

January 15, 2024

G:\536.02\...\Van Horne Landing Subdivision - Pre-Design Report - Final.docx

Mr. Roger Nesbitt, CAO
City of Dryden
30 Van Horne Avenue
Dryden, Ontario P8N 2A7

via email only

D-536.02

Dear Mr. Nesbitt,

Re: Van Horne Landing Subdivision – Pre-Design Report

1.0 INTRODUCTION

JR Cousin Consultants Ltd. (JRCC) was retained to complete the pre-design design for the Van Horne Landing Subdivision. The proposed subdivision is located in the south portion of the City of Dryden (City), extending south from Lakeside Drive on both the east and west sides of Van Horne Avenue, with a total area of approximately 30 acres. The land is mostly undeveloped, although there are a few existing buildings on the east side of the site.

2.0 SUBDIVISION PLANNING

JRCC, together with HTFC Planning and Design (HTFC), are part of the project Consulting Team tasked with providing alternatives for the subdivision layout. As indicated in the RFP, HTFC prepared three layout options for review (attached in Appendix A), and the City provided comments to assist with preparation of the preferred alternative (Appendix B). It is anticipated that when the preferred subdivision layout is selected, the City will proceed with the subdivision approval process while the detailed design occurs.

HTFC has reviewed the subdivision requirements with the City of Dryden during the initial project start-up meeting. Items such as lot sizing, preferred lot frontage, right-of-way usage, allowance for active transportation and streetscaping, preferred locations of underground utilities, stormwater management techniques such as retention ponds, etc., has been discussed to ensure that the subdivision meets the City's vision and the City of Dryden, City of Thunder Bay, and OPSS / MOE standards and specifications.

There are four preferred typical roadway cross sections proposed for the subdivision, as shown in Appendix B:

- The Van Horne Avenue section to be reconstructed will have two 3.75 m wide travel lanes, with a 2.5 m wide parking lane on the east side with a concrete curb and gutter only on the east side. A 4.0 m wide active transportation sidewalk is included, extending outward from the back of curb on the east side. Grass boulevards will be 2.0 m wide on the east side of the roadway, and 4.5 m wide on the west side.
- The south extension of Van Horne Avenue will include two 3.75 m wide travel lanes, and a 2.5 m wide parking lane and concrete curb and gutter on both sides. The active transportation sidewalk on the east side is reduced to 2.0 m wide from the above, with landscaped boulevards of 1.8 m on the east side and 2.0 m on the west.
- Clay Banks Road will have two 3.65 m wide travel lanes, a 2.5 m parking lane on the north side, concrete curb and gutter on both sides, a 4.0 m wide active transportation sidewalk on the north side, a 3.7 m wide landscaped boulevard on the north side and 5.0 m wide on the south side.
- Internal subdivision residential roads have two 3.65 m wide travel lanes, a 2.5 m wide parking lane on the north or east side, concrete curb and gutter on both sides, a 1.5 m wide active transportation sidewalk on the north or east side, and 3.7 m and 5.0 m wide landscaped boulevards on the north / east and south / west sides respectively.

The preferred subdivision layout includes a total of 38 single family lots, 108 assisted living units, 250 multi-family units, and 1500 square meters of Commercial units. Access is provided via Van Horne Avenue. A four-way roundabout at Van Horne Avenue and Clay Banks Road branches to the commercial and multi family building to the west, the boat launch, street vendor, and food truck parking to the south, and Clay Banks Road to the east. Walking pathway trails provide recreational access along the edge of the Laura Howe Marsh and along Lake Wabigoon.

The population estimate for the subdivision is based on City of Thunder Bay Standards population density of 3.69 persons per single family dwelling, an assumed multi-family and assisted living average population of 2 persons per unit, and 12 commercial units (6 per building) with an assumed occupancy of 5 people per commercial unit.

The residential water and sewer generation rates have been provided by The City of Thunder Bay Standards. The residential rate is 400 liters per person per day (L/p/d). The commercial generation rate is assumed to be 50 L/p/d, from EPA guidelines.

3.0 WATER DISTRIBUTION

JRCC has prepared preliminary design plans of the underground infrastructure, which are included in Appendix C. As shown on plan ML-02, the water distribution system for the proposed subdivision will be connected to an existing watermain on Lakeside Drive. Based on the size of the proposed subdivision, watermain looping has been designed within the subdivision to efficiently provide adequate flows and pressures.

The subdivision water distribution system hydraulic properties were modelled using the software EPA net version 2.2, using the Hazen-Williams equation. The model diagram is included in Appendix D. Pipe roughness coefficients used in the model follow City of Thunder Bay Standards, depending on pipe size; 150 mm and smaller pipe uses a C of 100, 200-300 mm diameters use a C of 110, and pipe 300 mm and larger use a C of 120.

The spacing of watermain valves have been kept to a maximum of 240 m intervals along the water distribution system, and are located for optimal operation and flushing. Fire hydrants will be spaced a maximum 150m intervals along the water distribution system. The water mainline will be located in the road allowance at 3.0 metres from property line.

For preliminary design, it is assumed the existing City water distribution system operates at 483 kPa (70 psi) and is capable of delivering the required peak hour and fire flow rate at the tie in to the existing watermain on Lakeside Drive. The subdivision water demands are based on the City of Thunder Bay Standards and the peak hour flows are calculated using the Harmon peak hour factor equation. With the peak hour demands, the minimum residual water system pressures must be 350 kPa (50 psi). A City of Thunder Bay Standards fire flow of 32 Liters per second was applied at various proposed subdivision fire hydrant and commercial and multi family building sprinkler fire suppression system locations to determine the critical location of a fire. The distribution system must maintain minimum system pressures of 140 kPa (20 psi) with maximum day demands of 2.5 times the average day demands, at a fire hydrant at any critical location, and 350 kPa (50psi) at a sprinklered building connection, such as the multi-family, commercial, and assisted living buildings. Table 1: Water Distribution System Pressure with Fire Flow below lists the critical nodes and minimum residual system pressures.

Table 1: Water Distribution System Pressure with Fire Flow

Node	Head [kPa] @ 32 L/s
FH01	423.3
FH02	357.2
FH03	386.5

Based on the EPA net model, water pressure analysis of the watermains concluded that the required watermains will be PVC C-900 DR-18 pipe with 150 to 200 mm diameters, and with 50 mm HDPE DR-11 pipe used for the cul-de-sac. The watermain will be installed with a minimum of 2.75 m of ground cover.

Service lines will extend to the property line with a curb stop installed 0.3 m from the road allowance. In accordance with City of Dryden recommendations, a 19 mm diameter Municipex service line pipe will be used for housing lots, while 50 mm HDPE DR-11 service lines will be provided for the 3 existing offices on Clay Bank Road, and 150 mm diameter PVC C-900 DR-18 service line will be provided to the assisted living, and commercial and multi-family buildings in order to provide fire flows for building sprinkler systems.

Construction is to be in accordance with City, the City of Thunder Bay, and OPSS specifications and standards.

4.0 WASTEWATER COLLECTION

The Van Horne Landing Subdivision will be serviced with a gravity sewer collection system, which is to be connected to a proposed lift station on Van Horne Avenue. The waste water sewer main will be PCV SDR-35 pipe with minimum 200 mm diameter trunk lines. In general, when sizing sewer trunk lines the maximum design flow depth is not recommended to exceed 70% of the internal diameter of the pipe. When sizing sewer lateral branch lines, the maximum design flow depth is not recommended to exceed 50% of the internal diameter of the pipe. Ten State Standards minimum recommended pipe slopes are used to determine the minimum flow capacity for various pipe diameters. Flow capacity is calculated with recommended Mannings roughness factor “n” of 0.013. All sections of pipe have been designed to maintain a minimum 0.6 m/s scour velocity during peak hour flow to prevent buildup of debris with the system.

Table 2: Pipe Flow Rate Capacity at Minimum Pipe Slopes

Diameter	Min % Slope	Flow Rate at 50% Flow Depth	Flow Rate at 70% Flow Depth
200	0.40	10.5 L/s	17.6 L/s
250	0.28	16.0 L/s	26.8 L/s
300	0.22	22.5 L/s	37.8 L/s

Using City of Thunder Bay and OPSS standards and wastewater generation guidelines as discussed in section 2.0 above, and using pipe gradients based on site topography and the minimum recommended Ten Sates Standards slopes, the City of Thunder Bay Standards infiltration rate of 0.075 Liters per millimetre of pipe diameter per every 100 meters of pipe per day, and peak hour flow factors calculated based on system population using the Harmon peak hour equation, the entire network was designed to optimize pipe sizes and constructability. It is estimated the maximum development total Peak Wet Weather Flow (PWWF) for design is 21.91 L/s. The layout of the proposed development wastewater sewer is shown on ML-01 Appendix C. The table below shows the pipe slope and expected flow rates for several key locations throughout the community.

Table 3: Sewer Pipe Flow Rates

Upstream Manhole	Downstream Manhole	Diameter	% Slope	Expected Flow Rate
MH02	MH13	200	0.40	8.66 L/s
MH11	MH12	200	0.40	8.90 L/s
MH12	MH13	250	0.28	15.29 L/s
MH13	LS01	300	0.22	21.91 L/s

The waste water sewer pipe will be 200mm, 250mm, and 300 mm diameter SDR-35 PVC pipe. The manholes have been spaced to a maximum of 150 m to facilitate maintenance; the depth of the sewer will maintain 2.75 m cover at the high end with depths of up to 6.5 m at the proposed Van Horne Avenue lift station.

All but two sections of pipe can be 200 mm diameter. A 250 mm wastewater sewer trunk line along Van Horne Avenue between manholes 12 and 13 will carry the majority of all flows generated. For preliminary design, the sewage flow is directed toward the proposed lift station on Van Horne Avenue using a 300 mm pipe. During detailed design, the wastewater collection system will be revised based on the final subdivision layout and the Van Horne lift station design.

Wastewater sewers are to be construction is to be in accordance with City, the City of Thunder Bay, and OPSS specifications and standards.

5.0 LAND DRAINAGE SEWER

More frequent and intense rainfall events will be occurring as a result of climate change, forcing communities to review innovative stormwater management alternatives such as rain gardens, swales, evaporation, etc. to reduce run-off through land drainage sewer piping and downstream watersheds. JRCC will incorporate these strategies during the detailed design process.

A land drainage sewer is required in the proposed subdivision for storm water management. The design of the land drainage sewer (LDS) was sized in accordance with Ministry of Transportation (MTO) guidelines to accommodate a 1 in 5-year return storm with a duration of 1 -hour for urban and rural local road LDS pipes and structures. Based on storm intensity, duration, and frequency data from the nearest available rainfall recording station, at Rawson Lake Ontario, the 1 in 5-year 60-minute duration storm intensity used for determining design flow is 33 mm per hour.

The HTFC preliminary subdivision layout was divided into catchment areas based on assumed locations of catch basin storm water sewer system inlets. The Rational Method was used to calculate peak storm water flow rates, with an assumed post development runoff coefficient of 0.5.

Catch basins will be placed at natural low points and trunk line manholes will be spaced to a maximum of 150m to facilitate cleaning and flushing operations. The LDS discharge to Wabigoon Lake is located near the east end of Clay Banks Road. Various approvals are required (DFO, MNRF, LRCA), with reference to City of Thunder Bay section 2. 2.3.3 and OPSS for design and construction requirements. The LDS will be PVC SDR-35 pipe with 250 mm to 900 mm diameters. The minimum pipe gradient is 0.1%, and the pipes are sized based on a maximum flow depth of 97%. The LDS will be installed with a minimum of 1.8 m of ground cover.

Table 4: LDS Gravity Pipe Flow at 0.1% Gradient

Diameter	Min % Slope	Flow Rate at 97% Flow Depth
250	0.10	20.04 L/s
300	0.10	32.59 L/s
375	0.10	59.09 L/s
450	0.10	96.09 L/s
525	0.10	144.94 L/s
600	0.10	206.93 L/s
750	0.10	375.20 L/s
900	0.10	610.11 L/s

The layout of the proposed development land drainage sewer is shown on ML-03 Appendix C. The table below shows the minimum pipe slope and expected flow rates for several key locations throughout the community.

