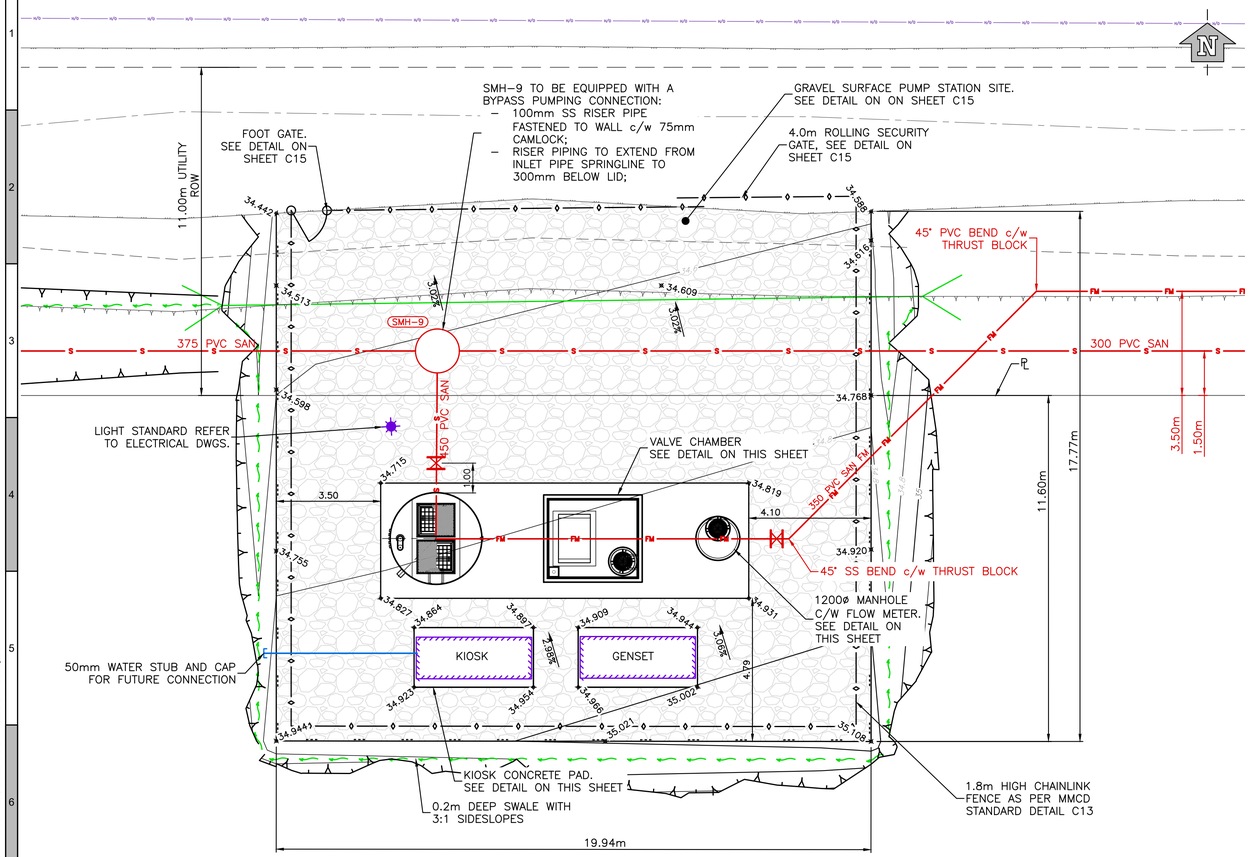
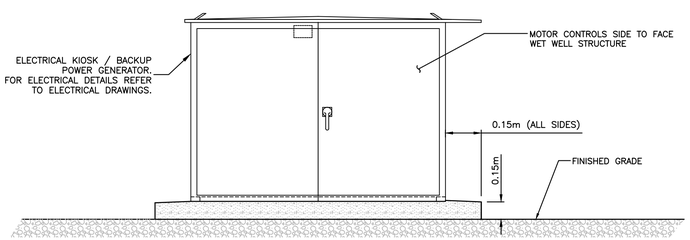
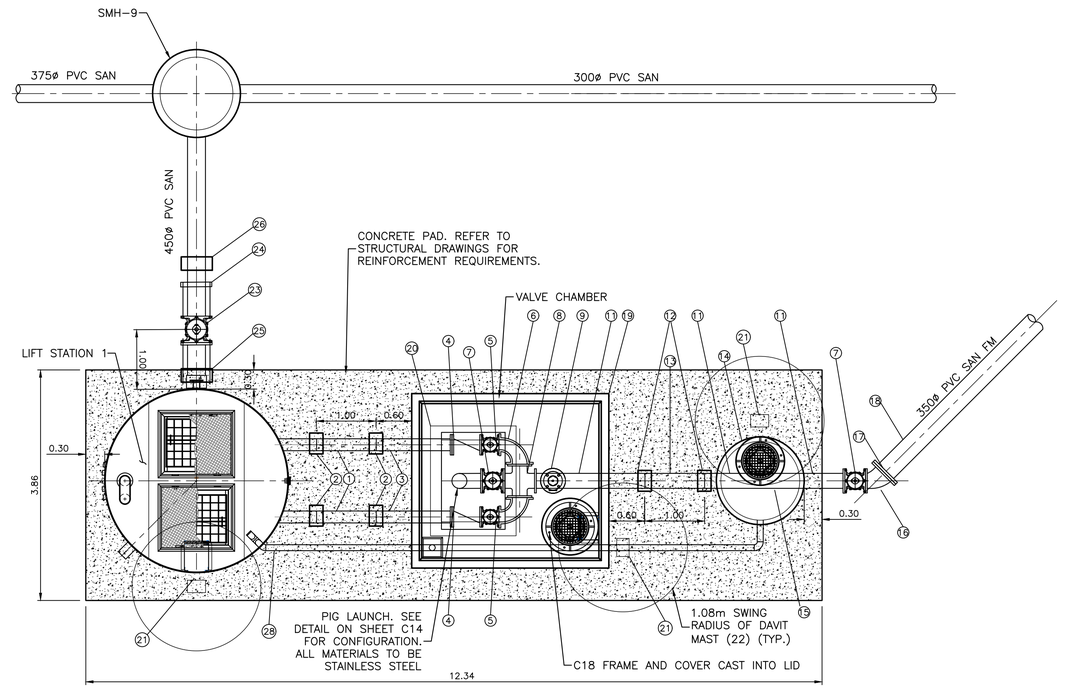


LIFT STATION 1 – PLAN VIEW
SCALE 1:100

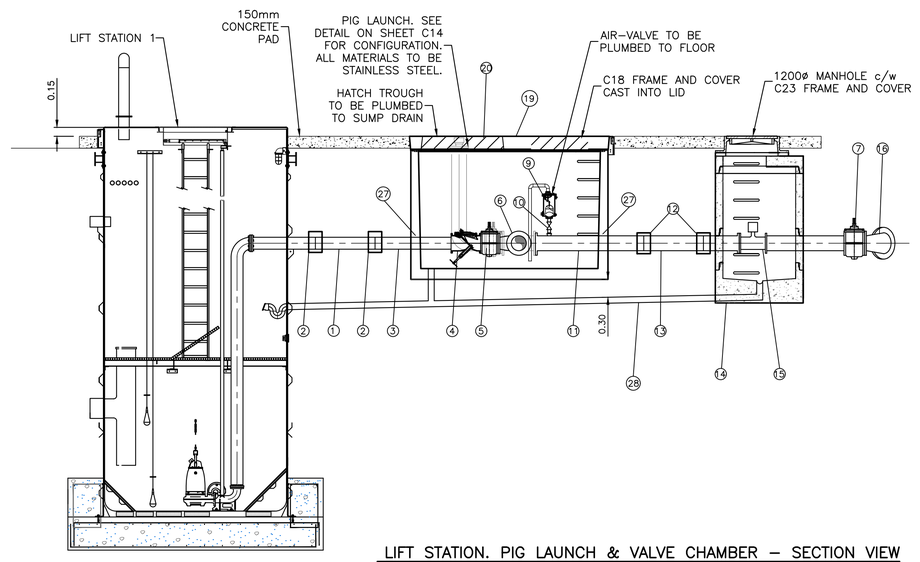


LIFT STATION GRADE DETAIL
SCALE 1:25

MATERIAL LIST	
ID	COMPONENT
1	200mm PVC FORCEMAIN AS REQ'D
2	200mm ROBAR 1506 COUPLER
3	200mm SCH.10 304 SS FORCEMAIN AS REQ'D
4	200mm VALMATIC 508ABFMI SWING–FLEX CHECK VALVE
5	200mm VALMATIC FxF NUT OPERATED 5808 PLUG VALVE
6	250–200 SCH.10 304 SS REDUCING 90° BEND
7	250mm VALMATIC FxH NUT OPERATED 5810 PLUG VALVE
8	250mm SCH.10 304 SS CROSS
9	50mm VALMATIC VM–801AS STAINLESS STEEL COMBINATION AIR VACUUM VALVE c/w BACK WASH ASSEMBLY – PLUMBED TO FLOOR
10	50mm STAINLESS STEEL BALL VALVE, c/w 2–THREDOLETS AND 2–THREADED SPOOL PIECES
11	250mm SCH.10 SS FORCEMAIN AS REQUIRED
12	250mm ROBAR 1506 COUPLER
13	250mm PVC DR25 FORCEMAIN AS REQUIRED
14	1200ø PRECAST MANHOLE BARREL c/w C23 FRAME AND COVER
15	250mm ABB WATERMASTER ELECTROMAGNETIC FLOW METER
16	350–250 PVC DR25 REDUCING 45° BEND C/W THRUST BLOCK
17	350mm ROBAR 7906 COUPLING ADAPTOR
18	350mm PVC FORCEMAIN AS REQUIRED
19	AE CONCRETE 302620 CHAMBER
20	EJCO H 42541906 ALUMINUM ACCESS HATCH WITH SAFETY GRATE AND LIFT ASSIST
21	DBI–SALA FLOOR MOUNT CAST–IN–PLACE SLEEVE DAVIT BASE 8562828
22	DBI–SALA ADVANCED PORTABLE ONE–PIECE OFFSET DAVIT MAST
23	450mm VALMATIC 5816 DIRECT BURIED MJ PLUG VALVE
24	450mm UNIFLANGE SERIES 1300 PIPE RESTRAINT
25	450mm ROBAR 1506 COUPLER
26	450mm PVC STOP COUPLER
27	LINK SEAL
28	100mm PVC SDR 25 DRAIN FROM FLOW METER AND VALVE CHAMBERS c/w BENDS AND FITTINGS AS REQUIRED



LIFT STATION. PIG LAUNCH & VALVE CHAMBER – PLAN VIEW
SCALE 1:50



LIFT STATION. PIG LAUNCH & VALVE CHAMBER – SECTION VIEW
SCALE 1:50

SURVEY INFORMATION
Prepared by: 3D Geomatics
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Compilation Date: August 21, 2018

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URBAN systems

Scale AS SHOWN

Quality Control by S.Brubacher
Designed by M.Stafford
Drawn by D.Barry

City of Courtenay Greenwood Trunk Sewers
Lift Station 1 - Site Plan

Sheet Number 12 of 18
Project Number 3222.0048.01
Drawing Number C12
Revision D

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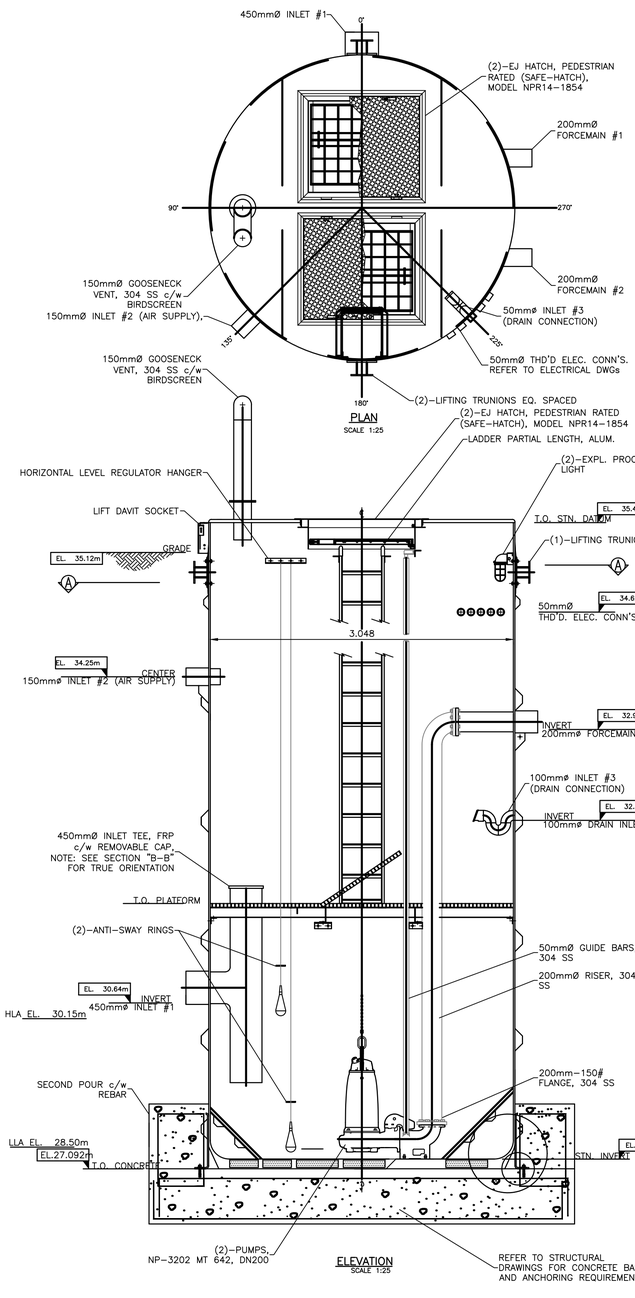
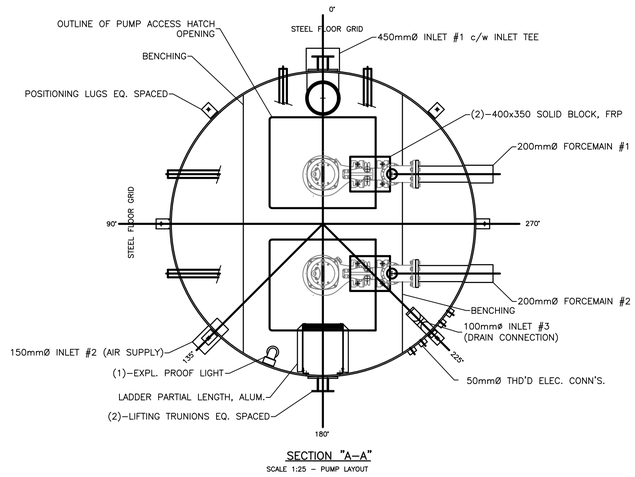


PLAN
SCALE 1:25



SECTION "A–A"
SCALE 1:25 – PUMP LAYOUT

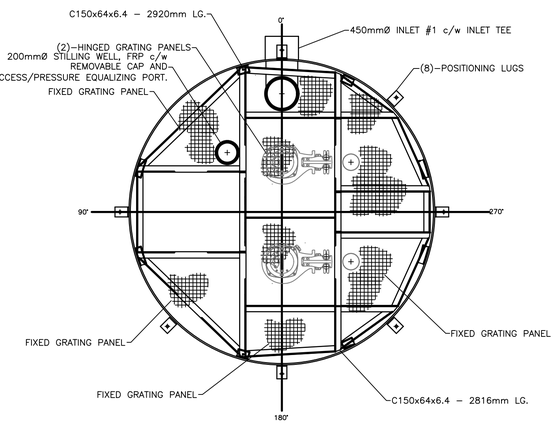
8	POSITIONING LUGS, MS.
2	LIFTING TRUNION, 100mm–SCH.120 PIPE, M.S. EPOXY COATED
1	MARINE GRADE SAFETY LADDER, ALUMINUM, PARTIAL LENGTH TO PLATFORM
1	400mmØ INLET #1, FRP, MACHINED c/w INLET TEE WITH REMOVABLE CAP, FRP
1	150mmØ INLET #2 (AIR SUPPLY), FRP, MACHINED
1	(2)–200mmØ FORCEMAIN, FRP, MACHINED c/w (2)–200mmØ RISER, 304 SS; (2)–200mm–150# FLANGE, FRP;
	(2)–200mm–150# FLANGE, 304 SS;
	(2)–200mmØ 90° LR ELL, 304 SS; (2)–200mm–150# FLANGE, 304 SS
1	FULL DIAMETER PLATFORM c/w ALUM. SUPPORT MEMBERS, FRP SAFETY GRATING & (2)–HINGED HATCH FOR ACCESS
1	150mmØ EXHAUST VENT, 304 SS, c/w DUCTING FLANGES, 180° RET. BEND & BIRDSCREEN
5	50mmØ THD'D. ELECTRICAL CONN'S.
8	20mmØ PUMP BASE BOLTS, 316 SS
4	50mmØ GUIDE BARS, 304 SS
1	100mmØ VALVE CHAMBER DRAIN, FRP, c/w P–TRAP, 100mm BACKWATER FLUSH VALVE
1	EXPLOSION PROOF LIGHT (NON LED)
1	EJ HATCH, PEDESTRIAN RATED (SAFE–HATCH), MODEL NPR15–1854
2	UPPER GUIDE BAR SUPPORT
2	FLYGT PUMP NP–3202 MT, DN200 c/w DN200 DISCHARGE ELBOWS
1	HORIZONTAL LEVEL REGULATOR HANGER (WET WELL) c/w (2)–ENM BULB & (2)–ANTI SWAY RING
8	3/4"x4–3/4" WEDGE ANCHOR BOLTS, GALV. CS

GENERAL NOTES
1. INTERIOR FINISH – WHITE ISOPHTHALIC NPG GELCOAT
2. EXTERIOR (ABOVE GRADE) TO HAVE DARK GREEN GELCOAT UV/AIR INHABITOR ADDITIVES IN GEL COAT.
3. INTERMEDIATE PLATFORM – CAPABLE OF WITHSTANDING A CONCENTRATED LOAD OF 200kg + PLUS THE DEAD WEIGHT OF ONE PUMP.
4. HATCH COVERS – EACH ACCESS COVER CAN SUPPORT THE WEIGHT OF TWO PEOPLE (200kg).
5. LADDER – CAPABLE OF SUPPORTING TWO PEOPLE AT ONE TIME (200kg), DESIGN MEETS ALL WCB SAFETY REQUIREMENTS & SAFETY CODES OF LOCAL AREA.
6. DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.

INSTALLATION PROCEDURES
THE FOLLOWING RECOMMENDATIONS ARE BASED ON FLYGT EXPERIENCE AND ARE IN NO WAY MEANT TO REPLACE THE ENGINEERS INSTRUCTIONS OR SPECIFICATIONS AND MUST BE USED IN CONJUNCTION WITH THE EXISTING AND ANTICIPATED CONDITIONS AT THE JOBSITE.
1. USE THE LIFTING LUGS PROVIDED FOR VERTICAL HANDLING.
2. USE SLINGS AROUND THE MAIN TANK FOR HORIZONTAL HANDLING.
3. ENSURE UNIT IS STANDING VERTICAL ON CONCRETE PAD.
4. BOLT UNIT FIRMLY AND SQUARELY IN PLACE, SHIM WHERE NECESSARY.

