REPORT

ESQUIMALT MIXED USE

STORMWATER MANAGEMENT TECHNICAL MEMORANDUM

Township of Esquimalt

Presented to:

Bill Brown and Alex Tang
Development Services – Township of Esquimalt

Richard Syrett
Engineering Services – Township of Esquimalt

Report No. 130400067-SWM April 14, 2025

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1. INTRODUCTION

Stantec Consulting Ltd. (Stantec), formerly Morrison Hershfield, has been retained by Nelson Esquimalt Developments Ltd. to design the municipal site servicing for the Nelson Street multi-family residential site. These site services include the provision of stormwater management according to the Community Plan for the Township of Esquimalt. This Plan contains Development Permit Area No. 8 for the purpose of water conservation, which recommends providing stormwater retention for the first 3 cm of a rainfall event onsite. This requirement is intended to recharge ground water, attenuate runoff, and capture contaminants. Engineering Services has also expressed a requirement to achieve a stormwater release rate that does not exceed existing conditions (supported by Subdivision and Development Control Bylaw 2175 Schedule 'B', Regional Specification S/D 1, clause 3.03).

Due to the limitations of the site and grading, the site is not able to achieve the full 3 cm retention volume in the landscaping. Further, with the installation of a parkade structure over most of the site, there is little opportunity for infiltration. This Technical Memorandum (Memo) outlines the measures used to obtain stormwater retention and provides calculations for the anticipated stormwater release in a 1:100-year event.

The site is located at 602 Nelson Street in the Township of Esquimalt, British Colombia. The existing site consists of three duplex-style homes, some single-family homes, and a fourplex. All existing structures shall be demolished to make way for the proposed 6-storey apartment-style residential tower and parkade. The surrounding neighbourhood and roads are fully developed, and there is an existing stormwater main in Nelson Street; Esquimalt Road also carries a storm main, but it does not extend to be adjacent to the site. The servicing and grading plans are available in **Appendix A**.

2. GRADING & STORMWATER STRATEGY

A site plan (Drawing C102) is available in Appendix A; The site slopes generally northwards at an average over 6%, with the southern property line being the high point of the site. The development team has provided for green Park space along the Esquimalt Road Frontage of the building, supplemented by large planter beds all around the main floor. The planters are not appropriate to be utilized for storing any storm water due to the type of plantings. Further, it is not recommended to pond water in the green spaces containing trees, as this may drown the trees. There is a sensitive Gerry Oak to be retained on the southeast corner, and the general grading above its root structure is not proposed to be changed. The Play Park is also deemed inappropriate for ponding space. The frontage along Nelson Street is proposed to sheet-flow offsite, through landscaping where possible, but is sloped too steeply to support ponding efforts. It is also not advised to pond water against the foundation structure, as it can cause moisture issues, and any infiltration is likely to be directed to weeping tile sump pumps rather than be retained by soils. The grading will ensure stormwater does not drain to the neighbouring properties adjacent to the site.

In general, the pedestrian walkways onsite shall be concrete, and shall be graded to drain towards the street or the nearest adjacent stormwater inlet. To maximize the water-holding capacity of the landscaping without drowning the plantings, it is proposed to use a highly absorbent soil as the planting medium. A sample soil specification is included in Appendix B with an approximate water absorption of 70 mm per hour. The exact soil specification from the local area will be determined by the Landscaping Architect.

To accomplish the DP Area No. 8 stormwater retention of the first 3 cm of rainfall, the option of water reuse for irrigation purposes was explored. Over a total site area of 0.4294 ha, the prescribed volume of usable retention is 128.8m^3. Ultimately, it was determined that water reuse for irrigation was not feasible for this project due to the stringent requirements by Island Health for water treatment. As such, the requirement for stormwater retention of the first 3 cm of rainfall is not achievable. However, absorbent soils are proposed for the landscape areas within the site which will provide some water retention, refer to **Section 3.1** for details.

3. STORMWATER MODELLING

3.1 Stormwater Detention Strategy

Stormwater detention is proposed to take place mainly on the roof via rooftop ponding. The Architect has provided the following data:

- "*The north roof area (without the amenity) is approximately 9,600 sq. ft., and the top south rooftop is about 11,000 sq. ft., excluding the mechanical space we're leaving*."
  - email dated 3/5/2025 from Gurkaran Dhaliwal of FAAS

These square footages account for approximately 1913 m2, or 68.6% of the total roof area. This rooftop ponding, assuming it is 0.10m deep per typical snow loads, and assuming cone-shaped trap lows (V=A*h/3), will provide approximately 63.7m3 of ponding.

A breakdown of the sites surface finishes and their runoff coefficients is shown in **Table 1**:

Table 1 Breakdown of Finished Surface Materials, Existing and Proposed

Area ID	Description	Existing Site	Post Development	Runoff Coefficient per Finish Type
Ar	sq.m (Area of roof)	1303.1	2812.0	1.0
Ap	sq.m (Area of paving)	402.7	531.9	0.9
Al	sq.m (Area of landscaping)	2528.6	549.3	0.3
Ag	sq.m (Area of gravel)	59.5	117.2	0.5
	Area removed from private property to Park Space		283.5	0.3
At	**ha (Total area of site)**	**4293.9**	**4293.9**	

The above surface breakdown is used to calculate a weighted Runoff Coefficient as follows:

$$C = \frac{(Ar \times 1.0)+(Ap \times 0.9)+(Al \times 0.3)+(Ag \times 0.5)}{At}$$

= **0.571 for the Existing site**

= **0.838 for the Site Post-Development**

Using the Rational Method, the site pre- and post-development may be analyzed to compare overall expected release rates for a 1:100-year storm as follows:

$$Q = (C \times I \times At)/360$$

Where: Q = Peak runoff rate (L/s) from the site

C = the above Runoff Coefficient for the given scenario

I = storm intensity, equal to:

64.75 mm/hr per historic IDF or 76.89 mm/hr per climate change IDF.

At = total site area = 0.429ha

360 is a unit conversion factor

IDF parameters for Victoria Gonzales catchment were downloaded from Variable — Short-duration Rainfall IDF Data — undefined on March 28, 2025. The intensities above represent a 5min 100-year storm from this data. Therefore, from the previous weighted Runoff Coefficients for each scenario, the site is expected to release:

Table 2 Rational Method Release Rates and Resulting Unit Area Rate

		Existing Site	**Post-Development**
Q =	C x I x At x 2.778	**39.6 L/s**	**69.0 L/s***
At =	0.429 ha		
Unit area release rate:		**92.2 L/s/ha**	**160.7 L/s/ha***

**Based on 5min 100-year storm under climate change.*

As previously discussed, the development will make use of rooftop ponding to meet the existing release rate. Therefore, if the Area 2 frontage of the site is permitted to free-flow offsite, the remaining flow from Area 1 shall be restricted to meet the remaining allowable offsite flow via the storm service connection. The generated flows from the proposed site are:

Table 3 Generated flows from proposed site (see Drawing C103)

Area #	**Area (m²)**	**Landscape 0.30**	**Gravel 0.50**	**Pavement 0.90**	**Roof 1.00**	**Coeff**	**Flow (L/s)**
A1	2812	0	0	0	2812	1.0	53.9
A2	1482	832.8	117.2	531.9	0	0.531	15.1
At	4293						69.0

Remaining Allowable Flow = 39.6 L/s existing – 15.1 L/s (free-flow) = **24.5 L/s allowable**

Area A1 represents the rooftop, while A2 represent the planters and walkable surfaces that drain directly offsite or to the unrestricted mechanical system. The allowable flow applied over the remaining site area (A1) is equivalent to 87.1 L/s/ha.

Using the above data within a 24-hour Soil Conservation Service (SCS) Type 1A Storm generated by SewerGEM, the 1:100-year rainfall runoff for the post-development scenario was modelled against a discharge rate equal to half of the existing unit area release rate. The results (available in the Appendix C) produce a required storage volume of 22.9 m^3. This volume can be achieved within the available roof ponding of 63.7m3. The release rate from the roof must be restricted to at or below the allowable 24.5 L/s. This flow rate will be

achieved with rooftop flow restrictors around the roof drains. We will coordinate with the Mechanical contractor to define the number of roof drains and specify an appropriate flow control roof drain.

The proposed grading scheme is detailed in Drawing C102. Due to the limitations of the landscaping, no surface ponding is proposed.

Additionally, as previously mentioned, it is intended to provide absorbent soils within the above landscaped areas. The landscape Architect will target the example soil infiltration of 70mm/hr (attached in Appendix B). Applied over the available landscaped areas, this soil would provide 48.5 m^3 of water infiltration per hour. This volume provides approximately 37% of the 128.8 m^3 prescribed under DP Area No. 8.

3.2 Manning's Analysis of Pipe

Drawing C101 shows the two site drain connections shall be a 200mm PVC. This drain will collect flows from the rooftop and outdoor floor drains, to be coordinated with the Mechanical engineer.

**Flow Calculations as per equation in Section 3.1 above.*

To be conservative, it is assumed full drainage from Catchments A1 and A2 is captured in the onsite drains, equal to 69 L/s. Per Manning's equation:

$$Q = V \times A = (A \times R^{2/3} \times \sqrt{S}) / n$$

As discussed, the building shall have two drain connections to main – this approach was originally considered to limit the service pipe size from the development. Separating the drainage into two connections each will allow the development to maintain service connection sizes at or below the main pipe size.

It is further assumed 50% of the 69 L/s (a maximum conservative estimate, not representative of the restricted flows) is assigned to each service pipe. Through analysis of the pipe, it is determined that 200mm pipe at 2.0% is sufficient to carry the total generated flows of 50%*69 = 34.5 L/s. Velocity in the full pipes meets minimum cleansing and does not exceed 3.0 m/s. Refer to Table 4 below for a summary for the analysis.

The flows generated onsite shall be restricted to existing release rates, it is assumed the Town's drainage mains have capacity for the storm flows from this development. A fulsome capacity analysis of the public mains has not been undertaken at this time.

Table 4 - Manning's Analysis of Pipe

Segment	Pipe Slope	Pipe Diameter (mm)	Material	Manning's Roughness	Capacity (L/s)	Spare Capacity (L/s)	A (m^2)	R (m)	Velocity (m/s)	% Full	Input storm Flow
Service Connection	2.000%	200	PVC	0.011	54.8	20.3	0.0314	0.05	1.74	63	34.5 L/s

4. CONCLUSION

Based on the higher density use of the subject lands, the post-development site will shed approximately 29.4 L/s of additional peak stormwater runoff for a 1:100-year event, which is intended to be restricted on the development roof to existing release rates. The total release rate from site will be restricted to a maximum of 39.6L/s total.

Based on the analysis provided in the previous sections, Stantec believes the described stormwater strategy provides stormwater detention sufficient to limit the offsite discharge to at least the same as existing runoff. Water retention equivalent to 3cm is not possible due to site constraints and onerous water treatment requirements. The Landscape architect will implement absorbent soils where possible. The Development will produce no detrimental effects to the existing public stormwater drainage system.

PREPARED BY:

Permit No. 1002862
2025-04-15

PROFESSIONAL SEAL
Caitlin Maloney, P.Eng.
Civil Engineer
Stantec Consulting Ltd.