Table 5: LDS Pipe Flow Rates

Upstream LDS Manhole	Downstream LDS Manhole	Diameter	% Slope	Expected Flow Rate
MH01	MH02	525	0.10	98.84 L/s
MH03	MH06	750	0.10	236.11 L/s
MH06	MH09	750	0.10	342.76 L/s
MH08	MH09	750	0.10	220.57 L/s
MH09	DC01	900	0.10	602.36 L/s

For preliminary design, the land drainage flow is directed toward the LDS outfall DC01 into Lake Wabigoon, using a 900 mm pipe. During detailed design, the LDS system will be revised based on the final subdivision layout.

The LDS will be construction is to be in accordance with City, the City of Thunder Bay, and OPSS specifications and standards.

6.0 ROADS AND DRAINAGE

The development will be serviced with a network of asphalt paved curb and gutter roads and asphalt side ditch access roads. The road design includes 3.75 m driving lanes and 2.5 m parking lanes along Van Horne Avenue and Clay Banks Road, and 3.65 m driving lanes and 2.5 m parking lanes along the interior residential roads. All roads will have a 3% cross fall and minimum 0.5% longitudinal grade.

Based on the City of Thunder Bay Standards and Specifications:

- The road pavement structure will have:
 - a pavement structure of 80 mm asphalt in two 40 mm lifts,
 - 150 mm A-base,
 - 500 mm B-base,
 - and geotextile will be used.
- The driveway pavement structure will have:

- 80 mm asphalt,
- 150 mm A-base,
- 200 mm B-base,
- and geotextile.
- The 1.5 m and 4.0 m wide development active transportation sidewalks will be designed with:
 - 80mm asphalt,
 - 350 mm A-base,
 - and geotextile.
- The parking lot pavement structure shall have:
 - 40 mm of asphalt,
 - 80 mm granular A base,
 - and all parking lots shall be curbed.

Drainage throughout the development will be provided using concrete curb and gutter roads for all roadways fronting residential, apartment, and public space lots. An LDS network will service the residential area curb and gutter roads, and side ditches will be used for drainage of Van Horne Avenue and Clay Banks Road. All roadway drainage will be located within the proposed road ROW.

All topsoil within the ROW will be stripped prior to construction. Seeding and topsoil has been included for the area between the edge of road and the property line. Final lot grading has not been included in the cost estimate.

Following City of Thunder Bay Standards, minimum intersection curb radii are 8.0 m. The Cul De Sac roadway will have a radius of 15.0 m to the back of curb. Curb and gutter grades will be minimum 0.3%, with 0.5% preferable. The maximum gutter grade is 6%. The maximum sidewalk slope is 5%, with a minimum 2% cross slope. The roadway structures will be constructed over a compacted subgrade free of organic or frost susceptible soil. Boulevard grades of 2% are to be used wherever feasible.

7.0 COST ESTIMATE

An itemized budget class “C” cost estimate of construction and non-construction costs is presented in Appendix E. The following is a summarization of the capital costs for each area of required works for a 2024 construction season. The costs for each year after this projection period should be inflated per prevailing inflation and market conditions.

Table 6 - Class C Cost Estimate – Van Horne Landing Subdivision

Description	Total
Multi-Family Units West	\$4,056,000.00
Van Horne Avenue	\$1,704,000.00
Clay Banks Road	\$2,922,000.00
Residential Works	\$5,190,000.00
Multi-Family Units East	\$2,778,000.00
Subtotal Construction	\$16,650,000.00

Yours truly,

JR Cousin Consultants Ltd.

Scott Blonski, P. Eng.
Municipal Engineer

Matt Fisher, P. Eng.
Senior Municipal Engineer

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APPENDIX A

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STATS:
 SINGLE-DETACHED HOUSING = 37
 ASSISTED LIVING = 112
 MULTI-HOUSING = 162
 COMMERCIAL = 3900 sq.m

OPTION 1A
 HTFC PLANNING + DESIGN
 2023-11-14

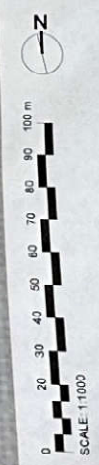


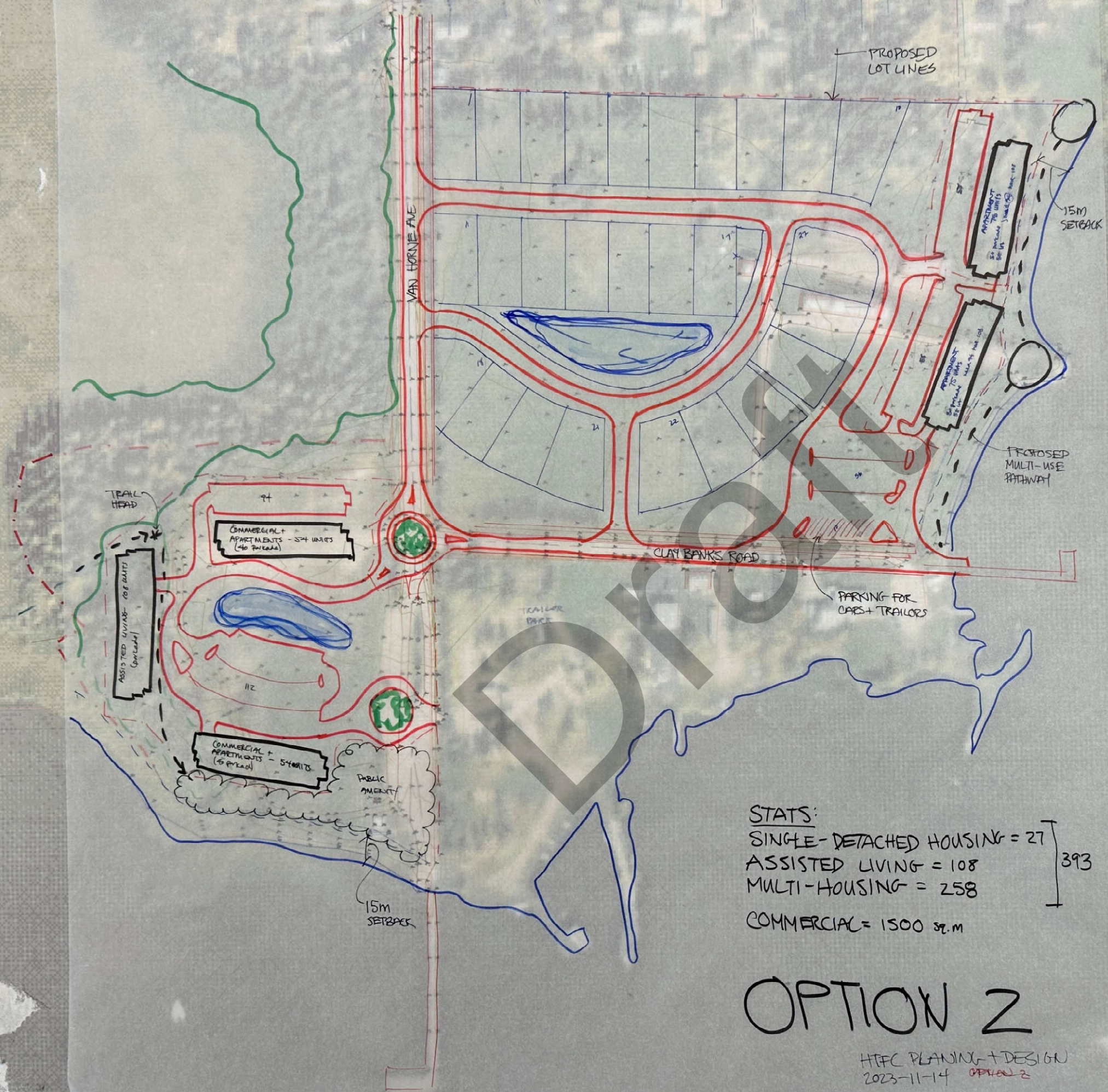


STATS:
SINGLE-DETACHED HOUSING = 29
ASSISTED LIVING = 108
MULTI-HOUSING = 108
COMMERCIAL = 1500 sq.m

245

OPTION 1B
HTFC PLANNING + DESIGN
2023-11-14





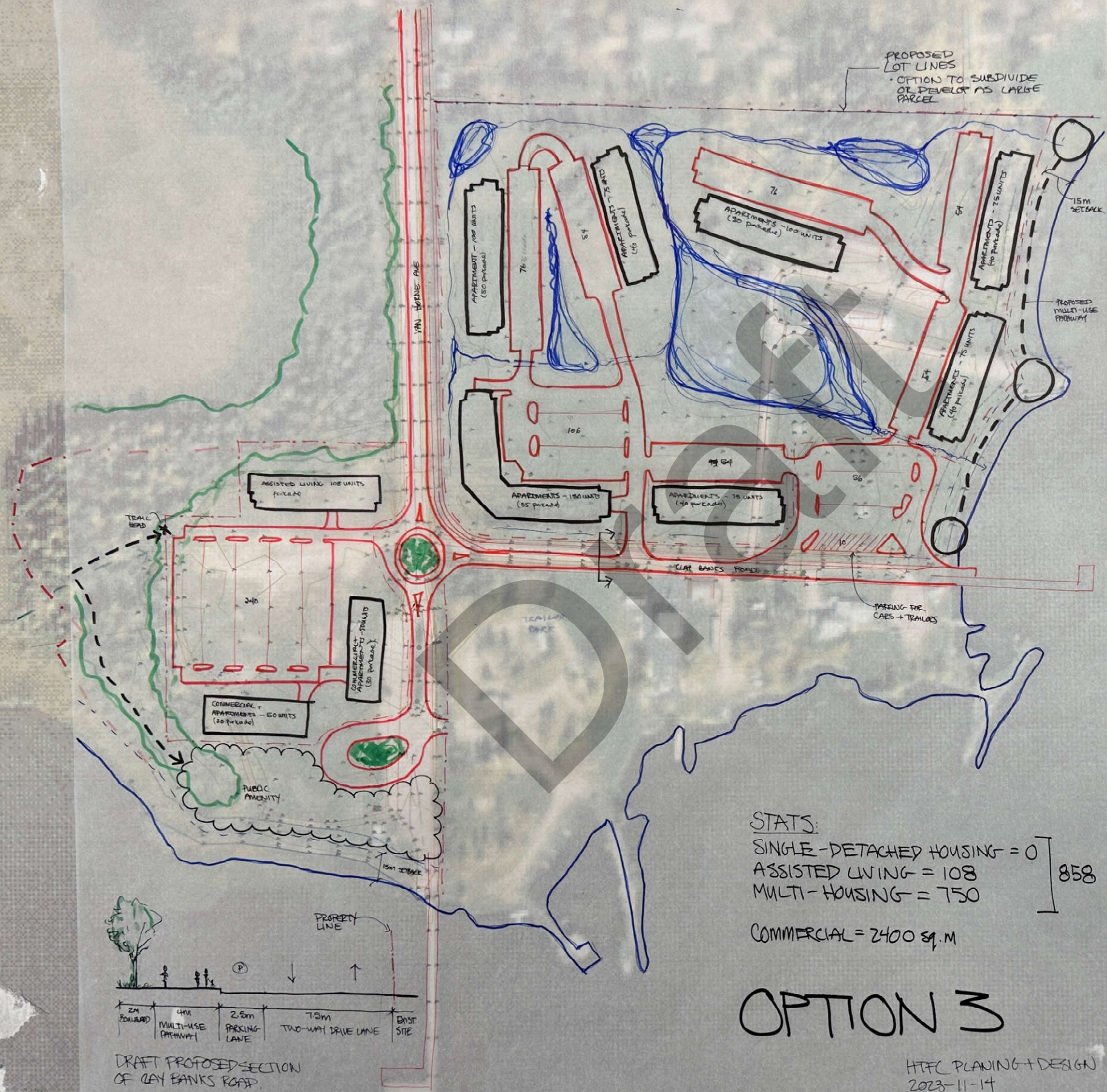
STATS:
SINGLE-DETACHED HOUSING = 27
ASSISTED LIVING = 108
MULTI-HOUSING = 258
COMMERCIAL = 1500 sq.m

