

**SERVICING & STORMWATER MANAGEMENT
IMPLEMENTATION REPORT**

31 HURON STREET INC. (STREETCAR)

HARBOUR HOUSE DEVELOPMENT

PREPARED BY:

**CROZIER CONSULTING ENGINEERS
40 HURON STREET, SUITE 301
COLLINGWOOD, ONTARIO
L9Y 4R3**

JULY 2020

CFCA FILE NO. 1838-5493



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1.0 INTRODUCTION

Crozier Consulting Engineers (Crozier) has been retained by 31 Huron Street Inc. (Streetcar) ("Developer") to complete a Servicing and Stormwater Management Implementation Report and engineering design to support the Zoning Bylaw Amendment and Site Plan applications for a proposed mixed-use residential/commercial development known as Harbour House referred to hereafter as the (Subject Development). The Subject Development is in The Shipyards Development Area in the Town of Collingwood and the general location of the subject development is shown on Figure 1.

The approximately 0.47 ha (1.2 ac) proposed development is comprised of one six-story mid-rise building with 130 residential units and 1056 sqm (11,362 SF) of retail space. The development also incorporates open landscaped areas, and underground/above ground parking facilities. Refer to Figure 2 for the proposed Site Plan.

Contained within this report is a description of the existing site conditions (Section 2.0); the proposed sanitary servicing and water distribution strategies (Sections 3.0 and 4.0); stormwater management and water quality control elements (Section 5.0); and a summary of the recommended erosion and sediment controls to be implemented prior to and during construction (Section 6.0).

2.0 SITE DESCRIPTION

The Shipyards Development Area in which the subject development is located is at the north end of downtown Collingwood at the Georgian Bay shoreline. The Shipyards Development Area is bounded by Heritage Drive to the east, Huron Street to the south and an open municipally owned block to the west. A detailed legal description of the overall Shipyards Development is provided in Appendix A.

The Harbour House development block currently is characterized by vacant land and is bounded by Side Launch Way to the north, an open municipal lot to the west, Heritage Drive to the east and Huron Street to the south. The Subject Development is legally described as Part of Lot 44 Concession 11, Registered Plan 51M-936.

It is noted that the open municipal block adjacent to the site is currently intended to be an overland flow route for the Pretty River Spillway as shown in the Regional Flood Flow Conveyance figure included in Appendix E of this report.

The former owner of the property, CSL Equity Investments Limited, completed extensive remediation works on the property, including removal of all existing building foundations, removal of impacted soil, and importation of clean fill material. The MECP granted clearance of the remediation works, and ownership of the property was officially transferred to the Developer.

3.0 SANITARY SERVICING

Existing Infrastructure

Existing sanitary infrastructure in the vicinity of the proposed development includes the following:

- 200mm diameter sanitary sewer along Side Launch Way, including a 200mm diameter sanitary stub to the proposed development, and a 200mm stub at the adjacent municipal block.

Proposed Servicing Strategy

The sanitary servicing strategy of the Harbour House Development will rely upon the existing 200mm diameter sewer along Side Launch Way. The buildings plumbing/sewerage systems will be routed internally to the existing 200 mm diameter sanitary stub provided to the property. Refer to Drawing 101 for the General Site Servicing Plan.

Based on preliminary calculations, the anticipated peak sanitary flow rates from the development will be approximately 7.24L/s. Previous design considerations for sanitary capacity of The Shipyards Development had anticipated a combined peak flow of 10.1L/s from the development and the adjacent municipal block. Based on lower flow rates than originally accounted for, sufficient capacity exists within the existing sewer network. This will be verified through Town modelling. Flow calculations and sanitary design sheets are available in Appendix B.

Sanitary sewer systems located downstream in the boundary road network were sized during the master servicing process to accommodate development in this area. Refer to Appendix C for the MOECC Certificate of Approval for the sanitary sewers located within the adjacent roadway.

4.0 DOMESTIC WATER SERVICING

A 400mm diameter watermain was constructed along Side Launch Way as part of the Shipyards Development, and two 150mm stubs were provided from Side Launch Way to provide service to the subject development and the adjacent municipal block. Refer to Drawing 101 for the General Servicing Plan.

Preliminary estimates of domestic water demands are approximately 7.9L/s for peak hour flow, and 4.8L/s for daily peak flow. Fire flow demands of the proposed development are estimated to be 266.7L/s per the Fire Underwriters Survey and 150L/s per the OBC Fire Protection Water Supply Guideline. Water demand calculations are available in Appendix D. Confirmation of the capacity of the watermain and existing stubs to meet development needs will be subject to the Town completing a distribution analysis and updating their municipal model.

5.0 STORMWATER MANAGEMENT & SITE DRAINAGE

5.1 Design Criteria

The stormwater management design of the proposed development will incorporate the policies and criteria of several agencies including the Ministry of Environment, Conservation and Parks (MECP), Nottawasaga Valley Conservation Authority (NVCA), and the Town of Collingwood. The agency stormwater management design criteria for the development is summarized below:

1. Development Standards (Town)
 - Minor and major drainage system to convey frequent and infrequent rainfall/runoff events, respectively, with 5-year events accommodated within the storm sewer system.
 - Lot grading 2% optimum.
2. Water Quality (MOECC & NVCA)
 - "Enhanced" quality control
3. Pretty River Flood Waters (NVCA)
 - Conveyance of spill waters to Georgian Bay.

Due to the proximity of the subject lands to Georgian Bay, water quantity control in the form of peak flow attenuation is not required for this development. Likewise, erosion control (from a stream protection standpoint) is not warranted as all drainage will discharge directly to Georgian Bay via a storm drainage network (storm sewers / road allowances / drainage channels).

The water quality control measures implemented with the development will meet municipal, provincial and federal requirements. This is in keeping with the recommendations of the Remedial Action Plan (RAP) for Collingwood Harbour.

During previous development application processes for The Shipyards Development Area, the following criteria were included in the Subdivision Agreements in order to obtain NVCA clearance:

1. All building openings must be at or above 178.30 masl unless special exemption is granted by the NVCA.
2. All roads and buildings internal to the future development blocks must be set at or above the grade of the adjacent public roadways with positive drainage. The associated site grading for the development blocks must respect this condition.
3. Positive outlets to Georgian Bay or public roadways must be provided for all overland drainage routes through the future development blocks.
4. Confirmation from qualified structural and/or geotechnical engineer that underground structures can and will be designed to respect the following conditions:
 - a. Structures can withstand hydrostatic pressures from lake based on sustained high lake level of 178.0 masl;
 - b. Flood proofing of entrance ramps to underground structures to the satisfaction of the NVCA; and
 - c. Provision of contingency plan for each structure's dewatering system in the event of a power or pump failure.
5. All future shoreline protection works are designed to the satisfaction of the NVCA.

The proposed development will conform to the applicable criteria outlined above.

5.2 Pre-Development Drainage Conditions

Generally the site drains in a northward direction, towards Georgian Bay in the existing condition. The site topography also resembles a slightly depressed bowl, and as such, drainage is generally retained and infiltrated onsite.

5.3 Pretty River Flood Waters

The lands west of and including Heritage Drive are located within Spill Zone 2 of the Pretty River flood plain (Stantec, 2000). In the event of a Regional Storm event, floodwaters of Pretty River are expected to enter the downtown area, passing through the lands along the shoreline, including the Harbour House site, and enter Georgian Bay. Accordingly, the area is Fill Regulated per the NVCA. Flow conveyance mapping for the Regional Storm event through the Shipyards development is shown in Appendix E.

Based on extensive modeling and reporting completed as part of the original Shipyards development application, it was demonstrated that the Pretty River Spill waters can be safely conveyed to Georgian Bay through the Shipyards development via the public roadways and drainage channels (Crozier, October 2007). As such, these models display that the Subject Development will not adversely impact the conveyance of the Pretty River Spill to Georgian Bay.

To ensure adequate flood protection, for the south and east property lines site grades are to be constructed above an elevation of 179.22 masl. This elevation corresponds to the modelled regional flood elevation near to the subject site, as detailed within the Pretty River Flood Hazard Delineation Study (Stantec, 1999). Relevant excerpts from this report are included in Appendix E. North property line grades were based on a maximum boulevard slope of 4% which to maximize floodproofing elevation this results in property line grades being 0.17m to .30m above centerline of Side Launch Way.

5.4 Proposed Drainage Conditions

During the previous construction of Side Launch Way as part of the Shipyards Development, a storm sewer was constructed which included a 300mm storm stub for the Subject Development. Stormwater is proposed to drain from the Subject Development to this stub and surrounding storm sewers where flows will be conveyed to an existing outlet at the south end of the Dry Dock. This outlet was identified as Outlet #5 in the Shipyards Master Drainage Plan. Refer to Appendix E for the Storm Area Drainage Plan. The existing sewers along Side Launch Way were sized to convey 1.55 ha of contributing area at a runoff coefficient of 0.9 which includes the open municipal block.

The internal drainage systems for the Harbour House Development will consist of plumbing/storm sewers to convey flow generated from minor storm events (up to and including the five-year return period) and the roadways/ overland flow routes designed to convey the major system (up to the 100 year event/regional event). Catch basins have been provided to collect parking lot runoff from minor events.

All portion of the site will be graded such that runoff is directed via overland flow to the adjacent roadways and collected by existing storm sewers.

5.5 Stormwater Quality Control

Georgian Bay, considered a Level 1 fishery, is the ultimate receiver of drainage from the subject lands; therefore, the development will incorporate measures to provide "enhanced protection" to treat runoff before entering the harbour.

In support of earlier Shipyards development blocks, 5 Stormceptor units were installed in-line upstream of each of the 5 stormwater outfalls serving the Shipyards Development Area. One of these units, an STC 6000 Stormceptor designated as STC#5 installed at outlet #5 exists at the south end of the existing dry dock. This Stormceptor unit was sized to accommodate runoff from the Subject Development.

The design of STC#5 accounted for a developed area 1.51 ha at 90% imperviousness. As our site was determined to be 89% impervious the Stormceptor unit will have capacity to treat site runoff to enhanced treatment levels. Previous Stormceptor sizing sheets for STC#5 are included in this report enclosed in Appendix F.

The public end-of-pipe treatment units of the Shipyards development, including STC#5 were previously approved by the Town, NVCA, and MOECC. A Certificate of Approval was issued by the MOECP for STC#5 in the fall 2007 (enclosed in Appendix C).

The Stormceptor unit is eligible for the Quality Assurance Program (QAP) provided by the supplier, Hanson Pipe, and administered by Minotaur Guardian Service Ltd. Maintenance of most O/G separators is performed using vacuum trucks at regular intervals, typically bi-annual inspection and cleaning as required. Details on the QAP are enclosed in Appendix F.

6.0 EROSION & SEDIMENTATION CONTROLS DURING CONSTRUCTION

Erosion and sediment controls will be implemented on-site prior to construction where required and as directed by the Developer and their site representative. See Drawing C102 for the site's Sediment Control Plan.

- Dust Suppression

During earthwork activities, the Contractor will ensure that measures for dust suppression are provided as required, such as the application of water or lime.

- Silt Sacks

The silt sacks will be installed in all catch basins prior to and maintained during construction.

7.0 CONCLUSIONS & RECOMMENDATIONS

The proposed servicing and stormwater management strategies for the Harbour House development are consistent with the recommendations of the Master Stormwater Management Implementation Report (Crozier, March 2008) and Functional Servicing Report (Burnside, 2003), which was prepared for the entire Shipyards residential development.

1. Harbour House will be serviced by connecting to the existing sanitary service stub provided at the property limits on Side Launch Way.
2. Harbour House will be serviced by connecting to the existing water main service stub provided at the property line within Side Launch Way.
3. A storm sewer system will be provided to convey minor flows to existing storm infrastructure. Major flows from infrequent events will utilize overland flow route channels to provide safe conveyance of flows to Georgian Bay.
4. Enhanced treatment levels will be provided by End of Pipe Water quality control via an existing stormceptor OGS prior to discharge into Georgian Bay).

Based on the detailed design of the infrastructure for these developments, all servicing and stormwater management objectives will be met.

Respectfully Submitted,

C.F. Crozier & Associates Inc.



Brendan Hummelen, P.Eng.
Project Engineer

C.F. Crozier & Associates Inc.



Justin L'Abbe, E.I.T.
Engineering Intern

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APPENDIX A

Legal Description of FSCD The Shipyards
Registered Plan Site Map

Legal Description for FSCD The Shipyards

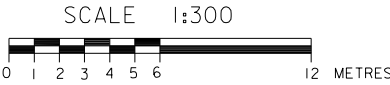
That this approval applies to the draft plan of subdivision located at Part of lot 44, Concessions 8 and Part of lot 44, Concession 9 and Part of the Water Lot in front of Lot 44, Concessions 8 and 9 and Part of the bed of Georgian Bay of Lake Huron (Collingwood Harbour – federal) in front of Lot 44, Concession 9 and Part of the original road allowance between Concessions 8 and 9 (geographic township of Nottawasaga) and Part of Bay Street (patented to the town of Collingwood July 8, 1904, (51363cls)) (closed by By-law 604 and 616) and Part of the Water Lot in front of Hurontario Street (patented to the town of Collingwood July 8, 1904, (51363cls)) Part of Lot 7, east of Beech Street, Registered Plan 373, Lots b and e and Part of Lots a, c and d, Registered Plan 224 and the 12.19 lane adjacent thereto (closed by By-law 604 and 616) and St. Paul Street lying north of Huron Street (closed by By-law 604 and 616) and Lots g, h, i, j and Part of Lot f, north of Huron Street, Registered Plan 282 and Part of the wharf reserve and Lots 1, 2, 3, 4, 75 and 76 west of the wharf reserve and Lots 5 and 6 and Part of Lots 7 and 8 west of Hurontario Street and Lots 1, 2, 3, 4, 5, 6, 7, 75, 76, 77, 78 and 79 and Part of Lot 8 east of Pine Street and Lots 1, 2, 3, 4, 5, 6, 75, 76, 77, 78 and 79 and Part of Lots 7 & 8 west of Pine Street and Lots 1, 2, 3, 4, 5, 6, 75, 76, 77, 78 and 79 and Part of Lot 7 east of Maple Street and Lots 1, 2, 3, 4, 5, 75, 76, 77, 78 and 79 and Part of Lots 6 and 7 west of Maple Street and Lots 1, 2, 3, 4, 5, 75, 76, 77, 78 and 79 and Part of Lot 6 east of Beech Street and Part of Pine Street and Part of Maple Street (closed by By-law 2340, inst. 196647) and Part of Beech Street (closed by By-law 82-81, inst. 784703) and Part of Manitou Street (closed by By-law 2336, inst. 196646), Registered Plan 489, Town of Collingwood, County of Simcoe prepared by Zubek, Emo, Patten & Thomsen Limited dated October 31, 2005, and showing a total of:

- a. Two Blocks for Medium Density Residential (Blocks 4 & 10)
- b. One Block for Townhouses (Block 3)
- c. Four Blocks for Commercial/Residential (Blocks 6, 8, 11 & 13)
- d. Two Blocks for Existing Industrial (Blocks 5 & 15)
- e. Three Blocks for Parks (Blocks 1, 7 & 9)
- f. One Block for Open Space (Block 2)
- g. One Block for Roads (Block 14)
- h. One Block for Road Widening (Block 12)

Notes:

- 1. Mackinaw Village is designated as Block 3 Townhouses in Draft Plan.
- 2. Side Launch Buildings 1 & 2 are designated as Block 4 Medium Density Residential in Draft Plan.