REVIEWED BY:

Fernando Lopez, P.Eng.
Civil Engineer
Stantec Consulting Ltd.

APPENDIX A: Servicing Drawings

EXISTING FEATURES

MANHOLE
STORM SEWER — D
CATCH BASIN
SANITARY SEWER — S
SEWER CLEANOUT
WATER MAIN — W
WATER VALVE
FIRE HYDRANT
WATER SERVICE
GAS MAIN — G
TELUS CONDUIT — T
ELECTRICAL CONDUIT — UE
JUNCTION BOX
DAVID STREET LIGHT
CURB & GUTTER

PROPOSED FEATURES

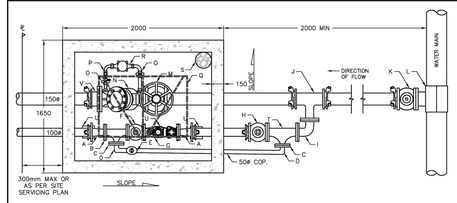
MANHOLE
STORM SEWER — D
CATCH BASIN
SANITARY SEWER — S
WATER MAIN — W
WATER VALVE
FIRE HYDRANT
WATER METER — M
WATER SERVICE
CURB & GUTTER
FLOOR DRAIN (CONNECTED VIA MECHANICAL)
RETAINING WALL
INSPECTION CHAMBER

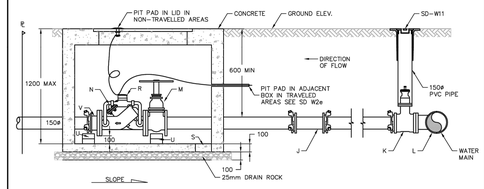
DRAWING LIST

CIVIL DRAWINGS	
SHEET No.	SHEET TITLE
C100	COVER SHEET AND DETAILS
C101	UNDERGROUND SERVICING
C102	SURFACE FEATURES & GRADING
C103	STORMWATER MANAGEMENT
C104	SERVICING PROFILE
C105	SERVICING PROFILE
C201	OFFSITE PLAN PROFILE (STURDEE)
C202	OFFSITE PLAN PROFILE (STURDEE)

SITE
LOCATION PLAN
NTS

SUPPLEMENTARY STANDARD DETAIL DRAWINGS





A) 100 X 75 CONCENTRIC REDUCER
B) 75 X 75 X 50mm FL TEE (TAP PERMITTED)
C) 50mm FL X FIP BLIND FLANGE
D) 50mm STREET ELBOW
E) 50mm LOCKING BALL VALVE
F) 75mm FL X FL GATE VALVE
G) 75mm METER
H) 100mm VALVE
I) 100mm FL X FL 90° BEND
J) 150 X 150 X 100mm MJ X MJ X FL TEE
K) 150mm VALVE
L) 150mm SADDLE OR TEE
M) 150mm VALVE
N) 150mm FL DETECTOR CHECK VALVE
O) 19mm BALL VALVE
P) 19mm CHECK VALVE
Q) HATCH: BOAD-TI4S106070AV; SIDEWALK-TI3S106070AV
R) 19mm METER
S) 200mmø PVC SUMP THRU FLOOR
T) 100 X 100 X 50mm FL TEE
U) 2-200 X 100 X 50mm CONCRETE BLOCK
V) 150mm ADAPTOR

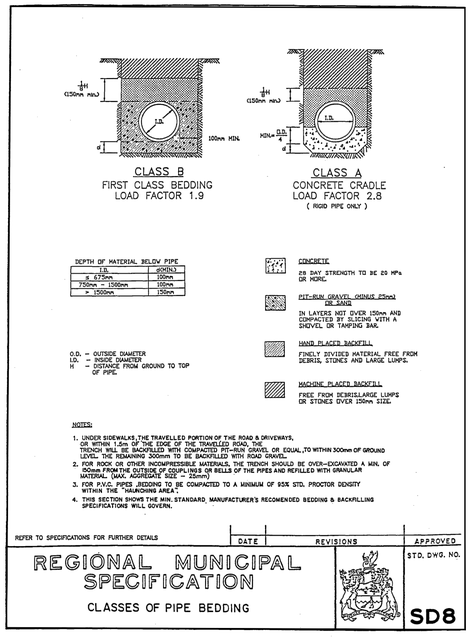
NOTES:
1) ALL PIPE AND FITTINGS TO BE PIPE RESTRAINED.
2) THE OWNER SHALL CONNECT TO THE CITY PIPE AT PROPERTY LINE.
3) WHERE PIPE IS IN CONTACT WITH CONCRETE ENSURE THERE IS A BARRIER OF POLY.
4) FIRE SERVICE TO BE RIGHT SIDE OF DOMESTIC METER ENTERING PROPERTY AND DIMENSIONED TO CLOSEST IRON PIN

NOT TO SCALE

2011

150mm FIRE SERVICE C/W 100mm DOMESTIC SERVICE AND 75mm WATER METER	REVISIONS: APR 2018	DRAWING NUMBER: SD W2h

NOTE:
1. INSTALLATION OF WATER METER SHALL BE UNDERTAKEN BY CITY OF VICTORIA FORCES AT THE COST THE DEVELOPER. REFER TO PLAN VIEW ON DRAWING C101



REFERENCE DRAWINGS
Existing Utilities.dwg, Esquimalt 130400057 LIGHTHOUSE, MH 500-U07-08444_2023-09-15.pdf, BCHYDRO

Township of ESQUIMALT

STAMP
PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — KYLE MALONEY — # 50551 — ENGINEER
2025-04-15
PERMIT NO. 1002862

NO.	DATE	BY	REVISIONS	ENG.
1	2025-04-14	CM	ISSUED FOR DP	CM
0	2024-12-02	CM	ISSUED FOR PRELIMINARY DESIGN REVIEW	CM

DESIGN BY CM	DATE 2024-11-28
DRAWN BY SW, KJ	DATE 2024-11-28
CHECKED BY FL	DATE 2024-12-02
APPROVED BY CCM	DATE 2024-12-02

Stantec
200-325 25 STREET NE
CALGARY, AB T2A 7H8
Tel: (403) 716 - 8000

SCALE HORIZ. NTS SCALE VERT. N/A
SHEET 1 OF 8 REV. No 1
ENG PROJECT NUMBER 130400067

PROJECT
EQUIMALT MIXED-USE
2211 SUSSEX STREET, ESQUIMALT, BC

DESCRIPTION
COVER SHEET & DETAILS
C100

GENERAL NOTES:

1. EXISTING UTILITY AND SURFACE FEATURES DATA IS DERIVED FROM DIGITAL RECORDS FROM THE TOWNSHIP OF ESQUIMALT. THIS INFORMATION IS OBTAINED FROM VARIOUS SOURCES. AS A RESULT, THE DATA CANNOT BE WARRANTED AS CURRENT, ACCURATE OR COMPLETE BY STANTEC OR THE TOWNSHIP. THE DATA IS PROVIDED FOR YOUR CONVENIENCE ONLY. USE OF THIS INFORMATION WITHOUT VERIFICATION IN THE FIELD IS AT YOUR OWN RISK.
2. ALL DRAWINGS ARE INTENDED TO BE READ IN CONJUNCTION WITH ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS. WHERE DISCREPANCIES ARE FOUND, THEY SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER.
3. ALL CONSTRUCTION AND MATERIALS SHALL BE TO CURRENT MASTER MUNICIPAL CONSTRUCTION DOCUMENTS (MMCD) DESIGN GUIDELINES, STANDARD SPECIFICATIONS AND DRAWINGS.
4. WHEN CONFLICT BETWEEN THESE SPECIFICATIONS ARISES, THE MOST STRINGENT SHALL APPLY.
5. THE CONTRACTOR SHALL OBTAIN A PERMIT TO CONSTRUCT WORKS ON A MUNICIPAL RIGHT-OF-WAY FROM THE ENGINEERING DEPARTMENT MINIMUM 48 HOURS PRIOR TO START OF UNDERGROUND CONSTRUCTION.
6. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND ALL LEVELS AND REPORT ALL ERRORS OR OMISSIONS TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK. DO NOT SCALE FROM DRAWINGS.
7. CONTACT BC HYDRO, TELUS, SHAW CABLE AND FORTISBC 48 HOURS PRIOR TO THE START OF ANY GROUND DISTURBANCE. BC ONE CALL LOCATES REQUIRED.
8. BED ALL PIPES USING CLASS 'B' BEDDING, STANDARD DRAWING SD8.
9. WHERE PIPE TRENCH IS UNDER OR WITHIN 1.5m OF THE EDGE OF TRAVELLED ROAD, DRIVEWAY, OR UNDER SIDEWALK, THE TRENCH SHALL BE BACK FILLED WITH COMPACTED PIT-RUN GRAVEL, OR APPROVED EQUAL, TO WITHIN 300mm OF SURFACE ASPHALT/CONCRETE. FILL REMAINING 300mm WITH ROAD STRUCTURE GRAVEL.
10. ALL INSTALLATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO BACKFILL.
11. COMPACT TRENCH BACKFILL TO 95% STD. PROCTOR DENSITY TO WITHIN 300mm OF SURFACE. FOLLOW GEOTECHNICAL ENGINEER'S PAVEMENT STRUCTURE & RECOMMENDATIONS.
12. FOLLOWING BACKFILL, SURFACE FINISH SHALL BE RETURNED TO AS-GOOD OR BETTER CONDITION.
13. MAINTAIN APPROPRIATE VEHICULAR AND PEDESTRIAN ACCESS AND TRAFFIC ACCOMMODATION ALONG ROADS ADJACENT TO CONSTRUCTION ROADS TO BE KEPT CLEAR OF MUD, DIRT AND DEBRIS; GOOD HOUSEKEEPING MEASURES SHALL BE EMPLOYED.
14. CONSTRUCT ALL SEWER, DRAIN, WATER, AND ROADS WITHIN PRIVATE PROPERTY IN ACCORDANCE WITH BC PLUMBING CODE AND NATIONAL PLUMBING CODE. CONSTRUCTION WITHIN PRIVATE PROPERTY SHALL BE INSPECTED AND APPROVED BY MUNICIPAL INSPECTORS.
15. LEGAL BOUNDARIES HAVE BEEN OBTAINED FROM UNOFFICIAL DIGITAL RECORDS AND SHALL NOT BE USED TO LOCATE PROPERTY CORNERS. SURVEY AND LAYOUTS IN FIELD SHOULD BE PERFORMED BY A QUALIFIED LAND SURVEYOR.
16. THE CONTRACTOR SHALL ENSURE NO LEGAL SURVEY MONUMENT IS DISTURBED OR OTHERWISE INTERFERED WITH. IF ANY MONUMENT IS AS RISK OF DISTURBANCE, THE CONTRACTOR SHALL ENGAGE A BC LAND SURVEYOR (BCLS) TO REFERENCE THE MONUMENT. IF DISTURBED, THE MONUMENT SHALL BE REPLACED BY THE BCLS AT THE CONTRACTOR'S EXPENSE.
17. ANY CONFLICT BETWEEN EXISTING INFRASTRUCTURE AND THIS DESIGN SHALL BE IMMEDIATELY REPORTED TO THE ENGINEER.
18. ALL SERVICE CONNECTIONS PROVIDED OR KILLED BY MUNICIPAL FORCES SHALL BE AT THE DEVELOPER'S EXPENSE.