393

OPTION 2

HTFC PLANNING + DESIGN
2023-11-14 OPTION 2

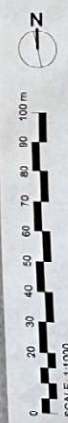




STATS:
 SINGLE-DETACHED HOUSING = 0
 ASSISTED LIVING = 108
 MULTI-HOUSING = 750
 COMMERCIAL = 2400 sq.m

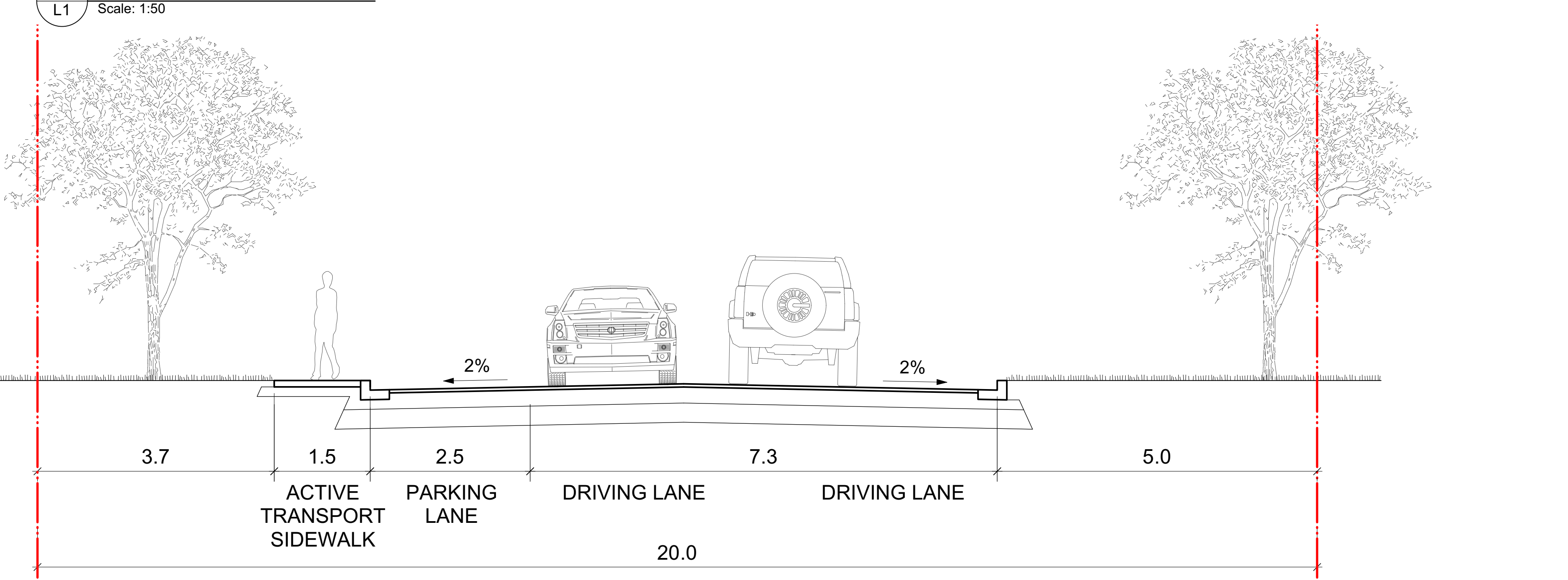
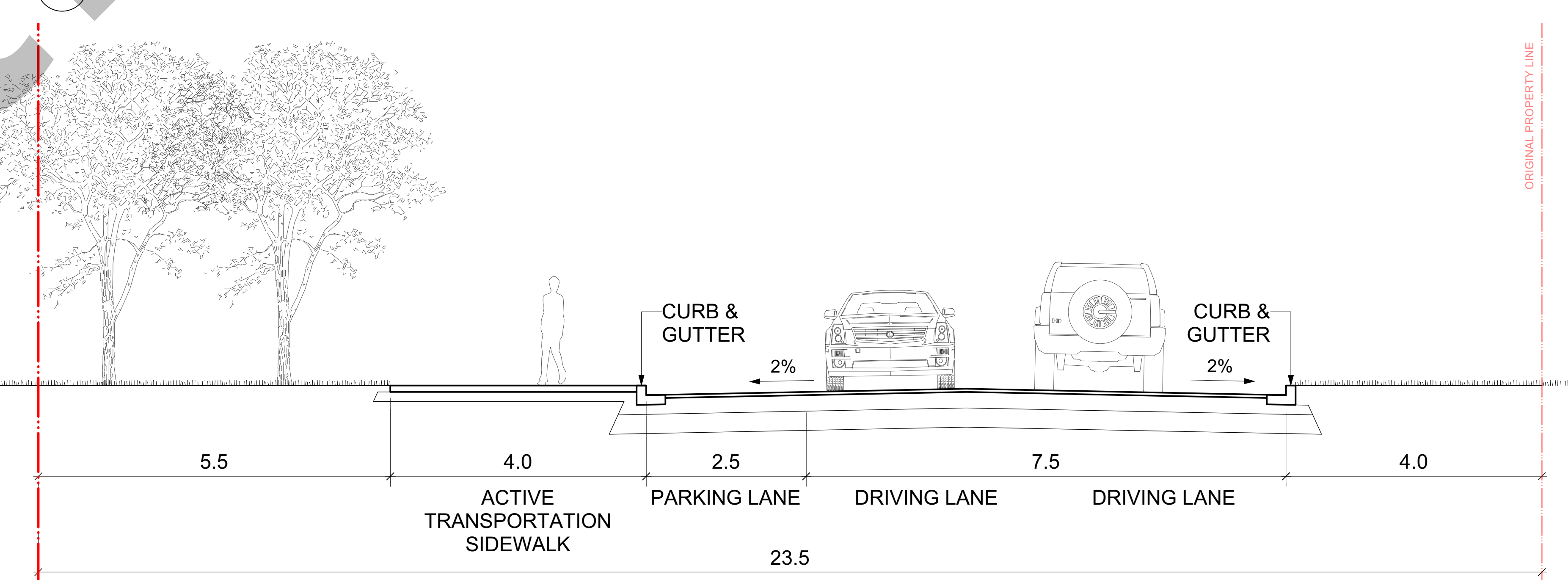
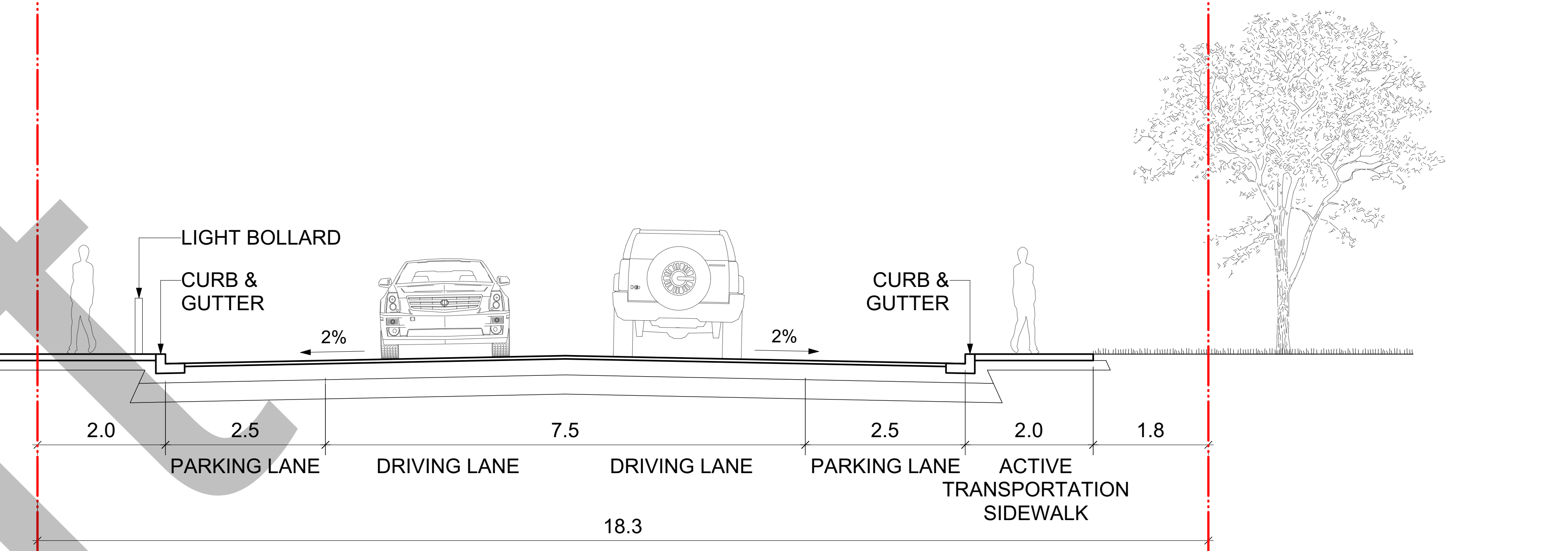
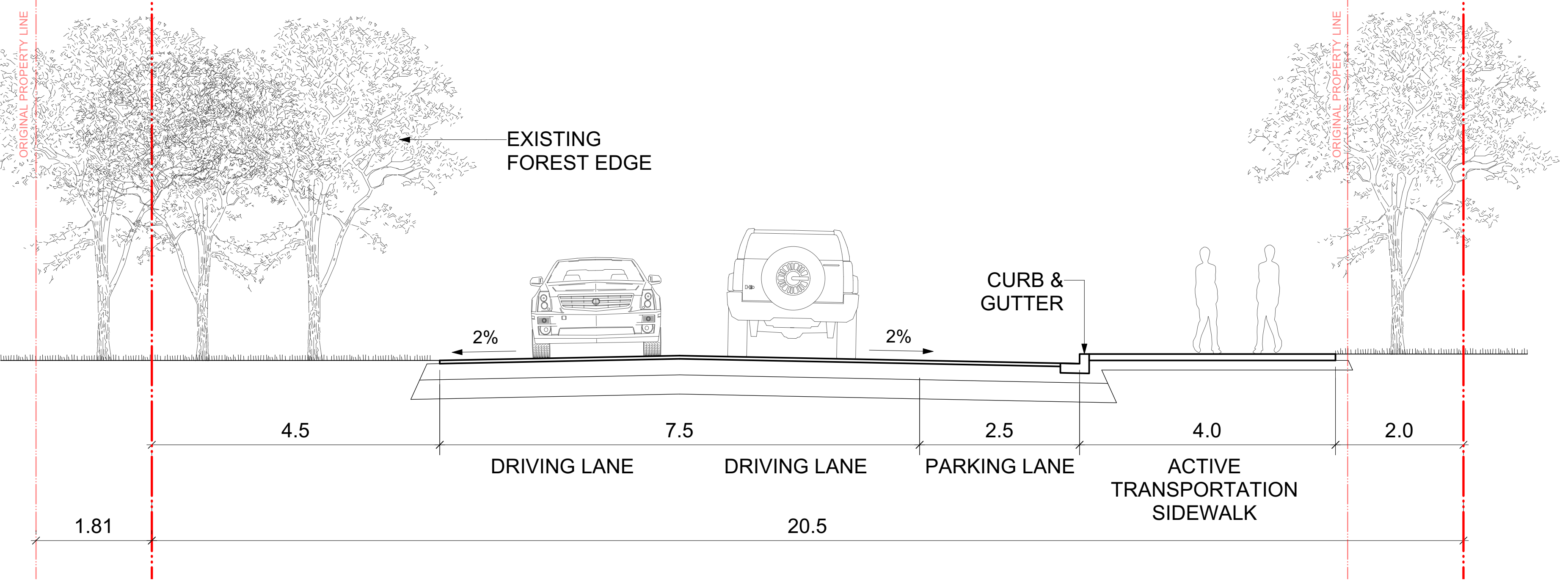
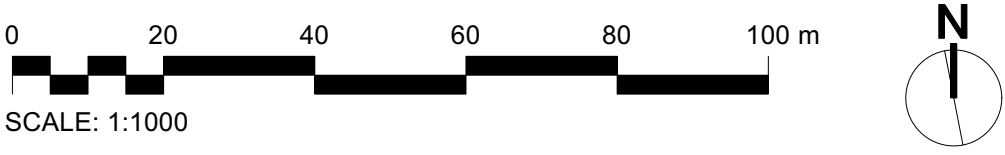
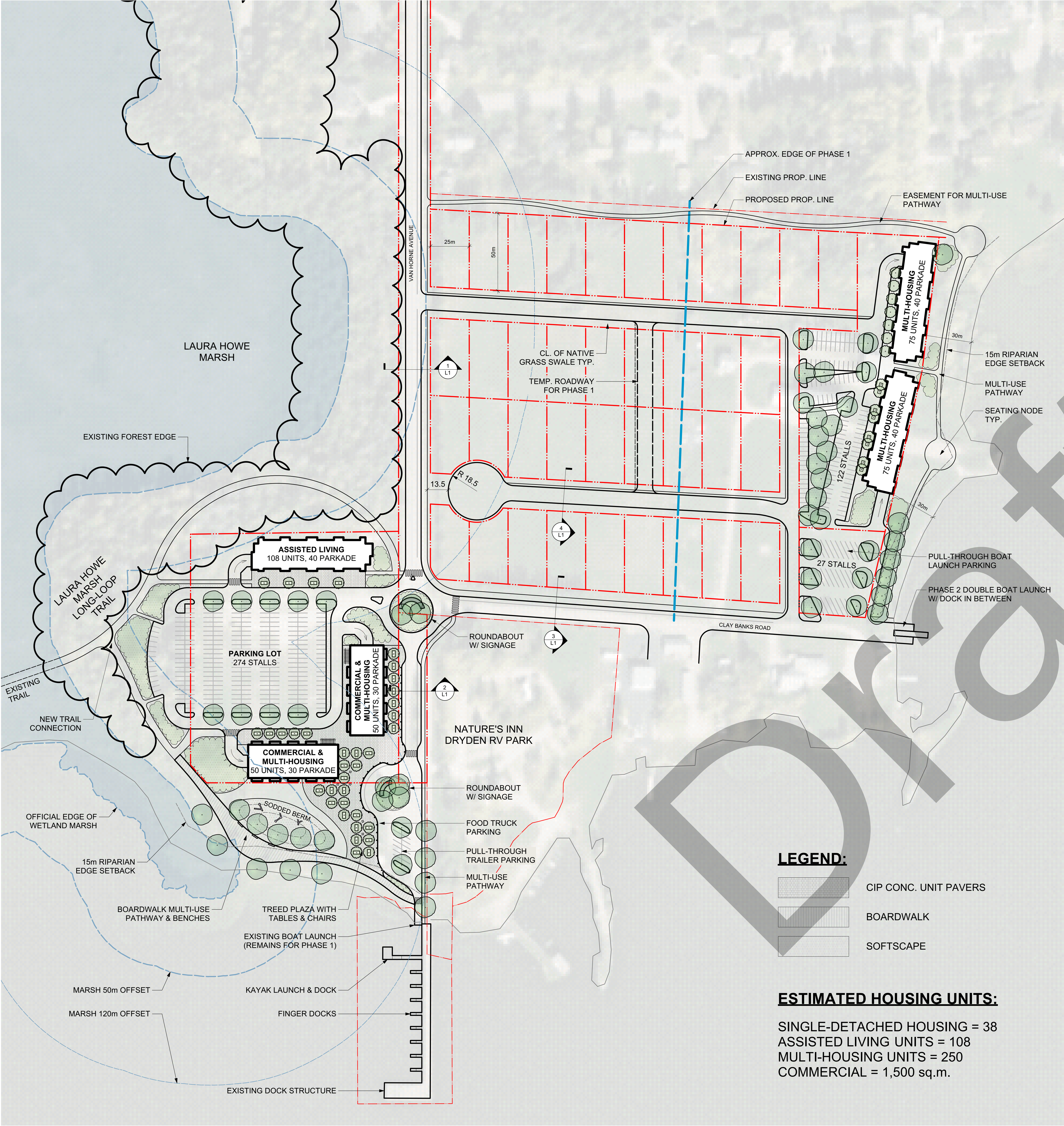
OPTION 3

