CREUS
Engineering
Civil Engineers & Project Managers
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

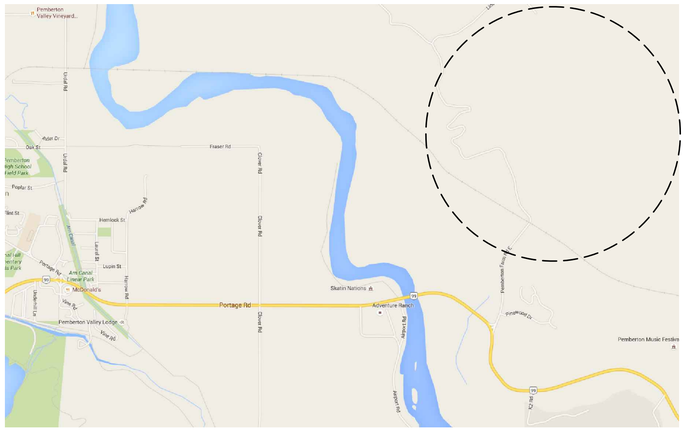
PROJECT:

THE RIDGE AT PEMBERTON PHASE 1 OFFSITE SEWER & WATER

PEMBERTON, BC

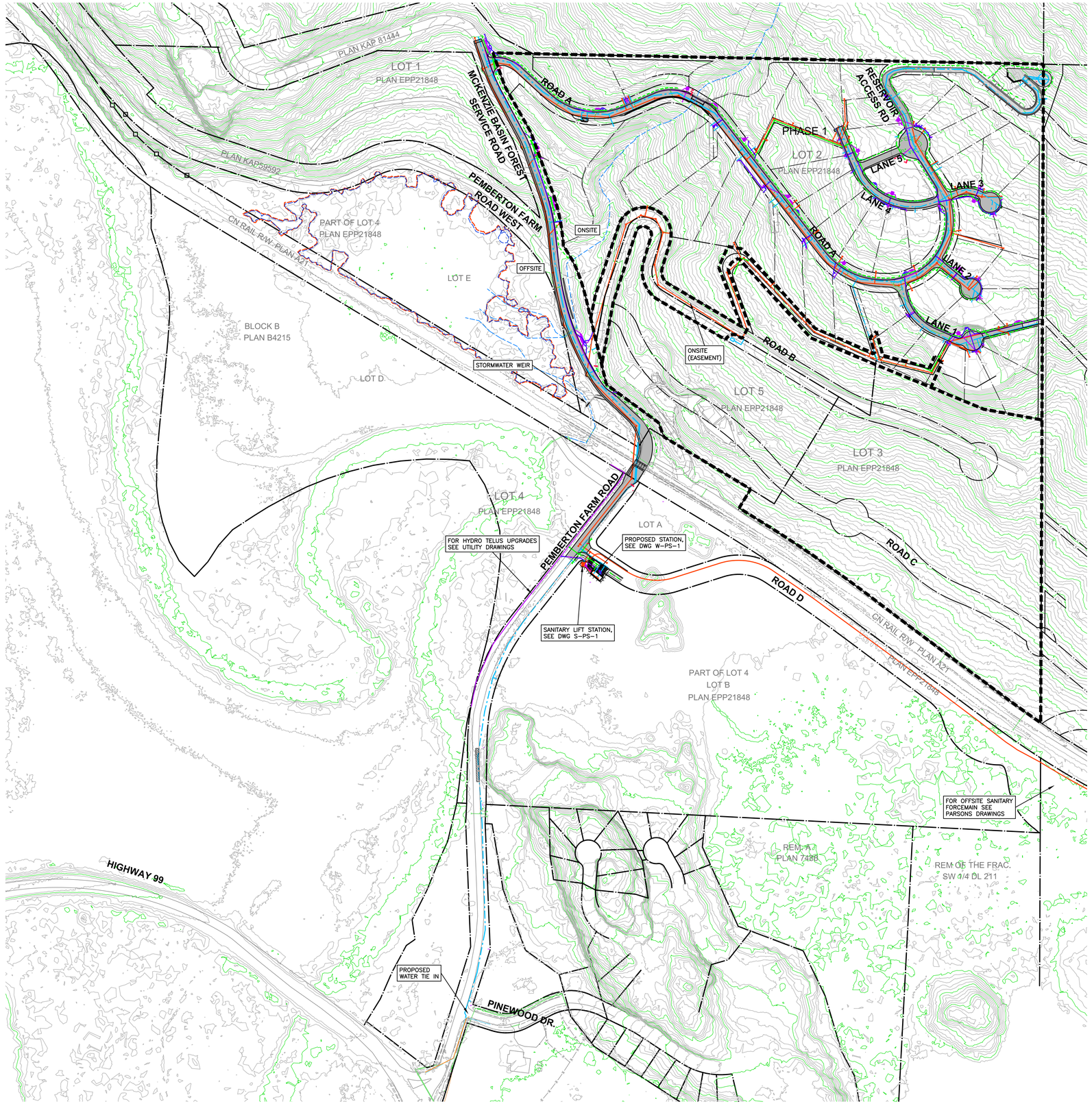
CLIENT:

580049 BC LTD.



DRAWING LIST			
DWG NO.			REVISION
KEY-1	KEY PLAN		29
KEY-2	KEY PLAN	PHASE 1	28
SMP-2	STORMWATER MANAGMENT	WEIR	4
R-A-1	ROADWORKS	ROAD A (STA 0+100-0+310)	18
R-OS-1	ROADWORKS	OFFSITE ROAD (STA 0+100-0+310)	15
R-OS-2	ROADWORKS	OFFSITE ROAD (STA 0+300-0+630)	14
R-OS-3	ROADWORKS	OFFSITE ROAD (STA 0+540-0+700)	2
LP-2	SIGNAGE & LINE PAINTING	OFFSITE	10
CN-1-A	ROADWORKS	CN RAIL CROSSING	14
CN-1-B	ROADWORKS	CN RAIL CROSSING	14
CN-2	CN RAL CROSSING	WATER CROSSING	11
CN-3	CN RAIL CROSSING	SANITARY CROSSING	10
D-2	STORMWORKS	LANE 1 TO ROAD B	13
W-A-1	WATERWORKS	ROAD A (STA 0+100-0+310)	17
W-OS-1	WATERWORKS	OFFSITE ROAD (STA 0+110-0+310)	15
W-OS-2	WATERWORKS	OFFSITE ROAD (STA 0+300-0+620)	15
W-OS-3	WATERWORKS	OFFSITE ROAD (STA 0+610-0+920)	15
W-OS-4	WATERWORKS	OFFSITE ROAD (STA 0+910-1+220)	16
S-A-1	SANITARY	ROAD A (STA 0+100-0+310)	16
S-B-1	SANITARY	ROAD B (STA 0+090-0+300)	18
S-B-2	SANITARY	MH B13 TO MH B23	12
S-B-3	SANITARY	MH B1 TO MH B12	15
S-OS-1	SANITARY	OFFSITE ROAD (STA 0+120-0+370)	13
S-OS-2	SANITARY	OFFSITE ROAD (STA 0+360-0+610)	13
S-OS-3	SANITARY	OFFSITE ROAD (STA 0+600-0+800)	18
X-OS-1	CROSS SECTIONS	OFFSITE ROAD (STA 0+100-0+120)	12
X-OS-2	CROSS SECTIONS	OFFSITE ROAD (STA 0+140-0+160)	11
X-OS-3	CROSS SECTIONS	OFFSITE ROAD (STA 0+180-0+200)	11
X-OS-4	CROSS SECTIONS	OFFSITE ROAD (STA 0+220-0+240)	10
X-OS-5	CROSS SECTIONS	OFFSITE ROAD (STA 0+260-0+280)	12
X-OS-6	CROSS SECTIONS	OFFSITE ROAD (STA 0+300-0+320)	10
X-OS-7	CROSS SECTIONS	OFFSITE ROAD (STA 0+340-0+400)	12
X-OS-8	CROSS SECTIONS	OFFSITE ROAD (STA 0+420-0+460)	11
X-OS-9	CROSS SECTIONS	OFFSITE ROAD (STA 0+480-0+500)	11
X-OS-10	CROSS SECTIONS	OFFSITE ROAD (STA 0+520-0+540)	11
X-OS-11	CROSS SECTIONS	OFFSITE ROAD (STA 0+560-0+580)	11
DET-1	DETAILS		17
DET-2	DETAILS		18
DET-3	DETAILS		19
DET-6	DETAILS		13
DET-10	DETAILS		2
DET-11	DETAILS		2

2018-02-06
PROJECT RECORD DRAWINGS



LEGAL DESCRIPTION

SUBDIVISION PLAN OF LOT '2,3', DL. 211, PLAN EPP21848

BENCHMARK CONTROL

ELEVATIONS ARE TO GEODETIC DATUM NAD83, AND ARE DERIVED FROM DUAL FREQUENCY GNSS OBSERVATIONS TO WHISTLER ACTIVE CONTROL POINT (GEODETIC CONTROL MONUMENT 967000) AND ARE REFERRED TO THE CENTRAL MERIDIAN OF UTM ZONE 10.

GENERAL NOTES

1. THE CONTRACTOR SHALL ENSURE THAT ALL APPROVALS REQUIRED FOR THE PROPOSED WORK HAVE BEEN OBTAINED PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION.
2. A PRE-CONSTRUCTION MEETING BETWEEN ENGINEER, THE CONTRACTOR, AND THE VILLAGE OF PEMBERTON IS REQUIRED PRIOR TO COMMENCEMENT OF CONSTRUCTION. MEETING TO BE COORDINATED BY THE CONTRACTOR.
3. CONTRACTOR TO PROVIDE EMERGENCY CONTACT LIST, INSURANCE AND SURETY DOCUMENTATION AND PROPOSED SCHEDULE OF WORK TO THE ENGINEER AT THE PRE-CONSTRUCTION MEETING.
4. THE CONTRACTOR MUST NOTIFY ENGINEER THEN THE VILLAGE OF PEMBERTON, 48 HOURS PRIOR TO STARTING CONSTRUCTION TO ESTABLISH AN INSPECTION SCHEDULE.
5. ALL CONSTRUCTION IN THE VILLAGE OF PEMBERTON (VOP) ROAD R.O.W. MUST CONFORM TO THE MASTER MUNICIPAL CONSTRUCTION DOCUMENTS (MMCD) AND THE VILLAGE OF PEMBERTON SUBDIVISION AND DEVELOPMENT BYLAW #6772011 SCHEDULE B SUPPLEMENTARY SPECIFICATIONS AND STANDARD DETAIL DRAWINGS. ALL MATERIALS AND PRODUCTS TO BE IN ACCORDANCE WITH MMCD ACCEPTED MATERIAL AND PRODUCTS.
6. ALL CONSTRUCTION WITHIN THE PROPERTY MUST CONFORM TO THE MASTER MUNICIPAL SPECIFICATIONS, B.C. BUILDING CODE & B.C. PLUMBING CODE.
7. THE CONTRACTOR WILL CONSTRUCT ALL WORKS TO THE SATISFACTION OF THE INSPECTORS FROM THE ENGINEER AND THE REGULATORY AUTHORITY. IF APPLICABLE ADDITIONALLY, THE TELUS WORKS UNDER THE DIRECTION AND TO THE SATISFACTION OF THE TELUS INSPECTOR, HYDRO WORKS TO SATISFACTION OF THE BC HYDRO INSPECTOR, FORTIS WORKS TO SATISFACTION OF THE FORTIS INSPECTOR, SHAW WORKS TO SATISFACTION OF THE SHAW INSPECTOR. THE CONTRACTOR WILL FORWARD TO THE ENGINEER CERTIFICATION OF ACCEPTANCE OR APPROVAL FROM THE ABOVE NOTED INSPECTORS ON COMPLETION OF THE WORK. ELECTRICAL WORKS, IF APPLICABLE TO ALSO BE UNDER PERMIT WITH BC ELECTRICAL SAFETY BRANCH WITH A COPY OF PERMIT AND SIGN OFF TO BE FORWARDED TO THE ENGINEER BY THE CONTRACTOR. CONTRACTOR TO GIVE MINIMUM 48 HOURS NOTICE TO RELEVANT INSPECTOR TO ALLOW FOR INSPECTION ON WORKS AND UPDATE ENGINEER ON SAME.
8. THE CONTRACTOR WILL PERFORM AT HIS OWN COST ALL TESTING REQUIRED BY THE REGULATORY AUTHORITY, MMCD AND THE ENGINEER. TESTING SHALL BE DONE BY AN INDEPENDENT SPECIALTY TESTING FIRM. CONTRACTOR TO GIVE ENGINEER 48 HOURS' NOTICE ON ALL TESTING. COPIES OF TESTS TO BE FORWARDED DIRECTLY BY THE TESTING FIRM TO ENGINEER AND GEOTECHNICAL ENGINEER BY EMAIL.
9. LOCATIONS OF EXISTING UNDERGROUND SERVICES HAVE BEEN DETERMINED FROM UTILITY AS-CONSTRUCTED DRAWINGS AND THIRD PARTY SURVEY. CONTRACTOR TO CONTACT BC ONE CALL AND PROVIDE COPIES TO ENGINEER AND VERIFY THE LOCATION OF ALL EXISTING SERVICES AND TO NOTIFY ENGINEER OF ANY DISCREPANCIES, CONFLICTS OR OMISSIONS PRIOR TO BEGINNING OF CONSTRUCTION.
10. THE CONTRACTOR SHALL USE EXTREME CARE WHEN WORKING NEAR EXISTING SERVICES AND ANY SERVICES DISTURBED ARE TO BE REPLACED TO THE SATISFACTION OF THE APPROVING AUTHORITY, THE ENGINEER AND/OR APPROPRIATE UTILITY CORPORATION.
11. ALL CUTS IN EXISTING ASPHALT REQUIRED FOR TRENCHING SHALL BE VERTICAL, MINIMUM 80 MM DEEP, WITH A DIAMOND SAW & REPLACED WITH MINIMUM 80 MM ASPHALT OR MATCHING EXISTING WHICHEVER IS GREATER UNLESS OTHERWISE NOTED, AFTER BACKFILL AND COMPACTION. ALL PAVEMENTS, BOULEVARDS, DRIVEWAYS, FENCES ETC. ARE TO BE RESTORED TO ORIGINAL OR BETTER CONDITION WHEN NO IMPROVEMENT IS PROPOSED UNDER THIS CONTRACT. ALL PAVEMENT JOINTS TO INCLUDE TOP LIFT LAP JOINT AS PER MMCD STD DWG G5
12. WHEN NO IMPROVEMENTS ARE PROPOSED UNDER THIS CONTRACT, THE EXISTING SECTION(S) OF ROADWAY, BOULEVARD OR LANDSCAPE SHALL BE KEPT CLEAN AND CLEAR FOR THE DURATION OF CONSTRUCTION AND LEFT IN SAME CONDITION AS PRIOR TO CONSTRUCTION.
13. THE CONTRACTOR'S SURVEYOR WILL RECORD AND CERTIFY ALL INFORMATION REQUIRED FOR THE ENGINEER TO PROVIDE A COMPLETE SET OF AS-CONSTRUCTED DRAWINGS INCLUDING CENTERLINE, FOG LINE, EDGE OF ASPHALT, SIGNS, INVERTS, RIMS, PIPE SIZES AND ALL APPURTENANCES. SEE SUPPLEMENTAL SPECIFICATION FOR DETAILS.
14. TRAFFIC CONTROL PER APPROVED TRAFFIC MANAGEMENT PLAN & THE MINISTRY OF TRANSPORTATION 'TRAFFIC MANUAL FOR WORK ON ROADWAYS'/TRANSPORTATION ASSOCIATION OF CANADA 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES'. CONTRACTOR TO INFORM ENGINEER AND VOP IMMEDIATELY OF ANY FORESEEN OR UNFORESEEN CHANGES TO THE SCHEDULE.
15. VEHICULAR ACCESS TO EXISTING DWELLINGS AND BUSINESS' TO BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF THE CONTRACT.
16. PEDESTRIANS SHALL BE PROTECTED AT ALL TIMES. ANY CLOSURES OF THE SIDEWALK OR LANES TO BE COORDINATED WITH AND APPROVED BY THE ENGINEER AND A PERMIT FROM REGULATORY AUTHORITY OBTAINED BY THE CONTRACTOR AND FORWARDED TO ENGINEER. CONTRACTOR TO PROVIDE REQUIRED NOTICES.
17. RESIDENTS AND BUSINESSES DIRECTLY AFFECTED BY CONSTRUCTION OF THIS PROJECT SHALL BE GIVEN 48 HOURS WRITTEN NOTICE OF THE PROPOSED START OF CONSTRUCTION. IF CONSTRUCTION ENTERS ONTO PRIVATE PROPERTY, THE CONTRACTOR OR DEVELOPER'S AGENT WILL REQUIRED WRITTEN AUTHORIZATION FROM THE PRIVATE PROPERTY OWNER. ENGINEER TO BE FORWARDED COPY OF AUTHORISATION.
18. RETAINING DESIGNATED TREES IS OF PRIME IMPORTANCE. WHEN WORKING IN PROXIMITY TO A DESIGNATED TREE OR WHEN ROOTS ARE ENCOUNTERED, THE CONTRACTOR SHALL CONSULT A CERTIFIED ARBORIST BEFORE PROCEEDING TO PREVENT DAMAGE TO TREES.
19. THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO ENSURE THAT NO SILT IS DISCHARGED TO THE STORM DRAINAGE SYSTEM, ROADWAYS OR ADJACENT PROPERTIES DURING THE COURSE OF CONSTRUCTION IN ACCORDANCE WITH DFO/MOELP'S "LAND DEVELOPMENT GUIDELINES FOR THE PROTECTION OF AQUATIC HABITAT". IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INSTALL & MAINTAIN ALL EROSION & SEDIMENT CONTROL WORKS.
20. FOR BC HYDRO, TELUS, AND FORTIS INSTALLATION, SEE APPROPRIATE UTILITY COMPANY DRAWINGS AND SPECIFICATIONS. CONTRACTOR TO NOTIFY ENGINEER IMMEDIATELY SHOULD SITE CONDITIONS BECOME ALTERED FROM EXPECTATION.
21. SEE ELECTRICAL ENGINEER DRAWINGS FOR STREETLIGHT .
22. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THEY ARE WORKING FROM THE MOST UP TO DATE DESIGN PACKAGE INCLUDING DRAWINGS AND REPORTS.
23. A PORTION OF THE CONTRACT DOCUMENTS IS INCLUDED BY REFERENCE. COPIES OF THESE DOCUMENTS HAVE BEEN REFERENCED IN THE TENDER PACKAGE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT CURRENT RELEVANT COPIES OF ALL DRAWINGS AND CONTRACT DOCUMENTS ARE FORWARDED TO SURVEYORS, TESTING AGENCIES, SUBCONTRACTORS, SUPERINTENDENTS, ESTIMATORS, PROJECT MANAGERS, SITE STAFF AND ANY OTHER RELEVANT PARTIES. CONTRACTOR CONFIRMS THEY HAVE REVIEWED SAME PRIOR TO SUBMITTING TENDER.
24. SUB-CONTRACTORS SHALL NOT COMMUNICATE WITH THE ENGINEERS OR OWNER DIRECTLY ON ANY CONTRACTUAL OR TECHNICAL ISSUE. THEY SHALL DIRECT THEIR ISSUES TO THE CONTRACTOR DIRECTLY WHOSE RESPONSIBILITY IT TO DEAL WITH THESE ISSUES ON THEIR BEHALF WITH THE ENGINEER. REVIEW AND APPROVAL OF ANY CONTRACTUAL MATTER INCLUDING PROGRESS PAYMENT, CHANGE ORDER, PAYMENT OF HOLDBACK, FINAL PAYMENT, INSURANCE AND WARRANTY, ETC. SHALL DIRECTED TO THE ENGINEER. CONTRACTOR MUST ONLY TAKE DIRECTION FROM THE ENGINEER IN REGARDS TO CHANGES TO DESIGN OR EXTRA WORKS.
25. UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS OR NOTIFIED TO THE CONTRARY BY THE ENGINEER, THE CONTRACTOR IS THE 'PRIME CONTRACTOR' FOR THE PURPOSE OF ALL APPLICABLE LAWS RELATIVE TO OCCUPATIONAL HEALTH AND SAFETY, INCLUDING THE DISCHARGE OF ALL DUTIES OF THE 'PRIME CONTRACTOR' UNDER THE WORKERS COMPENSATION ACT (BRITISH COLUMBIA), NOTWITHSTANDING THAT THE ENGINEER, THE OWNER OR ANOTHER CONTRACTOR MAY PROVIDE FROM TIME TO TIME SOME OF THE SERVICES NORMALLY PROVIDED BY SUCH 'PRIME CONTRACTOR'. IN THIS SECTION 'PRIME CONTRACTOR' MEANS THE CONTRACTOR SO DEFINED UNDER THE WORKERS COMPENSATION ACT (BRITISH COLUMBIA).
26. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE GEOTECHNICAL REPORT PREPARED BY EXP DATED AUGUST 18, 2016 AND BUILD TO THE REQUIREMENTS OF THE REPORT AND INSTRUCTIONS OF THE GEOTECHNICAL ENGINEER AND REPRESENTATIVES.
27. ALL DIMENSION IN METERS UNLESS OTHERWISE NOTED

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DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASEMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE	SM	SM	SM
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

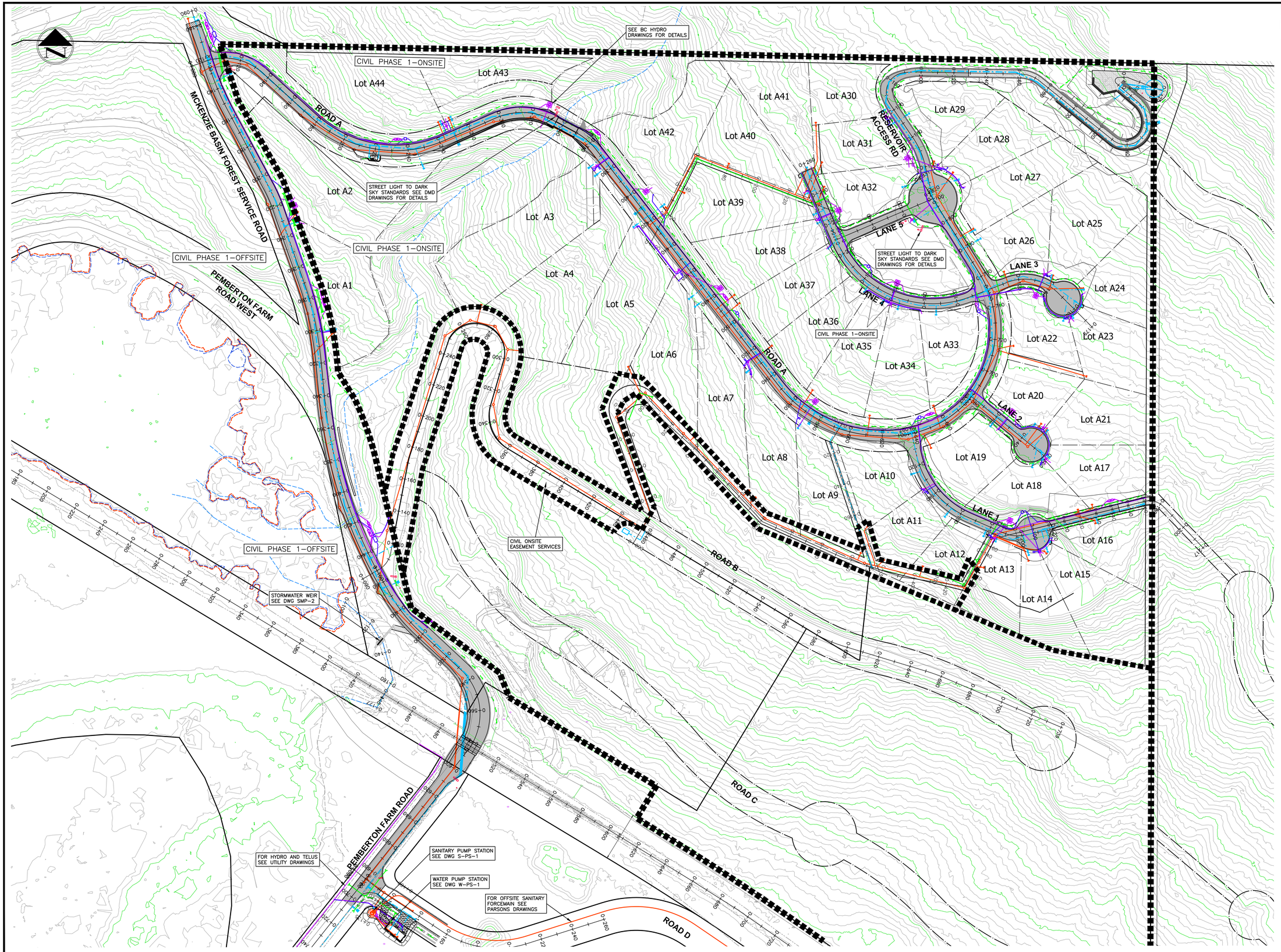
title
KEY PLAN

no.	(y/m/d)	revision	chk'd
29	18-02-06	PROJECT RECORDS OFFSITE	KBH
28	18-02-06	PROJECT RECORDS - PUMP STATIONS	KBH
27	18-02-06	PROJECT RECORDS ONSITE	KBH
26	17-10-17	PROJECT RECORDS OFFSITE	ZM
25	17-05-02	REISSUED FOR CONSTRUCTION PUMP STATION	KBH
24	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
23	17-02-27	ISSUED FOR CONSTRUCTION ONSITE	KBH
22	17-02-03	ISSUED FOR VOP APPROVAL	KBH

current rev. # 29

engineer of record: K.B.H.
designed by: N.G.B.
drawn by: R.J.L.
date: 2016-05-13

scales: hor:1:2000 vert: -
file no.: 16159
drawing no.: KEY-1



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DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASEMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

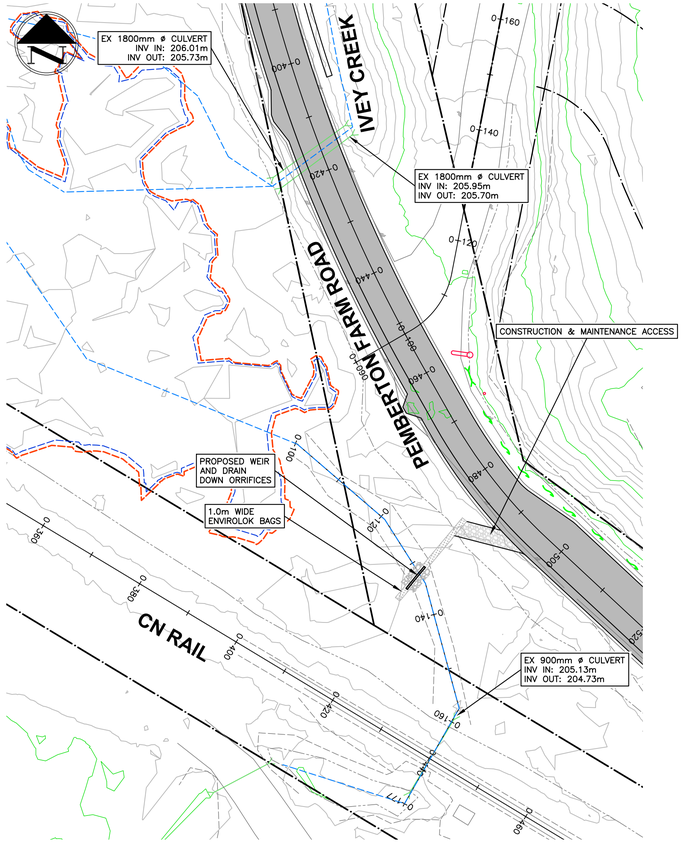
project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title
KEY PLAN
PHASE 1

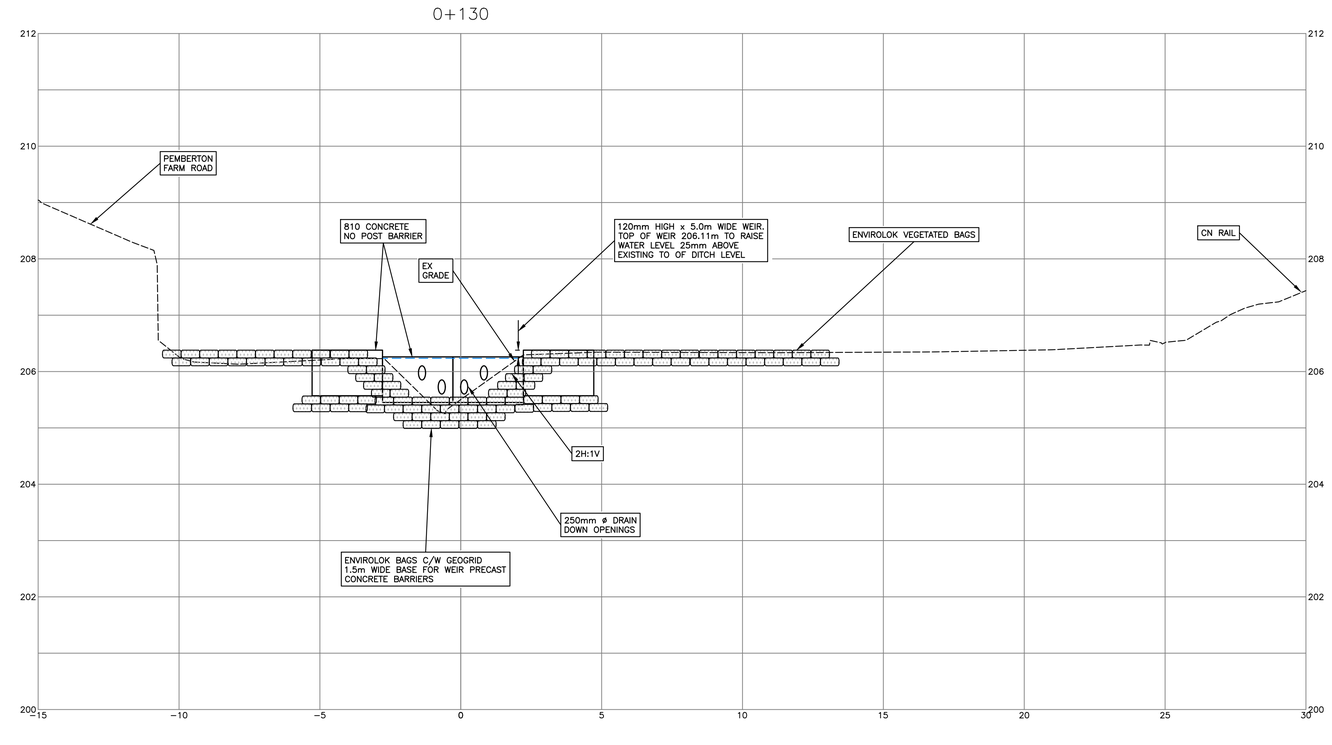
no.	(y/m/d)	revision	chk'd
28	18-02-06	PROJECT RECORDS OFFISTE	KBH
27	18-02-06	PROJECT RECORDS - PUMP STATIONS	KBH
26	18-02-06	PROJECT RECORDS ONSITE	KBH
25	17-12-01	HYDRO & TELUS PROJECT RECORDS	ZM
24	17-10-17	PROJECT RECORDS OFFSITE	ZM
23	17-05-02	REISSUED FOR CONSTRUCTION PUMP STATION	ZM
22	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
21	17-02-27	ISSUED FOR CONSTRUCTION ONSITE	KBH

current rev. # 28

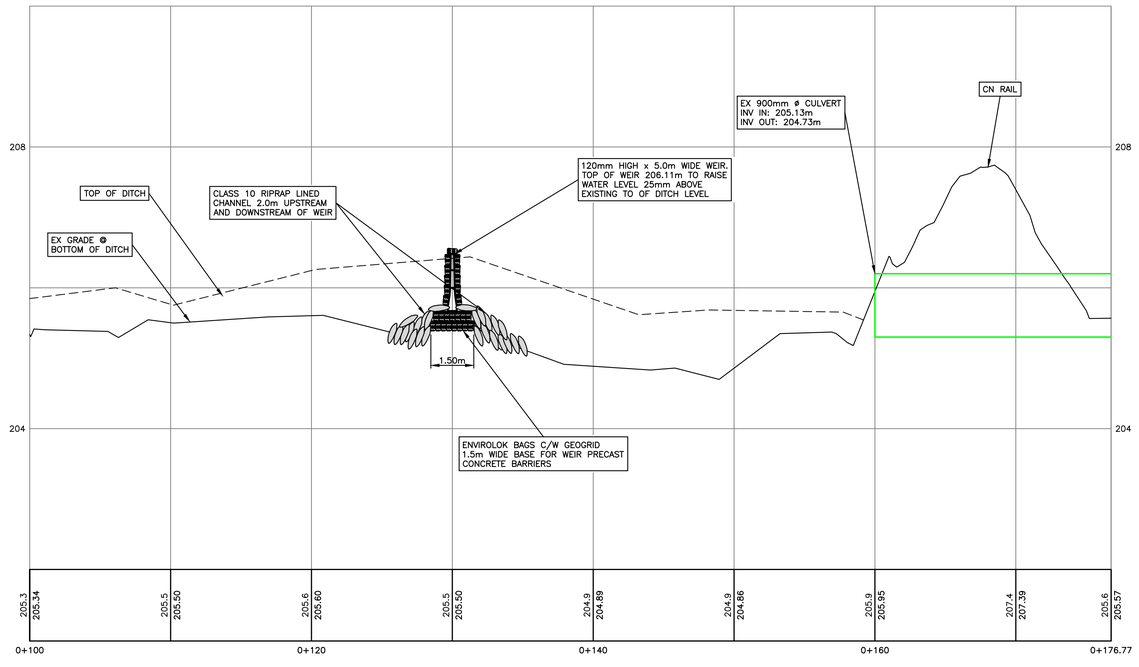
engineer of record: K.B.H.	scales: hor:1:1000 vert: -
designed by: N.G.B.	file no.: 16159
drawn by: R.J.L.	drawing no.: KEY-2
date: 2016-05-13	



WEIR – PLAN
SCALE 1:500



SECTION AT WEIR
SCALE 1:100



CHANNEL PROFILE
SCALE 1:200

A - PRE-DEVELOPMENT

CATCHMENT A (Includes all catchments that flow through the 2-1800 culverts)

Pre-development

Land Use	TOTAL AREA(ha):	RUNOFF COEFFICIENT:
Forrest	29.3	0.30
Forest feeding into MBFSR	27.40	0.30
Ivey Creek	98.65	0.30
TOTAL:	155.3	AVERAGE: 0.30

Pre-development Peak Flows

Rainfall intensity (I)
Time of Concentration 54 min
From Village of P IDF Curve...
10 year rainfall intensity 15 mm/hr

10 yr instantaneous Peak flow (Q=CIA) = 1942 l/s

A - POST-DEVELOPMENT

Post-development

Land Use	TOTAL AREA(ha):	RUNOFF COEFFICIENT:
Ivey creek forest	98.7	0.30
Forest feeding into MBFSR	27.4	0.30
Forest	14.8	0.30
Road	2.6	0.70
Park	0.2	0.30
Single Family	9.6	0.45
Gravel Road	0.3	0.60
Undeveloped	1.1	0.30
Reservoir	0.6	0.60
TOTAL:	155.4	AVERAGE: 0.32

Post-development Peak Flows

Rainfall intensity (I)
Time of Concentration 54 min
From Village of P IDF Curve...
10 year rainfall intensity 15 mm/hr
10 yr instantaneous Peak flow (Q=CIA) = 2056 l/s

10 yr pre development peak flow = 1942 l/s
10 yr post development peak flow = 2056 l/s
115 l/s

D - DETENTION

Catchment A Storage Requirement

min	Rainfall Duration	Intensity (mm/hr)	Peak Flow	Release Rate	Required Storage (m^3)
54	3240	15	2.06	1.942	372
60	3600	13	1.78	1.942	-116
90	5400	11	1.51	1.942	-1261
120	7200	8	1.10	1.942	-3484

Catchment A Storage Requirement 372 m^3

STORAGE

Rain Barrell Storage

Total homes = 132 Homes
Volume of Storage = 1 m3/barrell
Total Storage = 132 m3

STORAGE

Wetlands Detention

Storage Required = 240 m3
Detention pond Area = 2.6 ha
Level raised = 25 mm At top of weir
Storage Provided = 650 m3

EXISTING WEIR

Existing Ditch Capacity @ Weir location

Ditch depth = 0.9 m
Let Side slope = 1:1
Right Side Slope = 1:1
Flow from Hydaflow Express = 949 l/s

Weir To be sized to allow existing ditch flow through while raising the level of the wetlands by 25mm to increase the storage capacity

WEIR

Weir & Orrifices Sizing

Orifices

Net Head = 0.58 m
Orifice Size = 250 mm
Flow Through Single Orifice = 103 l/s
2 orrifices = 205 l/s Upper 2

Net Head = 0.71 m
Orifice Size = 250 mm
Flow Through Single Orifice = 113 l/s
2 orrifices = 226 l/s Lower 2

Weir Flow

Weir Size = 5.00m long x 120mm deep
Flow from Hydaflow Express = 540 l/s

Total Flow = 971.7 l/s

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SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
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REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE	SAN	ST	
POWER POLE			
STREETLIGHT			

approved

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580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title
STORMWATER MANAGMENT
WEIR

no.	(y/m/d)	revision	chk'd
4	18-02-06	PROJECT RECORDS OFFSITE	KBH
3	17-10-17	PROJECT RECORDS OFFSITE	KBH
2	16-11-01	RE-ISSUED FOR VOP APPROVAL	KBH
1	16-10-21	ISSUED FOR VOP APPROVAL	KBH

current rev. # 4

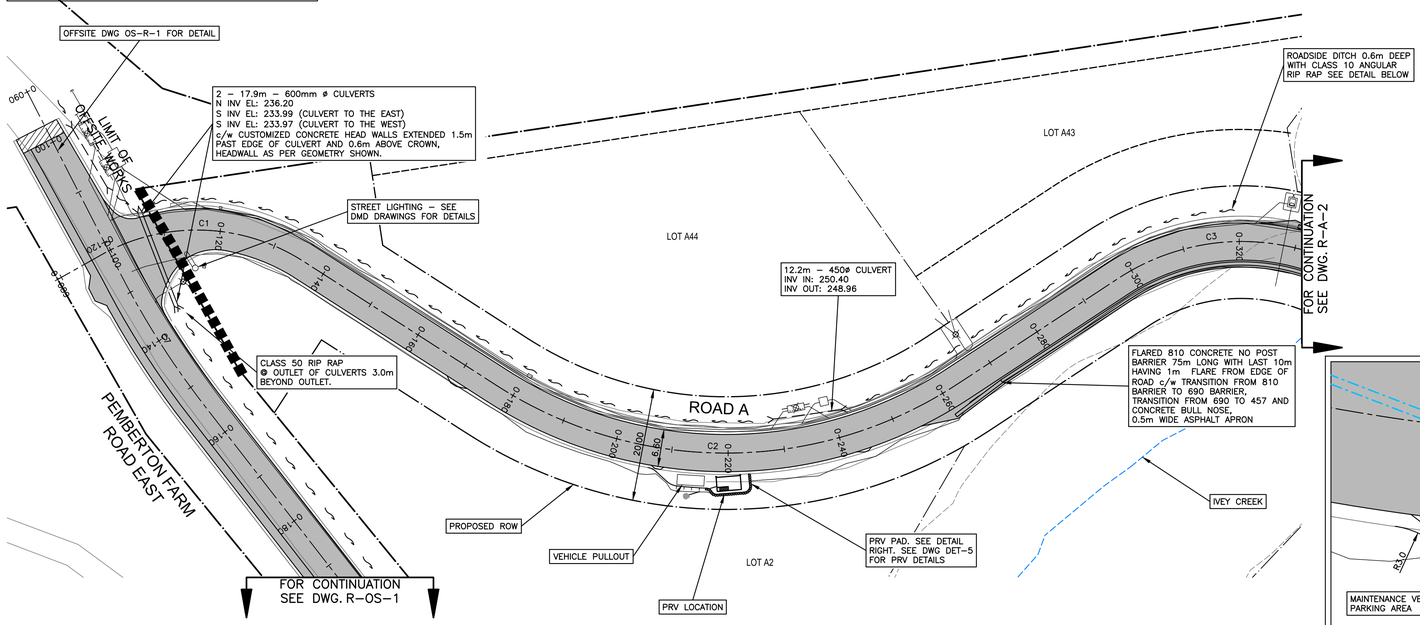
engineer of record K.B.H.
scales hor: 1:500 vert: -
designed by NGB
file no. 16159
drawn by NGB
drawing no. SMP-2
date 2016-05-13

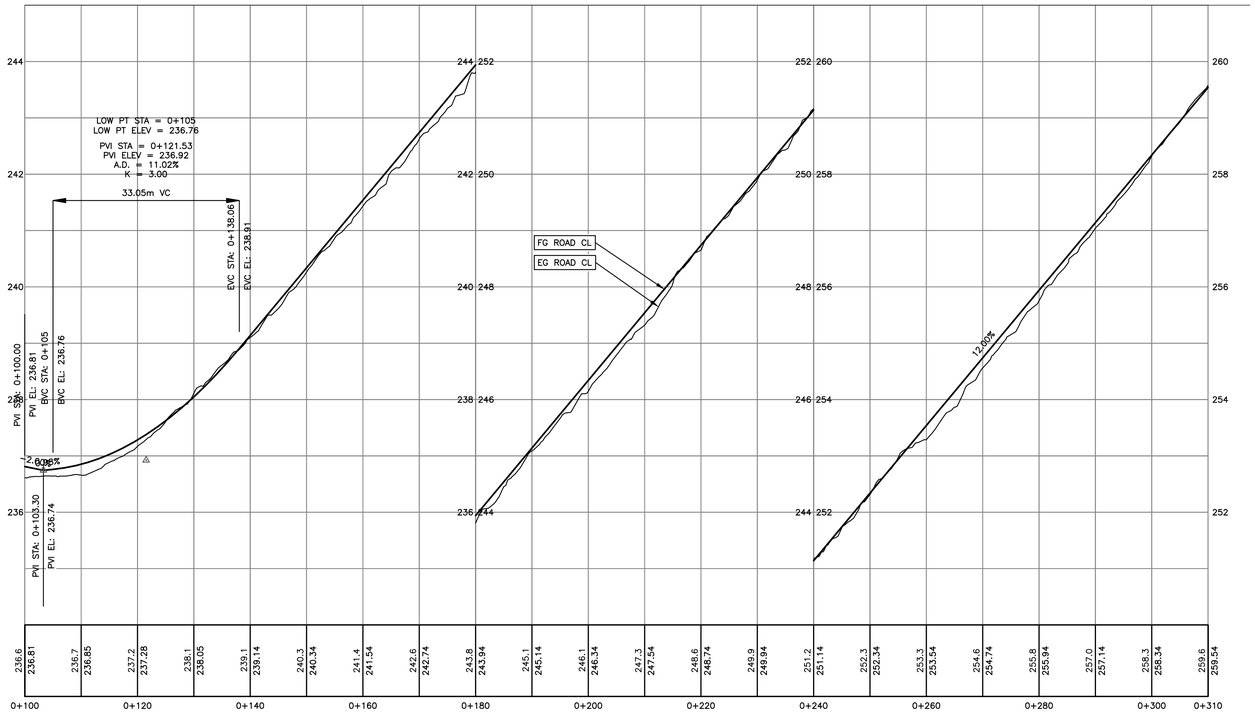
AS-CONSTRUCTED INFORMATION

CREUS ENGINEERING LTD. CERTIFIES THAT THE WORKS & SERVICES SHOWN ON THESE DRAWINGS WERE CONSTRUCTED IN GENERAL CONFORMANCE WITH THE DRAWINGS & SPECIFICATIONS.