ROAD:

1. ALL EXISTING CURB & GUTTER AND SIDEWALK DIRECTLY ADJACENT TO THE PROJECT SITE SHALL BE REMOVED AND REPLACED ACCORDING TO THE APPROVED DEVELOPMENT SITE PLAN.
2. ALL SURFACE IMPROVEMENTS TO BE COMPLETED BY DEVELOPER'S FORCES, AT THE DEVELOPER'S EXPENSE.

WATER:

1. WATER SERVICE TO BE INSTALLED UP TO PROPERTY LINE PER DETAIL SD W2h BY CITY OF VICTORIA, AT THE DEVELOPER'S EXPENSE. LOCATION OF EXISTING STUB TO BE CONFIRMED IN FIELD.
2. CITY OF VICTORIA SHALL CAP AND ABANDON ALL EXISTING WATER SERVICES AT THE DEVELOPER'S EXPENSE.

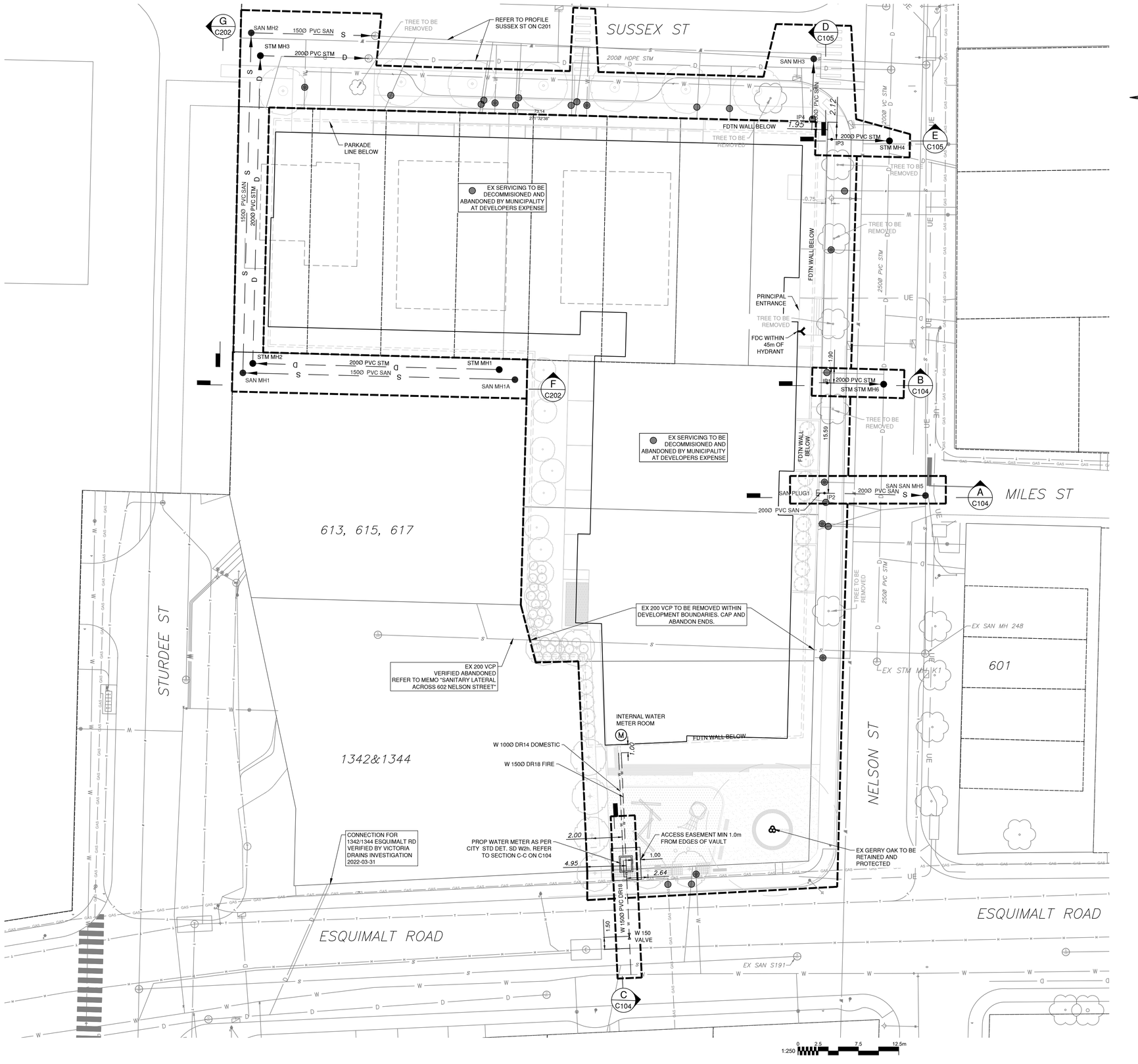
SEWER AND DRAIN:

1. ALL SEWER AND DRAIN DEEP UTILITY SERVICES TO BE INSTALLED BY THE MUNICIPALITY AT THE DEVELOPER'S EXPENSE.
2. ALL SANITARY SEWER PIPE SHALL BE 200mm PVC (MANNING'S ROUGHNESS COEFFICIENT n=0.011). MINIMUM GRADE SHALL ACHIEVE A FULL-PIPE VELOCITY OF 0.9 m/s. MINIMUM COVER SHALL BE 0.75mm
3. STORM DRAIN WITH COVER >0.75mm SHALL BE 200mm PVC (MANNING'S ROUGHNESS COEFFICIENT n=0.011). MINIMUM GRADE SHALL ACHIEVE A FULL-PIPE VELOCITY OF 0.9 m/s.
2. STORM DRAIN WITH COVER <0.75mm SHALL BE DUCTILE IRON (MANNING'S ROUGHNESS COEFFICIENT n=0.011). MINIMUM GRADE SHALL ACHIEVE A FULL-PIPE VELOCITY OF 0.9 m/s. PIPE SIZES AS SHOWN ON THIS DRAWING.
3. SEWER SERVICE SHALL BE EXTENDED TO 1.0m OUTSIDE PARKADE FOUNDATION WALL.
4. CONTRACTOR SHALL RECORD LOCATION, ELEVATION, PIPE MATERIAL AND SIZE OF ALL INSTALLATIONS. THESE SHALL BE REPORTED TO THE ENGINEER FOR AS-BUILT DRAWINGS.
5. ALL EXISTING SERVICES TO BE DISCONNECTED, CAPPED AND ABANDONED AT THE DEVELOPER'S EXPENSE.

HYDRO, TELEPHONE, STREETLIGHT & GAS: (BY OTHERS)

ALL MECHANICAL AND ELECTRICAL DETAILS ARE AS PER THE MECHANICAL ENGINEER.

1. BC ONE CALL LOCATES REQUIRED PRIOR TO ANY CONSTRUCTION.
2. ALL SERVICES SHALL BE UNDERGROUND.
3. ALL EXISTING HYDRO, TELEPHONE, CABLE AND GAS ARE SHOWN SCHEMATIC; REFER TO UTILITY COMPANY RECORDS FOR DETAILS.
4. ALL SHALLOW UTILITY CONNECTIONS SHALL BE CONSTRUCTED AS PER THE UTILITY OPERATOR'S STANDARD SPECIFICATIONS AND DRAWINGS.



REFERENCE DRAWINGS

Existing Utilities.dwg, Esquimalt 130400057 LIGHTHOUSE, MH 500-U07-08444_2023-09-15.pdf, BCHYDRO

Township of ESQUIMALT

STAMP

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — MIKE CHEY — 35861 — 2025-04-15

PERMIT NO. 1002862

NO.	DATE	BY	REVISIONS	ENG.
1	2025-04-14	CM	ISSUED FOR DP	CM
0	2024-12-02	CM	ISSUED FOR PRELIMINARY DESIGN REVIEW	CM

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Stantec
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CALGARY, AB T2A 7H8
Tel: (403) 716 - 8000

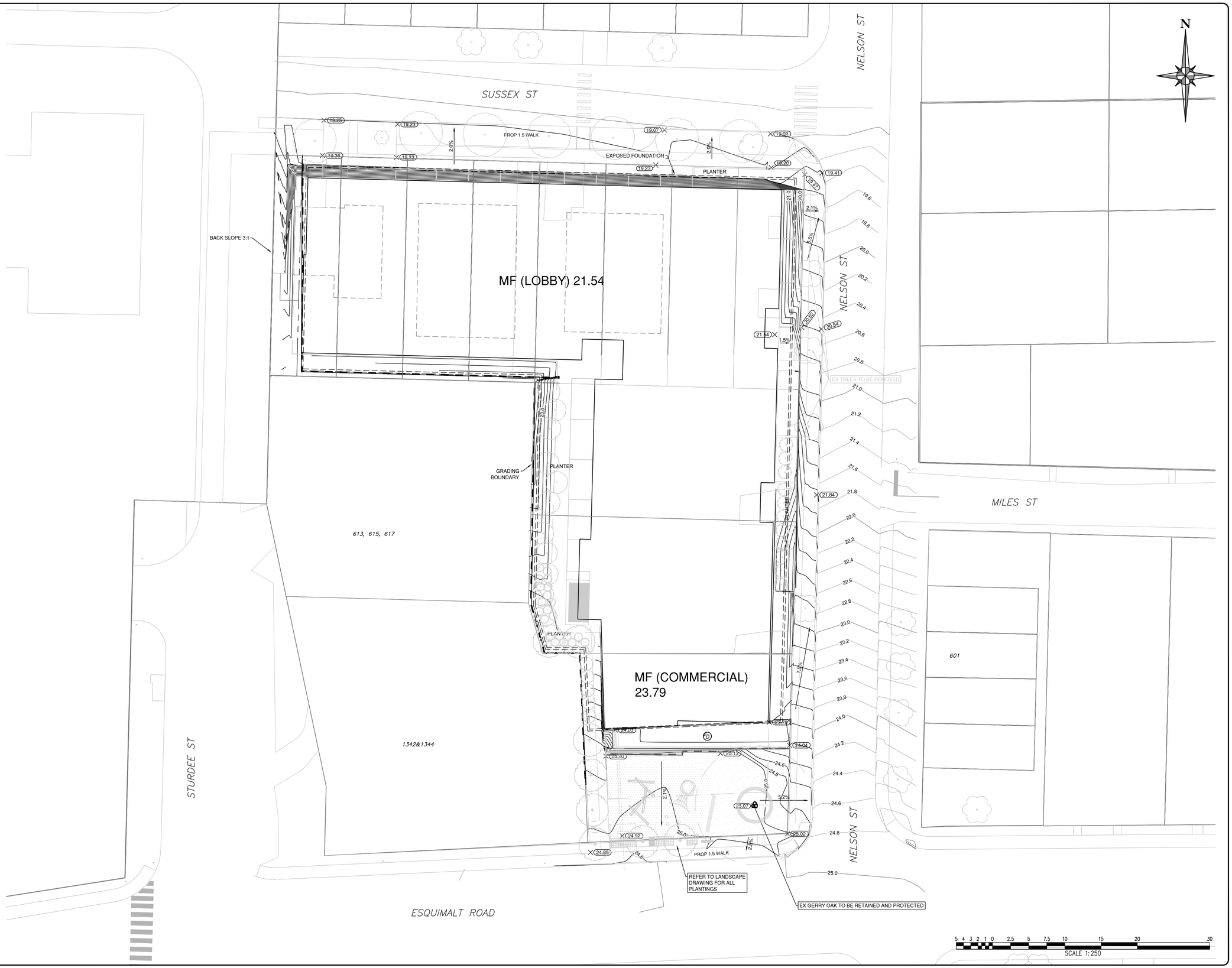
SCALE HORIZ. 1:250 SCALE VERT. N/A
SHEET 2 OF 8 REV. No 1
ENG PROJECT NUMBER 130400067