HTFC PLANNING + DESIGN
 2023-11-14



APPENDIX B

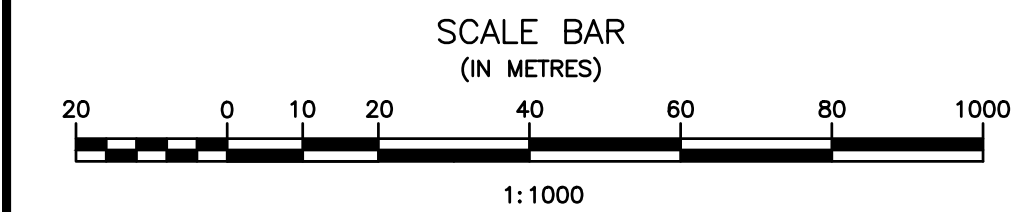
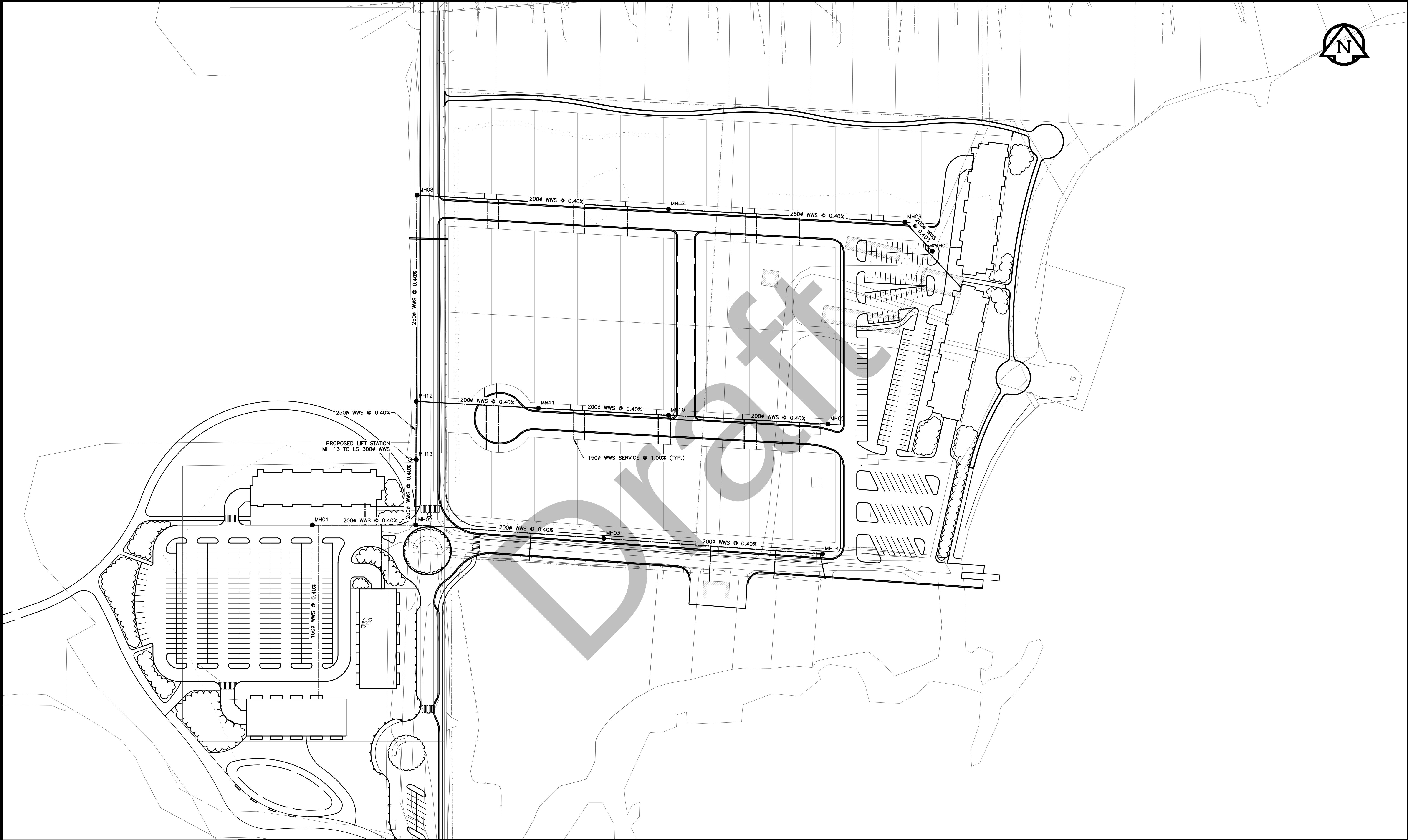
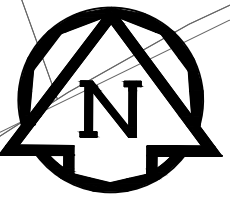
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APPENDIX C

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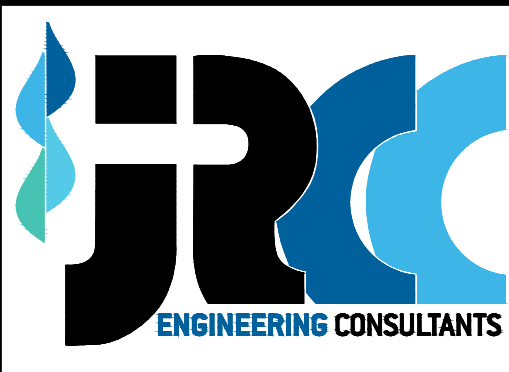
No.	REVISIONS	DATE	INITIALS

B.M. EL.

LOCATIONS OF UNDERGROUND STRUCTURES/UTILITIES AS SHOWN ARE BASED ON AVAILABLE INFORMATION BUT NO GUARANTEE IS GIVEN OR IMPLIED THAT ALL EXISTING UNDERGROUND STRUCTURES/UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL UNDERGROUND STRUCTURES/UTILITIES MUST BE OBTAINED FROM THE APPROPRIATE AUTHORITY/OWNER, BY THE CONTRACTOR, BEFORE PROCEEDING WITH CONSTRUCTION.