AS-CONSTRUCTED SURVEY INFORMATION SHOWN ON THESE DRAWINGS HAVE BEEN PROVIDED BY OTHERS. IT IS THE RESPONSIBILITY OF OTHERS USING THESE DRAWINGS TO CONFIRM THE LOCATION & ELEVATION OF THESE SERVICES.

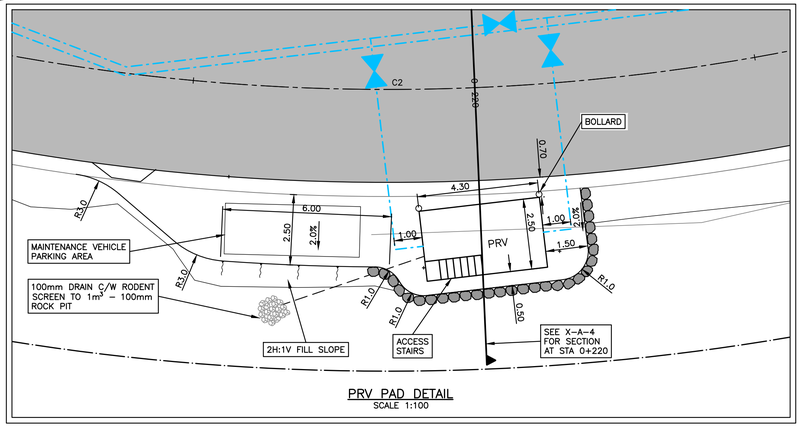
CURVE TABLE: ROAD A					
CURVE #	RADIUS	LENGTH	I.P.	START POINT	END POINT
C1	35.00	36.58	517119.75, 5574704.16	517100.51, 5574698.11	517134.63, 5574690.55
C2	75.00	86.48	517200.84, 5574630.04	517164.84, 5574662.94	517245.51, 5574649.59
C3	40.00	39.90	517295.71, 5574671.56	517275.75, 5574662.83	517313.88, 5574659.53



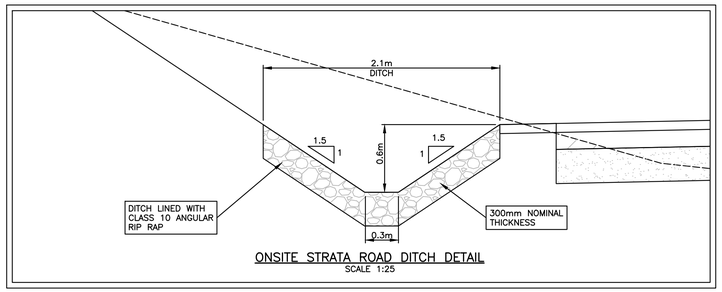


ROADWORKS NOTES

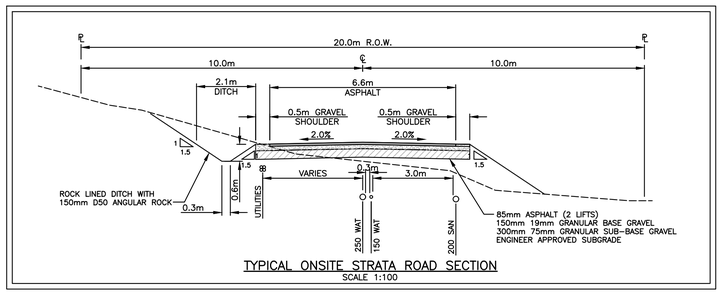
1. CONTRACTOR TO SUBMIT SEIVE TEST AND SOURCE DATA FOR AGGREGATES AND MIX DESIGN FOR ASPHALT AT BEGINNING OF CONTRACT TO ENGINEER FOR REVIEW AND APPROVAL.
2. ALL LOOSE AND ORGANIC MATERIAL TO BE EXCAVATED FROM ROADWAY, ALL SUBGRADES TO BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY. CONTRACTOR TO COORDINATE SUBGRADE INSPECTION BY ENGINEER PRIOR TO PLACEMENT OF GRAVEL SUBBASE. ANY WATER SOFTENED SUBGRADE SOIL SHALL BE OVEREXCAVATED AND THE GRADE RESTORED WITH GRANULAR SOILS COMPACTED TO 95% MODIFIED PROCTOR DENSITY.
3. THE BASE AND SUBBASE MATERIALS SHALL BE PROPERLY PLACED AND COMPACTED TO A MINIMUM OF 95% OF MODIFIED PROCTOR DRY DENSITY (ASTM D1557).
4. THE CONTRACTOR WILL GIVE THE ENGINEER 48 HOURS NOTICE PRIOR TO SUBGRADE PROOF ROLL, BASE COMPACTION AND PAVING.
5. THE CONTRACTOR MUST NOTIFY ENGINEER 48 HOURS PRIOR TO STARTING CONSTRUCTION TO ESTABLISH AN INSPECTION SCHEDULE.
6. ALL CUTS IN EXISTING ASPHALT REQUIRED FOR TRENCHING SHALL BE VERTICAL & MATCHING EXISTING THICKNESS (MINIMUM 80mm ASPHALT OR DESIGN THICKNESS UNLESS OTHERWISE SPECIFIED) AFTER BACKFILL AND COMPACTION.
7. ALL PAVEMENTS, BOULEVARDS, DRIVEWAYS, FENCES, ETC. ARE TO BE RESTORED TO ORIGINAL CONDITION WHEN NO IMPROVEMENT IS PROPOSED UNDER THIS CONTRACT. CONTRACTOR TO ROUGHGRADE THE BOULEVARDS AT THE SAME TIME AS ROAD GRADING.
8. CHANGES IN GRADE TO BE FORMED WITH SMOOTH CURVES.
9. ALL MANHOLE LIDS, VALVE COVERS, CATCHBASIN RIMS AND LIDS OF OTHER STRUCTURES TO BE SET AT FIRST LIFT ROAD ELEVATIONS AND RAISED WHEN FINAL LIFT INSTALLED.
10. COVERS FOR INSPECTION CHAMBERS AND VALVE RISERS IN DRIVEWAYS SHALL BE SUITABLE FOR TRAVELED AREAS.
11. PAVING CAN ONLY PROCEED IN THE PRESENCE OF THE ENGINEERS INSPECTOR.
12. ENSURE ALL NEW PAVEMENT WORKS ARE KEYED INTO EXISTING ASPHALT AS PER MMCD STANDARD DRAWING G5.



PRV PAD DETAIL
SCALE 1:100



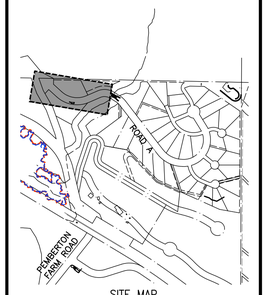
ONSITE STRATA ROAD DITCH DETAIL
SCALE 1:25



TYPICAL ONSITE STRATA ROAD SECTION
SCALE 1:100

CREUS Engineering

Civil Engineers & Project Managers
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca



SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title
ROADWORKS
ROAD A (STA 0+100-0+310)

no.	(y/m/d)	revision	chk'd
18	18-02-06	PROJECT RECORDS OFFSITE	KBH
17	18-02-06	PROJECT RECORDS ONSITE	KBH
16	17-11-24	REVISED FOR BARRIER UPDATE	KBH
15	17-10-17	PROJECT RECORDS OFFSITE	KBH
14	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
13	17-02-27	ISSUED FOR CONSTRUCTION ONSITE	KBH
12	17-01-18	REISSUED FOR ADDENDA 1	KBH
11	16-11-09	REISSUED FOR CONSTRUCTION ONSITE	KBH

current rev. # 18

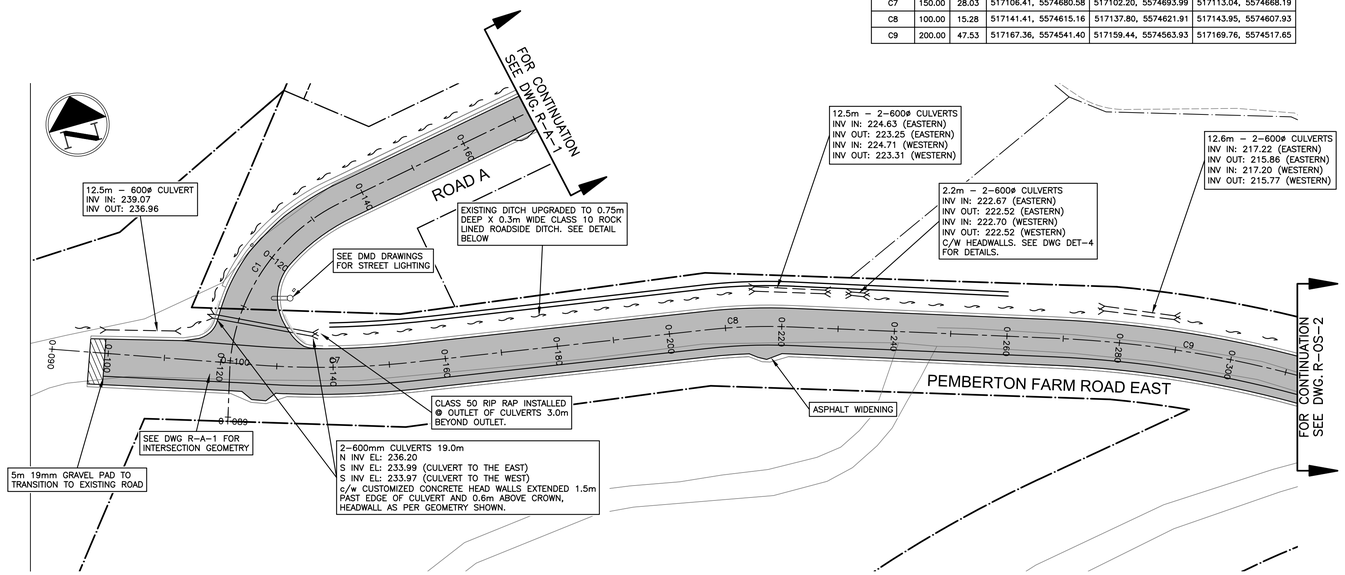
engineer of record: K.B.H.
scales: hor: 1:500 vert: 1:50
designed by: N.G.B.
file no.: 16159
drawn by: R.J.L.
drawing no.: R-A-1
date: 2016-05-13

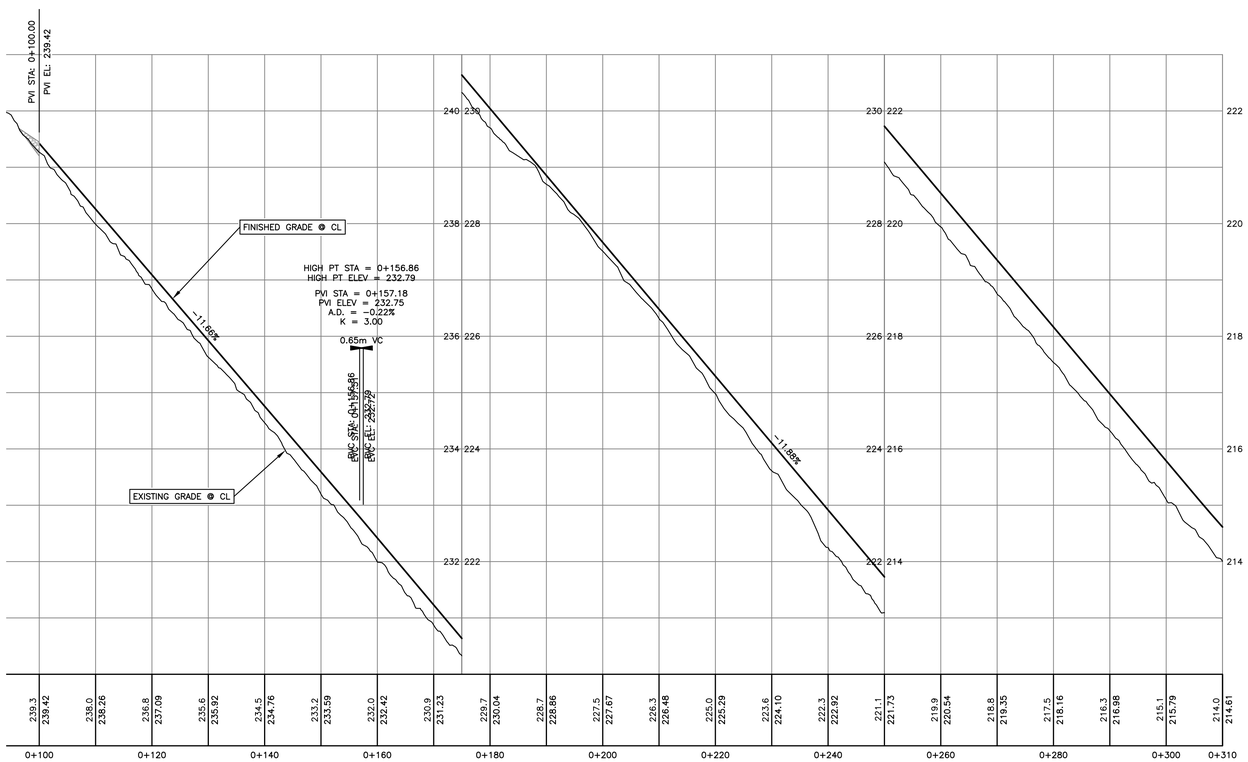
AS-CONSTRUCTED INFORMATION

CREUS ENGINEERING LTD. CERTIFIES THAT THE WORKS & SERVICES SHOWN ON THESE DRAWINGS WERE CONSTRUCTED IN GENERAL CONFORMANCE WITH THE DRAWINGS & SPECIFICATIONS.

AS-CONSTRUCTED SURVEY INFORMATION SHOWN ON THESE DRAWINGS HAVE BEEN PROVIDED BY OTHERS. IT IS THE RESPONSIBILITY OF OTHERS USING THESE DRAWINGS TO CONFIRM THE LOCATION & ELEVATION OF THESE SERVICES.

CURVE TABLE: OFFSITE ROAD					
CURVE #	RADIUS	LENGTH	I.P.	START POINT	END POINT
C7	150.00	28.03	517106.41, 5574680.58	517102.20, 5574693.99	517113.04, 5574668.19
C8	100.00	15.28	517141.41, 5574615.16	517137.80, 5574621.91	517143.95, 5574607.93
C9	200.00	47.53	517167.36, 5574541.40	517159.44, 5574563.93	517169.76, 5574517.65

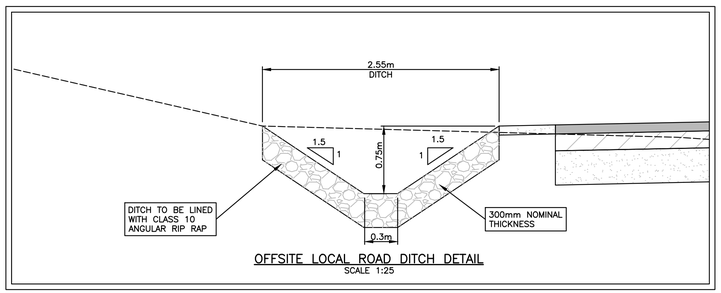




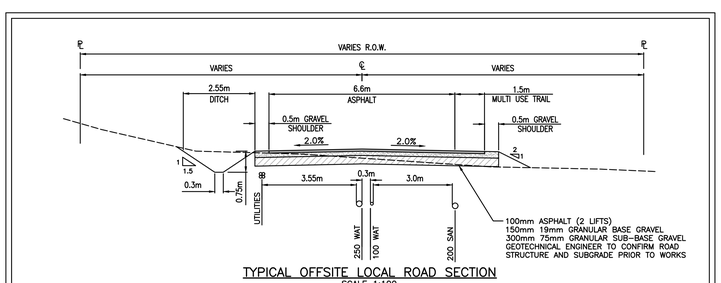
SEE DRAWING KEY–1 FOR GENERAL NOTES

ROADWORKS NOTES

1. CONTRACTOR TO SUBMIT SIEVE TEST AND SOURCE DATA FOR AGGREGATES AND MIX DESIGN FOR ASPHALT AT BEGINNING OF CONTRACT TO ENGINEER FOR REVIEW AND APPROVAL.
2. ALL LOOSE AND ORGANIC MATERIAL TO BE EXCAVATED FROM ROADWAY, ALL SUBGRADES TO BE COMPACTED TO 95% MODIFIED PROCTOR DENSITY. CONTRACTOR TO COORDINATE SUBGRADE INSPECTION BY ENGINEER PRIOR TO PLACEMENT OF GRAVEL SUBBASE. ANY WATER SOFTENED SUBGRADE SOIL SHALL BE OVEREXCAVATED AND THE GRADE RESTORED WITH GRANULAR SOILS COMPACTED TO 95% MODIFIED PROCTOR DENSITY.
3. THE BASE AND SUBBASE MATERIALS SHALL BE PROPERLY PLACED AND COMPACTED TO A MINIMUM OF 95% OF MODIFIED PROCTOR DRY DENSITY (ASTM D1557).
4. THE CONTRACTOR WILL GIVE THE ENGINEER 48 HOURS NOTICE PRIOR TO SUBGRADE PROOF ROLL, BASE COMPACTION AND PAVING.
5. THE CONTRACTOR MUST NOTIFY ENGINEER 48 HOURS PRIOR TO STARTING CONSTRUCTION TO ESTABLISH AN INSPECTION SCHEDULE.
6. ALL CUTS IN EXISTING ASPHALT REQUIRED FOR TRENCHING SHALL BE VERTICAL & MATCHING EXISTING THICKNESS (MINIMUM 80mm ASPHALT OR DESIGN THICKNESS UNLESS OTHERWISE SPECIFIED) AFTER BACKFILL AND COMPACTION.
7. ALL PAVEMENTS, BOULEVARDS, DRIVEWAYS, FENCES, ETC. ARE TO BE RESTORED TO ORIGINAL CONDITION WHEN NO IMPROVEMENT IS PROPOSED UNDER THIS CONTRACT. CONTRACTOR TO ROUGHGRADE THE BOULEVARDS AT THE SAME TIME AS ROAD GRADING.
8. CHANGES IN GRADE TO BE FORMED WITH SMOOTH CURVES.
9. ALL MANHOLE LIDS, VALVE COVERS, CATCHBASIN RIMS AND LIDS OF OTHER STRUCTURES TO BE SET AT FIRST LIFT ROAD ELEVATIONS AND RAISED WHEN FINAL LIFT INSTALLED.
10. COVERS FOR INSPECTION CHAMBERS AND VALVE RISERS IN DRIVEWAYS SHALL BE SUITABLE FOR TRAVELED AREAS.
11. PAVING CAN ONLY PROCEED IN THE PRESENCE OF THE ENGINEERS INSPECTOR.
12. ENSURE ALL NEW PAVEMENT WORKS ARE KEYED INTO EXISTING ASPHALT AS PER MMCD STANDARD DRAWING G5.



OFFSITE LOCAL ROAD DITCH DETAIL
SCALE 1:25



TYPICAL OFFSITE LOCAL ROAD SECTION
SCALE 1:100

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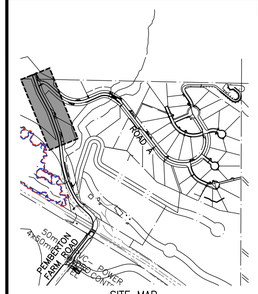
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca



SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASEMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE	GV	GV	GV
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE	SAN MH	ST	ST
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title
ROADWORKS
OFFSITE ROAD (STA 0+100-0+310)

no.	(y/m/d)	revision	chk'd
15	18-02-06	PROJECT RECORDS OFFSITE	KBH
14	17-10-17	PROJECT RECORDS OFFSITE	KBH
13	17-09-28	UPDATED OFFSETS	KBH
12	17-08-15	UPDATE WITH HYDRO & TELUS	KBH
11	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
10	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
9	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
8	16-10-13	ISSUED FOR CONSTRUCTION OFFSITE	KBH

current rev. #: 15

engineer of record: K.B.H.	scales: hor: 1:500 vert: 1:50
designed by: N.G.B.	file no.: 16159
drawn by: R.J.L.	drawing no.: R-OS-1
date: 2016-05-13	

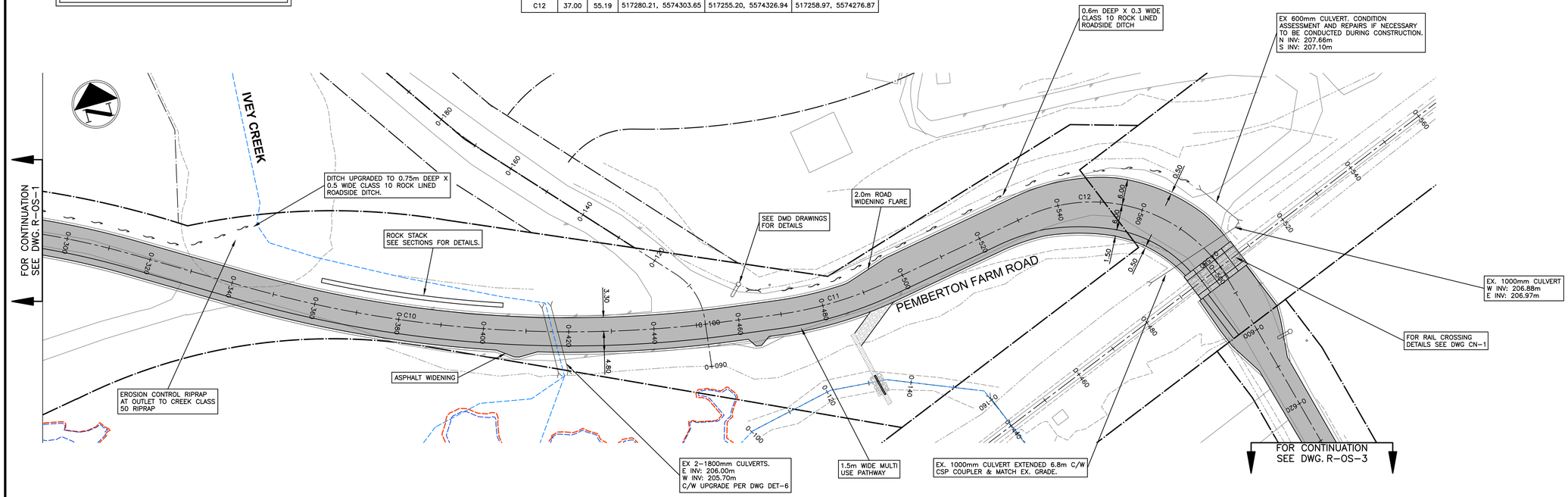
SEE DRAWING KEY-1 FOR GENERAL NOTES
SEE DRAWING R-A-1 FOR ROADWORKS NOTES

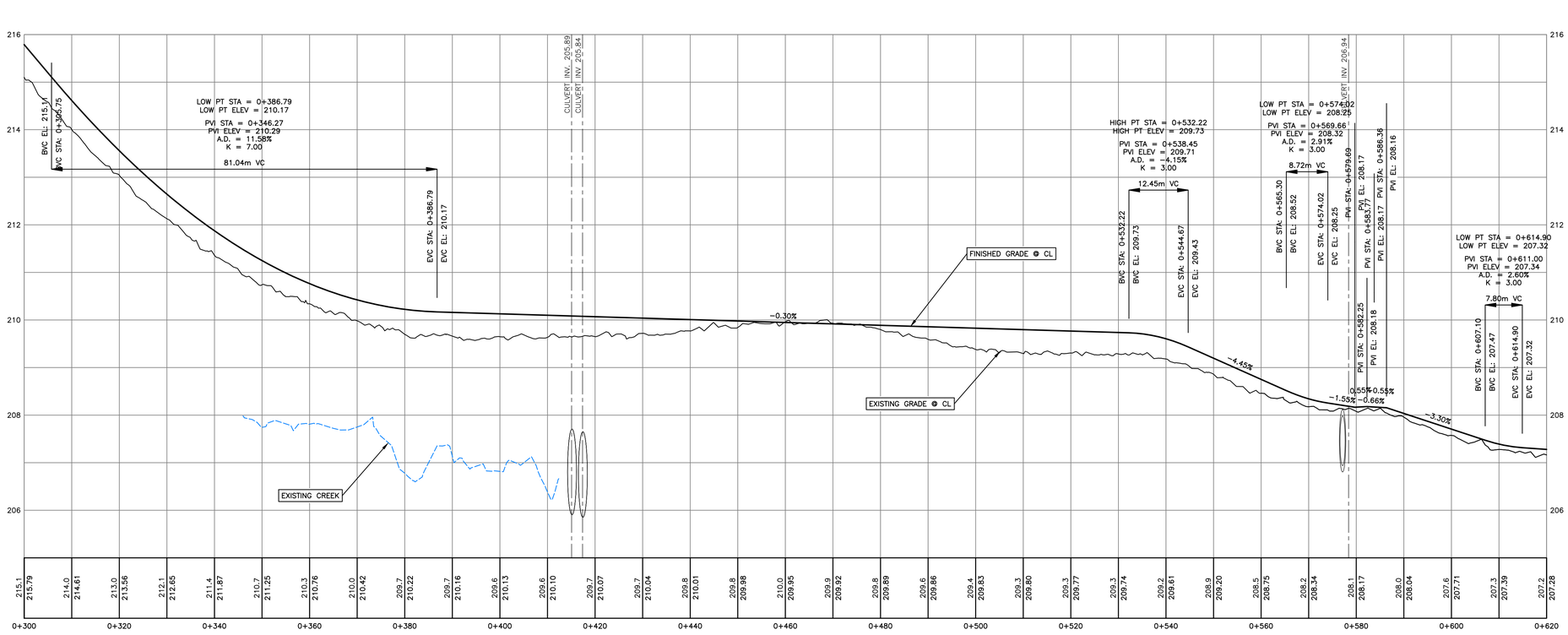
AS-CONSTRUCTED INFORMATION

CREUS ENGINEERING LTD. CERTIFIES THAT THE WORKS & SERVICES SHOWN ON THESE DRAWINGS WERE CONSTRUCTED IN GENERAL CONFORMANCE WITH THE DRAWINGS & SPECIFICATIONS.

AS-CONSTRUCTED SURVEY INFORMATION SHOWN ON THESE DRAWINGS HAVE BEEN PROVIDED BY OTHERS. IT IS THE RESPONSIBILITY OF OTHERS USING THESE DRAWINGS TO CONFIRM THE LOCATION & ELEVATION OF THESE SERVICES.

CURVE TABLE: OFFSITE ROAD					
CURVE #	RADIUS	LENGTH	I.P.	START POINT	END POINT
C10	280.00	115.86	517178.33, 5574432.88	517172.42, 5574491.35	517207.25, 5574381.72
C11	90.00	27.58	517219.35, 5574360.32	517212.51, 5574372.42	517229.52, 5574350.85
C12	37.00	55.19	517280.21, 5574303.65	517255.20, 5574326.94	517258.97, 5574276.87





CREUS Engineering

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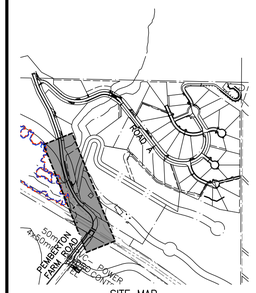
PH: 604-987-9070 WEBSITE: www.creus.ca



DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASEMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title
ROADWORKS
OFFSITE ROAD (STA 0+300-0+630)

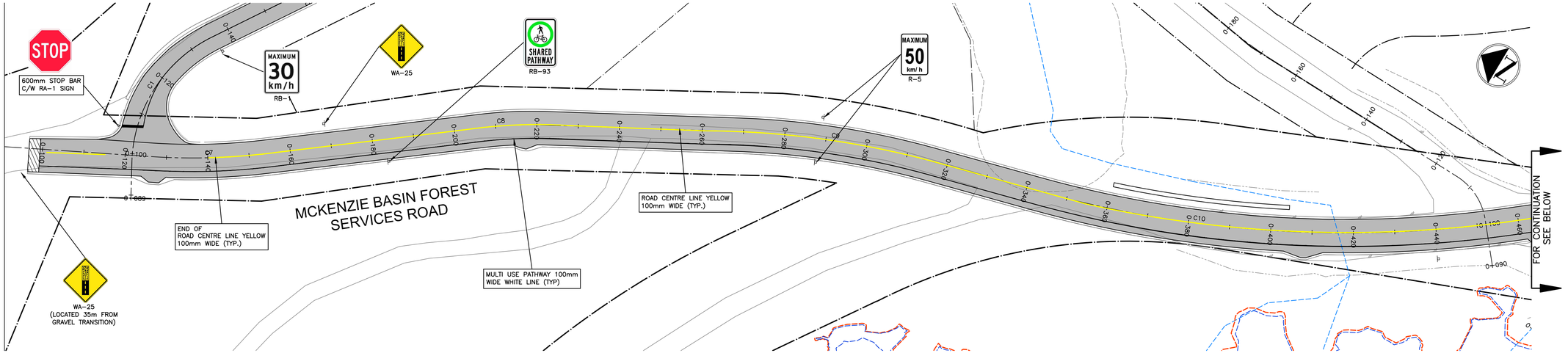
no.	(y/m/d)	revision	chk'd
14	18-02-06	PROJECT RECORDS OFFSITE	KBH
13	17-10-17	PROJECT RECORDS OFFSITE	KBH
12	17-09-28	UPDATED OFFSETS	KBH
11	17-08-15	UPDATE WITH HYDRO & TELUS	KBH
10	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
9	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
8	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
7	16-10-13	ISSUED FOR CONSTRUCTION OFFSITE	KBH

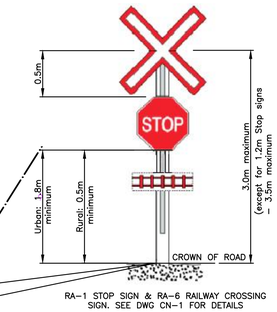
current rev. #: 14

engineer of record: K.B.H.
designed by: N.G.B.
drawn by: R.J.L.
date: 2016-05-13

scales: hor: 1:500 vert: 1:50
file no.: 16159
drawing no.: R-OS-2

SEE DRAWING KEY–1 FOR GENERAL NOTES
SEE DRAWING R–A–1 FOR ROADWORKS NOTES





RA–1 STOP SIGN & RA–6 RAILWAY CROSSING SIGN. SEE DWG CN–1 FOR DETAILS

SITE MAP

DRAWING LEGEND

approved

client
580049 BC LTD.

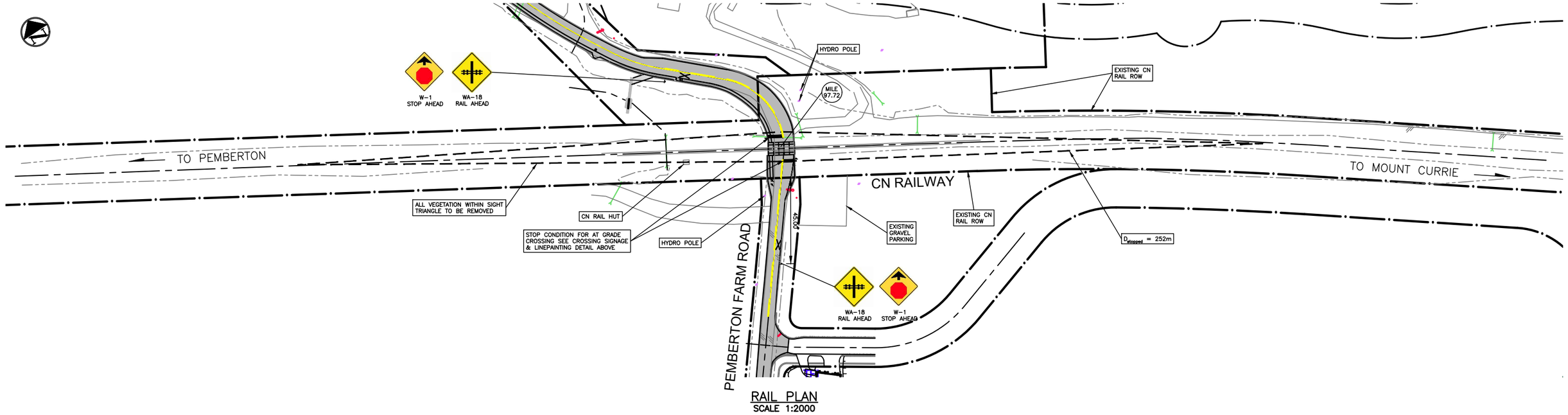
project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title
SIGNAGE & LINE PAINTING OFFSITE

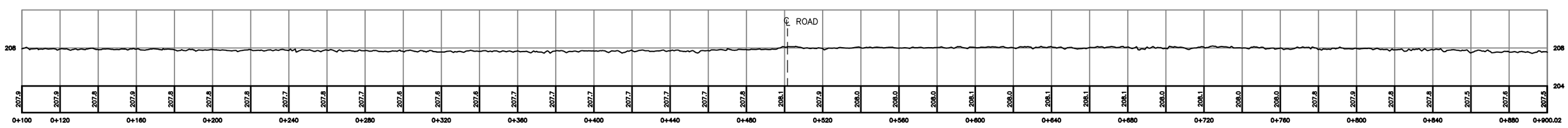
no.	(y/m/d)	revision	chk'd
10	18-02-06	PROJECT RECORDS OFFSITE	KBH
9	17-10-12	REVISED PER CN COMMENTS	ZM
8	17-09-27	REVISED PER CN COMMENTS	ZM
7	17-09-21	UPDATED PER CN COMMENTS	KBH
6	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
5	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
4	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
3	16-10-13	ISSUED FOR CONSTRUCTION OFFSITE	KBH

current rev. #: 10

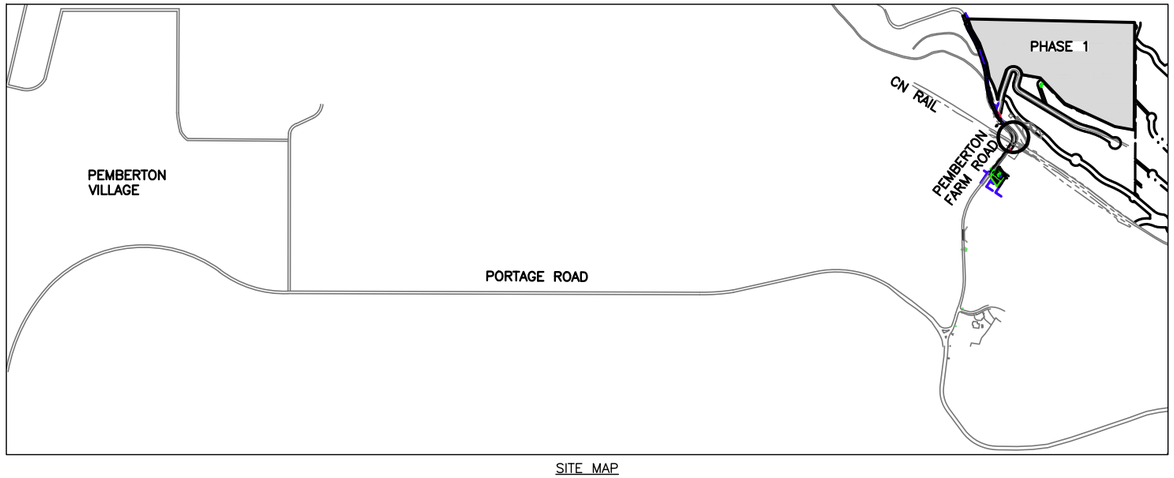
engineer of record: K.B.H.
designed by: N.G.B.
drawn by: A.A.P.
date: 2016-05-13
scales: hor: 1:500 vert: -
file no.: 16159
drawing no.: LP-2



RAIL PLAN
SCALE 1:2000



RAIL LINE ELEVATION
SCALE 1:2000



SITE MAP

GENERAL NOTES

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.
2. ELEVATIONS ARE TO GEODETIC DATUM NAD83, AND ARE DERIVED FROM DUAL FREQUENCY GNSS OBSERVATIONS TO WHISTLER ACTIVE CONTROL POINT (GEODETIC CONTROL MONUMENT 967000) AND ARE REFERRED TO THE CENTRAL MERIDIAN OF UTM ZONE 10.
3. CONSTRUCTION AND SIGHT LINE CLEARING TO BE IN ACCORDANCE WITH TRANSPORT CANADA GRADE CROSSING STANDARDS AND GRADE CROSSING REGULATIONS.
4. ALL UNDERGROUND UTILITY LOCATIONS TO BE PROTECTED AS PER TC-E10 FOR RAILWAY LOADING AND OVERHEAD UTILITIES AS PER G.O. E-11
5. ROAD SURFACE: ASPHALT
6. CROSSING SURFACE: CONCRETE PANEL 13.72m x 6.66m
7. DESIGN VEHICLE: WB-20
8. MAXIMUM VEHICLE SPEED AND TRAFFIC COUNT: 50km/h & 200 VEHICLES PER DAY
9. MAXIMUM TRAIN SPEED AND TRAFFIC COUNT: 30mp/h & 4 TRAINS PER DAY

PROPOSED SIGHTLINES

1. DESIGN VEHICLE: WB-20
2. STOP SIGN CONTROLLED CROSSING
3. TRAIN SPEED: 30mph (49km/h)
4. $D_{stopped}$ = 252m

EXISTING SIGHT LINES (AUGUST 2016)

STATION ALONG CL OF ROAD	VEHICLES TRAVELLING FROM NORTH		VEHICLES TRAVELLING FROM SOUTH	
	EAST ALONG TRACK	WEST ALONG TRACK	EAST ALONG TRACK	WEST ALONG TRACK
5m	50m BUSH/BERM	252m	252m	75m BUSH
25m	30m BUSH/BERM	10m BUSH	130m BUSH	50m BUSH
50m	10m BUSH	0m BUSH	130m BUSH	50m BUSH
100m	0m BUSH	0m BUSH	130m BUSH	50m BUSH

no.	date	revision
14	2018-02-06	PROJECT RECORDS OFFSITE
13	2017-10-17	PROJECT RECORDS OFFSITE
12	2017-10-12	REVISED PER CN COMMENTS
11	2017-09-27	REVISED PER CN COMMENTS

client: 580049 BC LTD.

project: THE RIDGE AT PEMBERTON - PHASE 1
PEMBERTON, BC

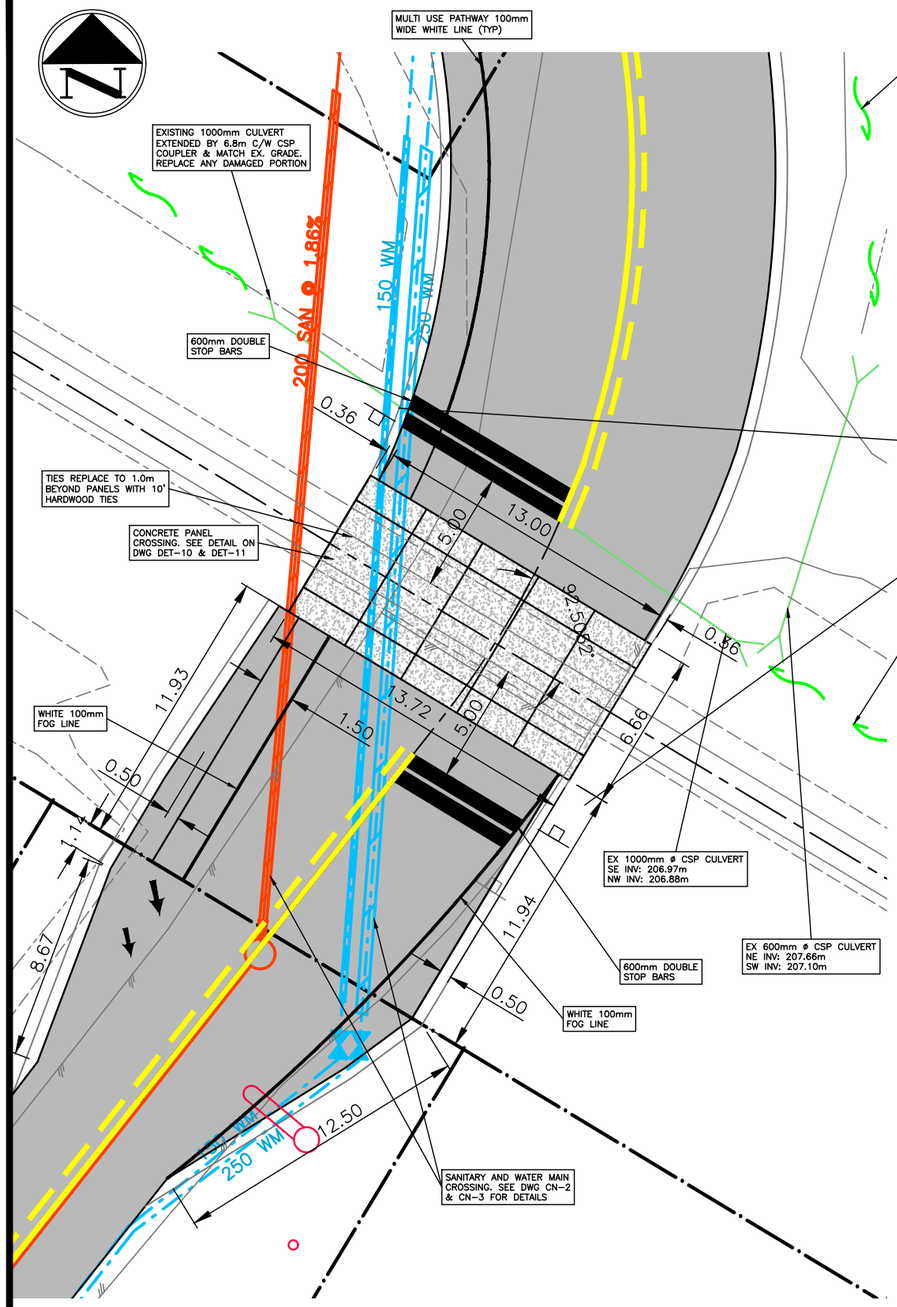
www.creus.ca
CREUS Engineering Ltd
Civil Engineers
P: 604-987-9070 F: 604-987-9071
200 - 901 WEST 16TH ST NORTH VANCOUVER, BC V7P 1R2

designed by: N.G.B.
drawn by: A.A.P.
checked by: K.B.H.
date: MAY.13.16

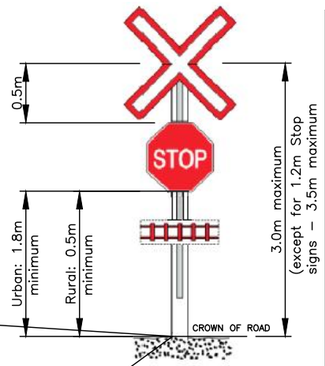
title: ROADWORKS
CN RAIL CROSSING
MILE 97.72 SQUAMISH SUBDIVISION,
IN THE VILLAGE OF PEMBERTON