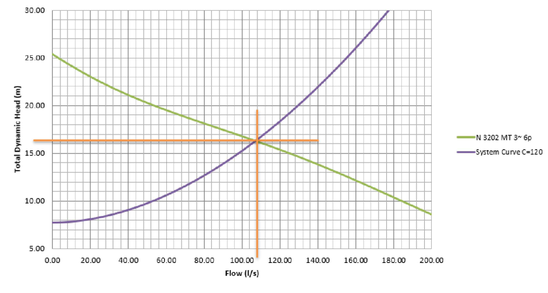
ELEVATION
SCALE 1:25

PROPOSED OPERATING LEVELS	
HLA	30.15m
LAG PUMP START	30.00m
LEAD PUMP START	29.85m
PUMP STOP	28.65m
LLA	28.50m
MINIMUM SUBMERGENCE	28.48m



SECTION "B–B"
SCALE 1:25 – PLATFORM LAYOUT

NOTES:
ALL SUPPORT MEMBERS TO BE L64x64x6.4, ALUMINUM UNLESS NOTED. GRATING TO BE 38x38x38 HIGH, FRP. PROVIDE HOLES THROUGH GRATING FOR ALL NECESSARY EQUIPMENT TO PASS THROUGH. RESIN SEAL ALL FRP EDGES.



THE SYSTEM CURVE IS BASED ON THE EXPECTED MAXIMUM AND MINIMUM OPERATING CONDITIONS FOR THE PUMPS. DISCHARGE IS VIA THE 350mm FORCEMAIN INTO THE RECEIVING CVRD GRAVITY SEWER OPERATING UNDER A NON–SURCHARGE CONDITION.

PUMP STATION DESIGN INFORMATION:

- DESIGN AVERAGE DAILY DRY WEATHER FLOW: 67.66 l/s
- DESIGN 20 YR AVERAGE DAILY WET WEATHER FLOW: 84.16 l/s
- DESIGN 20 YR PEAK DAILY WET WEATHER FLOW: 108.80 l/s
- SINGLE PUMP DUTY POINT: 109.1 l/s
- REQUIRED FLOW TO ACHIEVE CLEANSING VELOCITY: 89.45 l/s

SURVEY INFORMATION
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PROFESSIONAL ENGINEER – PROVINCE OF BRITISH COLUMBIA – E. D. SEARS – 36078
2020-02-21

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URBAN systems

Scale: AS SHOWN

Quality Control by	S.Brubacher
Designed by	M.Stafford
Drawn by	D.Barry

City of Courtenay Greenwood Trunk Sewers
Lift Station-1 Details

Sheet Number		13 of 18
Project Number	Drawing Number	Revision
3222.0048.01	C13	D

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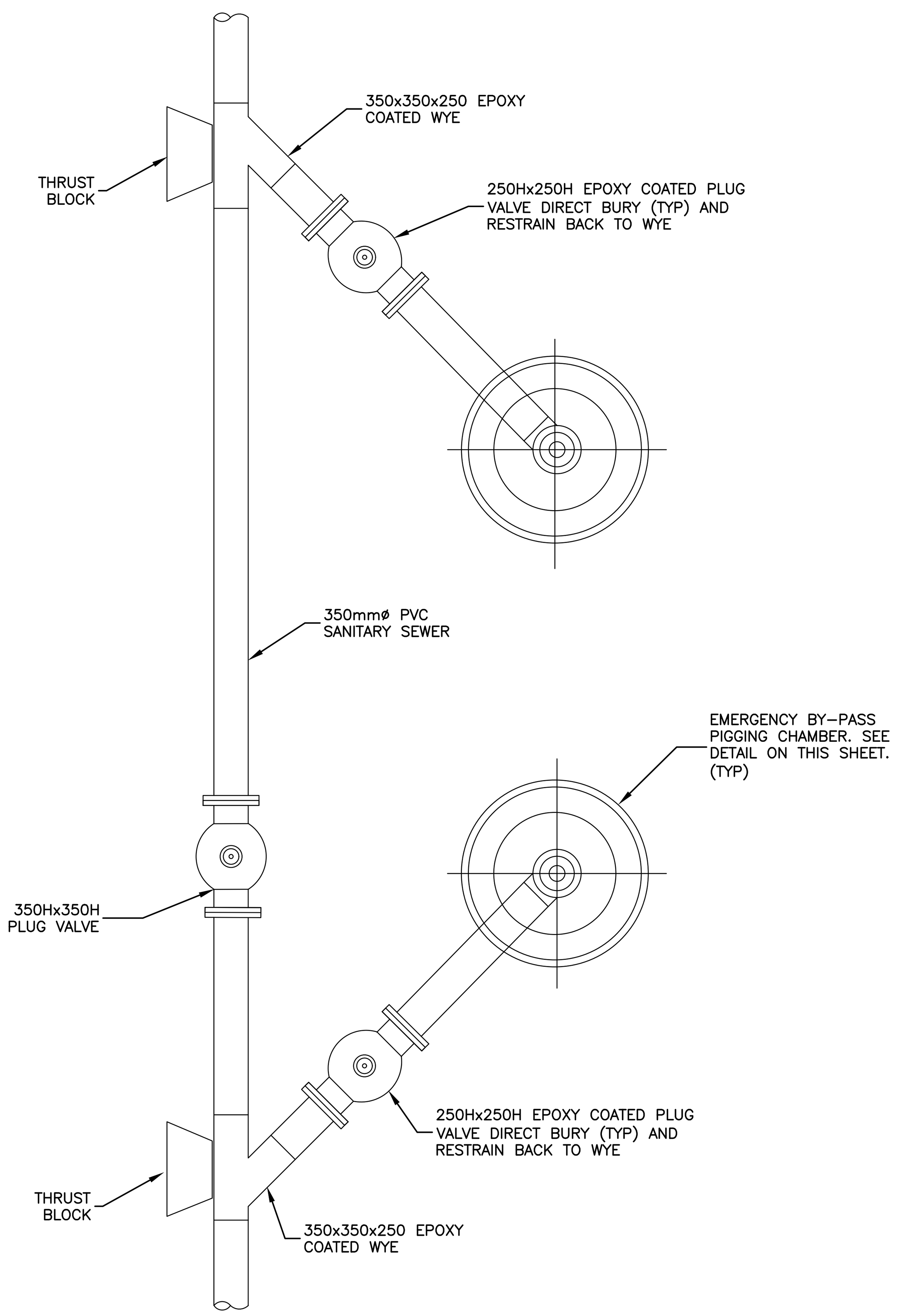
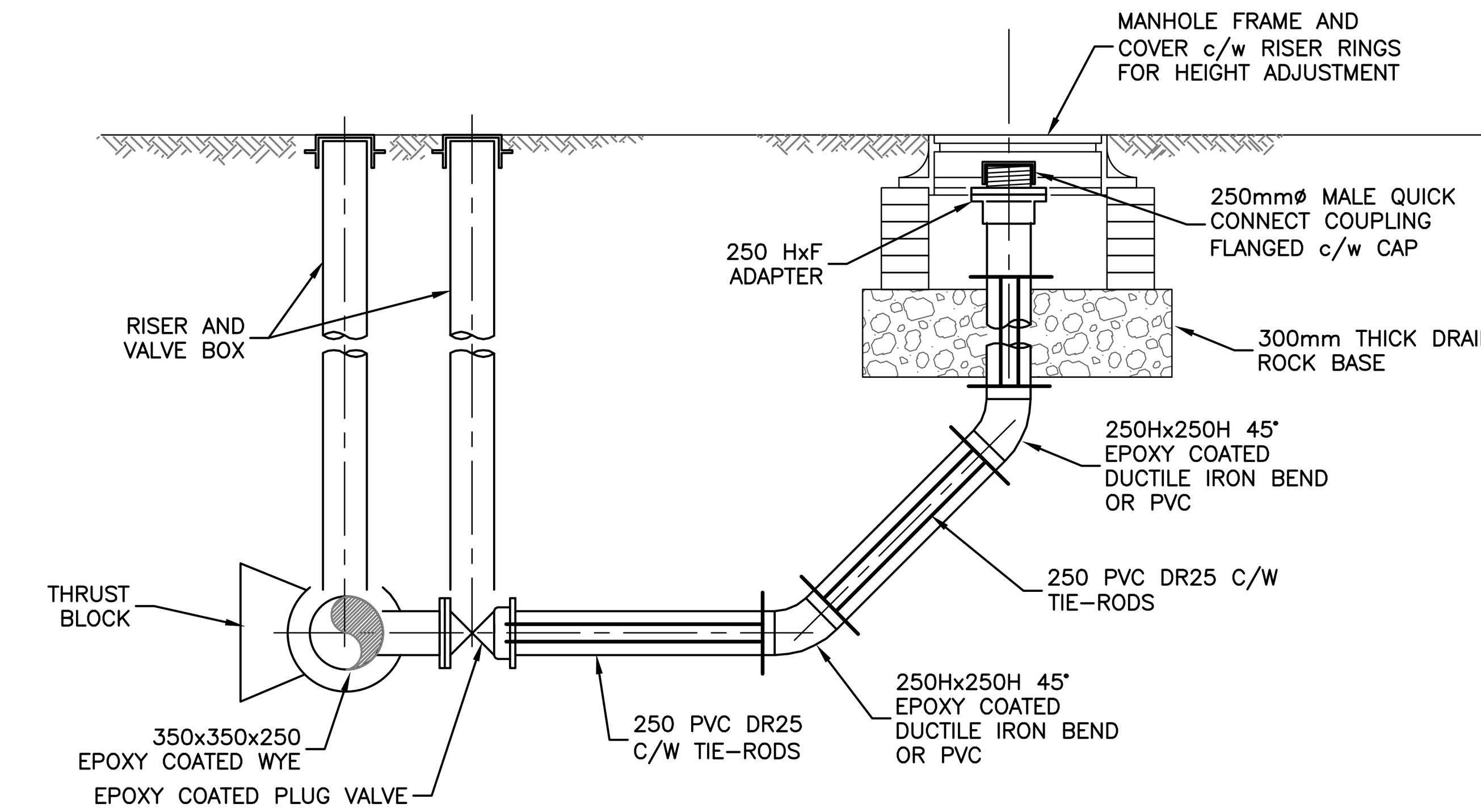


PIGGING LAUNCH DETAIL

SCALE 1:25

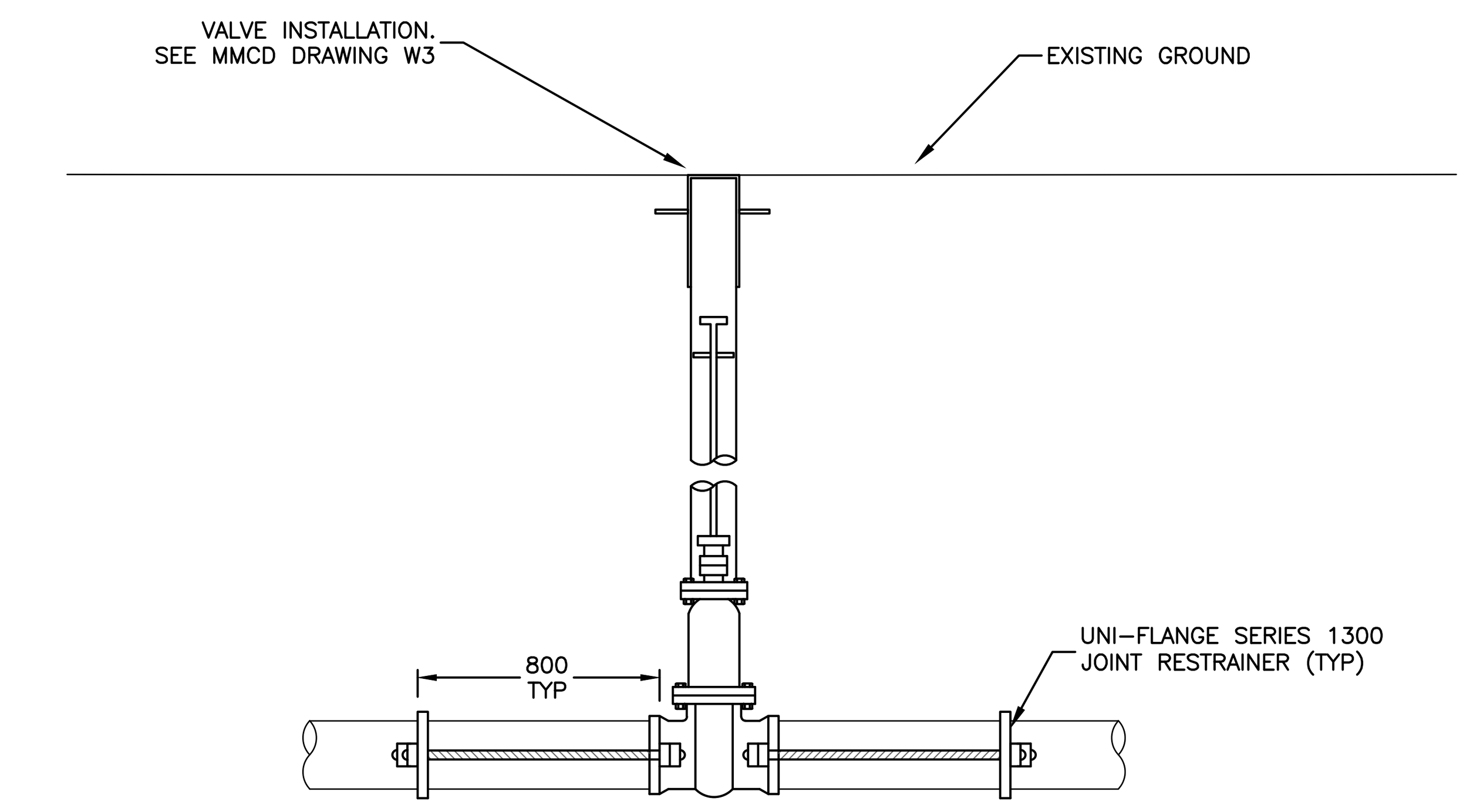


PIGGING ENTRANCE/EXIT CHAMBER DETAIL

NOT TO SCALE

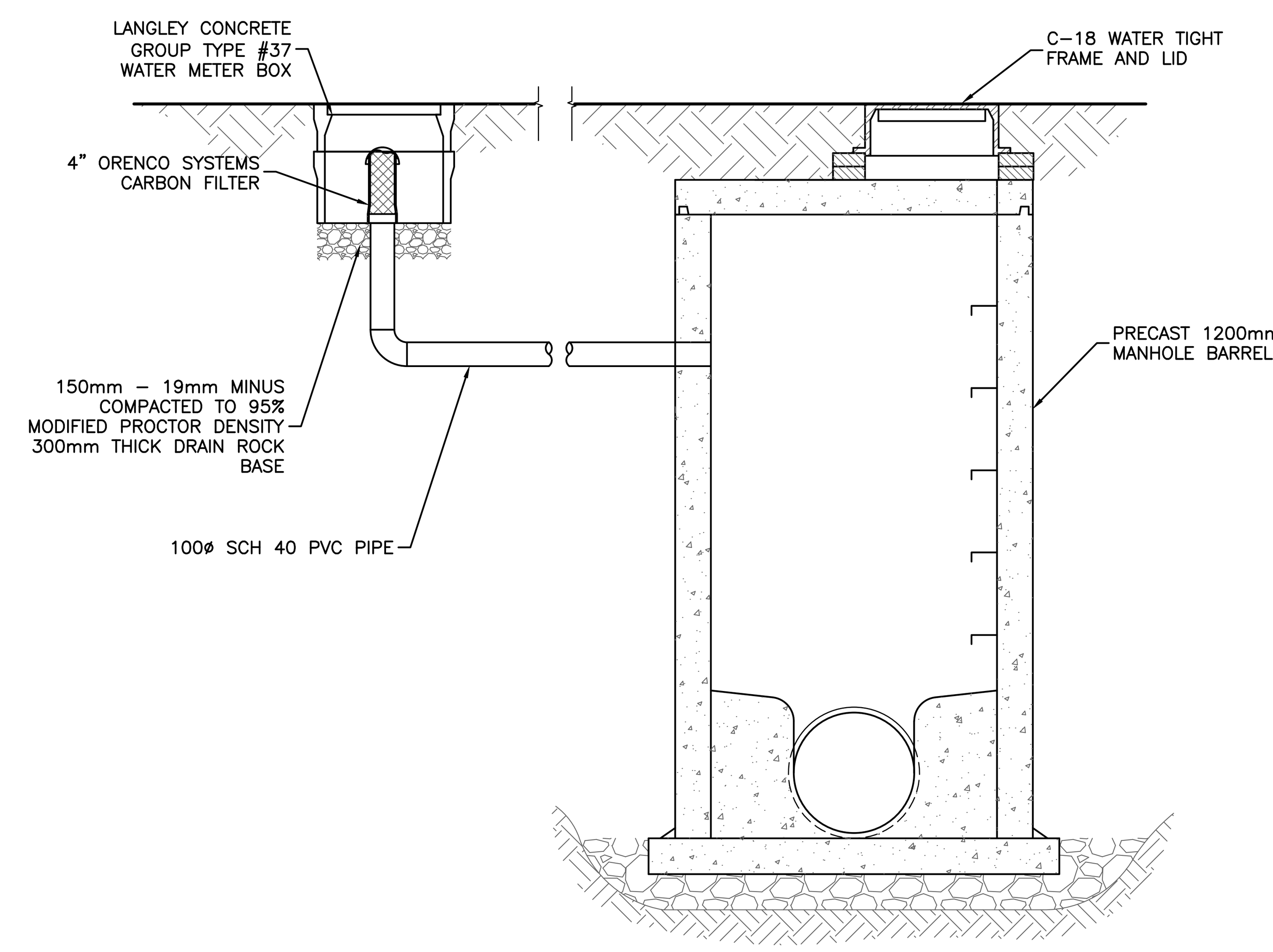
NOTE:

1. ALL HUB END FITTINGS TO BE CONNECTED USING JOINT RESTRAINTS



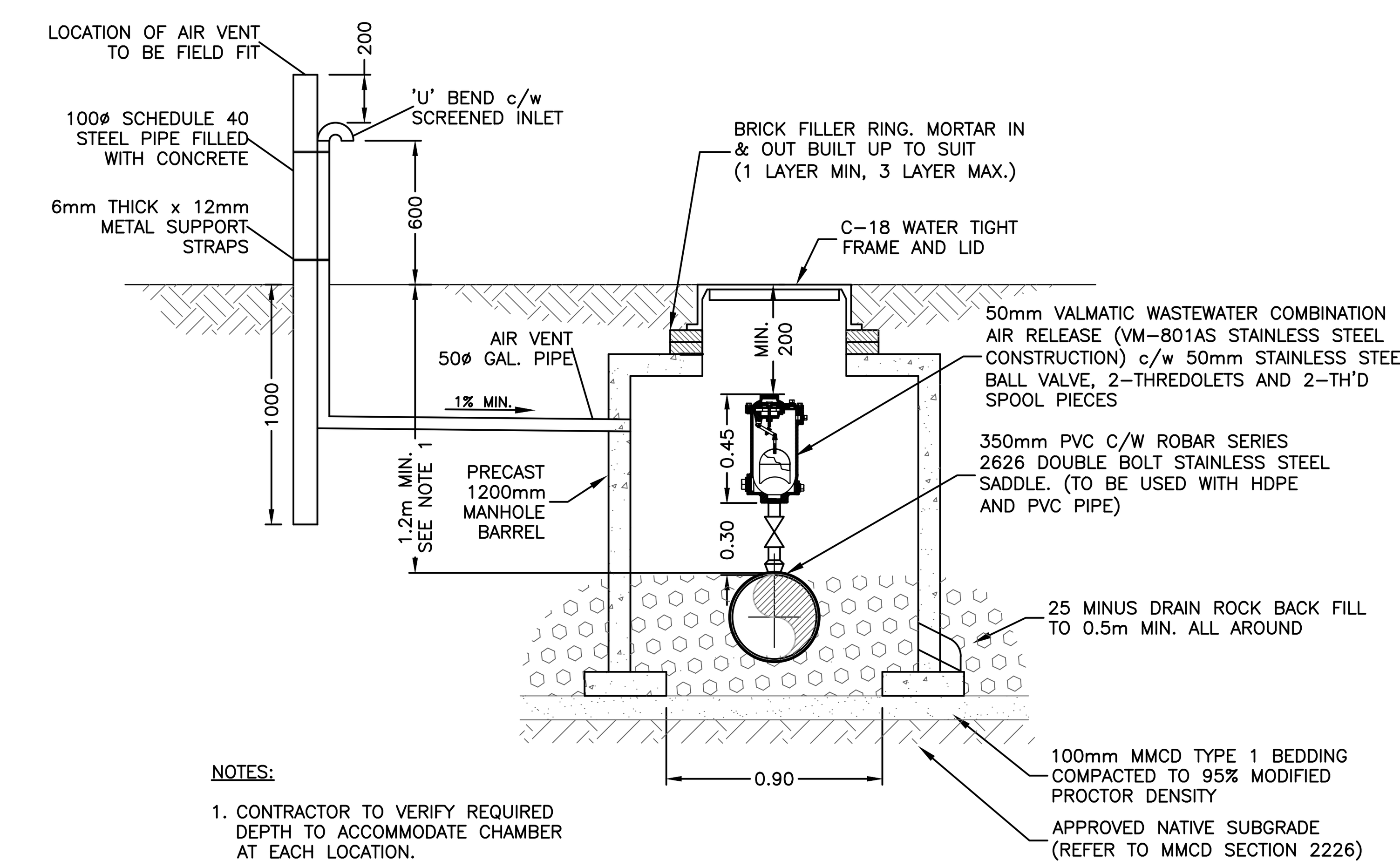
TYPICAL VALVE INSTALLATION (PVC PIPE ONLY)

NOT TO SCALE



ODOUR CONTROL MANHOLE DETAIL

SCALE 1:25



NOTES:

1. CONTRACTOR TO VERIFY REQUIRED DEPTH TO ACCOMMODATE CHAMBER AT EACH LOCATION.

AIR RELEASE VALVE CHAMBER

SCALE 1:25

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URBAN systems

Scale: AS SHOWN

Quality Control by: S.Brubacher
Designed by: M.Stafford
Drawn by: D.Barry

City of Courtenay Greenwood Trunk Sewers

Sanitary Details

Sheet Number: 16 of 18

Project Number	Drawing Number	Revision
3222.0048.01	C14	D

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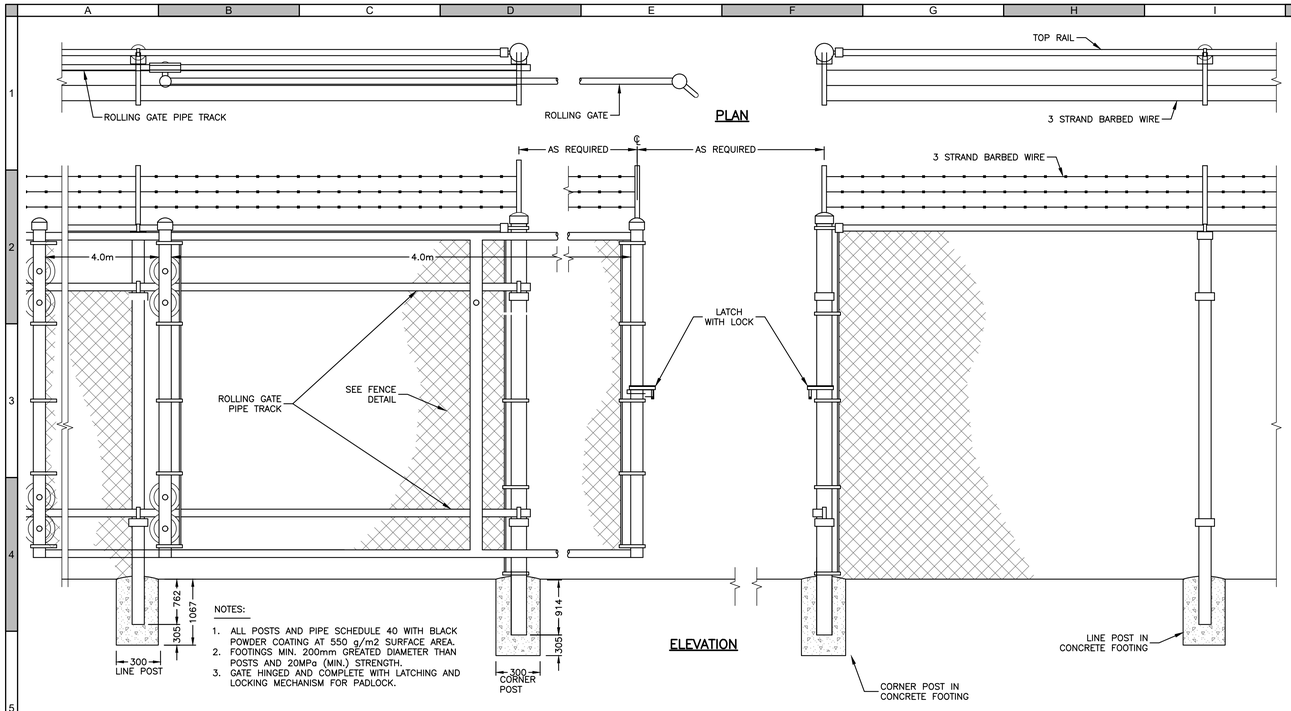
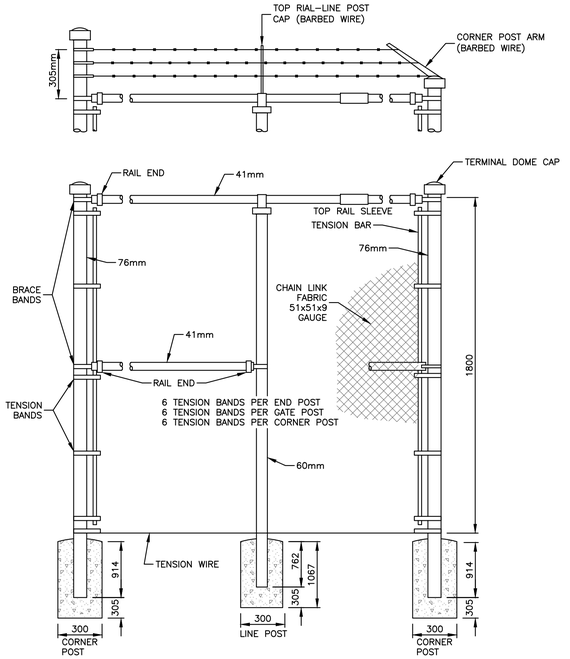


ROLLING GATE DETAIL
NOT TO SCALE



CHAIN LINK FENCE DETAIL
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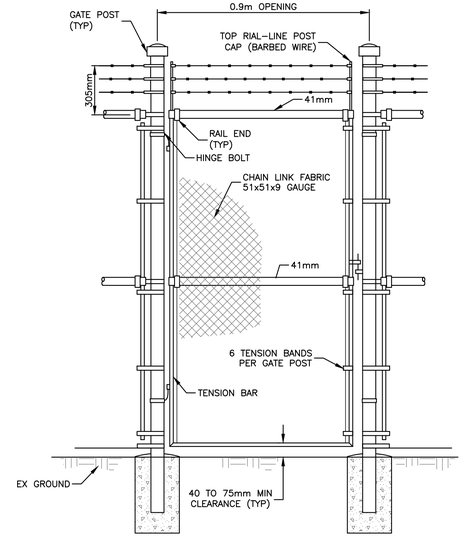

SECURITY FOOT GATE DETAIL
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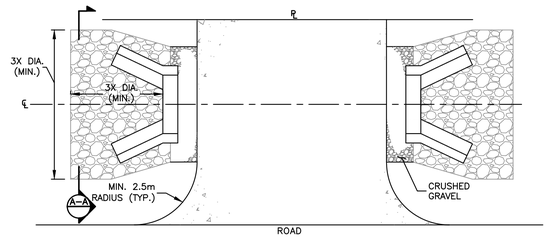
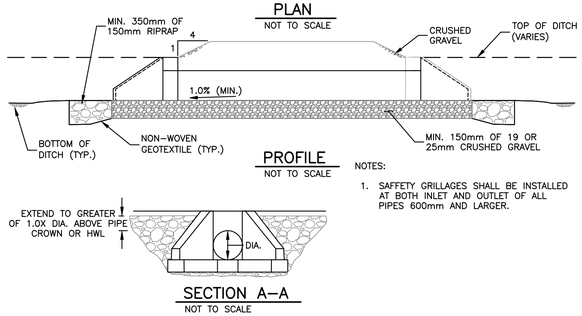
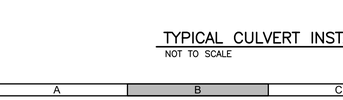


PLAN
NOT TO SCALE



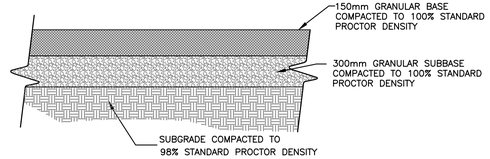
PROFILE
NOT TO SCALE

NOTES:
1. SAFFETY GRILLAGES SHALL BE INSTALLED AT BOTH INLET AND OUTLET OF ALL PIPES 600mm AND LARGER.

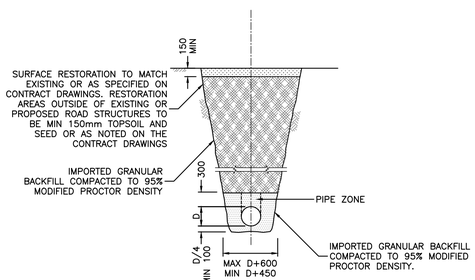


SECTION A–A
NOT TO SCALE

TYPICAL CULVERT INSTALLATION DETAIL
NOT TO SCALE

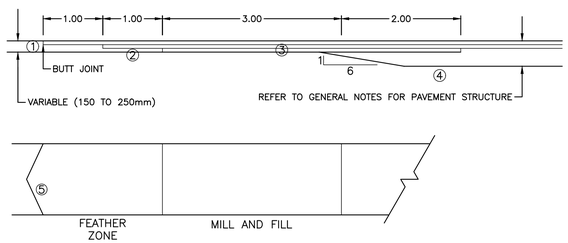


LIFT STATION SITE / ACCESS ROAD SURFACE STRUCTURE
TYP FINISHED GRADE SURFACE DETAIL
NOT TO SCALE



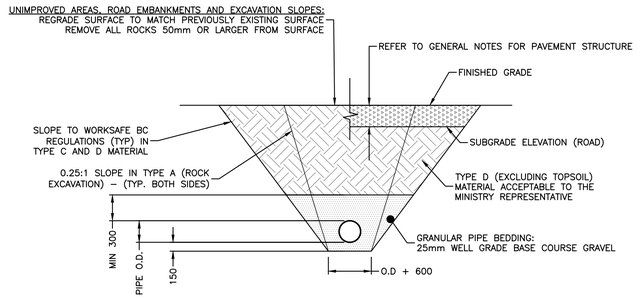
NOTE
TRENCHING TO COMPLY WITH ALL REQUIREMENTS OF WORKSAFE BC.

UTILITY TRENCH DETAIL – ON–SITE
TYP FINISHED GRADE SURFACE DETAIL
NOT TO SCALE



① MILL BUTT JOINT TO A DEPTH OF 62.5 mm NOM.
② MILL AND FILL ZONE AS REQUIRED TO ACHIEVE EVEN SURFACE.
③ EXPECT 2 LIFTS AT 62.5 mm±. DO NOT EXCEED A LIFT THICKNESS OF 65 mm.
④ SHAPE AND COMPACT SUBGRADE TO 100% SPD.
⑤ CONSTRUCT FULL WIDTH AT 20° SKEW.

LONGITUDINAL PAVEMENT TRANSITION
NOT TO SCALE



UTILITY TRENCH DETAIL – ANDERTON ROAD
TYP FINISHED GRADE SURFACE DETAIL
NOT TO SCALE

SURVEY INFORMATION
Prepared by: 3D Geomatics
Coordinate System: UTM NAD 83 Zone 10
Compilation Date: August 21, 2018

ISSUED FOR TENDER
FEBRUARY 18, 2020
urbansystems.ca

Professional Seals
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA E. D. SEABS
2020-02-21

#	Date	Issue / Revision	App
A	2018-12-20	Preliminary Design (Draft)	S.B.
B	2019-03-05	95% Design	S.B.
C	2019-04-18	100% Design	S.B.
D	2020-02-18	Tender	S.B.

URBAN systems

Scale AS SHOWN

Quality Control by S.Brubacher
Designed by M.Stafford
Drawn by D.Barry

City of Courtenay Greenwood Trunk Sewers
Miscellaneous Details

Sheet Number 17 of 18
Project Number 3222.0048.01
Drawing Number C15
Revision D

NOT FOR CONSTRUCTION

GENERAL STRUCTURAL NOTES

GENERAL

1. The following notes are minimum requirements unless noted otherwise on the structural drawings prepared by MISKIMMIN STRUCTURAL ENGINEERING LTD [MSE].
2. Read structural drawings in conjunction with all other consultants' drawings, contract documents and specifications.
3. Check and verify all dimensions, quantities and site conditions with architectural drawings before commencing with any work. Notify architect of any discrepancies.
4. The latest edition of the standards and codes referenced in these notes and on the Structural Drawings shall apply.
5. Do not construct from these drawings unless marked "Issued for Construction".
6. In the event of discrepancies in the specifications, drawings or contract documents, the more stringent requirement shall apply.
7. Notes and details specified on the plans and details take precedence over those in General Structural Notes, except for minimum requirements.
8. For conditions not explicitly shown, Contractor shall immediately request clarifications from the Structural Engineer.
9. Contractor to submit to MSE in writing all proposed alternate products, materials and structural systems for review at least 4 weeks prior to the start of construction.

FIELD REVIEW

1. Contractor is responsible for pre-inspecting the work and confirming completeness and conformity with the Structural Contract Documents prior to field review by MSE.
2. Notify MSE at least 48 hours in advance for field review of the following:
   a) Concrete reinforcement: Prior to each concrete pour
   b) Structural steel: Prior to concealment
   c) Wood framing: Prior to concealment
   d) Masonry reinforcement: Prior to each grout pour
   e) Steel decking (roof level): Prior to roofing
   f) Steel decking (floor level): Prior to placing concrete
   g) Light gauge steel framing: Prior to concealment
3. Work found to be incomplete or deficient may require additional field reviews at additional cost to the Contractor.
4. Our field review consists of a periodic review of the structural work only. It is not carried out for the Contractor's benefit, and it does not make MSE guarantors of the Contractor's work. The Contractor is responsible for his own quality control and shall perform the work with good workmanship in the conformance with the Contract Documents.

SUBMITTALS AND SHOP DRAWINGS

1. Contractor is responsible for overall coordination of sub-trades.
2. Submittals are items required by the Contract Documents to be submitted by the General Contractor, such as (but not limited to) request for payment, progress reports, shop drawings, manufacturer's literature on equipment, concrete mix designs, concrete test results, aggregate gradation reports, schedules, etc.
3. Suppliers shall prepare for MSE and submit to the General Contractor an electronic set of Shop Drawings for general compliance review prior to fabrication. Each sheet sheet shall be sealed and signed by a Professional Engineer registered in the Province of British Columbia, who will be the Specialty Structural Engineer responsible for the integrity of his/her design.
4. MSE will NOT review or assume responsibility for such matters as dimensions or quantities or the Contractor's safety measures or methods of construction.
5. Incomplete sets of Shop Drawings, or Shop Drawings prepared using reproductions of MSE Structural Drawings will NOT be accepted,
6. Shop drawings and other submittals of pre-engineered or proprietary structural elements shall clearly indicate type, position, and connection to elements of the Primary Structural System as well as the criteria and loads used for the design.
7. Submittals must be reviewed by the General Contractor prior to MSE's review.
8. Where required by the following sections of these General Structural Notes, proprietary products, connections and other structural elements which have been designed by Specialty Structural Engineers shall be inspected by those engineers at the appropriate stage of construction, at which time observations and deficiencies in the work shall be reported in writing to the SER (MSE).
9. Where required by the following sections of these General Structural Notes, each Specialty Structural Engineer shall submit to MSE Letters of Assurance Schedules B and C-B, or S-B and S-C, sealed and signed, clearly outlining areas of responsibility.
10. Refer to the following sections for specific Shop Drawing requirements:

CONSTRUCTION

1. Drawings show completed structures only. Contractor is responsible for temporary bracing for all building elements against construction loading conditions and for construction erection procedures. Temporary support to be designed by a Professional Engineer registered in the Province of British Columbia in accordance with WorkSafeBC regulations and as required by local building authorities.
2. It is the sole responsibility of the Contractor to ensure that no part of the work is subjected to a load which will endanger the safety of the building or workers.
3. Protect structural work from adverse weather conditions and moisture prior to, during and after installation.
4. Contractor to compare all design drawings, dimensions and site conditions and notify MSE of any discrepancies prior to proceeding with the work.
5. Contractor to submit to MSE in writing all proposed alternate products and structural systems, including technical specifications where required, for review and approval.
6. Contractor shall review the concrete pour plan with MSE prior to construction.