ENGINEER'S SEAL

PRELIMINARY

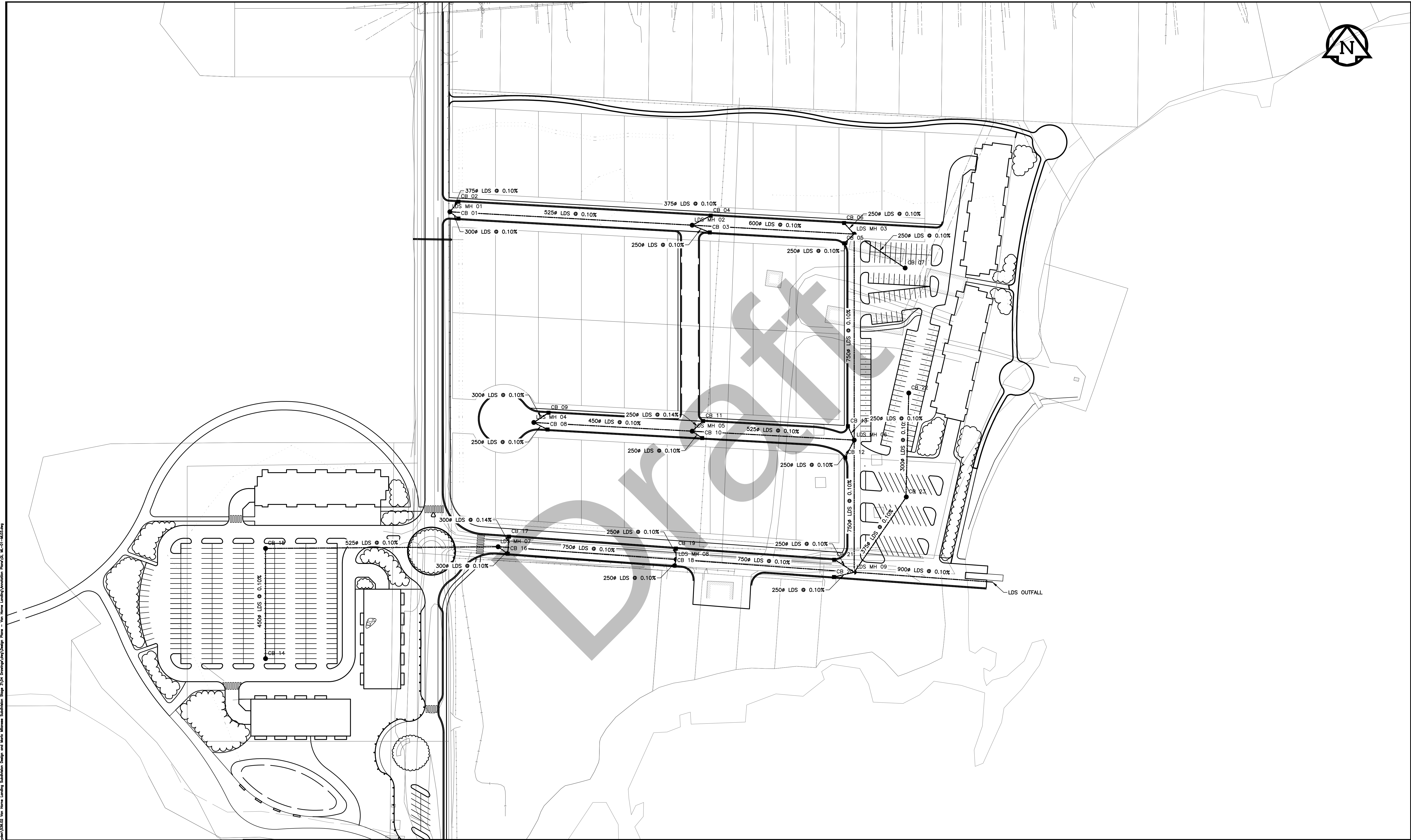
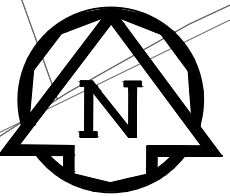


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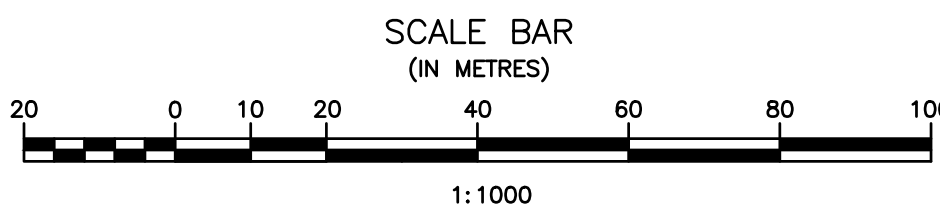
ENGINEERING EXCELLENCE SINCE 1981

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DRAWN BY: DD	
REVIEWED BY: MF	
SCALE: 1:1000	DATE: 24/01/4
PLAN: ML-01	SHEET: 02 of 04

Jan 15, 2024 - 03:10pm 010003358 City of Dryden\336.02 Van Horne Landfill Substation Design and Manhole Substation Stage 2\04 Drawings\04a Design Plans - Van Horne Landfill\Variation Plans\04 ML-01-ML03.dwg



Jun 16, 2024 - 03:10pm 0:00:00:00 City of Dryden 0306.02 Van Horne Landfill Subdivision Design and Mario Marone Subdivision Stage 2/04 Drawings/04/04 Design Plans - Van Horne Landfill/04/04 Design Plans - ML-01-ML-03.dwg



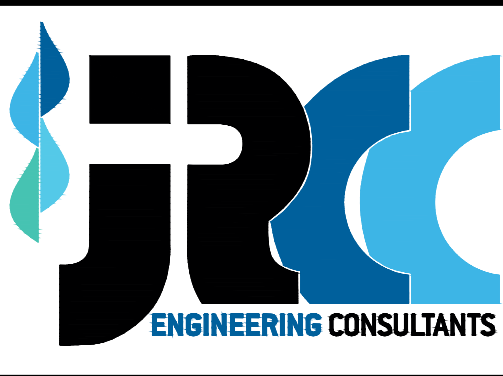
No.	REVISIONS	DATE	INITIALS

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ENGINEER'S SEAL

PRELIMINARY



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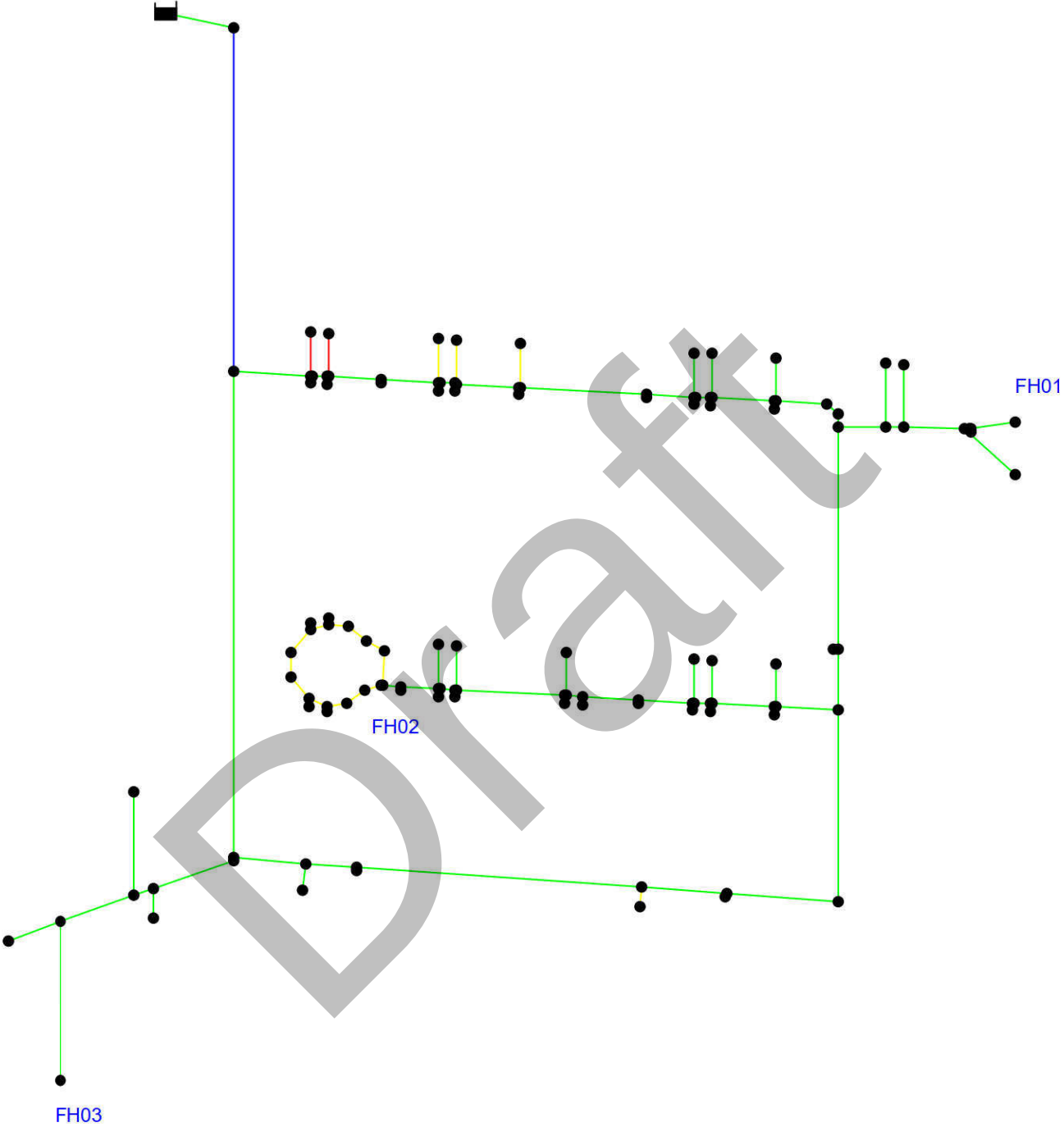
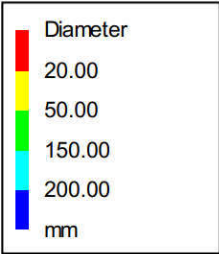
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DESIGNED BY: SB	TITLE: LAND DRAINAGE WORKS PLAN
DRAWN BY: DD	
REVIEWED BY: MF	
SCALE: 1:1000	DATE: 24/01/4
PLAN: ML-03	SHEET: 04 of 04

APPENDIX D

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Van Horne Landing Watermain - EPA Net Max Day + Fire Flows

Day 1, 12:00 AM



APPENDIX E

Draft

Class C Cost Estimate

Van Horne Landing Subdivision

Total Project

Item	Description	Unit	Approximate Quantity	Unit Price	Amount
	General				
1	Mobilization, Insurance, and Bonding	lump sum	1	\$ 449,000.00	\$ 449,000.00
	Water Works				
2	Watermain				
	a) 50 mm HDPE	metre	125	\$ 110.00	\$ 13,750.00
	b) 150 mm PVC	metre	1,250	\$ 330.00	\$ 412,500.00
	c) 200 mm PVC	metre	150	\$ 425.00	\$ 63,750.00
3	Watermain Gate Valve				
	a) 50 mm	each	2	\$ 2,000.00	\$ 4,000.00
	b) 150 mm	each	14	\$ 3,500.00	\$ 49,000.00
	c) 200 mm	each	1	\$ 5,000.00	\$ 5,000.00
4	Fire Hydrant Assembly	each	9	\$ 13,500.00	\$ 121,500.00
5	Connection to Existing Watermain	each	1	\$ 10,000.00	\$ 10,000.00
6	Water Service Main Stop and Curb Stop Assembly				
	a) 19 mm	each	37	\$ 2,100.00	\$ 77,700.00
	b) 50mm	each	3	\$ 2,300.00	\$ 6,900.00
	c) 150 mm	each	5	\$ 3,500.00	\$ 17,500.00
7	Water Service Line Piping				
	a) 19 mm	metre	360	\$ 155.00	\$ 55,800.00
	b) 50mm	metre	20	\$ 120.00	\$ 2,400.00
	c) 150 mm	metre	170	\$ 200.00	\$ 34,000.00
8	Connection to Existing Building	each	3	\$ 2,000.00	\$ 6,000.00
					\$ 879,800.00
	Sanitary Sewer Works				
9	Gravity Sewermain				
	a) 200 mm PVC	metre	1,050	\$ 330.00	\$ 346,500.00
	b) 250 mm PVC	metre	160	\$ 350.00	\$ 56,000.00
	c) 300 mm PVC	metre	25	\$ 375.00	\$ 9,375.00
10	Gravity Sewer Manhole Frame and Cover	metre	13	\$ 1,750.00	\$ 22,750.00
11	Gravity Sewer Manhole Riser	metre	53	\$ 3,000.00	\$ 159,000.00
12	Road Crossing Surcharge	each	10	\$ 2,800.00	\$ 28,000.00
13	Gravity Sewer Service Tee	each	44	\$ 900.00	\$ 39,600.00
14	Gravity Sewer Service Piping				
	a) 150 mm PVC	metre	725	\$ 275.00	\$ 199,375.00
15	Television and Mandrel testing	metre	1,155	\$ 25.00	\$ 28,875.00
					\$ 889,475.00
	Road Works and Drainage				
16	Clearing, Grubbing and Disposal	lump sum	1	\$ 25,500.00	\$ 25,500.00
17	Stripping and Stockpiling Topsoil	square metre	34,500	\$ 15.00	\$ 517,500.00
18	Shape and Compact Road Subgrade				
	a) Roadway	square metre	18,100	\$ 3.50	\$ 63,350.00
	b) Driveway	square metre	18,125	\$ 3.50	\$ 63,440.00
	c) Pathway	square metre	9,250	\$ 3.50	\$ 32,375.00
19	Geotextile				
	a) Roadway	square metre	18,100	\$ 4.80	\$ 86,880.00
	b) Driveway	square metre	18,125	\$ 4.80	\$ 87,000.00
	c) Pathway	square metre	9,250	\$ 5.00	\$ 46,250.00
20	Granular Class B Supply and Place				
	a) Roadway 500 mm	square metre	18,100	\$ 24.00	\$ 434,400.00

