CREUS

Engineering

Civil Engineers & Project Managers

#610 EAST TOWER - 221 ESPLANADE WEST, NORTH VANCOUVER BC, V7M3J3
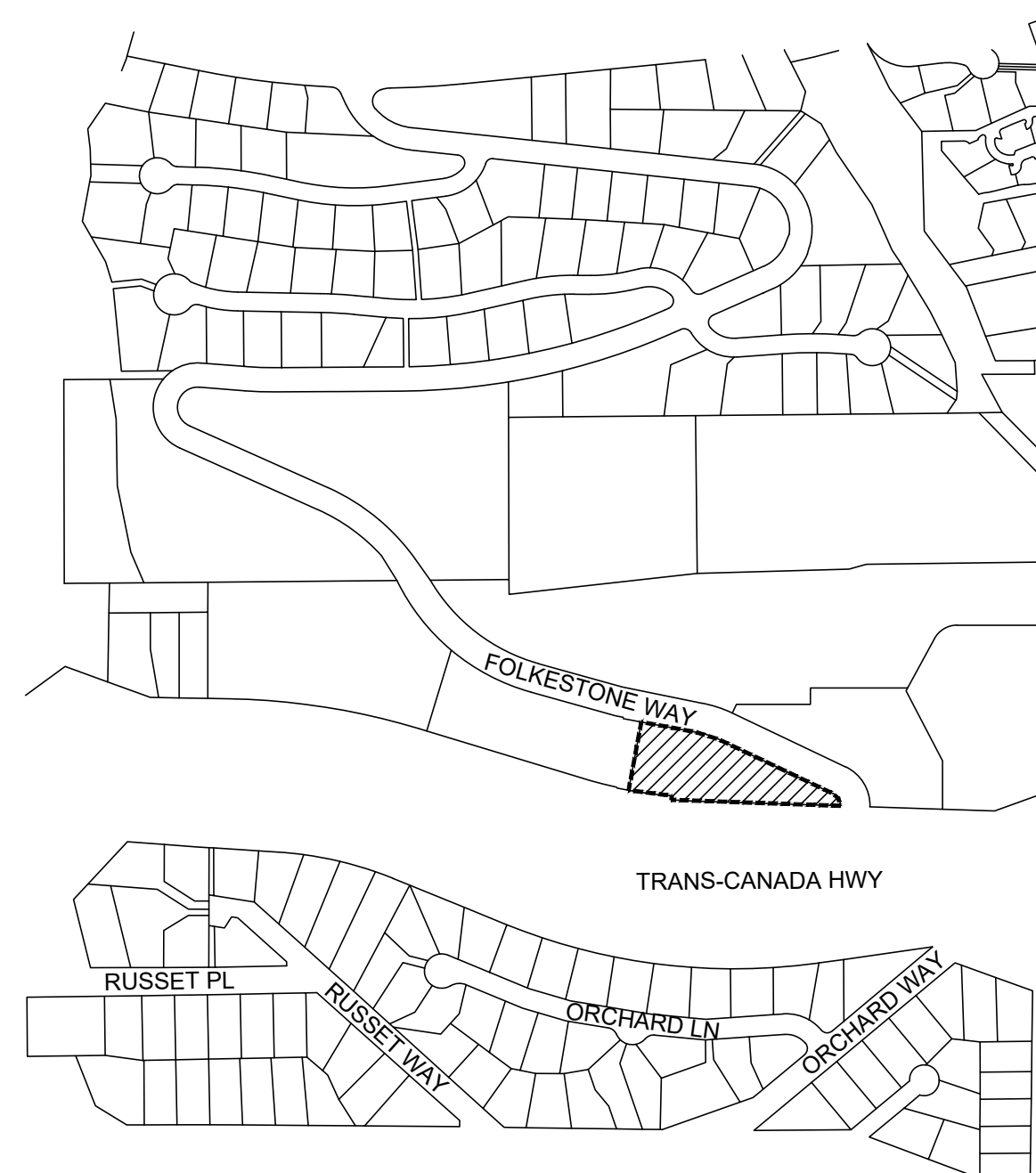PH: 604-987-9070   WEBSITE: www.creus.ca

PROJECT:

2229 FOLKESTONE WAY
WEST VANCOUVER, BC

CLIENT:

MGBA

SITE MAP
SCALE 1:5000

FOLKESTONE WAY

TRANS-CANADA HWY

RUSSET PL   RUSSET WAY   ORCHARD LN   ORCHARD WAY

2023-10-10
ISSUED FOR REZONING

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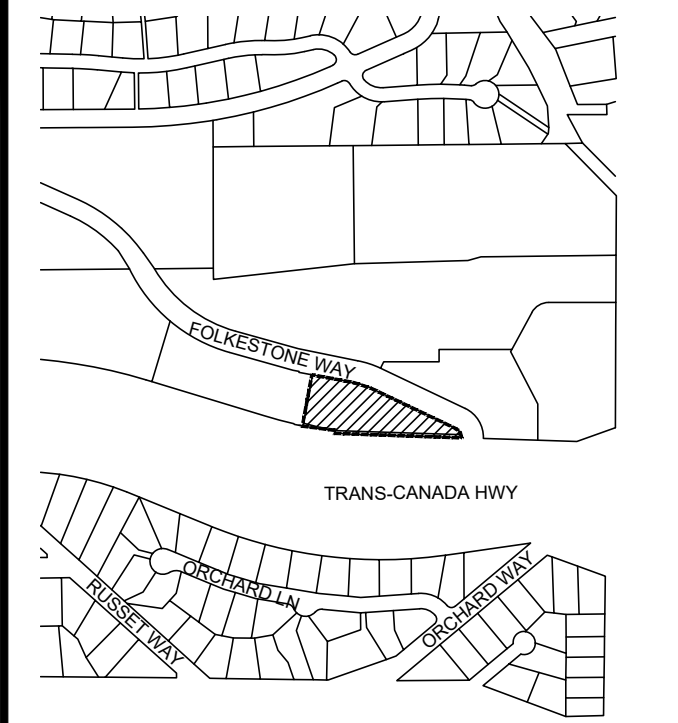PRIOR TO BEGINNING CONSTRUCTION

FOLKESTONE WAY

SEE DWG GRAD
FOR ONSITE GRADING

SEE DWG SERV
FOR SERVICING

SEE DWG SMP FOR
STORMWATER MANAGEMENT

SKILIFT ROAD

C R E U S
Engineering

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#610 EAST TOWER - 221 ESPLANADE WEST, NORTH VANCOUVER BC, V7M3J3
PH: 604-987-9070   WEBSITE: www.creus.ca

PERMIT TO PRACTICE # 1001543

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

MGBA

project

2229 FOLKESTONE WAY
WEST VANCOUVER, BC

title

KEY PLAN

LEGAL DESCRIPTION

LOT D; BLOCK 17; DL 783; PLAN 15565 GROUP 1

BENCHMARK INFORMATION

ELEVATIONS ARE METRIC, GEODETIC DATUM, AND DERIVED FROM OLD LEAD
PLUG LOCATED 5.47m NORTH OF THE NORTH WEST CORNER OF LOT D
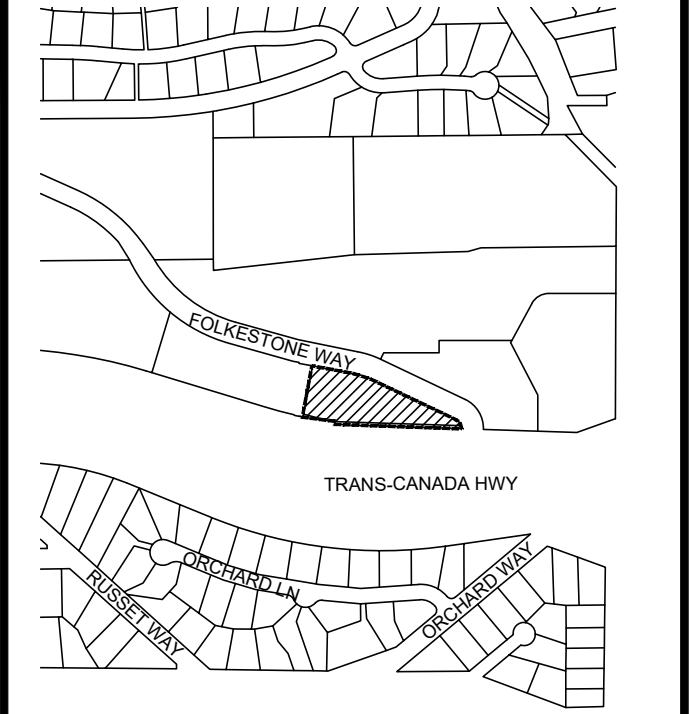EL: 205.08m (672.84')

GENERAL NOTES

1. ALL CONSTRUCTION MUST CONFORM TO THE DISTRICT OF WEST VANCOUVER & MMCD SPECIFICATIONS AND MUST PASS THE ENGINEER'S INSPECTION UPON COMPLETION OF EACH STAGE OF CONSTRUCTION.

2. ALL CONSTRUCTION WITHIN THE PROPERTY MUST CONFORM TO THE MUNICIPAL STANDARDS, MASTER MUNICIPAL SPECIFICATIONS, CURRENT B.C. BUILDING CODE, & B.C. PLUMBING CODE.

3. THE CONTRACTOR MUST NOTIFY ENGINEER THEN THE DISTRICT OF WEST VANCOUVER, 48 HOURS PRIOR TO STARTING CONSTRUCTION TO ESTABLISH AN INSPECTION SCHEDULE.

4. THE CONTRACTOR SHALL ENSURE THAT ALL APPROVALS REQUIRED FOR THE PROPOSED WORK HAVE BEEN OBTAINED PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION.

5. A PRE-CONSTRUCTION MEETING BETWEEN ENGINEER, THE CONTRACTOR, AND DISTRICT OF WEST VANCOUVER IS REQUIRED PRIOR TO COMMENCEMENT OF CONSTRUCTION.

6. CONTRACTOR TO PROVIDE EMERGENCY CONTACT LIST, INSURANCE AND SURETY DOCUMENTATION AND PROPOSED SCHEDULE OF WORK PRIOR TO PROCEEDING WITH WORKS.

7. 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.

8. 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, TERASEN WORKS TO SATISFACTION OF THE TERASEN 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. CONTRACTOR TO GIVE TIMELY NOTICE TO RELEVANT INSPECTOR TO ALLOW FOR INSPECTION ON WORKS AND UPDATE ENGINEER ON SAME.