STRUCTURAL DESIGN

1. The new construction for this base building has been designed by MSE in accordance with: Part 4 of the 2018 British Columbia Building Code [BCBC].
2. Climatic Design Criteria:
   a) Ground Snow Load (1 in 50 year) Ss (1/50)= 2.4 kPa (50.1 psf)
      Rain Load (1 in 50 year) Sr (1/50)= 0.4 kPa (8.4 psf)
   b) Importance Factor for Snow Load Is = 1.0
   c) 24-Hour Rain 106 mm (4")
   d) Hourly Wind Pressure (1/10 year) q (1/10) = 0.40 kPa (8.4 psf)
      Hourly Wind Pressure (1/50 year) q (1/50) = 0.52 kPa (10.9 psf)
      Importance Factor for Wind Load Iw = 1.0
      Wind Internal Pressure Category Category = 2
3. Minimum Design Live Loads:

Area	Specified Load
Slabs on Grade w/o Vehicular Traffic	4.8 kPa (100 psf)
Slabs on Grade w/ Vehicular Load	12.0 kPa (250 psf)
Mechanical room	3.6 kPa (75 psf)
Basic roof snow load + build up where applicable	2.3 kPa (48.1 psf)
Handrails and Guards	Per Part 4 of the Building Code

4. Seismic Data:
   a) Ground Motions Sa(0.2) = 0.675 Sa(0.5) = 0.656
      Sa(1.0) = 0.450 Sa(2.0) = 0.291
      Sa(5.0) = 0.102 Sa(10.0) = 0.036
   b) Peak Ground Acceleration PGA = 0.314
   c) Site Class C F(0.2) = 0.69 F(0.5) = 0.57
      F(1.0) = 0.57 F(2.0) = 0.58
      F(5.0) = 0.61 F(10.0) = 0.67
   d) Importance Factor Ie = 1.0
   e) Ductility NS direction: Rd = 1.5 Ro = 1.3
      EW direction: Rd = 1.5 Ro = 1.3
   f) Lateral Seismic force (factored) V = 0.34 x W - NS direction
      V = 0.34 x W - EW direction
   g) Plywood diaphragms are assumed to be ductile.
5. See drawings for specific loads and loading conditions. Specialty Engineers to be responsible for identifying specific loading conditions within their scopes of work.

SITE PREPARATION AND FOUNDATIONS

Building foundations have been designed based on the Geotechnical Engineering Report Referenced 23229 by Thurber Engineering Ltd. dated 16/Nov/2018 and must be confirmed during excavation/construction.

1. Site Preparation:
   Contractor to prepare site in accordance with Geotechnical Recommendations and notify Geotechnical Engineer for field review of site preparations prior to foundation construction.
2. Protect native soils from softening and frost. Remove all softened or frost damaged soils prior to placement of reinforcement and concrete. Protect bearing soils from freezing after footing construction.
3. Excavations to be free of water prior to and during concrete placement. Provide adequate means of removing water from excavations and trenches.
4. If building site is underlain by methane generating soils, refer to other consultant's report and drawings for design of methane control measures.
5. If building site is underlain by compressible soils, the building foundation design is based on the site being preloaded with mineral fill to induce primary consolidation settlement of the underlying compressible soils prior to foundation construction.
6. Foundation design:

	Till	Soil/Fill
a) Bearing soil:		
b) Serviceability Limit State bearing capacity	200 kPa	200 kPa
c) Factored Ultimate Limit State bearing capacity	300 kPa	300 kPa
d) Minimum footing width:		
i) Pad footing	450mm	
ii) Strip footing	600mm	

   e) Variable soil conditions that result in lower allowable soil bearing conditions may require revision to foundation design.
8. Minimum frost cover to be 450mm, or per Geotechnical recommendations.
9. Building design based on the following long-term settlements estimated by the Geotechnical Engineer:
   a) Total settlements: = 25mm
   b) Differential settlements: = 19mm
10. Provide formwork for full specified depth of footings and provide level footing base to allow uniform clear cover to reinforcement and to prevent sloughing of adjacent soil into footing form.
11. Loose or wet sub-base under footings may require removal, sub excavation and replacement with structural fill. Refer to Geotechnical Report for details.
12. Compact fills in maximum lifts and to densities as noted in the Geotechnical Report or as directed by the Geotechnical Engineer, and test for compaction at sufficient intervals to verify conformance.
13. Provide a minimum of 150mm (6") of well graded sand and gravel below all interior and exterior slabs-on-grade on prepared sub-base. Compacted to approval of Geotechnical Engineer.
14. Securely tie down all anchor bolts and embedded items to formwork prior to concrete pour.
15. Centre footings under columns/walls unless noted otherwise.
16. Retaining wall and basement wall backfill requirements:
   a) Backfill material behind retaining walls to be compacted, clean free-draining granular backfill.
   b) Install drainage system behind wall designed by others.
   c) Do not backfill behind retaining walls until concrete has achieved a minimum strength of 25 MPa.
   d) Do not backfill behind basement walls, or other walls to be connected to the floor or roof structure, until after completion of the floor and roof system to approval of MSE.

CONCRETE

1. Specifications:
   a) Standards: CAN/CSA A23.1, CAN/SCA A23.2, CAN/CSA A23.3
   b) Cement: Portland Cement Type G.U. in accordance with CSA A3001
   c) Coarse Aggregate: 19mm (3/4") maximum U.N.O.
   d) Mix Design to Alternative 1 per Table below:

Locations	28 - Day Compressive Strength, MPa	W/C Ratio	Air Entrain %	Slump (mm)	Exposure Class	Cement Type	See Notes
Interior Footing Pads	25	0.60	1 to 4	80 ± 30	N	G.U.	N/A
Exterior Footing Pads	25	0.55	4 to 7	80 ± 30	F-2	G.U.	N/A
Foundation walls (Exposed)	25	0.55	4 to 7	80 ± 30	F-2	G.U.	N/A
Interior slab-on-grade	30	0.55	1 to 4	80 ± 30	N	G.U.	2(A), 3
Exterior slab-on-grade - pedestrian traffic	32	0.45	5 to 8	80 ± 30	C-2	G.U.	2(A), 3
Exterior slab-on-grade - vehicular traffic	32	0.45	5 to 8	80 ± 30	C-2	G.U.	2(A), 3
Suspended slab and slabbands	35 @ 56 days	0.40	5 to 8	80 ± 30	F-2	G.U.	2(A), 6
Water Tank walls & columns/pedestals	25	0.45	4 to 7	80 ± 30	F-2	G.U.	6
Water Tank base slab	32	0.45	4 to 7	80 ± 30	F-2	G.U.	2(A), 6

Notes: Where referenced in notes column of the table above.

1. Slab-on-grade in exposed interior areas to be wet cured.
2. Slab and Floor Finish Classifications as per CSA A23.1:

Class	Description	Straight edge Tolerance	F_F	F_L	SWi
A	Conventional (smooth)	± 8mm	20	15	5mm
B	Conventional (non slip)	± 12mm	15	15	8mm
C	Moderately Flat	* ± 3mm *	30	20	3mm

   See CSA A23.1 for finishing procedure.
3. Sawcut crack control joint as soon as possible within 12 hours of slab finishing. See Architectural and Structural drawings for locations and details.
4. Hand tool crack control joint. See Architectural drawings for locations.
5. Add polypropylene fibres to concrete mix at plant to reduce non-structural cracking. Fibres to be Fibermesh 'MD' as manufactured by Fibermesh Division, Synthetic Industries, at an application rate of 0.9 kg/m3 to 1.8 kg/m3. Actual application rate and concrete mix design to be reviewed by Fibermesh and concrete supplier.
6. KRYTON KIM ADMIXTURE: Concrete strength noted is minimum required for structural design; higher strengths may be required based on KIM mix requirements. Minimum Portland cement content shall be 250 kg/m3. Maximum W/C ratio shall be 0.45. KIM waterproofing admixture to be added into the concrete mix at the time of batching at 2% by weight of the cementitious materials. Contact Kryton International Incorporated at 604-324-8280 for application instructions and specifications.
7. Max aggregate size of 3/8" (10mm) for masonry grout and concrete topping.

   e) Admixtures: Admixtures to approval of MSE. Calcium Chloride not allowed. Admixtures to conform to requirements of ASTM C260 (air entrainment) and ASTM C494 (chemical).
   f) Testing: Test concrete as per CSA A23.1 and A23.2: Min one test of three cylinders per Class per day. Additional tests required per A23.1 and A23.3. Additional field-cured cylinders required in hot and cold weather conditions.
   g) Grout: Non-shrink cementitious grout, minimum 30MPa at 3 days and minimum 55MPa at 28 days.
2. Concrete to be well consolidated with mechanical vibrator.
3. Protect concrete from all harmful substances and adverse weather conditions during construction.
4. No embedded items, including blockouts, nailers, conduits, ducts, pipes, sleeves, etc., are permitted in concrete formwork unless specifically authorized by MSE.
5. All concrete work, including footings, walls, slabs, curbs, and topping, shall be reinforced except skimcoats unless otherwise noted.
6. Unless otherwise noted, provide minimum bottom reinforcing in slabs as below:

Slab thickness	Temperature reinforcing each way
150 (6")	10M @ 300 (12")
175 (7")	10M @ 250 (10")
200 (8")	15M @ 450 (18")
225 (9")	15M @ 400 (16")
250 (10")	15M @ 400 (16")

7. Submittals: Contractor shall pay for and provide the following submittals:
   a) Mix designs
   b) Concrete test results

REINFORCING STEEL

1. All work shall meet the requirements of the Canadian Standards Association [CSA] and the American Society for Testing and Materials [ASTM].
2. Deformed bars shall conform to CSA G30.18 Grade 400 MPa (Fy=60,000 psi) with:
   a) Lapped tension splices in accordance with CAN3-A23.3 as follows:

BAR SIZE		10M	15M	20M	25M	30M	WWM
BASIC TENSION LAP SPLICE	mm (in)	450 (18)	630 (24)	780 (30)	1290 (50)	1700 (67)	300 (12)
TOP BAR TENSION LAP SPLICE	mm (in)	620 (24)	880 (36)	1090 (43)	1810 (72)	2400 (94)	–

   b) Detail reinforcement to stagger splices and minimize usage of splices U.N.O. on plans. Splicing of reinforcing steel shall meet the requirements of CAN3-A23.3.
   c) Horizontal reinforcement shall be continuous around corners with bends or corner bars.
   d) All concrete shall be reinforced. Concrete not explicitly detailed shall have the following minimum reinforcement:
      i) Columns: 1% of gross area of section.
         15M ties spaced at lease 1/2 least dimension of column.
      ii) Beams: 0.35% of gross area of section.
         15M ties spaced at 1/2 depth of beam.
      iii) Slabs and Walls: 0.2% of gross area of section each way and perimeter beam as detailed.
   e) Maintain concrete cover to reinforcing as follows when not explicitly detailed:

STRUCTURAL MEMBER		EXPOSURE TO WEATHER: EXPOSED	EXPOSURE TO WEATHER: NOT EXPOSED
For beams, girders, columns and piles: Principal reinforcement, No. 35 and smaller	mm (in)	50 (2)	40 (1 1/2)
For ties, stirrups and spirals:	mm (in)	40 (1 1/2)	30 (1 1/8)
For slabs, walls and joists, No. 20 and smaller:	mm (in)	30 (1 1/8)	20 (3/4)
For shells and folded plates, No. 15 and smaller:	mm (in)	30 (1 1/8)	15 (9/16)
For bars with diameter d larger than listed above, cover shall be min. 50mm (and need not be > 50mm)		1.5 d	1.0 d
The ratio of the cover to the nominal maximum aggregate size shall be minimum:		1.5 d	1.0 d
Formed surface exposed to ground or weather:	mm (in)	50 (2)	
When cast against, and permanently exposed to, earth:	mm (in)	75 (3)	
Tilt-up panels		See f) below	

   The cover for a bundle of bars shall be the same as that for a single bar with an equivalent area.
   f) Maintain concrete cover to reinforcing of tilt-up panels as follows:

CLEAR COVER TO MAIN REINFORCING		
OUTSIDE FACE OF PANEL	mm (in)	25 (1)
INSIDE FACE OF PANEL	mm (in)	20 (3/4)
EDGE OF PANEL	mm (in)	50 (2)

CLEAR COVER TO TIES & STIRRUPS		
INSIDE OR OUTSIDE	mm (in)	20 (3/4)
EDGE OF PANEL	mm (in)	40 (1 1/2)

3. Placement:
   a) Openings in walls and slabs:
      i) Do not cut typical reinforcement at openings, but shift to each side of opening.
      ii) Provide 1 - 15M x 4'-0"LG diagonal bar 25mm (1") clear from corner of opening.
      iii) Openings ≤ 600 (24") square: Provide 2-15M each side, extending 600 (24").
      iv) Openings > 600 (24") square: Provide extra reinforcing as directed on Site by MSE.
   b) Provide dowels to match size and spacing of vertical and horizontal reinforcement.
4. All reinforcement required to be welded to connection plates shall be Grade 400W (Weldable). Weld steel in conformance with CSA W186.
5. All reinforcement to be bent in the field shall be Grade 400W (Weldable).
6. Ensure all bars are securely tied and chaired to maintain specified cover and prevent displacement during concrete placement. For surfaces exposed to weather, provide non-corrosive chairs.
7. Wet doweling of reinforcement is not acceptable unless approved in advance by MSE.
8. All reinforcing steel shall be clean of substances that will affect its bond to concrete.
9. Bars damaged in the field may require replacement as directed by MSE.
10. For tension splices, no more than 50% of the bars shall be splices at any one location.
11. Where drill and epoxy reinforcing is required the following minimum embedment must be applied, unless directed otherwise in writing by MSE. Drill and epoxy with Hilti RE 500 V3 to develop reinforcing.

Reinforcing Bars	Minimum Embedment	Reinforcing Bars	Minimum Embedment
10M	240mm	20M	540mm
15M	400mm	25M	850mm

12. Provide minimum of 200 lbs of extra reinforcement (10M + 15M) to be used as directed by MSE.

STRUCTURAL STEEL, MISCELLANEOUS STEEL & CONNECTIONS

1. Fabricate and erect structural steel to CSA S-16 Division 2 certification or better.
2. Structural steel shall conform to CSA G40.21 with the following grades:
   a) W Shapes: Grade 350W
   b) Angles & Channels: Grade 300W
   c) HSS: Grade 350W Class C
   d) Plates & Miscellaneous steel: Grade 300W
   e) Connection Bolts: i) Steel to steel connections: ASTM A325
      ii) Steel to foundation anchor bolts: ASTM A307 or A325 per drawings
      iii) Wood connections: (interior - not exposed to moisture) ASTM A307 hot dipped galvanized to CAN/CSA - G164
   f) Finish: One coat shop primer except embedded items, See specifications.
   g) Pipes: ASTM A53 Grade B
3. All welding shall conform to CSA W59, W55.3 and W186 - Reinforcing Bars and shall be performed by fabricators fully certified by the Canadian Welding Bureau to the requirements of CSA W47.1.
4. Connection Design:
   a) Code Compliance: Supplier shall design structural steel connections on the basis of "Simple Construction" in accordance with CSA S-16 and S-136 for the design loads indicated on the drawings and in accordance with Part 4 of the Building Code.
   b) Beams: Design beam reaction for 60% of the load given in the beam load tables in Part 5 of the Commentary on CSA S-16, or for design loads indicated.
   c) Beam Stiffeners: Provide minimum 9.5mm (3/8") thick full height stiffeners each side of web at bearing supports, brace work points, beam and column connections and as indicated/required.
   d) Bolts: Minimum 19mm (3/4") diameter A325 or as indicated. Minimum 2 bolts per connection.
   e) Columns: Provide slotted shear plate beam connection through column to minimize eccentric loading to column.
   f) Braced Frames: Design for connection loads as indicated. Field weld as required.
   g) Lateral Bracing of Column/Beam: Design for 2% if factored axial load resisted by column/beam.
   h) Shear Connections: Provide double side plates for all shear connections.
5. Supplier to confirm all dimensions and site conditions of structure prior to fabrication.
6. Design steel trusses for design loads as indicated.
7. Carry all columns continuous to roof framing U.N.O.
8. Erection Tolerances:
   a) Columns: Location shall be zero inches at base and 6mm (1/4") max. out of plumb at top.
   b) Exterior girts to be accurately aligned with columns.
9. All edges and corners of connections shall be ground smooth.
10. Any steel subject to corrosion shall be hot dip galvanized or coated with a corrosion resistant finish to the approval of MSE. All hot dip galvanizing to be in accordance with CAN/CSA G164 U.N.O.
11. All HSS sections shall be provided with 6mm (1/4") thick caps.
12. Submittals: Supplier shall provide the following submittals (refer to the Submittals section):
   a) Shop Drawings sealed and signed by Supplier's Specialty Structural Engineer indication design capacity of all connections.
   b) Shop Drawings of trusses sealed and signed by Supplier's Specialty Structural Engineer indicating design capacity of all trusses and connections, truss design loads, truss reactions, member forces, lateral brace forces, deflections and any field splices.
   c) Letters of Assurance B and C-B, or Schedules S-B and S-C.
   d) Certificates showing that the fabricator is fully certified by the Canadian Welding Bureau.

POST INSTALLED CONCRETE ANCHORAGES

1. Provide adhesive at all drilled anchor and reinforcing steel locations indicated on structural drawings to depths of embedment indicated on drawings.
2. Products
   a) Adhesive used to install reinforcing steel and threaded rods in existing concrete shall be:
      i) Hilti HIT-HY 200-R Adhesive System, U.N.O. or,
      ii) Hilti HIT-RE 500 V3 Adhesive System.
   b) Mechanical anchors to be as specified on drawings.
   c) A written request for the use of alternate products, with applicable technical specifications, must be submitted to, and approved by MSE prior to construction.
   d) Reinforcing steel and threaded rod anchors shall be as specified in the reinforcing steel notes.
3. Documentation & Training
   a) The Contractor shall have copies of product literature and installation guides on site.
   b) Prior to construction, the Contractor shall arrange for Hilti on-site training of all installers for all post-installed anchor types to be used.
4. Execution
   a) Installation shall be in strict accordance with manufacturer's recommendations. Special attention is drawn to the minimum temperature requirements.
   b) Anchor capacity is dependant upon spacing between adjacent anchors and proximity of anchors to edge of concrete. Install anchors in accordance with spacing and edge clearances indicated on the drawings.
   c) Drilling of holes through existing reinforced steel in concrete is prohibited. If encountered, abandon hole location and start a new hole away from reinforcing steel locations. Patch all unused holes.
5. Testing
   a) On site load testing of 10% of all post-installed anchor shall be carried out by an independent testing laboratory, retained by the Contractor, in conjunction with the manufacturer's representative.
   b) If more than 10% of all post-installed anchors fail to achieve the specified torque or proof load, all anchors of the same diameter and type shall be tested, unless otherwise instructed by Engineer.
   c) As an alternative to anchor testing, the Contractor may retain a Material Consultant to carry out field reviews of all post-installed anchor installations.
6. Submittals
   a) Submit to MSE copies of all installers' training certificates prior to installation of post-installed anchors.
   b) Where testing is required, submit to MSE certified test reports, showing compliance with specified performance characteristics and physical properties.
   c) Where the Contractor retains a Material Consultant to perform field reviews of anchor installations instead of testing, submit to MSE Schedules S-B and S-C.