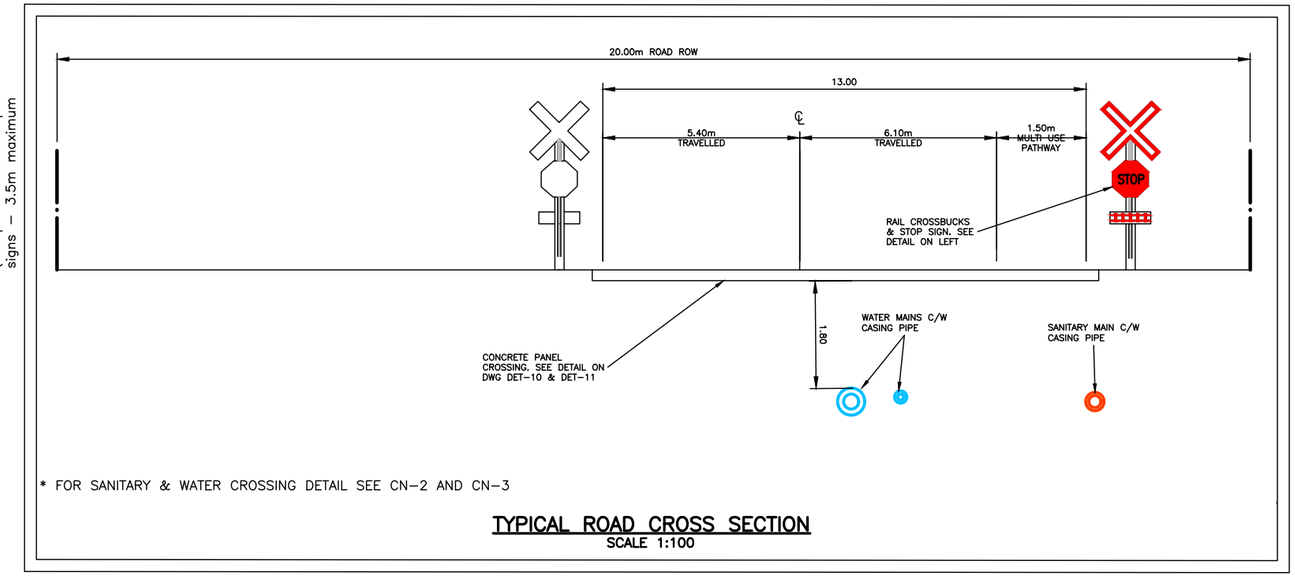
scales: hor: - vert: -
file no.: 16159
drawing no.: CN-1-A
rev.: 14

CONTRACTOR TO VERIFY & LOCATE EXISTING MAINS & SERVICE CONNECTIONS & NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO BEGINNING CONSTRUCTION

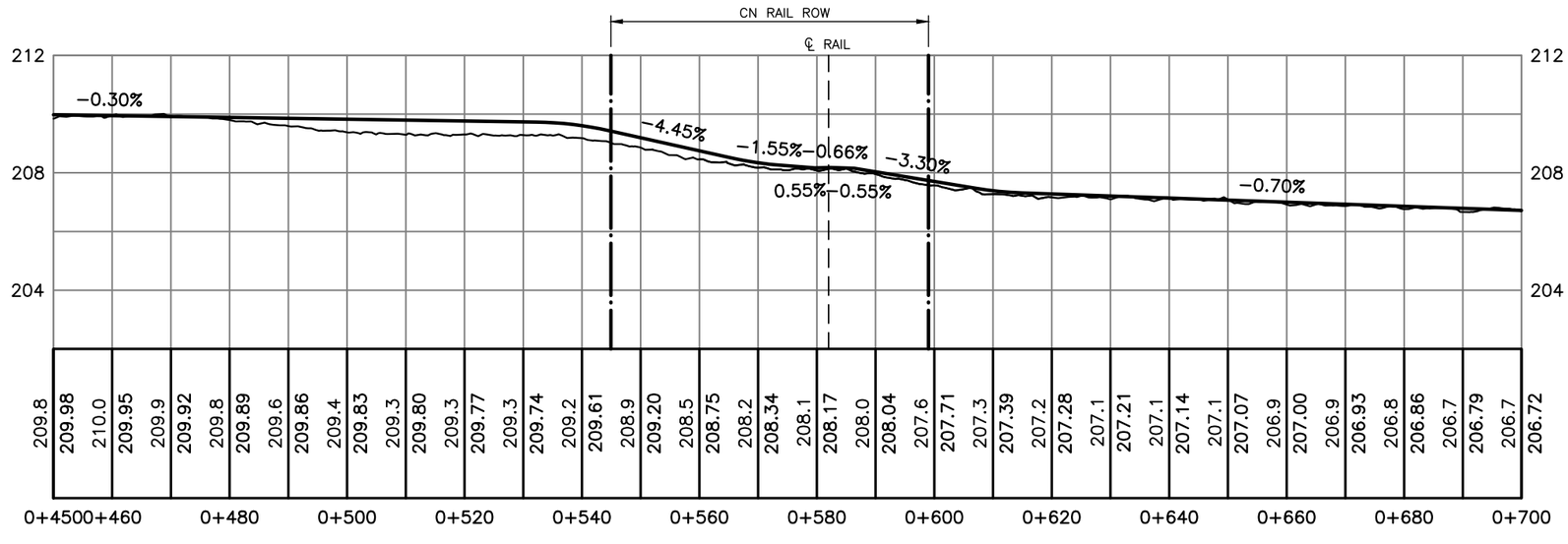


CROSSING SIGNAGE & LINEPAINTING DETAIL
SCALE 1:250





TYPICAL ROAD CROSS SECTION
SCALE 1:100



PEMBERTON FARM ROAD PROFILE
SCALE hor: 1:1000 / vert: 1:200

no.	date	revision
14	2018-02-06	PROJECT RECORDS OFFSITE
13	2017-10-17	PROJECT RECORDS OFFSITE
12	2017-10-12	REVISED PER CN COMMENTS
11	2017-09-27	REVISED PER CN COMMENTS

client: 580049 BC LTD.

project: THE RIDGE AT PEMBERTON - PHASE 1
PEMBERTON, BC

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Civil Engineers
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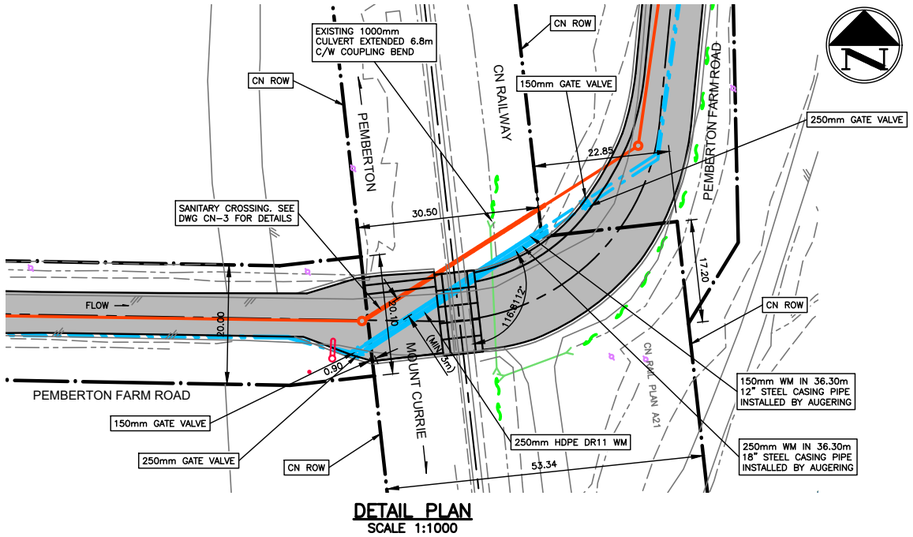
200 - 901 WEST 16TH ST NORTH VANCOUVER, BC V7P 1R2

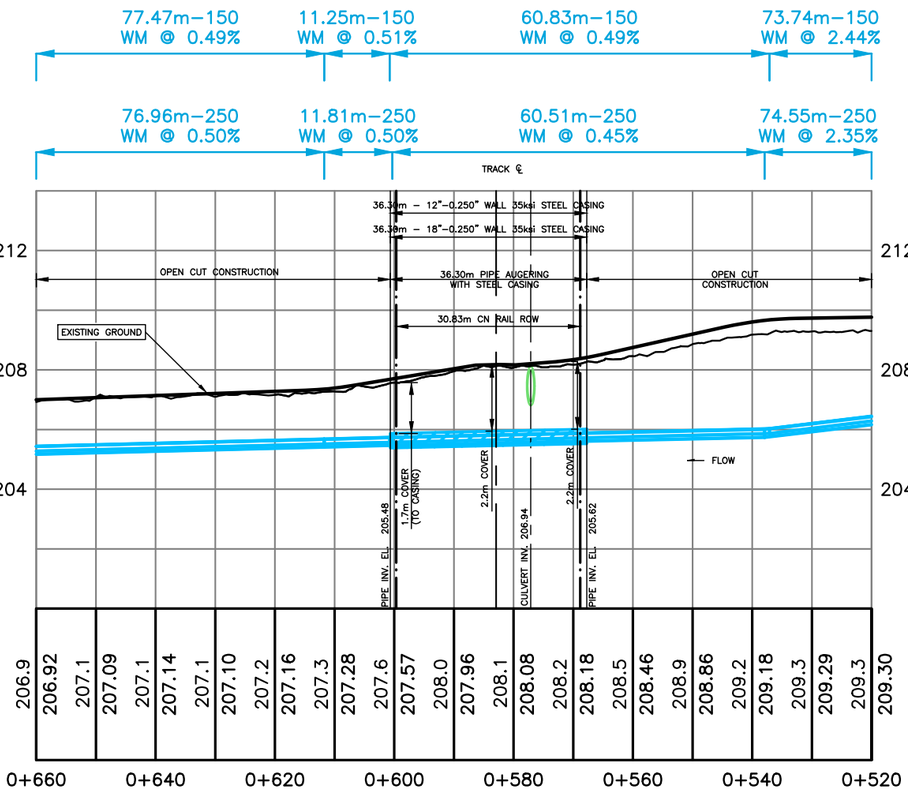
designed by: N.G.B.
drawn by: A.A.P.
checked by: K.B.H.
date: MAY.13.16

title: ROADWORKS
CN RAIL CROSSING
MILE 97.72 SQUAMISH SUBDIVISION,
IN THE VILLAGE OF PEMBERTON

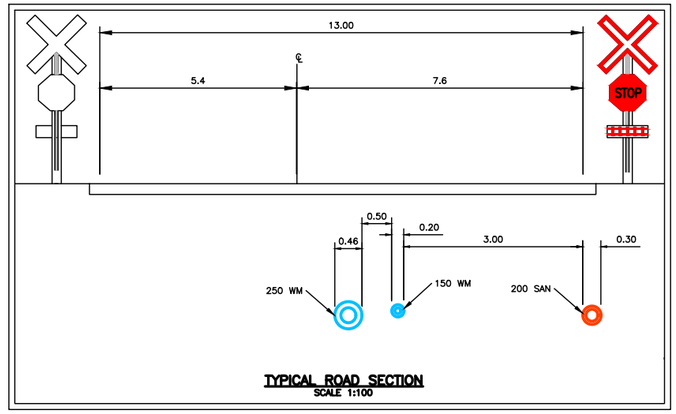
scales hor: - vert: -
file no. 16159
drawing no. CN-1-B
rev. 14



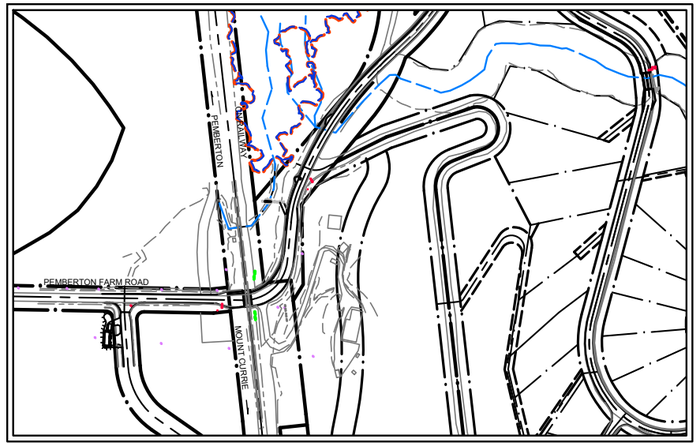
DETAIL PLAN
SCALE 1:1000



CROSSING PROFILE
SCALE 1:1000

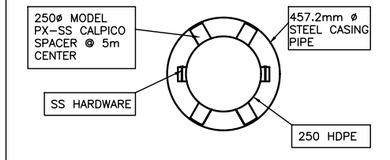


TYPICAL ROAD SECTION
SCALE 1:100

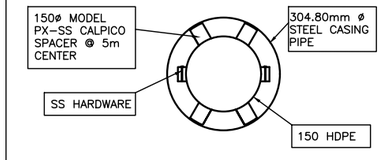


LOCATION PLAN
SCALE 1:5000

1. ALL UNDERGROUND UTILITY LOCATIONS PROTECTED AS PER TC–E10 FOR RAILWAY LOADING
2. WARNING MARKINGS AT EACH SIDE OF CN RAIL ROW
3. INSTALLATION AND MAINTENANCE IN ACCORDANCE WITH TC E–10



CASING PIPE FOR 250 WM–CROSS SECTION
N.T.S.



CASING PIPE FOR 150 WM–CROSS SECTION
N.T.S.

CASING PIPE SPECIFICATION–250 WM: 18"ø–0.312" WALL STEEL CASING	
OUTSIDE DIAMETER:	457.2mm
INSIDE DIAMETER:	441.3mm
WALL TICKNESS:	7.95mm
PIPE SPECIFICATION:	241MPa MIN. YIELD STRENGTH
LENGTH:	36.3m
MATERIAL:	STEEL
PROTECTION:	N/A
CARRIER PIPE SPECIFICATION:	HDPE
CONTENTS:	POTABLE WATER
INSIDE DIAMETER:	220mm
WALL TICKNESS:	25mm
SPEC.:	DR11
OPER./MAX. PRES.:	35psi/160psi
PROTECTION:	NIL

CASING PIPE SPECIFICATION–150 WM: 12"ø–0.250" WALL STEEL CASING	
OUTSIDE DIAMETER:	304.80mm
INSIDE DIAMETER:	292.00mm
WALL TICKNESS:	6.40mm
PIPE SPECIFICATION:	241MPa MIN. YIELD STRENGTH
LENGTH:	36.3m
MATERIAL:	STEEL
PROTECTION:	N/A
CARRIER PIPE SPECIFICATION:	HDPE
CONTENTS:	POTABLE WATER
INSIDE DIAMETER:	119mm
WALL TICKNESS:	23.06mm
SPEC.:	DR7.3
OPER./MAX. PRES.:	215psi/254psi
PROTECTION:	NIL

CANADIAN NATIONAL RAILWAY	
DIVISIONAL ENGINEER	
REGIONAL ENGINEER	
MANAGER	
RAILWAY CHAINAGE	
MILEAGE	
SUBDIVISION	

no.	date	revision
11	2018-02-06	PROJECT RECORDS OFFSITE
10	2017-10-17	PROJECT RECORDS OFFSITE
9	2017-03-07	REISSUED FOR CONSTRUCTION OFFSITE
8	2016-11-09	REISSUED FOR CONSTRUCTION OFFSITE

client: 580049 BC LTD.

project: THE RIDGE AT PEMBERTON - PHASE 1
PEMBERTON, BC

www.creus.ca
CREUS Engineering Ltd
Civil Engineers
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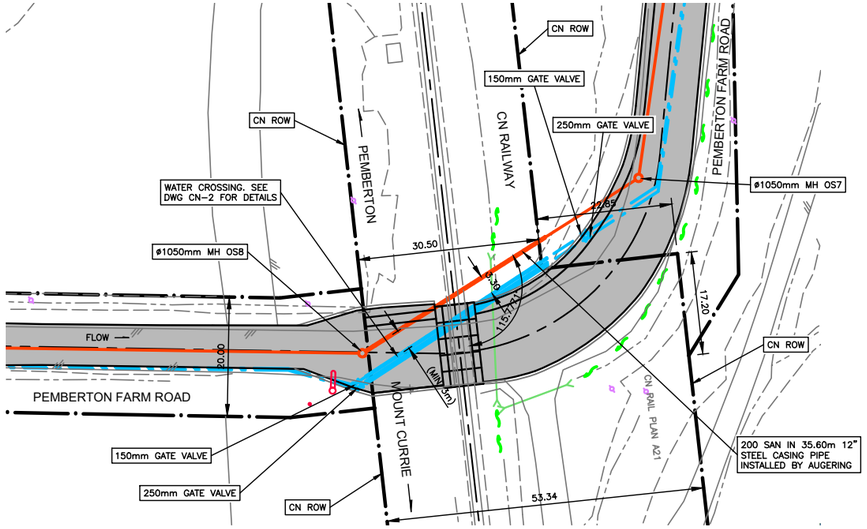
200 - 901 WEST 16TH ST NORTH VANCOUVER, BC V7P 1R2

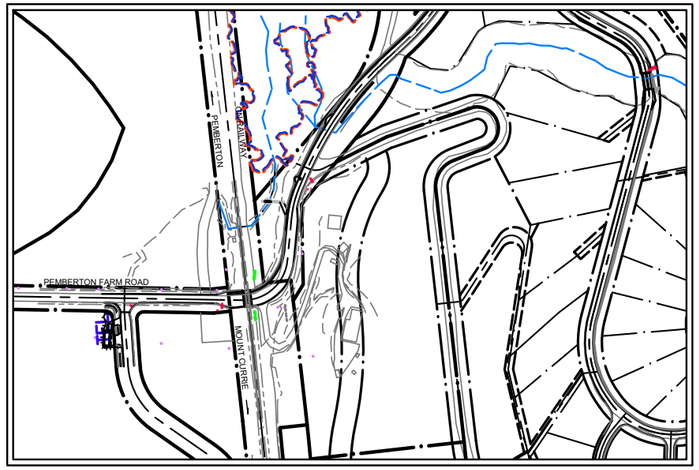
designed by: N.G.B.
drawn by: A.A.P.
checked by: K.B.H.
date: MAY.31.16

title: CN RAIL CROSSING
WATER CROSSING

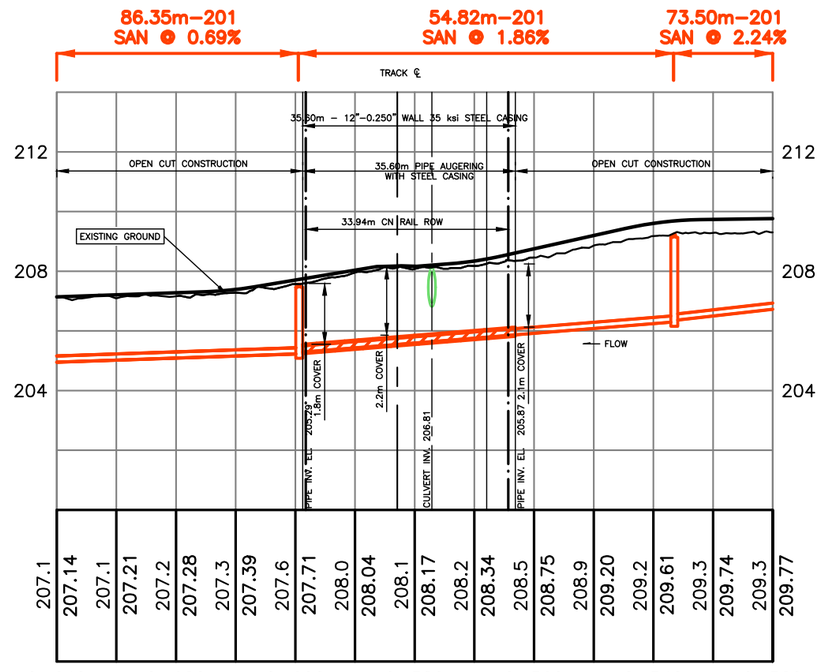
scales: hor: - vert: -
file no.: 16159
drawing no.: CN-2
rev.: 11



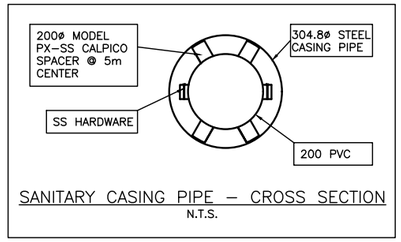
DETAIL PLAN
SCALE 1:1000



LOCATION PLAN
SCALE 1:5000



CROSSING PROFILE
SCALE 1:1000



SANITARY CASING PIPE – CROSS SECTION
N.T.S.

CASING PIPE SPECIFICATION: 12" ø – 0.250" WALL STEEL CASING	
OUTSIDE DIAMETER:	304.8mm
INSIDE DIAMETER:	292.1mm
WALL TICKNESS:	6.35mm
PIPE SPECIFICATION:	241MPa MIN. YIELD STRENGTH
LENGTH:	61.77m
MATERIAL:	STEEL
PROTECTION:	N/A
CARRIER PIPE SPECIFICATION:	PVC SDR 35
CONTENTS:	SEWAGE
WATER	
INSIDE DIAMETER:	201.16mm
WALL TICKNESS:	6.1mm
SPEC.:	DR11
OPER./MAX. PRES.:	0 psi (GRAVITY)
PROTECTION:	NIL

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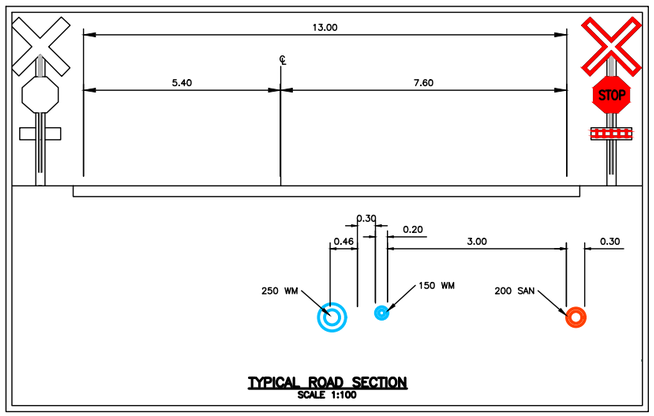

TYPICAL ROAD SECTION
SCALE 1:100

CANADIAN NATIONAL RAILWAY	
DIVISIONAL ENGINEER	
REGIONAL ENGINEER	
MANAGER	
RAILWAY CHAINAGE	
MILEAGE	
SUBDIVISION	

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200 - 901 WEST 16TH ST NORTH VANCOUVER, BC V7P 1R2

designed by	N.G.B.
drawn by	A.A.P.
checked by	K.B.H.
date	MAY.31.16

title: CN RAIL CROSSING
SANITARY CROSSING

scales: hor: - vert: -

file no. 16159

drawing no. CN-3

rev. 10

AS-CONSTRUCTED INFORMATION

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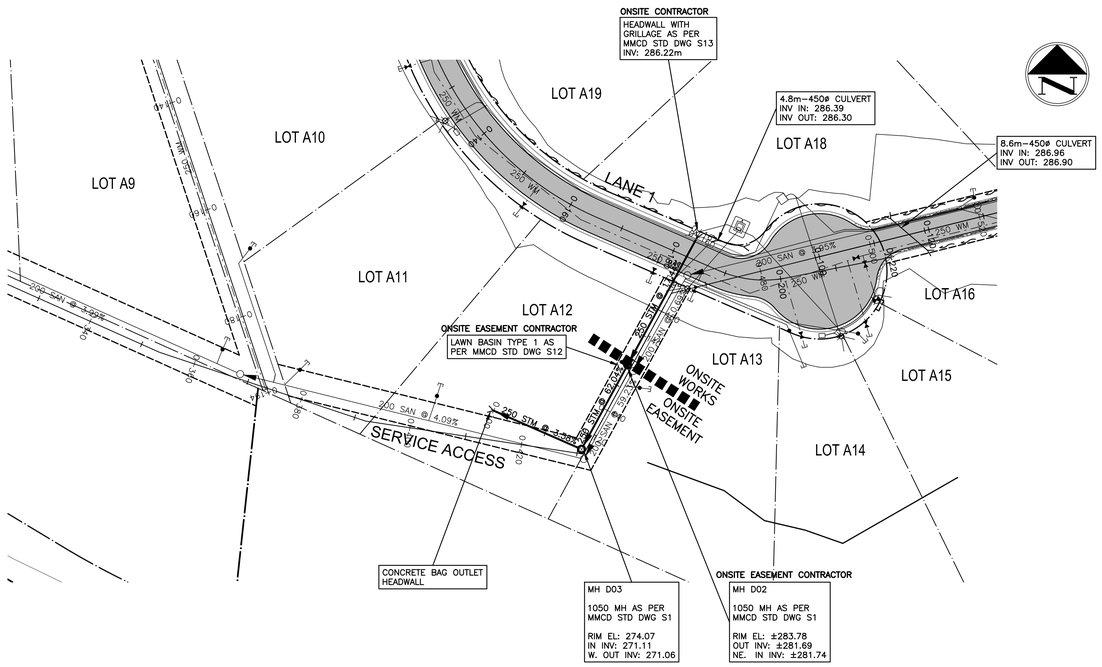

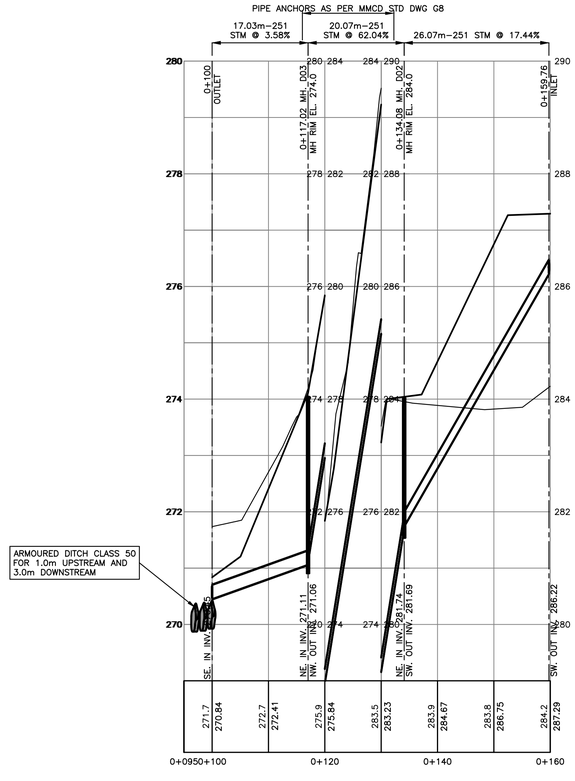

RAINFALL CAPTURE TARGET

Total Catchment Area		1536 m²	(see SMP dwg)
Building Area (Impervious)		100 m²	(see SMP dwg)
Hardscape Area (Impervious)		150 m²	(see SMP dwg)
Permeable Pavers (Semi-Pervious)		0 m²	(see SMP dwg)
Landscape Area (Pervious)		1286 m²	(see SMP dwg)
Total Percent Impervious		16%	
Total Catchment Area		1536 m²	

OBJECTIVE 1: CAPTURE RUNOFF FROM THE 50% MEAN ANNUAL RAINFALL (MAR) EVENT

Objective: Capture The 50% MAR Storm Event			
MAR Rainfall Event		35 mm	VOP IDF
50% of MAR Rainfall Event		17 mm	
Total Impervious Area	x	250 m²	(As Above)
Rainfall on Area	=	4.3 m³	
Total Rainfall Volume To Be Captured	=	4.3 m³	

BUILDING/PATIO/DRIVEWAY AREA CAPTURE VOL.

Rock Pit Capture			
Rock Pit Depth		0.90 m	
Rock Pit Width		2.50 m	
Rock Pit Length		4.50 m	
Rock Pit Porosity		30%	
Storage Volume	=	3.0 m³	(Storage Volume)
Infiltration Rate		10 mm/hr	(Typical Rate)
Potential Infiltration Provided Over 24hr	=	4.2 m³	(Infiltration Volume)
Rock Pit Capture	=	7.2 m³	(Storage + Infiltration)
Available Runoff for Capture	=	4.3 m³	(Rainfall on Surface)
Total Rainfall Captured	=	4.3 m³	(Lesser of Above)

SUMMARY

Total Rainfall Volume To Be Captured	=	4.3 m³	(As Above)
Rock Pit Capture Volume	=	4.3 m³	(As Above)
Runoff During Storm Event	**=**	**0 m³**	**OKAY**

AREAS

Pre Development Catchment Area		1536 m²	
Building/Roof Area (Impervious)		0 m²	
Hardscape Area (Impervious)		0 m²	
Landscape Area (Pervious)		1536 m²	
Post Development Catchment Area		1536 m²	
Building/Roof Area (Impervious)		100 m²	
Hardscape Area (Impervious)		150 m²	
Permeable Paver Area (Semi-Pervious)		0 m²	
Landscape Area (Pervious)		1286 m²	
Post Development Percent Impervious		16%	

PREDEVELOPMENT

Pre Development Peak Flows				
Catchment Area (A)		1536 m²		(As Above)
Weighted Average From Impervious And Pervious Areas				
Building/Roof Runoff Coefficient		0.95	for	0 m²
Hardscape Runoff Coefficient		0.80	for	0 m²
Landscape Runoff Coefficient		0.30	for	1536 m²
Pre Development Runoff Coefficient (C)	=	0.30	for	1536 m²
Rainfall Intensity (i)				
Pre Development TOC		20 min		
From Pemberton IDF Curve...				
10yr Rainfall Intensity		23 mm/hr		
Pre Development Peak Flow (Q=CIA)	=	2.9 l/s		

POSTDEVELOPMENT

OBJECTIVE 2: LIMIT RUNOFF FROM THE 10-YR EVENT

Post Development Peak Flows				
Catchment Area (A)		1536 m²		(As Above)
Weighted Average From Impervious And Pervious Areas				
Building/Roof Runoff Coefficient		0.95	for	100 m²
Hardscape Runoff Coefficient		0.80	for	150 m²
Permeable Paver Runoff Coefficient		0.50	for	0 m²
Landscape Runoff Coefficient		0.30	for	1286 m²
Post Development Runoff Coefficient (C)	=	0.39	for	1536 m²
Rainfall intensity (i)				
Pre Development TOC		15 min		
From Pemberton IDF Curve...				
10yr Rainfall Intensity		26 mm/hr		
Post Development Peak Flow (Q=CIA)	=	4.3 l/s		

DETENTION REQUIREMENTS

Detain The Post Development 10-Year Storm Event And Release At Pre Development Levels

Duration (min)	Intensity (mm/hr)	Peak Flow (l/s)	Release Rate (l/s)	Difference (l/s)	Volume (m³)
5	62	10.3	2.9	7.3	1.7
10	45	7.5	2.9	4.5	2.3
20	33	5.4	2.9	2.5	2.8
30	27	4.5	2.9	1.6	2.8
60	20	3.3	2.9	0.3	1.5
120	14	2.4	2.9	-0.5	-3.2
180	12	2.0	2.9	-1.0	-9.3
240	10	1.7	2.9	-1.2	-15.9

Peak Storage Requirement 2.8 m³

Storage Provided = 3.0 > 2.8 OKAY

CREUS
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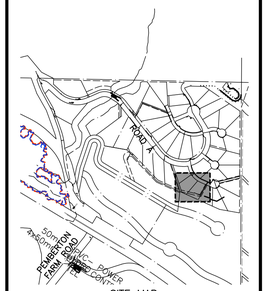
PH: 604-987-9070 WEBSITE: www.creus.ca



SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASEMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client

580049 BC LTD.

project

THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title

STORMWORKS
LANE 1 TO ROAD B

no.	(y/m/d)	revision	chk'd
13	18-02-06	PROJECT RECORDS OFFSITE	KBH
12	18-02-06	PROJECT RECORDS ONSITE	KBH
11	17-10-17	PROJECT RECORDS OFFSITE	KBH
10	17-04-27	REVISED GRADING	DWC
9	17-04-13	ISSUED FOR OFFSITE AI #5	AGC
8	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
7	17-02-27	ISSUED FOR CONSTRUCTION ONSITE	KBH
6	16-12-19	REVISED AS PER CLIENT REQUEST AI(4)	KBH

current rev. # 13

engineer of record: K.B.H.	scales: hor: 1:500 vert: 1:50
designed by: N.G.B.	file no.: 16159
drawn by: A.A.P.	drawing no.: D-2
date: 2016-05-13	

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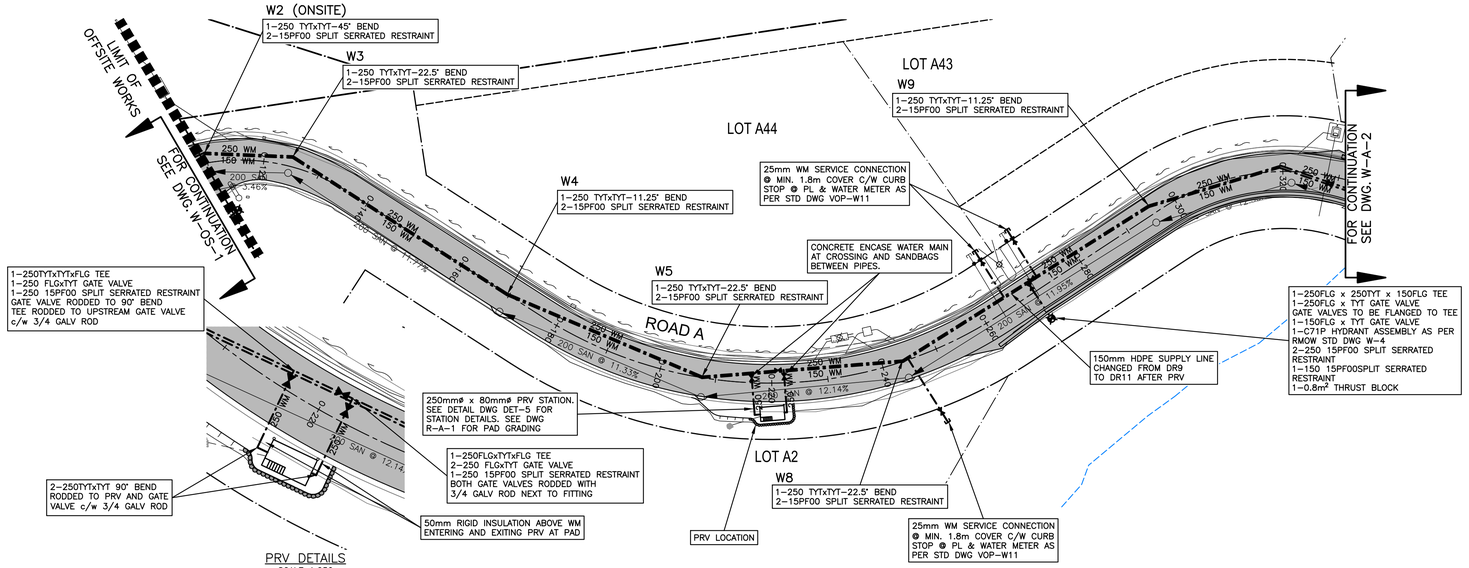

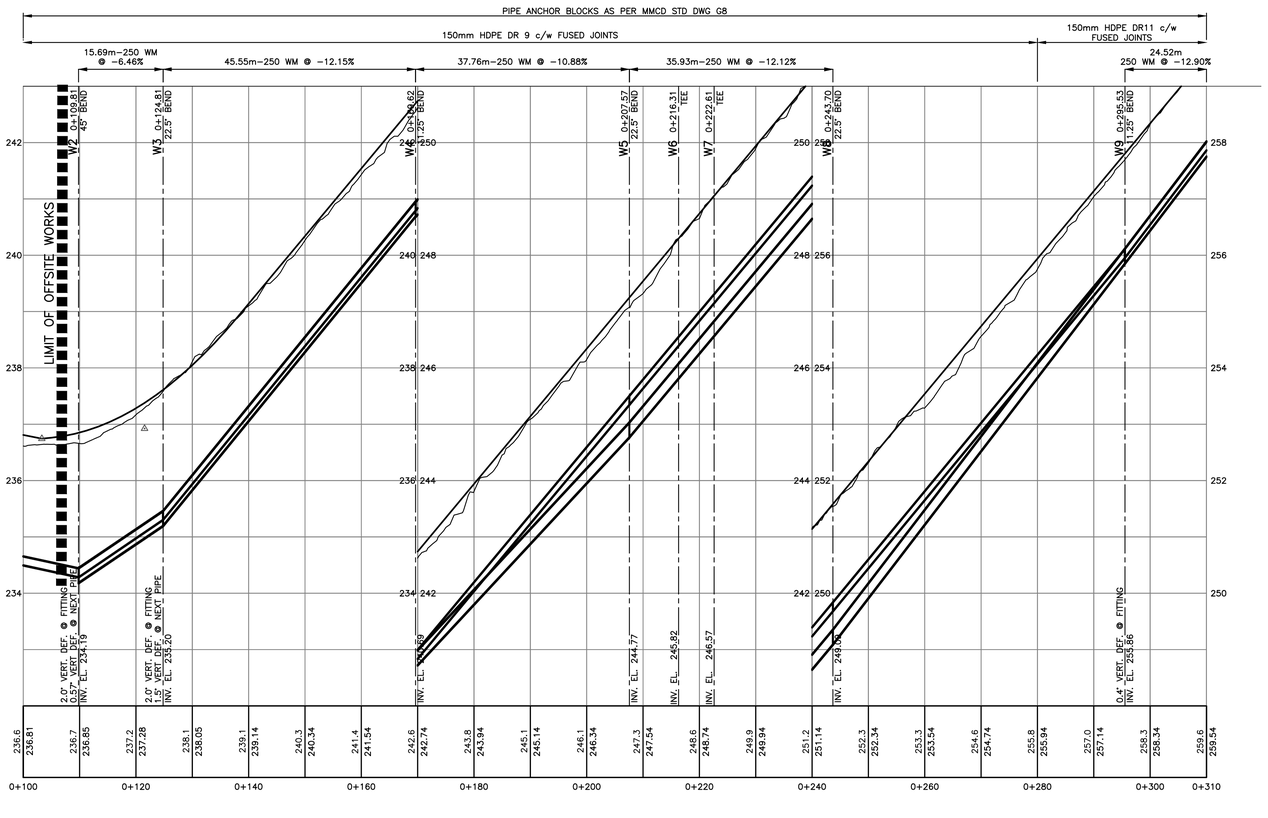

WATERWORKS NOTES

1. VALVES AND HYDRANTS OF EXISTING SYSTEM ONLY TO BE OPERATED WITH THE PERMISSION OF THE ENGINEER AND WATER UTILITY.
3. WATERMAIN TO BE PVC DR18 TO AWWA C900 FOR ALL PIPE 100mm TO 300mm IN DIAMETER. PIPE LARGER THAN 300mm TO BE AWWA C905. ALL PIPE TO BE CSA B137.3 CERTIFIED.
4. ALL FITTINGS TO BE DUCTILE IRON TO AWWA C110 OR C153, CEMENT MORTAR LINED TO AWWA C104, TYTON JOINTS TO AWWA C111, & ASTM D313.9 & GASKETS TO ASTM F477 WITH CLOSED LUGS.
5. HDPE JOINTS TO BE HEAT BUTT FUSION TO ASTM D2657, FITTINGS TO AWWA C906 AS PER MMCD
6. ALL WORKS TO BE PER MMCD (LATEST EDITION), MUNICIPAL REQUIREMENTS, CONTRACT DOCUMENTS AND ALSO, THE BCBC (LATEST EDITION) WITHIN PROPERTY LIMITS.
7. HYDRANTS TO BE TERMINAL CITY C71P TO RMOW STD. DRAWING W4. VALVE TO BE MMCD STD. & LEADS TO BE DUCTILE IRON AS PER WATERMAIN PIPING ABOVE. VILLAGE OF PEMBERTON TO PROVIDE ALL MATERIALS & FITTINGS INCLUDING VALVES FOR WORKS PROVIDED BY THEIR CREWS.
8. SERVICE CONNECTIONS TO MMCD STD DRAWING W2A WITH SERVICES LESS THAN 100mm TO BE POLYETHYLENE TO AWWA C901 OR ENGINEER APPROVED ALTERNATIVE UNLESS OTHERWISE NOTED.
9. SERVICE CONNECTIONS TO BE MARKED WITH A 40mm x 90mm POST PAINTED BLUE AT TERMINATION. SERVICES TO BE TERMINATED 1m BEYOND THE PROPERTY LINE, UNLESS OTHERWISE NOTED.
10. DURING CONSTRUCTION AND AT ANY TIME PRIOR TO ACCEPTANCE AND PRESSURIZING OF MAINS, THE CONTRACTOR SHALL BAG OR PLACE A 0.3m SQUARE 20mm SHEET OF PLYWOOD OVER THE PUMPER NOZZLE OF THE HYDRANT TO INDICATE THE HYDRANT IS NOT IN USE.
11. WATERMAIN TO BE CONSTRUCTED A MINIMUM OF 0.5m ABOVE STORM OR SANITARY SEWERS AND MAINTAIN 3.0m HORIZONTAL CLEARANCE. IN AREAS WHERE LESS THAN 0.5m VERTICAL OR 3.0m HORIZONTAL CLEARANCE CAN NOT BE MAINTAINED, ALL JOINTS TO BE HEAT SHRINK WRAPPED OR TAPE WRAPPED AS PER MINISTRY OF HEALTH STANDARDS; ANSI/AWWA C214 (FACTORY APPLIED), ANSI/AWWA C209 (FIELD APPLIED) ANSI/AWWA C217-90 (PETROLATUM TAPE) ALL TO MINISTRY OF HEALTH STANDARDS. WATERMAIN CROSSINGS OF STORM OR SANITARY SEWER TO BE MADE AT MIDPOINT OF PIPE.
12. WHERE SEWER MAIN CROSSES WATERMAIN AND CLEARANCE IS LESS THAN 0.5m, THE UPPER PIPE SHALL BE CONCRETE ENCASED PER MMCD STD DWG G6 AND WRAPPED AS PER NOTE ABOVE.
13. WHERE WATERMAIN PIPE GRADE EXCEEDS 10% PIPE TO BE ANCHORED AS PER MMCD STD DWG G8. JOINT RESTRAINTS TO MMCD SPECIFICATION SECTION 02666 TO BE INSTALLED WHERE GRADE EXCEEDS 20%.
14. PIPE BEDDING TO CONFORM WITH MMCD STANDARDS. SEE MMCD STD. DWG G4 AND BE COMPACTED TO 95% MODIFIED PROCTOR PRIOR TO BACKFILLING TRENCH.
15. EXCAVATION AND PAVEMENT RESTORATION TO BE COMPLETED BY CONTRACTOR PER REGULATORY AUTHORITY REQUIREMENTS, MMCD STANDARDS AND CONTRACT DOCUMENTS. CONTRACTOR TO GIVE NOTICE PRIOR TO COMPLETING WORKS.
16.
17. WHERE IT IS SPECIFIED THAT THE CONTRACTOR IS TO MAKE TIE-IN(S) TO EXISTING WATERMAIN(S), ALL TIE-INS SHALL BE MADE UNDER THE SUPERVISION OF THE ENGINEER. CONTRACTOR TO ADVISE ENGINEER 48 HOURS PRIOR TO TIE-IN. WHERE THE TIE-IN SCOPE IS NOT SPECIFIED VOP TO MAKE TIE-IN – CONTRACTOR TO GIVE VOP & ENGINEER A MINIMUM OF 2 WEEKS NOTICE IN ADVANCE OF TIE-IN.
18. INSTALLATION, TESTING AND CHLORINATING TO BE PERFORMED IN ACCORDANCE WITH VILLAGE OF PEMBERTON AND MMCD CONSTRUCTION SPECIFICATIONS AND AWWA C600 AND C651. ENGINEER AND VILLAGE TO BE GIVEN 48 HOURS NOTICE PRIOR TO TESTING AND CONTRACTOR TO INSURE TESTING IS COMPLETED IN THE PRESENCE OF THE ENGINEER.
19. MINIMUM COVER ON WATERMAIN = 1.8m.
20. THRUST BLOCKS AS PER MMCD STD DWG W1.
21. BLOW OFF AND AIR VALVES AS PER MMCD STD DWGS W6 & W7.
22. PIPE BEDDING TO CONFORM WITH MMCD STANDARDS. SEE MMCD STD. DWG G4 AND BE COMPACTED TO 95% MODIFIED PROCTOR PRIOR TO BACKFILLING TRENCH.
23. COVERS FOR INSPECTION CHAMBERS, VALVE RISERS AND METER CHAMBERS LOCATED WITHIN DRIVEWAYS SHALL BE SUITABLE FOR H20 TRAFFIC LOADING.
24. LOCATION OF SERVICE CONNECTIONS TO BE CONFIRMED BY ENGINEER ONCE ROUGH GRADING COMPLETE.
25. EXCAVATION AND PAVEMENT RESTORATION FOR WATERMAIN TIE-IN FROM EX. WATERMAIN TO PROPERTY LINE TO BE COMPLETED BY CONTRACTOR. VILLAGE OF PEMBERTON UTILITIES DEPT. WILL SUPPLY WET TAP MATERIALS AND COMPLETE TIE-IN AT DEVELOPER'S COST. CONTRACTOR IS RESPONSIBLE FOR REPLACEMENT OF ANY PAVEMENT AND BOULEVARD TO THE PRE-CONSTRUCTION CONDITION OR BETTER.
26. ALL ONSITE WATERMAIN PIPING TO BE PVC DR18 PIPE TO AWWA C900 FOR PIPE 100mm TO 300mm DIAMETER AND AWWA C905 FOR PIPE LARGER THAN 300mm. ALL PIPE TO BE CSA B137.3 CERTIFIED.
27. ALL VALVES OUTSIDE PAVED AREAS TO INCLUDE MINIMUM 1.0m ASPHALT OR CONCRETE APRON.