PLAN OF SURVEY AND
TOPOGRAPHICAL PLAN OF
BLOCK 11
REGISTERED PLAN 5 IM-926
AND PART OF LOT 44
CONCESSION 11
(FORMERLY TOWNSHIP OF NOTTAWASAGA)
TOWN OF COLLINGWOOD
COUNTY OF SIMCOE



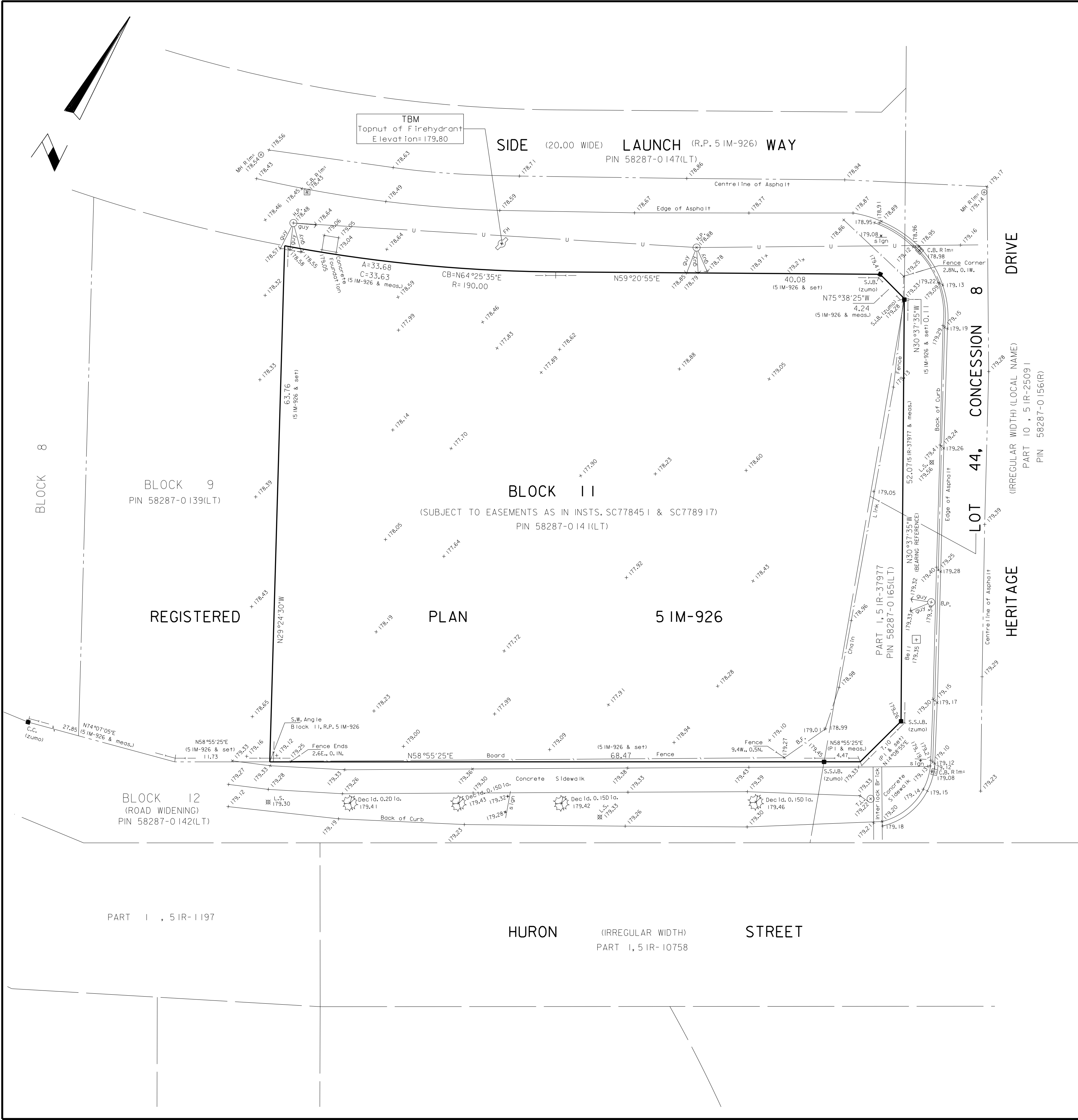
METRIC
DISTANCES ON THIS PLAN ARE IN METRES AND CAN
BE CONVERTED TO FEET BY DIVIDING BY 0.3048

NOTES:
BEARINGS HEREON ARE UTM GRID, ZONE 17, NAD 83 AND ARE
REFERRED TO THE BEARING OF THE EASTERLY LIMIT OF PART 1
BEING N30°37'35"W IN ACCORDANCE WITH PLAN 5 IR-37977.

- ⊕ DENOTES SET
- ⊕ DENOTES FOUND
- ⊕ S.I.B. DENOTES STANDARD IRON BAR
- ⊕ I.B. DENOTES IRON BAR
- ⊕ S.S.I.B. DENOTES SHORT STANDARD IRON BAR
- ⊕ C.C. DENOTES CUT CROSS
- P I REFERES TO 5 IR-37977
- U — DENOTES AERIAL UTILITY LINE
- CB DENOTES CATCH BASIN
- HP DENOTES HYDRO POLE
- guy DENOTES GUY WIRE
- Be II DENOTES BELL BOX
- sign DENOTES SIGN
- MH DENOTES SANITARY MANHOLE
- L.S. DENOTES LIGHT STANDARD
- FH DENOTES FIREHYDRANT
- T.L. DENOTES TRAFFIC LIGHT
- B.P. DENOTES BRACE POLE
- B.F. DENOTES BOARD FENCE
- Dec id. DENOTES DECIDUOUS TREE
- Con if. DENOTES CONIFEROUS TREE

CAUTION
UNDERGROUND SERVICES WERE NOT LOCATED AND MUST
BE VERIFIED ON SITE PRIOR TO EXCAVATION.

BENCH MARK
ELEVATIONS HEREON ARE GEODETIC AND ARE REFERRED TO
THE GEODETIC MONUMENT No. 72U313 HAVING AN ELEVATION
OF 179.633 METRES (CGVD 28:78).



APPENDIX B

Preliminary Sanitary Flow Rate Calculations Sanitary Sewer Design Sheet



File: 1838-5493
Date: 27-Jul-20
By: JL'A
Check By: BH

Harbour House - Equivalent Population

Developed Site Area	0.45	ha
Number of Residential Units	130	units
Persons Per Residential Unit	2.40	persons/unit
Residential Population	312	persons

Per DC Background Study (Watson & Associates)

Equivalent Daily Flow Calculations

Retail		
$R = 1,056 \text{ sq.m} \times 5\text{L/day/sq.m}$	$R =$	5280 L/day
Live Work Lofts		
$LWL = 436 \text{ sq.m} \times 5\text{L/day/sq.m}$	$LWL =$	2178.1 L/day
Amenity/Lobby		
$A/L = 776 \text{ sq.m} \times 5\text{L/day/sq.m}$	$A/L =$	3880 L/day
Total		
$T = R + LWL + A/L$	$T =$	11338.1 L/day

Equivalent Persons Calculation

Per Capital Flow	450	L/C-day
Equivalent Persons		
$Peq = \text{Total} / \text{Per Capital Flow}$		
$Peq = (35389\text{L/day}) / (450 \text{ L/C-day})$	$Peq =$	25.20 Persons
	$Peq =$	26 Persons

Total Design Sewage Flows

Equivalent Mixed Use Population	(See Appendix B)	26	persons
Residential Population		312	persons
Total Population		338	persons



File: 1838-5493
Date: 27-Jul-20
By: JL'A
Check By: BH

Harbour House Hotel- Sanitary Flow Requirements

Developed Site Area		0.45 ha
Number of Residential Units		130 units
Persons Per Residential Unit	Per DC Background Study (Watson & Associates)	2.40 persons/unit
Residential Population		312 persons
Equivalent Mixed Use Population	(See Appendix B)	26 persons
Total Population		338 persons

Unit Sewage flows

Per Capital Flow	450 L/C-day
Infiltration (typical)	0.23 L/s/ha

Total Design Sewage Flows

Infiltration/Inflow		0.10 L/sec
Average Daily Flow		1.76 L/sec
Peak Factor	(Harmon Formula)	4.1
Peak Flow		7.14 L/sec

Total Peak Daily Flow	7.24 L/sec
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FSCD THE SHIPYARDS
SANITARY SEWER DESIGN MODEL

DESIGN: K. Morris
CHECK: K. Morris & J. O'Neill

N = 0.013
Population = 3.5 p.p.u.
Peak Factor (M) = $1 + (14/4 + (P/1000)^{0.5})$
Avg. Daily/Capita Flow = 450 L/cap.d
Q infiltration = 0.28 L/ha.s

Flows from Block B North Garage = 7 L/s
Flows from Block C Garage = 10 L/s

Location	FROM MH	TO MH	Length (m)	Area (Ha)	Units	Pop.	TOTAL trib pop	Peak Factor	Avg. Flow (l/s)	Max Flow (l/s)	Infilt. (l/s)	TOTAL Infilt.	Combined (l/s)	Pipe Diam (mm)	Upper Inv. El.	Lower Inv. El.	Slope (%)	Cap. (l/s)	Vel. (m/s)	FROM MH	TO MH	Ground Upper	Ground Lower	Cover Upper	Cover Lower
Side Launch Way Town Trunk Sewer (Huronario)	10T	9T	90.2			0.0	0	4.50	0.00	0.00	0.00	0.00	0.00	900	176.242	176.117	0.1%	673.91	1.06	10T	9T	178.480	178.020	1.34	1.00
	9T	8T	64.9			0.0	0	4.50	0.00	0.00	0.00	0.00	0.00	900	176.112	176.057	0.1%	527.00	0.83	9T	8T	178.020	178.210	1.01	1.25
	8T	7T	65.3			0.0	0	4.50	0.00	0.00	0.00	0.00	0.00	900	176.057	175.985	0.1%	601.12	0.94	8T	7T	178.210	178.410	1.25	1.52
	(Pine)	7T	6T	60.3		0.0	585	3.94	3.04	11.99	0.00	1.15	30.13	900	175.985	175.915	0.1%	616.80	0.97	7T	6T	178.410	179.000	1.52	2.19
	(Maple)	6T	5T	61.3		0.0	669	3.91	3.48	13.60	0.00	1.30	31.90	900	175.905	175.847	0.1%	556.85	0.88	6T	5T	179.000	178.570	2.20	1.82
	5T	4T	25.1		0.0	851	3.84	4.43	17.03	0.00	1.89	1.89	35.92	900	175.837	175.818	0.1%	498.07	0.78	5T	4T	178.570	178.400	1.83	1.68
	4T	3T	96.9		0.0	851	3.84	4.43	17.03	0.00	1.89	1.89	35.92	900	175.813	175.716	0.1%	572.77	0.90	4T	3T	178.400	178.500	1.69	1.88
	8A	8	80.9	0.54	24	84.0	84	4.26	0.44	1.87	0.15	0.15	2.02	200	177.520	176.711	1.00%	32.80	1.04	8A	8	179.700	179.000	1.98	2.09
	8	6T	14.1	0.00	0	0.0	84	4.26	0.44	1.87	0.00	0.15	2.02	200	176.661	176.605	0.40%	20.74	0.66	8	6T	179.700	179.000	2.84	2.19
	Maple	7A	7	102.1	0.45	12	42.0	42	4.33	0.22	0.95	0.13	0.13	1.07	200	178.878	177.857	1.00%	32.80	1.04	7A	7	180.850	179.900	1.77
Pine	7	6	64.8	0.23	6	21.0	63	4.29	0.33	1.41	0.06	0.19	1.60	250	177.777	177.595	0.28%	31.47	0.64	7	6	179.900	179.600	1.87	1.75
	6	5	66.5	0.20	3	10.5	74	4.28	0.38	1.64	0.06	0.25	1.88	250	177.515	177.329	0.28%	31.47	0.64	6	5	179.600	179.900	1.83	2.32
	5	4	67.3	0.20	3	10.5	84	4.26	0.44	1.87	0.06	0.30	2.17	250	177.299	177.111	0.28%	31.47	0.64	5	4	179.900	179.750	2.35	2.39
	4A	4	64.3	0.19	6	21.0	21	4.38	0.11	0.48	0.05	0.05	0.53	200	177.804	177.161	1.00%	32.80	1.04	4A	4	180.600	179.750	2.60	2.39
	4	3	33.7	0.05	0	0.0	105	4.24	0.55	2.32	0.01	0.37	2.69	250	177.081	176.986	0.28%	31.47	0.64	4	3	179.750	179.450	2.42	2.21
	3A	3	63.4	0.34	10	35.0	35	4.34	0.18	0.79	0.10	0.10	0.89	200	177.670	177.036	1.00%	32.80	1.04	3A	3	179.950	180.300	2.08	3.06
	3	2	61.3	0.17	4	14.0	154	4.19	0.80	3.36	0.05	0.51	3.87	250	176.956	176.785	0.28%	31.47	0.64	3	2	180.300	179.450	3.09	2.42
	2	1	61.3	0.26	8	28.0	182	4.16	0.95	3.95	0.07	0.59	4.53	250	176.755	176.583	0.28%	31.47	0.64	2	1	179.450	178.800	2.45	1.97
	1	5T	16.5	0.02	0	0.0	182	4.16	0.95	3.95	0.01	0.59	4.54	250	176.533	176.484	0.28%	31.47	0.64	1	5T	178.800	178.570	2.02	1.84
	Flows from Block C Garage	7	15	63.3	0.24	6	21.0	21	4.38	0.11	0.48	0.07	0.07	10.55	250	177.874	177.697	0.28%	31.47	0.64	7	15	179.950	180.300	1.83
Flows from Block B North Garage	15	14	85.5	0.30	5	17.5	39	4.34	0.20	0.87	0.08	0.15	11.02	250	177.617	177.378	0.28%	31.47	0.64	15	14	180.600	180.300	2.73	2.67
	Stub	14	10.0	0.54	72	252.0	252	4.11	1.31	5.39	0.15	0.15	5.55	200	177.528	177.428	1.00%	32.80	1.04	Stub	14	179.800	180.100	2.07	2.47
	14	13	48.0	0.12	1	3.5	294	4.08	1.53	6.25	0.03	0.34	16.59	250	177.348	177.213	0.28%	31.47	0.64	14	13	180.300	180.100	2.70	2.64
	4A	13	62.5	0.19	6	21.0	21	4.38	0.11	0.48	0.05	0.05	0.53	200	177.888	177.263	1.00%	32.80	1.04	4A	13	179.800	180.100	1.71	2.64
	13	12	33.7	0.06	0	0.0	315	4.07	1.64	6.68	0.02	0.41	17.08	250	177.183	177.089	0.28%	31.47	0.64	13	12	180.100	180.000	2.67	2.66
	3A	12	63.4	0.38	10	35.0	35	4.34	0.18	0.79	0.11	0.11	0.90	200	177.773	177.139	1.00%	32.80	1.04	3A	12	180.300	180.000	2.33	2.66
	12	11	23.2	0.04	0	0.0	350	4.05	1.82	7.38	0.01	0.52	17.90	250	177.059	176.994	0.28%	31.47	0.64	12	11	180.000	179.800	2.69	2.56
	11	10	77.0	0.31	8	28.0	378	4.03	1.97	7.94	0.09	0.61	18.55	250	176.964	176.748	0.28%	31.47	0.64	11	10	179.800	179.300	2.59	2.30
	10	9	27.4	0.12	4	14.0	585	3.94	3.04	11.99	0.03	1.15	30.13	300	176.698	176.638	0.22%	45.36	0.64	10	9	179.300	179.600	2.30	2.66
	9	7T	10.5	0.00	0	0.0	585	3.94	3.04	11.99	0.00	1.15	30.13	300	176.608	176.585	0.22%	45.36	0.64	9	7T	179.600	178.410	2.69	1.52
Heritage Way	22	21	90.6	0.54	18	63.0	63	4.29	0.33	1.41	0.15	0.15	8.56	200	178.132	177.226	1.00%	32.80	1.04	22	21	180.300	179.850	1.97	2.42
	Stub	21	23.5	0.36	38	133.0	133	4.21	0.69	2.91	0.10	0.10	3.02	200	177.411	177.176	1.00%	32.80	1.04	Stub	21	179.700	179.850	2.09	2.47
	21	11	36.3	0.00	0	0.0	196	4.15	1.02	4.24	0.00	0.25	11.49	250	177.146	177.044	0.28%	31.47	0.64	21	11	179.850	179.850	2.45	2.56
	20	19	65.0	0.38	12	42.0	42	4.33	0.22	0.95	0.11	0.36	1.31	250	177.143	176.961	0.28%	31.47	0.64	20	19	179.900	179.250	2.51	2.04
	Stub	19	23.5	0.41	40	140.0	140	4.20	0.73	3.06	0.11	0.11	13.18	200	177.166	176.931	1.00%	32.80	1.04	Stub	19	179.550	179.250	2.18	2.12
	19	10	36.5	0.10	3	10.5	193	4.15	1.00	4.16	0.03	0.50	14.67	250	176.881	176.778	0.28%	31.47	0.64	19	10	179.250	178.900	2.12	1.87
Proposed Rec Centre	18	17	54.4	0.20	50	175.0	175	4.17	0.91	3.80	0.06	0.06	3.86	250	177.863	177.656	0.38%	36.66	0.75	18	17	179.400	179.200	1.29	1.29
	17	16	35.5	0.15	50	175.0	350	4.05	1.82	7.38	0.04	0.10	7.48	250	177.626	177.491	0.38%	36.66	0.75	17	16	179.200	179.100	1.32	1.36
	16	15	55.8	0.20	0	0.0	350	4.05	1.82	7.38	0.06	0.15	7.54	250	177.411	177.199	0.38%	36.66	0.75	16	15	179.100	178.900	1.44	1.45
	15	14	33.8	0.10	50																				