9. 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 NOTICE ON ALL TESTING. COPIES OF TESTS TO BE FORWARDED DIRECTLY BY THE TESTING FIRM TO ENGINEER AND GEOTECHNICAL ENGINEER BY EMAIL.

10. 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.

11. 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 AN OTHER 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).

12. LOCATIONS OF EXISTING UNDERGROUND SERVICES HAVE BEEN DETERMINED FROM UTILITY AS-CONSTRUCTED DRAWINGS. 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.

13. THE CONTRACTOR SHALL USE EXTREME CARE WHEN WORKING NEAR EXISTING SERVICES AND ANY SERVICES DISTURBED ARE TO BE REPLACED TO THE SATISFACTION OF DWV, THE ENGINEER AND/OR APPROPRIATE UTILITY CORPORATION.

14. 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, AND ALL APPURTENANCES. SEE SUPPLEMENTAL SPECIFICATION FOR DETAILS.

15. WHEN NO IMPROVEMENTS ARE PROPOSED UNDER THIS CONTRACT, THE EXISTING SECTION(S) OF ROADWAY SHALL BE KEPT CLEAN AND CLEAR FOR THE DURATION OF CONSTRUCTION AND LEFT IN SAME CONDITION AS PRIOR TO CONSTRUCTION.

16. TRAFFIC CONTROL PER THE MINISTRY OF TRANSPORTATION 'TRAFFIC MANUAL FOR WORK ON ROADWAYS' AND AS PER THE TRANSPORTATION ASSOCIATION OF CANDA 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES'. CONTRACTOR TO SUBMIT PLAN FOR TRAFFIC MANAGEMENT FOR APPROVAL AND RECEIVE SAME PRIOR TO PROCEEDING WITH WORKS.

17. VEHICULAR ACCESS TO EXISTING DWELLINGS TO BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF THE CONTRACT.

18. 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 REGULATROY AUTHORITY OBTAINED AND FORWARDED TO ENGINEER. CONTRACTOR TO PROVIDE REQUIRED NOTICES.

19. RESIDENTS 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.

20. 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.

21. 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".

22. FOR BC HYDRO, TELUS, AND TERASEN INSTALLATION, SEE APPROPRIATE UTILITY COMPANY DRAWINGS AND SPECIFICATIONS.

23. UPON COMPLETION OF WORKS, OWNER MUST CONDUCT CCTV TEST TO ENSURE NO CROSS CONNECTIONS & CONDITION OF PIPES. A COPY OF THE REPORT IS TO BE FORWARDED TO THE DISTRICT OF WEST VANCOUVER UTILITIES.

24. SEE LANDSCAPE DRAWINGS FOR PLANTING DETAILS.

25. SEE ELECTRICAL DRAWINGS FOR STREETLIGHTING PLANS.

no.	(y/m/d)	revision	chk'd
3	23/10/10	ISSUED FOR REZONING	AFG
2	23/04/11	REVISED PER DWV COMMENTS	AFG
1	22/07/21	ISSUED FOR REZONING	AFG

engineer of record	FMC	scales	hor: 1:300 vert:
designed by	AFG	file no.	
drawn by	AFG		21263
date	21-07-09	drawing no.	KEY

Current Rev. #
3

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PERMIT TO PRACTICE # 1001543