M S K M M N
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4
ISSUED FOR TENDER 2020-02-18 3
100% DESIGN SUBMISSION 2019-04-19 2
95% DESIGN REVIEW 2019-02-22 1
REVISIONS

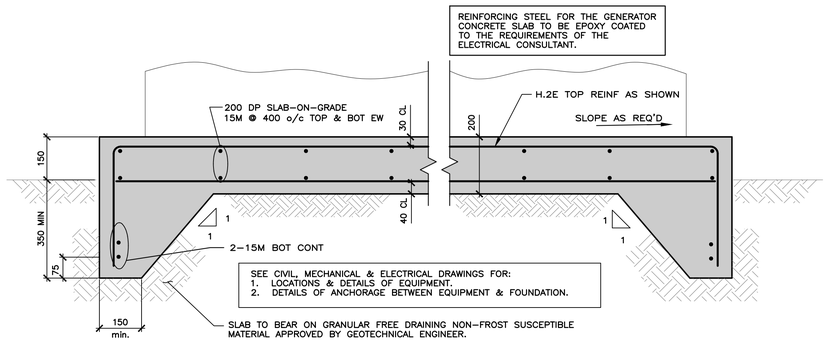
DESIGNED BY: PWSM
CHECKED BY: .
DRAWN BY: PWSM
DRAWING DATE: 2018-07-06
SCALE: N/A
CONSULTANT:

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA
18th February 2020

PROJECT NAME
GREENWOOD PUMP STATION
CLIENT
CITY OF COURTENAY
.
PROJECT ADDRESS
.
COURTENAY, BC
.
DRAWING TITLE
GENERAL STRUCTURAL NOTES
REVISION No.
03

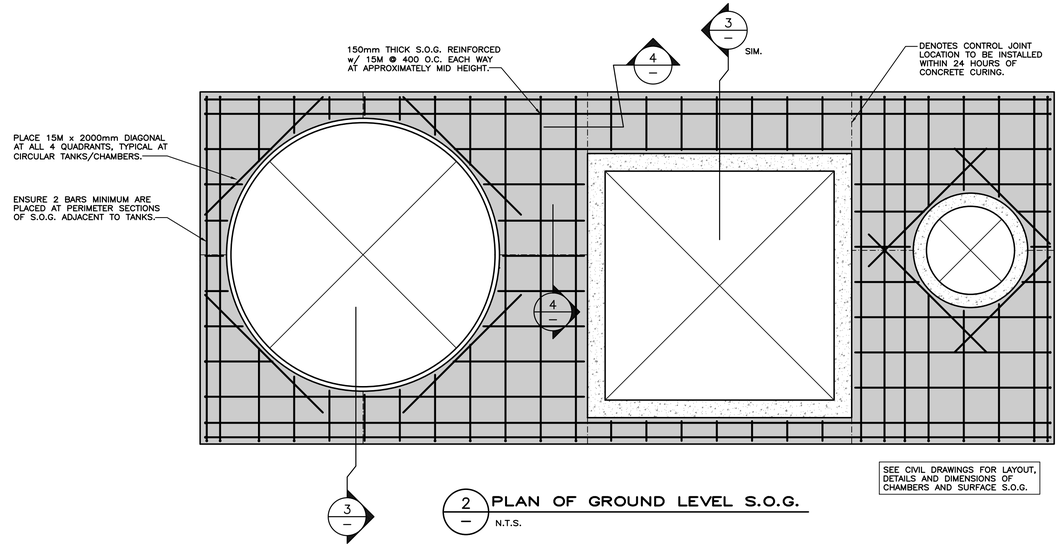
PROJECT # MSE0016

S1.1



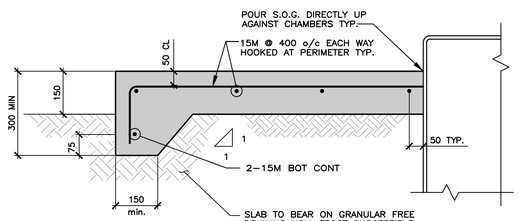
1 — FOUNDATION FOR KIOSK AND GENERATOR

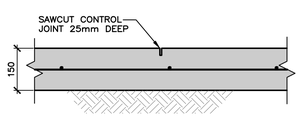
SCALE 1 : 10



2 — PLAN OF GROUND LEVEL S.O.G.

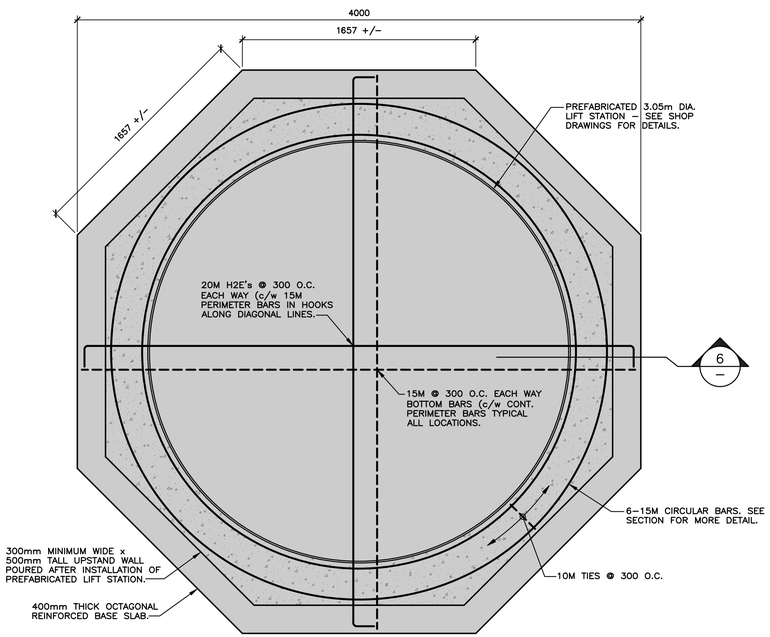
N.T.S.





4 — SLAB-ON-GRADE CONTROL JOINT

SCALE 1 : 10

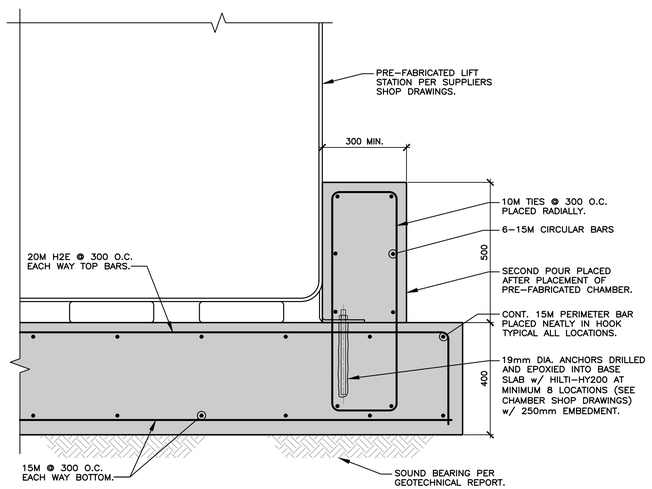


5 — PLAN OF LIFT STATION BASE

1:20

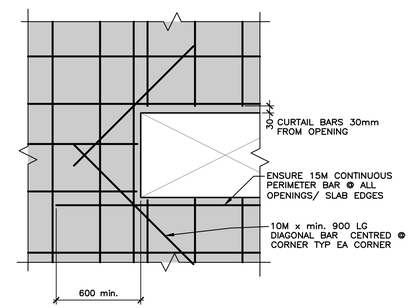
3 — SECTION

SCALE 1 : 10



6 — SECTION

SCALE 1 : 10



MINIMUM REINFORCEMENT AT OPENINGS, INSIDE CORNERS, AND COLD JOINTS IN S.O.G.

7 TYP — N.T.S.

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M N
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4
ISSUED FOR TENDER 2020-02-18 — 3
100% DESIGN SUBMISSION 2019-04-19 — 2
95% DESIGN REVIEW 2019-02-22 — 1
REVISIONS

DESIGNED BY: PWSM
CHECKED BY: .
DRAWN BY: PWSM
DRAWING DATE: 2018-07-06
SCALE: AS SHOWN
CONSULTANT:

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — PAUL W. SKIMMING — 18th February 2020

PROJECT NAME
GREENWOOD PUMP STATION
CLIENT
CITY OF COURTENAY
.
PROJECT ADDRESS
.
COURTENAY, BC
.
DRAWING TITLE
STRUCTURAL DETAILS
REVISION No.
03

PROJECT # MSE0016

S3.1

GENERAL NOTES:

1. RESTORE ALL SURFACES TO MATCH EXISTING.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL CONCRETE BASES AND JB SYMBOLS ARE NOT TO SCALE.
3. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE CANADIAN ELECTRICAL CODE (INCLUDING BULLETINS PUBLISHED BY THE BC SAFETY AUTHORITY) AND THE ELECTRICAL SPECIAL PROVISIONS ISSUED WITH THIS CONTRACT.
4. LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO EXCAVATING.
5. ALL INSTALLATIONS SHALL CONFORM TO CSA C22.1–15 INCLUDING BC ELECTRICAL SAFETY BRANCH AMENDMENTS. ALL UNDERGROUND CONDUITS SHALL BE RIGID PVC CONDUIT: COMPLYING CSA C22.2 No. 211.2–06 (NOTED AS "RPVC") ON THE DRAWINGS OR OTHERWISE NOTED. ALL OUTDOOR MOUNTED CONDUIT SHALL BE RGS OR OTHERWISE NOTED.
6. ALL MANUFACTURER AND CSA LABELS SHALL BE VISIBLE AND LEGIBLE AFTER THE EQUIPMENT IS INSTALLED.
7. ALL EQUIPMENT AND MATERIAL SHALL BE CSA CERTIFIED FOR INSTALLATION IN BC.
8. NO WORK SHALL INTERFERE WITH CURRENT CONSTRUCTION ACTIVITIES IN THE AREA BY OTHERS.
9. ALL WORK INCLUDING SHUTDOWNS AND POWER OUTAGES SHALL BE COORDINATED AND SCHEDULED WITH THE CONSTRUCTION MANAGER.
10. LOCK–OUT PROCEDURES SHALL APPLY FOR ALL HOT EQUIPMENT/WIRING THAT REQUIRES DISCONNECTION. CONTRACTOR TO COORDINATE ALL LOCK–OUTS WITH THE CONSTRUCTION MANAGER.
11. TRAFFIC CONTROL ON PORTION OF ROADS AFFECTED BY WORK SHALL BE COORDINATED WITH THE CONSTRUCTION MANAGER.
12. NOTIFY CONSULTANT OF CHANGES REQUIRED BY ELECTRICAL INSPECTION DEPARTMENT PRIOR TO MAKING CHANGES.
13. SUPPLY COPIES OF ALL INSPECTION REPORTS TO ENGINEER WITHIN 24 HOURS OF INSPECTION.
14. FURNISH CERTIFICATES OF ACCEPTANCE FROM ELECTRICAL INSPECTION DEPARTMENT ON COMPLETION OF WORK TO ENGINEER.
15. UNUSED MATERIAL AND ABANDONED EQUIPMENT SHALL BE DISPOSED OF AT THE CONTRACTORS EXPENSE.
16. INSTALLATION FOR ALL EQUIPMENT SHALL INCLUDE ALL NECESSARY CONNECTORS, TERMINATIONS, FASTENERS AND BONDING REQUIRED TO CREATE A FULLY FUNCTIONAL SYSTEM.
17. ALL CONDUCTORS SHALL BE STRANDED COPPER, RW90 XLPE INSULATED OR OTHERWISE NOTED.
18. ALL GROUNDING AND BONDING SHALL COMPLY WITH THE CANADIAN ELECTRICAL CODE.
19. MAINTAIN PHASE SEQUENCE AND COLOUR CODING THROUGHOUT. USE COLOUR CODED WIRES IN COMMUNICATION CABLES, MATCHED THROUGHOUT SYSTEM.
20. ALL EMPTY CONDUITS SHALL BE CAPPED.
21. ALL CONDUITS SHALL DRAIN TO JUNCTION BOX. SPACING BETWEEN POWER AND COMMUNICATIONS CONDUITS FOR LONGITUDINAL RUNS SHALL BE 300mm (UNLESS CONCRETE ENCASED). THE SPACING MAY BE REDUCED TO 50mm AT CROSSOVER POINTS WHERE THE CONDUITS ENTER AND EXIT JUNCTION BOXES AND PULL PITS.
22. THE CONTRACTOR SHALL NOT USE ANY FACTORY BENDS IN THE CONDUIT RUNS EXCEPT WHERE SHOWN ON THE DRAWINGS OR APPROVED BY THE PROJECT ENGINEER IN THE FIELD. WHERE FACTORY 90 DEGREE BENDS ARE APPROVED, THE RADIUS SHALL BE GREATER THAN 900mm.
23. ALL CONDUITS SHALL BE VERIFIED AND CLEANED USING THE FOLLOWING PROCEDURE:
    - TO VERIFY INTEGRITY OF CONDUIT, PULL THROUGH EACH CONDUIT DUCT A HARD RUBBER MANDREL, NOT LESS THAN 300mm LONG AND OF A DIAMETER 6mm LESS THAN THE INTERNAL DIAMETER OF THE DUCT, PRECEDED BY A SWAB OF SUITABLE DIAMETER TO REMOVE SAND, EARTH AND OTHER FOREIGN MATERIALS.
    - NOTIFY PROJECT ENGINEER IN THE EVENT OF CONDUIT FAILURE.
    - CLEAN DUCTS BEFORE LAYING. CAP BOTH ENDS DURING CONSTRUCTION AND AFTER INSTALLATION TO PREVENT ENTRY OF ANY FOREIGN MATERIALS.
    - INSTALL PULL LINE.
    - TERMINATE CONDUIT ENDS IN THE JUNCTION BOX.
    - CLEAN AND VACUUM JUNCTION BOXES. LOCATIONS SHALL BE LAID OUT BY THE CONTRACTOR AND FIELD REVIEWED BY THE ENGINEER PRIOR TO INSTALLATION.
24. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY BENDS, COUPLINGS, REDUCERS, BELL END FITTINGS, PLUGS, CAPS AND ADAPTORS OF THE SAME PRODUCT MATERIAL AS THE CONDUIT TO ENSURE A COMPLETE INSTALLATION.
25. FOR CABLE INSTALLATION IN DUCTS, CONTRACTOR SHALL USE THE FOLLOWING PROCEDURE:
    - INSTALL CABLES AS INDICATED IN DUCTS.
    - DO NOT PULL SPLICED CABLES INSIDE DUCTS.
    - INSTALL MULTIPLE CABLES IN DUCT SIMULTANEOUSLY.
    - USE CSA APPROVED LUBRICANTS OF TYPE COMPATIBLE WITH CABLE JACKET TO REDUCE PULLING TENSION.
    - AFTER INSTALLATION OF CABLES, SEAL DUCT ENDS WITH DUCT SEALING COMPOUND.
27. FOR CABLE SPLICING:
    - REMOVE INSULATION CAREFULLY FROM ENDS OF CONDUCTORS.
    - CONNECTOR SPLICES SHALL BE SECURED WITH SOLDERLESS TWIST–ON (MARRETTE) TYPE CONNECTORS.
    - WHERE THE NUMBER AND/OR SIZE OF CONDUCTORS EXCEEDS THE CAPACITY OF THE TWIST–ON CONNECTOR, BURNDY BIT MULTI TAP CONNECTIONS SHALL BE USED.
    - ALL WIRING SHALL BE NEATLY BUNDLED AND LABELLED IN ALL JUNCTION BOXES, VAULTS, CHAMBERS, HAND HOLES, CONTROL BOXES, DEVICE BOXES AND PANELS.
28. SEALING OF OUTDOOR TWIST–ON CONNECTIONS SHALL BE PERFORMED USING DOUBLE DIPPING METHOD SUCH AS 3M "SCOTCHKOTE" OR APPROVED ALTERNATIVE.
29. TESTING:
    - PERFORM TESTS USING QUALIFIED PERSONNEL. PROVIDE NECESSARY INSTRUMENTS AND EQUIPMENT.
    - FOR FEEDERS SUPPLYING MOTORS, CHECK PHASE ROTATION AND IDENTIFY EACH PHASE CONDUCTOR OF EACH FEEDER.
    - AFTER INSTALLING CABLE BUT BEFORE SPLICING AND TERMINATING, PERFORM INSULATION RESISTANCE TEST WITH 1000V MEGGER ON EACH PHASE CONDUCTOR.
30. TOP OF VAULT/JB COVERS TO BE FLUSH WITH THE FINAL GRADE OR CONCRETE PAD, UNLESS NOTED OTHERWISE.
31. ALL THE UNDERGROUND BOXES SHALL BE EQUIPPED WITH GALVANIZED STEEL COVERS. THE COVERS SHALL BE BONDED TO GROUND, AND SHALL BE LABELLED "ELEC" OR "COMM" AS SHOWN IN THE DRAWINGS.
32. THE CONTRACTOR SHALL NOT DISTURB OR DESTROY EXISTING PLANTS, BUSHES, TREES, OR ROOTS WHILE INSTALLING THE EQUIPMENT. MANUALLY DIG THROUGH HEDGES.
33. THE CONTRACTOR SHALL DISPOSE OF ALL THE REMOVED CONCRETE AND EXCESS NATIVE FILL.
34. ON–SITE DOCUMENTS SHALL BE STORED IN A SECURE LOCATION AND SHALL NOT BE LEFT IN VEHICLES OVERNIGHT.
35. THERE SHALL BE NO ENERGIZED EXPOSED PARTS INSIDE KIOSKS, CABINETS, CHAMBERS OR EQUIPMENT BOXES.
36. CABLE INSTALLATION INCLUDES CABLE TERMINATION, LABELLING, TESTING AND COMMISSIONING. ALL TESTING REPORTS SHALL BE SENT TO THE ENGINEER FOR REVIEW AND APPROVAL.
37. ALL THE POWER CABLES INSIDE OF CHAMBERS SHALL BE TECK TYPE AND ALL THE CONNECTORS SHALL BE WATER TIGHT.
38. ALL ELECTRICAL EQUIPMENT TO BE REMOVED SHALL BE RETURNED TO THE CRD PUBLIC WORKS YARD.
39. WORK SHALL CONFORM TO ALL APPLICABLE REGULATIONS OF WORKSAFE BC.
40. IDENTIFY ELECTRICAL EQUIPMENT WITH LABELS. FOR EACH DEVICE, INSTALL LABEL ON EQUIPMENT, PANEL, AND BACKSIDE OF PANEL, WHERE APPLICABLE.
41. ARC FLASH LABELS SHALL BE INSTALLED PRIOR TO ENERGIZING STATION.
42. CONTRACTOR SHALL COORDINATE WITH BC HYDRO. REFERENCE NUMBER: 4219303. CONTACT: JOHN SMAJLA, PHONE: 250–897–7405, EMAIL: JOHN.SMAJLA@BCHYDRO.COM
43. CONTRACTOR SHALL COORDINATE WITH TELUS. FILE ID: NGM–45426. CONTACT: JOHN HARVEY, PHONE 250–304–9830, EMAIL: JOHN.HARVEY@TELECON.CA

LABELLING CONVENTION NOTES:

1. ALL CABLES AND CONDUCTORS SHALL BE LABELLED AS SHOWN ON THESE DRAWINGS. CONDUCTORS SHALL BE LABELLED IN ALL JB'S, HANDHOLES, VAULTS, CONTROL CABINETS AND ALL OTHER ACCESSIBLE POINTS.
2. "LOCAL" SPECIFIES THE TERMINATION INSIDE THE CONTROL CABINET AND "REMOTE" INDICATES TERMINATION OUTSIDE.
3. IF THERE IS MORE THAN ONE CONDUCTOR OF THE SAME TYPE WITHIN A BUNDLE OR CABLE, THE CONDUCTORS SHALL BE LABELLED SEQUENTIALLY STARTING FROM ONE.
4. HOT AND NEUTRAL CIRCUITS ARE LABELLED HX OR NX, WHERE X IS THE CIRCUIT NUMBER IN THE PANEL.
5. ALL CONDUCTORS SHALL BE IDENTIFIED IN ALL JUNCTION BOXES, CABINETS OR OTHER ACCESS POINTS. IDENTIFY WIRING WITH PERMANENT INDELIBLE IDENTIFYING MARKINGS, EITHER NUMBERED AND/OR COLOUR CODED PLASTIC TAPE ON BOTH ENDS OF PHASE CONDUCTORS OF FEEDERS AND BRANCH CIRCUIT WIRING, PRINTED USING A THERMAL HEAT TRANSFER SYSTEM.
6. IDENTIFY GROUPS OF CONDUCTORS OR CABLES IN ENCLOSURES AND PANELS USING BRADY #B–342 (HEAT SHRINK SLEEVES) OR APPROVED ALTERNATE. IDENTIFY CABLES OR GROUPS OF CONDUCTORS IN JUNCTION BOXES USING BRADY #B–109 (TY–WRAP STYLE MULTIPURPOSE IDENTIFICATION TAG) OR APPROVED ALTERNATE.