APPENDIX C

Approvals and Permits

MDE



Ontario

Ministry
of the
Environment

Ministère
de
l'Environnement

CERTIFICATE OF APPROVAL
MUNICIPAL AND PRIVATE SEWAGE WORKS
NUMBER 3673-797Q65
Issue Date: November 23, 2007

F.S. Collingwood Development Ltd.
141 Lakeshore Road East
Mississauga, Ontario
L5G 1E8

Site Location: The Shipyards Development
Lot 44, Concession 8 and 9
Collingwood Town, County of Simcoe, Ontario

You have applied in accordance with Section 53 of the Ontario Water Resources Act for approval of:

sanitary and storm sewers, and a stormwater management system to be constructed to service The Shipyards Development, located at the north end of downtown Collingwood at the Georgian Bay shoreline in the Town of Collingwood, County of Simcoe, comprising the following:

- **storm and sanitary sewers** to be constructed on North Maple Street, Wheelhouse Crescent, North Pine Street and Side Launch Way;
- **sanitary sewers** to be constructed on Heritage Drive; and
- Four (4) **oil/grit interceptors** located on Side Launch Way and Wheelhouse Crescent, each of three (3) oil/grit interceptors no. 1, 3 and 5 (single chamber) has a treatment flow rate of 70 L/s, a sediment capacity of 26,945 L, an oil capacity of 3,930 L and a total holding capacity of 31,285 L, and one (1) oil/grit interceptor no. 2 (dual chamber) has a treatment flow rate of 100 L/s, a sediment capacity of 32,980 L, an oil capacity of 10,555 L and a total holding capacity of 44,355 L, discharging to the Georgian Bay;

all in accordance with the application from F.S. Collingwood Development Ltd., dated July 16, 2007 and received on July 20, 2007, and all supporting documentation and information, including 'Master Stormwater Management Implementation Report' and revised design sheets, dated September, 2007, final plans and specifications prepared by C.F. Crozier & Associates Inc.

For the purpose of this Certificate of Approval and the terms and conditions specified below, the following definitions apply:

- (1) "Certificate " means this entire Certificate of Approval document, issued in accordance with Section 53 of the *Ontario Water Resources Act* , and includes any schedules;

RC 11/27/07

- (2) "Owner " means F.S. Collingwood Development Ltd. and includes its successors and assignees; and
- (3) "Works " means the sewage works described in the *Owner 's* application, this *Certificate* and in the supporting documentation referred to herein, to the extent approved by this *Certificate* .

You are hereby notified that this approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL CONDITIONS

- 1.1 The *Owner* shall ensure that any person authorized to carry out work on or operate any aspect of the *Works* is notified of this *Certificate* and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.
- 1.2 Except as otherwise provided by these Conditions, the *Owner* shall design, build, install, operate and maintain the *Works* in accordance with the description given in this *Certificate* , the application for approval of the works and the submitted supporting documents and plans and specifications as listed in this *Certificate* .
- 1.3 Where there is a conflict between a provision of any submitted document referred to in this *Certificate* and the Conditions of this *Certificate* , the Conditions in this *Certificate* shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.
- 1.4 Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.
- 1.5 The requirements of this *Certificate* are severable. If any requirement of this *Certificate* , or the application of any requirement of this *Certificate* to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this *Certificate* shall not be affected thereby.

2. EXPIRY OF APPROVAL

- 2.1 The approval issued by this *Certificate* will cease to apply to those parts of the *Works* which have not been constructed within five (5) years of the date of this *Certificate* .

3. OPERATION AND MAINTENANCE

- 3.1 The *Owner* shall design, construct and operate the oil/grit interceptor with the objective that no visible oil sheens occur in the effluent discharged from the oil/grit interceptor.
- 3.2 The *Owner* shall carry out and maintain an annual inspection and maintenance program on the operation of the oil/grit interceptor in accordance with the manufacturer's recommendation.

- 3.3 After a two (2) year period, the District Manager of the MOE District Office may alter the frequency of inspection of the oil/grit interceptor if he/she is requested to do so by the *Owner* and considers it acceptable upon review of information submitted in support of the request.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition No.1 is imposed to ensure that the *Works* are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the *Certificate* and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. The condition also advises the *Owners* their responsibility to notify any person they authorized to carry out work pursuant to this *Certificate* the existence of this *Certificate*.
2. Condition No.2 is included to ensure that, when the *Works* are constructed, the *Works* will meet the standards that apply at the time of construction to ensure the ongoing protection of the environment.
3. Condition No.3 is imposed to ensure that the oil/grit interceptor is operated and maintained without any adverse impact on the environment.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., Suite 1700
P.O. Box 2382
Toronto, Ontario
M4P 1E4

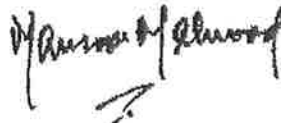
AND

The Director
Section 53, *Ontario Water Resources Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca

The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 23rd day of November, 2007



Mansoor Mahmood, P.Eng.
Director
Section 53, Ontario Water Resources Act

AA/

c: District Manager, MOE Barrie
Kevin Morris, P.Eng., C.F. Crozier & Associates Inc.

APPENDIX D

Preliminary Domestic Water Flow Rate Calculations
Fire Suppression Flow Rate Calculations

Harbour House - Water Flow Requirements

Site Area		1.16 ha
Number of Residential Units		130 unit
Person Per Residential Unit	Per DC Background Study (Watson & Associates)	2.40 persons/unit
Residential Population		312 persons
Equivalent Mixed Use Population	(See Appendix B)	26 persons
Total Population		338 persons

Water Design Flows

Per Capita Flow	450 L/C-day
-----------------	-------------

Total Domestic Water Design Flows

Average Daily Flow	1.8 L/s
Max Day Peak Factor	2.75
Max Day Demand Flow	4.8 L/s
Peak Hour Factor	4.5
Peak Hour Flow	7.9 L/s
Fire Flow (per Fire Underwriters Survey) (note minimum fire flow per Town Standard is 57 L/sec)	267 L/s

<u>Peak Design Flow</u>	271.5 L/s
--------------------------------	------------------

**Water Supply for Public Fire Protection - 1999
Fire Underwriters Survey**

Part II - Guide for Determination of Required Fire Flow

1. An estimate of fire flow required for a given area may be determined by the formula:

$$F = 220 * C * \sqrt{A}$$

where

F = the required fire flow in litres per minute
C = coefficient related to the type of construction
= 1.5 for wood frame construction (structure essentially all combustible)
= 1.0 for ordinary construction (brick or other masonry walls, combustible floor and interior)
= 0.8 for non-combustible construction (unprotected metal structural components)
= 0.6 for fire-resistive construction (fully protected frame, floors, roof)
A = The total floor area in square metres (including all storeys, but excluding basements at least 50 percent below grade) in the building considered.

7 number of floors

Ordinary Construction
0.8 C

14870.804 sq.m. total floor area

Therefore F= 21,000 L/min (rounded to nearest 1000 L/min)

Fire flow determined above shall not exceed:

30,000 L/min for wood frame construction
30,000 L/min for ordinary construction
25,000 L/min for non-combustible construction
25,000 L/min for fire-resistive construction

2. Values obtained in No. 1 may be reduced by as much as 25% for occupancies having low contents fire hazard or may be increased by up to 25% surcharge for occupancies having a high fire hazard.

Non-Combustible	-25%	Free Burning	15%
Limited Combustible	-15%	Rapid Burning	25%
Combustible	No Charge		

Low fire Hazard occupancy for dwellings	15% reduction
---	---------------

3,150 L/min reduction

Note: Flow determined shall not be less than 2,000 L/min

3. Sprinklers - The value obtained in No. 2 above maybe reduce by up to 50% for complete automatic sprinkler protection.

Automatic Sprinklers (30% Reduction)
5,355 L/min surcharge / reduction

Harbour House
Fire Protection Volume Calculation
CFCA File: 1838-5493

* Based on Site Plan

Page 2

Water Supply for Public Fire Protection - 1999
Fire Underwriters Survey

Part II - Guide for Determination of Required Fire Flow

4. Exposure - To the value obtained in No. 2, a percentage should be added for structures exposed within 45 metres by the fire area under consideration. The percentage shall depend upon the height, area, and construction of the building(s) being exposed, the separation, openings in the exposed building(s), the length and height of exposure, the provision of automatic sprinklers and/or outside sprinklers in the building(s) exposed, the occupancy of the exposed building(s) and the effect of hillside locations on the possible spread of fire.

Separation	Charge	Separation	Charge
0 to 3 m	25%	20.1 to 30 m	10%
3.1 to 10 m	20%	30.1 to 45 m	5%
10.1 to 20 m	15%		

Exposed buildings

Name	Distance			
North	N/A			0
South	N/A			0
East	Town Houses	40	10%	1564.5
West	BMO	40	10%	1785
				3,350 L/min Surcharge

Determine Required Fire Flow

No.1	21,000		
No. 2	3,150 reduction		
No. 3	5,355 reduction		
No. 4	<u>3,350</u> surcharge		
Required Flow:	15,845 L/min		
Rounded to nearest 1000l/min:	16,000 L/min	or	266.7 L/s
			4,227 USGPM

Determine Required Fire Storage Volume

Flow from above	16,000 L/min
Required duration	3.50 hours
Therefore:	3,360,000 Litres or
	3,360 cu.m. is the required fire storage volume.

Required Duration of Fire Flow

Flow Required L/min	Duration (hours)
2,000 or less	1.0
3,000	1.25
4,000	1.5
5,000	1.75
6,000	2.0
8,000	2.0
10,000	2.0
12,000	2.5
14,000	3.0
16,000	3.5
18,000	4.0
20,000	4.5
22,000	5.0
24,000	5.5
26,000	6.0
28,000	6.5
30,000	7.0
32,000	7.5
34,000	8.0
36,000	8.5
38,000	9.0
40,000 and over	9.5

Harbour House
Fire Protection Volume Calculation
CFCA File: 1838-5493

Page 3

* Based on Site Plan

Calculation Check

Office of the Fire Marshall - Fire Protection Water Supply Guideline for Part 3 in the OBC (October 2006)

$$Q = KVS_{TOT}$$

Q = minimum supply of water in litres (L)
K = water supply coefficient
V = total building volume in cubic metres
 S_{TOT} = total of spatial coefficient values from property line exposures on all sides

First Floor

K = 27 Group E building with noncombustible construction (Table 1 Row 2)
V = 12751.57934
 S_{TOT} = 1 S_{TOT} Need Not Exceed 2.0

$$Q = 344292.642$$

Floors 2-6

K = 16 Group C building with noncombustible construction (Table 1 Row 2)
V = 36580 h=3.1 m area= 2360 m2
 S_{TOT} = 1 S_{TOT} Need Not Exceed 2.0

$$Q = 585280 \text{ L}$$

Floors 7(Loft+Mechanical)

K = 16 Group C building with noncombustible construction (Table 1 Row 2)
V = 2375 h=3.1 m area= 766 m2
 S_{TOT} = 1 S_{TOT} Need Not Exceed 2.0

$$Q = 38000 \text{ L}$$

$$\text{Total } Q = 967572.642 \text{ L}$$

Table 2

9000 L/min
150 L/s

APPENDIX E

Regional Flood Flow Conveyance Figure
Storm Area Drainage Plan
Storm Sewer Design Sheet