SITE MAP

FOLKESTONE WAY

TRANS-CANADA HWY

PROPOSED WATER SERVICE

PROPOSED SANITARY SERVICE

PROPOSED STORM SERVICE

SKILIFT ROAD

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)			
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2229 FOLKESTONE WAY
WEST VANCOUVER, BC
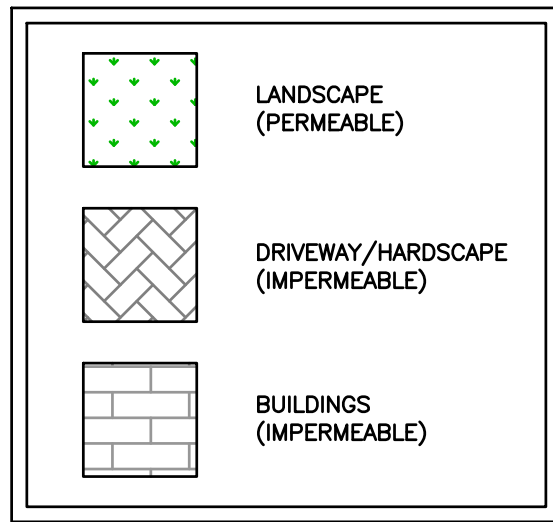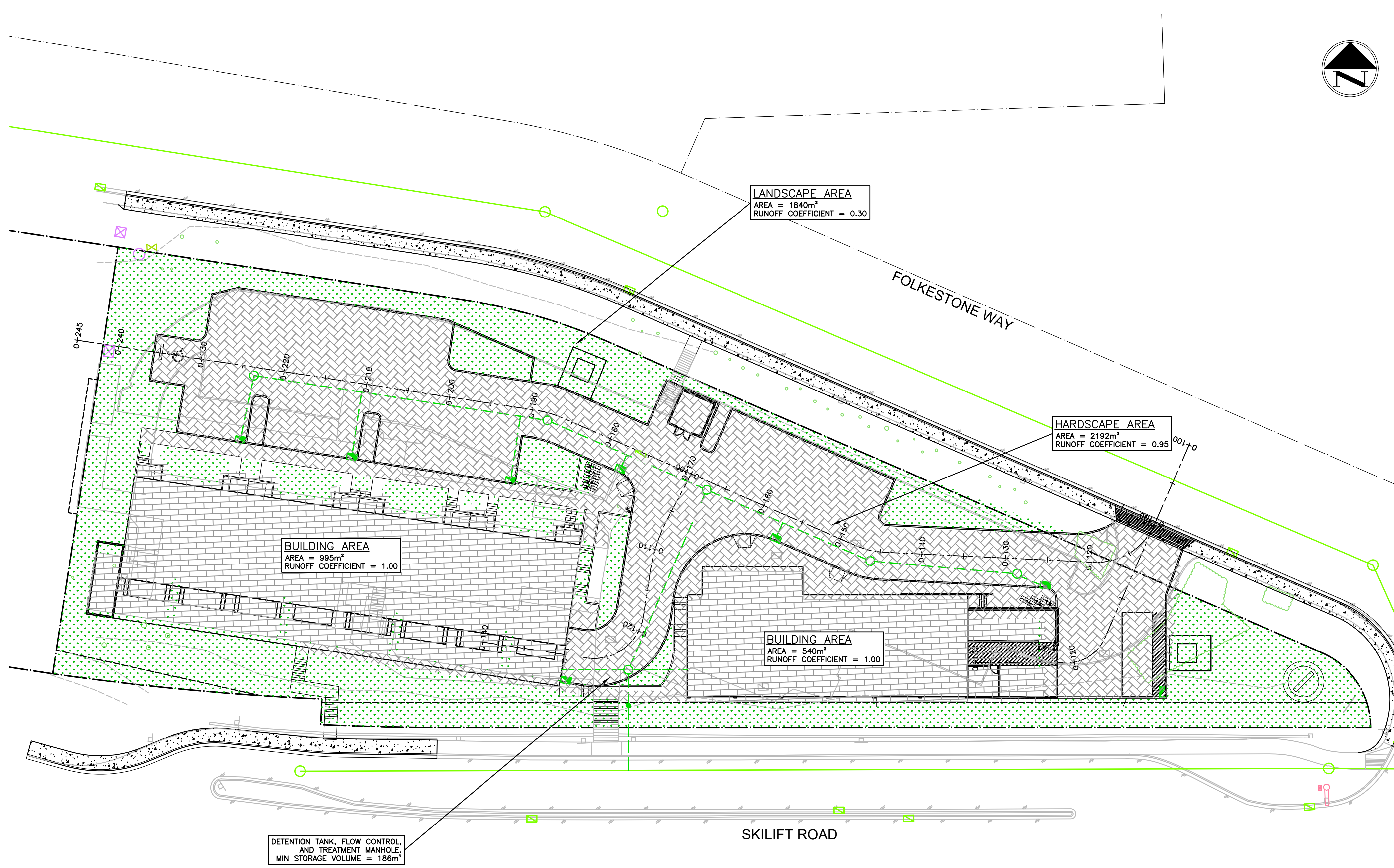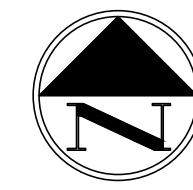
title

SERVICING PLAN

WATERWORKS NOTES

1. VALVES AND HYDRANTS OF EXISTING SYSTEM TO NOT BE OPERATED WITHOUT THE PERMISSION OF THE ENGINEER AND WATER UTILITY.

2. THE DISTRICT OF WEST VANCOUVER SHALL MAKE TIE-IN(S) TO THE EXISTING WATERMAIN(S) AT THE COST OF THE DEVELOPER. THE CONTRACTOR SHALL GIVE THE CITY & ENGINEER 72 HOURS NOTICE PRIOR TO TIE IN.

3. ALL WATERMAIN PIPING TO BE DUCTILE IRON (D.I.) WATERMAIN CLASS 50 TO AWWA C151, CEMENT MORTAR LINED TO AWWA C104, UNLESS NOTED OTHERWISE. TYTON JOINTS TO AWWA C111 AND ASTM D313.9 & GASKET TO ASTM F377.

4. TYTON JOINTS TO AWWA C111 AND ASTM D313.9 & GASKET TO ASTM F477.

5. TESTING OF THE WATERMAIN TO BE COMPLETED BY THE CONTRACTOR AS NOTED IN THE CONSTRUCTION SPECIFICATIONS & MMCD (LATEST EDITION). ENGINEER & REGULATORY AUTHORITY MUST BE NOTIFIED 48 HOURS IN ADVANCE OF ANY TESTING.

6. ALL WORKS TO BE PER MMCD, MUNICIPAL REQUIREMENTS, CONTRACT DOCUMENTS AND ALSO THE BCBC WITHIN PROPERTY LIMITS.

7. HYDRANTS TO BE TERMINAL CITY NO. 20P & SURROUNDED BY 1.0m RADIUS ASPHALT APRON. HYDRANTS TO BE PAINTED WHITE WITH RED BONNET & CAP. HYDRANT PUMPER PORT TO BE 0.50m TO 1.0m ABOVE FINISHED GRADE. HYDRANT BODY TO BE INSTALLED 150mm ABOVE FINISHED GRADE.