Class C Cost Estimate

Van Horne Landing Subdivision

Total Project

Item	Description	Unit	Approximate Quantity	Unit Price	Amount
	b) Driveway 200 mm	square metre	18,125	\$ 26.00	\$ 471,250.00
21	Granular Class A Supply and Place				
	a) Roadway 150 mm	square metre	18,100	\$ 25.00	\$ 452,500.00
	b) Driveway 150 mm	square metre	18,125	\$ 25.00	\$ 453,125.00
	c) Pathway 300 mm	square metre	9,250	\$ 40.00	\$ 370,000.00
22	Asphaltic Concrete				
	a) Roadway 80 mm	square metre	14,775	\$ 55.00	\$ 812,625.00
	b) Driveway 80 mm	square metre	18,125	\$ 55.00	\$ 996,875.00
	c) Pathway 80 mm	square metre	12,350	\$ 55.00	\$ 679,250.00
23	Asphalt Removal	square metre	5,175	\$ 22.00	\$ 113,850.00
24	Excavation	square metre	50,000	\$ 25.00	\$ 1,250,000.00
25	Concrete Curb and Gutter	metre	5,360	\$ 135.00	\$ 723,600.00
26	Culverts				
	a) 600 mm CMP	metre	24	\$ 500.00	\$ 12,000.00
27	Land Drainage Sewer				
	a) 250 mm PVC	metre	155	\$ 375.00	\$ 58,125.00
	b) 300 mm PVC	metre	105	\$ 350.00	\$ 36,750.00
	c) 375 mm PVC	metre	75	\$ 375.00	\$ 28,125.00
	d) 450 mm PVC	metre	160	\$ 450.00	\$ 72,000.00
	e) 525 mm PVC	metre	380	\$ 600.00	\$ 228,000.00
	f) 600 mm PVC	metre	95	\$ 675.00	\$ 64,125.00
	g) 750 mm PVC	metre	410	\$ 900.00	\$ 369,000.00
	h) 900 mm PVC	metre	85	\$ 930.00	\$ 79,050.00
28	Catch Basin Frame and Cover	each	18	\$ 2,500.00	\$ 45,000.00
29	Catch Basin Riser	metre	36	\$ 2,300.00	\$ 82,800.00
30	LDS Manhole Frame and Cover	each	14	\$ 1,750.00	\$ 24,500.00
31	LDS Manhole Riser	metre	42	\$ 3,000.00	\$ 126,000.00
32	LDS Outfall	each	1	\$ 5,000.00	\$ 5,000.00
33	Television and Mandrel testing	metre	1,425	\$ 25.00	\$ 35,625.00
34	Granular Density Testing	lump sum	1	\$ 16,000.00	\$ 16,000.00
35	Concrete Testing	lump sum	1	\$ 6,500.00	\$ 6,500.00
36	Asphalt Testing	lump sum	1	\$ 16,000.00	\$ 16,000.00
37	Boulevard Grading	square metre	19,100	\$ 3.00	\$ 57,300.00
38	Topsoil and Seeding	square metre	19,100	\$ 7.00	\$ 133,700.00
39	Erosion Control and Silt Fencing	lump sum	1	\$ 12,000.00	\$ 12,000.00
40	Bedrock Removal	cubic metre	500	\$ 475.00	\$ 237,500.00
					\$ 9,424,870.00

Subtotal Construction: \$ 11,643,100.00

Contingency (15%): \$ 1,746,500.00

Engineering (15%): \$ 1,746,500.00

HST(13%): \$ 1,513,600.00

Total Project Class C Cost Estimate: \$ 16,650,000.00

Notes:

- Driveways, lot grading have not been included.
- Phone and Hydro servicing costs have not been included.
- The landscaping and amenities have not been included.
- Clearing and grubbing only within the R.O.W.

Class C Cost Estimate

Van Horne Landing Subdivision

Multi-Family Units West

Item	Description	Unit	Approximate Quantity	Unit Price	Amount
	General				
1	Mobilization, Insurance, and Bonding	lump sum	1	\$ 109,000.00	\$ 109,000.00
	Water Works				
2	Watermain				
	a) 50 mm HDPE	metre			
	b) 150 mm PVC	metre	100	\$ 330.00	\$ 33,000.00
	c) 200 mm PVC	metre			
3	Watermain Gate Valve				
	a) 50 mm	each			
	b) 150 mm	each	2	\$ 3,500.00	\$ 7,000.00
	c) 200 mm	each			
4	Fire Hydrant Assembly	each	1	\$ 13,500.00	\$ 13,500.00
5	Connection to Existing Watermain	each			
6	Water Service Main Stop and Curb Stop Assembly				
	a) 19 mm	each			
	b) 50mm	each			
	c) 150 mm	each	3	\$ 3,500.00	\$ 10,500.00
7	Water Service Line Piping				
	a) 19 mm	metre			
	b) 50mm	metre			
	c) 150 mm	metre	120	\$ 200.00	\$ 24,000.00
8	Connection to Existing Building	each			
					\$ 88,000.00
	Sanitary Sewer Works				
9	Gravity Sewermain				
	a) 200 mm PVC	metre	75	\$ 330.00	\$ 24,750.00
	b) 250 mm PVC	metre			
	c) 300 mm PVC	metre			
10	Gravity Sewer Manhole Frame and Cover	metre	1	\$ 1,750.00	\$ 1,750.00
11	Gravity Sewer Manhole Riser	metre	3	\$ 3,000.00	\$ 9,000.00
12	Road Crossing Surcharge	each	1	\$ 2,800.00	\$ 2,800.00
13	Gravity Sewer Service Tee	each	3	\$ 900.00	\$ 2,700.00
14	Gravity Sewer Service Piping				
	a) 150 mm PVC	metre	175	\$ 275.00	\$ 48,125.00
15	Television and Mandrel testing	metre	65	\$ 25.00	\$ 1,625.00
					\$ 90,750.00
	Road Works and Drainage				
16	Clearing, Grubbing and Disposal	lump sum	1	\$ 12,000.00	\$ 12,000.00
17	Stripping and Stockpiling Topsoil	square metre	7,000	\$ 15.00	\$ 105,000.00
18	Shape and Compact Road Subgrade				
	a) Roadway	square metre	3,325	\$ 3.50	\$ 11,640.00
	b) Driveway	square metre	10,975	\$ 3.50	\$ 38,410.00
	c) Pathway	square metre	3,675	\$ 3.50	\$ 12,860.00
19	Geotextile				
	a) Roadway	square metre	3,325	\$ 4.80	\$ 15,960.00
	b) Driveway	square metre	10,975	\$ 4.80	\$ 52,680.00
	c) Pathway	square metre	3,675	\$ 5.00	\$ 18,375.00
20	Granular Class B Supply and Place				
	a) Roadway 500 mm	square metre	3,325	\$ 24.00	\$ 79,800.00

Class C Cost Estimate

Van Horne Landing Subdivision

Multi-Family Units West

Item	Description	Unit	Approximate Quantity	Unit Price	Amount
	b) Driveway 200 mm	square metre	10,975	\$ 26.00	\$ 285,350.00
21	Granular Class A Supply and Place				
	a) Roadway 150 mm	square metre	3,325	\$ 25.00	\$ 83,125.00
	b) Driveway 150 mm	square metre	10,975	\$ 25.00	\$ 274,375.00
	c) Pathway 300 mm	square metre	3,675	\$ 40.00	\$ 147,000.00
22	Asphaltic Concrete				
	a) Roadway 80 mm	square metre			
	b) Driveway 80 mm	square metre	10,975	\$ 55.00	\$ 603,625.00
	c) Pathway 80 mm	square metre	3,675	\$ 55.00	\$ 202,125.00
23	Asphalt Removal	square metre			
24	Excavation	square metre	6,000	\$ 25.00	\$ 150,000.00
25	Concrete Curb and Gutter	metre	1,780	\$ 135.00	\$ 240,300.00
26	Culverts				
	a) 600 mm CMP	metre			
27	Land Drainage Sewer				
	a) 250 mm PVC	metre			
	b) 300 mm PVC	metre			
	c) 375 mm PVC	metre			
	d) 450 mm PVC	metre	65	\$ 450.00	\$ 29,250.00
	e) 525 mm PVC	metre	140	\$ 600.00	\$ 84,000.00
	f) 600 mm PVC	metre			
	g) 750 mm PVC	metre			
	h) 900 mm PVC	metre			
28	Catch Basin Frame and Cover	each			
29	Catch Basin Riser	metre			
30	LDS Manhole Frame and Cover	each	2	\$ 1,750.00	\$ 3,500.00
31	LDS Manhole Riser	metre	6	\$ 3,000.00	\$ 18,000.00
32	LDS Outfall	each			
33	Television and Mandrel testing	metre	200	\$ 25.00	\$ 5,000.00
34	Granular Density Testing	lump sum	1	\$ 6,000.00	\$ 6,000.00
35	Concrete Testing	lump sum	1	\$ 2,000.00	\$ 2,000.00
36	Asphalt Testing	lump sum	1	\$ 5,000.00	\$ 5,000.00
37	Boulevard Grading	square metre	6,100	\$ 3.00	\$ 18,300.00
38	Topsoil and Seeding	square metre	6,100	\$ 7.00	\$ 42,700.00
39	Erosion Control and Silt Fencing	lump sum	1	\$ 2,000.00	\$ 2,000.00
40	Bedrock Removal	cubic metre			
					\$ 2,548,375.00

Subtotal Construction: \$ 2,836,200.00

Contingency (15%): \$ 425,400.00

Engineering (15%): \$ 425,400.00

HST(13%): \$ 368,700.00

Multi-Family Units West Class C Cost Estimate: \$ 4,056,000.00

Notes:

- Driveways, lot grading have not been included.
- Phone and Hydro servicing costs have not been included.
- The landscaping and amenities have not been included.
- Clearing and grubbing only within the R.O.W.