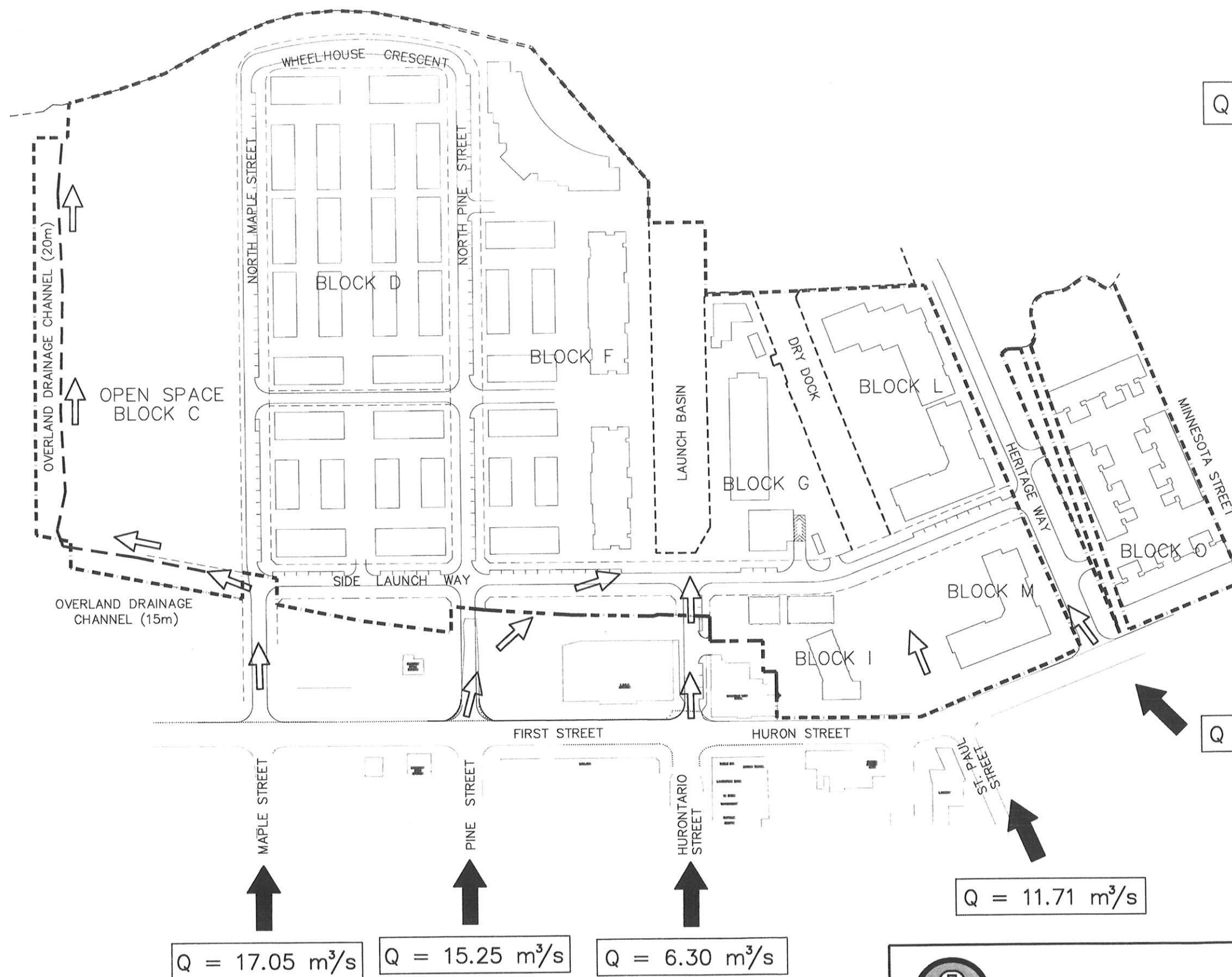
LEGEND

PEAK FLOW (REGIONAL)
(IBI GROUP, 2002)

$Q = 11.71 \text{ m}^3/\text{s}$

FLOW PATH (REGIONAL)

PROPERTY BOUNDARY



CF CROZIER & ASSOCIATES INC
LAND DEVELOPMENT ENGINEERS

110 PINE STREET
COLLINGWOOD ON
L9Y 2N9
T. 705-446-3510
F. 705-446-3520
CFCROZIER.CA

PROJECT
FSCD THE SHIPYARDS
TOWN OF COLLINGWOOD

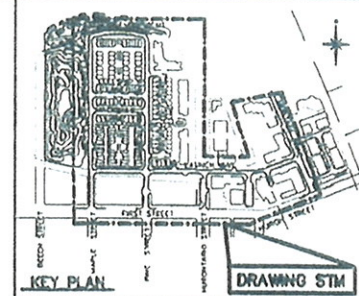
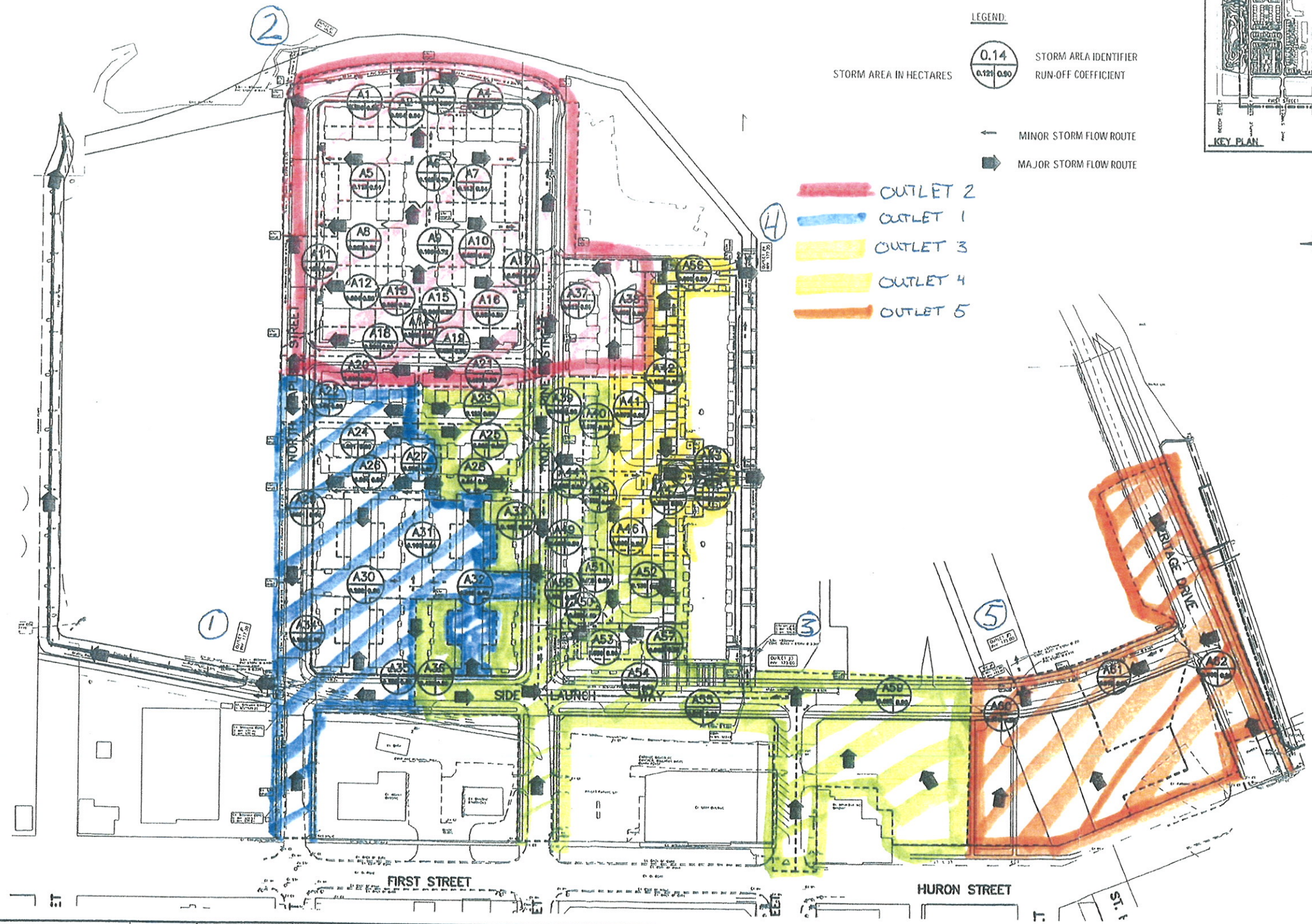
DRAWN BY:
K.A.M. PROJECT No.:
103-2595

DATE:
09/04/2007 SCALE:
1:2500

TITLE
REGIONAL FLOOD
FLOW CONVEYANCE

DRAWING No.:
FIGURE 3

FIGURE 6



1. This drawing is the exclusive property of R. J. Burnside & Associates Limited and the reproduction of any part without prior written consent of this office is strictly prohibited. 2. The contractor shall verify all dimensions, levels, and details on site and report any discrepancies or omissions to this office prior to construction. 3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project. 4. Do not scale the drawings.	<table border="1"> <thead> <tr> <th>No.</th> <th>Issue / Revision</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Issued for Review</td> <td>Dec 21, 2006</td> </tr> <tr> <td>2.</td> <td>Revised per Town comments</td> <td>June 4, 2007</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	No.	Issue / Revision	Date	1.	Issued for Review	Dec 21, 2006	2.	Revised per Town comments	June 4, 2007													BENCHMARKS GEODETIC BM ELEV. 170.140 BRASS CAP #010840871 IN SIDEWALK AT NORTH EAST CORNER OF HURON STREET (HWY. 26) AND HURONTARIO STREET. LOCAL BM ELEV. 172.71 CUT-CROSS ON TOP OF CONE WALL ON W SIDE HERITAGE DRIVE AT WATER'S EDGE, APPROX 250M N. OF HURON ST. (2UMD) LOCAL BM ELEV. 170.876 SPIKE IN NORTH FACE HPLS ON SOUTH SIDE HURON STREET AT HERITAGE DRIVE	BURNSIDE R. J. Burnside & Associates Limited 3 Huron Crescent, Collingwood, Ontario Telephone (705) 446-0515 Fax (705) 446-2200 Web: www.burnside.com	CP CROZIER & ASSOCIATES INC. 1111 BAYVIEW AVE. SUITE 100 SCARBOROUGH, ONT. M1B 4Y6 Tel: (416) 291-1111 Fax: (416) 291-1112 E-mail: info@crozier.ca	THE SHIPYARDS FRAM SLOKKER COLLINGWOOD DEVELOPMENT LTD.	STORM DRAINAGE AREA PLAN <table border="1"> <tr> <td>Drawn By: J.O.</td> <td>Checked By: K.M.</td> <td>Drawing No: STM</td> </tr> <tr> <td>Scale: 1:1000</td> <td>Date: 01/10/06</td> <td>Project No: PG-03-4783</td> </tr> <tr> <td colspan="3"> Project: 1:1000 Date: 01/10/06 Project No: PG-03-4783 Drawn By: J.O. Checked By: K.M. Drawing No: STM Scale: 1:1000 Date: 01/10/06 Project No: PG-03-4783 </td> </tr> </table>	Drawn By: J.O.	Checked By: K.M.	Drawing No: STM	Scale: 1:1000	Date: 01/10/06	Project No: PG-03-4783	Project: 1:1000 Date: 01/10/06 Project No: PG-03-4783 Drawn By: J.O. Checked By: K.M. Drawing No: STM Scale: 1:1000 Date: 01/10/06 Project No: PG-03-4783		
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CF CROZIER & ASSOCIATES INC.
LAND DEVELOPMENT ENGINEERS



BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

FSCD THE SHIPYARDS - STORM SEWER DESIGN SHEET

FREQUENCY

5 YEARS - Owen Sound IDF

Coef. A=

28.5

Coef. B=

-0.725

PROJECT: FSCD Shipyards

PROJECT No.: 103-2595

FILE: Storm Sewer Design 080107 Sub 3

DATE: 24-Nov-17

Design: Kevin Morris & John O'Neill

Date: 11/14/05

Revised: August 1, 2007

TIME OF CONCENTRATION

10.00

MANNINGS "n"