8. SERVICE CONNECTIONS UP TO 50MM TO PROPERTY LINE TO BE TYPE K ANNEALED COPPER TO ASTM B88M AND SIZED AS SPECIFIED. SERVICE CONNECTIONS C/W WATER METER (50mm SERVICE/38mm METER OR 38mm SERVICE/25mm METER) & CHAMBER TO BE INSTALLED BY DISTRICT OF WEST VANCOUVER CREWS AT THE DEVELOPER'S COST. CONTRACTOR TO ENSURE THE CONNECTION AND METER ARE INSTALLED IN ACCORDANCE WITH THE DRAWINGS AND PROVIDE DISTRICT CREWS WITH FINAL GRADES. SERVICE AS PER DWV STD DWG WW-2A.

9. SERVICE CONNECTIONS UPTO 50mm FROM THE PROPERTY LINE TO THE BUILDING TO BE POLYBUTYLENE TO AWWA C902 CLASS 160, POLYETHYLENE TO AWWA C901, PRESSURE CLASS TUBING TO CSA B137.1 OR ENGINEER APPROVED ALTERNATIVE UNLESS SPECIFIED OTHERWISE.

10. ALL FITTINGS TO BE DUCTILE IRON TO AWWA C110 OR C153, CEMENT MORTAR LINED TO AWWA C104, TYTON JOINTS TO AWWA C111, WITH CLOSED LUGS.

11. 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.

12. DURING CONSTRUCTION AND AT ANY TIME PRIOR TO ACCEPTANCE AND PRESSURIZING OF MAINS, THE CONTRACTOR SHALL PLACE A 0.3m SQUARE 20mm SHEET OF PLYWOOD OVER THE PUMPER NOZZLE OF THE HYDRANT TO INDICATE THE HYDRANT IS NOT IN USE.

13. 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.

14. WHERE SEWER MAIN CROSSES WATERMAIN AND CLEARANCE IS LESS THAN 0.5m, THE UPPER PIPE SHALL BE CONCRETE ENCASED PER MMCD STD. DWG. G6.

15. WHERE WATERMAIN PIPE GRADE EXCEEDS 15% PIPE TO BE ANCHORED AS PER MMCD STD DWG G8. JOINT RESTRAINTS TO MMCD SPECIFICATION SECTION 02666 TO BE INSTALLED WHERE GRADE EXCEEDS 20%.

16. PIPE BEDDING TO CONFORM WITH MMCD STANDARDS. SEE MMCD STD. DWG G4 AND BE COMPACTED TO 95% MODIFIED PROCTOR PRIOR TO BACKFILLING TRENCH.

17. 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.

18. CONTRACTOR SHALL MAKE TIE-IN(S) TO EXISTING WATERMAIN(S) UNDER SUPERVISION OF ENGINEER. CONTRACTOR TO ADVISE ENGINEER 48 HOURS PRIOR TO TIE-IN.

19. INSTALLATION, TESTING AND CHLORINATING TO BE PERFORMED IN ACCORDANCE WITH C.N.V., MMCD CONSTRUCTION SPECIFICATIONS, AWWA C600 AND AWWA C651. ENGINEER AND DWV TO BE GIVEN 48 HOURS NOTICE PRIOR TO TESTING AND CONTRACTOR TO INSURE TESTING IS COMPLETED IN THE PRESENCE OF THE ENGINEER.

20. MINIMUM COVER ON WATERMAIN = 1.0m.

21. THRUST BLOCKS AS PER MMCD STD DWG W1.

22. SERVICE CONNECTIONS AS PER MMCD STD DWG W2A.

23. BLOW OFF AND AIR VALVES AS PER MMCD STD DWGS W6 AND W8.

24. PIPE BEDDING TO CONFORM WITH MMCD STANDARDS. SEE MMCD STD. DWG G4 AND BE COMPACTED TO 95% MODIFIED PROCTOR PRIOR TO BACKFILLING TRENCH.

25. COVERS FOR INSPECTION CHAMBERS, VALVE RISERS AND METER CHAMBERS LOCATED WITHIN DRIVEWAYS SHALL BE SUITABLE FOR TRAVELLED LOADING.

26. SITE SERVICING WORKS TO COMMENCE ONLY AFTER OFFSITE SERVICE CONNECTION HAS BEEN INSTALLED & VERIFIED.

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 AND CB LEADS 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. 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.

4. STORM SERVICES TO BE MINIMUM SDR28 P.V.C. 150mm MIN C/W INSPECTION CHAMBER AT PROPERTY LINE AS PER MMCD STD. DWG S7

5. SANITARY SERVICES TO BE MINIMUM SDR28 P.V.C. 100mm MIN c/w INSPECTION CHAMBER AT PROPERTY LINE AS PER MMCD STD. DWG S7

6. CATCH BASIN RIMS TO BE SET 25mm BELOW GUTTER LINE ELEVATION.

7. TESTING OF SEWERS TO BE PERFORMED IN THE PRESENCE OF ENGINEER INSPECTORS. 48 HOURS PRIOR NOTICE REQUIRED.

8. ALL SEWERS TO BE T.V. CAMERA INSPECTED. T.V. CAMERA INSPECTION TO BE ARRANGED AND PAID FOR BY THE CONTRACTOR.

9. ALL SEWER SERVICE CONNECTIONS ENTERING MANHOLES TO HAVE INVERT ELEVATION AT CROWN ELEVATION OF DOWNSTREAM SEWER OUTLET EXCEPT WHERE NOTED OTHERWISE.