RESTRAINT TABLE			
TYPE OF FITTING	LENGTH OF RESTRAINT		
DEAD END, CAPS, AND VALVES	30.0m		
TEES 250x200	2.0m ON TEE AND BRANCHES		
TEES 250x250	2.0m ON TEE AND BRANCHES		
VERTICAL OFFSET		UPPER BEND	LOWER BEND
	11.25	2.1m	1.0m
	22.5	4.0m	1.5m
	45	12.5m	3.0m
HORIZONTAL BEND	11.25	1.0m	
	22.5	1.5m	
	45	3.0m	
	90	7.3m	

CREUS Engineering

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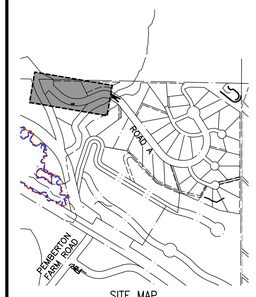

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DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title
WATERWORKS
ROAD A (STA 0+100-0+310)

no.	(y/m/d)	revision	chk'd
17	18-02-06	PROJECT RECORDS OFFSITE	KBH
16	18-02-06	PROJECT RECORDS ONSITE	KBH
15	17-04-13	ISSUED FOR OFFSITE AI #5	AGC
14	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
13	17-02-27	ISSUED FOR CONSTRUCTION ONSITE	KBH
12	16-11-09	REISSUED FOR CONSTRUCTION ONSITE	KBH
11	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
10	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH

current rev. # 17

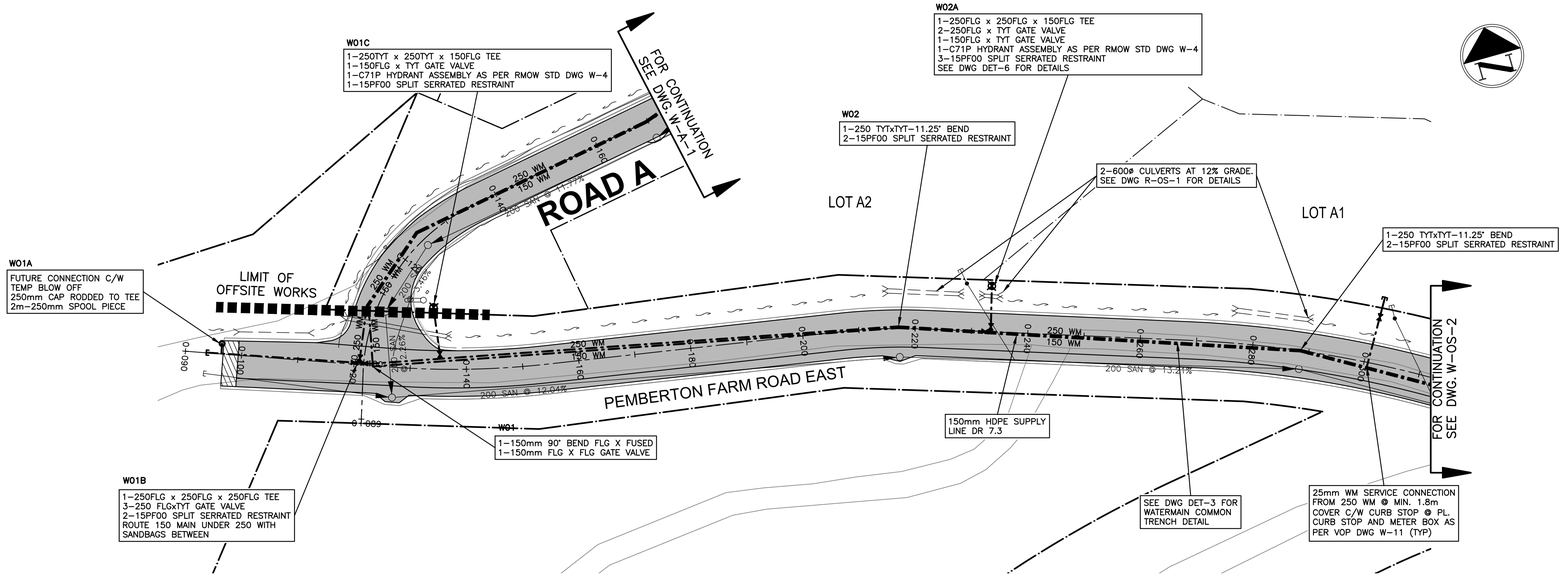
engineer of record: K.B.H.
scales: hor: 1:500 vert: 1:50
designed by: N.G.B.
file no.: 16159
drawn by: R.J.L.
drawing no.: W-A-1
date: 2016-05-13

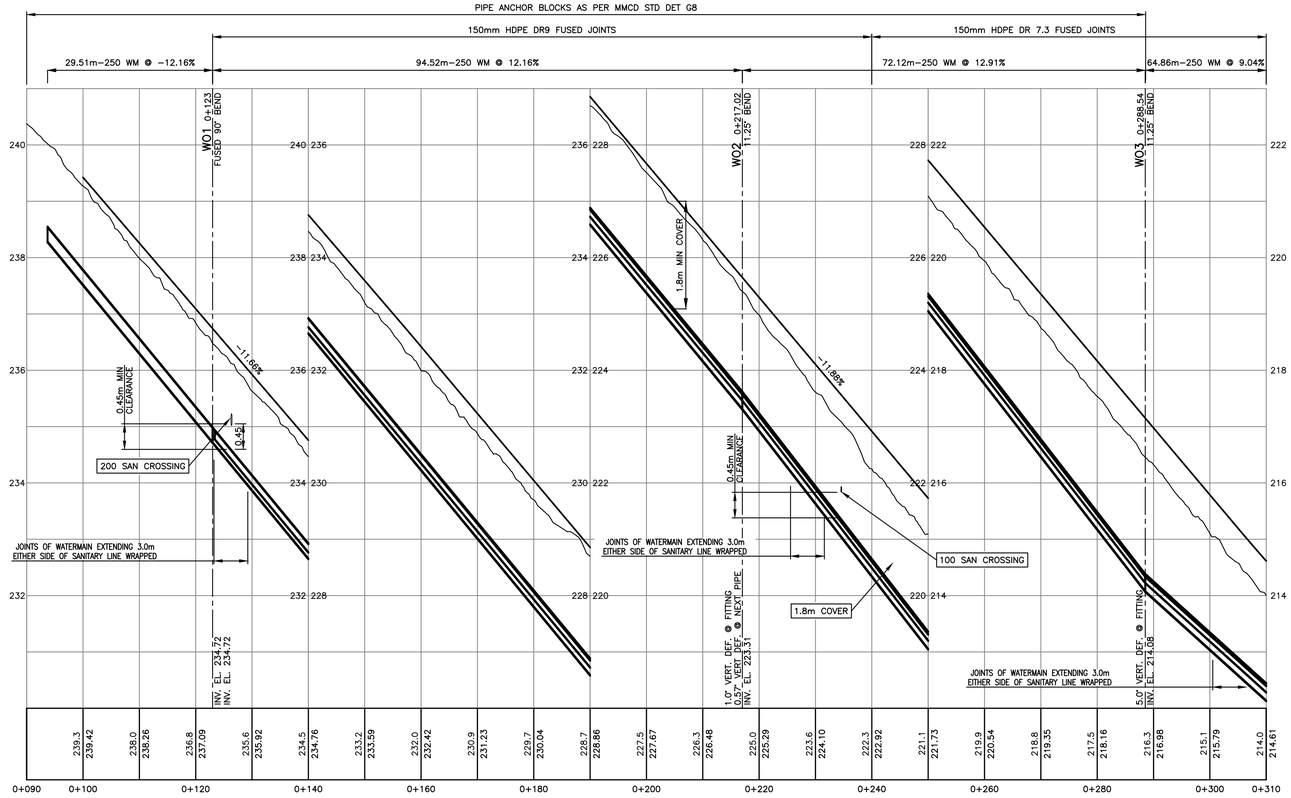
AS-CONSTRUCTED INFORMATION

CREUS ENGINEERING LTD. CERTIFIES THAT THE WORKS & SERVICES SHOWN ON THESE DRAWINGS WERE CONSTRUCTED IN GENERAL CONFORMANCE WITH THE DRAWINGS & SPECIFICATIONS.

AS-CONSTRUCTED SURVEY INFORMATION SHOWN ON THESE DRAWINGS HAVE BEEN PROVIDED BY OTHERS. IT IS THE RESPONSIBILITY OF OTHERS USING THESE DRAWINGS TO CONFIRM THE LOCATION & ELEVATION OF THESE SERVICES.

SEE DRAWING KEY-1 FOR GENERAL NOTES
SEE DRAWING W-A-1 FOR WATERWORKS NOTES
SEE DRAWING S-A-1 FOR SANITARY NOTES





RESTRAINT TABLE			
TYPE OF FITTING	LENGTH OF RESTRAINT		
DEAD END, CAPS, AND VALVES	30.0m		
TEES 250x200	2.0m ON TEE AND BRANCHES		
TEES 250x250	2.0m ON TEE AND BRANCHES		
VERTICAL OFFSET		UPPER BEND	LOWER BEND
	11.25	2.1m	1.0m
	22.5	4.0m	1.5m
	45	12.5m	3.0m
HORIZONTAL BEND	11.25	1.0m	
	22.5	1.5m	
	45	3.0m	
	90	7.3m	

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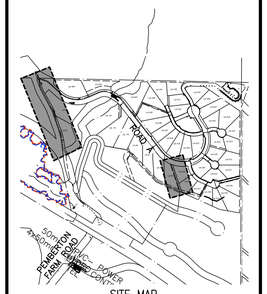

SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title
WATERWORKS
OFFSITE ROAD (STA 0+110-0+310)

no.	(y/m/d)	revision	chk'd
15	18-02-06	PROJECT RECORDS OFFSITE	KBH
14	17-10-17	PROJECT RECORDS OFFSITE	KBH
13	17-04-13	ISSUED FOR AI #5	AGC
12	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
11	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
10	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
9	16-10-21	VCH UPDATE	KBH
8	16-10-13	ISSUED FOR CONSTRUCTION OFFSITE	KBH

current rev. # 15

engineer of record: K.B.H.
designed by: N.G.B.
drawn by: R.J.L.
date: 2016-05-13
scales: hor: 1:500 vert: 1:50
file no.: 16159
drawing no.: W-OS-1

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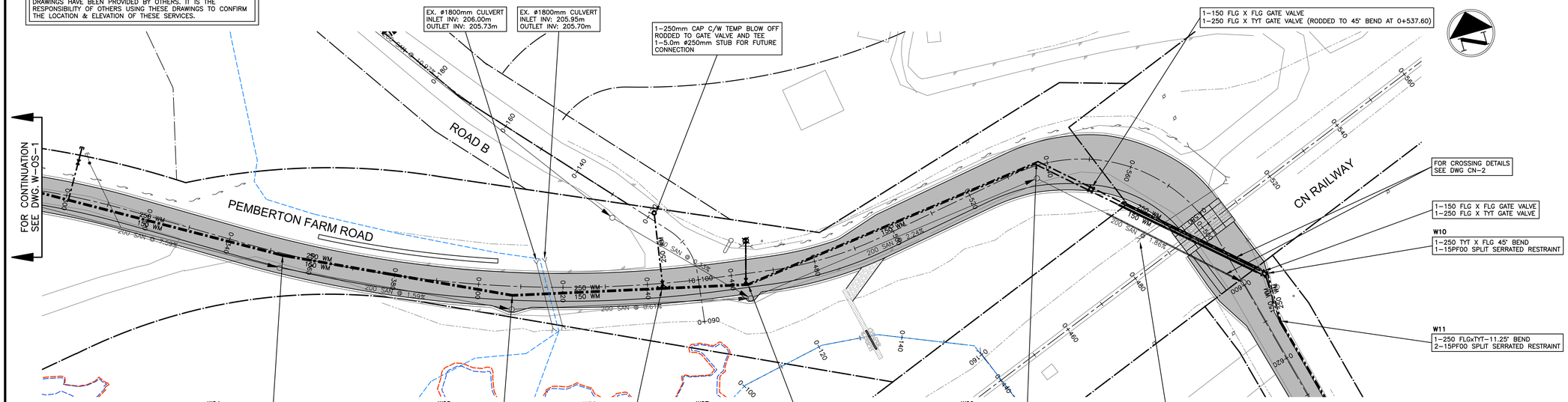
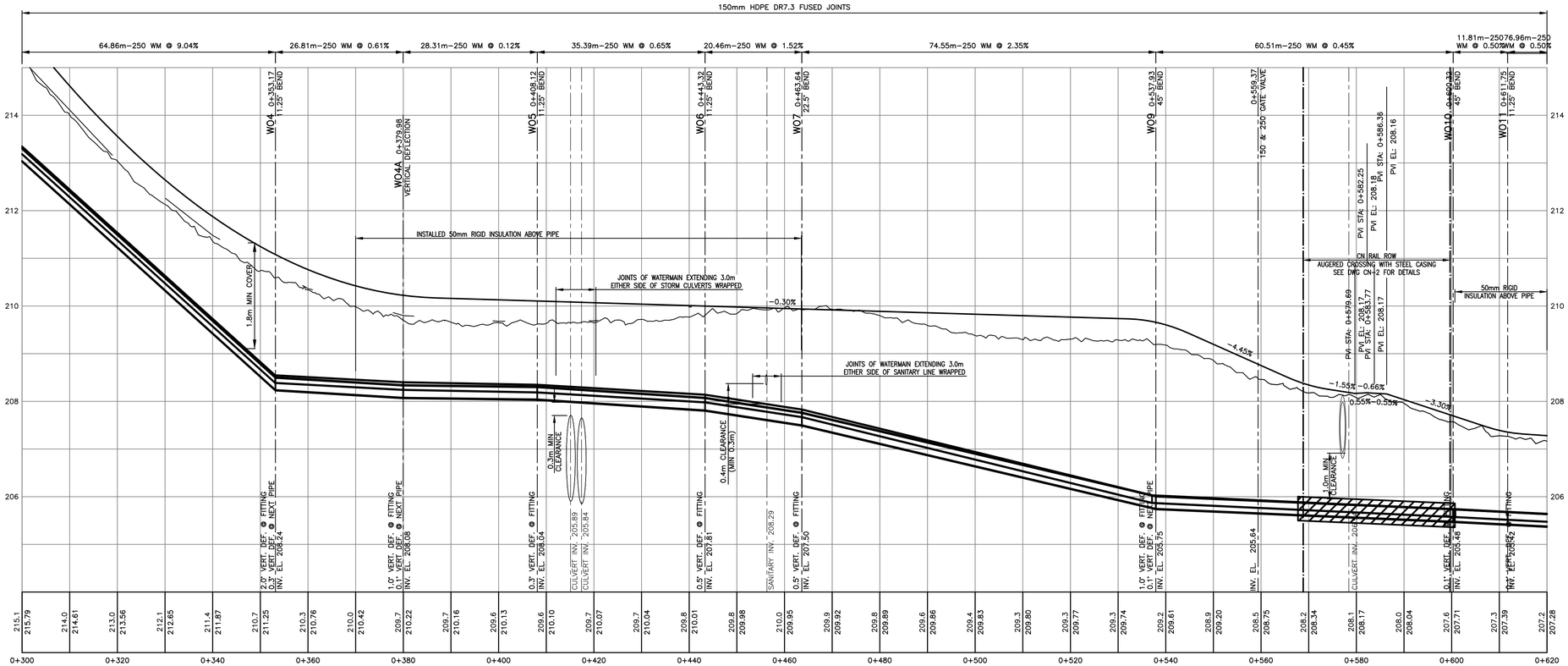
SEE DRAWING W-A-1 FOR WATERWORKS NOTES
SEE DRAWING S-A-1 FOR SANITARY & STORM NOTES
SEE DRAWING R-A-1 FOR ROADWORKS NOTES





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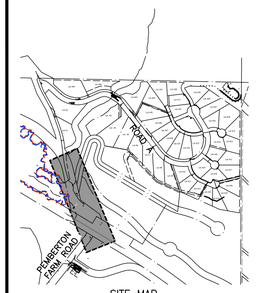

SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title
WATERWORKS
OFFSITE ROAD (STA 0+300-0+620)

no.	(y/m/d)	revision	chk'd
15	18-02-06	PROJECT RECORDS OFFSITE	KBH
14	17-10-17	PROJECT RECORDS OFFSITE	KBH
13	17-04-13	ISSUED FOR AI #5	AGC
12	17-03-07	REISSUED FOE CONSTRUCTION OFFSITE	KBH
11	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
10	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
9	16-10-21	VCH UPDATE	KBH
8	16-10-13	ISSUED FOR CONSTRUCTION OFFSITE	KBH

current rev. #: 15

engineer of record: K.B.H.
scales: hor: 1:500 vert: 1:50
designed by: N.G.B.
file no.: 16159
drawn by: R.J.L.
drawing no.: W-OS-2
date: 2016-05-13

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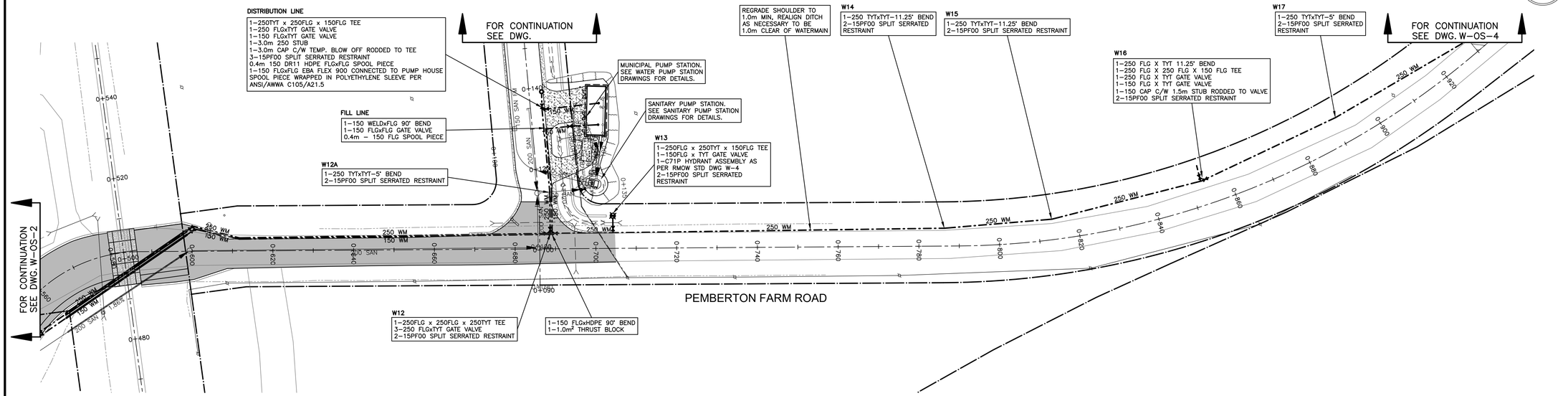
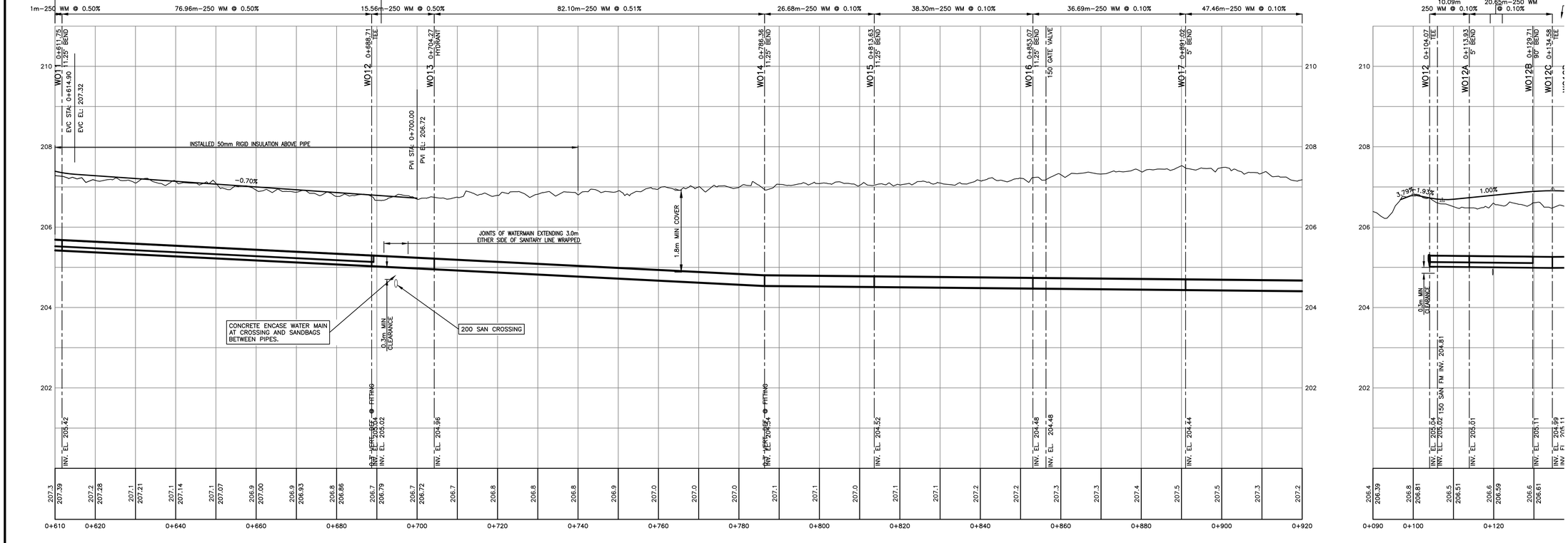
SEE DRAWING W-A-1 FOR WATERWORKS NOTES
SEE DRAWING S-A-1 FOR SANITARY NOTES





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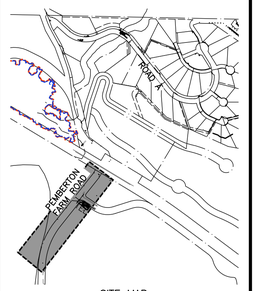

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title
WATERWORKS
OFFSITE ROAD (STA 0+610-0+920)

no.	(y/m/d)	revision	chk'd
15	18-02-06	PROJECT RECORDS OFFSITE	KBH
14	17-10-17	PROJECT RECORDS OFFSITE	KBH
13	17-04-13	ISSUED FOR AI #5	AGC
12	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
11	16-12-01	REVISED PER CLIENT REQUEST AI(2)	KBH
10	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
9	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
8	16-10-21	VCH UPDATE	KBH

current rev. #: 15

engineer of record: K.B.H.	scales: hor: 1:500 vert: 1:50
designed by: N.G.B.	file no.: 16159
drawn by: A.A.P.	drawing no.: W-OS-3
date: 2016-05-13	

AS-CONSTRUCTED INFORMATION

CREUS ENGINEERING LTD. CERTIFIES THAT THE WORKS & SERVICES SHOWN ON THESE DRAWINGS WERE CONSTRUCTED IN GENERAL CONFORMANCE WITH THE DRAWINGS & SPECIFICATIONS.

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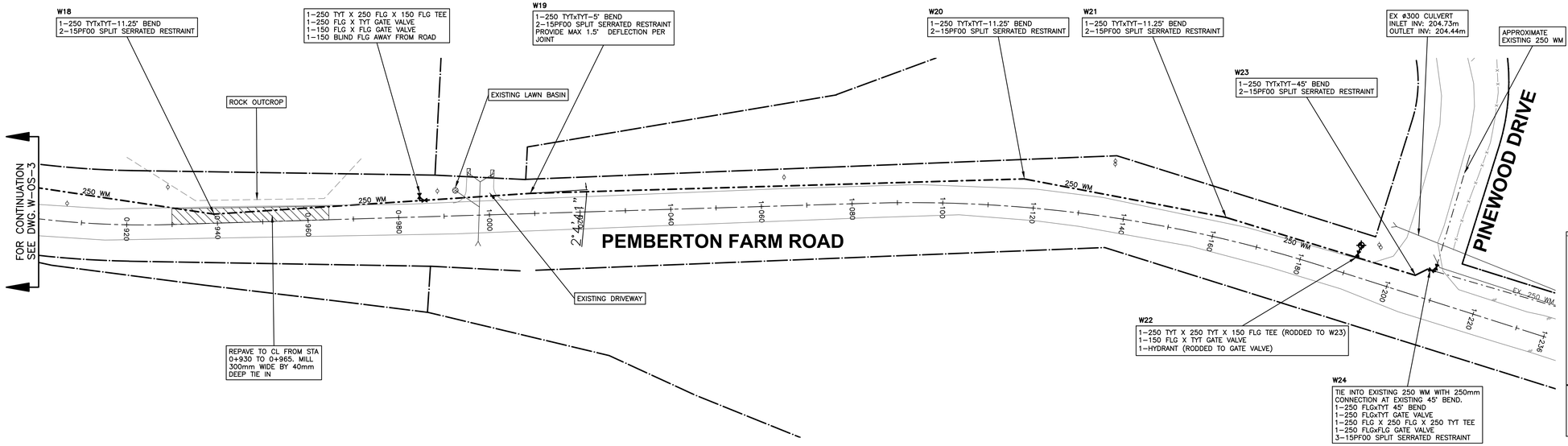
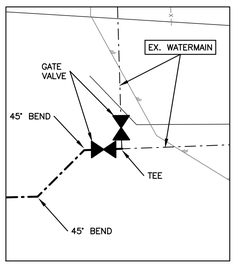
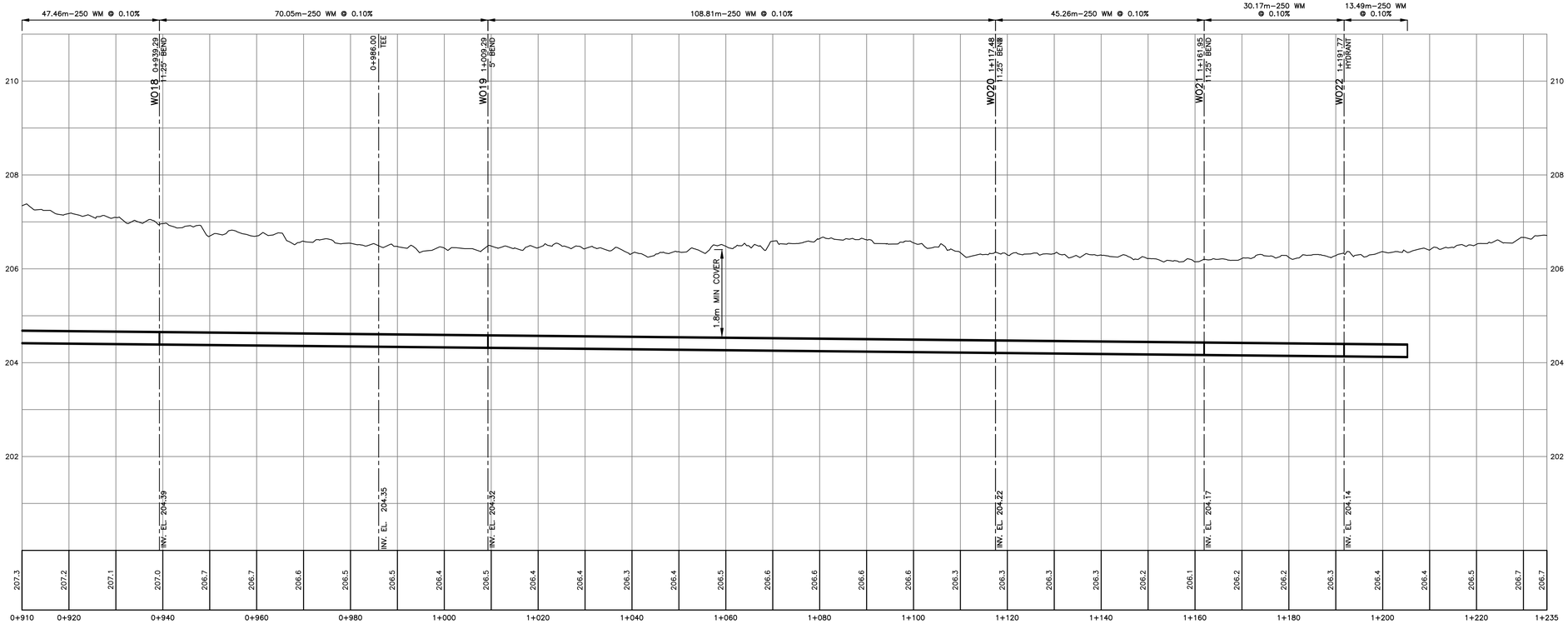
SEE DRAWING KEY-1 FOR GENERAL NOTES
SEE DRAWING W-A-1 FOR WATERWORKS NOTES
SEE DRAWING S-A-1 FOR SANITARY NOTES





TIE IN DETAILS W24
NTS



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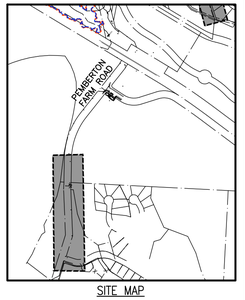


SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

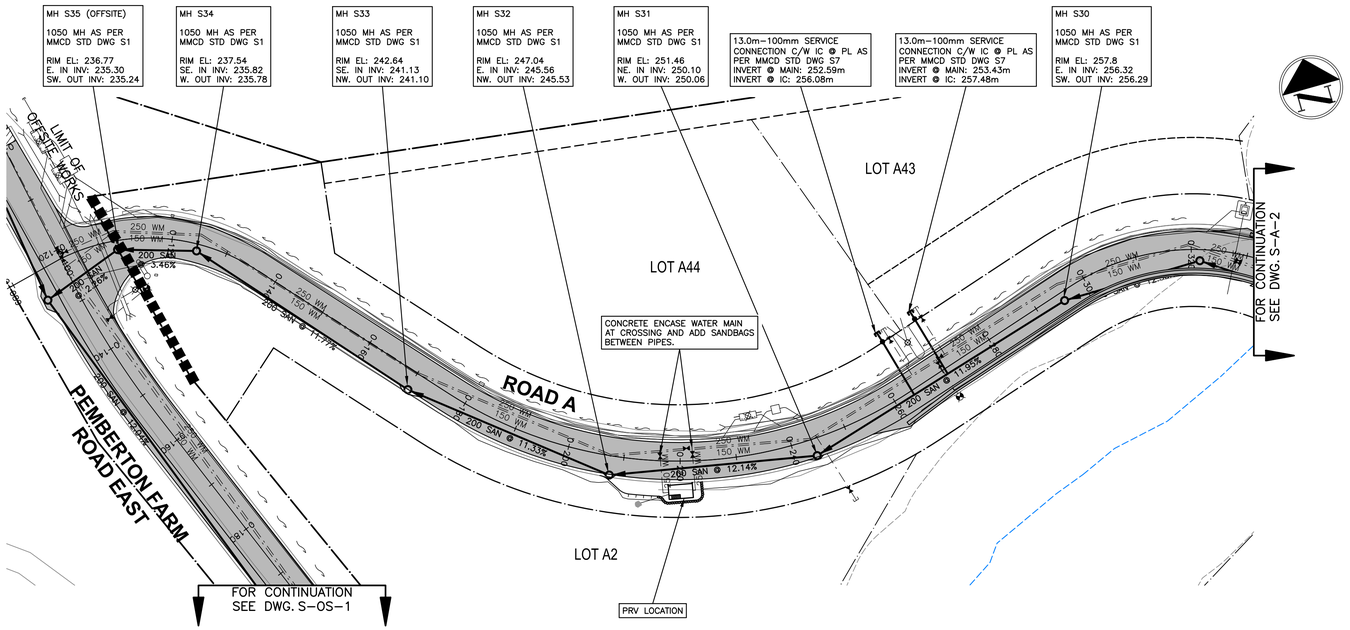
project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

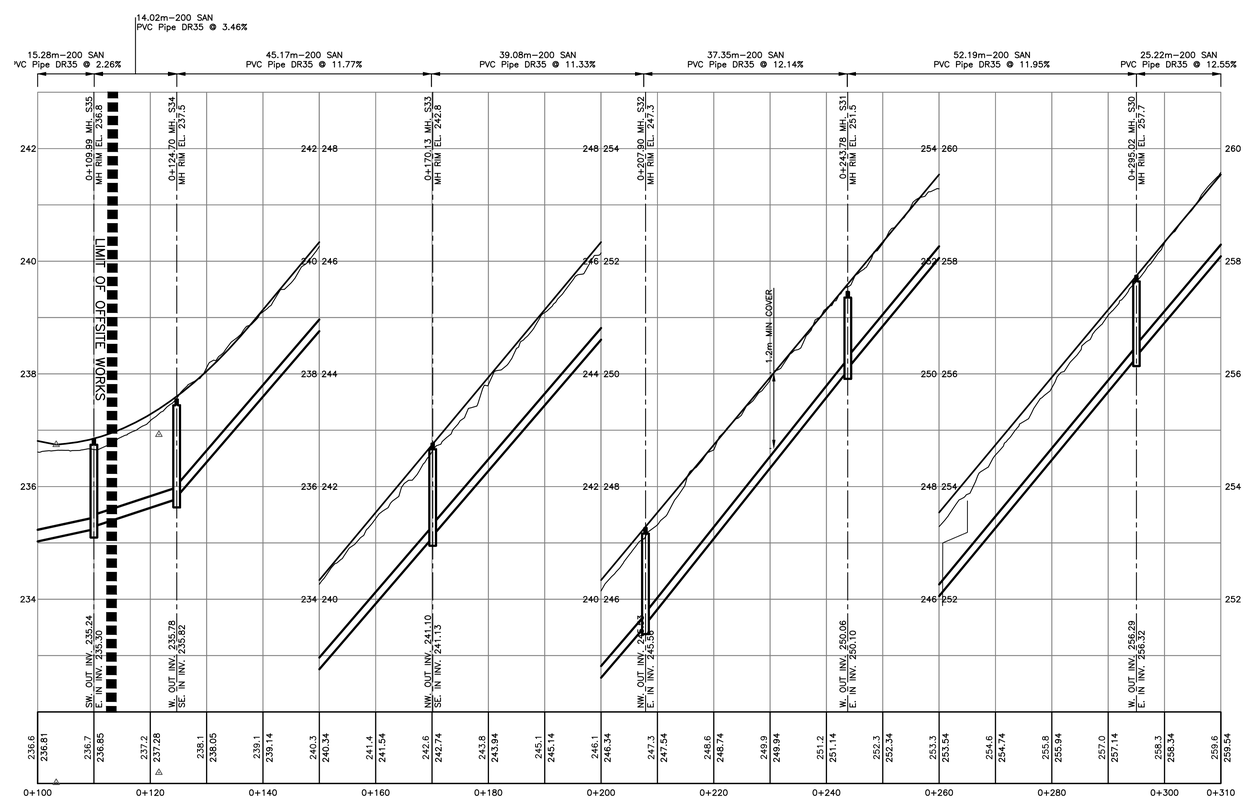
title
WATERWORKS
OFFSITE ROAD (STA 0+910-1+220)

no.	(y/m/d)	revision	chk'd
16	18-02-06	PROJECT RECORDS OFFSITE	KBH
15	17-10-17	PROJECT RECORDS OFFSITE	KBH
14	17-04-13	ISSUED FOR AI #5	AGC
13	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
12	16-12-01	REVISED PER CLIENT REQUEST AI(2)	KBH
11	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
10	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
9	16-10-21	VCH UPDATE	KBH

current rev. # 16

engineer of record: K.B.H.
scales: hor: 1:500 vert: 1:50
designed by: N.G.B.
file no.: 16159
drawn by: A.A.P.
drawing no.: W-OS-4
date: 2016-05-13





STORM AND SANITARY NOTES

1. SANITARY GRAVITY SEWERS TO BE PVC SDR 28 FOR SERVICE CONNECTIONS AND SDR 35 FOR MAIN LINES WHEN TESTED IN ACCORDANCE WITH ASTM D3034 & CSA B182.1. PIPE STIFFNESS (f/y) SHALL BE 314 kPa AT 2.5% DEFLECTION WHEN TESTED IN ACCORDANCE WITH ASTM D2412 UNLESS NOTED OTHERWISE.
2. STORM GRAVITY SEWERS TO BE EITHER PVC SDR 28 FOR SERVICE CONNECTIONS AND SDR 35 FOR MAIN LINES WHEN TESTED IN ACCORDANCE WITH ASTM D3034 & CSA B182.1 (PIPE STIFFNESS (f/y) SHALL BE 314 kPa AT 2.5% DEFLECTION WHEN TESTED IN ACCORDANCE WITH ASTM D2412 UNLESS NOTED OTHERWISE.) OR CONCRETE AND SHALL MEET ASTM C14 CLASS 3 OR IF INDICATED ON DRAWINGS SDR 35 FOR MAIN LINES WHEN TESTED IN ACCORDANCE WITH ASTM D3034 & CSA B182.1 (PIPE STIFFNESS (f/y) SHALL BE 314 kPa AT 2.5% DEFLECTION WHEN TESTED IN ACCORDANCE WITH ASTM D2412 UNLESS NOTED OTHERWISE).
3. CULVERTS TO BE CORRUGATED STEEL PIPE IN ACCORDANCE WITH CAN 3–G–401. MIN COVER 450mm.
4. SANITARY FORCEMAINS ARE TO BE PVC TO AWWA C900 CLASS 150 OR HIGH DENSITY POLYETHYLENE SERIES 100 (DR17) OR BETTER, TO ASTM F714–85 & ASTM D–1248–84.
5. STORM SERVICES TO BE MINIMUM SDR28 P.V.C. 150mm MIN C/W INSPECTION CHAMBER PER MMCD STD. DWG. S8 AND HAVE A MINIMUM OF 1.8m COVER.
6. SANITARY SERVICES TO BE MINIMUM SDR28 P.V.C. 100mm MIN C/W INSPECTION CHAMBER PER MMCD STD. DWG S7 AND HAVE A MINIMUM OF 1.8m COVER.
7. CONTRACTOR TO INSURE TESTING OF SEWER MAINS AND LATERALS TO BE PREFORMED IN THE PRESENCE OF THE ENGINEER OF RECORD AND VILLAGE OF PEMBERTON INSPECTORS. CONTRACTORS TO PROVIDE MINIMUM OF 48 HOURS NOTICE. ALL MAINS AND SERVICES ARE TO BE TESTED AS PER MMCD SPECIFICATIONS WITH THE RESULTS FORWARDED TO THE VILLAGE OF PEMBERTON.
8. CONTRACTOR TO PROVIDED TEMPORARY BYPASS AND RECONNECTION OF ANY SERVICES DISRUPTED BY CONSTRUCTION ACTIVITIES.
9. ALL SEWER MAINS AND LATERALS TO BE CCTV INSPECTED. CCTV INSPECTIONS TO BE ARRANGED BY CONTRACTOR AT CONTRACTOR'S EXPENSE. CONTRACTOR TO FORWARD VIDEO FILES TO ENGINEER WITHIN TWO WEEKS OF INSPECTION.
10. CROWN OF ALL SEWER SERVICE CONNECTIONS ENTERING MANHOLES TO MATCH CROWN ELEVATION OF DOWNSTREAM SEWER OUTLET EXCEPT WHERE NOTED OTHERWISE. INVERT OF SERVICE CONNECTIONS TO MAIN TO MATCH CROWN OF MAIN AS PER VOP STANDARD SERVICE CONNECTION DETAIL.
11. WHERE SANITARY PIPE GRADE EXCEEDS 15%, PIPE TO BE ANCHORED AS PER MMCD STD. DWG G8.
12. MINIMUM GRADE ON SERVICE CONNECTIONS TO BE 2%, UNLESS NOTED OTHERWISE.
13. PIPE BEDDING TO CONFORM WITH MMCD STANDARDS AND BE COMPACTED TO 95% MODIFIED PROCTOR PRIOR TO BACKFILLING TRENCH. SEE MMCD STD. DWG G4. TEST RESULTS ARE TO BE FORWARDED TO VILLAGE OF PEMBERTON.
14. TIE–INS TO EXISTING MAINS 200mm OR LARGER TO USE QWIKSEAL INSERT CONNECTIONS.
15. TIE–INS TO EXISTING 150mm MAINS TO USE ROBAR 3406/3506 SEWER SADDLE OR ROMAC STYLE "CB" SEWER SADDLE.
16. CUT IN WYES COMPLETE WITH FLEX SEAL ADJUSTABLE SHIELDED COUPLINGS MAY ONLY BE USED AT THE DISCRETION ON THE VILLAGE OF PEMBERTON. APPROVAL MUST BE OBTAINED PRIOR TO INSTALLATION.
17. REINSTATED EXISTING OR NEW SERVICE CONNECTIONS TO HAVE MANUFACTURED WYE CONNECTION AT MAIN.
18. ALL CONNECTIONS TO EXISTING PIPES OR TO PIPES OF DIFFERING MATERIAL TO USE FLEX SEAL ADJUSTABLE SHIELDED COUPLINGS.
19. ALL MANHOLES TO BE TO MMCD STD DWG S1, MINIMUM 1050 UNLESS OTHERWISE NOTED.
20. EXCAVATION AND PAVEMENT RESTORATION TO BE COMPLETED BY CONTRACTOR PER REGULATORY AUTHORITY REQUIREMENTS, MMCD STANDARDS AND CONTRACT DOCUMENTS. CONTRACTOR TO GIVE NOTICE PRIOR TO COMPLETING WORKS.
21. NEW AND/OR REINSTATED SERVICES TO BE FREE OF BENDS UNLESS OTHERWISE APPROVED.
22. SERVICE CONNECTIONS TO BE MARKED WITH A 40mm x 90mm POST PAINTED RED FOR SANITARY AND GREEN FOR STORM AT TERMINATION. SERVICES TO BE TERMINATED 1m BEYOND THE PROPERTY LINE, UNLESS OTHERWISE NOTED.
23. MIN. COVER FOR SANITARY & STORM SEWERS = 1.2m UNDER TRAVELED AREAS AND 1.0m UNDER NON–TRAVELED AREAS.
24. LOCATION/INVERTS OF SERVICE CONNECTIONS TO BE CONFIRMED BY ENGINEER ONCE ROUGH GRADING IS COMPLETE.
25. WHEN INSTALLING PIPE DO NOT EXCEED HALF THE MANUFACTURERS PERMISSIBLE JOINT DEFLECTION. BENDING OF PVC PIPE IS NOT PERMITTED.
26. TIE IN TO EXISTING SYSTEM TO BE COMPLETED BY THE VILLAGE OF PEMBERTON UNLESS OTHERWISE NOTED. WHEN IT IS NOTED THAT THE CONTRACTOR IS TO COMPLETE THE TIE–IN THE CONTRACTOR IS TO GIVE THE ENGINEER AND THE VILLAGE INSPECTOR 48 HOURS NOTICE PRIOR TO THE TIE–IN AND ONLY COMPLETE THE TIE–IN UNDER THE SUPERVISION OF THE ENGINEER.
27. SITE SERVICING WORKS TO COMMENCE ONLY AFTER OFFSITE SERVICE CONNECTION HAS BEEN INSTALLED & VERIFIED.
28. ALL MANHOLES OUTSIDE PAVED AREAS TO INCLUDE MINIMUM 1.0m ASPHALT OR CONCRETE APRON.

