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35 Years

Hillside Vista Walk-Up Condos

Serviceability Report

HILLSIDE VISTA WALK-UP CONDOS
SERVICEABILITY REPORT

Prepared For:

HILLSIDE VISTA INC.

Prepared By:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

June 23, 2017
Revised: December 15, 2017

Novatech File: 106011B
Ref: R-2016-116

NOVATECH
Engineers, Planners & Landscape Architects

December 15, 2017

BY COURIER

City of Ottawa
Planning, Infrastructure and Economic Development Department
Infrastructure Approvals Division,
110 Laurier Avenue West, 4th Floor
Ottawa, ON K1P 1J1

Attention: **Mr. Issac Wong, P. Eng.**

Reference: **Hillside Vista Walk-Up Condos**
Serviceability Report
Novatech File No.: 116011B

Please find enclosed three (3) copies of the Serviceability Report for the Hillside Vista Walk-Up Condos, located in the OTC East development near the St. Joseph/10th Line intersection. The report demonstrates how the proposed site will be serviced with storm, sanitary, watermain, utilities, and stormwater management and is submitted for your review and approval.

If you have any questions or comments, please do not hesitate to contact us.

Sincerely,

NOVATECH

Drew Blair, P. Eng.
Project Manager | Land Development Engineering

Encl.

cc: Michael Boucher, DCR Phoenix

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

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1.0 INTRODUCTION

Novatech has been retained by Hillside Vista Inc. to prepare this serviceability report in support of the site plan application of the Hillside Vista Walk- Up Condos, located within the Orleans Town Centre (OTC) East lands. The site is located at 241 Centrum Boulevard and is included in Block 4 on the approved Draft Plan of Subdivision (City File No. D07-16-08-0014). The key plan (**Figure 1**) highlights the site location, approximately 250m northwest of the St. Joseph/10th Line intersection. The site will be developed by Hillside Vista Inc. and includes five (5) condo buildings with a combined 90 units, onsite parking, and servicing, as shown in **Figure 2**.

Since this site is located within the OTC East Lands, this report follows recommendations of The Serviceability and Stormwater Management Report (SSMR), Hillside Vista Towns, Ottawa, Ontario prepared in June 2015 by Novatech (Ref. R-2014-059). The SSMR outlines the design criteria for all future development within the OTC East Lands, including the proposed Hillside Vista Walk-Up Condos.

This servicing and report will confirm how the proposed Hillside Vista Walk-Up Condos will be serviced with: sanitary, water, stormwater management, and utilities.