10. WHERE SANITARY PIPE GRADE EXCEEDS 15%, PIPE TO BE ANCHORED AS PER MMCD STD. DWG G8.

11. MINIMUM GRADE ON SERVICE CONNECTIONS TO BE 2%, UNLESS NOTED OTHERWISE. SERVICE CONNECTIONS AS PER MMCD STD. DWG S7 AND S8.

12. PIPE BEDDING TO CONFORM WITH MMCD STANDARDS. SEE MMCD STD. DWG G4 AND BE COMPACTED TO 95% MODIFIED PROCTOR PRIOR TO BACKFILLING TRENCH.

13. ALL MANHOLES TO BE TO MMCD STD DWG S1, MINIMUM 1050 UNLESS OTHERWISE NOTED.

14. 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.

15. SERVICE CONNECTIONS TO BE MARKED WITH A 40mm x 90mm POST PAINTED RED FOR SANTIARY AND GREEN FOR STORM AT TERMINATION. SERVICES TO BE TERMINATED 1m BEYOND THE PROPERTY LINE, UNLESS OTHERWISE NOTED.

16. MIN. COVER FOR SANITARY = 1.5m UNDER TRAVELED AREAS AND 1.0m UNDER NON-TRAVELED AREAS.

17. SITE SERVICING WORKS TO COMMENCE ONLY AFTER OFFSITE SERVICE CONNECTION HAS BEEN INSTALLED & VERIFIED.

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current Rev. # **3**

engineer of record	scales	
FMC	hor: 1:250 vert:	
designed by	file no.	
AFG		
drawn by	**21263**	
AFG	drawing no.	
date		
21-07-09	**SERV**	

Site Plan Labels

LANDSCAPE AREA
AREA = 1840m²
RUNOFF COEFFICIENT = 0.30

HARDSCAPE AREA
AREA = 2192m²
RUNOFF COEFFICIENT = 0.95

BUILDING AREA
AREA = 995m²
RUNOFF COEFFICIENT = 1.00

BUILDING AREA
AREA = 540m²
RUNOFF COEFFICIENT = 1.00

DETENTION TANK, FLOW CONTROL,
AND TREATMENT MANHOLE,
MIN STORAGE VOLUME = 186m³

FOLKESTONE WAY

SKILIFT ROAD

Legend

- LANDSCAPE (PERMEABLE)
- DRIVEWAY/HARDSCAPE (IMPERMEABLE)
- BUILDINGS (IMPERMEABLE)

CREUS Engineering Ltd
Civil Engineers

SMP Calculations

Project: Salmon House - 2229 Folkestone Way	File: 21263
Subject: Stormwater Management Plan	Date: 8/Dec/22
Section: SMP Source Control Calculations	By: RJL

Objectives
1) Infiltrate or reuse the first 50mm of rainfall on impervious surfaces and the first 72mm of rainfall on pervious surfaces
2) Treat the first 35mm of rain in 24 hours from all vehicle accessible impervious surfaces
3) Limit Runoff from the 1:10 Year Storm Event to Pre-Development Levels

Site Elevation	=	100m - 400m
Correction Factor	=	1.43
Soil Description	=	Sandy Loam
Infiltration Rate	=	25.0 mm/hr (Assumed)
Tank Type	=	Infiltration
Tank System	=	Online
Pipe Size	=	150 mm

Pre-Development Catchment Area

	Area	C Value
Roof Area (Impervious)	1065 m²	1.00
Hardscape Area (Impervious)	2274 m²	0.95
Landscape Area (Impervious)	2228 m²	0.65
Pavers Area (Pervious)	0 m²	0.50
Green Roof Area (Pervious)	0 m²	0.50
Natural Woodlands (Pervious)	0 m²	0.20
Total Area	**5567 m²**	**0.84**

Post-Development Catchment Area

	Area	C Value	% Controlled
Roof Area (Impervious)	1535 m²	1.00	100%
Hardscape Area (Impervious)	400 m²	0.95	100%
Hardscape Area (Impervious) - Travelled	1790 m²	0.95	100%
Landscape Area (Pervious)	1840 m²	0.30	0%
Green Roof Area (Pervious)	0 m²	0.50	100%
Natural Woodlands (Pervious)	0 m²	0.20	100%
Total	**5567 m²**	**0.75**	

Volumetric Capture Volume

Capture Criteria = Infiltrate or reuse the first 50mm of rainfall on impervious surfaces and the first 72mm of rainfall on pervious surfaces

Rainfall Capture Required - Impervious Area	=	50 mm
Impervious Area		
Impervious Area	=	3727 m²
Storage Volume Required	=	186 m³
Infiltration Tank		
% of Impervious Directed	=	100%
Required Volumetric Capture	=	186 m³
Infiltration Footprint	=	163 m² (Tank Base + 300mm Drain Rock Side Fill)
Infiltration Provided (24 hours)	=	98 m³
Volumetric Storage Required	=	88 m³
Total Volumetric Capture Provided	=	**186 m³**