PROJECT
EQUIMALT MIXED-USE
2211 SUSSEX STREET, ESQUIMALT, BC

DESCRIPTION
UNDERGROUND SERVICING
C101

LEGEND:

- (20.00) PROPOSED SPOT ELEVATION
- (20.00) EXISTING SPOT ELEVATION
- 20.0 PROPOSED GROUND CONTOURS
- 20.0 EXISTING GROUND CONTOURS



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Township of
ESQUIMALT

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PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA — STEVE MALONEY # 33661 — ENGINEER

2025-04-15

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SHEET 3 OF 8 REV. No 1
ENG PROJECT NUMBER 130400067

PROJECT
EQUIMALT MIXED-USE
2211 SUSSEX STREET, ESQUIMALT, BC

DESCRIPTION
SURFACE FEATURES & GRADING
C102

SEE SHEET C100 FOR STANDARD MMCD LINEWORK LEGEND

- LANDSCAPING
- GRAVEL
- SAFETY MULCH
- CONCRETE PAVING
- PRE-DEVELOPMENT ROOFS
- CATCHMENT AREA

EXISTING SITE PRIOR TO DEMO

PROPOSED SITE AND CATCHMENTS

10 8 6 4 2 0 5 10 15 20 25 30 40 50 60
SCALE 1:500

REFERENCE DRAWINGS

Existing Utilities.dwg, Esquimalt
130400057 LIGHTHOUSE, MH
500-U07-08444_2023-09-15.pdf,
BCHYDRO

Township of
ESQUIMALT

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PROFESSIONAL PROVINCE OF C. MALONEY # 55861 BRITISH COLUMBIA ENGINEER
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0	2024-12-02	CM	ISSUED FOR PRELIMINARY DESIGN REVIEW	CM

DESIGN BY CM	DATE 2024-11-28
DRAWN BY SW, KJ	DATE 2024-11-28
CHECKED BY FL	DATE 2024-12-02
APPROVED BY CCM	DATE 2024-12-02

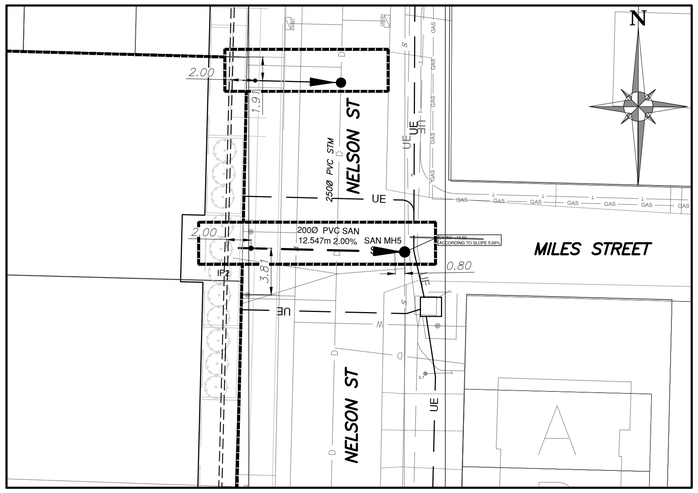
Stantec

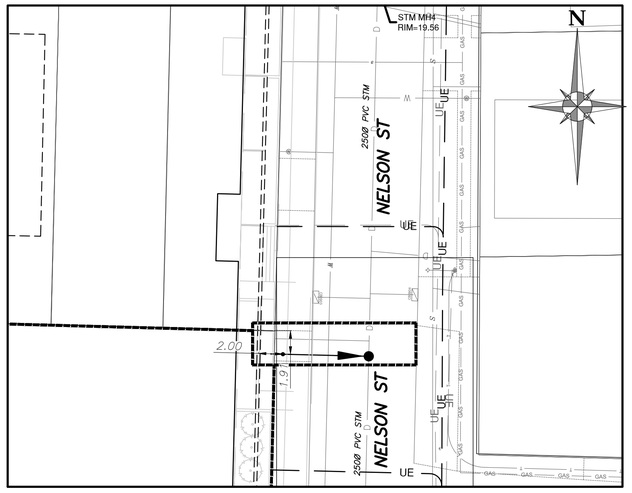
200-325 25 STREET NE
CALGARY, AB T2A 7H8
Tel: (403) 716 - 8000

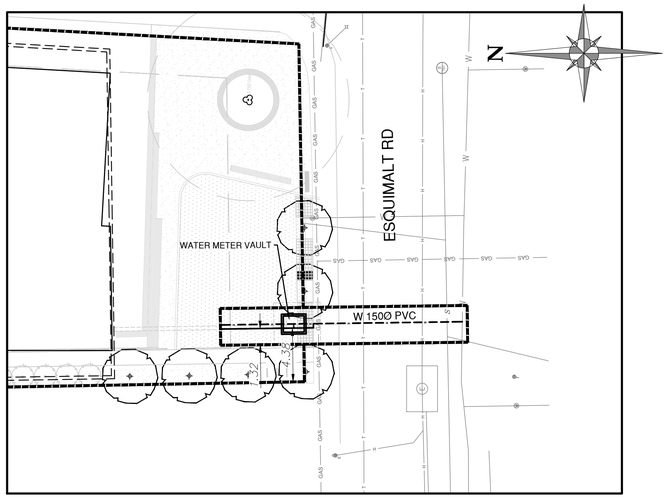
SCALE HORIZ. 1:500 SCALE VERT. N/A
SHEET 4 OF 8 REV. No 1
ENG PROJECT NUMBER 130400067

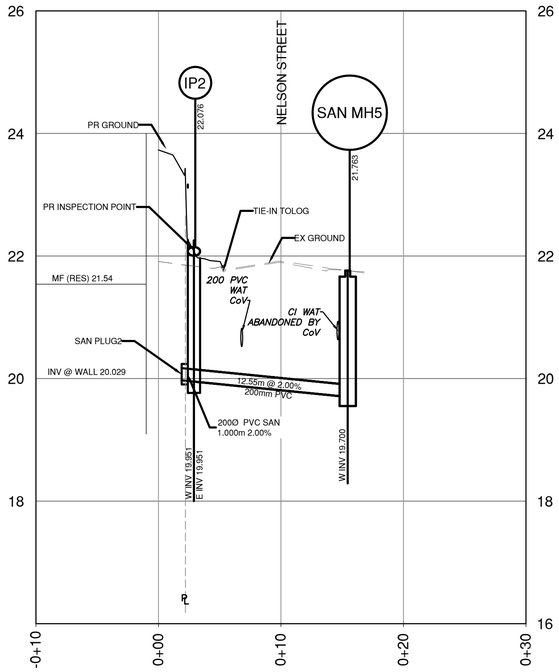
PROJECT
EQUIMALT MIXED-USE
2211 SUSSEX STREET, ESQUIMALT, BC

DESCRIPTION
STORMWATER MANAGEMENT
C103



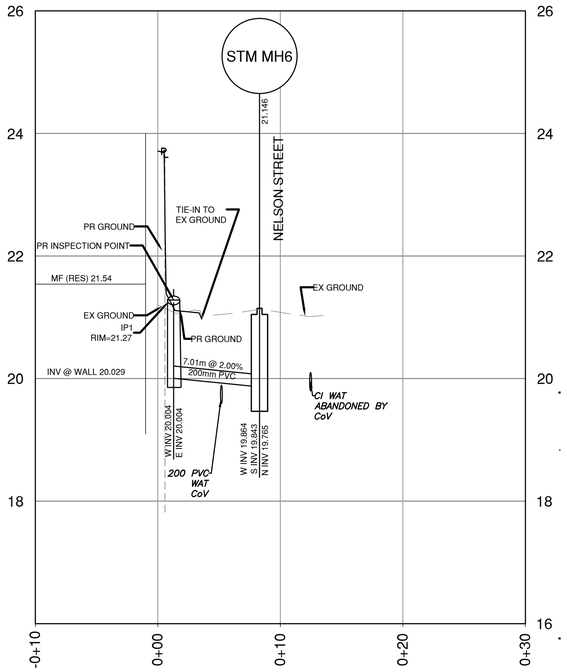




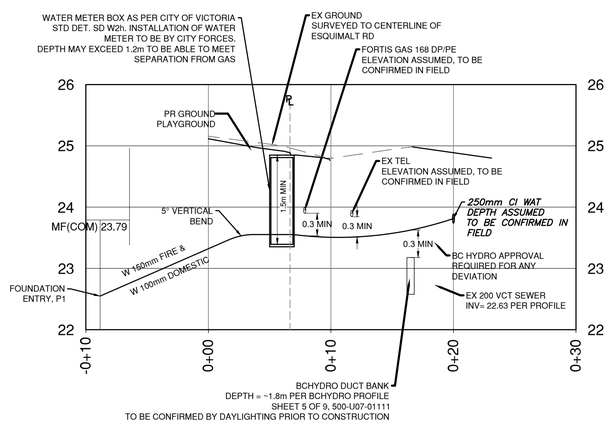


MILES STREET: SANITARY SERVICE
(2103708 OG)
(2103708 FG)

A–A
SANITARY SERVICE PROFILE
HOR 1:250 VER 1:50



B–B
STORM SERVICE PROFILE
HOR 1:250 VER 1:50



C–C
WATER SERVICE PROFILE
HOR 1:250 VER 1:25

5 4 3 2 1 0 2.5 5 7.5 10 15 20 30
SCALE 1:250

REFERENCE DRAWINGS
Existing Utilities.dwg, Esquimalt 130400057 LIGHTHOUSE_MH 500-U07-08444_2023-09-15.pdf, BCHYDRO

Township of
ESQUIMALT

STAMP
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA
2025-04-15
PERMIT NO. 1002862