0.013

Location	FR MH NO	TO MH NO	Contributing Areas	AREA (A) Ha	RUN- OFF COEFF	A x C	Cummul. A x C	TIME OF CONC. min	I mm/hr	Q l/sec	SLOPE %	PIPE DIA. mm	VEL m/sec	LENGTH m	TIME OF FLOW min	CAPACITY l/sec	FALL m	GROUND ELEV. UPPER END	LOWER END	PIPE INV. ELEV. UPPER END	LOWER END	UPPER END	LOWER END	COVER UPPER END	LOWER END
Outlet #1	6	5	30	0.20	0.90	0.18				10.00															
			32	0.20	0.90	0.18				10.00															
			31	0.17	0.90	0.15	0.150	10.00	104.66	63.73	0.45	300	0.92	48.5	0.88	65.13	0.22	179.47	179.75	178.71	178.49	0.46	0.96		
	5	3	26 & 27	0.13	0.90	0.12	0.271	10.88	98.46	74.15	0.60	300	1.06	68.7	1.08	74.70	0.41	179.75	179.69	178.41	178.00	1.04	1.39		
	4	3	22 & 24	0.23	0.90	0.21	0.480	10.00	104.66	139.57	0.28	450	0.95	24.7	0.43	151.78	0.07	180.00	179.69	177.95	177.88	1.60	1.36		
	3	2		0.00	0.90	0.00	0.480	11.96	91.90	122.56	0.27	450	0.92	47.1	0.85	146.88	0.13	179.69	179.24	177.85	177.73	1.39	1.07		
	2	1	29	0.20	0.90	0.18	0.661	12.39	89.57	164.49	0.23	525	0.94	53.1	0.94	204.44	0.12	179.24	178.50	177.65	177.53	1.07	0.44		
	Ex MHA (Maple)	1		0.00	0.90	0.00	0.000	10.00	104.66	0.00	0.15	525	0.76	55.0	1.21	164.02	0.08	178.60	178.50	177.53	177.45	0.54	0.53		
	1	STC1	34, 35 & Future	0.69	0.90	0.62	1.277	13.33	84.95	301.61	0.40	600	1.37	5.0	0.06	388.33	0.02	178.50	178.93	177.45	177.43	0.45	0.90		
	STC1	Outlet 1		0.00	0.90	0.00	1.277	13.39	84.67	300.62	0.33	600	1.25	15.0	0.20	354.50	0.05	178.93	178.00	177.40	177.35	0.93	0.05		
Outlet #2	9	8	12, 13, 18 & 20	0.19	0.90	0.17	0.248	11.18	96.55	66.61	0.76	300	1.19	49.6	0.69	84.08	0.38	180.15	179.90	178.65	178.28	1.20	1.33		
	8	7	5, 8 & 11	0.12	0.90	0.11	0.474	11.87	92.41	121.72	0.67	375	1.30	76.4	0.98	143.94	0.51	179.90	179.85	178.20	177.69	1.33	1.79		
	13	12	15, 16, 19 & 21	0.17	0.90	0.15	0.229	11.08	97.16	61.77	0.51	300	0.97	44.4	0.76	68.84	0.23	180.15	179.95	178.65	178.43	1.20	1.23		
	12	11	7, 10, 17, 37, & 38	0.38	0.90	0.34	0.687	11.84	92.60	176.72	0.29	525	1.06	78.7	1.23	229.95	0.22	179.95	179.60	178.20	177.98	1.23	1.10		
	11	10	3 & 4	0.43	0.90	0.39	1.074	13.07	86.16	257.14	0.19	600	0.94	63.7	1.13	266.50	0.12	179.60	179.80	177.90	177.78	1.10	1.42		
	10	7A	2, 6, & 9	0.05	0.90	0.05	1.286	14.20	81.14	290.09	0.23	600	1.04	64.9	1.04	295.19	0.15	179.80	179.70	177.73	177.58	1.47	1.52		
	7A	7		0.00	0.90	0.00	1.286	15.23	77.10	275.63	0.23	600	1.05	4.3	0.07	296.10	0.01	179.70	179.85	177.55	177.54	1.55	1.71		
	7	STC2	1	0.29	0.90	0.26	2.021	15.23	77.10	433.13	0.60	600	1.68	5.8	0.06	474.24	0.03	179.85	179.60	177.46	177.43	1.79	1.57		
	STC2	Outlet 2		0.00	0.90	0.00	2.021	15.29	76.89	431.94	6.47	600	5.53	13.9	0.04	1562.39	0.90	179.60	178.50	177.40	176.50	1.60	1.40		
	15	14	9	0.11	0.72	0.08	0.078	10.00	104.66	22.83	0.33	300	0.78	36.9	0.79	55.15	0.12	180.26	180.05	178.90	178.78	1.06	0.97		
	14	10	6	0.12	0.70	0.09	0.164	10.79	99.05	45.13	0.36	300	0.83	41.2	0.83	58.35	0.15	180.05	179.80	178.75	178.60	1.00	0.90		
	Area 13	Area 12	13	0.06	0.52	0.03	0.03	10.00	104.66	9.08	0.50	200	0.74	40.0	0.90	23.19	0.20	180.45	180.18	179.45	179.25	0.80	0.74		
	Area 12	9	12	0.08	0.59	0.05	0.08	10.90	98.29	22.07	0.50	250	0.86	14.0	0.27	42.05	0.07	180.18	180.07	178.47	178.4	1.46	1.42		
	Area 15	Area 16	15	0.06	0.52	0.03	0.03	10	104.66	9.08	0.50	200	0.74	40.0	0.90	23.19	0.20	180.45	180.18	179.45	179.25	0.80	0.74		
	Area 16	13	16	0.08	0.59	0.05	0.08	10.90	98.29	21.91	1.21	250	1.33	14.0	0.17	65.53	0.17	180.18	179.99	178.77	178.6	1.16	1.14		
	Area 10	12	10	0.09	0.62	0.05	0.05	10.00	104.66	15.69	0.50	250	0.86	17.0	0.33	42.05	0.09	180.15	179.91	178.61	178.525	1.29	1.13		
	Area 7	12	7	0.11	0.54	0.06	0.06	10.00	104.66	17.75	0.50	250	0.86	14.0	0.27	42.05	0.07	179.86	179.67	178.445	178.375	1.17	1.04		
	Area 8	8	8	0.09	0.62	0.05	0.05	10	104.66	15.69	0.50	250	0.86	17.0	0.33	42.05	0.08	180.15	179.92	178.26	178.175	1.64	1.49		
	Area 5	8	5	0.11	0.54	0.06	0.06	10	104.66	17.75	0.50	250	0.86	14.0	0.27	42.05	0.07	179.87	179.75	178.255	178.185	1.37	1.32		
Outlet #3	20A	20	51, 52, & 57	0.26	0.90	0.23	0.235	10.00	104.66	68.35	0.36	375	0.96	27.4	0.48	105.92	0.10	179.30	179.10	177.85	177.75	1.08	0.97		
	20	19	50 & 53	0.08	0.90	0.07	0.303	10.48	101.18	85.32	0.44	375	1.06	11.3	0.18	116.63	0.05	179.10	178.85	177.68	177.63	1.04	0.84		
	21	19	23, 25, 28, 33, 39, 40, 44, 45, & 49																						
				0.70	0.90	0.63	0.687	10.91	98.26	187.57	0.73	450	1.53	91.6	1.00	243.84	0.67	179.95	178.85	178.25	177.58	1.25	0.82		
	19	18	58	0.08	0.90	0.08	1.066	11.90	92.22	273.18	1.19	450	1.96	31.1	0.27	310.98	0.37	178.85	178.33	177.55	177.18	0.85	0.70		
	18	STC3	36, 63, & Future	0.63	0.90	0.57	1.634	12.17	90.76	412.36	1.05	525	2.04	57.0	0.47	441.23	0.60	178.33	178.20	177.10	176.50	0.71	1.17		
	STC3	17		0.00	0.90	0.00	1.634	12.64	88.31	401.26	1.43	525	2.37	43.5	0.31	513.43	0.62	178.20	178.06	176.40	175.78	1.27	1.76		
	22	17	59	0.70	0.90	0.63	0.626	10.00	104.66	181.99	0.50	450	1.27	36.6	0.48	201.60	0.18	178.10	178.06	176.18	176.00	1.47	1.61		
	17	16	54, 55, & Future	1.00	0.90	0.90	3.158	12.94	86.79	762.00	2.28	600	3.28	18.4	0.09	927.67	0.42	178.06	178.30	175.70	175.28	1.76	2.42		
	16	Outlet 3		0.00	0.90	0.00	3.158	13.03	86.34	758.03	3.39	600	4.00	5.9	0.02	1130.49	0.20	178.30	178.30	175.20	175.00	2.50	2.70		
	Area 28	21	28	0.06	0.90	0.06	0.058	10.00	104.66	16.76	0.40	200	0.66	36.0	0.91	20.74	0.14	179.65	179.71	178.48	178.34	0.97	1.17		
	Parking Garage	26	41, 42, 43, 46, 47, & 48	0.45	0.90	0.41	0.405	10.00	104.66	117.84	0.25	450	0.90	40.0	0.74	142.55	0.10	179.57	179.70	178.90	178.80	0.22	0.45		
	26	STC4		0.00	0.90	0.00	0.405	10.74	90.35	111.86	0.19	450	0.78	106.2	2.28	123.73	0.20	179.05	179.70	177.70	177.50	0.90	1.75		
STC4	25	56 & Future	0.30	0.90	0.27	0.673	13.02	86.42	161.73	3.50	450	3.35	2.0	0.01	533.38	0.07	179.70	179.70	177.40	177.33	1.85	1.92			
25	Outlet 4		0.00	0.90	0.00	0.673	13.03	86.37	161.64	0.50	450	1.27	10.0	0.13	201.60	0.05	179.70	178.30	177.25	177.20	2.00	0.65			
Outlet #5	24	23	62	0.60	0.90	0.54	0.540	10.00	104.66	157.12	0.16	525	0.79	57.4	1.22	170.29	0.09	179.05	178.75	177.82	177.73	0.71	0.50		
	23	22a	61	0.24	0.90	0.22	0.756	11.22	96.29	202.38	0.25	525	0.99	28.3	0.48	213.89	0.07	178.75	178.60	177.70	177.63	0.53	0.44		
	22a	STC5	60	0.67	0.90	0.60	1.359	11.69	93.42	352.96	0.83	525	1.81	6.0	0.06	392.59	0.05	178.60	179.00	177.55	177.50	0.52	0.98		
	STC5	Outlet 5		0.00	0.90	0.00	1.359	11.75	93.10	351.75	20.69	525	9.04	11.6	0.02	1956.18	2.40	179.00	176.50	177.40	175.00	1.07	0.98		
	South side																								

APPENDIX F

Stormceptor Analysis

Stormceptor Maintenance Program

1.4	Quantity Control (L/s) The maximum release rate of any flow control devices located upstream of the SC unit.	1.4.1. Does quantity control exist? ☐ Yes, continue to 1.4.2; or ☒ No, continue to 1.5 1.4.2. Is the control upstream of the SC unit? ☐ Yes, continue to 1.4.3 ☐ No, continue to 1.4.3 1.4.3. Does the restrictor control flows from all upstream area (i.e. is there uncontrolled surface flow combined with rooftop controlled flows)? ☐ Yes, continue to 1.4.5 ☐ No, continue to 1.4.4 1.4.4. Does the hydraulic grade line (HGL) exceed the elevation of the outlet invert when Q=0? ☐ Yes, contact manufacturer ☐ No, continue to 1.4.4 1.4.5. Maximum release rate (L/s): _____, continue to 1.4
1.5	Particle Size Distribution Select the particle size distribution that most closely represents the target pollutants in the runoff.	☒ Fine particle size distribution (20 um to 2000 um) ☐ Coarse particle size distribution (150 um to 2000 um) Continue to 1.6
1.6	Stormceptor Model Based on simulations using the Expert System sizing program or sizing tables.	Stormceptor Model STC <u>6000</u> Annual Flow Capture: <u>96</u> Annual TSS Removed (%) <u>82</u> Continue to 3.1
2 STORMCEPTOR® SIZING (SPILLS ONLY)		
2.1	Drainage Area (ha) Calculate the total impervious drainage area in hectares (includes rooftops, asphalt parking, concrete sidewalks, etc.)	Drainage Area (ha): _____ % Impervious _____ Total impervious Area (ha): _____ Continue to 2.2

STC #5

Stormceptor® Design Worksheet



2.2	Storage Volume (L) The required storage volume for hydrocarbons. To be determined by the designer based on the site risk assessment.	Storage volume required (L): _____ Continue to 2.3
2.3	Physical properties of hydrocarbon Most common hydrocarbon prone to be spilled at location (to be determined by designer based on the site risk assessment). Recommended CPI SG for oil water separators.	Specific Gravity: _____ Oil globule size: _____ Continue to 2.4
2.4	Model Number Sizing of units to be determined by the designer. Provide information in items 2.1, 2.2 and 2.3 to the manufacturer for sizing.	Stormceptor Model: STC _____ Annual Flow Capture: _____ Annual TSS Removed (%): _____ Total oil storage volume (L): _____ Continue to 3.1
3 STORMCEPTOR® SITING CONSIDERATIONS		
3.1	Distance from top of grade to inlet invert elevation (m) For units with less than 1.5 m of headroom, a twin inlet flat cap and two MH frame and covers will be provided. This provides easy access to the by-pass chamber for maintenance.	☒ If > 1.2 m, OK ☐ If < 1.2 m, please contact Hanson Continue to 3.2
3.2	Number of inlet pipe Maximum slope of any incoming pipe to prevent high velocities in flows.	Refer to Figure 9 in Technical Manual, Pipe Diameter: <u>525mm</u> Max Slope (Fig. 9): <u>0.3%</u> Continue to 3.3
3.3	Inlet and outlet pipe invert elevations	☒ 25 mm (Single inlet Inline and Submerged units) ☐ 75 mm (Multiple inlet Inline and Submerged units, Inlet Stormceptor System, Series Stormceptor System) Continue to 3.4

3.4	Inlet and outlet pipe diameter The pipe diameter and orientation of the pipe will dictate the diameter of the lower chamber. If pipe diameters are greater than 825 mm, please contact the manufacturer to determine the feasibility.	☒ 1050 mm inlet/outlet pipe straight through or 825 mm with 90 degree bend: 1800 mm by-pass chamber. ☐ 1500 mm inlet/outlet pipe straight through or 1050 mm with 90 degree bend: 2400 mm by-pass chamber. ☐ 2400 mm inlet/outlet pipe straight through or 1500 mm with 90 degree bend: 3000 mm by-pass chamber. Continue to 3.5
3.5	Bends Change in horizontal alignment can be no less than 90 degrees.	☐ Bend is from 90 to 180 degree horizontal deflection. Continue to 3.6 ☐ Other, contact Hanson
3.6	Submerged Conditions A submerged condition exists only if there is a standing water elevation in the sewer system during zero flow conditions. Downstream receiving waters should be reviewed to ensure that tailwater from high water levels do not submerge the unit.	☒ No submerged unit is required ☐ Yes, submerged conditions exist. The design tailwater elevation is _____. Contact the manufacturer for design. Continue to 3.7
3.7	Catch basin covers	The STC 300i is the only unit adaptable for a catch basin frame and cover. A CB or DCB should be located upstream of the unit and tee into the main pipeline.

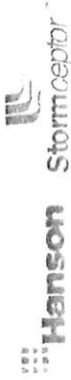
DISCLAIMER

This worksheet is provided as a guide to assist designers in properly sizing, selecting and siting a Stormceptor unit. All selections considered should be based on the designer's risk assessment for the site. Hanson should be consulted to address any special needs for a project or when a question arises.

DESIGN SUMMARY

Model Number:	STC <u>6000</u>	MOEE water quality objective: Level <u>1</u>
Annual flow capture:	<u>96</u> %	Total volume of storage: _____ L
Annual TSS removal:	<u>82</u> %	Oil capacity: _____ L
Total drainage area:	<u>1.55</u> ha	No. of inlet pipes: <u>1</u>
% Impervious:	<u>0.9</u> %	Upstream quantity control maximum release rate: _____ L/s
Impervious drainage area:	<u>1.4 ha</u>	

Ontario Stormceptor Sizing Table



Hanson Pipe & Products Canada, Inc.
p 1.888.888.3222 f 519.621.8233

Legend

80% or greater
70% to 79%
60% to 69%
Less than 60%

Estimates obtained from simulations using the Expert System Version sizing program