AS–CONSTRUCTED INFORMATION

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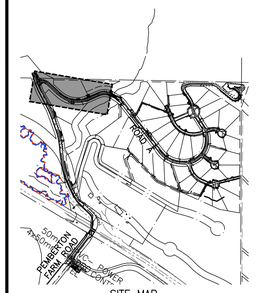
PH: 604-987-9070
WEBSITE: www.creus.ca



SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASEMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title
SANITARY
ROAD A (STA 0+100-0+310)

no.	(y/m/d)	revision	chk'd
16	18-02-06	PROJECT RECORDS OFFSITE	KBH
15	18-02-06	PROJECT RECORDS ONSITE	KBH
14	17-10-17	PROJECT RECORDS OFFSITE	KBH
13	17-05-01	ISSUED FOR AI #9	KBH
12	17-04-13	ISSUED FOR OFFSITE AI #5	AGC
11	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
10	17-02-27	ISSUED FOR CONSTRUCTION ONSITE	KBH
9	16-11-09	REISSUED FOR CONSTRUCTION ONSITE	KBH

current rev. #: 16

engineer of record: K.B.H.	scales: hor: 1:500 vert: 1:50
designed by: N.G.B.	file no.: 16159
drawn by: R.J.L.	drawing no.: S-A-1
date: 2016-05-13	

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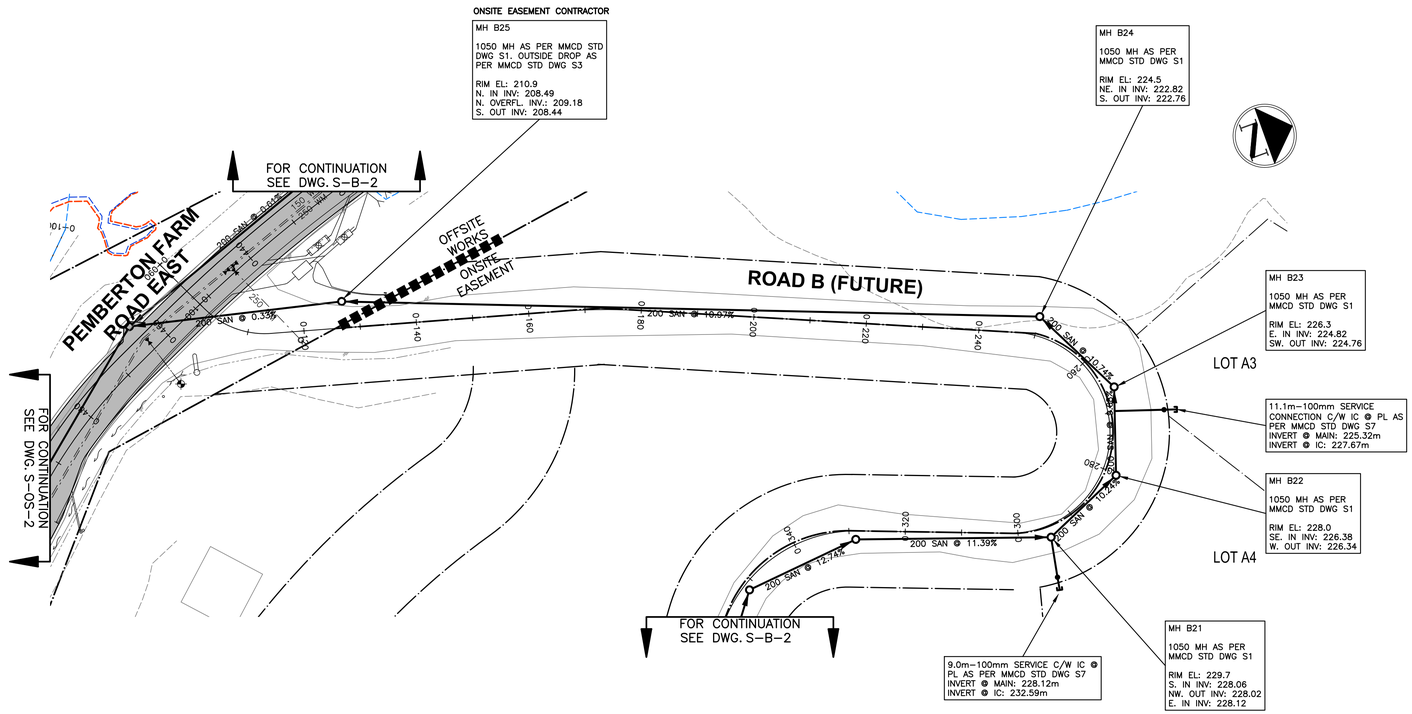

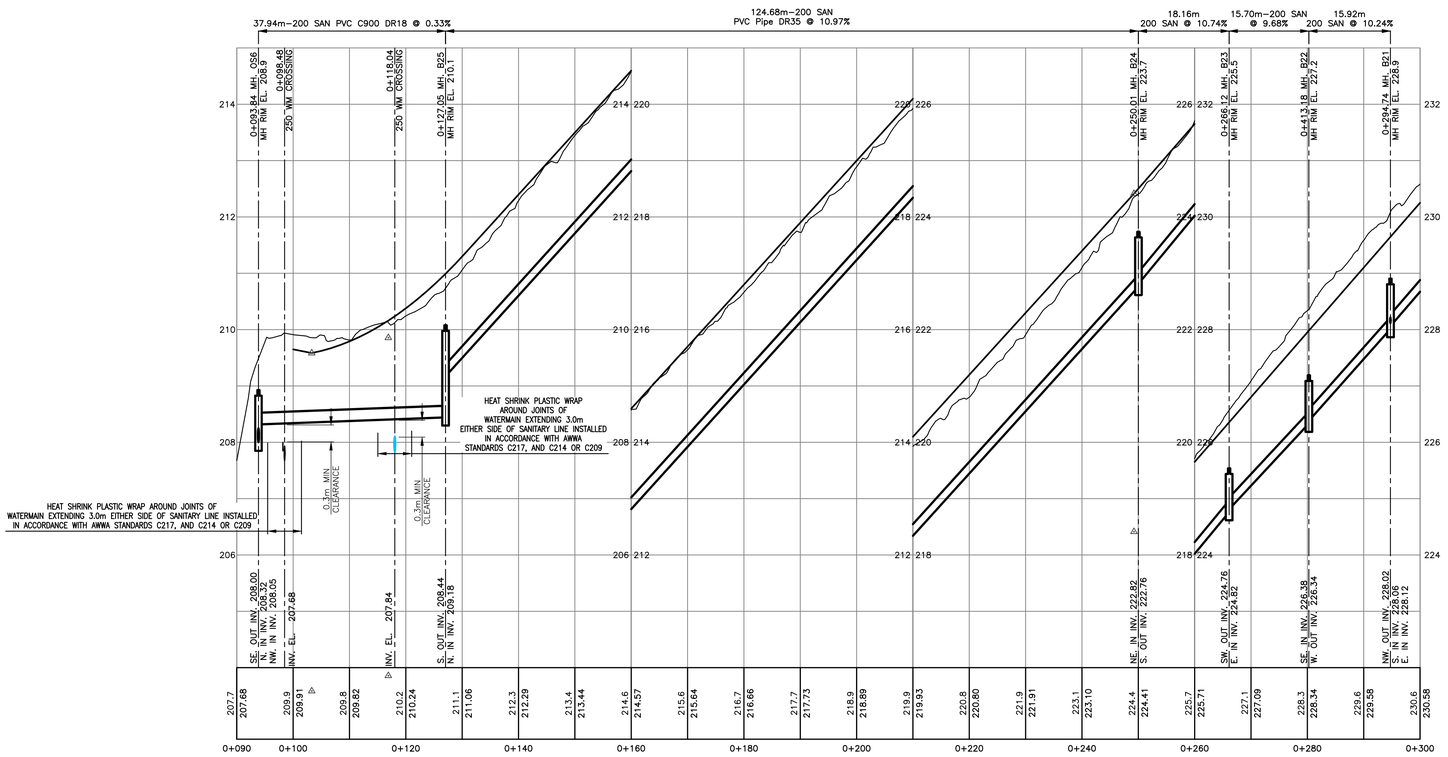

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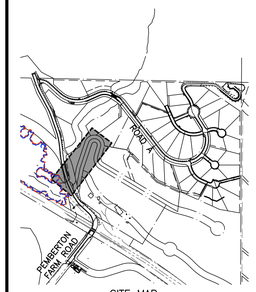
PH: 604-987-9070 WEBSITE: www.creus.ca



SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title
SANITARY
ROAD B (STA 0+090-0+300)

no.	(y/m/d)	revision	chk'd
18	18-02-06	PROJECT RECORDS OFFSITE	KBH
17	18-02-06	PROJECT RECORDS ONSITE	KBH
16	17-10-17	PROJECT RECORDS OFFSITE	KBH
15	17-04-13	ISSUED FOR OFFSITE AI #5	AGC
14	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
13	17-02-27	ISSUED FOR CONSTRUCTION ONSITE	KBH
12	16-11-09	REISSUED FOR CONSTRUCTION ONSITE	KBH
11	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH

current rev. #: 18

engineer of record: K.B.H.
scales: hor: 1:500 vert: 1:50
designed by: N.G.B.
file no.: 16159
drawn by: R.J.L.
drawing no.: S-B-1
date: 2016-05-13

AS-CONSTRUCTED INFORMATION

CREUS ENGINEERING LTD. CERTIFIES THAT THE WORKS & SERVICES SHOWN ON THESE DRAWINGS WERE CONSTRUCTED IN GENERAL CONFORMANCE WITH THE DRAWINGS & SPECIFICATIONS.

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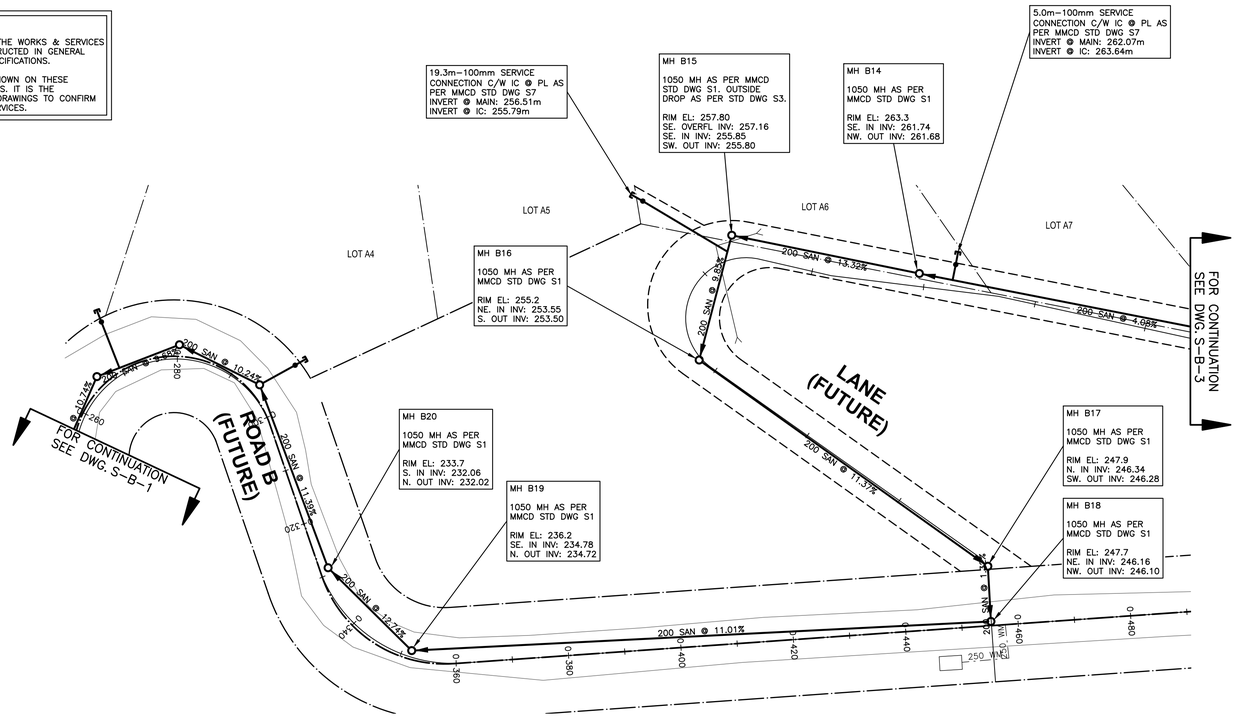
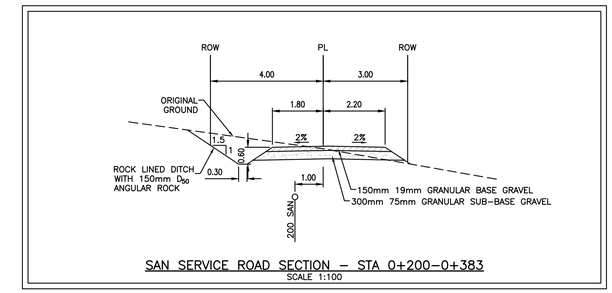
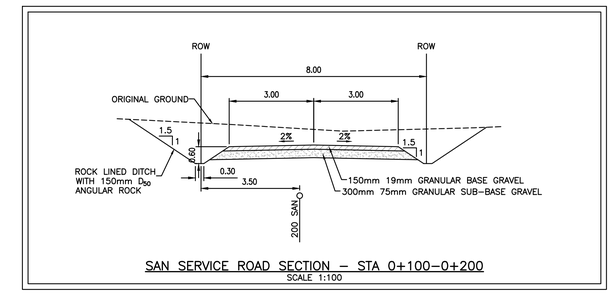
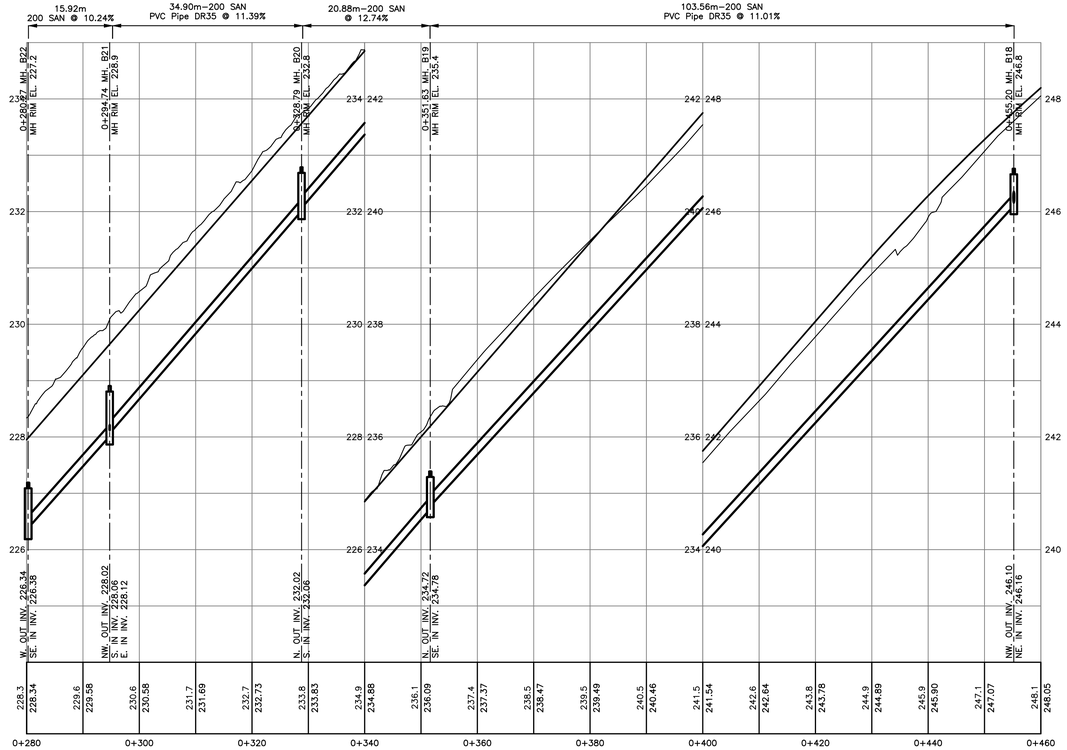


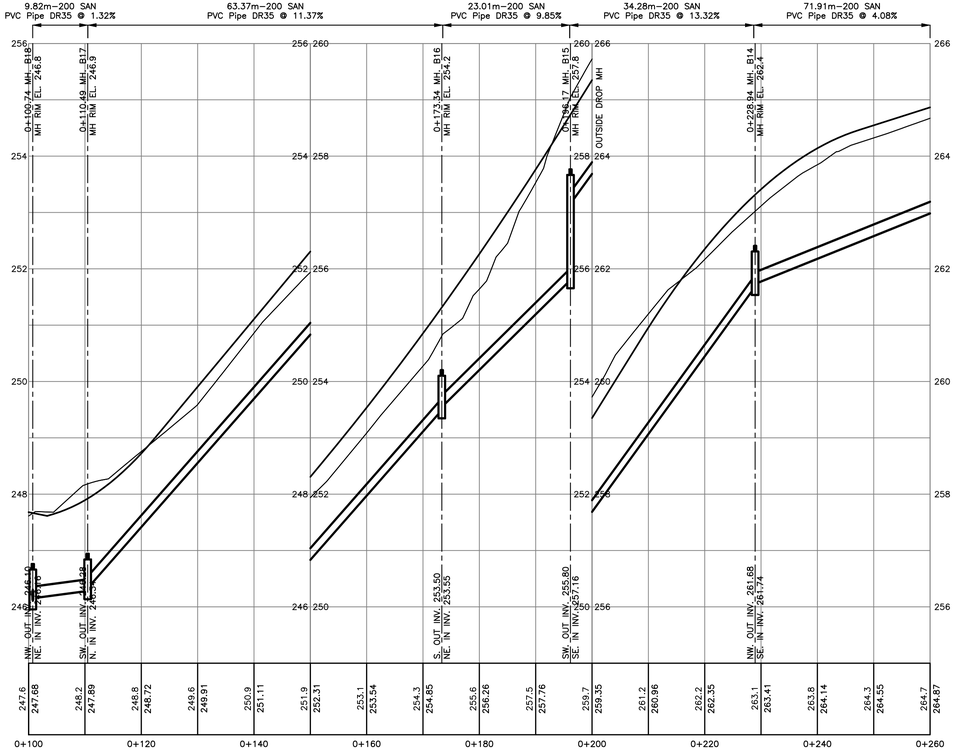


SAN SERVICE ROAD SECTION – STA 0+200–0+383
SCALE 1:100



SAN SERVICE ROAD SECTION – STA 0+100–0+200
SCALE 1:100





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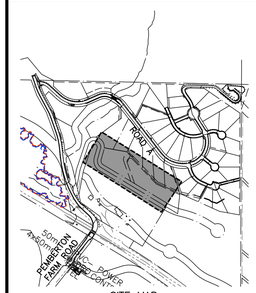
PH: 604-987-9070 WEBSITE: www.creus.ca



DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASEMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

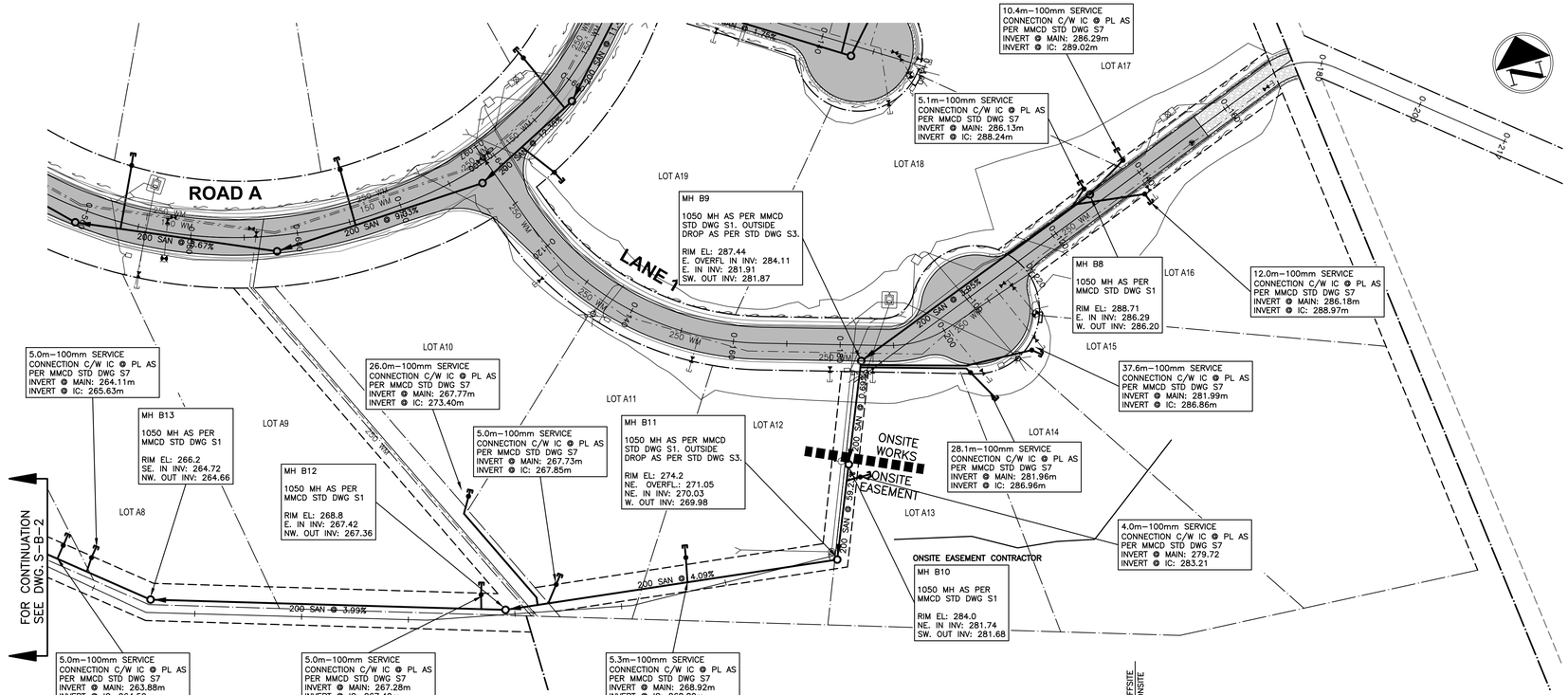
project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title
SANITARY
MH B13 TO MH B23

no.	(y/m/d)	revision	chk'd
12	18-02-06	PROJECT RECORDS OFFSITE	KBH
11	18-02-06	PROJECT RECORDS ONSITE	KBH
10	17-10-17	PROJECT RECORDS OFFSITE	KBH
9	17-04-13	ISSUED FOR OFFSITE AI #5	AGC
8	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
7	17-02-27	ISSUED FOR CONSTRUCTION ONSITE	KBH
6	16-12-19	REVISED PER CLIENT REQUEST AI(3)	KBH
5	16-11-09	REISSUED FOR CONSTRUCTION ONSITE	KBH

current rev. #: 12

engineer of record: K.B.H.
scales: hor: 1:500 vert: 1:50
designed by: N.G.B.
file no.: 16159
drawn by: R.J.L.
drawing no.: S-B-2
date: 2016-05-13



AS–CONSTRUCTED INFORMATION

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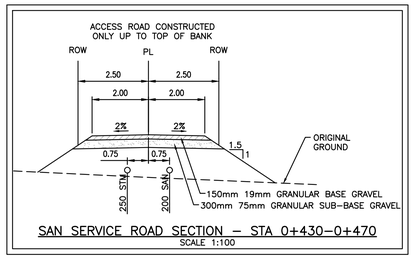
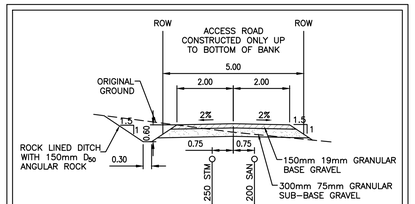
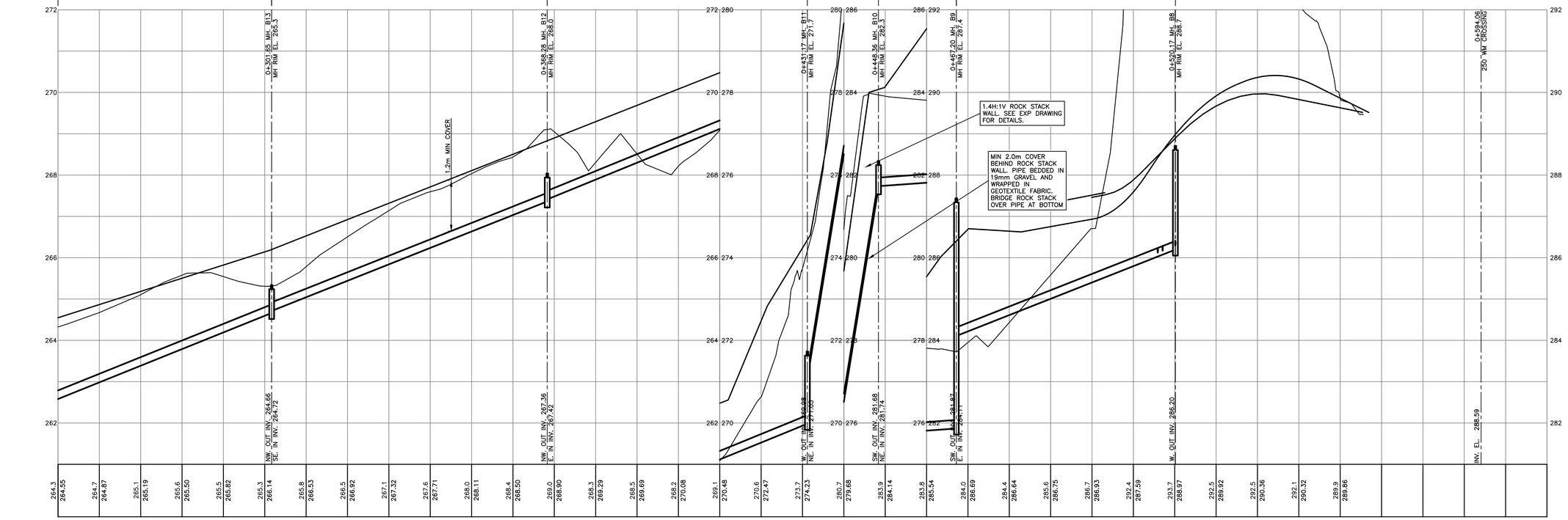
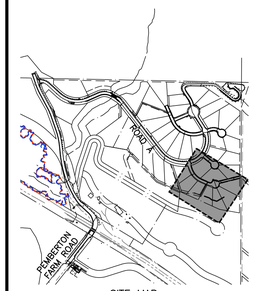


SAN SERVICE ROAD SECTION – STA 0+430–0+470
SCALE 1:100



SAN SERVICE ROAD SECTION – STA 0+383–0+430
SCALE 1:100





SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASEMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title
SANITARY
MH B1 TO MH B12

no.	(y/m/d)	revision	chk'd
15	18-02-06	PROJECT RECORDS OFFSITE	KBH
14	18-02-06	PROJECT RECORDS ONSITE	KBH
13	17-10-17	PROJECT RECORDS OFFSITE	KBH
12	17-06-09	REVISED MH B8 LOCATION	KBH
11	17-04-27	REVISED GRADING	DWC
10	17-04-13	ISSUED FOR OFFSITE AI #5	KBH
9	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
8	17-02-27	ISSUED FOR CONSTRUCTION	KBH

current rev. #
15

engineer of record: K.B.H.
designed by: N.G.B.
drawn by: R.J.L.
date: 2016-05-13
scales: hor: 1:500 vert: 1:50
file no.: 16159
drawing no.: S-B-3

CREUS Engineering
Civil Engineers & Project Managers
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WEBSITE: www.creus.ca

SEE DRAWING KEY–1 FOR GENERAL NOTES
SEE DRAWING W–A–1 FOR WATERWORKS NOTES
SEE DRAWING S–A–1 FOR SANITARY NOTES

AS–CONSTRUCTED INFORMATION

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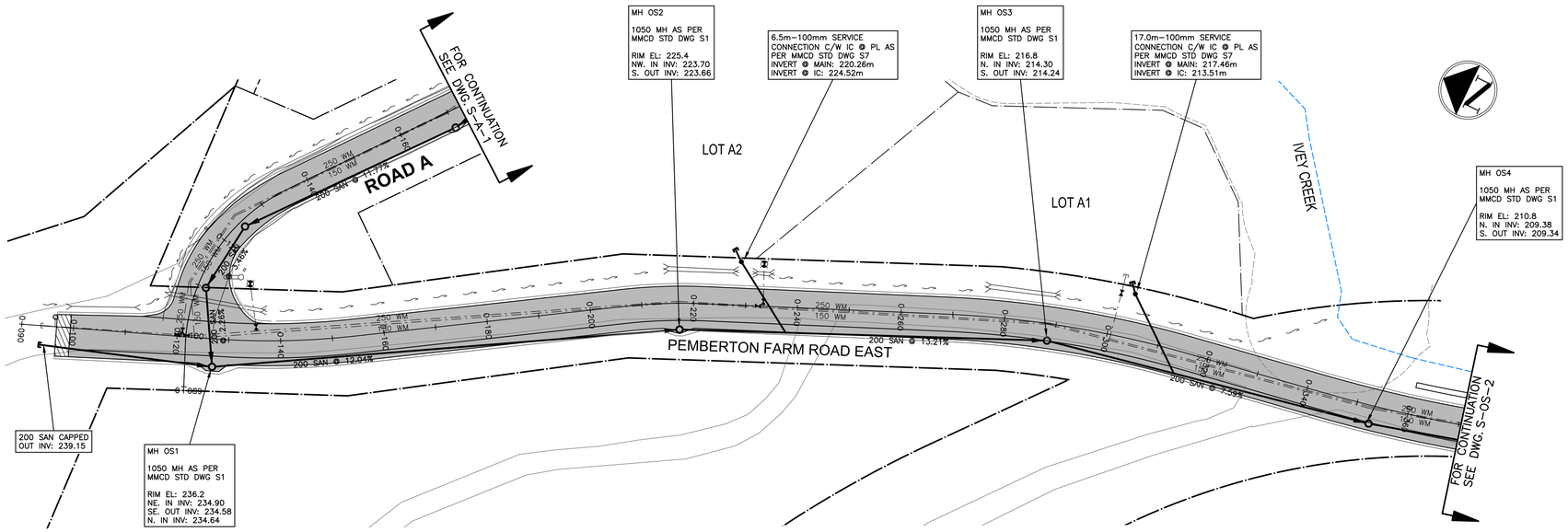

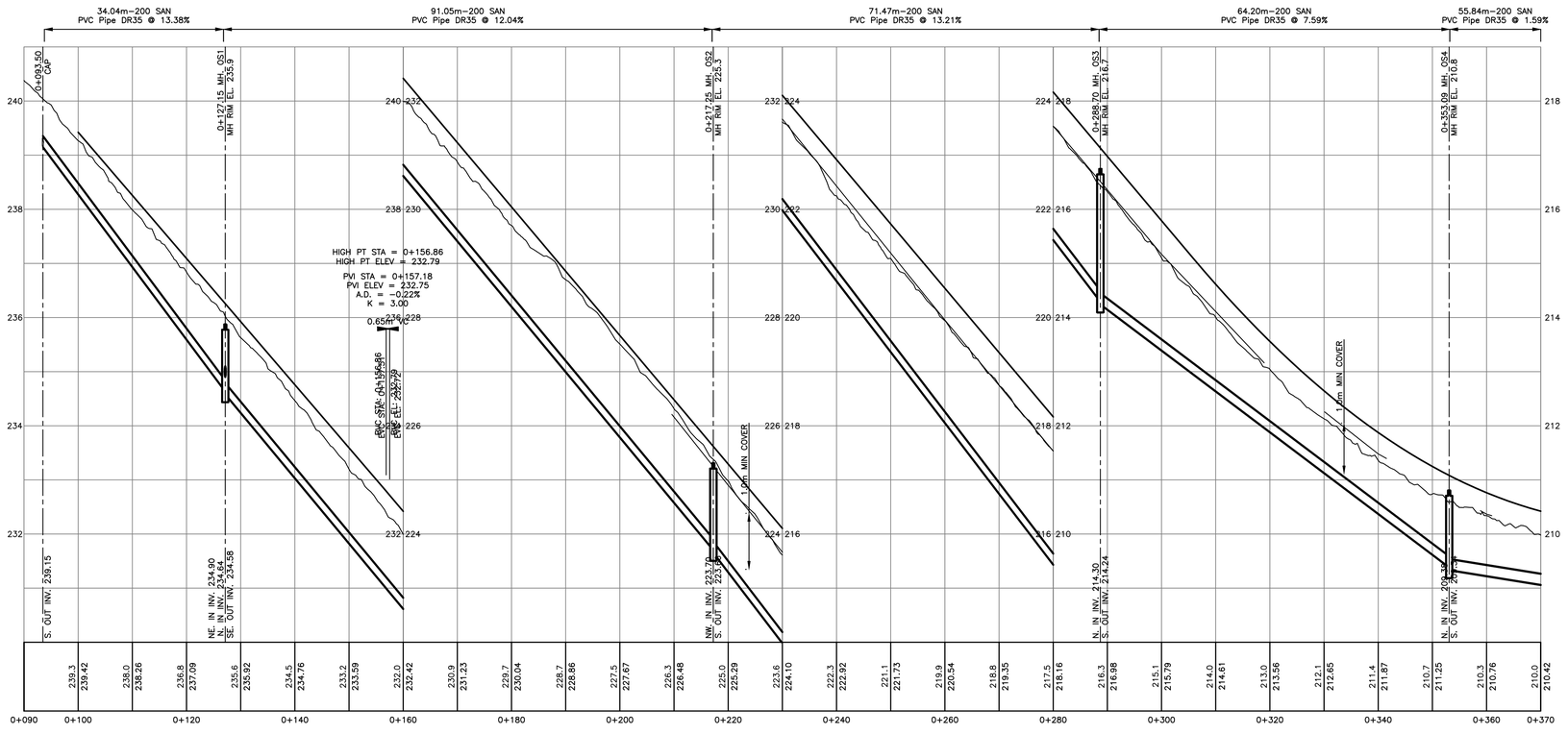

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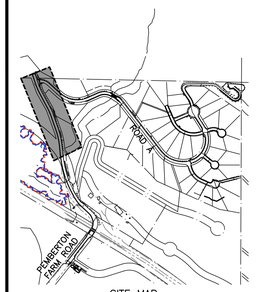
PH: 604-987-9070 WEBSITE: www.creus.ca



SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASEMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title
SANITARY
OFFSITE ROAD (STA 0+120-0+370)

no.	(y/m/d)	revision	chk'd
13	18-02-06	PROJECT RECORDS OFFSITE	KBH
12	17-10-17	PROJECT RECORDS OFFSITE	KBH
11	17-04-13	ISSUED FOR AI #5	AGC
10	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
9	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
8	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
7	16-10-13	ISSUED FOR CONSTRUCTION OFFSITE	KBH
6	16-09-19	ISSUED FOR VOP FINAL COMMENTS	KBH

current rev. #: 13

engineer of record: K.B.H.
scales: hor: 1:500 vert: 1:50
designed by: N.G.B.
file no.: 16159
drawn by: R.J.L.
drawing no.: S-OS-1
date: 2016-05-13