EQUIPMENT:

1. ALL ELECTRICAL EQUIPMENT SHALL BE AS SPECIFIED OR APPROVED ALTERNATIVE.
2. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR ALL ELECTRICAL EQUIPMENT FOR APPROVAL PRIOR TO PURCHASING.

NOTES LEGEND:

[1] VS. 1.

- INDICATES THAT THE NOTE APPLIES TO THE ENTIRE DRAWING.
- INDICATES THAT THE NOTE IS REFERENCED TO A SPECIFIC LOCATION ON THE DRAWING.

CABLE LABELLING NOMENCLATURE:

POWER

EXAMPLE: P1–CCT10/12/14–600V

- VOLTAGE
- CIRCUIT
- PANEL

EYS FITTING SYMBOLOGY:

1

- FITTING IDENTIFIER. SHEET BY SHEET BASIS.
- EYS FITTING SYMBOL.

RELAY SYMBOLOGY:

DS–1

RX 1P

- BOX AROUND DEVICE INDICATES THE COMPONENT IS LOCATED EXTERNAL TO THE ENCLOSURE.
- NUMBER OF POLES / FORM C CONTACTS.

NOMENCLATURE:

A	– AMBER	LTG	– LIGHTING
ACT	– ACTUATOR	LVL	– LEVEL
AS	– AUTOSTART	MCC	– MOTOR CONTROL CENTER
BATT	– BATTERY	MGB	– MASTER GROUND BUS
BCH	– BC HYDRO	MSM	– MULTISMART
BLK	– BLACK	MM	– MILLIMETER
C	– COIL	MOT	– MOTION SENSOR
C/W	– COMPLETE WITH	N	– NEUTRAL
CBx	– CIRCUIT BREAKER ("X" DENOTES NUMBER)	NC	– NORMALLY CLOSED
CCT	– CIRCUIT	NO	– NORMALLY OPEN
CEC	– CANADIAN ELECTRICAL CODE, PART 1, LATEST EDITION	NS	– NETWORK SWITCH
CMD	– COMMAND	NTS	– NOT TO SCALE
COMM	– COMMUNICATION	OL	– OVERLOAD
CRD	– CAPITAL REGIONAL DISTRICT	OT	– OVERTEMPERATURE
CSA	– CANADIAN STANDARDS ASSOCIATION	PEC	– PHOTOELECTRIC CELL
CT	– CURRENT TRANSFORMER	PFC	– POWER FACTOR CORRECTION
CTRL	– CONTROL	PIT	– PRESSURE INDICATING TRANSMITTER
DC	– DOOR CONTACT	PLC	– PROGRAMMABLE LOGIC CONTROLLER
DPDT	– DOUBLE POLE DOUBLE THROW	PMR	– PUMP MONITOR RELAY
DS	– KIOSK DOOR SWITCH	POTS	– PLAIN OLD TELEPHONE SERVICE
DWG	– DRAWING	PVC	– POLYVINYL CHLORIDE
EMR	– EMERGENCY RUN	PT	– POTENTIAL TRANSFORMER/PRESSURE TRANSMITTER
ERR	– EMERGENCY RUN RELAY	PWR	– POWER
ETM	– ELAPSED TIME METER	Px	– PUMP ("X" DENOTES NUMBER)
F	– FUSE	QTY	– QUANTITY
FCV	– FLOW CONTROL VALVE	R	– RED
FE	– FLOW ELEMENT	RAD	– SCADA RADIO
FLA	– FULL LOAD AMPERAGE	RGS	– RIGID GALVANIZED STEEL
FLS	– FLYGT LEAKAGE SENSOR	RLY	– RELAY
FM	– FLOW METER	RPVC	– RIGID POLYVINYL CHLORIDE
FRUN	– FAN RUN	RR	– REMOTE RUN
FS	– FLOAT SWITCH	RS	– REMOTE START
G	– GREEN	RSF	– RESIDUAL SOLIDS FORCEMAIN
GA	– GAUGE	RTU	– REMOTE TELEMETRY UNIT
GEN	– GENERATOR	SD	– SMOKE DETECTOR
GFCI	– GROUND FAULT CIRCUIT INTERRUPTER	SLF	– SECONDARY LOW FLOAT
GFLT	– GROUND FAULT RELAY	SP	– SUMP PUMP
GND	– GROUND	SPD	– SURGE PROTECTION DEVICE
GRN	– GREEN	SPDT	– SINGLE POLE DOUBLE THROW
HI	– HIGH WET WELL LEVEL	SS	– STAINLESS STEEL
HIHI	– HIGH HIGH WET WELL LEVEL	SST	– ELECTRONIC SOLID STATE TRIP DEVICE
HLOA	– HIGH–LOW–OFF–AUTO	TD	– TIME DELAY
HMI	– HUMAN MACHINE INTERFACE	TEMP	– TEMPERATURE
HOA	– HAND–OFF–AUTO CONTROL	TRSW	– TRANSFER SWITCH
HP	– HORSE POWER	TYP	– TYPICAL
HS	– HATCH SWITCH	UPS	– UNINTERRUPTIBLE POWER SUPPLY
HTR	– HEATER	US	– ULTRASONIC SENSOR
IS	– IN SERVICE	UTS	– UP TO SPEED
JB	– JUNCTION BOX	UV	– ULTRAVIOLET
KP	– KEYPAD	VFD	– VARIABLE FREQUENCY DRIVE
LO	– LOW WET WELL LEVEL	VFR	– VENTILATION FAN RELAY
LOLO	– LOW LOW WET WELL LEVEL	XFMR	– TRANSFORMER
LS	– LEVEL SWITCH	XP	– EXPLOSION PROOF
LSI	– LONG–TIME, SHORT–TIME, INSTANTANEOUS		

LEGEND

	POWER/COMMUNICATIONS UTILITY POLE		VENTILATION FAN
	CIRCUIT BREAKER		PUSH BUTTON (NORMALLY OPEN)
	FUSE		PUSH BUTTON (NORMALLY CLOSED)
	OVERLOAD PROTECTION		HEATING/COOLING THERMOSTAT
	TRANSFORMER		FLOAT SWITCH
	LINE REACTOR		
X.X kVAR	POWER FACTOR CORRECTION CIRCUIT	G	ILLUMINATED PUSH BUTTON (INDICATOR LIGHT)
M	BC HYDRO METER AND METER BASE		ACTUATED VALVE
	CURRENT TRANSFORMER		
M Px	PUMP MOTOR	PMR	PHASE LOSS MONITOR RELAY
	GENERATOR	SPD	SURGE PROTECTION DEVICE
	YAGI ANTENNA	ETM	ELAPSED TIME METER
	DUAL RECEPTACLE 120V (GFCI)		HYDROSTATIC PRESSURE SENSOR
WP	WEATHERPROOF DUAL GFI RECEPTACLE		FLOAT SWITCH
T	WALL MOUNTED THERMOSTAT (DUAL STAGE HEATING AND COOLING)	RX 1P	CONTACTOR/RELAY COIL (NUMBER OF POLES/CONTACTS)
	GROUND ELECTRODE/ROD		NORMALLY OPEN CONTACT
	TERMINAL BLOCK LOCATED IN PUMP CONTROL PANEL		NORMALLY CLOSED CONTACT
	TERMINAL BLOCK LOCATED IN MOTOR CONTROL ENCLOSURE		GROUND
	TERMINAL BLOCK LOCATED IN KIOSK VENTILATED COMPARTMENT		LIGHT
HS	HATCH SWITCH	XP	EXPLOSION PROOF LIGHT FIXTURE
	DISCONNECT	HW	EXTERIOR WALL PACK LUMINAIRE
T $	ASTRONOMICAL TIME SWITCH		BATTERY PACK WITH REMOTE HEADS AND EXIT SIGN
OS $	OCCUPANCY SENSOR SWITCH		BATTERY PACK WITH REMOTE HEADS
HTR	HEATER		REMOTE HEADS
K	SECURITY PANEL KEYPAD		WALL MOUNTED MOTION SENSOR
M	MAGNETIC FLOW METER SENSOR		HEAT DETECTOR
DC	DOOR CONTACT (ALLEN BRADLEY 802T–A LIMIT SWITCH WITH S.S. LEVER 802MC–W2B)		

LINE TYPE LEGEND

LINE	DESCRIPTION
———	120/240V CONDUIT/CABLE
———	COMMUNICATIONS OR LOW VOLTAGE CONDUIT/CABLE
—·—	347/600V CONDUIT/CABLE
—··—	TECK CABLING
– – – –	GROUNDING
———┐	CAPPED CONDUIT

ISSUED FOR TENDER
NOT FOR CONSTRUCTION

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PROFESSIONAL ENGINEER – PROVINCE OF BRITISH COLUMBIA – L.S. NAIDU # 41038
2020-02-17

#	Date	Issue / Revision	App
-	2020-02-18	ISSUED FOR TENDER	IN

CITY OF COURTENAY

URBAN systems

Scale: AS SHOWN

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Designed by	MC/MS
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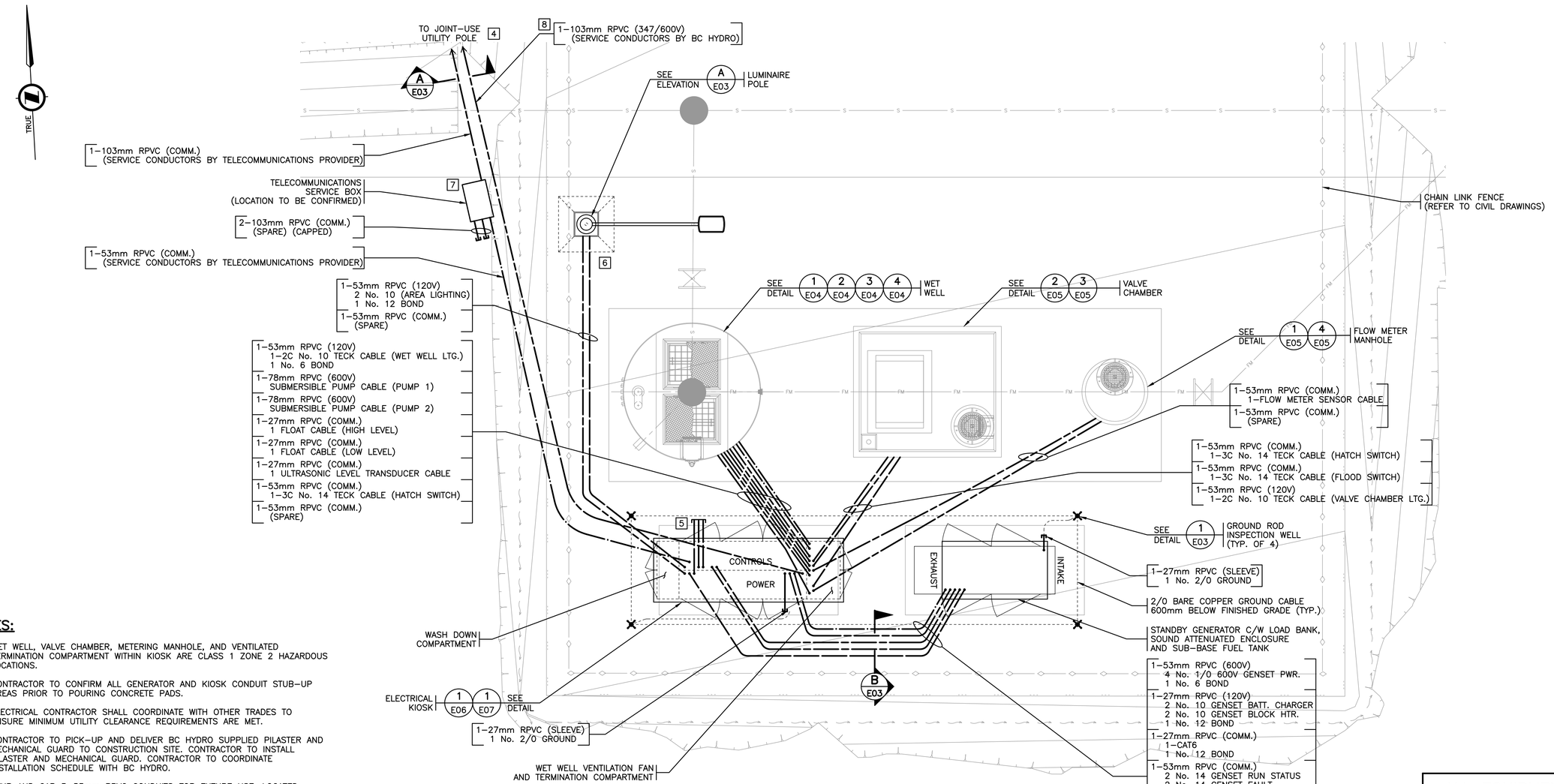
GREENWOOD PUMPSTATION
NOTES AND LEGEND

Sheet Number		1 of 18
Project Number	Drawing Number	Revision
18248	E01	-



NOTES:

1. WET WELL, VALVE CHAMBER, METERING MANHOLE, AND VENTILATED TERMINATION COMPARTMENT WITHIN KIOSK ARE CLASS 1 ZONE 2 HAZARDOUS LOCATIONS.
2. CONTRACTOR TO CONFIRM ALL GENERATOR AND KIOSK CONDUIT STUB–UP AREAS PRIOR TO POURING CONCRETE PADS.
3. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OTHER TRADES TO ENSURE MINIMUM UTILITY CLEARANCE REQUIREMENTS ARE MET.

[4] CONTRACTOR TO PICK–UP AND DELIVER BC HYDRO SUPPLIED PILASTER AND MECHANICAL GUARD TO CONSTRUCTION SITE. CONTRACTOR TO INSTALL PILASTER AND MECHANICAL GUARD. CONTRACTOR TO COORDINATE INSTALLATION SCHEDULE WITH BC HYDRO.

[5] STUB AND CAP 3–53mm RPVC CONDUITS FOR FUTURE USE. LOCATED CONDUITS APPROXIMATELY 600mm FROM EDGE OF CONCRETE PAD. INCLUDE FINAL LOCATION ON AS–BUILTS.

[6] POSITION LUMINAIRE POLE HANDHOLE ON SOUTH SIDE OF POLE.

[7] REFER TO TELECOMMUNICATION PROVIDER'S INSTALLATION STANDARDS. TELECOMMUNICATION SERVICE BOX LOCATION TO BE CONFIRMED PRIOR TO CONSTRUCTION. CONTRACTOR TO PICK–UP AND DELIVER TELECOMMUNICATION SERVICE PROVIDER SUPPLIED PILASTER, MECHANICAL GUARD, AND SERVICE BOX TO CONSTRUCTION SITE. CONTRACTOR TO INSTALL PILASTER, MECHANICAL GUARD, AND SERVICE BOX. CONTRACTOR TO COORDINATE INSTALLATION SCHEDULE WITH TELECOMMUNICATIONS SERVICE PROVIDER.

[8] CONCRETE ENCASEMENT OF BC HYDRO CONDUCTORS REQUIRED IN AREAS SUBJECT TO EROSION PER SECTION ES54 H0–02.03 OF BC HYDRO'S UNDERGROUND DISTRIBUTION STANDARDS, SEE "BC HYDRO COORDINATION" DRAWING.

SITE PLAN

0 1:50 2.5

ALL EQUIPMENT IS PROPOSED UNLESS NOTED OTHERWISE

ISSUED FOR TENDER
NOT FOR CONSTRUCTION

CHECK BEFORE YOU DIG

CONTRACTOR SHALL CONFIRM THE LOCATIONS OF ALL UNDERGROUND UTILITIES.