Toronto Central Rain Gauge, 1986 to 1996

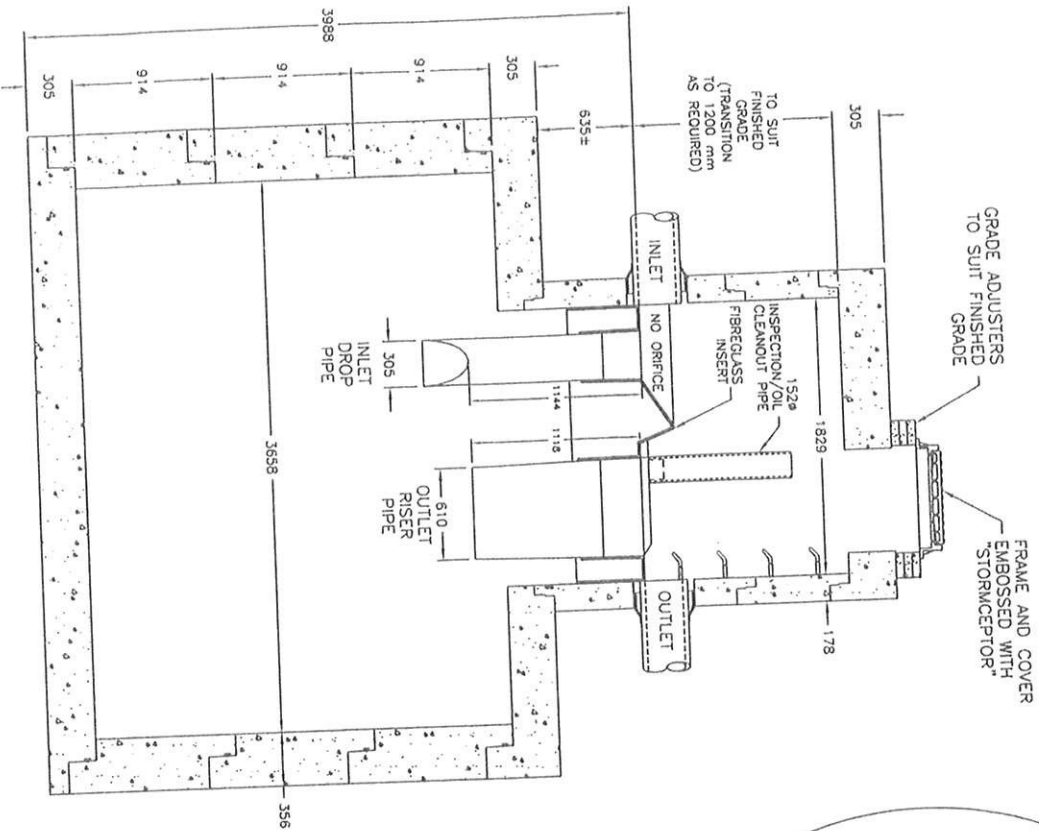
All drainage areas are 100% impervious

No flow control has been assumed

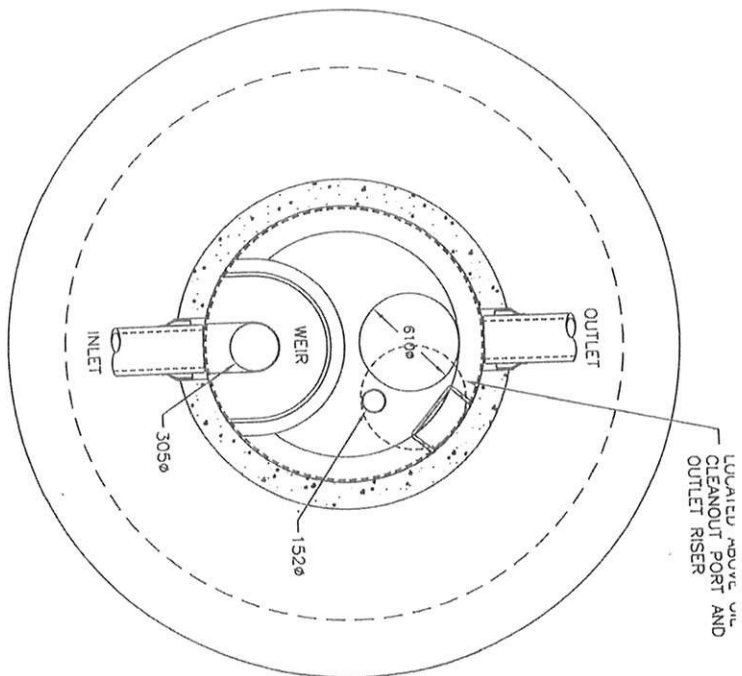
Drainage Area (ha)	ESTIMATED ANNUAL % RUNOFF TREATED														ESTIMATED ANNUAL % TSS REMOVED														Drainage Area (ha)
	Stormceptor Model														Stormceptor Model														
	300	750	1000	1500	2000	3000	4000	5000	6000	9000	10000	14000	300	750	1000	1500	2000	3000	4000	5000	6000	9000	10000	14000					
0.1	95	99	99	99	100	100	100	100	100	100	100	100	100	85	91	91	92	94	95	96	96	97	98	98	98	0.1			
0.2	88	96	98	98	99	99	100	100	100	100	100	100	100	78	86	87	88	90	91	93	94	95	96	96	97	0.2			
0.3	83	97	97	97	99	99	99	100	100	100	100	100	100	73	83	84	84	87	88	91	91	93	94	95	95	0.3			
0.4	78	95	95	95	98	98	98	99	99	100	100	100	100	70	80	81	82	85	86	89	90	91	93	94	95	0.4			
0.5	74	93	93	93	97	97	98	98	99	99	99	99	99	67	78	79	80	83	84	87	88	90	92	93	94	0.5			
0.6	70	91	91	91	95	95	96	96	98	98	99	99	99	64	76	77	78	81	83	86	87	89	91	91	91	0.6			
0.7	66	89	89	89	94	94	96	96	98	98	99	99	99	60	73	74	75	76	80	81	85	86	88	90	91	0.7			
0.8	63	86	86	86	93	93	97	97	98	98	99	99	99	56	71	73	73	77	79	83	83	86	88	91	91	0.8			
0.9	60	87	87	87	92	92	96	96	98	98	99	99	99	53	69	70	71	75	77	81	82	84	87	88	89	1.0			
1.0	57	85	85	85	91	91	96	96	98	98	99	99	99	50	66	67	68	72	74	78	78	81	84	85	87	1.1			
1.1	55	84	84	84	91	91	95	95	97	97	98	98	98	48	64	65	66	70	72	76	77	80	83	86	87	1.2			
1.2	53	83	83	83	90	90	94	94	96	96	98	98	98	45	62	63	64	68	70	74	75	78	81	84	87	1.3			
1.3	51	81	81	81	89	89	94	94	96	96	98	98	98	42	59	60	61	65	67	71	72	75	78	81	84	1.4			
1.4	49	80	80	80	88	88	93	93	95	95	97	97	97	40	57	58	59	63	65	69	70	73	76	79	82	1.5			
1.5	47	79	79	79	87	87	93	93	95	95	97	97	97	38	55	56	57	61	63	67	68	71	74	77	80	1.6			
1.6	45	78	78	78	86	86	92	92	94	94	96	96	96	36	53	54	55	59	61	65	66	69	72	75	78	1.7			
1.7	44	76	76	76	85	85	92	92	94	94	96	96	96	34	51	52	53	57	59	63	64	67	70	73	76	1.8			
1.8	42	75	75	75	85	85	91	91	94	94	96	96	96	32	49	50	51	55	57	61	62	65	68	71	74	1.9			
1.9	41	74	74	74	84	84	91	91	94	94	96	96	96	30	47	48	49	53	55	59	60	63	66	69	72	2.0			
2.0	40	73	73	73	83	83	90	90	93	93	95	95	95	28	45	46	47	51	53	57	58	61	64	67	70	2.1			
2.1	39	72	72	72	82	82	90	90	93	93	95	95	95	26	43	44	45	49	51	55	56	59	62	65	68	2.2			
2.2	38	71	71	71	82	82	89	89	92	92	94	94	94	24	41	42	43	47	49	53	54	57	60	63	66	2.3			
2.3	37	70	70	70	81	81	89	89	92	92	94	94	94	22	39	40	41	45	47	51	52	55	58	61	64	2.4			
2.4	36	69	69	69	80	80	88	88	92	92	94	94	94	20	37	38	39	43	45	49	50	53	56	59	62	2.5			
2.5	35	68	68	68	79	79	88	88	91	91	94	94	94	18	35	36	37	41	43	47	48	51	54	57	60	2.6			
2.6	34	67	67	67	79	79	87	87	91	91	94	94	94	16	33	34	35	39	41	45	46	49	52	55	58	2.7			
2.7	33	66	66	66	78	78	87	87	91	91	94	94	94	14	31	32	33	37	39	43	44	47	50	53	56	2.8			
2.8	32	65	65	65	77	77	86	86	90	90	93	93	93	12	29	30	31	35	37	41	42	45	48	51	54	2.9			
2.9	32	65	65	65	77	77	86	86	90	90	93	93	93	10	27	28	29	33	35	39	40	43	46	49	52	3.0			
3.0	31	64	64	64	76	76	85	85	89	89	92	92	92	8	25	26	27	31	33	37	38	41	44	47	50	3.1			
3.1	30	63	63	63	75	75	85	85	89	89	92	92	92	6	23	24	25	29	31	35	36	39	42	45	48	3.2			
3.2	30	62	62	62	75	75	84	84	89	89	92	92	92	4	21	22	23	27	29	33	34	37	40	43	46	3.3			
3.3	29	62	62	62	74	74	84	84	88	88	92	92	92	2	19	20	21	25	27	31	32	35	38	41	44	3.4			
3.4	28	61	61	61	74	74	83	83	88	88	92	92	92	0	17	18	19	23	25	29	30	33	36	39	42	3.5			
3.5	28	60	60	60	73	73	83	83	88	88	91	91	91	0	15	16	17	21	23	27	28	31	34	37	40	3.6			
3.6	27	59	59	59	72	72	83	83	88	88	91	91	91	0	13	14	15	19	21	25	26	29	32	35	38	3.7			
3.7	27	59	59	59	72	72	82	82	87	87	91	91	91	0	11	12	13	17	19	23	24	27	30	33	36	3.8			
3.8	26	58	58	58	71	71	82	82	87	87	91	91	91	0	9	10	11	15	17	21	22	25	28	31	34	3.9			
3.9	26	57	57	57	71	71	81	81	87	87	90	90	90	0	7	8	9	13	15	19	20	23	26	29	32	4.0			
4.0	25	57	57	57	70	70	81	81	86	86	90	90	90	0	5	6	7	11	13	17	18	21	24	27	30	4.1			
4.1	25	56	56	56	69	69	80	80	86	86	90	90	90	0	3	4	5	9	11	15	16	19	22	25	28	4.2			
4.2	25	56	56	56	69	69	80	80	86	86	90	90	90	0	1	2	3	7	9	13	14	17	20	23	26	4.3			
4.3	24	55	55	55	68	68	80	80	85	85	89	89	89	0	0	1	2	6	8	12	13	16	19	22	25	4.4			
4.4	24	54	54	54	67	67	79	79	85	85	89	89	89	0	0	0	1	5	7	11	12	15	18	21	24	4.5			
4.5	24	54	54	54	67	67	78	78	85	85	89	89	89	0	0	0	0	4	6	10	11	14	17	20	23	4.6			
4.6	23	53	53	53	67	67	78	78	84	84	88	88	88	0	0	0	0	3	5	9	10	13	16	19	22	4.7			
4.7	23	53	53	53	66	66	78	78	84	84	88	88	88	0	0	0	0	2	4	8	9	12	15	18	21	4.8			
4.8	23	52	52	52	66	66	78	78	84	84	88	88	88	0	0	0	0	1	3	7	8	11	14	17	20	4.9			
4.9	22	52	52	52	65	65	77	77	83	83	88	88	88	0	0	0	0	0	2	6	10	11	14	17	20	5.0			
5.0	22	51	51	51	65	65	77	77	83	83	88	88	88	0	0	0	0	0	1	5	9	10	13	16	19	22			

STC 5

SECTION VIEW



PLAN VIEW



STC # 5

FOR CLEANOUT ACCESS TO THE STORMCEPTOR CHAMBER. ACCESS WAY IS OFFSET TO ALLOW ACCESS TO THE FIBREGLASS BYPASS SLAB AND TO ALLOW FOR INSPECTION AND MAINTENANCE FROM THE SURFACE.

1. PIPE INSTALLATION BY NON-SHRINK GROUT OR FLEXIBLE BOOTS.
2. SAFETY GRATES FOR THE 610 mm OUTLET RISER PIPE ARE PROVIDED.
3. NITRILE GASKETS ARE PROVIDED FOR THE JOINTS.
4. TWIN INLET FLAT CAPS ARE PROVIDED FOR UNITS WITH TOP OF GRADE TO INVERT ELEVATIONS OF 2.134 m OR LESS FOR INSPECTION AND MAINTENANCE.
5. DIFFERENCE BETWEEN INLET AND OUTLET INVERT ELEVATIONS TO BE 25 mm FOR SINGLE INLET UNITS AND 76 mm FOR MULTIPLE INLET UNITS.

DESIGN SPECIFICATIONS:

1. MANUFACTURED TO CSA A257.4
2. CONCRETE STRENGTH: 30 MPa
3. REINFORCING STEEL: 448 MPa
4. WELDED WIRE FABRIC TO CSA G30.5
5. CONCRETE COVER TO STEEL: 25 mm MIN.
6. DESIGNED TO OHBC '91, 3rd EDITION

LOADING

THE STORMCEPTOR SYSTEM IS PROTECTED BY ONE OR MORE OF THE FOLLOWING PATENTS:

CANADIAN PATENT NO. 2,009,208
CANADIAN PATENT NO. 2,137,942
CANADIAN PATENT NO. 2,175,277
CANADIAN PATENT NO. 2,180,305



Hanson

Stormceptor

STC - 6000
IN-LINE STORMCEPTOR
6000 GALLON CAPACITY

DATE:	5 FEB 01
D.S.	B.L.
UNITS:	METRIC
SCALE:	1:50

B.L.	UNITS:	METRIC	SCALE:	1:50
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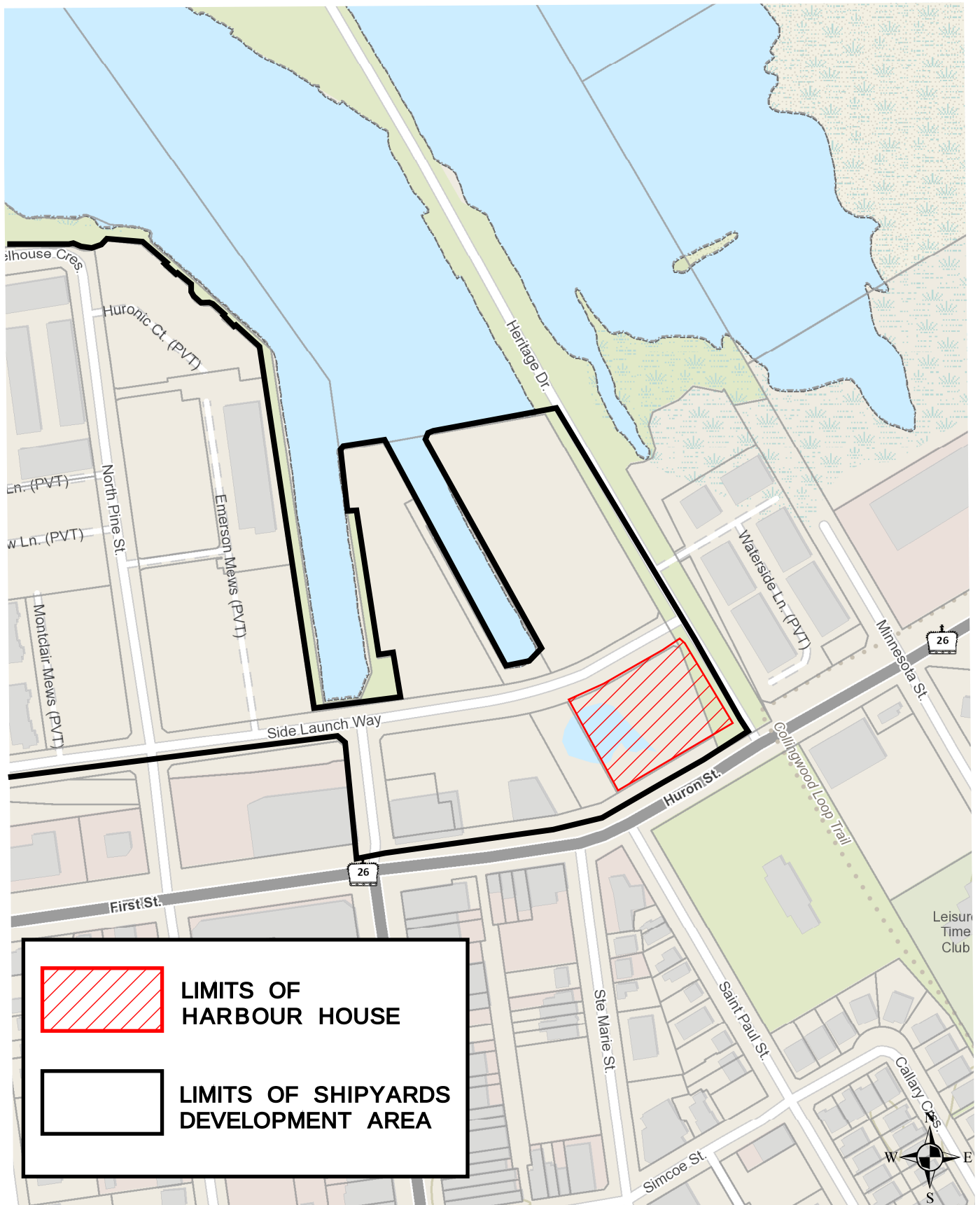
FIGURES