AS-CONSTRUCTED INFORMATION

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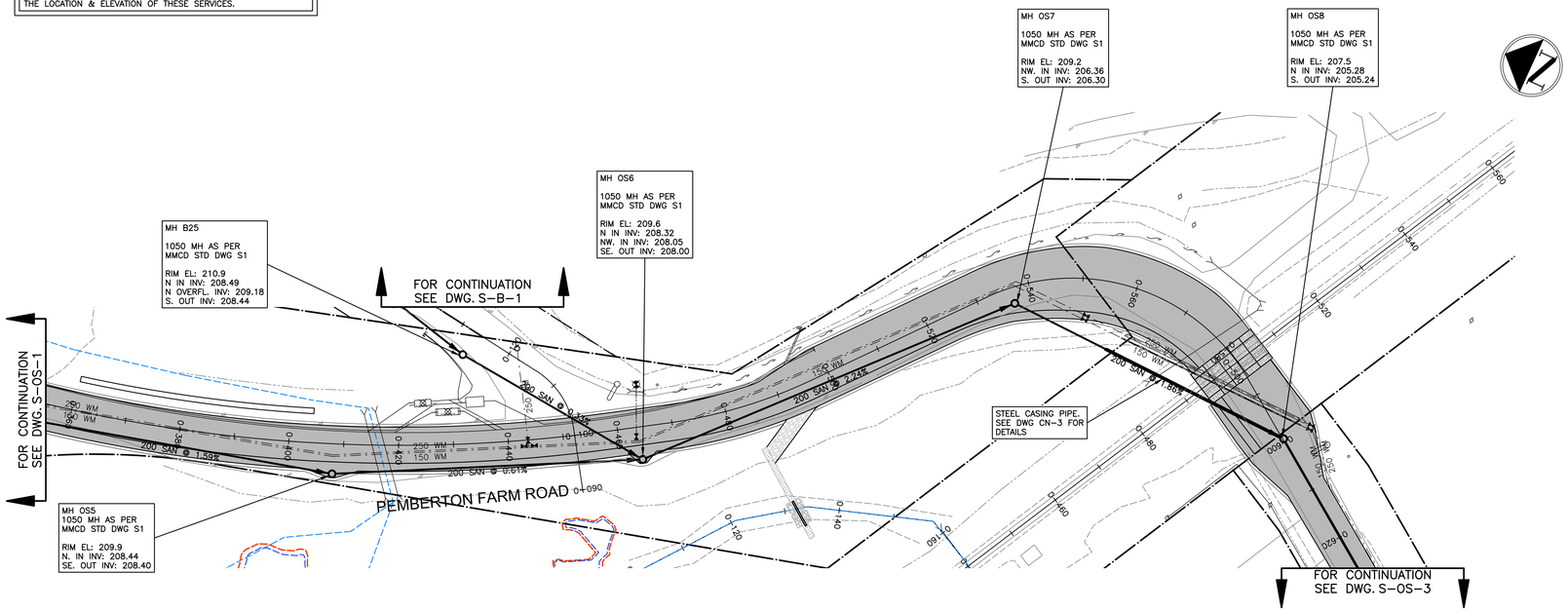
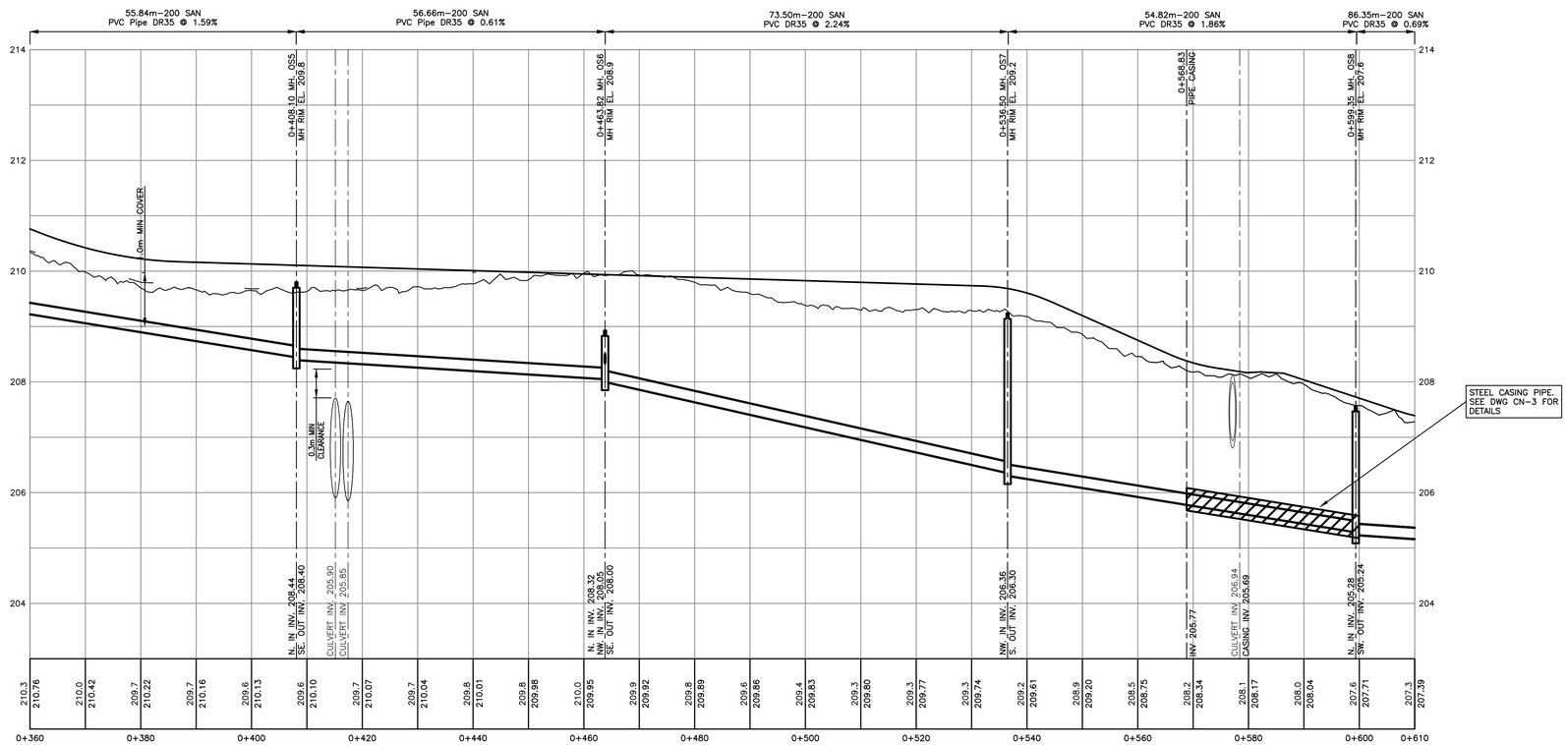
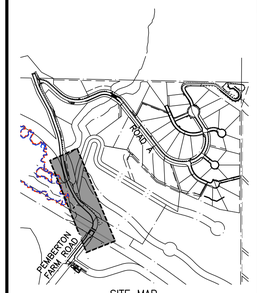
SEE DRAWING KEY-1 FOR GENERAL NOTES
SEE DRAWING W-A-1 FOR WATERWORKS NOTES
SEE DRAWING S-A-1 FOR SANITARY NOTES







SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client

580049 BC LTD.

project

THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title

SANITARY
OFFSITE ROAD (STA 0+360-0+610)

no.	(y/m/d)	revision	chk'd
13	18-02-06	PROJECT RECORDS OFFSITE	KBH
12	17-10-17	PROJECT RECORDS OFFSITE	KBH
11	17-04-13	ISSUED FOR AI #5	AGC
10	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
9	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
8	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
7	16-10-13	ISSUED FOR CONSTRUCTION OFFSITE	KBH
6	16-09-19	ISSUED FOR VOP FINAL COMMENTS	KBH

current rev. #: 13

engineer of record: K.B.H.
scales: hor: 1:500 vert: 1:50
designed by: N.G.B.
file no.: 16159
drawn by: R.J.L.
drawing no.: S-OS-2
date: 2016-05-13

CREUS Engineering
Civil Engineers & Project Managers
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

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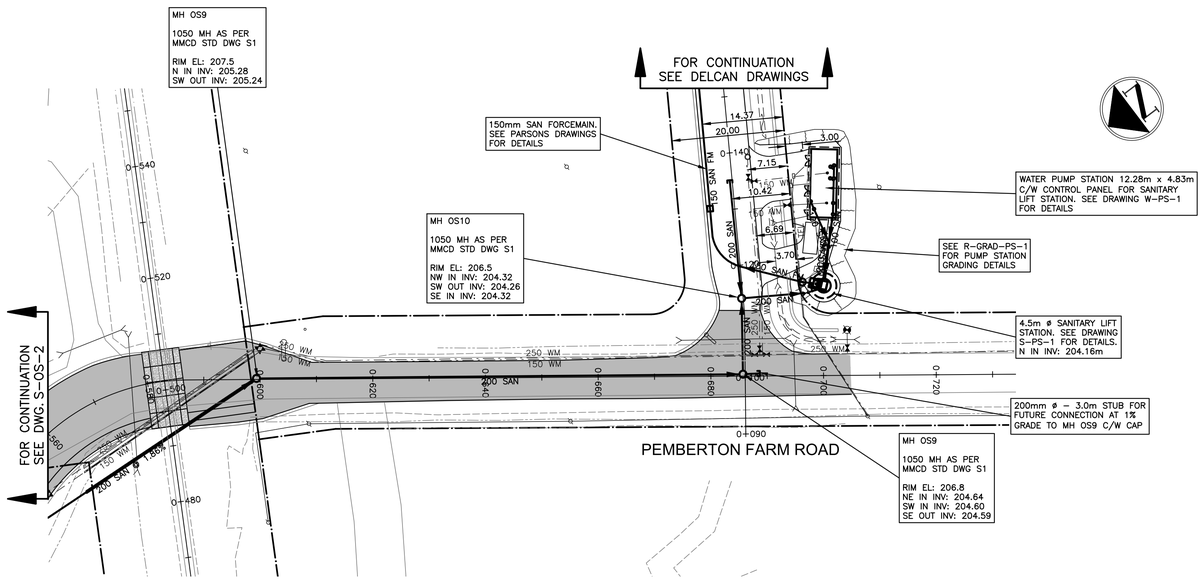
SEE DRAWING KEY-1 FOR GENERAL NOTES
SEE DRAWING W-A-1 FOR WATERWORKS NOTES
SEE DRAWING S-A-1 FOR SANITARY NOTES



OS9 TO LIFT STATION

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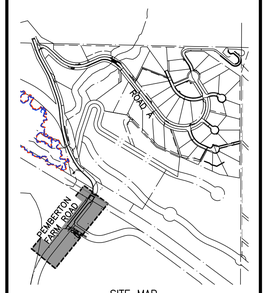
PH: 604-987-9070 WEBSITE: www.creus.ca



SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

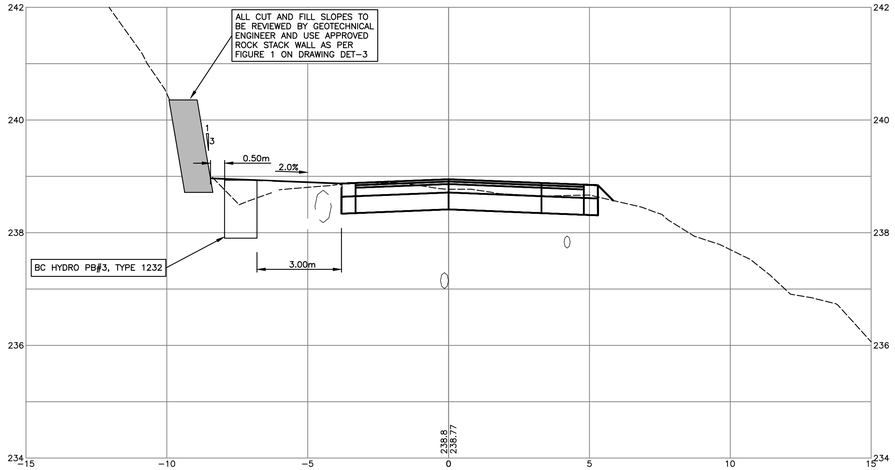
title
SANITARY
OFFSITE ROAD (STA 0+600-0+800)

no.	(y/m/d)	revision	chk'd
18	18-02-06	PROJECT RECORDS OFFSITE	KBH
17	18-02-06	PROJECT RECORDS - PUMP STATION	KBH
16	17-10-17	PROJECT RECORDS OFFSITE	KBH
15	17-05-02	REISSUED FOR CONSTRUCTION PUMP STATION	ZM
14	17-04-13	ISSUED FOR AI #5	AGC
13	17-03-16	PROFILE CLARIFICATION	AGC
12	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	AGC
11	17-02-27	REISSUED FOR VOP APPROVAL	AGC

current rev. #: 18

engineer of record: K.B.H.	scales: hor: 1:500 vert: 1:50
designed by: N.G.B.	file no.: 16159
drawn by: A.A.P.	drawing no.: S-OS-3
date: 2016-05-13	

0+104.07



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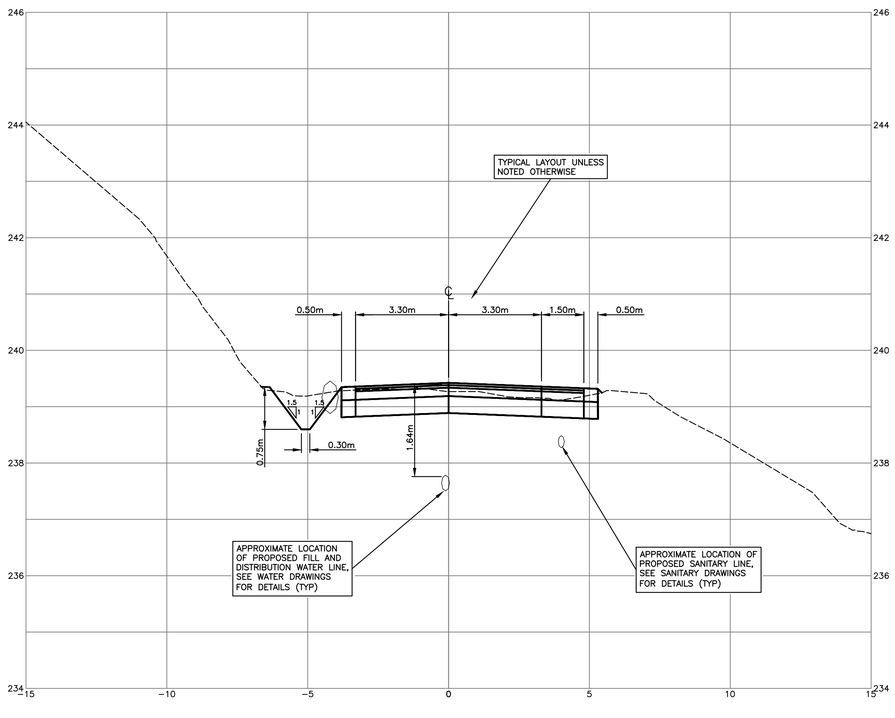

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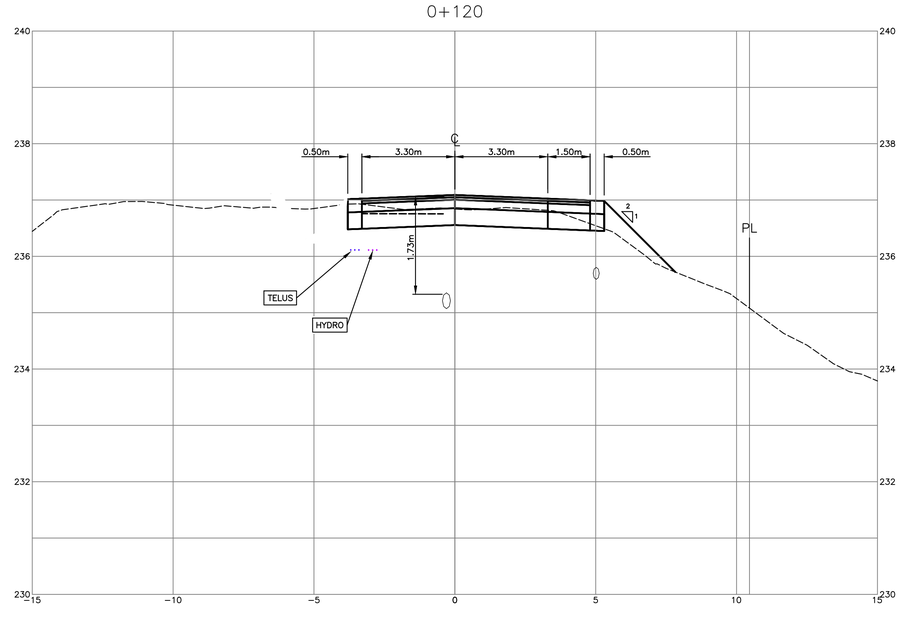


CREUS Engineering

Civil Engineers & Project Managers
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

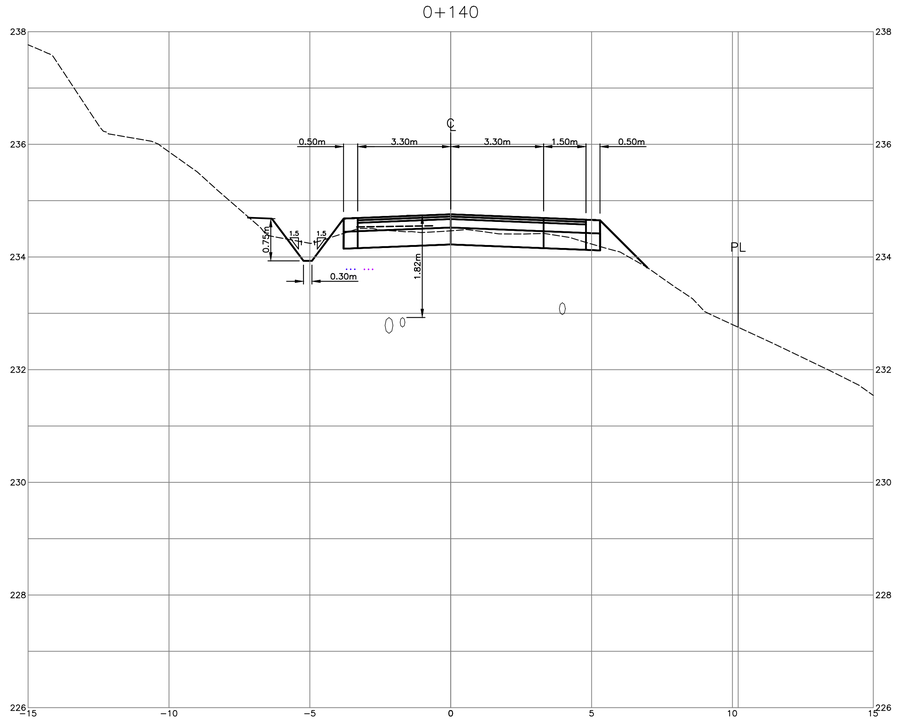
project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

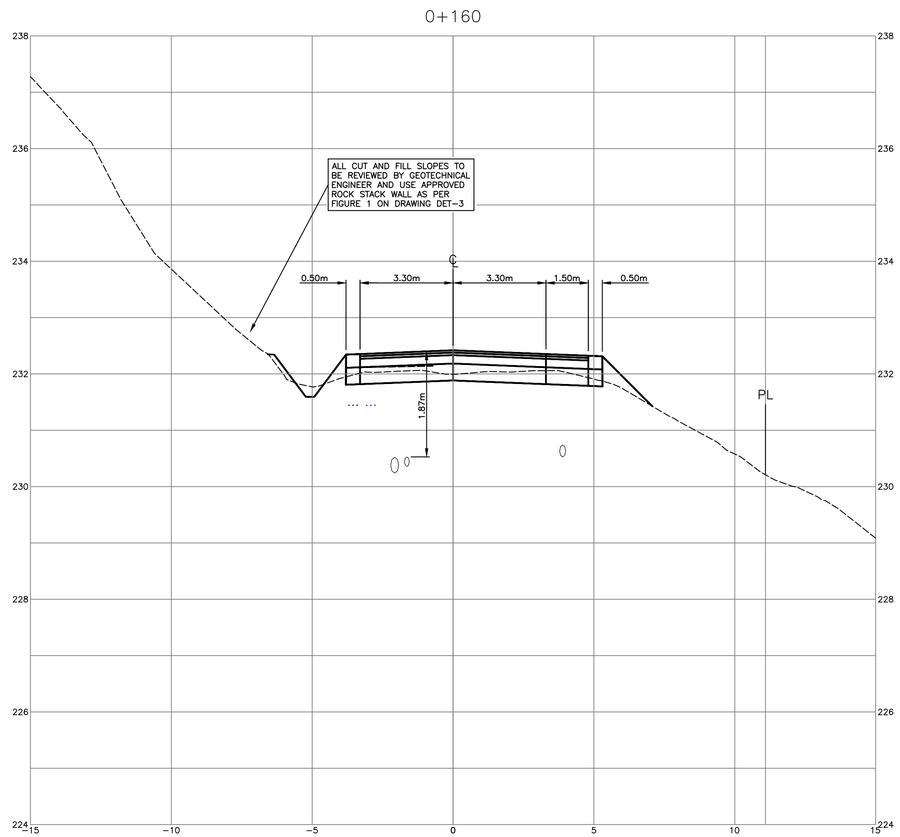
title
CROSS SECTIONS
OFFSITE ROAD (STA 0+100-0+120)

no.	(y/m/d)	revision	chk'd
12	18-02-06	PROJECT RECORDS OFFSITE	KBH
11	17-10-17	PROJECT RECORDS OFFSITE	KBH
10	17-09-19	UPDATED OFFSETS	KBH
9	17-08-15	UPDATE WITH HYDRO & TELUS	KBH
8	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
7	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
6	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
5	16-10-13	ISSUED FOR CONSTRUCTION OFFSITE	KBH

current rev. #: 12

engineer of record: K.B.H.
scales: hor: 1:100 vert: 1:50
designed by: N.G.B.
file no.: 16159
drawn by: A.A.P.
drawing no.: X-OS-1
date: 2016-05-13





CREUS
Engineering
Civil Engineers & Project Managers
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

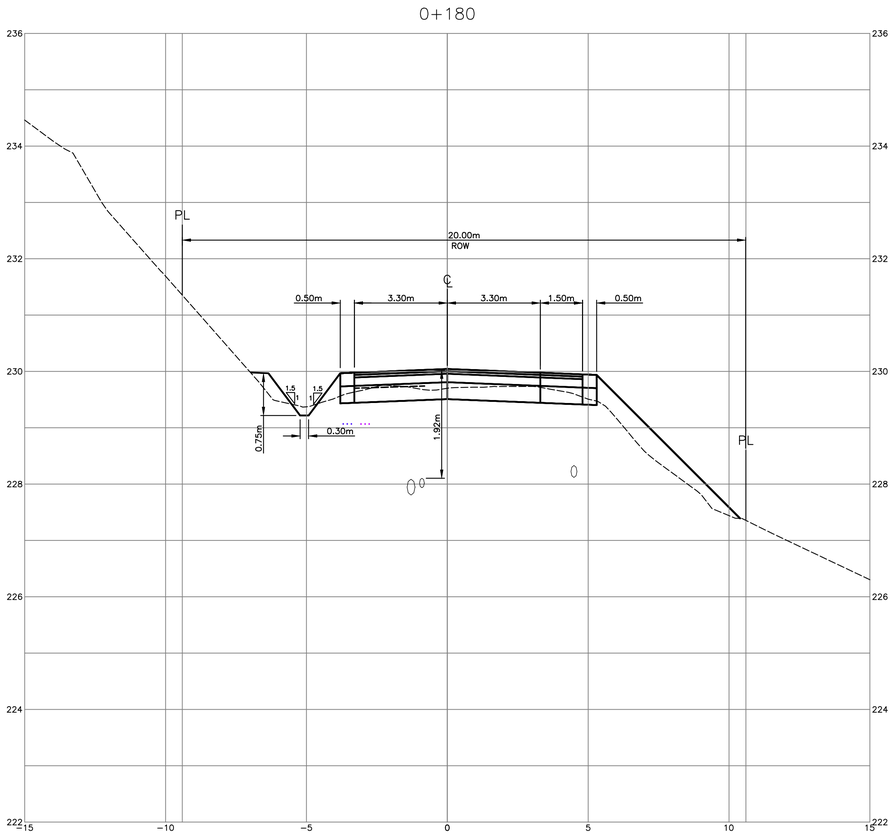
project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

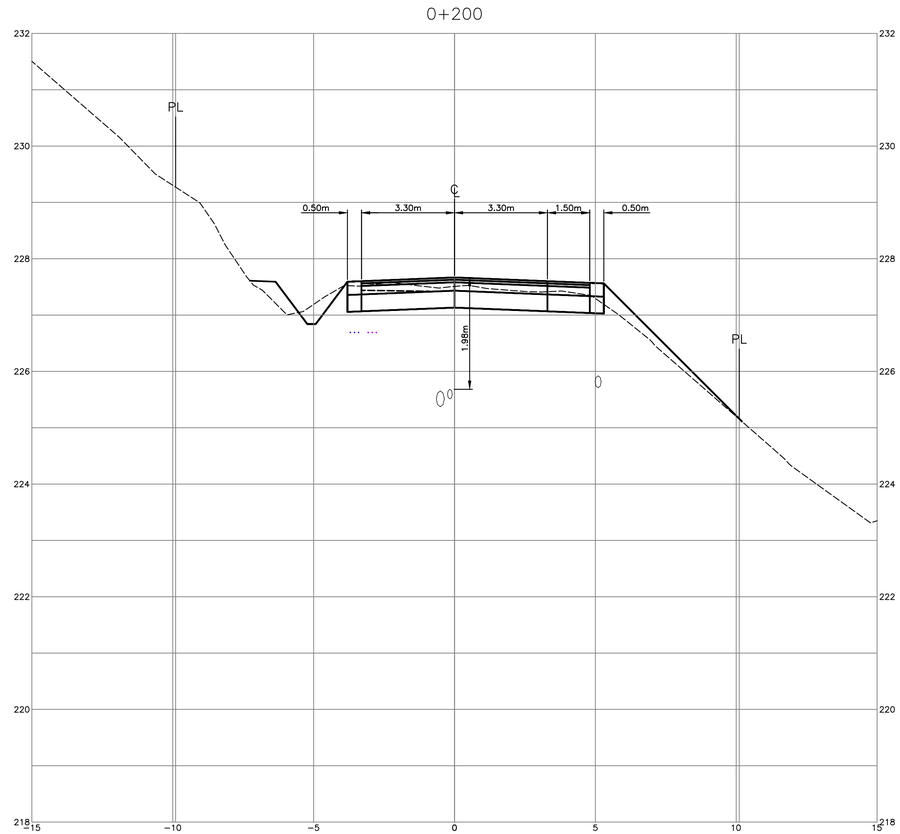
title
CROSS SECTIONS
OFFSITE ROAD (STA 0+140-0+160)

no.	(y/m/d)	revision	chk'd
11	18-02-06	PROJECT RECORDS OFFSITE	KBH
10	17-10-17	PROJECT RECORDS OFFSITE	KBH
9	17-09-19	UPDATED OFFSETS	KBH
8	17-08-15	UPDATE WITH HYDRO & TELUS	KBH
7	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
6	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
5	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
4	16-10-13	ISSUED FOR CONSTRUCTION OFFSITE	KBH

current rev. # 11

engineer of record: K.B.H.
designed by: N.G.B.
drawn by: A.A.P.
date: 2016-05-13
scales: hor: 1:100 vert: 1:50
file no.: 16159
drawing no.: X-OS-2





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Engineering
Civil Engineers & Project Managers
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

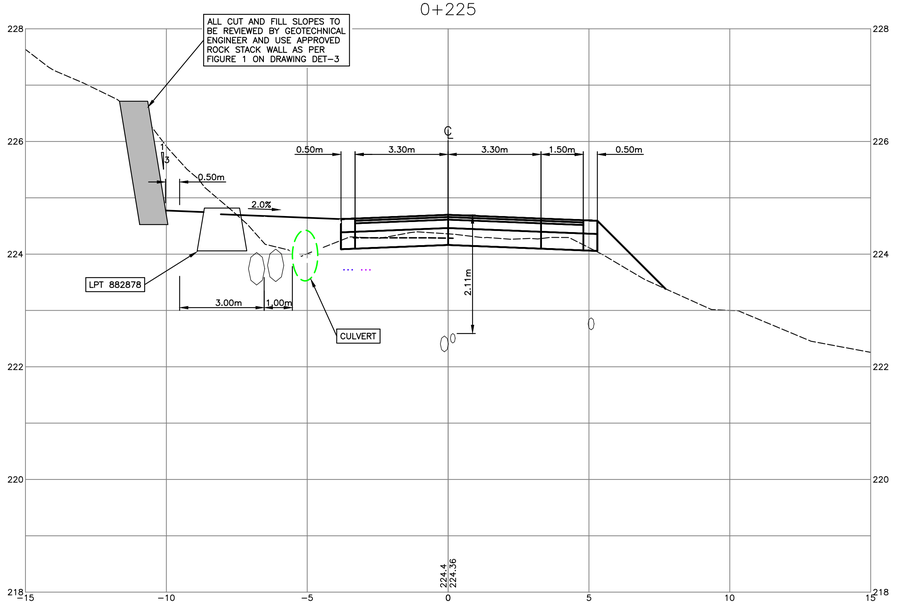
title
CROSS SECTIONS
OFFSITE ROAD (STA 0+180-0+200)

no.	(y/m/d)	revision	chk'd
11	18-02-06	PROJECT RECORDS OFFSITE	KBH
10	17-10-17	PROJECT RECORDS OFFSITE	KBH
9	17-09-19	UPDATED OFFSETS	KBH
8	17-08-15	UPDATE WITH HYDRO & TELUS	KBH
7	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
6	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
5	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
4	16-10-13	ISSUED FOR CONSTRUCTION OFFSITE	KBH

current rev. #: 11

engineer of record: K.B.H.
scales: hor: 1:100 vert: 1:50
designed by: N.G.B.
file no.: 16159
drawn by: A.A.P.
drawing no.: X-OS-3
date: 2016-05-13

0+225



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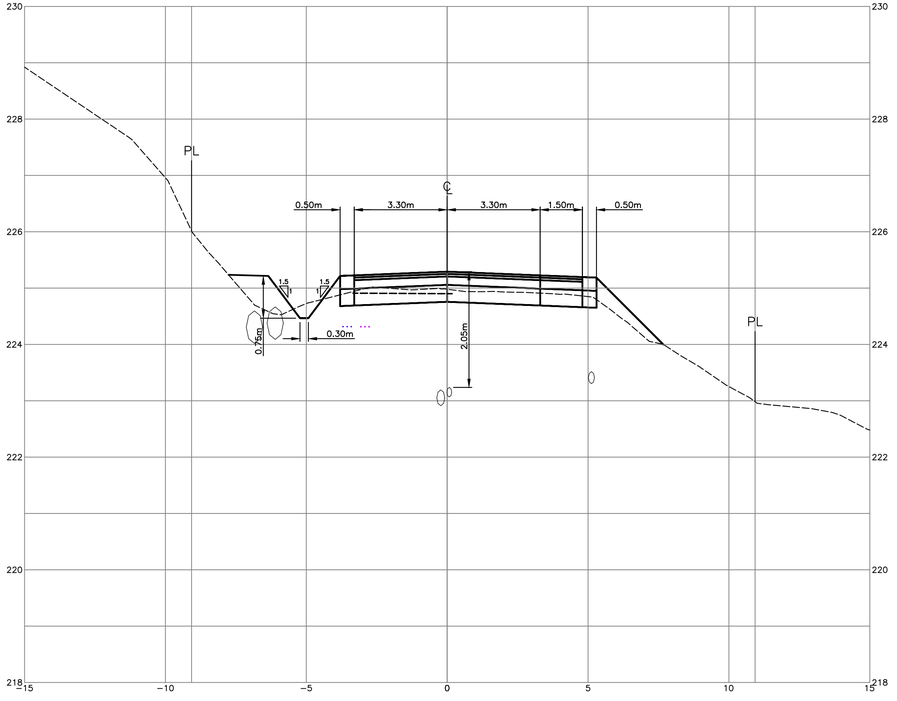

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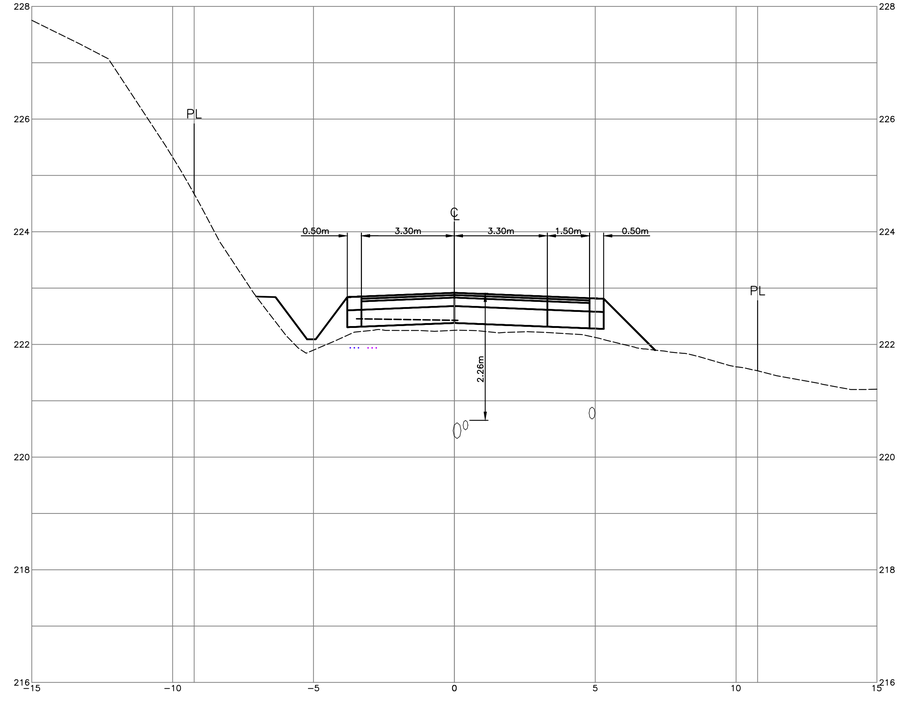


CREUS Engineering

Civil Engineers & Project Managers
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

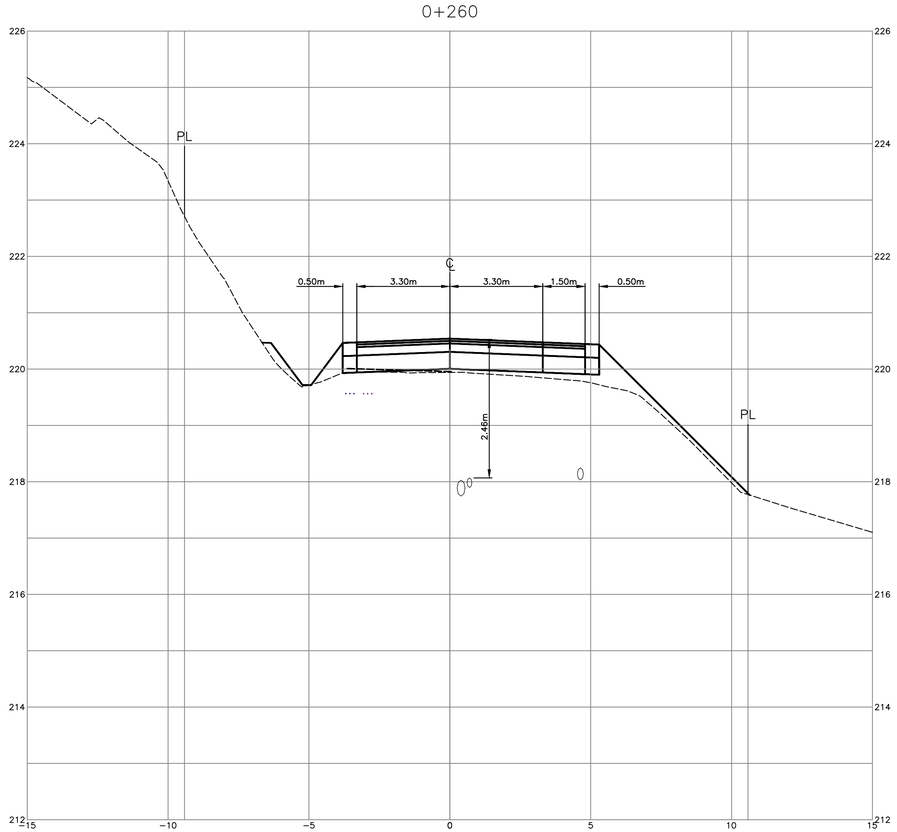
title
CROSS SECTIONS
OFFSITE ROAD (STA 0+220-0+240)

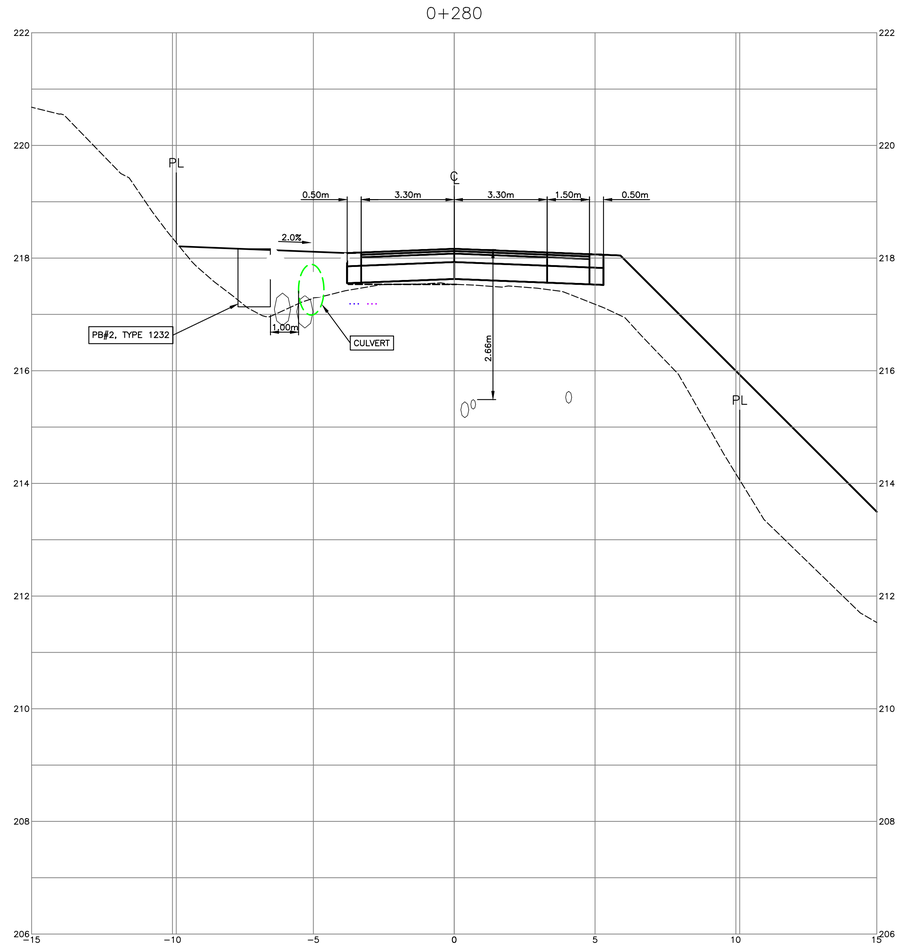
no.	(y/m/d)	revision	chk'd
10	18-02-06	PROJECT RECORDS OFFSITE	KBH
9	17-10-17	PROJECT RECORDS OFFSITE	KBH
8	17-08-15	UPDATE WITH HYDRO & TELUS	KBH
7	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
6	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
5	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
4	16-10-13	ISSUED FOR CONSTRUCTION OFFSITE	KBH
3	16-09-19	ISSUED FOR VOP FINAL COMMENTS	KBH

current rev. #: 10

engineer of record: K.B.H.
designed by: N.G.B.
drawn by: A.A.P.
date: 2016-05-13

scales: hor: 1:100 vert: 1:50
file no.: 16159
drawing no.: X-OS-4





CREUS Engineering

Civil Engineers & Project Managers
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client

580049 BC LTD.

project

THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

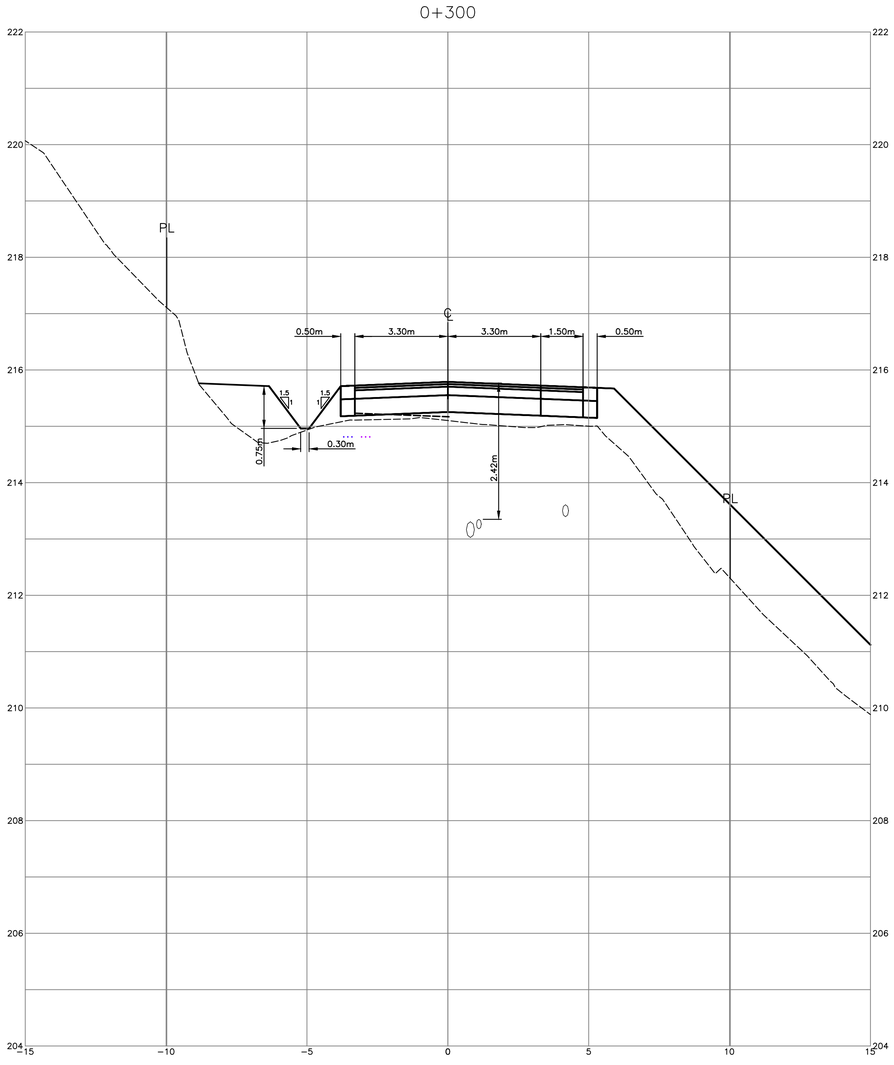
title

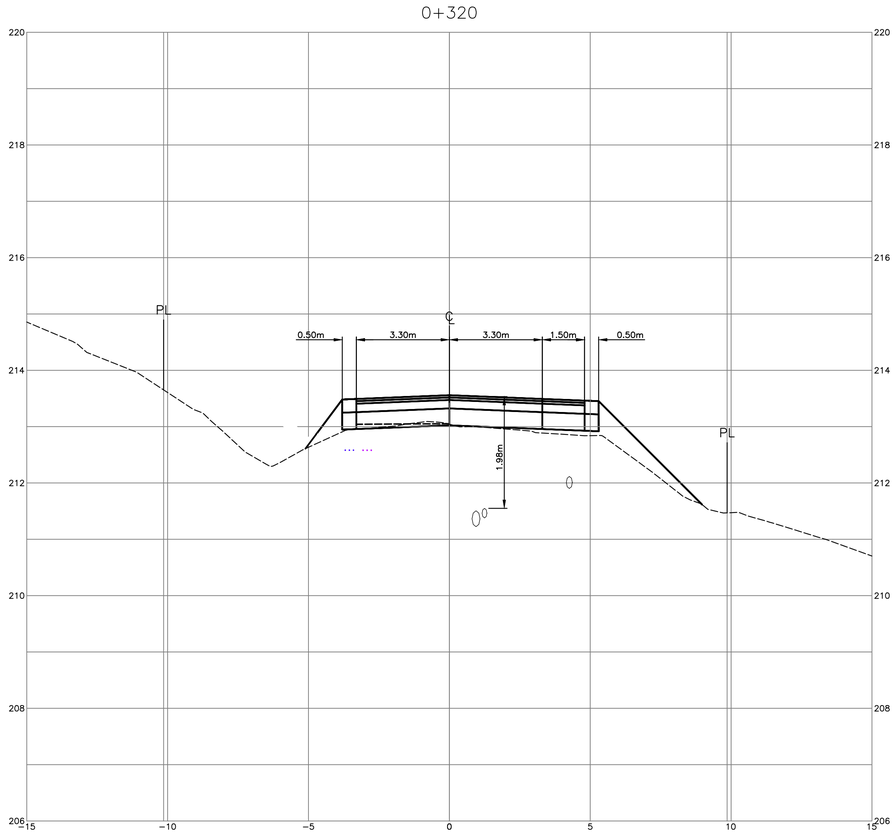
CROSS SECTIONS
OFFSITE ROAD (STA 0+260-0+280)

no.	(y/m/d)	revision	chk'd
12	18-02-06	PROJECT RECORDS OFFSITE	KBH
11	18-01-09	PROJECT RECORDS OFFSITE	KBH
10	17-10-17	PROJECT RECORDS OFFSITE	KBH
9	17-09-19	UPDATED OFFSETS	KBH
8	17-08-15	UPDATE WITH HYDRO & TELUS	KBH
7	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
6	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
5	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH

current rev. #: 12

engineer of record: K.B.H.
scales: hor: 1:100 vert: 1:50
designed by: N.G.B.
file no.: 16159
drawn by: A.A.P.
drawing no.: X-OS-5
date: 2016-05-13