Class C Cost Estimate

Van Horne Landing Subdivision

Van Horne Avenue

Item	Description	Unit	Approximate Quantity	Unit Price	Amount
	General				
1	Mobilization, Insurance, and Bonding	lump sum	1	\$ 46,000.00	\$ 46,000.00
	Water Works				
2	Watermain				
	a) 50 mm HDPE	metre			
	b) 150 mm PVC	metre	200	\$ 330.00	\$ 66,000.00
	c) 200 mm PVC	metre	150	\$ 425.00	\$ 63,750.00
3	Watermain Gate Valve				
	a) 50 mm	each			
	b) 150 mm	each	2	\$ 3,500.00	\$ 7,000.00
	c) 200 mm	each	1	\$ 5,000.00	\$ 5,000.00
4	Fire Hydrant Assembly	each			
5	Connection to Existing Watermain	each	1	\$ 10,000.00	\$ 10,000.00
6	Water Service Main Stop and Curb Stop Assembly				
	a) 19 mm	each			
	b) 50mm	each			
	c) 150 mm	each			
7	Water Service Line Piping				
	a) 19 mm	metre			
	b) 50mm	metre			
	c) 150 mm	metre			
8	Connection to Existing Building	each			
					\$ 151,750.00
	Sanitary Sewer Works				
9	Gravity Sewermain				
	a) 200 mm PVC	metre	175	\$ 330.00	\$ 57,750.00
	b) 250 mm PVC	metre	100	\$ 350.00	\$ 35,000.00
	c) 300 mm PVC	metre	25	\$ 375.00	\$ 9,375.00
10	Gravity Sewer Manhole Frame and Cover	metre	3	\$ 1,750.00	\$ 5,250.00
11	Gravity Sewer Manhole Riser	metre	15	\$ 3,000.00	\$ 45,000.00
12	Road Crossing Surcharge	each	3	\$ 2,800.00	\$ 8,400.00
13	Gravity Sewer Service Tee	each			
14	Gravity Sewer Service Piping				
	a) 150 mm PVC	metre			
15	Television and Mandrel testing	metre	250	\$ 25.00	\$ 6,250.00
					\$ 167,025.00
	Road Works and Drainage				
16	Clearing, Grubbing and Disposal	lump sum	1		
17	Stripping and Stockpiling Topsoil	square metre	3,800	\$ 15.00	\$ 57,000.00
18	Shape and Compact Road Subgrade				
	a) Roadway	square metre	2,800	\$ 3.50	\$ 9,800.00
	b) Driveway	square metre			
	c) Pathway	square metre	1,000	\$ 3.50	\$ 3,500.00
19	Geotextile				
	a) Roadway	square metre	2,800	\$ 4.80	\$ 13,440.00
	b) Driveway	square metre			
	c) Pathway	square metre	1,000	\$ 5.00	\$ 5,000.00
20	Granular Class B Supply and Place				
	a) Roadway 500 mm	square metre	2,800	\$ 24.00	\$ 67,200.00

Class C Cost Estimate

Van Horne Landing Subdivision

Van Horne Avenue

Item	Description	Unit	Approximate Quantity	Unit Price	Amount
	b) Driveway 200 mm	square metre			
21	Granular Class A Supply and Place				
	a) Roadway 150 mm	square metre	2,800	\$ 25.00	\$ 70,000.00
	b) Driveway 150 mm	square metre			
	c) Pathway 300 mm	square metre	1,000	\$ 40.00	\$ 40,000.00
22	Asphaltic Concrete				
	a) Roadway 80 mm	square metre	2,800	\$ 55.00	\$ 154,000.00
	b) Driveway 80 mm	square metre			
	c) Pathway 80 mm	square metre	1,000	\$ 55.00	\$ 55,000.00
23	Asphalt Removal	square metre	3,025	\$ 22.00	\$ 66,550.00
24	Excavation	square metre	7,000	\$ 25.00	\$ 175,000.00
25	Concrete Curb and Gutter	metre	280	\$ 135.00	\$ 37,800.00
26	Culverts				
	a) 600 mm CMP	metre	24	\$ 500.00	\$ 12,000.00
27	Land Drainage Sewer				
	a) 250 mm PVC	metre			
	b) 300 mm PVC	metre			
	c) 375 mm PVC	metre			
	d) 450 mm PVC	metre			
	e) 525 mm PVC	metre			
	f) 600 mm PVC	metre			
	g) 750 mm PVC	metre			
	h) 900 mm PVC	metre			
28	Catch Basin Frame and Cover	each			
29	Catch Basin Riser	metre			
30	LDS Manhole Frame and Cover	each			
31	LDS Manhole Riser	metre			
32	LDS Outfall	each			
33	Television and Mandrel testing	metre			
34	Granular Density Testing	lump sum	1	\$ 1,500.00	\$ 1,500.00
35	Concrete Testing	lump sum	1	\$ 500.00	\$ 500.00
36	Asphalt Testing	lump sum	1	\$ 1,500.00	\$ 1,500.00
37	Boulevard Grading	square metre	600	\$ 3.00	\$ 1,800.00
38	Topsoil and Seeding	square metre	600	\$ 7.00	\$ 4,200.00
39	Erosion Control and Silt Fencing	lump sum	1	2,000	\$ 2,000.00
40	Bedrock Removal	cubic metre	100	\$ 475.00	\$ 47,500.00
					\$ 825,290.00

Subtotal Construction: \$ 1,190,100.00

Contingency (15%): \$ 178,500.00

Engineering (15%): \$ 178,500.00

HST(13%): \$ 154,700.00

Van Horne Avenue Class C Cost Estimate: \$ 1,702,000.00

Notes:

- Driveways, lot grading have not been included.
- Phone and Hydro servicing costs have not been included.
- The landscaping and amenities have not been included.
- Clearing and grubbing only within the R.O.W.

Class C Cost Estimate

Van Horne Landing Subdivision

Claybanks Road

Item	Description	Unit	Approximate Quantity	Unit Price	Amount
	General				
1	Mobilization, Insurance, and Bonding	lump sum	1	\$ 79,000.00	\$ 79,000.00
	Water Works				
2	Watermain				
	a) 50 mm HDPE	metre			
	b) 150 mm PVC	metre	275	\$ 330.00	\$ 90,750.00
	c) 200 mm PVC	metre			
3	Watermain Gate Valve				
	a) 50 mm	each			
	b) 150 mm	each	2	\$ 3,500.00	\$ 7,000.00
	c) 200 mm	each			
4	Fire Hydrant Assembly	each	2	\$ 13,500.00	\$ 27,000.00
5	Connection to Existing Watermain	each			
6	Water Service Main Stop and Curb Stop Assembly				
	a) 19 mm	each	1	\$ 2,100.00	\$ 2,100.00
	b) 50mm	each	3	\$ 2,300.00	\$ 6,900.00
	c) 150 mm	each			
7	Water Service Line Piping				
	a) 19 mm	metre	10	\$ 155.00	\$ 1,550.00
	b) 50mm	metre	20	\$ 120.00	\$ 2,400.00
	c) 150 mm	metre			
8	Connection to Existing Building	each	3	\$ 2,000.00	\$ 6,000.00
					\$ 143,700.00
	Sanitary Sewer Works				
9	Gravity Sewermain				
	a) 200 mm PVC	metre	225	\$ 330.00	\$ 74,250.00
	b) 250 mm PVC	metre			
	c) 300 mm PVC	metre			
10	Gravity Sewer Manhole Frame and Cover	metre	2	\$ 1,750.00	\$ 3,500.00
11	Gravity Sewer Manhole Riser	metre	8	\$ 3,000.00	\$ 24,000.00
12	Road Crossing Surcharge	each	1	\$ 2,800.00	\$ 2,800.00
13	Gravity Sewer Service Tee	each	3	\$ 900.00	\$ 2,700.00
14	Gravity Sewer Service Piping				
	a) 150 mm PVC	metre	75	\$ 275.00	\$ 20,625.00
15	Television and Mandrel testing	metre	220	\$ 25.00	\$ 5,500.00
					\$ 133,375.00
	Road Works and Drainage				
16	Clearing, Grubbing and Disposal	lump sum	1	\$ 4,500.00	\$ 4,500.00
17	Stripping and Stockpiling Topsoil	square metre	5,400	\$ 15.00	\$ 81,000.00
18	Shape and Compact Road Subgrade				
	a) Roadway	square metre	4,250	\$ 3.50	\$ 14,875.00
	b) Driveway	square metre			
	c) Pathway	square metre	1,150	\$ 3.50	\$ 4,025.00
19	Geotextile				
	a) Roadway	square metre	4,250	\$ 4.80	\$ 20,400.00
	b) Driveway	square metre			
	c) Pathway	square metre	1,150	\$ 5.00	\$ 5,750.00
20	Granular Class B Supply and Place				
	a) Roadway 500 mm	square metre	4,250	\$ 24.00	\$ 102,000.00

Class C Cost Estimate

Van Horne Landing Subdivision

Claybanks Road

Item	Description	Unit	Approximate Quantity	Unit Price	Amount
	b) Driveway 200 mm	square metre			
21	Granular Class A Supply and Place				
	a) Roadway 150 mm	square metre	4,250	\$ 25.00	\$ 106,250.00
	b) Driveway 150 mm	square metre			
	c) Pathway 300 mm	square metre	1,150	\$ 40.00	\$ 46,000.00
22	Asphaltic Concrete				
	a) Roadway 80 mm	square metre	4,250	\$ 55.00	\$ 233,750.00
	b) Driveway 80 mm	square metre			
	c) Pathway 80 mm	square metre	4,250	\$ 55.00	\$ 233,750.00
23	Asphalt Removal	square metre	2,150	\$ 22.00	\$ 47,300.00
24	Excavation	square metre	9,000	\$ 25.00	\$ 225,000.00
25	Concrete Curb and Gutter	metre	870	\$ 135.00	\$ 117,450.00
26	Culverts				
	a) 600 mm CMP	metre			
27	Land Drainage Sewer				
	a) 250 mm PVC	metre	40	\$ 375.00	\$ 15,000.00
	b) 300 mm PVC	metre	20	\$ 350.00	\$ 7,000.00
	c) 375 mm PVC	metre			
	d) 450 mm PVC	metre			
	e) 525 mm PVC	metre			
	f) 600 mm PVC	metre			
	g) 750 mm PVC	metre	210	\$ 900.00	\$ 189,000.00
	h) 900 mm PVC	metre	85	\$ 930.00	\$ 79,050.00
28	Catch Basin Frame and Cover	each	6	\$ 2,000.00	\$ 12,000.00
29	Catch Basin Riser	metre	12	\$ 2,300.00	\$ 27,600.00
30	LDS Manhole Frame and Cover	each	3	\$ 1,750.00	\$ 5,250.00
31	LDS Manhole Riser	metre	9	\$ 3,000.00	\$ 27,000.00
32	LDS Outfall	each	1	\$ 5,000.00	\$ 5,000.00
33	Television and Mandrel testing	metre	345	\$ 25.00	\$ 8,625.00
34	Granular Density Testing	lump sum	1	\$ 2,000.00	\$ 2,000.00
35	Concrete Testing	lump sum	1	\$ 1,000.00	\$ 1,000.00
36	Asphalt Testing	lump sum	1	\$ 3,000.00	\$ 3,000.00
37	Boulevard Grading	square metre	1,200	\$ 3.00	\$ 3,600.00
38	Topsoil and Seeding	square metre	1,200	\$ 7.00	\$ 8,400.00
39	Erosion Control and Silt Fencing	lump sum	1	\$ 4,000.00	\$ 4,000.00
40	Bedrock Removal	cubic metre	100	\$ 475.00	\$ 47,500.00
					\$ 1,687,075.00

Subtotal Construction: \$ 2,043,200.00

Contingency (15%): \$ 306,500.00

Engineering (15%): \$ 306,500.00

HST(13%): \$ 265,600.00

Claybanks Road Class C Cost Estimate: \$ 2,922,000.00

Notes:

- Driveways, lot grading have not been included.
- Phone and Hydro servicing costs have not been included.
- The landscaping and amenities have not been included.
- Clearing and grubbing only within the R.O.W.