Figure 1: Site Location Plan

Figure 2: Site Plan

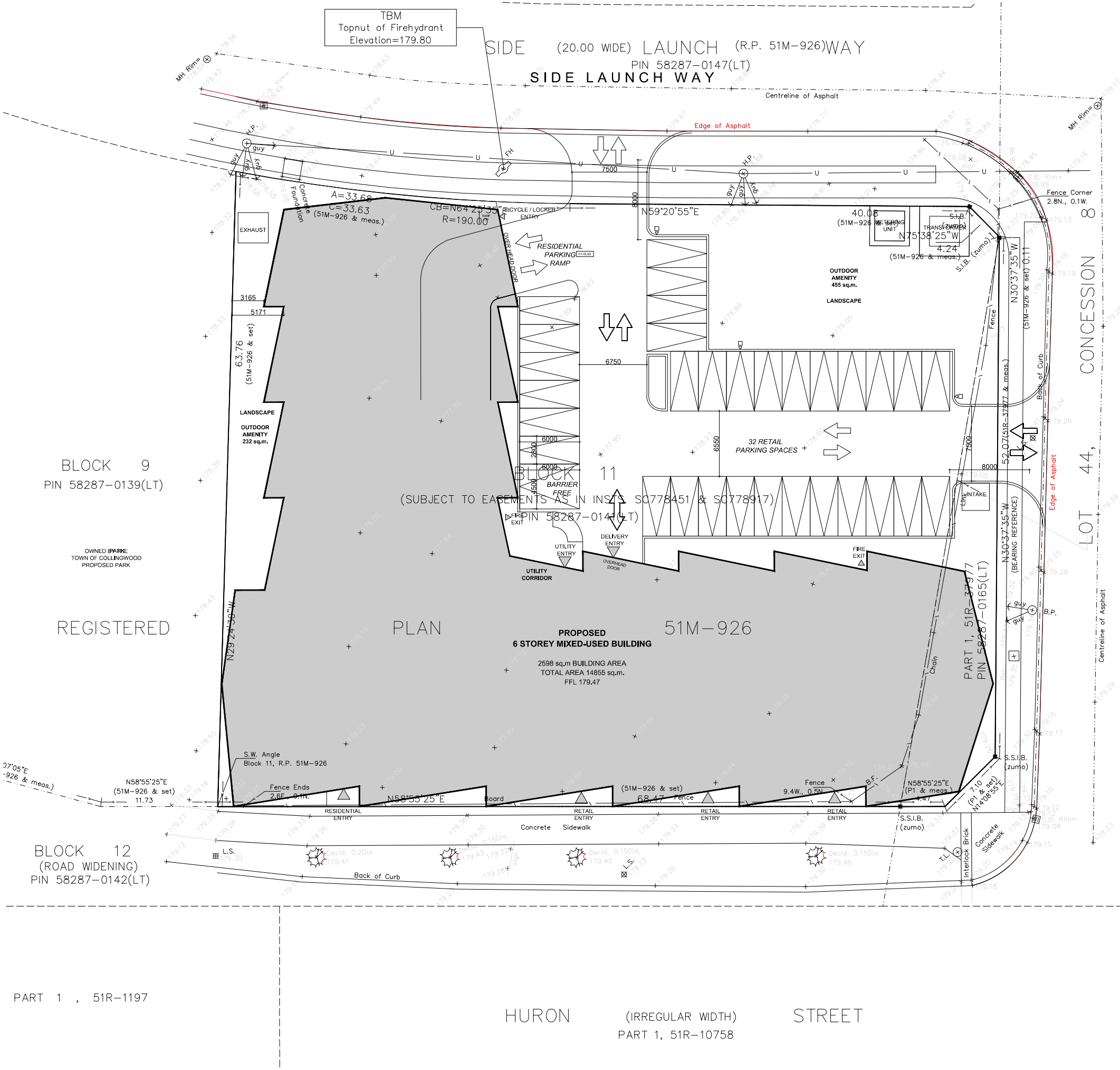
Drawing C101: General Site Servicing Plan

Drawing C102: Site Grading Plan & Sediment Control Plan



THE HARBOUREDGE BUILDING,
40 HURON STREET, SUITE 301,
COLLINGWOOD, ON L9Y 4R3
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

PROJECT	HARBOUR HOUSE		DRAWN BY:	PROJECT No.:
	TOWN OF COLLINGWOOD		J.L'A	1838 - 5493
	TITLE		DATE:	SCALE:
SITE LOCATION PLAN			JULY 31, 2020	NTS
			DRAWING No.:	FIG. 1



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NO.	DATE	REVISION
01.	07 / 31 / 2020	ISSUED FOR SPA

SITE STATISTICS AND ZONING REQUIREMENTS:			
PROPERTY LEGAL	31 HURON STREET, TOWN OF COLLINGWOOD		
ZONING	IN PROCESS OF BEING REDZONED TO SITE SPECIFIC ZONING (C1-3) IN ACCORDANCE WITH THE TOWN OF COLLINGWOOD ZONING BY-LAW 2010-40.		
DESCRIPTION			
AREA	TOTAL	%COVERAGE	
BUILDING AREA (GROUND FLOOR)	2598 sq.m.	55%	
ASPHALT PARKING & DRIVEWAY AREAS	1116 sq.m.	24%	
SIDEWALKS & OTHER HARD SURFACES	216	5%	
LANDSCAPES OPEN SPACE	757	16%	
TOTAL LOT AREA	4680 sq.m.	1.158 ACRES	
LAND USE	MIXED USE, RESIDENTIAL AND COMMERCIAL		
ZONING	IN PROCESS OF BEING REDZONED TO SITE SPECIFIC ZONING IN ACCORDANCE TO THE TOWN OF COLLINGWOOD ZONING BY-LAW		
BUILDING SETBACKS	REQUIRED	PROVIDED	
FRONT YARD (HERITAGE DRIVE)	0m	0m	
REAR YARD	7.5m	0m - 5.17m	
EXTERIOR SIDE YARD SET BACK	0m	0m	
PARKING & BICYCLES	REQUIRED	PROVIDED	
COMMERCIAL (3 spaces per 100sq.m.)	32	32	
VISITOR (0.25 space per unit)	33	33	
RESIDENTIAL (1 space per unit)	130	130	
BARRIER FREE (2% of total required spaces)	4	4	
DELIVERY SPACE	1	1	
BICYCLES	15	200	
BUILDING HEIGHT	BUILDING HEIGHT PROPOSED 6 STOREY BUILDING 26.0m FROM GROUND FLOOR TO TOP OF PEAKED ROOM		

- GENERAL NOTES
- THE "LIMITS OF CONSTRUCTION" SHALL BE ASSUMED TO BE THE PROPERTY LINE UNLESS OTHERWISE NOTED
 - FIRE ACCESS ROUTE TO BE POSTED AND DESIGNATED UNDER MUNICIPAL BY-LAW (FIRE ACCESS ROUTE TO BE MIN. 6 m WIDE WITH A MIN. 12 m CENTRELINE TURNING RADIUS AND MAX. 6% SLOPE) COORD. W/ MECH. & SITE PLANS FOR ALL EXISTING & NEW LOCATIONS OF SERVICES & ENTRY OF SERVICES INTO THE BUILDING ENVELOPE. (ALL MECH. ELECT. INFO INDICATED ON ARCHITECTURAL SITE DING, A1.1 IS FOR GENERAL REFERENCE & COORD. ONLY)
 - COORD. W/ SITE GRADING PLAN FOR PROPOSED FINAL FINISH GRADE ELEV'S & DRAINAGE SLOPES
 - TYP. DRIVEWAY & PARKING LOT CONC. CURBS AS INDICATED ON DRAWING, W/ OPSO DETAILS & SPECS. FOR TYPICAL CURB TYPES.SITE DIMENSIONS ARE TYPICALLY DIMENSIONED TO FACE OF CURB
 - THE SUB-GRADE SOILS EXPOSED AFTER EXCAVATION SHALL BE INSPECTED AND CERTIFIED BY A QUALIFIED REGISTERED PROFESSIONAL SOILS ENGINEER AND A COPY OF THE REPORT SHALL BE FORWARDED TO THE MUNICIPALITY
 - ALL FILL PLACED ON THE SITE SHALL BE COMPACTED TO A MINIMUM OF 88-100% STANDARD PROCTOR DENSITY. A SUFFICIENT NUMBER OF TESTS SHALL BE TAKEN AT VARIOUS LEVELS SATISFACTORY TO THE DIRECTOR OF ENGINEERING. TEST RESULTS SHALL BE SENT TO THE MUNICIPALITY WITH A LETTER, SIGNED AND STAMPED BY THE SOILS ENGINEER, STATING THAT A SUFFICIENT NUMBER OF TESTS HAVE BEEN TAKEN AND THE MINIMUM DEGREE OF COMPACTION HAS BEEN REACHED
 - APPROVAL OF THIS DRAWING IS FOR MATERIAL ACCEPTABILITY AND COMPLIANCE WITH MUNICIPAL AND PROVINCIAL SPECIFICATIONS AND STANDARDS ONLY. APPROVAL AND INSPECTION BY THE MUNICIPALITY OF THE WORKS DOES NOT CERTIFY THE LINE AND GRADE OF THE WORKS AND IT IS THE OWNER'S RESPONSIBILITY TO HAVE THEIR ENGINEER CERTIFY THIS ACCORDINGLY
 - STATION CONTROL DEVICES SHALL BE INSTALLED PRIOR TO WORKS COMMENCING ON THE SITE AND SHALL BE MAINTAINED FOR THE DURATION OF CONSTRUCTION, TO THE SATISFACTION OF THE MUNICIPALITY
 - PROJECT SIGN TO BE ERRECTED @ BEGINNING OF PROJECT. FINAL LOCATION TO BE COORDINATED WITH ARCHITECT ON SITE
 - EARTH BERMS SHOWN ARE DIAGRAMMATIC ONLY. REFER TO GRADING PLAN FOR ACCURATE AND COMPLETE INFORMATION
 - PROVIDE HEAVY DUTY ASPHALT @ ENTIRE TRUCK ACCESS ROUTE PROVIDE MEDIUM DUTY (MD) ASPHALT @ ALL OTHER DRIVEWAYS AND PARKING SPACES
- GENERAL NOTES - MUNICIPAL
- ALL WORK INVOLVED IN THE CONSTRUCTION, RELOCATION, REPAIR OF MUNICIPAL SERVICES FOR THE PROPOSED DEVELOPMENT SHALL BE TO THE SATISFACTION OF THE MUNICIPALITY
 - STREET EXCAVATION PERMITS ARE REQUIRED FOR ANY WORK IN MUNICIPAL RIGHT OF WAY BY ANY CONTRACTOR
 - CONTRACTOR IS RESPONSIBLE FOR ALL SERVICING, UTILITIES, AND COSTS
 - STORM WATER DRAINAGE MUST NOT HAVE A NEGATIVE IMPACT ON ADJACENT PROPERTIES
 - FIRE ROUTE SIGNS AND 3-WAY FIRE HYDRANTS SHALL BE ESTABLISHED TO THE SATISFACTION OF THE FIRE DEPARTMENT AND AT THE EXPENSE OF THE CONTRACTOR
 - ALL DRIVEWAYS FROM PROPERTY LINES FOR THE FIRST 7.5 M SHALL BE WITHIN 5% MAXIMUM GRADE. THEREAFTER, ALL DRIVEWAYS SHALL BE WITHIN 10% MAXIMUM GRADES
 - THE MUNICIPAL APPROVAL OF THIS SITE PLAN DOES NOT EXEMPT THE CONTRACTOR FROM THE REQUIREMENTS TO OBTAIN THE VARIOUS PERMITS/APPROVALS NORMALLY REQUIRED TO COMPLETE A CONSTRUCTION PROJECT, SUCH AS, BUT NOT LIMITED TO THE FOLLOWING:
 - BUILDING PERMIT
 - SEWER AND WATER PERMITS
 - ROAD CUT PERMITS
 - RELOCATION OF SERVICES
 - APPROACH APPROVAL PERMITS
 - ENCROACHMENT AGREEMENTS
 - COMMITTEE OF ADJUSTMENT
 - ANY ABANDONED ACCESSSES MUST BE REMOVED AND THE CURB AND BOULEVARD RESTORED WITH SOD AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE MUNICIPALITY

- BEFORE STARTING WORK
- THE CONTRACTOR SHALL NOTIFY THE MUNICIPALITY, ARCHITECT & CONSULTANTS AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION
 - THE POSITION OF THE POLE LINES, CONDUITS, WATER MAINS, SEWERS, AND OTHER UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. CONTRACTOR TO VERIFY EXISTING CONDITIONS
 - ALL EXISTING UNDERGROUND UTILITIES WITHIN THE LIMITS OF CONSTRUCTION SHALL BE LOCATED, MARKED AND PROTECTED. ANY UTILITIES DAMAGED OR DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE ENGINEER, AT THE CONTRACTOR'S EXPENSE
 - PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ALL BENCHMARKS, ELEVATIONS, DIMENSIONS, AND GRADES MUST BE CHECKED BY THE CONTRACTOR AND ANY DISCREPANCIES REPORTED TO THE ENGINEER
 - AT LEAST TWO DIFFERENT BENCHMARKS MUST BE REFERRED TO AT ALL TIMES