BC OneCall Call before you dig

PBX ENGINEERING

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2020-02-18
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PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA L.S. NAIDU # 41036 ENGINEER 2020-02-17

#	Date	Issue / Revision	App
-	2020-02-18	ISSUED FOR TENDER	IN

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URBAN systems

Scale AS SHOWN

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GREENWOOD PUMPSTATION

SITE PLAN

Sheet Number 2 of 18
Project Number 18248
Drawing Number E02
Revision -

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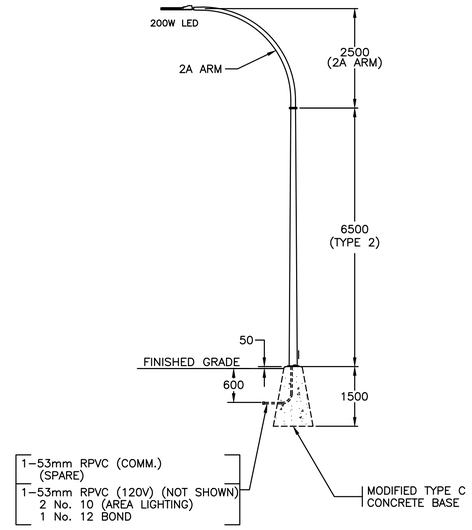

ELEVATION A E02 LUMINAIRE POLE
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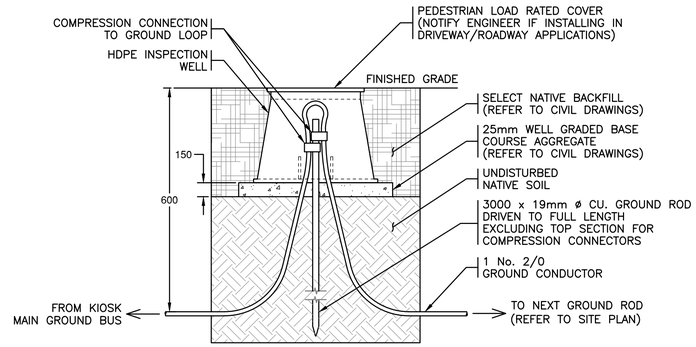
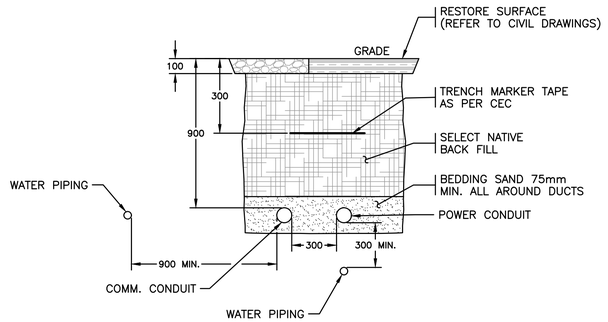


DETAIL 1 E02 TYPICAL GROUND ROD INSPECTION WELL
N.T.S.



SECTION A E02 TYPICAL TRENCH SECTION
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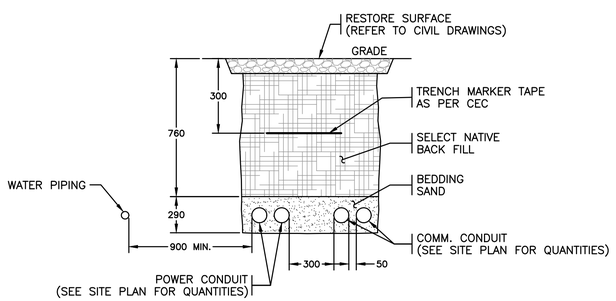

SECTION B E02 TYPICAL TRENCH SECTION
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PBX ENGINEERING

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2020-02-18
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PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA I. S. NAIDU # 41038
2020-02-17

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-	2020-02-18	ISSUED FOR TENDER	IN

CITY OF COURTENAY

URBAN systems

Scale AS SHOWN

Quality Control by IN
Designed by MC/MS
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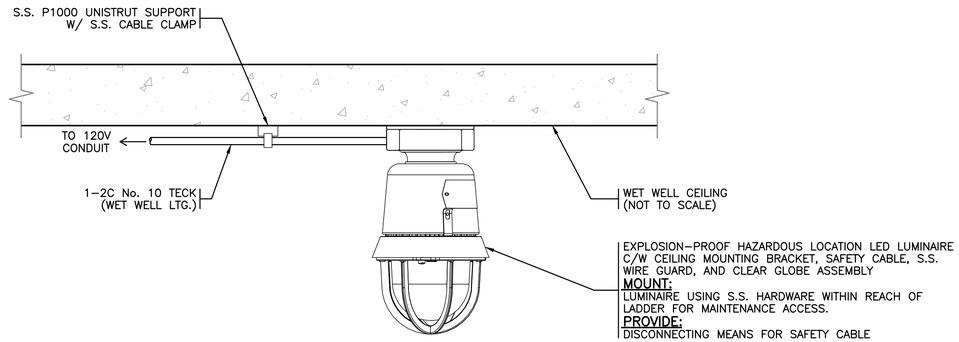
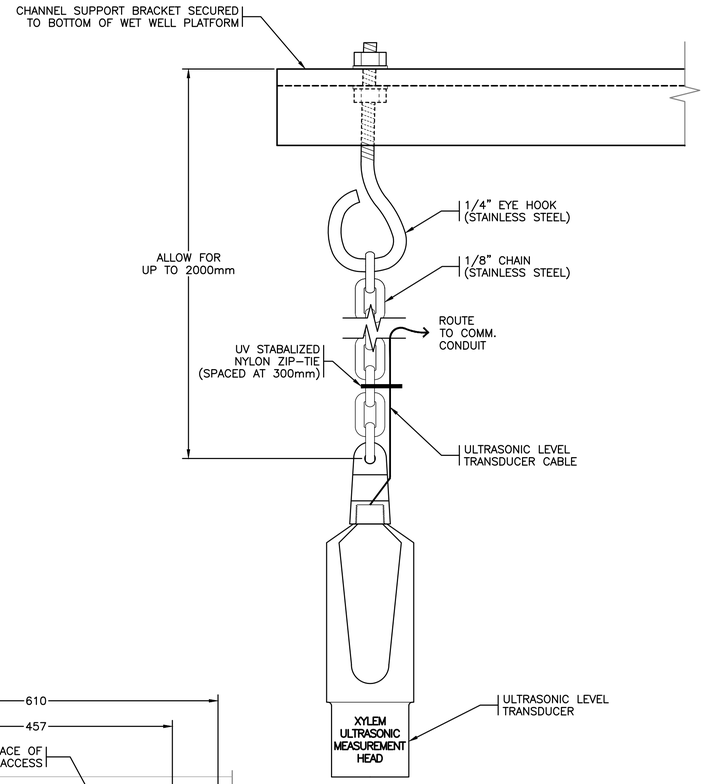
GREENWOOD
PUMPSTATION
DETAILS
(1 OF 3)

Sheet Number 3 of 18
Project Number 18248 | Drawing Number E03 | Revision -

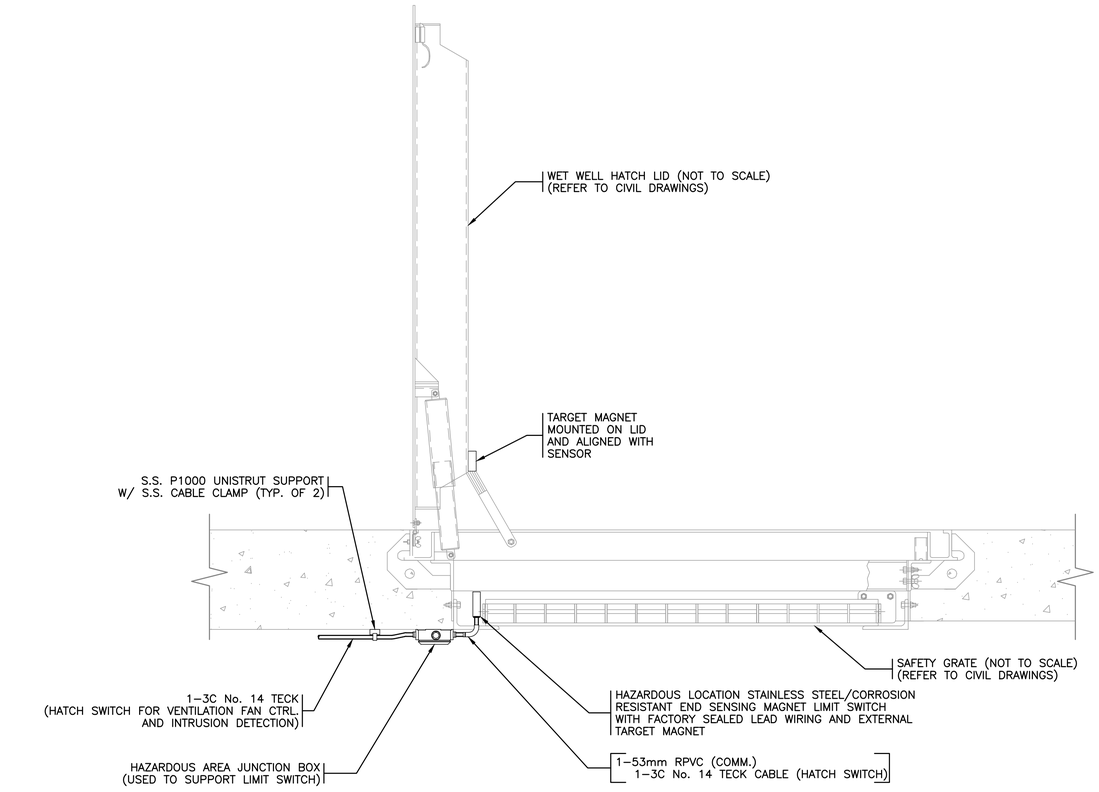


DETAIL 1 WET WELL LUMINAIRE
1:5 (E02)

0 1:5 250mm

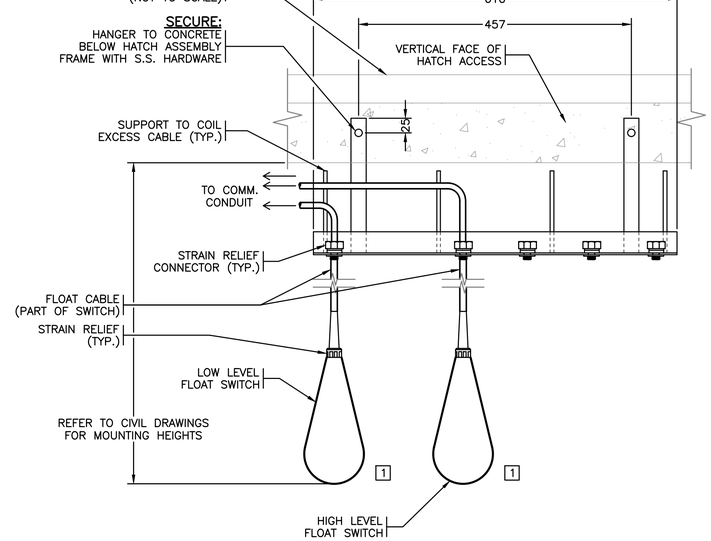


DETAIL 2 ULTRASONIC LEVEL TRANSDUCER MOUNTING
N.T.S. (E02)



DETAIL 3 WET WELL HATCH SWITCH
1:10 (E02)

0 1:10 500mm



DETAIL 4 FLOAT HANGER
1:2 (E02)

0 1:5 250mm

NOTES:

1. INSTALL INSTRUMENTS/SENSORS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

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GREENWOOD PUMPSTATION
DETAILS
(2 OF 3)

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18248	E04	-

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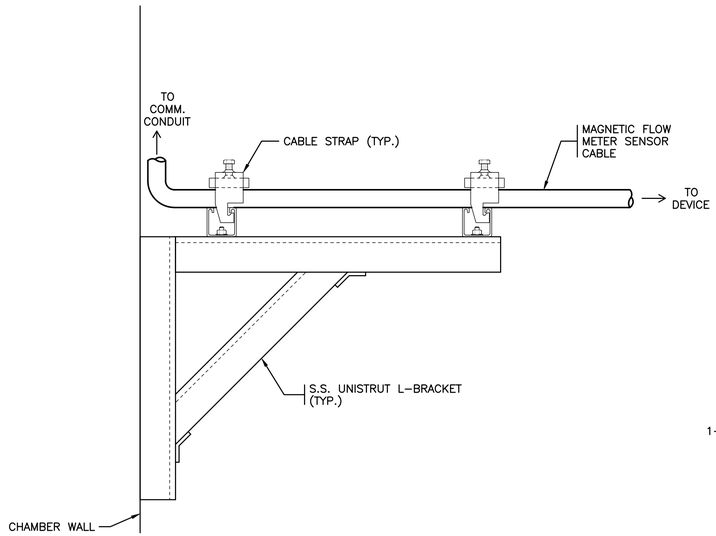
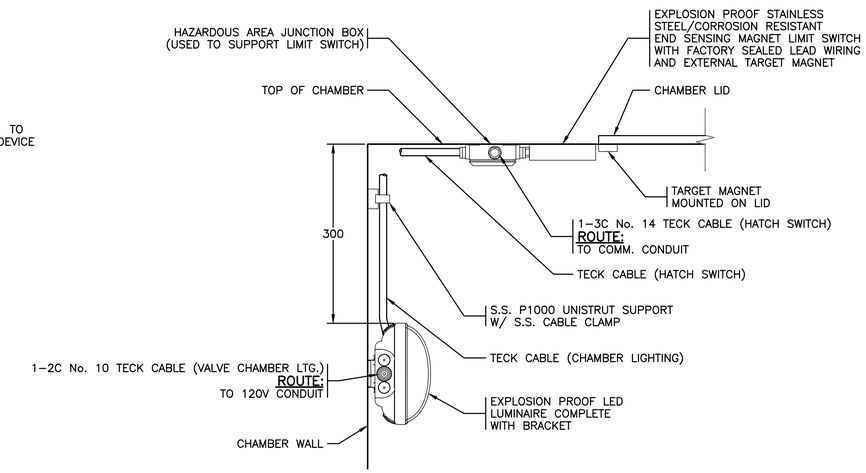
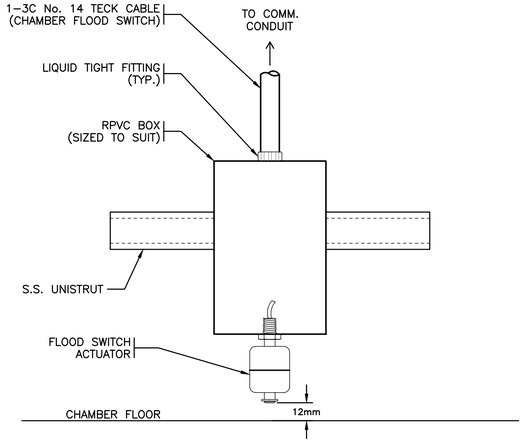


DETAIL 1 CABLE SUPPORT BRACKET
N.T.S. E02



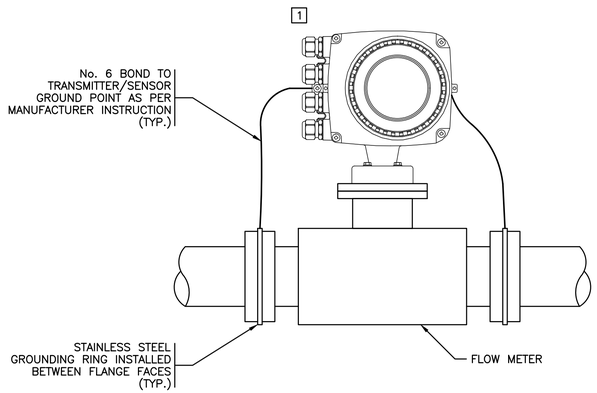
DETAIL 2 VALVE CHAMBER LUMINAIRE
1:5 E02

0 1:5 250mm



DETAIL 3 FLOOD SWITCH
1:2 E02

0 1:2 100mm



DETAIL 4 MAGNETIC FLOWMETER WITH GROUND RING
N.T.S. E02

NOTES:

1. FLOW METER TRANSMITTER SHOWN FOR CLARITY. REFER TO COMMUNICATIONS BLOCK DIAGRAM FOR LOCATION OF TRANSMITTER.

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ATTENTION
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WARNING
Utilities or structures shown on this drawing were compiled from information supplied by various parties and may not be complete or accurate. Expose and conclusively confirm the location in the field all underground utilities and structures indicated on this drawing, all underground utilities in the area of the proposed work and any utilities or structures reasonably apparent from an inspection of the proposed work. Urban Systems Ltd. assumes no responsibility for loss or damage caused by third party negligence or failure to comply with the above.

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GREENWOOD PUMPSTATION
DETAILS
(3 OF 3)

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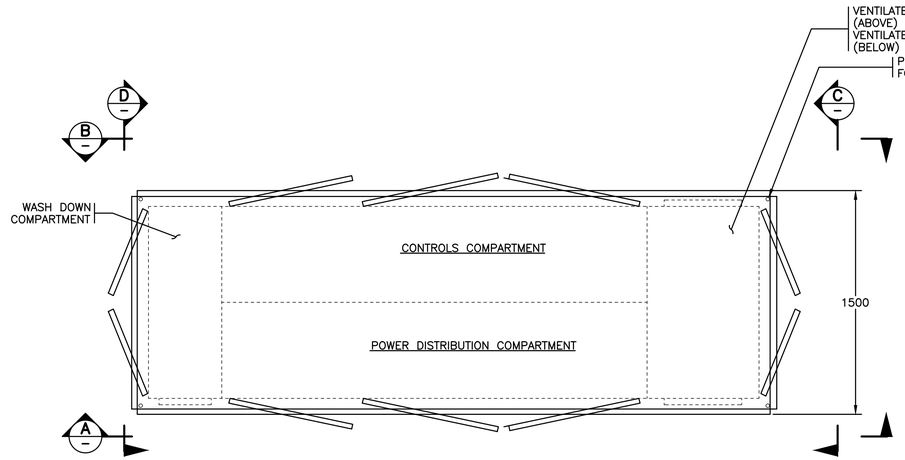
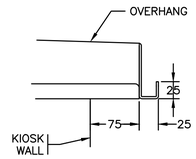
Project Number 18248
Drawing Number E05
Revision -



DETAIL 1 – KIOSK – TOP VIEW
1:20 (E02)

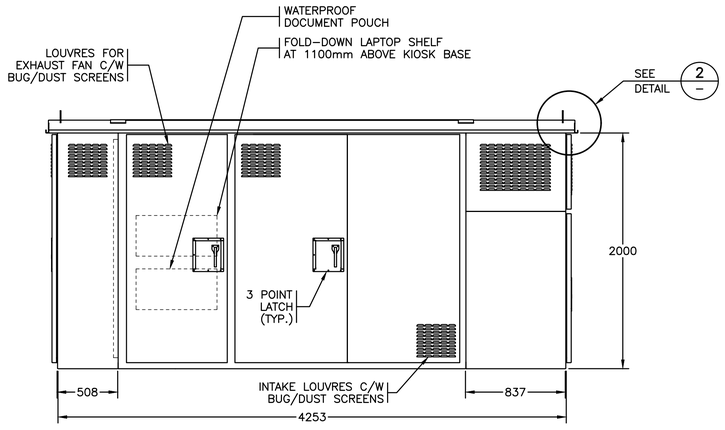
0 1:20 1



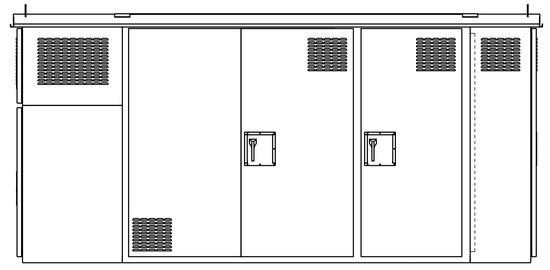
DETAIL 2 – KIOSK – ROOF (TYP.)
N.T.S.