NO.	DATE	BY	REVISIONS	ENG.
1	2025-04-14	CM	ISSUED FOR DP	CM
0	2024-12-02	CM	ISSUED FOR PRELIMINARY DESIGN REVIEW	CM

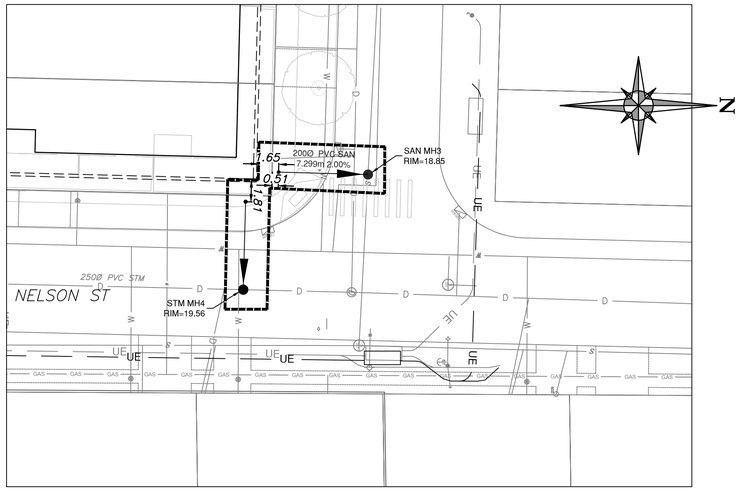
DESIGN BY CM	DATE 2024-11-28
DRAWN BY SW, KJ	DATE 2024-11-28
CHECKED BY FL	DATE 2024-12-02
APPROVED BY CCM	DATE 2024-12-02

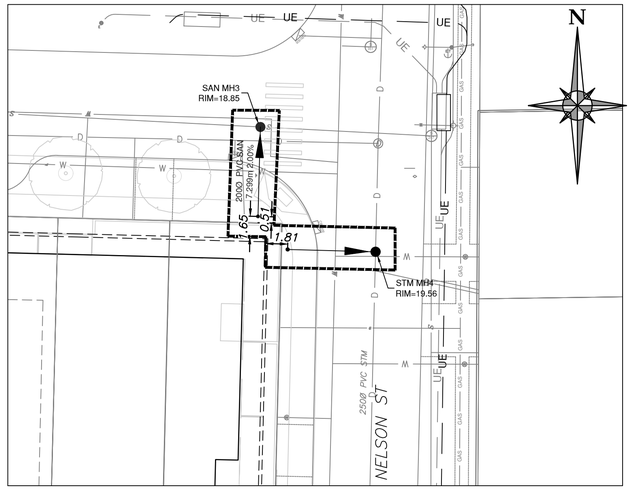
Stantec
200-325 25 STREET NE
CALGARY, AB T2A 7H8
Tel: (403) 716 - 8000

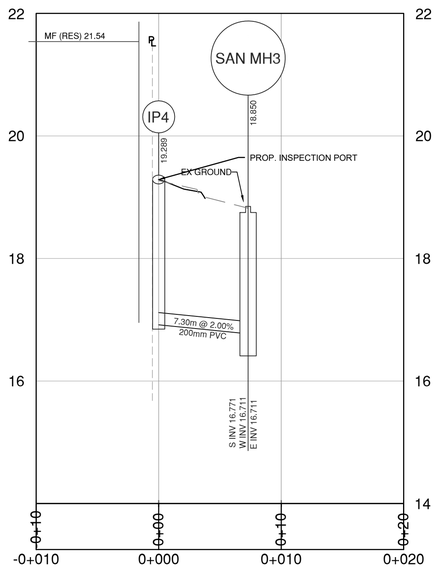
SCALE HORIZ. 1:250
SCALE VERT. AS SHOWN
SHEET 5 OF 8
REV. No 1
ENG PROJECT NUMBER 130400067

PROJECT
EQUIMALT MIXED-USE
2211 SUSSEX STREET, ESQUIMALT, BC

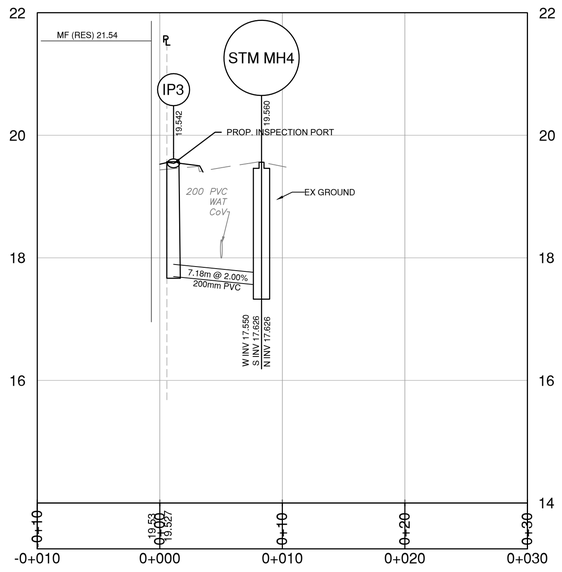
DESCRIPTION
SERVICING PROFILE
C104







D–D
SANITARY SERVICE PROFILE
HOR 1:250 VER 1:50



E–E
STORM SERVICE PROFILE
HOR 1:250 VER 1:50

5 4 3 2 1 0 2.5 5 7.5 10 15 20 30
SCALE 1:250

REFERENCE DRAWINGS

Existing Utilities.dwg, Esquimalt 130400057 LIGHTHOUSE, MH 500-U07-08444_2023-09-15.pdf, BCHYDRO

Township of
ESQUIMALT

STAMP
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA
PETE MALONEY
25051
2025-04-15
PERMIT NO. 1002862

NO.	DATE	BY	REVISIONS	ENG.
1	2025-04-14	CM	ISSUED FOR DP	CM
0	2024-12-02	CM	ISSUED FOR PRELIMINARY DESIGN REVIEW	CM

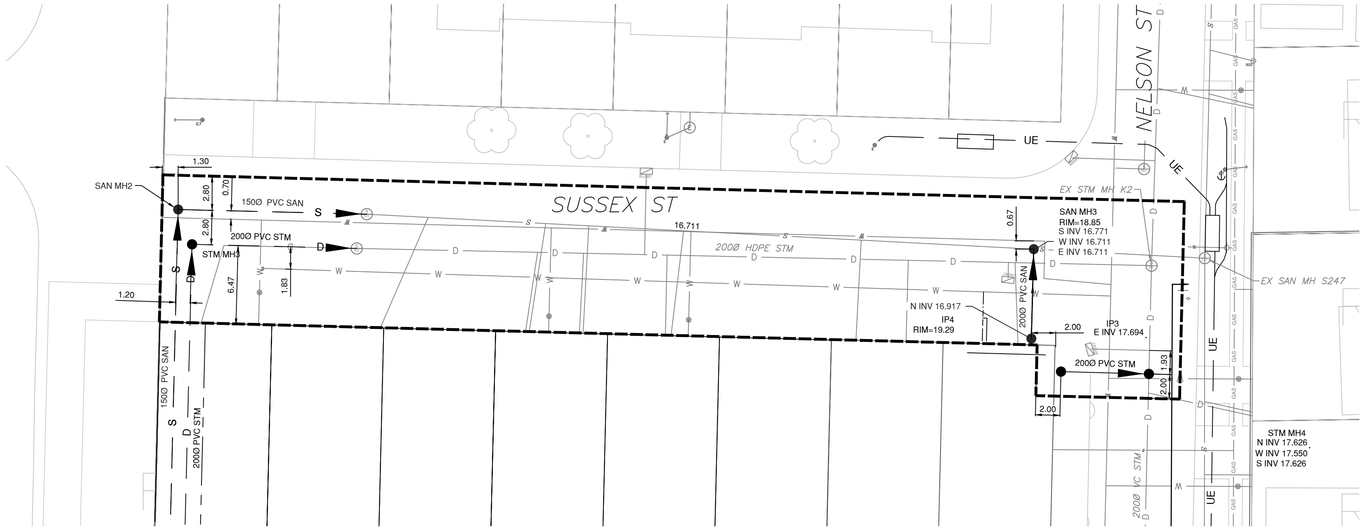
DESIGN BY CM	DATE 2024-11-28
DRAWN BY SW, KJ	DATE 2024-11-28
CHECKED BY FL	DATE 2024-12-02
APPROVED BY CCM	DATE 2024-12-02

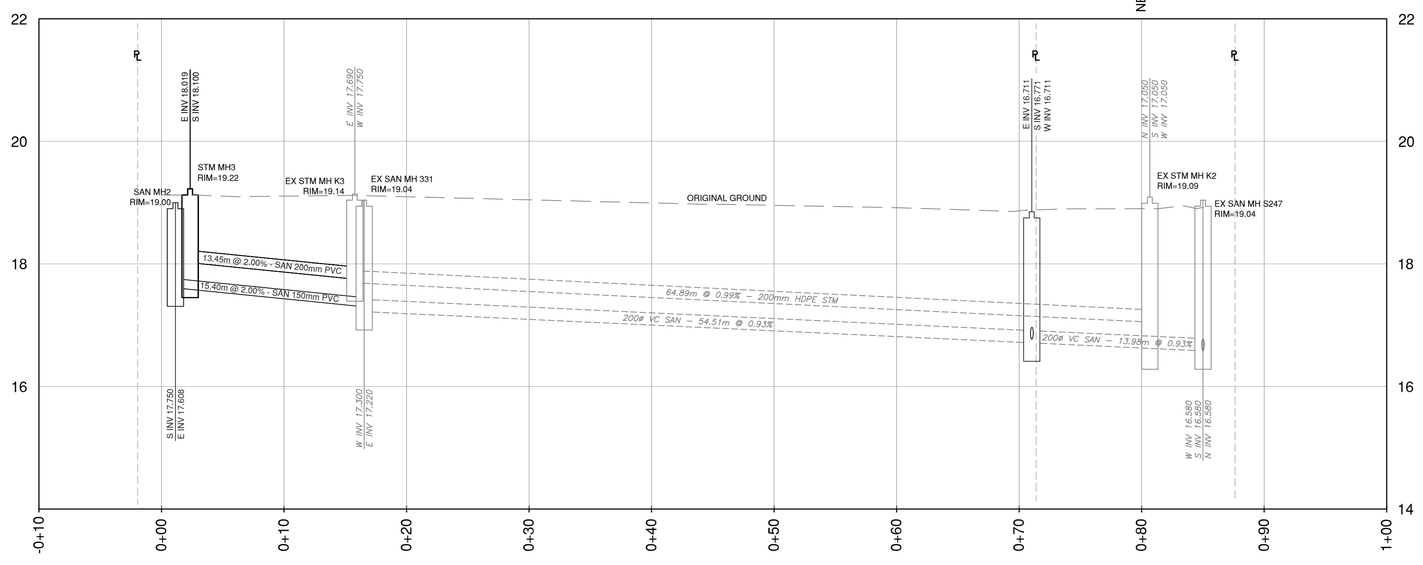
Stantec
200-325 25 STREET NE
CALGARY, AB T2A 7H8
Tel: (403) 716 - 8000

SCALE HORIZ. 1:500 SCALE VERT. AS SHOWN
SHEET 6 OF 8 REV. No 1
ENG PROJECT NUMBER 130400067

PROJECT
EQUIMALT MIXED-USE
2211 SUSSEX STREET, ESQUIMALT, BC

DESCRIPTION
SERVICING PROFILE
C105





SUSSEX STREET
SANITARY AND STORM SERVICE PROFILE
HOR 1:250 VER 1:50

SCALE 1:250

REFERENCE DRAWINGS
Existing Utilities.dwg, Esquimalt 130400057 LIGHTHOUSE, MH 500-U07-08444_2023-09-15.pdf, BCHYDRO

Township of
ESQUIMALT

STAMP
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
MIL ONEY
53661
2025-04-15
PERMIT NO. 1002862