Class C Cost Estimate

Van Horne Landing Subdivision

Residential Subdivision

Item	Description	Unit	Approximate Quantity	Unit Price	Amount
	General				
1	Mobilization, Insurance, and Bonding	lump sum	1	\$ 140,000.00	\$ 140,000.00
	Water Works				
2	Watermain				
	a) 50 mm HDPE	metre	125	\$ 110.00	\$ 13,750.00
	b) 150 mm PVC	metre	600	\$ 330.00	\$ 198,000.00
	c) 200 mm PVC	metre			
3	Watermain Gate Valve				
	a) 50 mm	each	2	\$ 2,000.00	\$ 4,000.00
	b) 150 mm	each	7	\$ 3,500.00	\$ 24,500.00
	c) 200 mm	each			
4	Fire Hydrant Assembly	each	5	\$ 13,500.00	\$ 67,500.00
5	Connection to Existing Watermain	each			
6	Water Service Main Stop and Curb Stop Assembly				
	a) 19 mm	each	36	\$ 2,100.00	\$ 75,600.00
	b) 50mm	each			
	c) 150 mm	each			
7	Water Service Line Piping				
	a) 19 mm	metre	350	\$ 155.00	\$ 54,250.00
	b) 50mm	metre			
	c) 150 mm	metre			
8	Connection to Existing Building	each			
					\$ 437,600.00
	Sanitary Sewer Works				
9	Gravity Sewermain				
	a) 200 mm PVC	metre	550	\$ 330.00	\$ 181,500.00
	b) 250 mm PVC	metre	60	\$ 350.00	\$ 21,000.00
	c) 300 mm PVC	metre			
10	Gravity Sewer Manhole Frame and Cover	metre	6	\$ 1,750.00	\$ 10,500.00
11	Gravity Sewer Manhole Riser	metre	24	\$ 3,000.00	\$ 72,000.00
12	Road Crossing Surcharge	each	4	\$ 2,800.00	\$ 11,200.00
13	Gravity Sewer Service Tee	each	36	\$ 900.00	\$ 32,400.00
14	Gravity Sewer Service Piping				
	a) 150 mm PVC	metre	400	\$ 275.00	\$ 110,000.00
15	Television and Mandrel testing	metre	595	\$ 25.00	\$ 14,875.00
					\$ 453,475.00
	Road Works and Drainage				
16	Clearing, Grubbing and Disposal	lump sum	1	\$ 4,500.00	\$ 4,500.00
17	Stripping and Stockpiling Topsoil	square metre	9,000	\$ 15.00	\$ 135,000.00
18	Shape and Compact Road Subgrade				
	a) Roadway	square metre	7,725	\$ 3.50	\$ 27,037.50
	b) Driveway	square metre			
	c) Pathway	square metre	1,275	\$ 3.50	\$ 4,462.50
19	Geotextile				
	a) Roadway	square metre	7,725	\$ 4.80	\$ 37,080.00
	b) Driveway	square metre			
	c) Pathway	square metre	1,275	\$ 5.00	\$ 6,375.00
20	Granular Class B Supply and Place				
	a) Roadway 500 mm	square metre	7,725	\$ 24.00	\$ 185,400.00

Class C Cost Estimate

Van Horne Landing Subdivision

Residential Subdivision

Item	Description	Unit	Approximate Quantity	Unit Price	Amount
	b) Driveway 200 mm	square metre			
21	Granular Class A Supply and Place				
	a) Roadway 150 mm	square metre	7,725	\$ 25.00	\$ 193,125.00
	b) Driveway 150 mm	square metre			
	c) Pathway 300 mm	square metre	1,275	\$ 40.00	\$ 51,000.00
22	Asphaltic Concrete				
	a) Roadway 80 mm	square metre	7,725	\$ 55.00	\$ 424,875.00
	b) Driveway 80 mm	square metre			
	c) Pathway 80 mm	square metre	1,275	\$ 55.00	\$ 70,125.00
	Asphalt Removal	square metre		\$ 22.00	
24	Excavation	square metre	17,000	\$ 25.00	\$ 425,000.00
25	Concrete Curb and Gutter	metre	1,350	\$ 135.00	\$ 182,250.00
26	Culverts				
	a) 600 mm CMP	metre			
27	Land Drainage Sewer				
	a) 250 mm PVC	metre	75	\$ 375.00	\$ 28,125.00
	b) 300 mm PVC	metre	20	\$ 350.00	\$ 7,000.00
	c) 375 mm PVC	metre	20	\$ 375.00	\$ 7,500.00
	d) 450 mm PVC	metre	95	\$ 450.00	\$ 42,750.00
	e) 525 mm PVC	metre	240	\$ 600.00	\$ 144,000.00
	f) 600 mm PVC	metre	95	\$ 675.00	\$ 64,125.00
	g) 750 mm PVC	metre	200	\$ 900.00	\$ 180,000.00
	h) 900 mm PVC				
28	Catch Basin Frame and Cover	each	12	\$ 2,500.00	\$ 30,000.00
29	Catch Basin Riser	metre	24	\$ 2,300.00	\$ 55,200.00
30	LDS Manhole Frame and Cover	each	6	\$ 1,750.00	\$ 10,500.00
31	LDS Manhole Riser	metre	18	\$ 3,000.00	\$ 54,000.00
32	LDS Outfall	each			
33	Television and Mandrel testing	metre	730	\$ 25.00	\$ 18,250.00
34	Granular Density Testing	lump sum	1	\$ 3,000.00	\$ 3,000.00
35	Concrete Testing	lump sum	1	\$ 1,500.00	\$ 1,500.00
36	Asphalt Testing	lump sum	1	\$ 3,000.00	\$ 3,000.00
37	Boulevard Grading	square metre	5,800	\$ 3.00	\$ 17,400.00
38	Topsoil and Seeding	square metre	5,800	\$ 7.00	\$ 40,600.00
39	Erosion Control and Silt Fencing	lump sum	1	\$ 2,000.00	\$ 2,000.00
40	Bedrock Removal	cubic metre	300	\$ 475.00	\$ 142,500.00
					\$ 2,597,680.00

Subtotal Construction: \$ 3,628,800.00

Contingency (15%): \$ 544,300.00

Engineering (15%): \$ 544,300.00

HST(13%): \$ 471,700.00

Residential Subdivision Class C Cost Estimate: \$ 5,190,000.00

Notes:

- Driveways, lot grading have not been included.
- Phone and Hydro servicing costs have not been included.
- The landscaping and amenities have not been included.
- Clearing and grubbing only within the R.O.W.

Class C Cost Estimate

Van Horne Landing Subdivision

Multi-Family Units East

Item	Description	Unit	Approximate Quantity	Unit Price	Amount
	General				
1	Mobilization, Insurance, and Bonding	lump sum	1	\$ 75,000.00	\$ 75,000.00
	Water Works				
2	Watermain				
	a) 50 mm HDPE	metre			
	b) 150 mm PVC	metre	75	\$ 330.00	\$ 24,750.00
	c) 200 mm PVC	metre			
3	Watermain Gate Valve				
	a) 50 mm	each			
	b) 150 mm	each	1	\$ 3,500.00	\$ 3,500.00
	c) 200 mm	each			
4	Fire Hydrant Assembly	each	1	\$ 13,500.00	\$ 13,500.00
5	Connection to Existing Watermain	each			
6	Water Service Main Stop and Curb Stop Assembly				
	a) 19 mm	each			
	b) 50mm	each			
	c) 150 mm	each	2	\$ 3,500.00	\$ 7,000.00
7	Water Service Line Piping				
	a) 19 mm	metre			
	b) 50mm	metre			
	c) 150 mm	metre	50	\$ 200.00	\$ 10,000.00
8	Connection to Existing Building	each			
					\$ 58,750.00
	Sanitary Sewer Works				
9	Gravity Sewermain				
	a) 200 mm PVC	metre	25	\$ 330.00	\$ 8,250.00
	b) 250 mm PVC	metre			
	c) 300 mm PVC	metre			
10	Gravity Sewer Manhole Frame and Cover	metre	1	\$ 1,750.00	\$ 1,750.00
11	Gravity Sewer Manhole Riser	metre	3	\$ 3,000.00	\$ 9,000.00
12	Road Crossing Surcharge	each	1	\$ 2,800.00	\$ 2,800.00
13	Gravity Sewer Service Tee	each	2	\$ 900.00	\$ 1,800.00
14	Gravity Sewer Service Piping				
	a) 150 mm PVC	metre	75	\$ 275.00	\$ 20,625.00
15	Television and Mandrel testing	metre	25	\$ 25.00	\$ 625.00
					\$ 44,850.00
	Road Works and Drainage				
	Clearing, Grubbing and Disposal	lump sum	1	\$ 4,500.00	\$ 4,500.00
	Stripping and Stockpiling Topsoil	square metre	9,300	\$ 15.00	\$ 139,500.00
18	Shape and Compact Road Subgrade				
	a) Roadway	square metre			
	b) Driveway	square metre	7,150	\$ 3.50	\$ 25,025.00
	c) Pathway	square metre	2,150	\$ 3.50	\$ 7,525.00
19	Geotextile				
	a) Roadway	square metre			
	b) Driveway	square metre	7,150	\$ 4.80	\$ 34,320.00
	c) Pathway	square metre	2,150	\$ 5.00	\$ 10,750.00
20	Granular Class B Supply and Place				
	a) Roadway 500 mm	square metre			

Class C Cost Estimate

Van Horne Landing Subdivision

Multi-Family Units East

Item	Description	Unit	Approximate Quantity	Unit Price	Amount
	b) Driveway 200 mm	square metre	7,150	\$ 26.00	\$ 185,900.00
21	Granular Class A Supply and Place				
	a) Roadway 150 mm	square metre			
	b) Driveway 150 mm	square metre	7,150	\$ 25.00	\$ 178,750.00
	c) Pathway 300 mm	square metre	2,150	\$ 40.00	\$ 86,000.00
22	Asphaltic Concrete				
	a) Roadway 80 mm	square metre			
	b) Driveway 80 mm	square metre	7,150	\$ 55.00	\$ 393,250.00
	c) Pathway 80 mm	square metre	2,150	\$ 55.00	\$ 118,250.00
	Asphalt Removal	square metre		\$ 22.00	
24	Excavation	square metre	11,000	\$ 25.00	\$ 275,000.00
25	Concrete Curb and Gutter	metre	1,080	\$ 135.00	\$ 145,800.00
26	Culverts				
	a) 600 mm CMP	metre			
27	Land Drainage Sewer				
	a) 250 mm PVC	metre	40	\$ 375.00	\$ 15,000.00
	b) 300 mm PVC	metre	65	\$ 350.00	\$ 22,750.00
	c) 375 mm PVC	metre	55	\$ 375.00	\$ 20,625.00
	d) 450 mm PVC	metre			
	e) 525 mm PVC	metre			
	f) 600 mm PVC	metre			
	g) 750 mm PVC	metre			
	h) 900 mm PVC				
28	Catch Basin Frame and Cover	each			
29	Catch Basin Riser	metre			
30	LDS Manhole Frame and Cover	each	3	\$ 1,750.00	\$ 5,250.00
31	LDS Manhole Riser	metre	9	\$ 3,000.00	\$ 27,000.00
32	LDS Outfall	each			
33	Television and Mandrel testing	metre	150	\$ 25.00	\$ 3,750.00
34	Granular Density Testing	lump sum	1	\$ 3,500.00	\$ 3,500.00
35	Concrete Testing	lump sum	1	\$ 1,500.00	\$ 1,500.00
36	Asphalt Testing	lump sum	1	\$ 3,500.00	\$ 3,500.00
37	Boulevard Grading	square metre	5,400	\$ 3.00	\$ 16,200.00
	Topsoil and Seeding	square metre	5,400	\$ 7.00	\$ 37,800.00
	Erosion Control and Silt Fencing	lump sum	1	\$ 2,000.00	\$ 2,000.00
40	Bedrock Removal	cubic metre			
					\$ 1,763,445.00

Subtotal Construction: \$ 1,942,100.00

Contingency (15%): \$ 291,300.00

Engineering (15%): \$ 291,300.00

HST(13%): \$ 252,500.00

Multi-Family Units East Class C Cost Estimate: \$ 2,778,000.00

Notes:

- Driveways, lot grading have not been included.
- Phone and Hydro servicing costs have not been included.
- The landscaping and amenities have not been included.
- Clearing and grubbing only within the R.O.W.