Pervious Area		
Rainfall Capture Required - Pervious Area	=	72 mm
Landscape Area		
Landscape Area	=	1840 m²
Storage Volume Required	=	132 m³
Hardscape Directed to Landscape	=	0 m²
I/P Ratio	=	0 : 1 <2:1 OK
Landscape Water Holding Capacity	=	0.20
Minimum Soil Depth	=	0.36 m
Water That Falls on Lanscape is Captured and Stored by Landscape		

Water Quality Treatment

Criteria = Treat the first 35mm of rain in 24 hours form all vehicle-accessible impervious surfaces

Area Treated by Infiltration Tank	=	1960 m²	Total Treated Area =	1960 m²
Area Treated by Rain Garden	=	0 m²	Required Treatment Area =	1790 m²

6h Pre-Development Release Rate

Area of Site	=	5567 m²
Site C Value	=	0.84
Max Release Rate #1	=	26.13 l/s

Max Release Rate per DWV Section 4.3

Max Release for Any Site	=	31.80 L/s/ha
Max Release Rate #2	=	17.70 l/s

Release Rate from Site

6h Post Dev Release Rate (No Orifice)	=	23.31 l/s
Maximum Allowed Release Rate	=	17.70 l/s (Minimum of Release Rate 1 & 2)
% Difference (Increase)	=	24% >10% Detention Storage Required

Uncontrolled Release Rate

Uncontrolled Area	=	1840 m²
Uncontrolled C Value	=	0.30
Uncontrolled Release Rate	=	3.09 l/s
Release Rate From Site	=	**19.47 l/s** (110% Max Allowed Release Rate)

Orifice Sizing (Detention Storage)

Max Head	=	0.71 m
Orifice Ø	=	96 mm
Flow Out of Orifice	=	16.39 l/s (Release Rate - Uncontrolled Rate)

Detention Storage Volume

1-HOUR	2-HOUR	4-HOUR	6-HOUR
Detention Storage (m³)	Detention Storage (m³)	Detention Storage (m³)	Detention Storage (m³)
42.83	93.67	72.30	27.94

Detention Storage Volume Required = 93.67 m³
Design Storm = 2 Hour Storm

Infiltration Tank

Storage Tank Depth	=	0.91 m	1 modules
Storage Tank Width	=	5.33 m	10 modules
Storage Tank Length	=	23.47 m	22 modules
Void Space	=	0.20 m	
Detention Storage Tank Depth	=	0.71 m	
Tank Porosity	=	95%	
Tank Storage Volume	=	84.87 m³	
Infiltration Volume Provided	=	97.99 m³	
Total Volume Provided	=	**182.86 m³**	

Detention Storage Volume Provided	=	182.86 m³	
Detention Storage Volume Required (Including Volumetric Storage)	=	182.02 m³	OK
Max Allowed Detention Release Rate	=	16.39 l/s	
Max Release Rate from Tank	=	16.39 l/s	OK

Vertical column labels: OBJECTIVES | ELEVATION & SITE INFORMATION | PRE & POST AREAS | IMPERVIOUS CAPTURE TARGET | VOLUMETRIC INFILTRATION REQUIREMENT | PERVIOUS CAPTURE TARGET | WATER QUALITY | RELEASE RATE | DETENTION STORAGE REQUIRED | ORIFICE SIZING | INFILTRATION TANK SIZE | SUMMARY
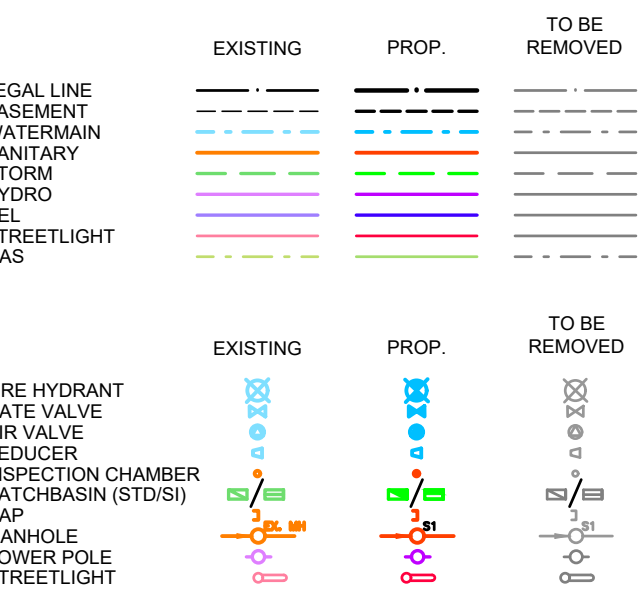