NO.	DATE	BY	REVISIONS	ENG.
1	2025-04-14	CM	ISSUED FOR DP	CM
0	2024-12-02	CM	ISSUED FOR PRELIMINARY DESIGN REVIEW	CM

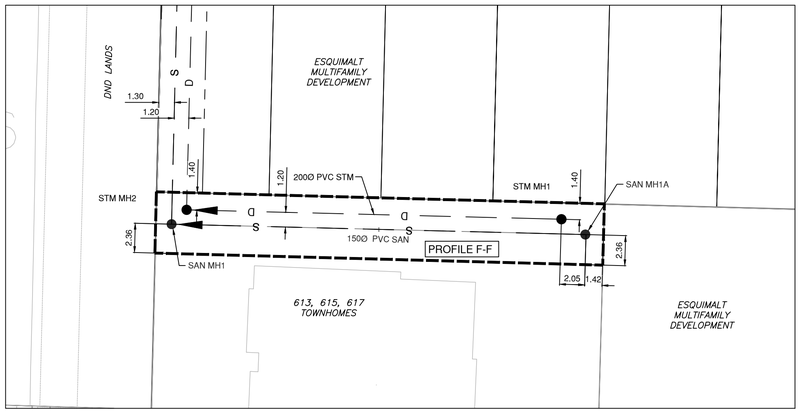
DESIGN BY CM	DATE 2024-11-28
DRAWN BY SW, KJ	DATE 2024-11-28
CHECKED BY FL	DATE 2024-12-02
APPROVED BY CCM	DATE 2024-12-02

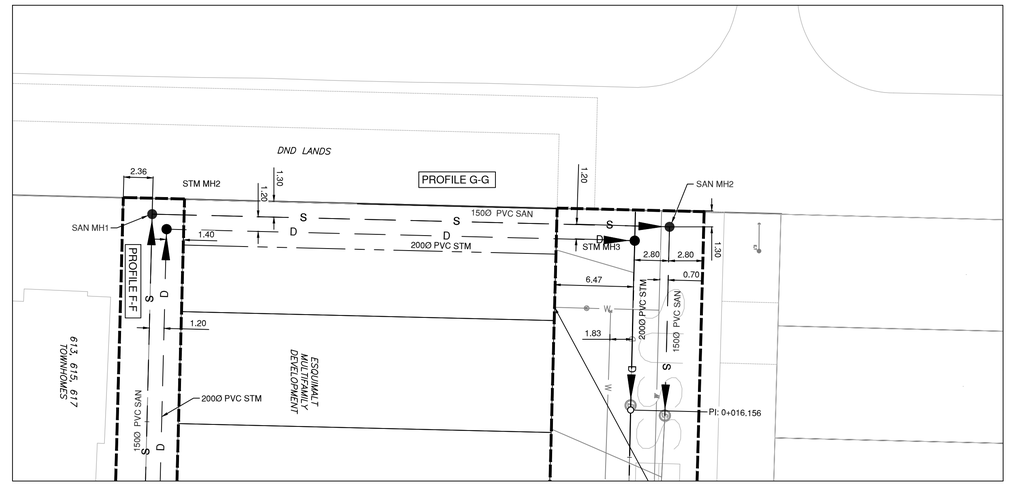
Stantec
200-325 25 STREET NE
CALGARY, AB T2A 7H8
Tel: (403) 716 - 8000

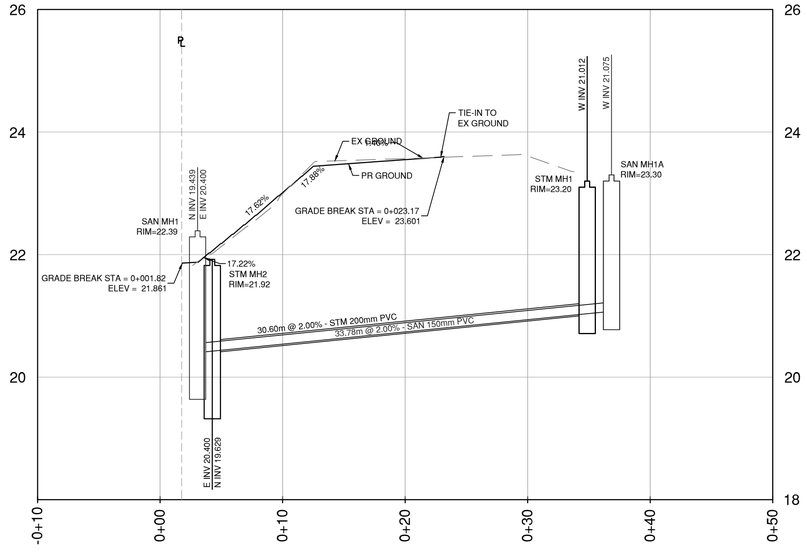
SCALE HORIZ. 1:250 SCALE VERT. 1:50
SHEET 7 OF 8 REV. No 1
ENG PROJECT NUMBER 2103708

PROJECT
EQUIMALT MIXED-USE
2211 SUSSEX STREET, ESQUIMALT, BC

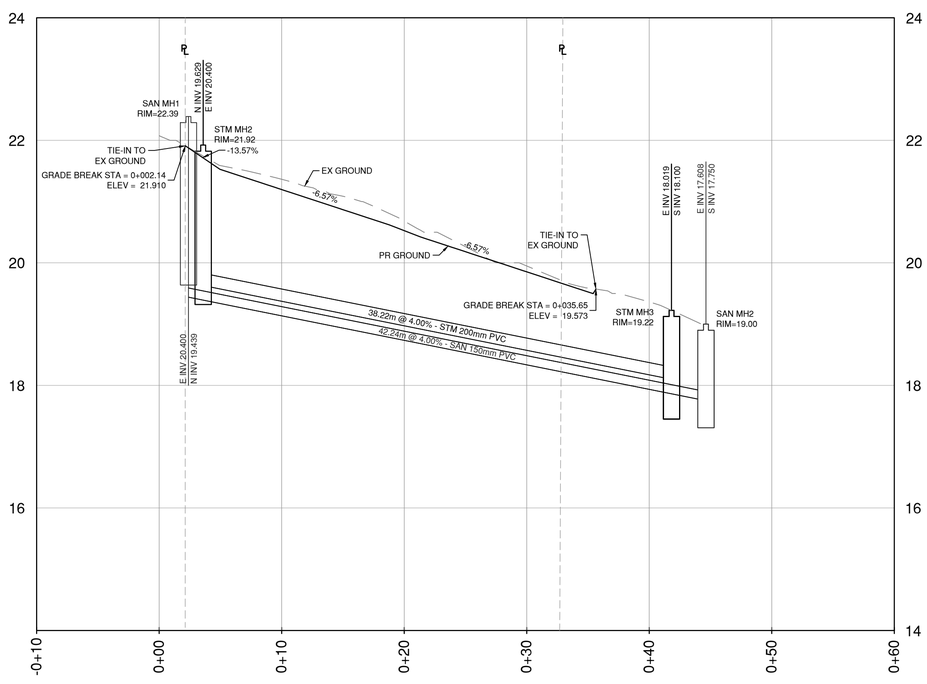
DESCRIPTION
OFFSITE PLAN PROFILE (STURDEE)
C201







F–F
SANITARY AND STORM SERVICE PROFILE
HOR 1:250 VER 1:50



G–G
SANITARY AND STORM SERVICE PROFILE
HOR 1:250 VER 1:50

SCALE 1:250

REFERENCE DRAWINGS
Existing Utilities.dwg, Esquimalt 130400057 LIGHTHOUSE, MH 500-U07-08444_2023-09-15.pdf, BCHYDRO

Township of ESQUIMALT

STAMP
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA MIL ONEY 39861
2025-04-15
PERMIT NO. 1002862

NO.	DATE	BY	REVISIONS	ENG.
1	2025-04-14	CM	ISSUED FOR DP	CM
0	2024-12-02	CM	ISSUED FOR PRELIMINARY DESIGN REVIEW	CM

DESIGN BY CM	DATE 2024-11-28
DRAWN BY SW, KJ	DATE 2024-11-28
CHECKED BY FL	DATE 2024-12-02
APPROVED BY CCM	DATE 2024-12-02

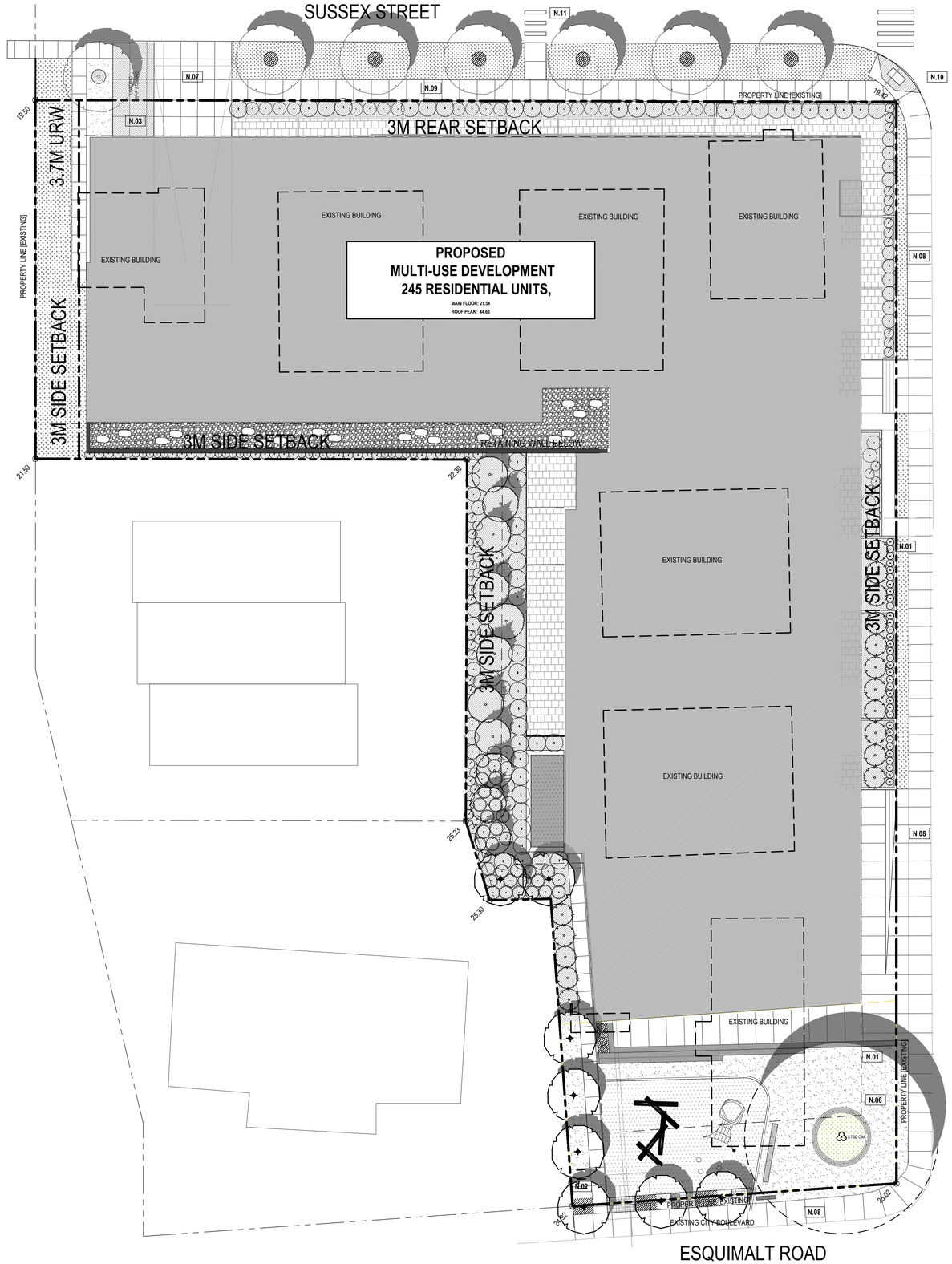
Stantec
200-325 25 STREET NE
CALGARY, AB T2A 7H8
Tel: (403) 716 - 8000