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SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client

580049 BC LTD.

project

THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title

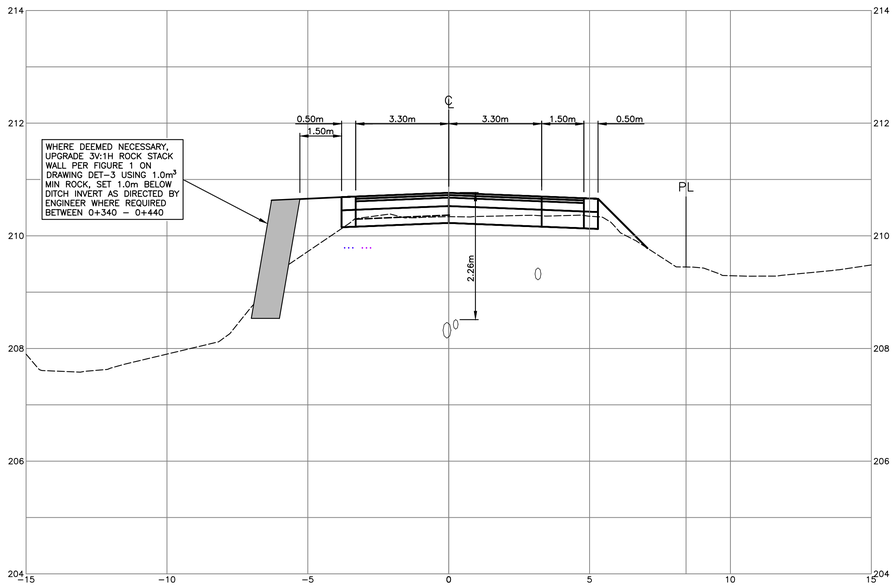
CROSS SECTIONS
OFFSITE ROAD (STA 0+300-0+320)

no.	(y/m/d)	revision	chk'd
10	18-02-06	PROJECT RECORDS OFFSITE	KBH
9	17-10-17	PROJECT RECORDS OFFSITE	KBH
8	17-09-19	UPDATED OFFSETS	KBH
7	17-08-15	UPDATE WITH HYDRO & TELUS	KBH
6	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
5	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
4	16-10-13	ISSUED FOR CONSTRUCTION OFFSITE	KBH
3	16-09-19	ISSUED FOR VOP FINAL COMMENTS	KBH

current rev. # 10

engineer of record: K.B.H.
scales: hor: 1:100 vert: 1:50
designed by: N.G.B.
file no.: 16159
drawn by: A.A.P.
drawing no.: X-OS-6
date: 2016-05-13

0+360



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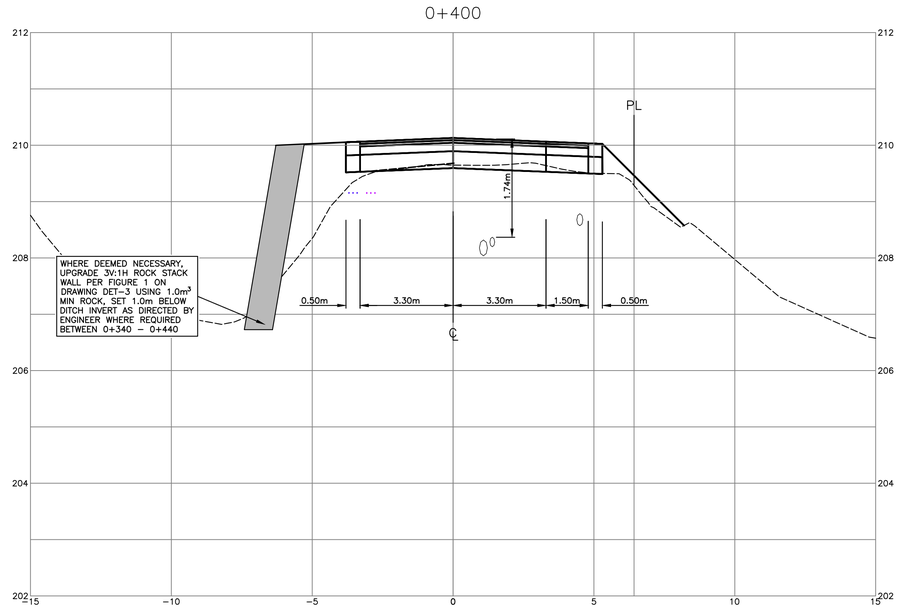

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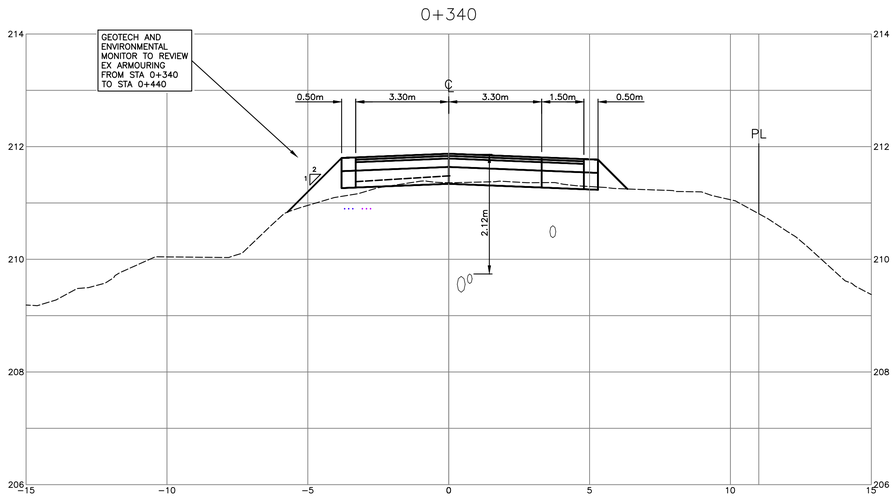

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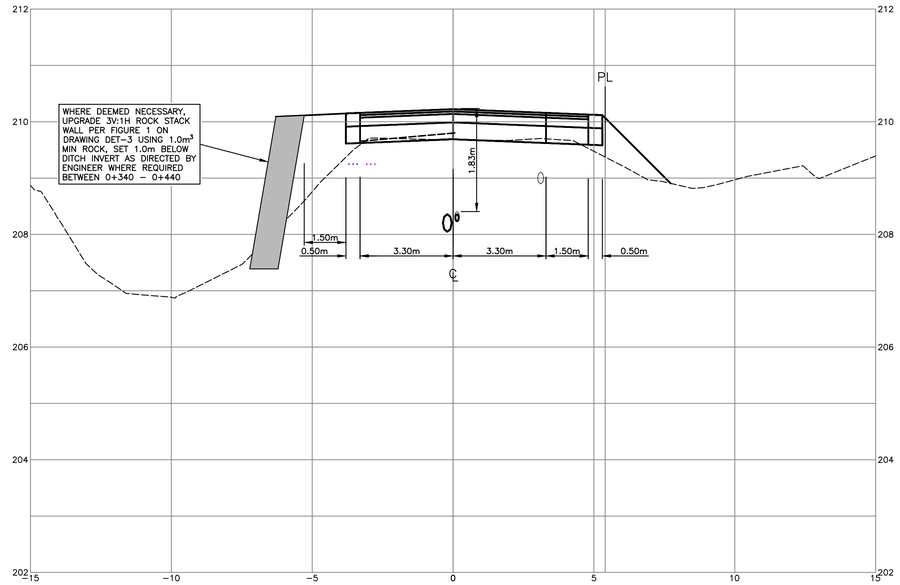


CREUS Engineering

Civil Engineers & Project Managers
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client

580049 BC LTD.

project

THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

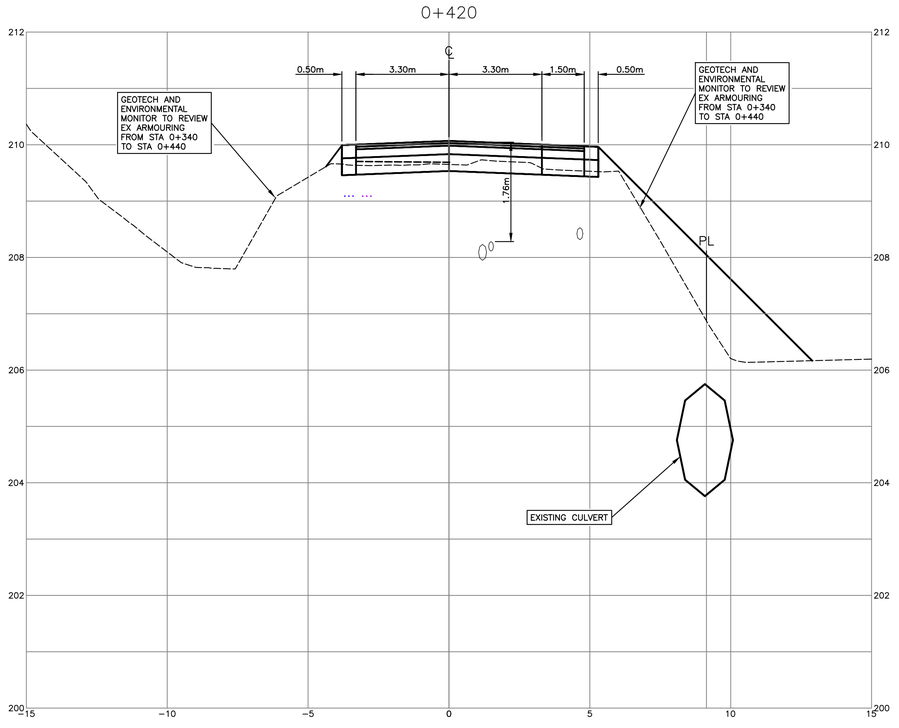
title

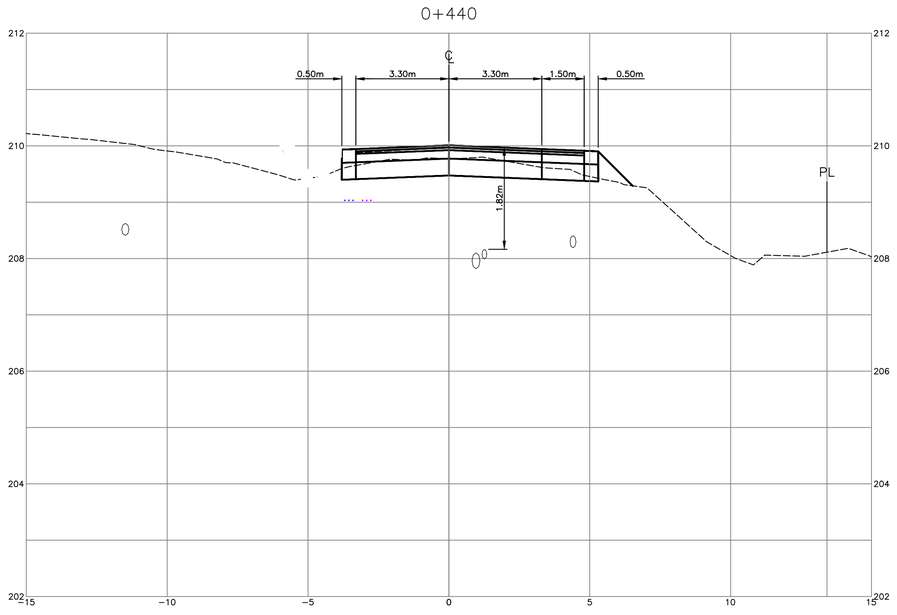
CROSS SECTIONS
OFFSITE ROAD (STA 0+340-0+400)

no.	(y/m/d)	revision	chk'd
12	18-02-06	PROJECT RECORDS OFFSITE	KBH
11	17-10-17	PROJECT RECORDS OFFSITE	KBH
10	17-09-19	UPDATED OFFSETS	KBH
9	17-08-15	UPDATE WITH HYDRO & TELUS	KBH
8	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
7	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
6	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
5	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH

current rev. # 12

engineer of record: K.B.H.
scales: hor: 1:100 vert: 1:50
designed by: N.G.B.
file no.: 16159
drawn by: A.A.P.
drawing no.: X-OS-7
date: 2016-05-13





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Engineering
Civil Engineers & Project Managers
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

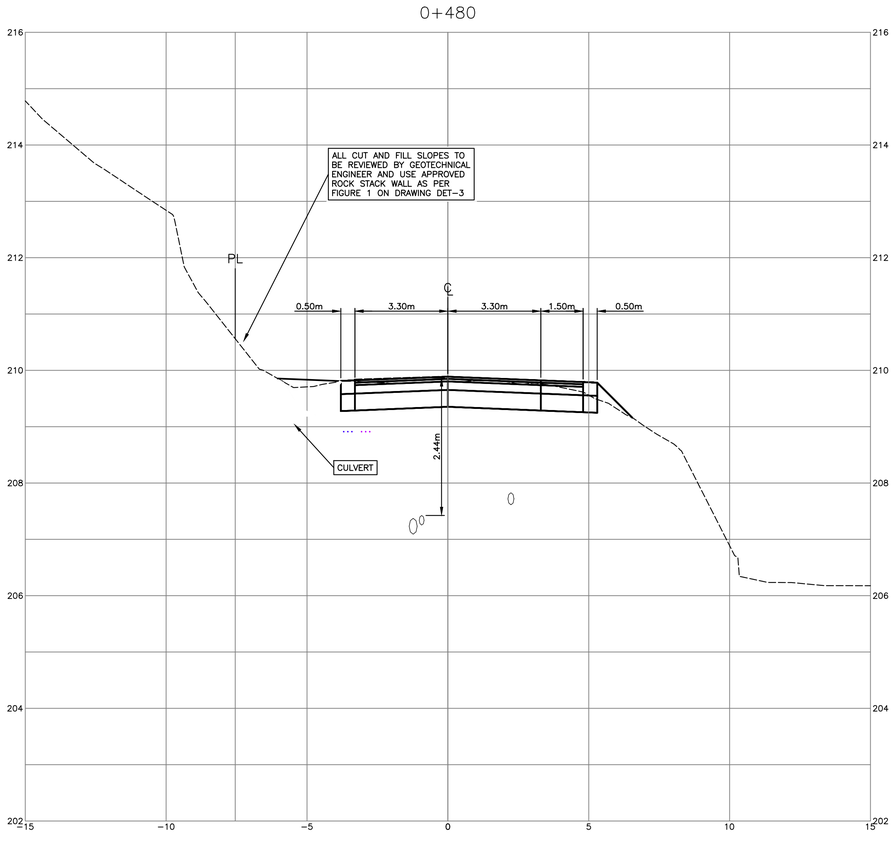
project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

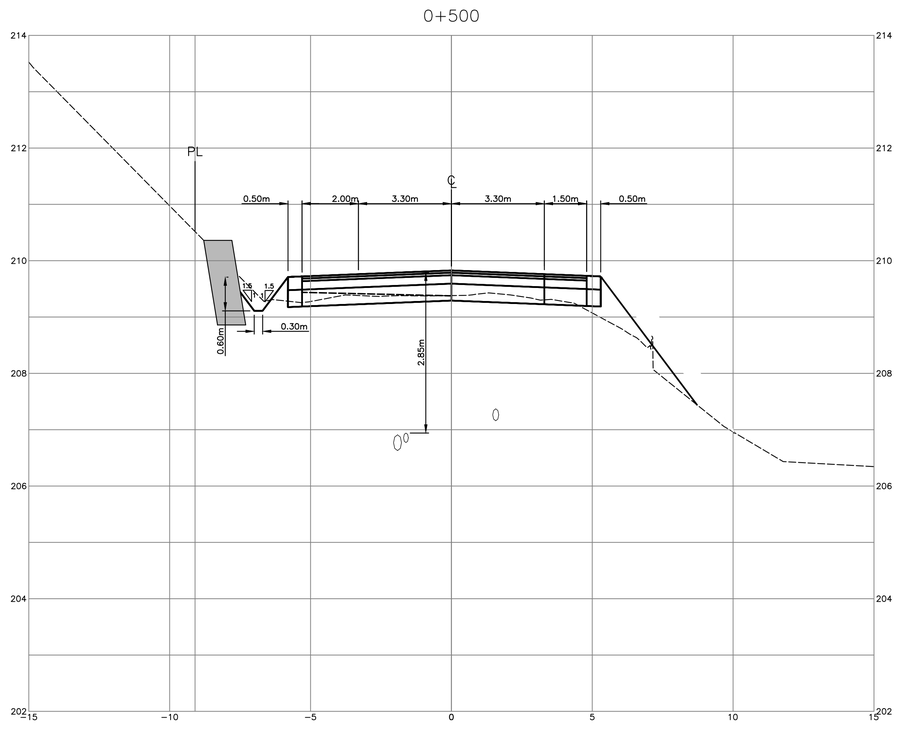
title
CROSS SECTIONS
OFFSITE ROAD (STA 0+420-0+460)

no.	(y/m/d)	revision	chk'd
11	18-02-06	PROJECT RECORDS OFFSITE	KBH
10	17-10-17	PROJECT RECORDS OFFSITE	KBH
9	17-09-19	UPDATED OFFSETS	KBH
8	17-08-15	UPDATE WITH HYDRO &TELUS	KBH
7	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
6	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
5	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
4	16-10-13	ISSUED FOR CONSTRUCTION OFFSITE	KBH

current rev. #
11

engineer of record: K.B.H.	scales: hor: 1:100 vert: 1:50
designed by: N.G.B.	file no.: 16159
drawn by: A.A.P.	drawing no.: X-OS-8
date: 2016-05-13	





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Engineering
Civil Engineers & Project Managers
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client

580049 BC LTD.

project

THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

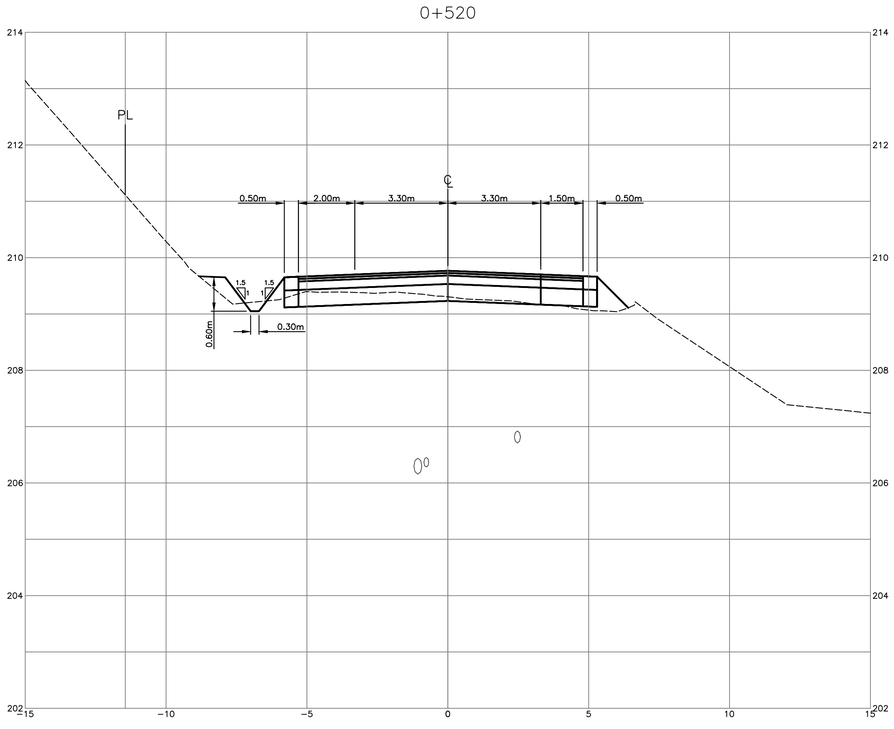
title

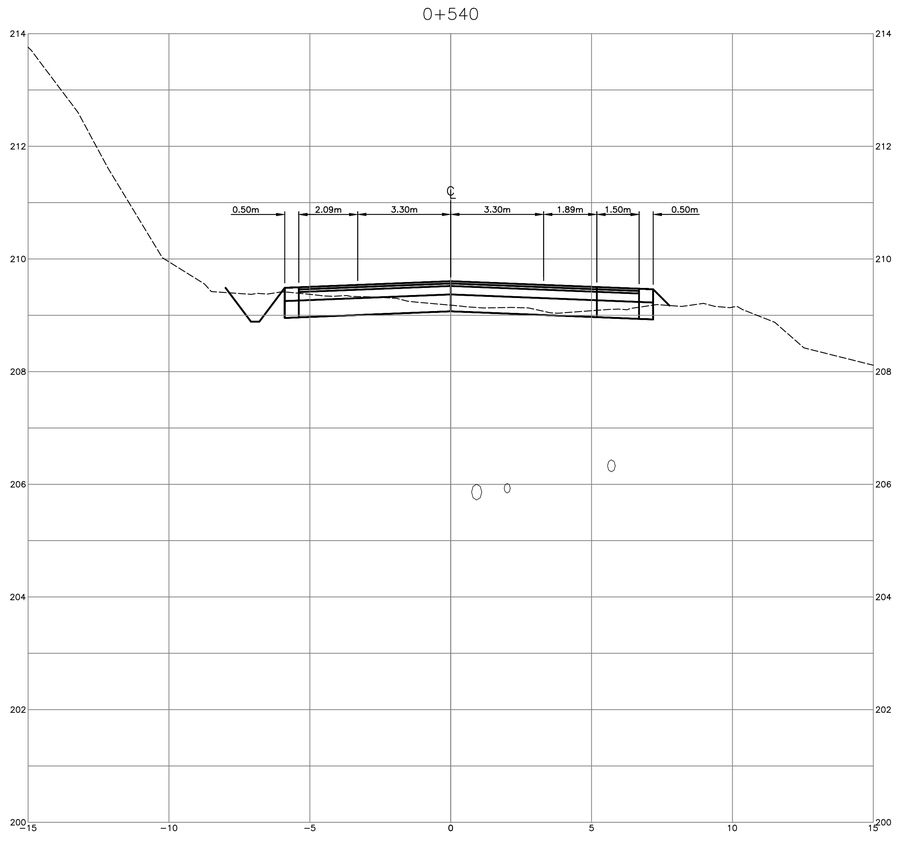
CROSS SECTIONS
OFFSITE ROAD (STA 0+480-0+500)

no.	(y/m/d)	revision	ch'd
11	18-02-06	PROJECT RECORDS OFFSITE	KBH
10	17-10-17	PROJECT RECORDS OFFSITE	KBH
9	17-09-19	UPDATED OFFSETS	KBH
8	17-08-15	UPDATE WITH HYDRO & TELUS	KBH
7	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
6	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
5	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
4	16-10-13	ISSUED FOR CONSTRUCTION OFFSITE	KBH

current rev. # 11

engineer of record: K.B.H.
scales: hor: 1:100 vert: 1:50
designed by: N.G.B.
file no.: 16159
drawn by: A.A.P.
drawing no.: X-OS-9
date: 2016-05-13





CREUS Engineering

Civil Engineers & Project Managers
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client

580049 BC LTD.

project

THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

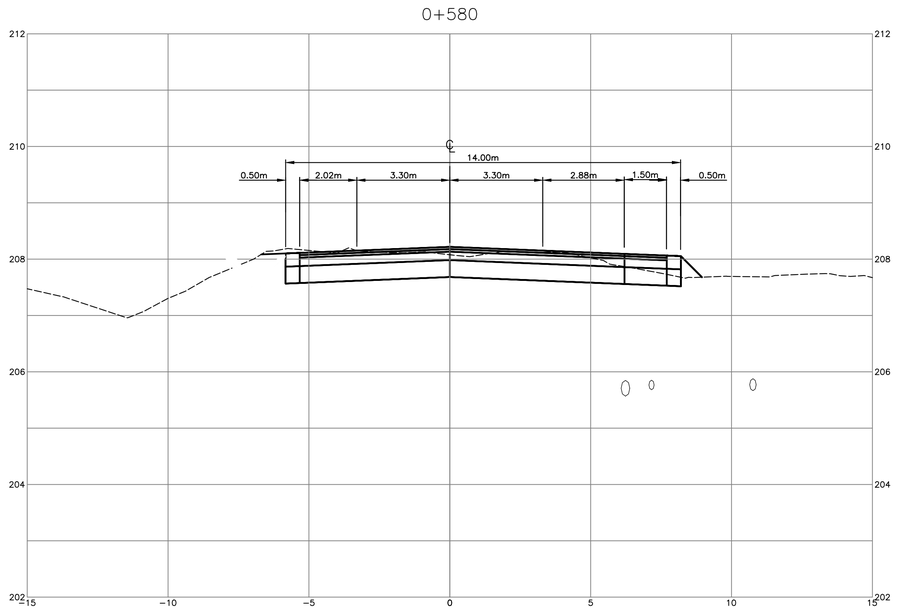
title

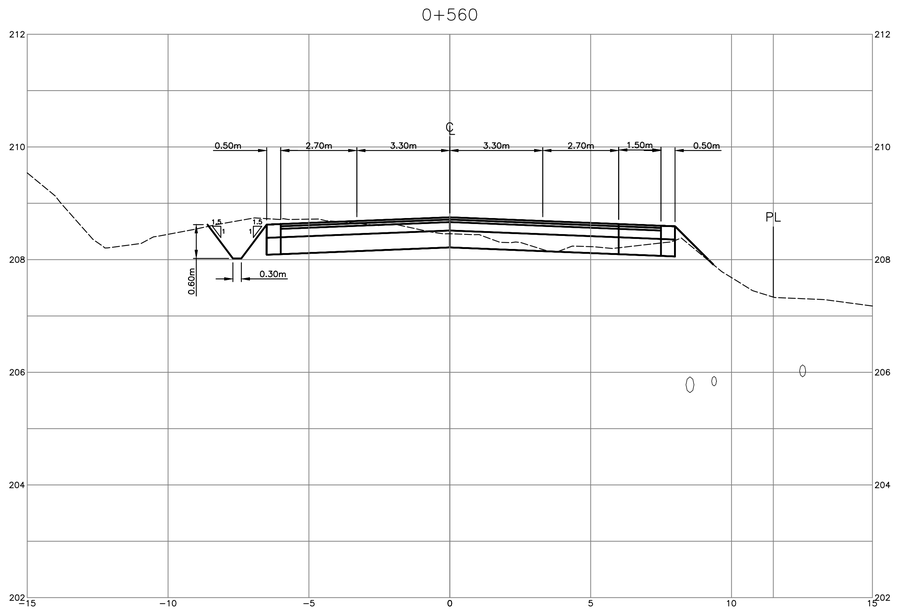
CROSS SECTIONS
OFFSITE ROAD (STA 0+520-0+540)

no.	(y/m/d)	revision	ch'd
11	18-02-06	PROJECT RECORDS OFFSITE	KBH
10	17-10-17	PROJECT RECORDS OFFSITE	KBH
9	17-09-19	UPDATED OFFSETS	KBH
8	17-08-15	UPDATE WITH HYDRO & TELUS	KBH
7	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
6	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
5	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
4	16-10-13	ISSUED FOR CONSTRUCTION OFFSITE	KBH

current rev. #: 11

engineer of record: K.B.H.	scales: hor: 1:100 vert: 1:50
designed by: N.G.B.	file no.: 16159
drawn by: A.A.P.	drawing no.: X-OS-10
date: 2016-05-13	





CREUS
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SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

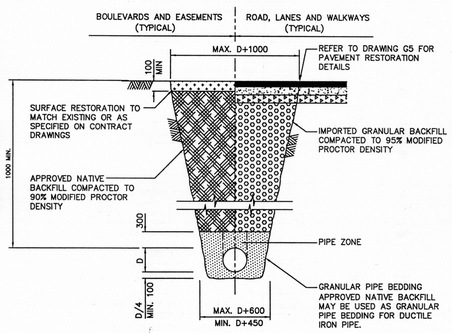
title
CROSS SECTIONS
OFFSITE ROAD (STA 0+560-0+580)

no.	(y/m/d)	revision	chk'd
11	18-02-06	PROJECT RECORDS OFFSITE	KBH
10	17-10-17	PROJECT RECORDS OFFSITE	KBH
9	17-09-19	UPDATED OFFSETS	KBH
8	17-08-15	UPDATE WITH HYDRO & TELUS	KBH
7	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
6	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
5	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH
4	16-10-13	ISSUED FOR CONSTRUCTION OFFSITE	KBH

current rev. #
11

engineer of record: K.B.H.	scales: hor: 1:100 vert: 1:50
designed by: N.G.B.	file no.: 16159
drawn by: A.A.P.	drawing no.: X-OS-11
date: 2016-05-13	

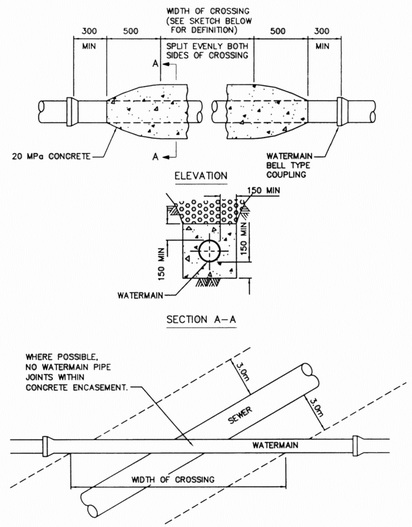
MMCD STANDARD DETAIL DRAWINGS



NOTE: 1. TRENCHING TO COMPLY WITH ALL REQUIREMENTS OF THE WORKERS' COMPENSATION BOARD.
2. REFER TO CONTRACT DRAWINGS AND SECTION 02223 FOR DETAILED SPECIFICATIONS.

2001 UTILITY TRENCH — DRAWING NUMBER: **G4**

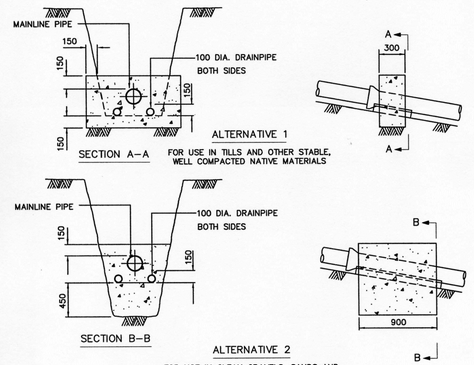
MMCD STANDARD DETAIL DRAWINGS



NOTE: 1. THIS STANDARD IS APPLICABLE TO WATERMAIN/SEWER SEPARATION ONLY. SEE DRAWING G7 FOR CONCRETE PROTECTION OF UNDERGROUND UTILITIES.
2. REFER TO CONTRACT DRAWINGS AND SECTION 02223 FOR DETAILED SPECIFICATIONS.

2001 CONCRETE ENCASEMENT FOR WATERMAIN/ SEWER SEPARATION — DRAWING NUMBER: **G6**

MMCD STANDARD DETAIL DRAWINGS

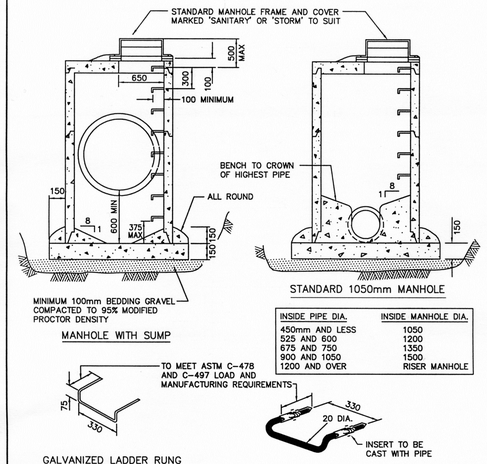


MAXIMUM SPACING OF ANCHOR BLOCKS (SEE NOTE 4)			
SANITARY AND STORM GRAVITY SEWERS		WATERMAINS AND FORCEMAINS	
SLOPE	MAX. SPACING	SLOPE	MAX. SPACING
15% – 20%	25m	10% OR GREATER	10m
20% – 35%	20m		
35% – 50%	15m		
50% – OVER	10m		

NOTE: 1. APPLICABLE TO ALL PIPE MATERIALS.
2. USE ALTERNATIVES 1 OR 2 AS SPECIFIED ON CONTRACT DRAWINGS.
3. USE 20 MPa CONCRETE UNLESS SPECIFIED OTHERWISE ON CONTRACT DRAWINGS.
4. REFER TO CONTRACT DRAWINGS FOR SPECIFIED SPACING IF OTHER THAN MAXIMUM SHOWN IN TABLE.

2001 PIPE ANCHOR BLOCKS — DRAWING NUMBER: **G8**

MMCD STANDARD DETAIL DRAWINGS

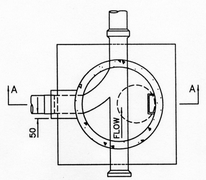


INSIDE PIPE DIA.	INSIDE MANHOLE DIA.
450mm AND LESS	1050
525 AND 600	1200
675 AND 750	1350
900 AND 1050	1500
1200 AND OVER	RISER MANHOLE

NOTE: 1. DETAILS ARE DRAWN FOR PRECAST RISERS ON CAST-IN-PLACE BASE. PRECAST BASES APPROVED BY CONTRACT ADMINISTRATOR ARE ACCEPTABLE.
2. MAXIMUM DEPTH TO FIRST RUNG IS 500mm. WHEN HANDHOLD IS INSTALLED BETWEEN TOP AND FIRST RUNG, MAXIMUM DEPTH MAY BE INCREASED TO 660mm
3. FOR MANHOLES OVER 1200mm DIA. BASE THICKNESS TO BE 200mm.
4. REFER TO DRAWING S2 FOR CONNECTION DETAILS.
5. REFER TO CONTRACT DRAWINGS AND SECTION 02725 FOR DETAILED SPECIFICATIONS.

2001 STANDARD AND SUMP MANHOLES — DRAWING NUMBER: **S1**

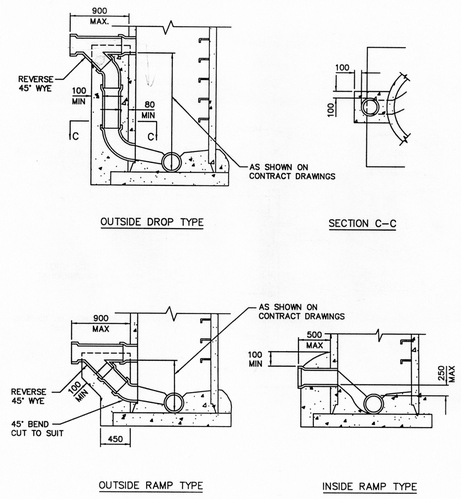
MMCD STANDARD DETAIL DRAWINGS



NOTE: 1. THIS DRAWING SHOWS CONNECTION DETAILS ONLY, REFER TO DRAWING S1 FOR ALL OTHER DETAILS PERTAINING TO MANHOLE REQUIREMENTS AND INSTALLATION.
2. REFER TO CONTRACT DRAWINGS AND SECTION 02725 FOR DETAILED SPECIFICATIONS.

2001 STANDARD MANHOLE CONNECTION DETAILS — DRAWING NUMBER: **S2**

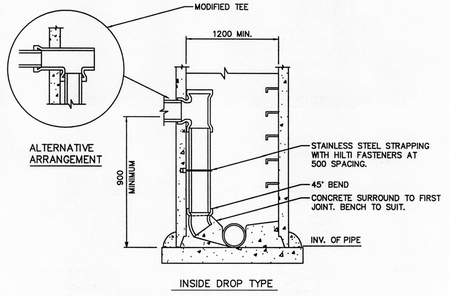
MMCD STANDARD DETAIL DRAWINGS



NOTE: 1. THIS DRAWING SHOWS CONNECTION DETAILS ONLY, REFER TO DRAWING S1 FOR ALL OTHER DETAILS PERTAINING TO MANHOLE REQUIREMENTS AND INSTALLATION.
2. REFER TO CONTRACT DRAWINGS AND SECTION 02725 FOR DETAILED SPECIFICATIONS.

2001 MANHOLE CONNECTION DETAILS – DROP AND RAMP TYPE — DRAWING NUMBER: **S3**

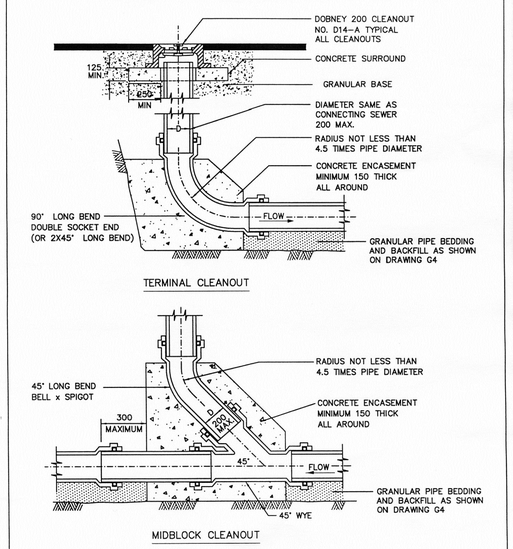
MMCD STANDARD DETAIL DRAWINGS



NOTE: 1. INSIDE DROP TO BE USED ONLY WHERE SPECIFIED BY CONTRACT ADMINISTRATOR.
2. ALL INSIDE PIPE AND FITTINGS PVC DR 28/35
3. THIS DRAWING SHOWS INSIDE DROP ONLY. SEE DRAWING S1 FOR ALL OTHER DETAILS PERTAINING TO MANHOLE REQUIREMENTS.
4. REFER TO CONTRACT DRAWINGS AND SECTION 02725 FOR DETAILED SPECIFICATIONS

2001 INSIDE DROP MANHOLE — DRAWING NUMBER: **S4**

MMCD STANDARD DETAIL DRAWINGS



NOTE: 1. ALL PIPE FITTINGS PVC DR28 c/w GASKETS

2001 SEWER CLEANOUT — DRAWING NUMBER: **S6**

CREUS Engineering

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PH: 604-987-9070 WEBSITE: www.creus.ca

SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASEMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client: 580049 BC LTD.

project: THE RIDGE AT PEMBERTON PHASE 1 PEMBERTON, BC

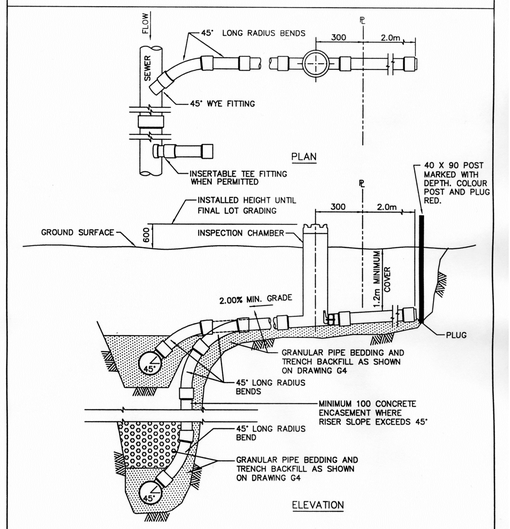
title: DETAILS

no.	(y/m/d)	revision	chk'd
17	18-02-06	PROJECT RECORDS OFFSITE	KBH
16	18-02-06	PROJECT RECORDS ONSITE	KBH
15	17-10-17	PROJECT RECORDS OFFSITE	KBH
14	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
13	17-02-27	ISSUED FOR CONSTRUCTION ONSITE	KBH
12	16-11-09	REISSUED FOR CONSTRUCTION ONSITE	KBH
11	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH
10	16-10-26	IFC OFFSITE FINAL COMMENTS	KBH

current rev. #: 17

engineer of record: K.B.H.
scales: hor: - vert: -
designed by: N.G.B.
file no.: 16159
drawn by: A.A.P.
drawing no.: DET-1
date: 2016-05-13

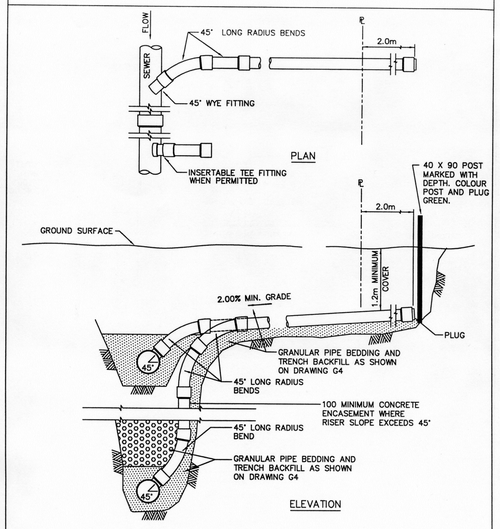
MMCD STANDARD DETAIL DRAWINGS



NOTE: 1. CONNECTIONS TO BE 100 OR AS SPECIFIED ON CONTRACT DRAWINGS.
2. RISER TYPE SERVICE TO BE USED ONLY WHEN SERVICE IS MORE THAN 2.4m ABOVE WYE INVERT OR AS DIRECTED BY CONTRACT ADMINISTRATOR.
3. LOCATION OF SERVICE AND MARKER AS SHOWN ON CONTRACT DRAWINGS.
4. SEE DRAWING S9 FOR DETAILS OF INSPECTION CHAMBER AND INSTALLATION REQUIREMENTS.

2001 | SANITARY SEWER SERVICE CONNECTION | DRAWING NUMBER: **S7**

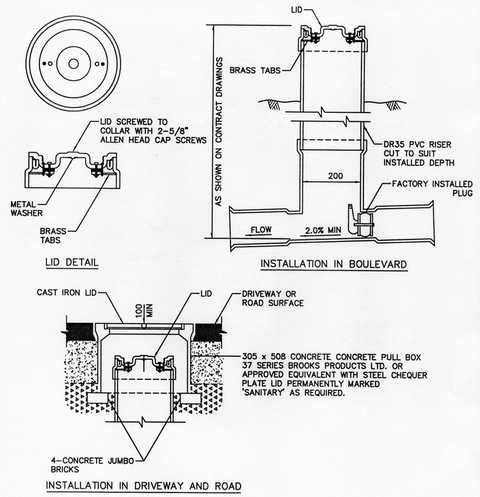
MMCD STANDARD DETAIL DRAWINGS



NOTE: 1. CONCRETE STORM SEWER PIPES TO BE PROVIDED WITH SUPPLIER INSTALLED PVC STUB.
2. CONNECTIONS TO BE 100 MINIMUM OR LARGER AS SPECIFIED ON CONTRACT DRAWINGS.
3. RISER TYPE SERVICE TO BE USED ONLY WHEN SERVICE IS MORE THAT 2.4m ABOVE WYE INVERT OR AS DIRECTED BY CONTRACT ADMINISTRATOR.
4. LOCATION OF SERVICE AND MARKER AS SHOWN ON CONTRACT DRAWINGS.