NOTES:

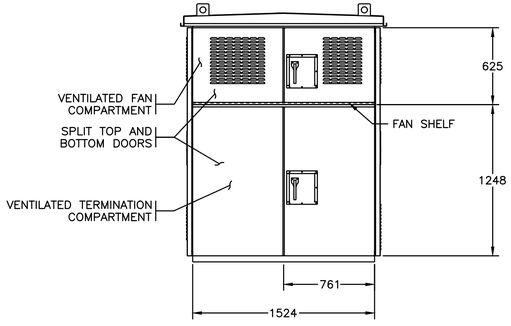
1. KIOSK SHALL BE CSA TYPE 3R RATED. OUTER SHELL SHALL BE MARINE GRADE ALUMINIUM AND SHALL BE WELDED TO ROOF ASSEMBLY, EQUIPMENT MOUNTING PANEL MOUNTS AND BASE PLATES. KIOSK SHALL INCLUDE STRUCTURAL BRACING TO ACCOMMODATE TRANSPORTATION, WIND, SNOW AND ICE LOADING. KIOSK MANUFACTURER SHALL BE RESPONSIBLE FOR OBTAINING STRUCTURAL CERTIFICATION FROM APEGBC REGISTERED PROFESSIONAL ENGINEER. STRUCTURAL CERTIFICATION SHALL INCLUDE RECOMMENDATIONS FOR SEISMIC AND FOR FASTENING METHODS.
2. KIOSK DIMENSIONS ARE APPROXIMATE ONLY. KIOSK MANUFACTURER SHALL PRODUCE DETAILED SHOP DRAWINGS WHICH SHALL INCLUDE INTERNAL EQUIPMENT LAYOUTS FOR REVIEW BY ENGINEER PRIOR TO PRODUCTION. THE MANUFACTURER SHALL ENSURE THE KIOSK IS SIZED APPROPRIATELY TO HOUSE THE INTENDED EQUIPMENT.
3. ALL LOUVERS SHALL HAVE BUG SCREENS.
4. DOORS SHALL INCLUDE A GAS SPRING. ALL LATCHES SHALL BE 3–POINT LATCHING SYSTEM WITH PAD LOCKABLE HANDLES.
5. KIOSK TO BE POWDER COATED. COLOUR CODE: TO BE CONFIRMED.
6. ALL COMPARTMENTS SHALL HAVE REMOVABLE MOUNTING PANELS. ALL INTERIOR PANELS SHALL BE 10 GA. GALVANIZED PAINTED WHITE.
7. ALL COUPLINGS BETWEEN THE COMPARTMENTS SHALL BE PLACED AND WELDED AT THE ENCLOSURE FABRICATION SHOP.
8. THE FAN COMPARTMENT SHALL BE CONTINUOUSLY WELDED PROVIDING A COMPLETELY SEALED ENCLOSURE. VENTILATED FAN COMPARTMENT SHALL BE SEALED FROM VENTILATED TERMINATION COMPARTMENT.
9. KIOSK SUPPLIER TO PROVIDE CONDUIT STUB–UP TEMPLATE FOR USE BY INSTALLATION CONTRACTOR.
10. PROVIDE 12mm THICK NEOPRENE CLOSED CELL GASKET BETWEEN KIOSK BASE AND CONCRETE PAD.



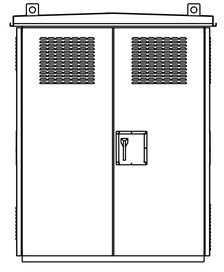
SECTION A – KIOSK – CONTROLS COMPARTMENT
1:25



SECTION B – KIOSK – POWER DISTRIBUTION COMPARTMENT
1:25



SECTION C – KIOSK – VENTILATED COMPARTMENT
1:25



SECTION D – KIOSK – WASH DOWN COMPARTMENT
1:25

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GREENWOOD PUMPSTATION
KIOSK
(1 OF 3)

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Drawing Number: E06
Revision: -

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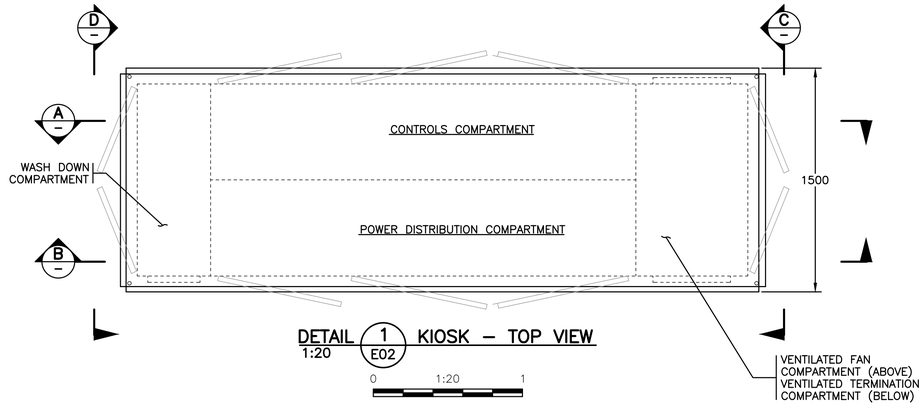
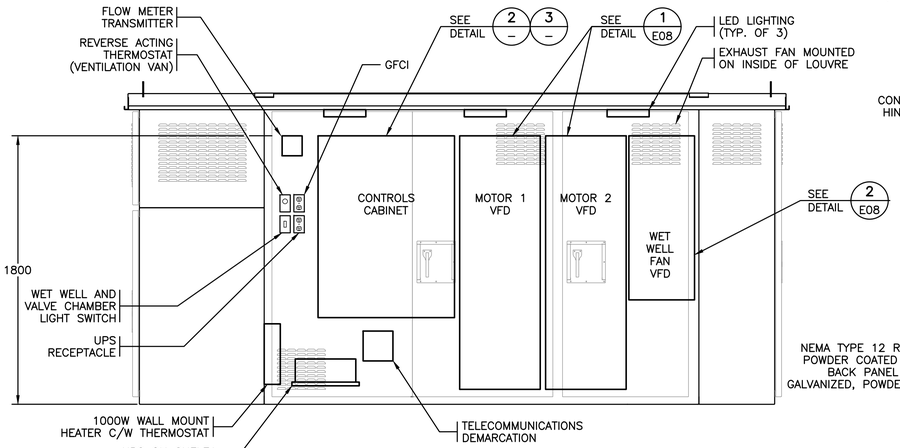


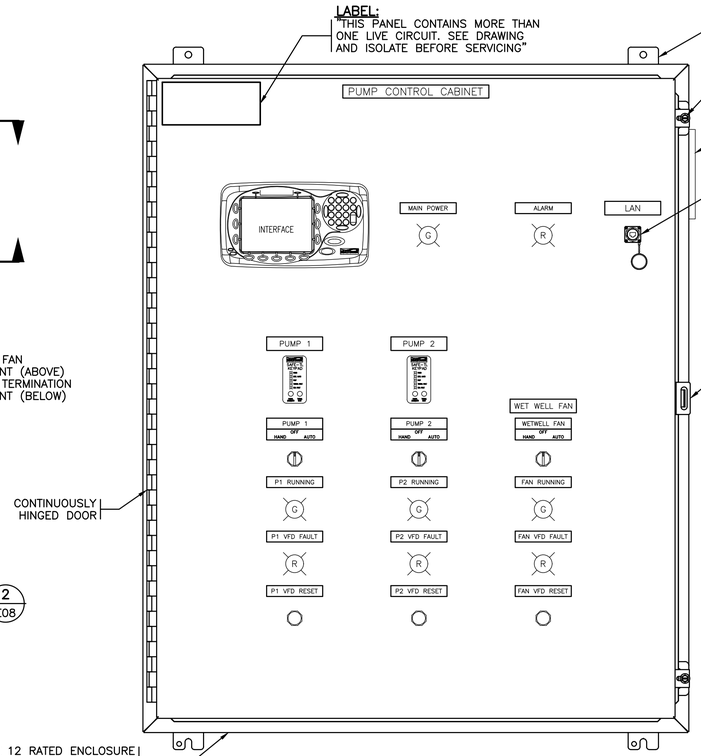
DETAIL 1 (E02) KIOSK – TOP VIEW
1:20

0 1:20 1



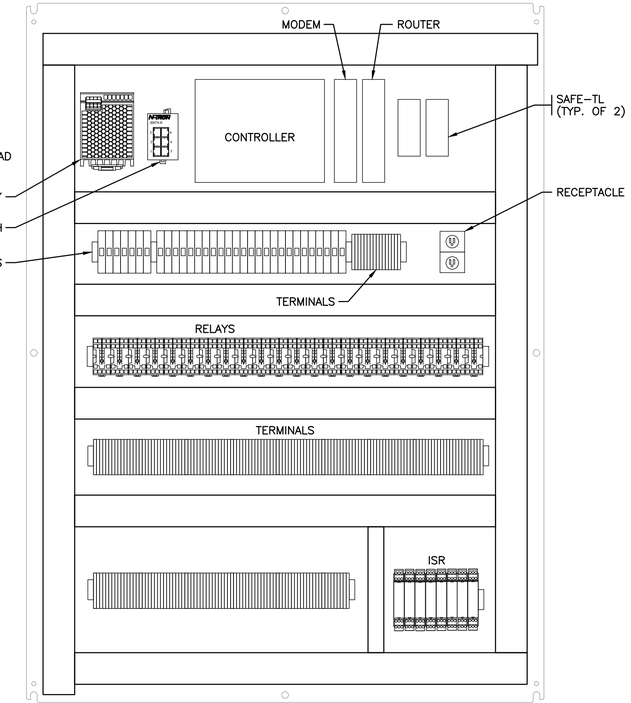
SECTION A (–) KIOSK – CONTROLS COMPARTMENT
1:20

0 1:20 1



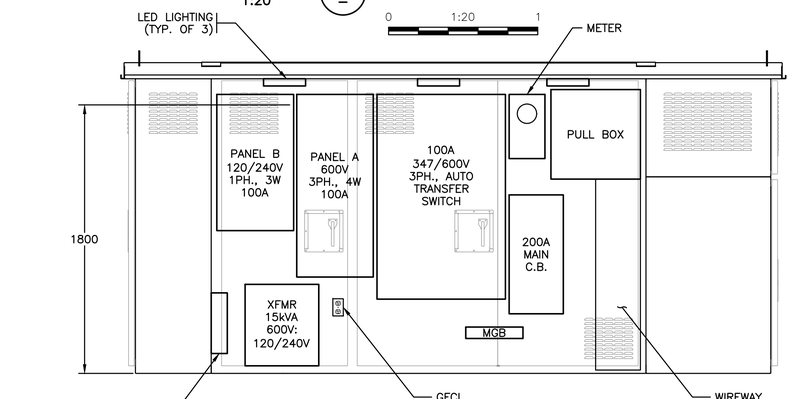
DETAIL 2 (–) CONTROLS CABINET – FRONT PANEL
1:5

0 1:5 250mm



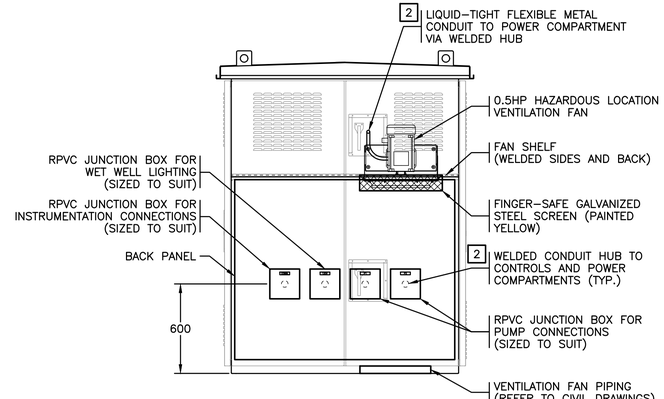
DETAIL 3 (–) CONTROLS CABINET – INTERIOR LAYOUT
1:5

0 1:5 250mm



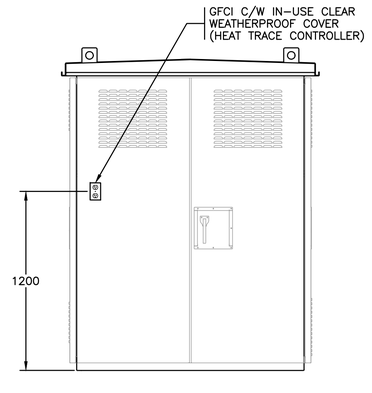
SECTION B (–) KIOSK – POWER DISTRIBUTION COMPARTMENT
1:20

0 1:20 1



SECTION C (–) KIOSK – VENTILATED COMPARTMENT
1:20

0 1:20 1



SECTION D (–) KIOSK – WASH DOWN COMPARTMENT
1:20

0 1:20 1

NOTES:

1. CONTRACTOR TO PROVIDE DETAILED SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION. INTERIOR AND EXTERIOR PANEL LAYOUTS AND WIRING DIAGRAMS TO BE PROVIDED AS PART OF THE SUBMISSION. REFER TO SPECIFICATIONS FOR SPECIFIC LAYOUT DETAILS AND EQUIPMENT REQUIREMENTS.

2. ALL CONDUIT PENETRATIONS TO CONTROLS AND POWER COMPARTMENTS SHALL BE MADE USING WELDED CONDUIT HUBS AND SEALED USING EYS FITTINGS.

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GREENWOOD PUMPSTATION
KIOSK
(2 OF 3)

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Drawing Number E07
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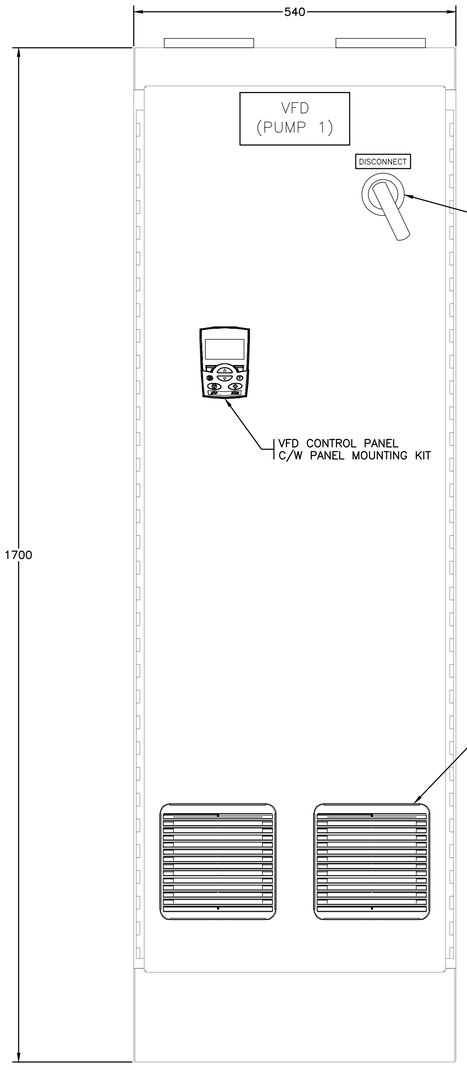
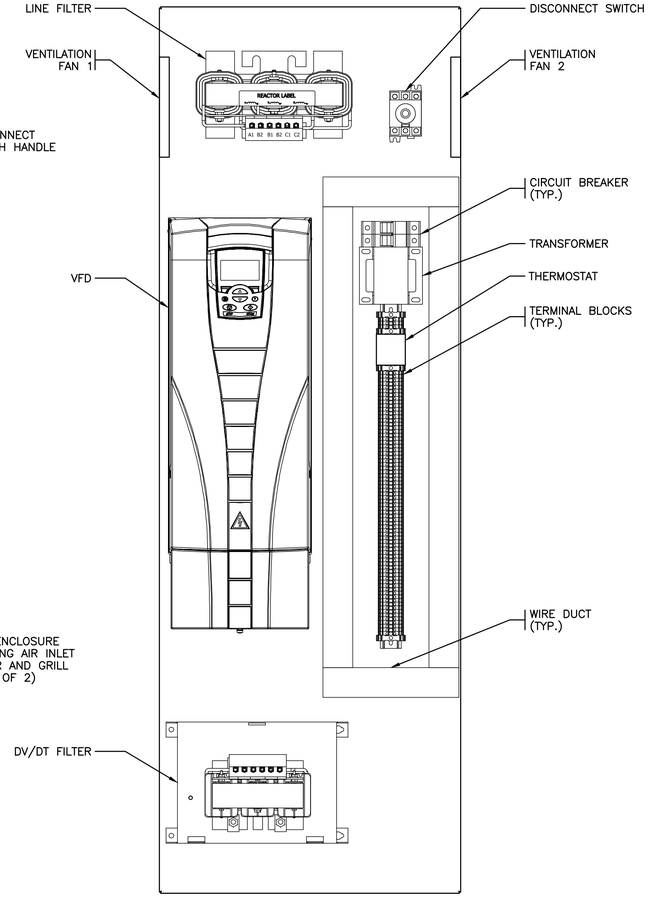


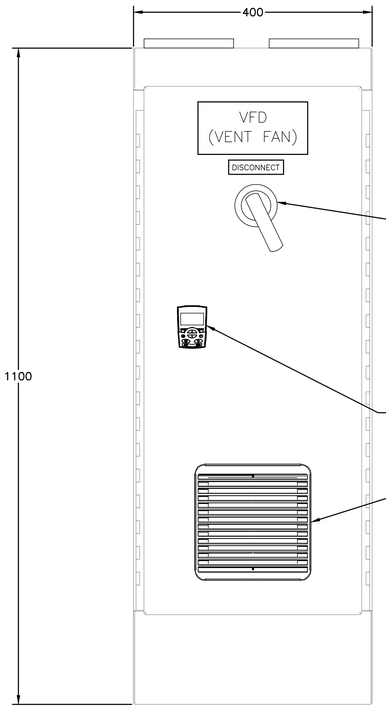
FRONT LAYOUT



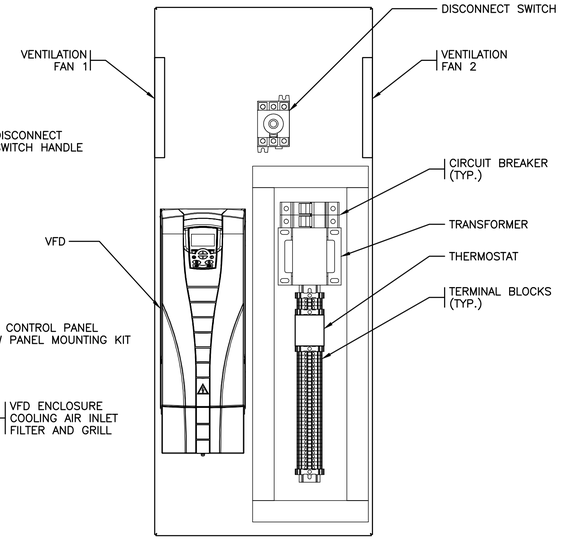
INSIDE LAYOUT

DETAIL 1 (E07) 600V MOTOR CONTROL ENCLOSURE
1:5

0 1:5 250mm



FRONT LAYOUT



INSIDE LAYOUT

DETAIL 2 (E07) 600V VENT. FAN CONTROL ENCLOSURE
1:5

0 1:5 250mm

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GREENWOOD PUMPSTATION
KIOSK
(3 OF 3)

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