SCALE HORIZ. 1:250 SCALE VERT. 1:50
SHEET 8 OF 8 REV. No 1
ENG PROJECT NUMBER 2103708

PROJECT
EQUIMALT MIXED-USE
2211 SUSSEX STREET, ESQUIMALT, BC

DESCRIPTION
OFFSITE PLAN PROFILE (STURDEE)
C202

APPENDIX B: Supplementary Information



1 SITE PLAN
DP.100 1/16" - 1'-0"

SHEET NOTES

N.01	PROPOSED PLANTERS W/ BUILT IN BENCH
N.02	PROPOSED CLASS 1 BIKE RACKS
N.03	LOADING STALL / WASTE AND RECYCLING STAGING BINS TO BE ROLLED INTO LOADING FOR COLLECTION
N.04	LOCATION OF GAS METER
N.05	PROPOSED SANITARY, SEWER AND STORM CONNECTIONS
N.06	PUBLIC PARK
N.07	PARKADE RAMP ACCESS
N.08	2M SIDEWALK
N.09	1.8M SIDEWALK
N.10	CROSSWALK AND LET DOWN
N.11	RAISED CROSSWALK - LOCATION TO BE DETERMINED DURING BP
	EXISTING GEODETIC ELEVATION

GENERAL NOTES

A. ALL EXISTING STRUCTURES, RETAINING WALLS AND LANDSCAPING TO BE REMOVED WITHIN COMBINED DEVELOPMENT PARCELS.

B. REFER TO SURVEY PLANS FOR GEODETIC ELEVATIONS ADJACENT TO DEVELOPMENT PERIMETER.

C. ALL SITE REHABILITATION OF SIDEWALKS, BUS ZONE APRONS, AND PAVED LANES ARE TO BE COMPLETED AT THE OWNER'S EXPENSE.

D. WASTE AND RECYCLING TO BE COLLECTED TWICE A WEEK BY PRIVATE PICK UP

E. ALL PUBLIC ACCESSED SIDEWALKS TO BE BROOM FINISHED CONCRETE

FAAS

FORMED ALLIANCE ARCHITECTURE STUDIO

RELEASES

NO.	DESCRIPTION	DATE
03	DP SET	16.12.2024
02	DP LITE (DRAFT)	27.09.2024
01	SD	12.09.2024

PROJECT NAME

ESQUIMALT - MULTI

MUNICIPAL ADDRESS

2211 SUSSEX STREET, ESQUIMALT, BC

LEGAL ADDRESS

PLAN; BLOCK; LOT;

PROJECT NO.

24.036.ECC_2211

DRAWN: GD

CHECKED: RB

DATE: 2024.12.16

SCALE: AS NOTED

DRAWING TITLE

SITE PLAN

DRAWING NUMBER

DP.100

EAGLE LAKE
professional landscape supply

innovation outdoors™

Calgary BioRetention Blend 70mm/ hr

We blended this mix to be sufficiently permeable to infiltrate runoff, to have sufficient moisture holding capabilities and nutrients to support healthy vegetation. Ideal for Bioswales, Tree trenches and Rain gardens.

SPECIFICATIONS

parameter	result	method
Vegetation	*Trees, Shrubs, Perennials, Grasses, Sedums, and Annuals*	
Composition	*Sandy Loam, Sand, Peat Moss and Compost*	
Soil Textural Class	*Sandy Loam*	*ASTM F1632 B*
Physical Parameters	*Sand-76%, Silt-11%, Clay-12%*	*ASTM F1632 B*
ph.	*7-8*	
Infiltration Rate at 80% compaction	*70 mm/hr*	*KSAT 80% Proctor*
Infiltration Rate at 80% compaction	*2.8 in/ hr*	*KSAT 80% Proctor*
Initial Media Density	*1.03 g/cubic cm*	*ASTM D2974 C*
Initial Media Density	*70-75 lb./cubic foot*	*ASTM D2974 C*
Maximum Media Density	*1700-1800 Kg/ cubic Metre*	*ASTM D2974 C*
Maximum Media Density	*135-140 lb./ cubic foot*	*ASTM D2974 C*
Dry Media Density	*1100-1200 Kg/ cubic metre*	*ASTM D2974 C*
Organic Matter %	*8-10%*	*-*
Cation Exchange	*21.30*	*CEC*
Soluble Salts	*0.7*	*SSE*
Dry Matter %	*89-91%*	*ASTM D2974 C*
Phosphorus, P	*47 ppm*	*SSE*
Potassium, K	*351 ppm*	*SSE*
Magnesium, Mg	*241 ppm*	*SSE*
Calcium, Ca	*3400 ppm*	*SSE*
Sulfur, S	*121 ppm*	*SSE*
Zinc, Zn	*3.3 ppm*	*SSE*
Manganese, Mn	*0 ppm*	*SSE*
Iron, Fe	*0 ppm*	*SSE*
Copper, Cu	*0 ppm*	*SSE*
Boron, B	*0 ppm*	*SSE*
Sodium, Na	*52 ppm*	*SSE*
Nitrate, NO3	*22 ppm*	*SSE*

** Shipped: Bulk or in 1 cubic yard totes*

APPENDIX C: Stormwater Modelling Results

MORRISON HERSHFIELD

100 YEAR STORAGE CALCULATIONS

Input Cells	
Output Cells	

Roof	891.8	m2
available	1021.9	m2
for ponding		
	63.79	m3

Total Drainage Area =	0.2812	ha
Weighted Runoff Coefficient=	1.00	
Maximum Allowable Rate =	87.1	L/s/ha
Required Storage=	**22.93**	m^3
	2.78	

Note: Type 1a SCS Distribution

Time		1:100 Year 24 Hour Rainfall Depth	1:100 Year 24 Hour Runoff Volume	Average Discharge Rate	Approx. Storage Volume per 6min	Approx. Total Storage
(mins)	(hours)	(mm)/6min.	(m^3)/6min.	(m^3)/6min.	(m^3)	(m^3)
0	0.00	0.00	0.00	4.41	0.00	0.00
6	0.10	0.30	0.85	4.41	0.00	0.00
12	0.20	0.28	0.79	4.41	0.00	0.00
18	0.30	0.26	0.74	4.41	0.00	0.00
24	0.40	0.25	0.71	4.41	0.00	0.00
30	0.50	0.25	0.70	4.41	0.00	0.00
36	0.60	0.25	0.70	4.41	0.00	0.00
42	0.70	0.25	0.71	4.41	0.00	0.00
48	0.80	0.26	0.74	4.41	0.00	0.00
54	0.90	0.28	0.79	4.41	0.00	0.00
60	1.00	0.30	0.85	4.41	0.00	0.00
66	1.10	0.37	1.05	4.41	0.00	0.00
72	1.20	0.39	1.11	4.41	0.00	0.00
78	1.30	0.41	1.15	4.41	0.00	0.00
84	1.40	0.42	1.18	4.41	0.00	0.00
90	1.50	0.43	1.20	4.41	0.00	0.00
96	1.60	0.40	1.13	4.41	0.00	0.00
102	1.70	0.40	1.13	4.41	0.00	0.00
108	1.80	0.40	1.14	4.41	0.00	0.00
114	1.90	0.41	1.14	4.41	0.00	0.00
120	2.00	0.41	1.16	4.41	0.00	0.00
126	2.10	0.43	1.20	4.41	0.00	0.00
132	2.20	0.43	1.21	4.41	0.00	0.00
138	2.30	0.43	1.22	4.41	0.00	0.00
144	2.40	0.43	1.22	4.41	0.00	0.00
150	2.50	0.44	1.23	4.41	0.00	0.00
156	2.60	0.43	1.22	4.41	0.00	0.00
162	2.70	0.43	1.22	4.41	0.00	0.00
168	2.80	0.43	1.22	4.41	0.00	0.00
174	2.90	0.43	1.22	4.41	0.00	0.00
180	3.00	0.43	1.22	4.41	0.00	0.00
186	3.10	0.42	1.19	4.41	0.00	0.00
192	3.20	0.43	1.20	4.41	0.00	0.00
198	3.30	0.43	1.21	4.41	0.00	0.00
204	3.40	0.44	1.23	4.41	0.00	0.00
210	3.50	0.44	1.25	4.41	0.00	0.00
216	3.60	0.47	1.32	4.41	0.00	0.00
222	3.70	0.48	1.35	4.41	0.00	0.00
228	3.80	0.49	1.37	4.41	0.00	0.00
234	3.90	0.50	1.39	4.41	0.00	0.00
240	4.00	0.50	1.41	4.41	0.00	0.00
246	4.10	0.50	1.40	4.41	0.00	0.00