STREETCAR™
RETHINK URBAN LIVING

1230 DUNDAS ST E TORONTO ONTARIO M4M 1S3 416-466-2361

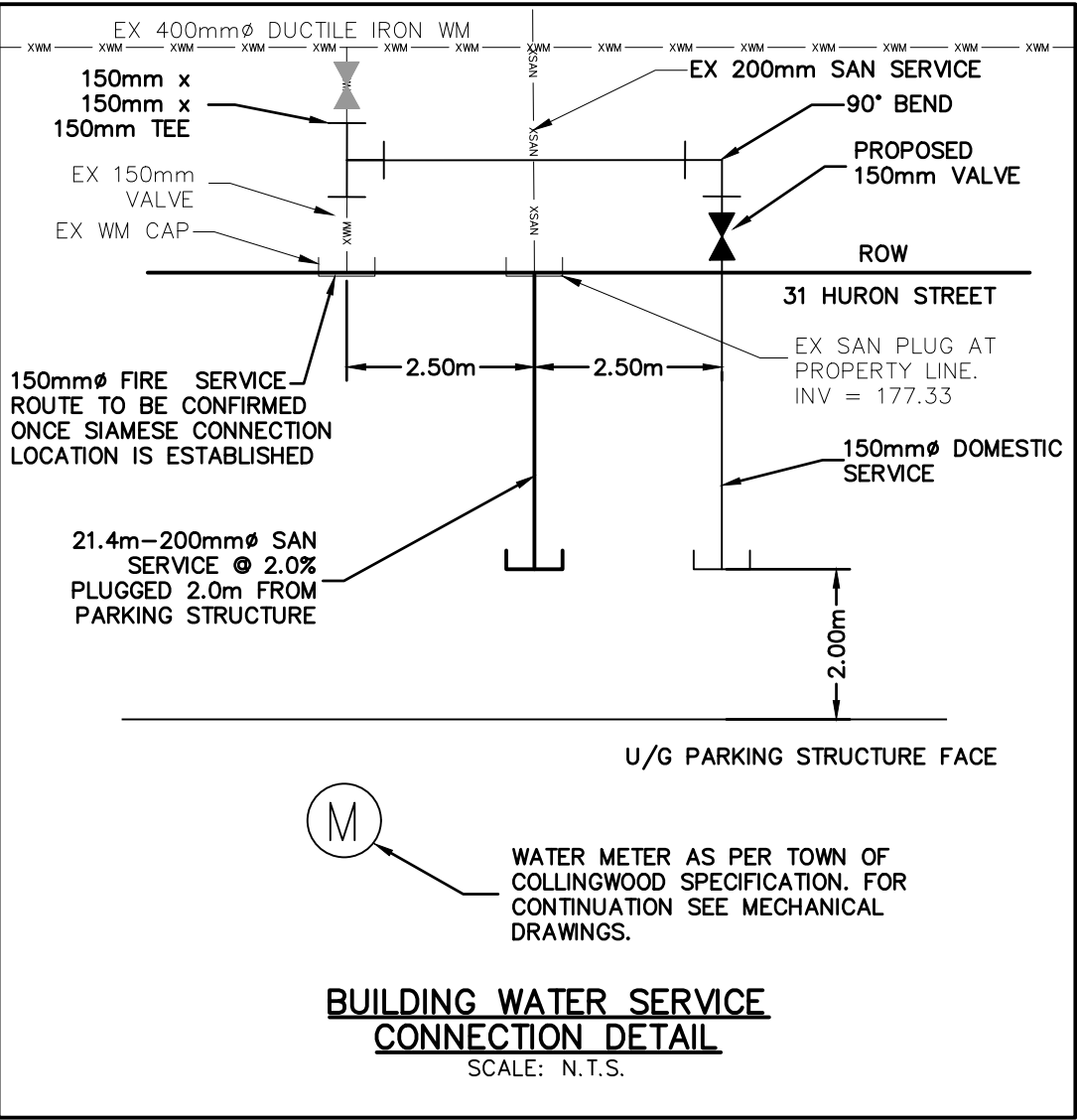
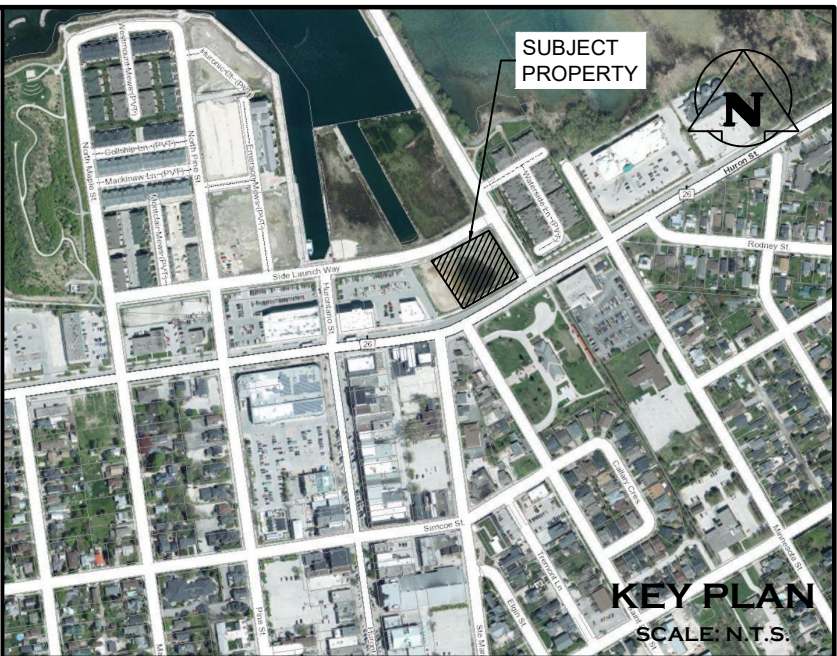
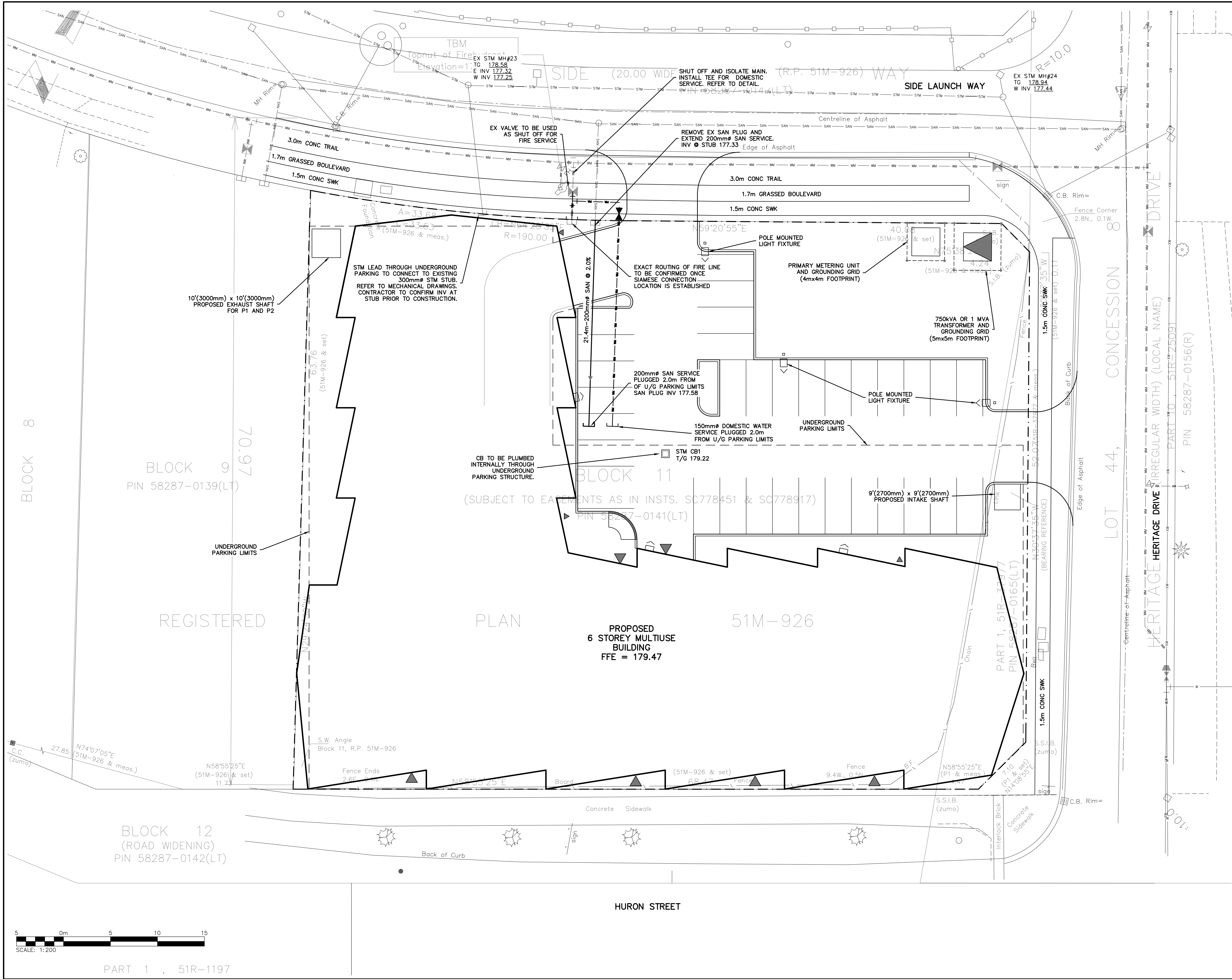
DRAWING:
PROPOSED SITE PLAN

PROJECT:
31 HURON STREET
COLLINGWOOD

SCALE:
1:200

ISSUE DATE:
30 / 07 / 2020

D-001
Figure #2



- 1. THIS DRAWING IS THE EXCLUSIVE PROPERTY OF C.F. CROZIER & ASSOCIATES INC. AND THE REPRODUCTION OF ANY PART WITHOUT PRIOR WRITTEN CONSENT OF THIS OFFICE IS STRICTLY PROHIBITED.
- 2. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, LEVELS, AND DATUMS ON SITE AND REPORT ANY DISCREPANCIES OR OMISSIONS TO THIS OFFICE PRIOR TO CONSTRUCTION.
- 3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.
- 4. DO NOT SCALE THE DRAWINGS.
- 5. ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

TEMPORARY BENCHMARKS
TBM#1-179.80
TOP NUT OF FIRE HYDRANT ON THE NORTH SIDE OF THE 31 HURON STREET DEVELOPMENT ON THE SOUTH SIDE OF SIDELAUNCH WAY.

No.	ISSUE	DATE: MM/DD/YYYY
1	ISSUED FOR FIRST SUBMISSION	07/31/2020

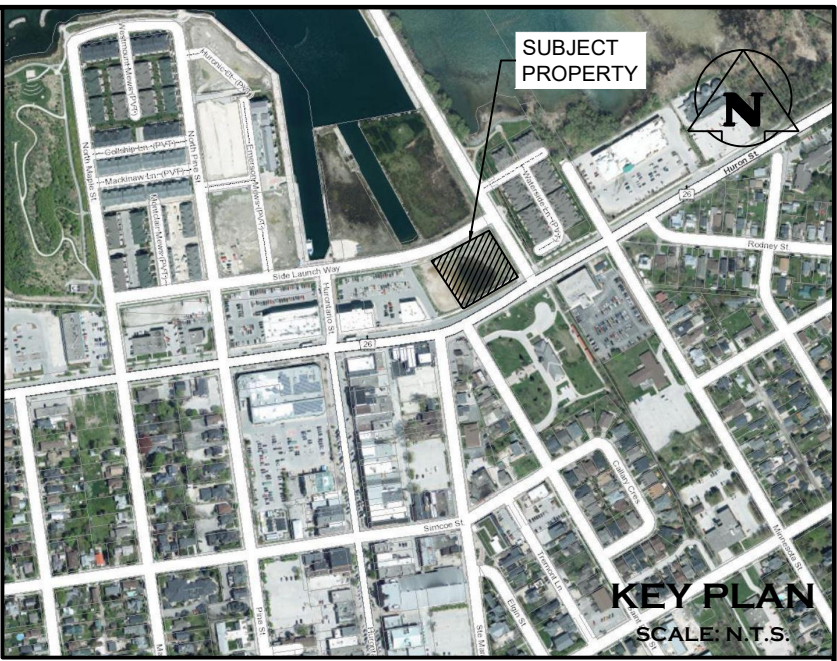
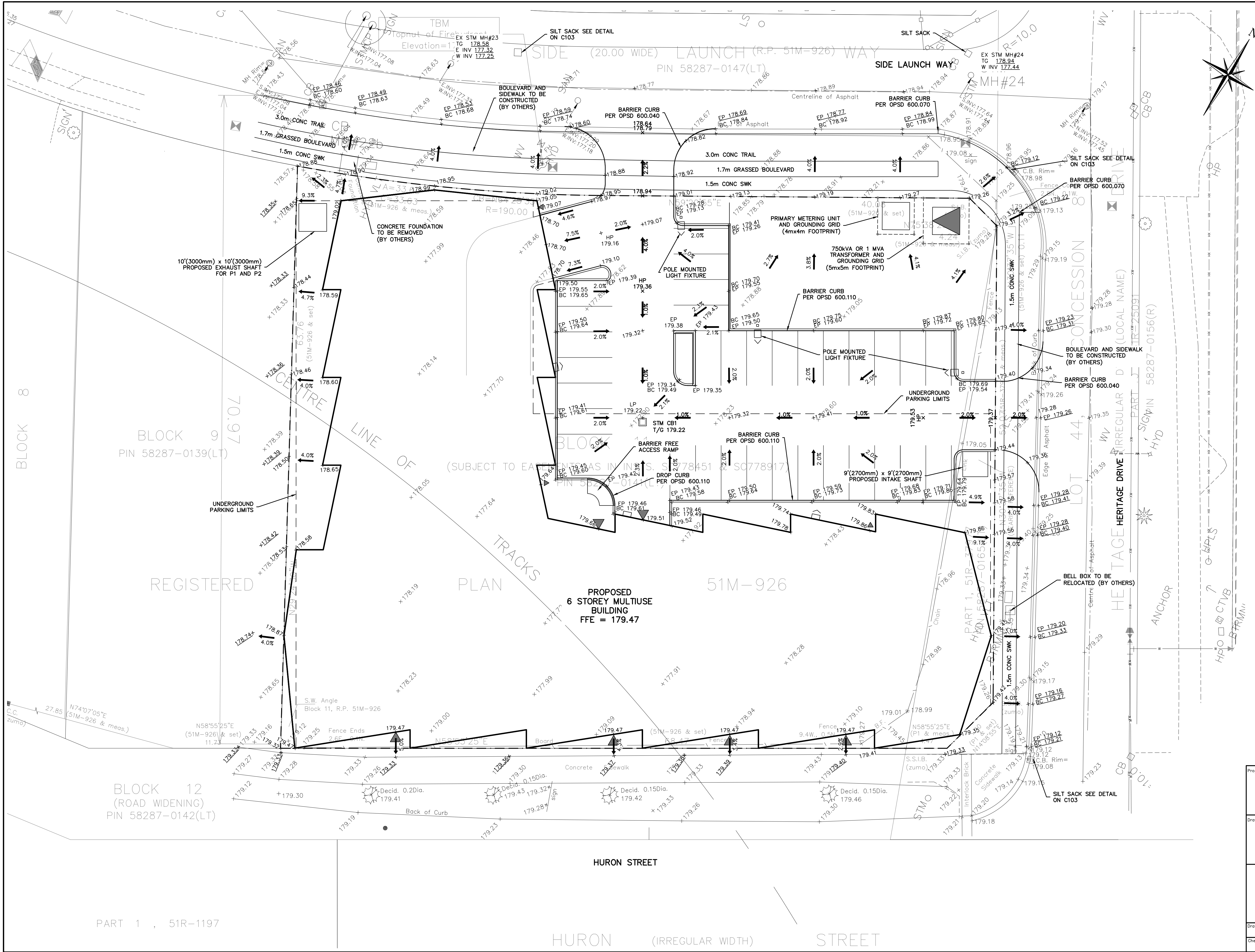
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

HARBOUR HOUSE DEVELOPMENT
TOWN OF COLLINGWOOD

GENERAL SITE SERVICING PLAN

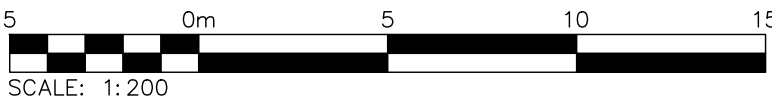
THE HARBOUREDGE BUILDING,
40 HURON STREET, SUITE 301,
COLLINGWOOD, ON L9Y 4R3
705 446-3510 T
705 446-3520 F
INFO@CFCROZIER.CA

Drawn By	J.A.P.	Design By	M.V.R.	Project	1838-5493
Check By	B.H.	Check By	K.M.	Scale	1:200
				Drawing	C101



BC XXX.XX
EP XXX.XX

BACK OF CURB ELEVATION
EDGE OF CURB ELEVATION



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TEMPORARY BENCHMARKS

TBM#1-179.80
TOP NUT OF FIRE HYDRANT ON THE NORTH SIDE OF THE 31 HURON STREET DEVELOPMENT ON THE SOUTH SIDE OF SIDELAUNCH WAY.

No.	ISSUE	DATE: MM/DD/YYYY
1	ISSUED FOR FIRST SUBMISSION	07/31/2020

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

HARBOUR HOUSE DEVELOPMENT
TOWN OF COLLINGWOOD

OVERALL SITE GRADING PLAN
& SEDIMENT & EROSION CONTROL PLAN



THE HARBOUREDGE BUILDING,
40 HURON STREET, SUITE 301,
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INFO@CFCROZIER.CA

Drawn By	J.A.P.	Design By	M.V.R.	Project	1838-5493
Check By	B.H.	Check By	K.M.	Scale	1:200
				Drawing	C102