CREUS Engineering
Civil Engineers & Project Managers
#610 EAST TOWER - 221 ESPLANADE WEST, NORTH VANCOUVER BC, V7M3J3
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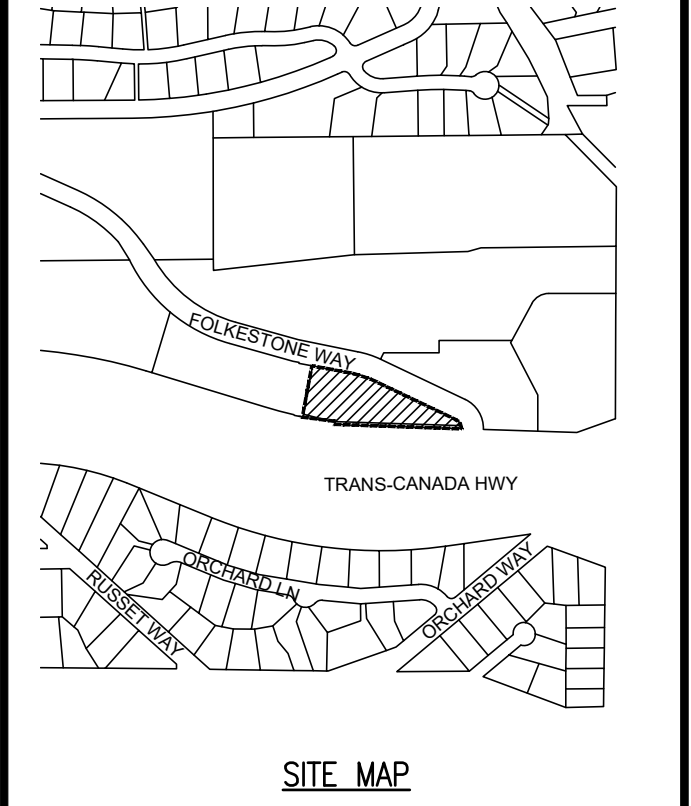
PERMIT TO PRACTICE # 1001543

SITE MAP

FOLKESTONE WAY
TRANS-CANADA HWY

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			
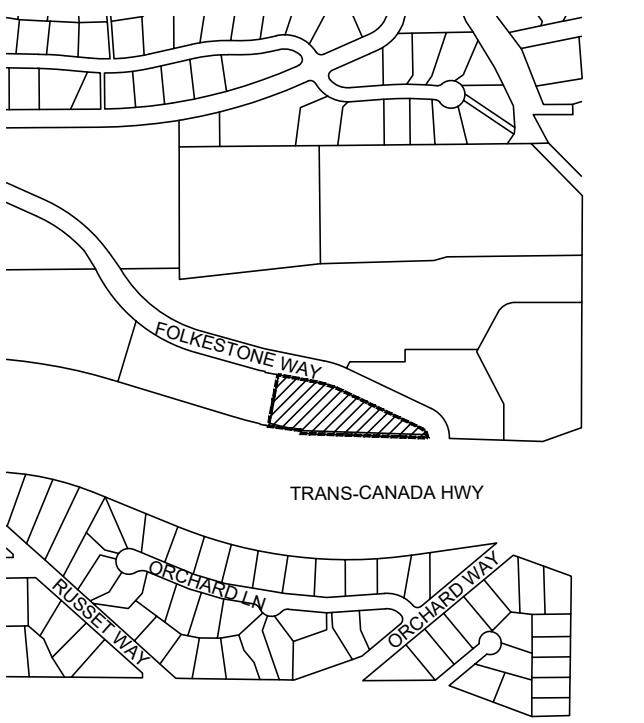
approved

client
MGBA

project
**2229 FOLKESTONE WAY
WEST VANCOUVER, BC**

title
STORMWATER MANAGEMENT

no.	(y/m/d)	revision	chk'd
3	23/10/10	ISSUED FOR REZONING	AFG
2	23/04/11	REVISED PER DWV COMMENTS	AFG
1	22/07/21	ISSUED FOR REZONING	AFG

engineer of record FMC	scales hor: 1:300 vert:		
designed by AFG	file no. 21263		
drawn by AFG	drawing no.		
date 21-07-09	SMP		

current rev. # **3**

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

MGBA

project

2229 FOLKESTONE WAY
WEST VANCOUVER, BC

title

GRADING PLAN

no.	(y/m/d)	revision	chk'd
3	23/10/10	ISSUED FOR REZONING	AFG
2	23/04/11	REVISED PER DWV COMMENTS	AFG
1	22/07/21	ISSUED FOR REZONING	AFG

engineer of record	FMC	scales	
designed by	AFG	hor: 1:250	vert:
drawn by	AFG	file no. 21263	
date	21-07-09	drawing no. GRAD-1	

Current Rev. 3

FOLKESTONE WAY

SKILIFT ROAD

TRANS-CANADA HWY

EXISTING PARKING LOT EXTENTS

REMOVE EXISTING CURB AND INSTALL NEW CONCRETE BARRIER CURB AND GUTTER AS PER MMCD STD DWG C5

REMOVE EXISTING SIDEWALK AND INSTALL NEW 1.8m WIDE CONCRETE SIDEWALK

PARKADE ENTRANCE

LOADING EL: 192.64

TIE INTO EXISTING CURB AND SIDEWALK AT NEAREST CONTROL JOINT

INSTALL NEW 1.8m WIDE CONCRETE SIDEWALK

INSTALL NEW CONCRETE CURB AND GUTTER AS PER MMCD STD DWG C5

1.80m SIDEWALK

EX 1.8m SIDEWALK

FINISHED GRADE

EX. GROUND

PVI STA. 0+235.63   PVI EL: 197.93
PVI STA. 0+190.82   PVI EL: 195.92
PVI STA. 0+177.21   PVI EL: 194.96
PVI STA. 0+140.00   PVI EL: 193.85
PVI STA. 0+110.00   PVI EL: 192.57

4.50%
7.00%
3.00%
4.25%