252	4.20	0.50	1.42	4.41	0.00	0.00
258	4.30	0.51	1.44	4.41	0.00	0.00
264	4.40	0.52	1.47	4.41	0.00	0.00
270	4.50	0.53	1.49	4.41	0.00	0.00
276	4.60	0.54	1.52	4.41	0.00	0.00
282	4.70	0.55	1.55	4.41	0.00	0.00
288	4.80	0.57	1.59	4.41	0.00	0.00
294	4.90	0.58	1.63	4.41	0.00	0.00
300	5.00	0.60	1.67	4.41	0.00	0.00
306	5.10	0.62	1.74	4.41	0.00	0.00
312	5.20	0.64	1.79	4.41	0.00	0.00
318	5.30	0.65	1.83	4.41	0.00	0.00
324	5.40	0.66	1.86	4.41	0.00	0.00
330	5.50	0.67	1.89	4.41	0.00	0.00
336	5.60	0.67	1.88	4.41	0.00	0.00
342	5.70	0.68	1.92	4.41	0.00	0.00
348	5.80	0.70	1.97	4.41	0.00	0.00
354	5.90	0.72	2.02	4.41	0.00	0.00
360	6.00	0.74	2.09	4.41	0.00	0.00
366	6.10	0.80	2.26	4.41	0.00	0.00
372	6.20	0.83	2.32	4.41	0.00	0.00
378	6.30	0.84	2.37	4.41	0.00	0.00
384	6.40	0.85	2.40	4.41	0.00	0.00
390	6.50	0.86	2.41	4.41	0.00	0.00
396	6.60	0.79	2.22	4.41	0.00	0.00
402	6.70	0.80	2.25	4.41	0.00	0.00
408	6.80	0.83	2.32	4.41	0.00	0.00
414	6.90	0.86	2.42	4.41	0.00	0.00
420	7.00	0.91	2.56	4.41	0.00	0.00
426	7.10	0.97	2.72	4.41	0.00	0.00
432	7.20	1.04	2.92	4.41	0.00	0.00
438	7.30	1.12	3.16	4.41	0.00	0.00
444	7.40	1.22	3.42	4.41	0.00	0.00
450	7.50	1.32	3.72	4.41	0.00	0.00
456	7.60	2.89	8.13	4.41	3.72	3.72
462	7.70	3.14	8.84	4.41	4.43	8.15
468	7.80	3.25	9.14	4.41	4.73	12.88
474	7.90	3.21	9.03	4.41	4.62	17.50
480	8.00	3.03	8.52	4.41	4.12	21.62
486	8.10	1.94	5.45	4.41	1.04	22.66
492	8.20	1.66	4.68	4.41	0.27	22.93
498	8.30	1.44	4.04	4.41	0.00	22.93
504	8.40	1.26	3.54	4.41	0.00	22.93
510	8.50	1.13	3.17	4.41	0.00	22.93
516	8.60	1.22	3.43	4.41	0.00	22.93
522	8.70	1.15	3.22	4.41	0.00	22.93
528	8.80	1.07	3.02	4.41	0.00	22.93
534	8.90	1.01	2.84	4.41	0.00	22.93
540	9.00	0.95	2.67	4.41	0.00	22.93
546	9.10	0.90	2.52	4.41	0.00	22.93
552	9.20	0.85	2.38	4.41	0.00	22.93
558	9.30	0.80	2.26	4.41	0.00	22.93
564	9.40	0.77	2.16	4.41	0.00	22.93
570	9.50	0.73	2.07	4.41	0.00	22.93
576	9.60	0.76	2.14	4.41	0.00	22.93
582	9.70	0.75	2.10	4.41	0.00	22.93
588	9.80	0.73	2.05	4.41	0.00	22.93
594	9.90	0.71	2.00	4.41	0.00	22.93
600	10.00	0.70	1.96	4.41	0.00	22.93
606	10.10	0.67	1.89	4.41	0.00	22.93

612	10.20	0.66	1.85	4.41	0.00	22.93
618	10.30	0.65	1.81	4.41	0.00	22.93
624	10.40	0.64	1.79	4.41	0.00	22.93
630	10.50	0.63	1.77	4.41	0.00	22.93
636	10.60	0.64	1.81	4.41	0.00	22.93
642	10.70	0.63	1.78	4.41	0.00	22.93
648	10.80	0.62	1.75	4.41	0.00	22.93
654	10.90	0.61	1.72	4.41	0.00	22.93
660	11.00	0.60	1.69	4.41	0.00	22.93
666	11.10	0.59	1.66	4.41	0.00	22.93
672	11.20	0.58	1.63	4.41	0.00	22.93
678	11.30	0.57	1.59	4.41	0.00	22.93
684	11.40	0.56	1.56	4.41	0.00	22.93
690	11.50	0.55	1.53	4.41	0.00	22.93
696	11.60	0.53	1.48	4.41	0.00	22.93
702	11.70	0.52	1.45	4.41	0.00	22.93
708	11.80	0.51	1.44	4.41	0.00	22.93
714	11.90	0.51	1.42	4.41	0.00	22.93
720	12.00	0.50	1.42	4.41	0.00	22.93
726	12.10	0.50	1.42	4.41	0.00	22.93
732	12.20	0.51	1.42	4.41	0.00	22.93
738	12.30	0.51	1.44	4.41	0.00	22.93
744	12.40	0.52	1.45	4.41	0.00	22.93
750	12.50	0.53	1.48	4.41	0.00	22.93
756	12.60	0.49	1.39	4.41	0.00	22.93
762	12.70	0.49	1.37	4.41	0.00	22.93
768	12.80	0.48	1.36	4.41	0.00	22.93
774	12.90	0.48	1.36	4.41	0.00	22.93
780	13.00	0.48	1.35	4.41	0.00	22.93
786	13.10	0.50	1.42	4.41	0.00	22.93
792	13.20	0.49	1.39	4.41	0.00	22.93
798	13.30	0.49	1.37	4.41	0.00	22.93
804	13.40	0.48	1.34	4.41	0.00	22.93
810	13.50	0.47	1.33	4.41	0.00	22.93
816	13.60	0.47	1.31	4.41	0.00	22.93
822	13.70	0.46	1.29	4.41	0.00	22.93
828	13.80	0.46	1.29	4.41	0.00	22.93
834	13.90	0.45	1.28	4.41	0.00	22.93
840	14.00	0.45	1.28	4.41	0.00	22.93
846	14.10	0.46	1.29	4.41	0.00	22.93
852	14.20	0.46	1.28	4.41	0.00	22.93
858	14.30	0.45	1.28	4.41	0.00	22.93
864	14.40	0.45	1.27	4.41	0.00	22.93
870	14.50	0.45	1.26	4.41	0.00	22.93
876	14.60	0.45	1.26	4.41	0.00	22.93
882	14.70	0.45	1.25	4.41	0.00	22.93
888	14.80	0.44	1.25	4.41	0.00	22.93
894	14.90	0.44	1.24	4.41	0.00	22.93
900	15.00	0.44	1.24	4.41	0.00	22.93
906	15.10	0.44	1.23	4.41	0.00	22.93
912	15.20	0.44	1.23	4.41	0.00	22.93
918	15.30	0.43	1.22	4.41	0.00	22.93
924	15.40	0.43	1.21	4.41	0.00	22.93
930	15.50	0.43	1.21	4.41	0.00	22.93
936	15.60	0.43	1.20	4.41	0.00	22.93
942	15.70	0.43	1.20	4.41	0.00	22.93
948	15.80	0.42	1.19	4.41	0.00	22.93
954	15.90	0.42	1.18	4.41	0.00	22.93
960	16.00	0.42	1.18	4.41	0.00	22.93
966	16.10	0.42	1.17	4.41	0.00	22.93

972	16.20	0.41	1.17	4.41	0.00	22.93
978	16.30	0.41	1.16	4.41	0.00	22.93
984	16.40	0.41	1.15	4.41	0.00	22.93
990	16.50	0.41	1.15	4.41	0.00	22.93
996	16.60	0.41	1.14	4.41	0.00	22.93
1002	16.70	0.41	1.14	4.41	0.00	22.93
1008	16.80	0.40	1.13	4.41	0.00	22.93
1014	16.90	0.40	1.13	4.41	0.00	22.93
1020	17.00	0.40	1.12	4.41	0.00	22.93
1026	17.10	0.40	1.12	4.41	0.00	22.93
1032	17.20	0.39	1.11	4.41	0.00	22.93
1038	17.30	0.39	1.10	4.41	0.00	22.93
1044	17.40	0.39	1.10	4.41	0.00	22.93
1050	17.50	0.39	1.09	4.41	0.00	22.93
1056	17.60	0.39	1.09	4.41	0.00	22.93
1062	17.70	0.38	1.08	4.41	0.00	22.93
1068	17.80	0.38	1.07	4.41	0.00	22.93
1074	17.90	0.38	1.07	4.41	0.00	22.93
1080	18.00	0.38	1.06	4.41	0.00	22.93
1086	18.10	0.38	1.06	4.41	0.00	22.93
1092	18.20	0.37	1.05	4.41	0.00	22.93
1098	18.30	0.37	1.05	4.41	0.00	22.93
1104	18.40	0.37	1.04	4.41	0.00	22.93
1110	18.50	0.37	1.03	4.41	0.00	22.93
1116	18.60	0.37	1.03	4.41	0.00	22.93
1122	18.70	0.36	1.02	4.41	0.00	22.93
1128	18.80	0.36	1.02	4.41	0.00	22.93
1134	18.90	0.36	1.01	4.41	0.00	22.93
1140	19.00	0.36	1.01	4.41	0.00	22.93
1146	19.10	0.36	1.00	4.41	0.00	22.93
1152	19.20	0.35	0.99	4.41	0.00	22.93
1158	19.30	0.35	0.99	4.41	0.00	22.93
1164	19.40	0.35	0.98	4.41	0.00	22.93
1170	19.50	0.35	0.98	4.41	0.00	22.93
1176	19.60	0.35	0.97	4.41	0.00	22.93
1182	19.70	0.34	0.96	4.41	0.00	22.93
1188	19.80	0.34	0.96	4.41	0.00	22.93
1194	19.90	0.34	0.95	4.41	0.00	22.93
1200	20.00	0.34	0.95	4.41	0.00	22.93
1206	20.10	0.33	0.94	4.41	0.00	22.93
1212	20.20	0.33	0.94	4.41	0.00	22.93
1218	20.30	0.33	0.93	4.41	0.00	22.93
1224	20.40	0.33	0.92	4.41	0.00	22.93
1230	20.50	0.33	0.92	4.41	0.00	22.93
1236	20.60	0.32	0.91	4.41	0.00	22.93
1242	20.70	0.32	0.91	4.41	0.00	22.93
1248	20.80	0.32	0.90	4.41	0.00	22.93
1254	20.90	0.32	0.90	4.41	0.00	22.93
1260	21.00	0.32	0.89	4.41	0.00	22.93
1266	21.10	0.31	0.88	4.41	0.00	22.93
1272	21.20	0.31	0.88	4.41	0.00	22.93
1278	21.30	0.31	0.87	4.41	0.00	22.93
1284	21.40	0.31	0.87	4.41	0.00	22.93
1290	21.50	0.31	0.86	4.41	0.00	22.93
1296	21.60	0.30	0.85	4.41	0.00	22.93
1302	21.70	0.30	0.85	4.41	0.00	22.93
1308	21.80	0.30	0.84	4.41	0.00	22.93
1314	21.90	0.30	0.84	4.41	0.00	22.93
1320	22.00	0.30	0.83	4.41	0.00	22.93
1326	22.10	0.29	0.83	4.41	0.00	22.93

1332	22.20	0.29	0.82	4.41	0.00	22.93
1338	22.30	0.29	0.81	4.41	0.00	22.93
1344	22.40	0.29	0.81	4.41	0.00	22.93
1350	22.50	0.29	0.80	4.41	0.00	22.93
1356	22.60	0.28	0.80	4.41	0.00	22.93
1362	22.70	0.28	0.79	4.41	0.00	22.93
1368	22.80	0.28	0.79	4.41	0.00	22.93
1374	22.90	0.28	0.78	4.41	0.00	22.93
1380	23.00	0.28	0.77	4.41	0.00	22.93
1386	23.10	0.27	0.77	4.41	0.00	22.93
1392	23.20	0.27	0.76	4.41	0.00	22.93
1398	23.30	0.27	0.76	4.41	0.00	22.93
1404	23.40	0.27	0.75	4.41	0.00	22.93
1410	23.50	0.26	0.74	4.41	0.00	22.93
1416	23.60	0.26	0.74	4.41	0.00	22.93
1422	23.70	0.26	0.73	4.41	0.00	22.93
1428	23.80	0.26	0.73	4.41	0.00	22.93
1434	23.90	0.26	0.72	4.41	0.00	22.93
1440	24.00	0.26	0.72	4.41	0.00	22.93