2001 | STORM SEWER SERVICE CONNECTION | DRAWING NUMBER: **S8**

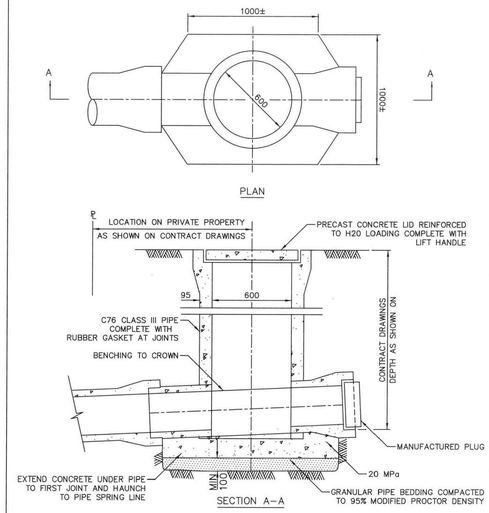
MMCD STANDARD DETAIL DRAWINGS



NOTE: 1. REFER TO DRAWING S7 FOR INSTALLATION REQUIREMENTS.
2. INSPECTION CHAMBER TO BE APPROVED MANUFACTURED FITTING.
3. REFER TO CONTRACT DRAWINGS FOR SITE SPECIFIC DIMENSIONS AND SECTION 02731 FOR DETAILED SPECIFICATIONS.

2001 | INSPECTION CHAMBER FOR 100 TO 200 SANITARY SEWER CONNECTION | DRAWING NUMBER: **S9**

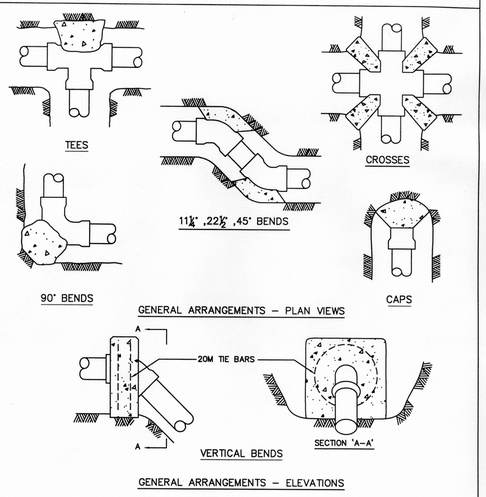
MMCD STANDARD DETAIL DRAWINGS



NOTE: 1. REFER TO CONTRACT DRAWINGS FOR LOCATION WITH RESPECT TO PROPERTY LINES.
2. PRECAST UNIT MAY BE PROVIDED AS ALTERNATIVE WITH CONTRACT ADMINISTRATOR'S PRIOR APPROVAL.
3. REFER TO CONTRACT DRAWINGS, SECTION 33 40 01 FOR DETAILED SPECIFICATIONS.
NOT TO SCALE

2008 | INSPECTION CHAMBER FOR 250 TO 375 STORM SEWER CONNECTION | DRAWING NUMBER: **S10**

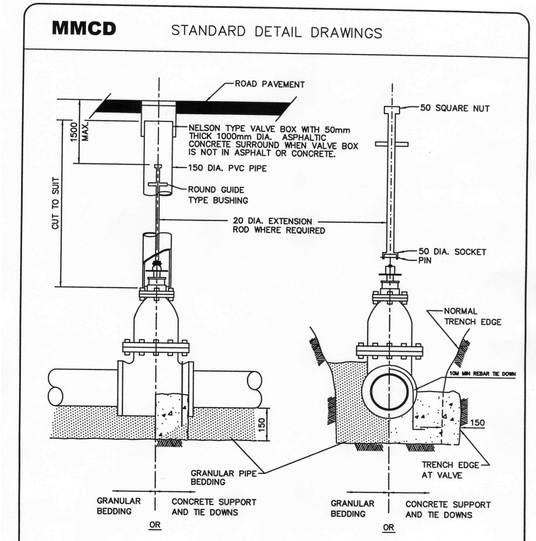
MMCD STANDARD DETAIL DRAWINGS



NOTE: 1. REFER TO CONTRACT DRAWINGS FOR SPECIFIED BEARING AREAS OF THRUST BLOCKS AND/OR SPECIFIC REQUIREMENTS NOT SHOWN ON THIS DRAWING.
2. PLACE 6 mil POLYETHYLENE ON INTERFACE BETWEEN CONCRETE AND FITTING.
3. PLACE 20 MPa CONCRETE AGAINST UNDISTURBED GROUND; KEEP CONCRETE CLEAR OF FITTING JOINTS.
4. REFER TO CONTRACT DRAWINGS AND SECTIONS. 02666 AND 03300 FOR DETAILED SPECIFICATIONS.

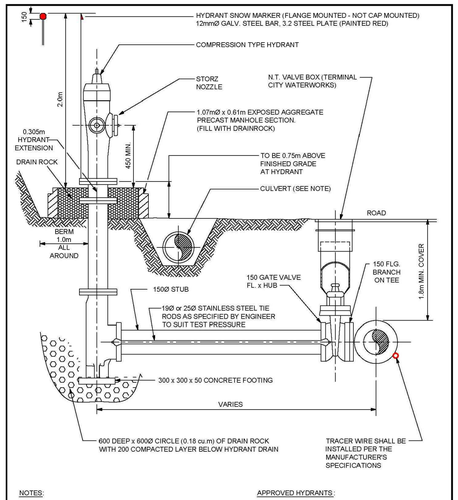
2001 | TYPICAL THRUST BLOCK ARRANGEMENTS | DRAWING NUMBER: **W1**

MMCD STANDARD DETAIL DRAWINGS



NOTE: 1. REFER TO CONTRACT DRAWINGS FOR VALVE INSTALLATION DETAILS IN AREAS OF UNSTABLE GROUND (WHERE APPLICABLE).
2. REFER TO CONTRACT DRAWINGS AND SECTION 02666 FOR DETAILED SPECIFICATIONS.

2001 | GATE VALVE INSTALLATION | DRAWING NUMBER: **W3**



NOTES:
- CULVERT TO BE SIZED TO CARRY DITCH DESIGNED FLOWS. LENGTH 2.0m C/W CONCRETE HEADWALLS
- COMPACT BEDDING TO 95% MODIFIED PROCTOR
- FOR INSTALLATION OF VALVE BOX SEE RMOW STANDARD DWG W3
- APPLY AN APPROVED CORROSION PROTECTION SYSTEM TO ALL BURIED FERROUS FITTINGS, FLANGES, FASTENERS, ETC., SUCH AS "DENSO" PETROLATUM TAPE SYSTEM; INCLUDING PASTE, PROFILING MASTIC AND TAPE AS PER MANUFACTURER'S INSTRUCTIONS, OTHER CORROSION PROTECTION SYSTEMS MAY BE USED UPON APPROVAL OF THE RMOW.

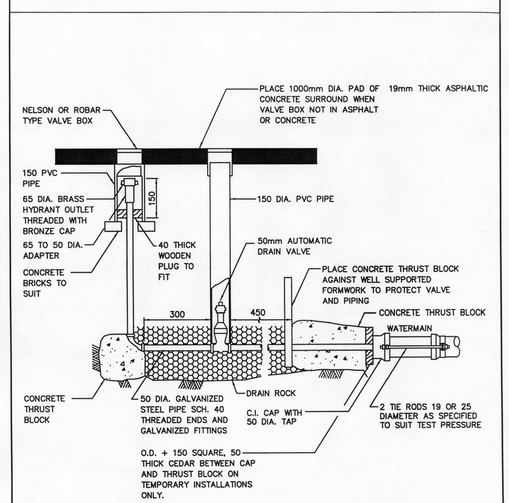
APPROVED HYDRANTS:
- T.C.I.W. C-71P EXTENDED BODY COMPRESSION TYPE HYDRANT
- CANADA VALVE "CENTURY"
- CLOW CANADA "BRIGADIER M53"

WHISTLER

RESORT MUNICIPALITY of WHISTLER
STANDARD HYDRANT ASSEMBLY

DRAWN BY: BL	DATE: APRIL 2016
SCALE: N.T.S.	DWG. NO.: W4

MMCD STANDARD DETAIL DRAWINGS



NOTE: 1. 20 MPa CONCRETE.
2. REFER TO CONTRACT DRAWINGS AND SECTION 02666 FOR DETAILED SPECIFICATIONS.

2001 | BLOW-OFF FOR WATERMAIN | DRAWING NUMBER: **W8**

CREUS Engineering

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SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASEMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

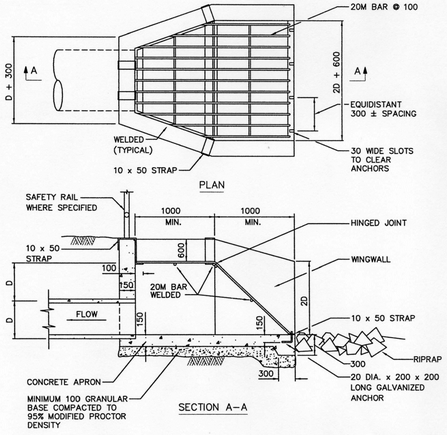
title
DETAILS

no.	(y/m/d)	revision	chk'd
18	18-02-06	PROJECT RECORDS OFFSITE	KBH
17	18-02-06	PROJECT RECORDS ONSITE	KBH
16	17-10-17	PROJECT RECORDS OFFSITE	KBH
15	17-09-19	UPDATED OFFSETS	KBH
14	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
13	17-02-27	ISSUED FOR CONSTRUCTION ONSITE	KBH
12	16-11-09	REISSUED FOR CONSTRUCTION ONSITE	KBH
11	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH

current rev. #: 18

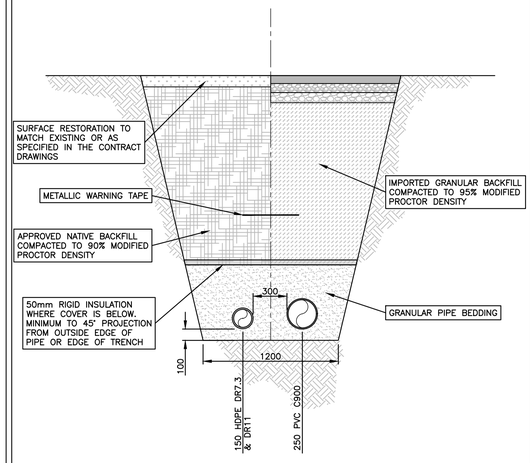
engineer of record: K.B.H.
scales: hor: - vert: -
designed by: N.G.B.
file no.: 16159
drawn by: A.A.P.
drawing no.: DET-2
date: 2016-05-13

MMCD STANDARD DETAIL DRAWINGS



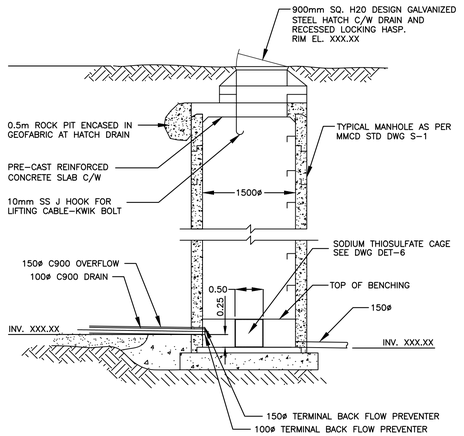
NOTE:
1. INSTALL SAFETY HANDRAIL IF SPECIFIED ON CONTRACT DRAWINGS.
2. PRECAST UNIT MAY BE PROVIDED AS ALTERNATIVE WITH CONTRACT ADMINISTRATOR'S PRIOR APPROVAL.
3. ALL STEEL COMPONENTS TO BE HOT DIPPED GALVANIZED AFTER FABRICATION.
4. SAFETY GRILLAGE TO BE WELDED AT ALL JOINTS AND CONNECTIONS EXCEPT AT ANCHOR BOLTS.
5. REFER TO CONTRACT DRAWINGS FOR LOCATIONS AND SITE SPECIFIC DIMENSIONS. REFER TO SECTIONS 03200 AND 03300 FOR DETAILED SPECIFICATIONS.

2001 STORM SEWER INLET WITH SAFETY GRILLAGE — DRAWING NUMBER: **S13**

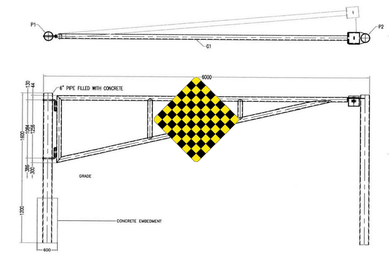


1. TRENCHING TO COMPLY WITH ALL REQUIREMENTS OF WORKSAFE BC.
2. REFER TO CONTRACT DRAWINGS, SECTION 31 23 01 FOR DETAILED SPECIFICATIONS,
3. LOCALLY LOWER 150 HDPE WM @ CROSSING TO ALLOW MIN 100mm COVER c/w SANDBAGS.

WATER MAIN COMMON TRENCH DETAIL
SCALE 1:25



DECHLORINATION SUMP DETAIL
SCALE 1:50



CREUS Engineering Ltd
Civil Engineers

title: GATE DETAIL

scales	
hor: NTS	vert:
drawn by: S.M.C.	checked by: R.A.W.

MUELLER® THERMAL-COIL® METER BOX

Mueller Co. Reliable Connections

8F.1

Shaded area indicates change. Rev. 4-14

The MUELLER THERMAL-COIL Meter Box provides a means to allow a meter to be read and maintained even though it is set deep in the ground to resist freezing. The THERMAL-COIL Meter Box is designed with the meter installed on a platform that normally sets near the bottom of the box where the ground temperature keeps it warmer. The meter and platform are connected to the service line by coils of polybutylene tubing which allow the meter and platform to be raised to the surface.

The body of the meter box is made from rigid PVC which has a high insulating "R" value to resist frost bridging" inside the box. For extremely cold climates, an optional insulating pad is available which traps the relatively warm air rising from the earth inside the box.

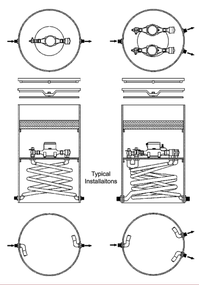
MUELLER THERMAL-COIL Meter Boxes are shipped fully assembled, ready for meter installation. Their light weight saves shipping costs and makes installation a one man job in most cases. Every box is factory tested and has a 150 psig maximum working pressure rating.

MUELLER THERMAL-COIL Meter Boxes are available for 5/8" to 1" meters. A wide variety of end connections, control valves, box depths, lids and other options provide you with the meter set you need. Due to the almost endless combination of features available, each box is custom built to your specifications. See page 8F.2 for options and ordering instructions.

Manufactured under one or more of the following: U.S. Patent No. 4,614,113; 4,813,281

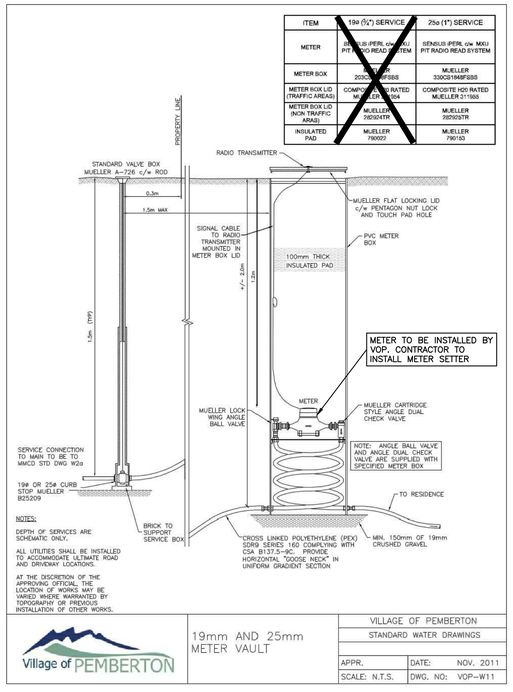
MUELLER THERMAL-COIL Meter Box Features

- Rigid .300 minimum wall PVC material holds shape and resists frost bridging
- Optional insulation pad traps earth's heat to prevent freezing in extremely cold climates
- White interior aids visibility
- Meter set is anchored to moveable platform to maintain alignment and stability
- Platform support and reinforcing ring add rigidity to box
- Poly coil tubing provides low friction loss equivalent to a typical conventional meter set of the same size and depth
- Male I.P. thread inlet and outlet connections accept a variety of MUELLER Service Fittings–see section 6
- Optional aluminum bottom available
- Large selection of optional lids



MUELLER Valves and Couplings used in these meter box assemblies are manufactured and tested in accordance with ANSI/AWWA C800. Components in contact with potable water will also comply with latest requirements of the Federal Safe Drinking Water Act.

8F-PVCBOXES/VAULTS

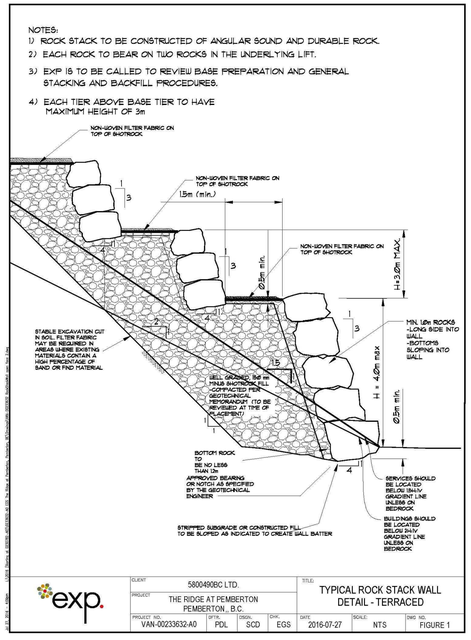


Village of PEMBERTON

19mm AND 25mm METER VAULT

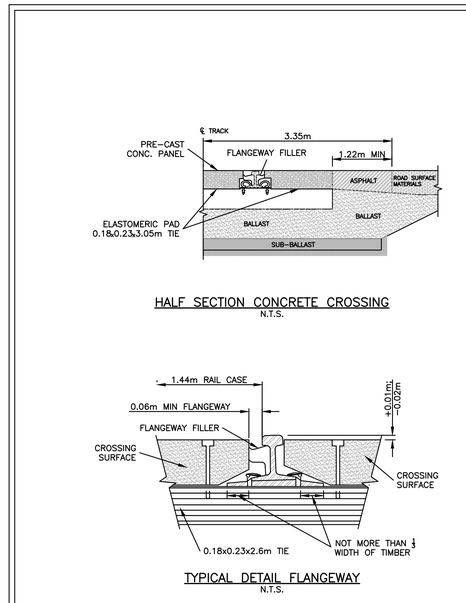
VILLAGE OF PEMBERTON
STANDARD WATER DRAWINGS

APPR.	DATE: NOV. 2011
SCALE: N.T.S.	DWG. NO: VOP–W11



exp.

CLIENT	5800490BC LTD.				TITLE	TYPICAL ROCK STACK WALL DETAIL - TERRACED		
PROJECT	THE RIDGE AT PEMBERTON PEMBERTON, B.C.							
PROJECT NO.	OFFICE	DSGN.	CHK.	DATE	SCALE	DWG NO.		
VAN-00233632-A0	PDL	SCD	EGS	2016-07-27	NTS	FIGURE 1		



CREUS
Engineering
Civil Engineers & Project Managers
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASEMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client: 580049 BC LTD.

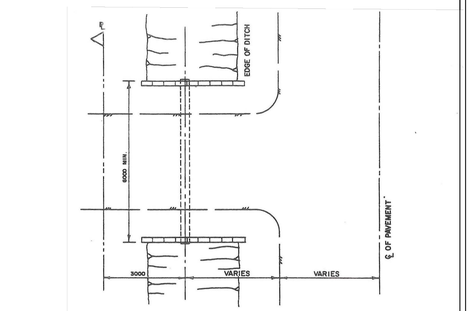
project: THE RIDGE AT PEMBERTON PHASE 1 PEMBERTON, BC

title: DETAILS

no.	(y/m/d)	revision	chk'd
19	18-02-06	PROJECT RECORDS OFFSITE	KBH
18	18-02-06	PROJECT RECORDS ONSITE	KBH
17	17-10-17	PROJECT RECORDS OFFSITE	KBH
16	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
15	17-02-27	ISSUED FOR CONSTRUCTION ONSITE	KBH
14	17-01-18	REISSUED FOR ADDENDA 1	KBH
13	16-11-09	REISSUED FOR CONSTRUCTION ONSITE	KBH
12	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH

current rev. #: 19

engineer of record: K.B.H.	scales: hor: - vert: -
designed by: N.G.B.	file no.: 16159
drawn by: A.A.P.	drawing no.: DET-3
date: 2016-05-13	



• ALL HEADWALLS TO BE TYPE A UNLESS SPECIFIED

BULKHEADING

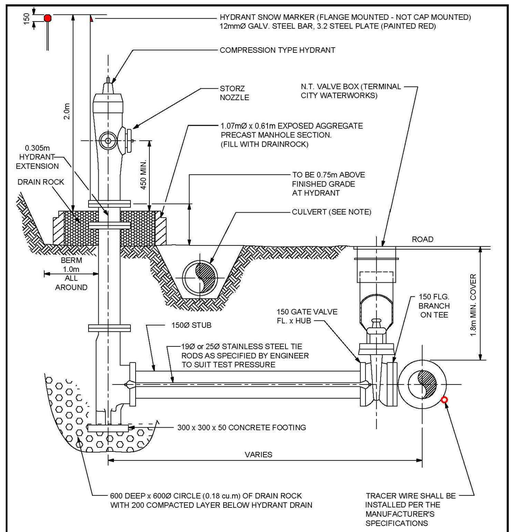
TYPE "A" JUTE SACKS FILLED WITH A WET CONCRETE MIX TO BE 28 MPa AT 28 DAYS. (TEMPORARY USE ONLY)

NOTES:

1. SPIGOT END OF CULVERT TO FACE DOWNSTREAM.
2. CULVERT DIAMETER AS SPECIFIED, MINIMUM 300 mm.
3. CONCRETE USED IN ALL TYPES OF BULKHEADS TO BE 28 MPa AT 28 DAYS.
4. REINFORCING BARS TO HAVE MINIMUM 50 mm COVER ON ALL SIDES AND ENDS.
5. MAXIMUM BULKHEAD HEIGHT 1200 mm.
6. FILL BETWEEN BULKHEADS WITH PIT RUN GRAVEL EXCEPT TOP 100 mm WHICH SHALL BE 20 mm CRUSH GRAVEL.
7. WALLS TO BE BATTERED AT 1 IN 12.
8. WALLS OVER 1.5 m HIGH MUST HAVE A DESIGN APPROVED BY THE DIR. OF ENGINEERING.

CULVERT HEADWALL TYPICAL DETAIL

N.T.S.



NOTES:

- CULVERT TO BE SIZED TO CARRY DITCH DESIGNED FLOWS. LENGTH 2.0m C/W CONCRETE HEADWALLS
- COMPACT BEDDING TO 95% MODIFIED PROCTOR
- FOR INSTALLATION OF VALVE BOX SEE RMOW STANDARD DWG W3
- APPLY AN APPROVED CORROSION PROTECTION SYSTEM TO ALL BURIED FERROUS FITTINGS, FLANGES, FASTENERS, ETC. SUCH AS "DENSO" PETROLATUM TAPE SYSTEM; INCLUDING PASTE, PROFILING MASTIC AND TAPE AS PER MANUFACTURER'S INSTRUCTIONS, OTHER CORROSION PROTECTION SYSTEMS MAY BE USED UPON APPROVAL OF THE RMOW.

APPROVED HYDRANTS:

- T.C.I.W. C-71P EXTENDED BODY COMPRESSION TYPE HYDRANT
- CANADA VALVE "CENTURY"
- CLOW CANADA "BRIGADIER M93"

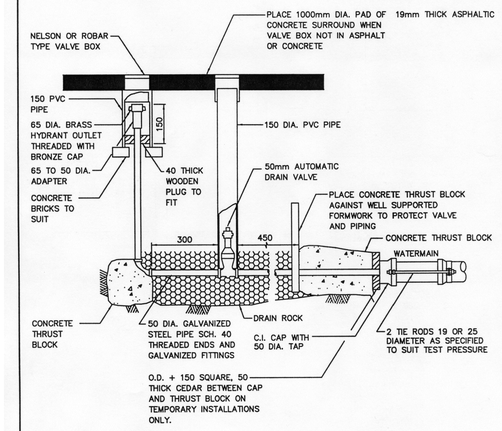
WHISTLER

RESORT MUNICIPALITY of WHISTLER

STANDARD HYDRANT ASSEMBLY

DRAWN BY: BL	DATE: APRIL 2016
SCALE: N.T.S.	DWG. NO.: W4

MMCD STANDARD DETAIL DRAWINGS

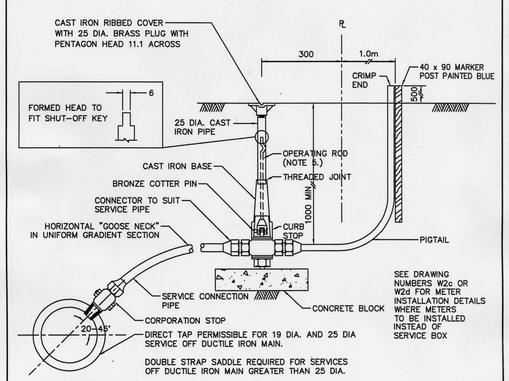


NOTE: 1. 20 MPa CONCRETE.
2. REFER TO CONTRACT DRAWINGS AND SECTION 02666 FOR DETAILED SPECIFICATIONS.

2001

BLOW–OFF FOR WATERMAIN — DRAWING NUMBER: **W8**

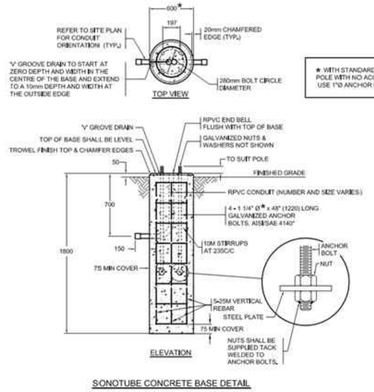
MMCD STANDARD DETAIL DRAWINGS



NOTE: 1. THIS DETAIL FOR SERVICES 19 TO 50mm ONLY.
2. PVC SADDLES TO SECTION 02666.
3. INSTALL SERVICE PIPE WITH "GOOSE NECK" IN HORIZONTAL POSITION.
4. WHEN CURB STOP INSTALLED IN DRIVEWAY PLACE COVER IN CHAMBER. MARK "WATER". SEE DRAWING S9 FOR TYPICAL DETAIL.
5. REFER TO CONTRACT DRAWINGS AND SECTION 02666 FOR DETAILED SPECIFICATIONS.
6. OPERATING ROD DIAMETERS:
   • 14mm FOR 25mm OR SMALLER CURB STOPS.
   • 19mm FOR 32mm TO 50mm CURB STOPS.

2001

WATER SERVICE CONNECTION – SERVICE BOX — DRAWING NUMBER: **W2a**

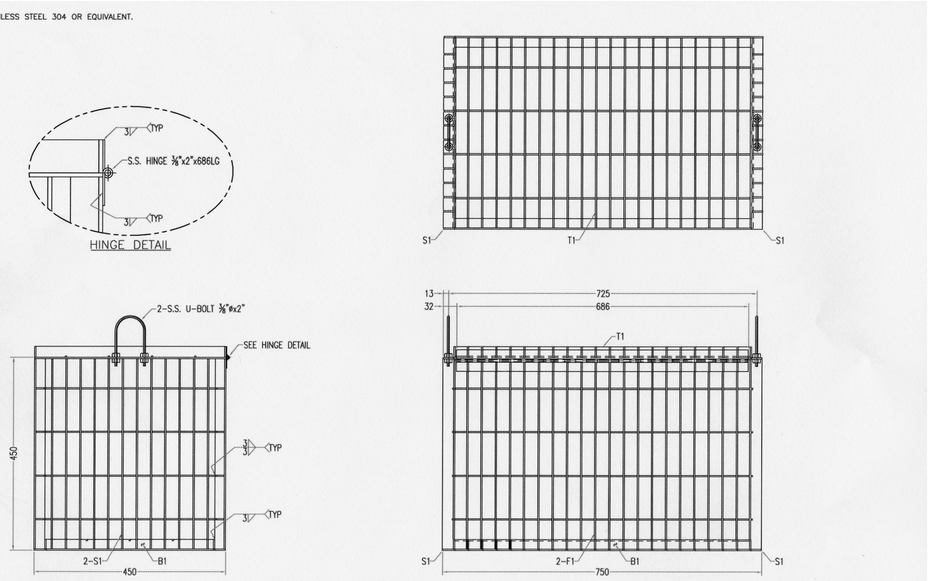


SONOTUBE CONCRETE BASE DETAIL

N.T.S.

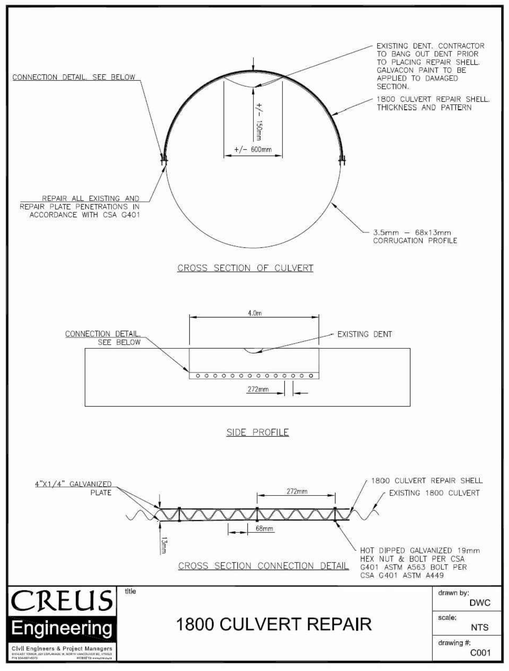
NOTES:
1. ALL MATERIAL TO BE STAINLESS STEEL 304 OR EQUIVALENT.
2. WELDING TO CSA W59–M

HARDWARE:
1–S.S. HINGE 3⅛"x2"x686LG.
2–S.S. U–BOLT



SODIUM THIOSULFATE CAGE

N.T.S.



CREUS Engineering — Civil Engineers & Project Managers

title: 1800 CULVERT REPAIR

drawn by:	DWC
scale:	NTS
drawing #:	C001

CREUS Engineering

Civil Engineers & Project Managers
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

SITE MAP

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE			
POWER POLE			
STREETLIGHT			

approved

client: 580049 BC LTD.

project: THE RIDGE AT PEMBERTON PHASE 1 PEMBERTON, BC

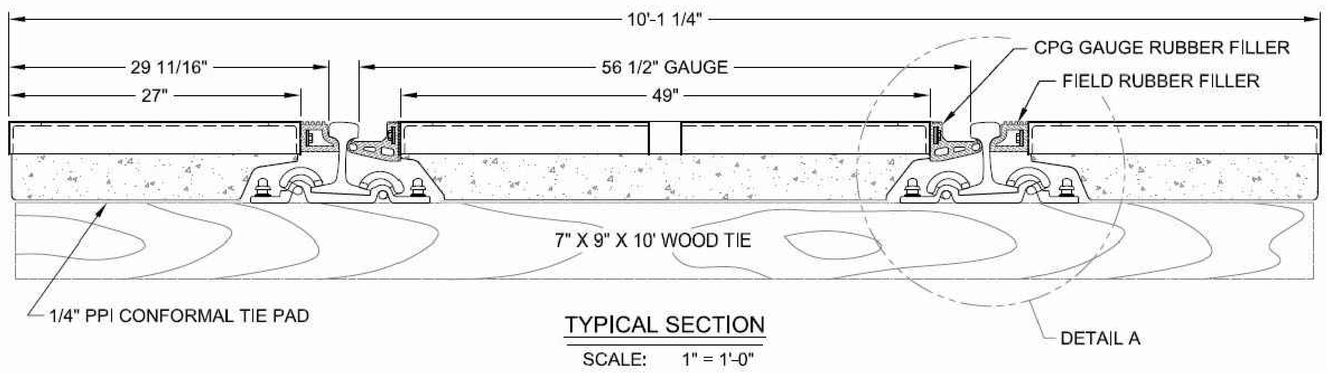
title: DETAILS

no.	(y/m/d)	revision	chk'd
13	18-02-06	PROJECT RECORDS OFFSITE	KBH
12	18-02-06	PROJECT RECORDS ONSITE	KBH
11	17-10-17	PROJECT RECORDS OFFSITE	KBH
10	17-03-07	REISSUED FOR CONSTRUCTION OFFSITE	KBH
9	17-02-27	ISSUED FOR CONSTRUCTION ONSITE	KBH
8	17-01-18	REVISED FOR ADDENDA 1	KBH
7	16-11-09	REISSUED FOR CONSTRUCTION ONSITE	KBH
6	16-11-09	REISSUED FOR CONSTRUCTION OFFSITE	KBH

current rev. #: 13

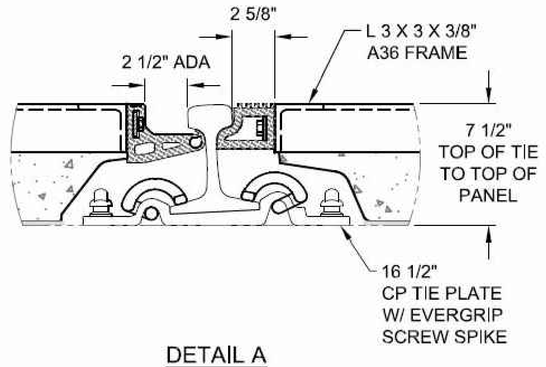
engineer of record: K.B.H.	scales: hor: - vert: -
designed by: N.G.B.	file no.: 16159
drawn by: M.S.T.	drawing no.: DET-6
date: 2016-05-13	

* CN SURFACE CROSSING TO BE COMPLETED



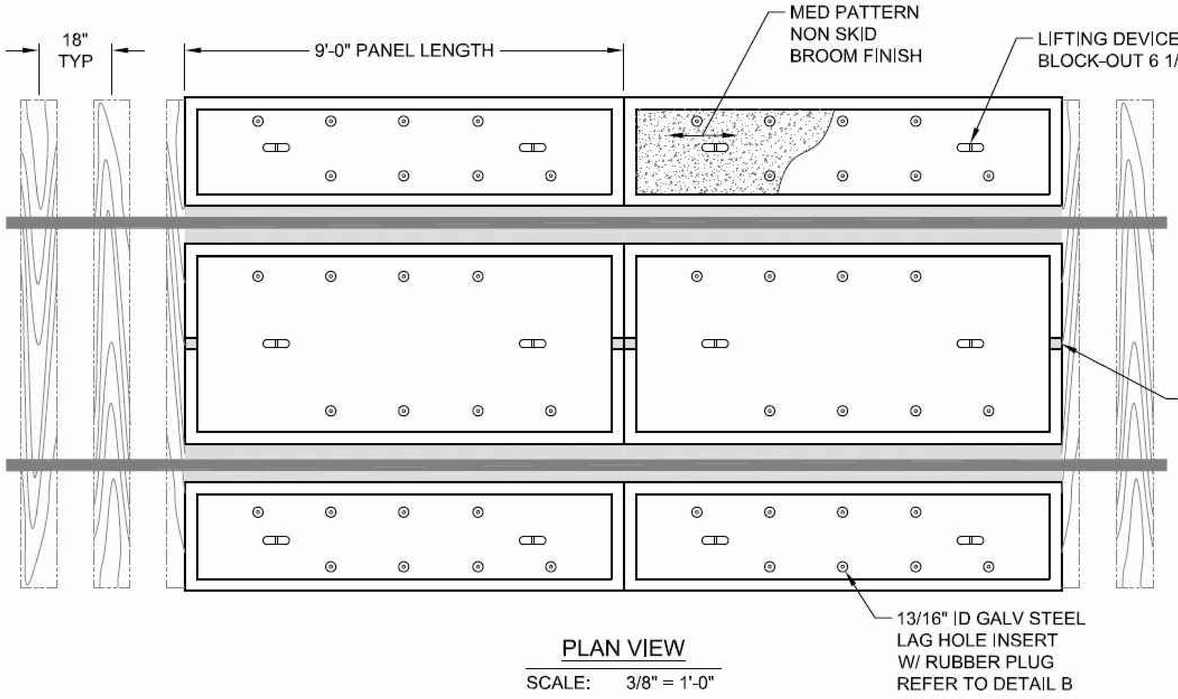
TYPICAL SECTION

SCALE: 1" = 1'-0"



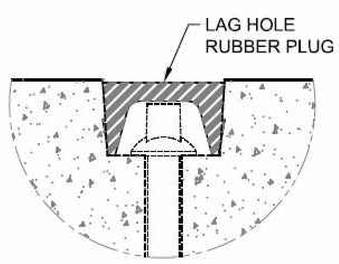
DETAIL A

SCALE: N.T.S.



PLAN VIEW

SCALE: 3/8" = 1'-0"



DETAIL B

SCALE: N.T.S.

NOTES:

1. CONCRETE STRENGTH 6000 psi MINIMUM AT 28 DAYS.
2. POLY FIBER REINFORCEMENT @ 2 LB. PER CU YD.
3. SEE OMEGA'S MANUAL FOR INSTALLATION INSTRUCTIONS
4. WEIGHTS: GAGE PANEL 3480 LBS, FIELD PANEL 1880 LBS

TOLERANCE: (UNLESS OTHERWISE SPECIFIED)
ALL LINEAR DIMENSIONS ARE ±1/8"
ALL ANGULAR DIMENSIONS ARE ±1 DEG
ALL HOLES ARE +1/16, -0"

DATE	REV	DESCRIPTION	INTL	CHK
1-11-12	01	RELEASED	VVK	

OMEGA INDUSTRIES, INC.
7304 N.E. ST. JOHNS RD VANCOUVER, WA 98665

CANADIAN RAIL STANDARD
9'-0" PRECAST CONCRETE PANELS ON 10' TIES
115# RAIL, GENERAL ARRANGEMENT

ENGINEER			
VK			
DATE: 1-11-12	SCALE: NOTED	DRAWN BY: VVK	
DRAWING #: 1004156	SHEET: 1 OF 1	REVISION: 01	

CREUS Engineering

Civil Engineers & Project Managers
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

SITE MAP

DRAWING LEGEND

approved

client: 580049 BC LTD.

project: THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

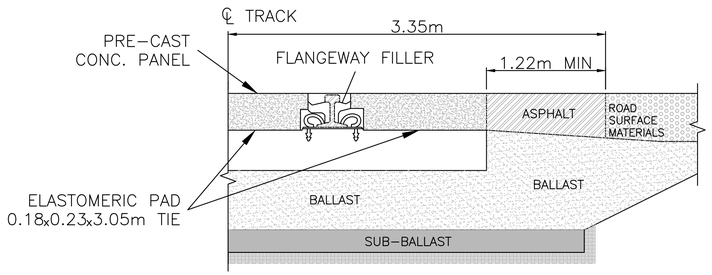
title: DETAILS

no.	(y/m/d)	revision	chk'd
2	18-02-06	PROJECT RECORDS OFFSITE	KBH
1	17-10-17	PROJECT RECORDS OFFSITE	KBH

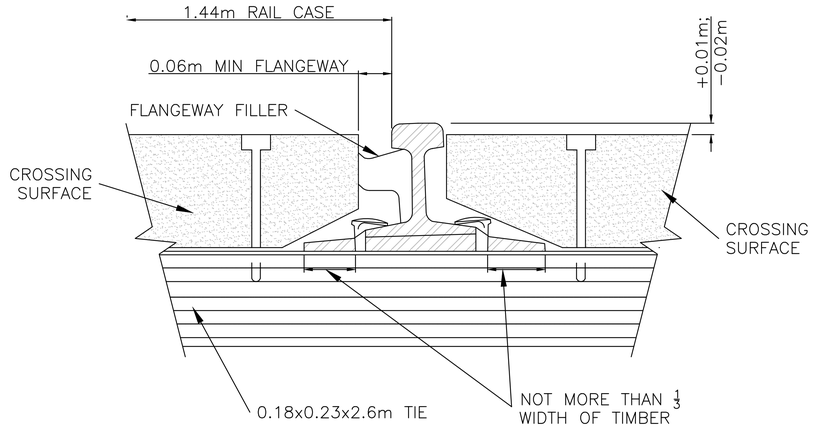
current rev. #: 2

engineer of record: K.B.H.
designed by: K.B.H.
drawn by: Z.M.
date: 2016-05-13

scales: hor: - vert: -
file no.: 16159
drawing no.: DET-10



HALF SECTION CONCRETE CROSSING
N.T.S.



TYPICAL DETAIL FLANGEWAY
N.T.S.

DRAWING LEGEND

	EXISTING	PROP.	TO BE REMOVED
LEGAL LINE			
EASMENT			
WATERMAIN			
SANITARY			
STORM			
HYDRO			
TEL			
STREETLIGHT			
GAS			

	EXISTING	PROP.	TO BE REMOVED
FIRE HYDRANT			
GATE VALVE			
AIR VALVE			
REDUCER			
INSPECTION CHAMBER			
CATCHBASIN (STD/SI)			
CAP			
MANHOLE	EX. MH	S1	S1
POWER POLE			
STREETLIGHT			

CREUS Engineering
Civil Engineers & Project Managers
SUITE 200-901 16TH ST WEST, NORTH VANCOUVER BC, V7P1R2
PH: 604-987-9070 WEBSITE: www.creus.ca

SITE MAP

DRAWING LEGEND

approved

client
580049 BC LTD.

project
THE RIDGE AT PEMBERTON
PHASE 1
PEMBERTON, BC

title
DETAILS

no.	(y/m/d)	revision	chk'd
2	18-02-06	PROJECT RECORDS OFFSITE	KBH
1	17-10-17	PROJECT RECORDS OFFSITE	KBH

current rev. #: 2

engineer of record: K.B.H.	scales: hor: - vert: -
designed by: K.B.H.	file no.: 16159
drawn by: Z.M.	drawing no.: DET-11
date: 2016-05-13	