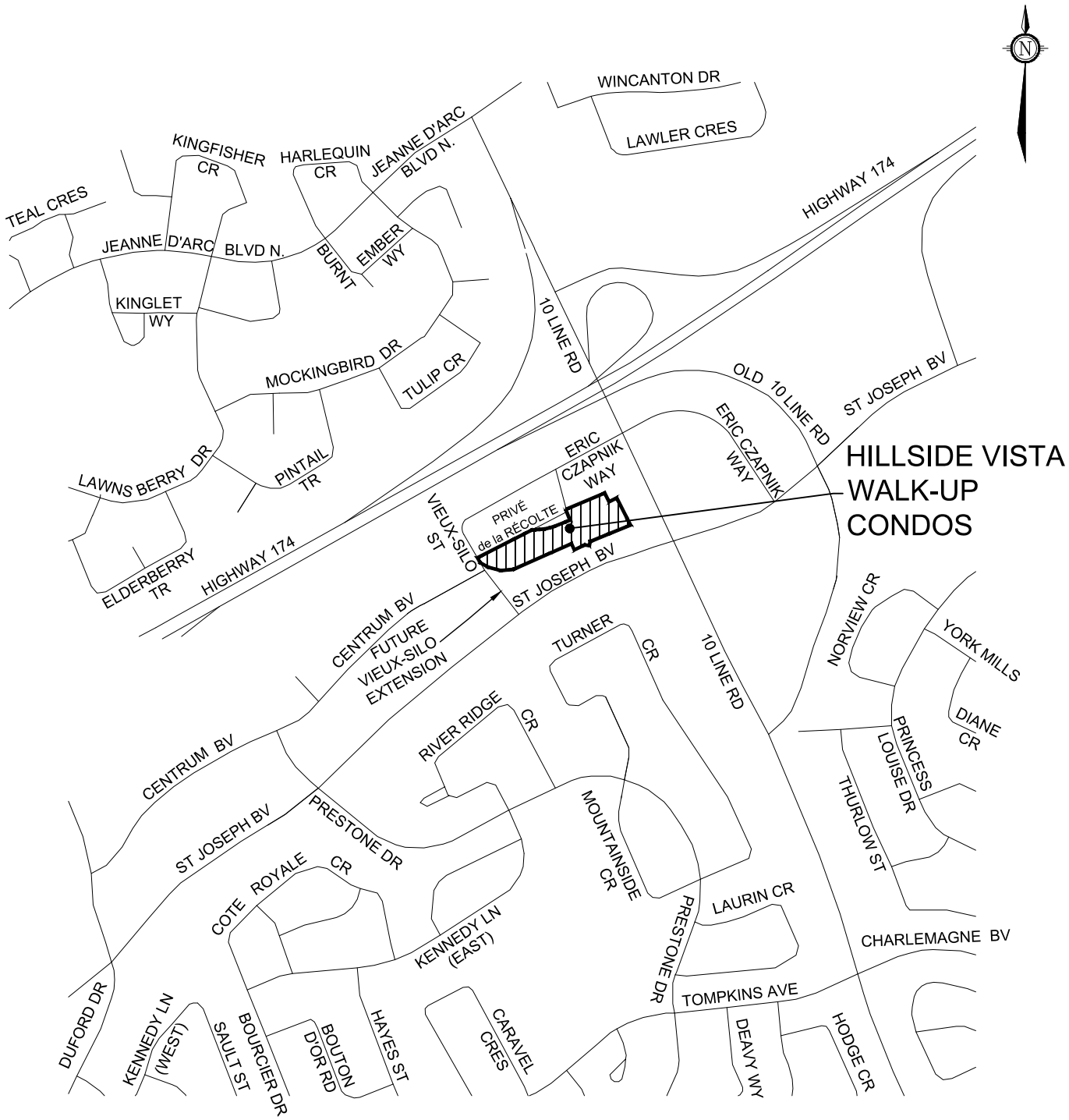
2.0 SANITARY SERVICING

The design criteria used to determine the sanitary flows are based on the City of Ottawa's sewer design guidelines and are as follows:

- Residential Average Flow = 350L/capita/day
- Peaking Factor = Harmon Equation (max peaking factor = 4.0)
- Peak Extraneous Flows (Infiltration) = 0.28L/s/ha
- Condo Population Density = 2.1 people/2 bedroom unit and 1.4 people/1 bedroom unit
- Minimum Pipe Slope (200mm) = 0.32%
- Minimum Full Flow Velocity = 0.6m/s
- Maximum Full Flow Velocity = 3.0m/s

Based on the criteria from the City of Ottawa Sewer Design Guidelines, the calculated peak sanitary design flow for the Hillside Vista Walk-Up Condos and adjacent townhouse Blocks (6-8) is 3.93L/s. For detailed calculations refer to the Sanitary Sewer Design Sheet located in **Appendix A**.

The peak sanitary flows from the site will be directed by gravity sewer into the existing Récolte Private sanitary sewer prior to discharging into the Eric Czapnik Way sanitary sewer as per the approved design in the 2015 Hillside Vista Towns SSMR. **Table 1** compares the peak rate of sanitary flow from the Hillside Vista Walk-Up Condo Lands calculated to outlet into the Récolte Private sanitary sewer determined in the 2015 approved Hillside Vista Towns SSMR and the peak rate of sanitary flow calculated to outlet into the Récolte Private sanitary sewer based on the design criteria listed above.



NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

HILLSIDE VISTA WALK-UP CONDOS

KEY PLAN

SCALE: N.T.S.

DATE: DEC 2017 | JOB: 106011 | FIGURE: FIGURE 1

SHT8X11.DWG - 216mmx279mm

M:\2006\106011\CAD\DESIGN - EAST\Condo Walkups\Figures\106011-WT-KeyPlan.dwg, 106011T-KP, Dec 18, 2017 - 1:51pm, smclaughlin

FUTURE DEVELOPMENT

CITY OPEN SPACE

CITY PARK

RUE DU VIEUX-SILO STREET

HILLSIDE VISTA TOWNS

PRIVÉ DE LA RÉCOLTE PRIVATE

PROPOSED 1.5m CONCRETE SIDEWALK

PRIVÉ DE LA RÉCOLTE PRIVATE

CITY PARK

EXISTING AFFORDABLE HOUSING

BLOCK 1

BLOCK 2

HILLSIDE VISTA WALK-UP CONDOS

BLOCK 3

BLOCK 4

BLOCK 5

FUTURE DEVELOPMENT BY OWNERS

CITY OPEN SPACE

EXISTING HILLSIDE TERRACE TOWNS

FUTURE DEVELOPMENT BY OWNERS

ST.JOSEPH BOULEVARD

M:\2006\106011\CAD\DESIGN - EAST\Condo Walkups\Figures\106011-WT-Concept.dwg, 106011-WT-FIGURE 2, Dec 15, 2017 - 1:39pm, smclaughlin

NOVATECH

Engineers, Planners & Landscape Architects

Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

HILLSIDE VISTA WALK-UP CONDOS

CONCEPT PLAN

SCALE 1 :750 (0, 10m, 20m, 30m)

DATE DEC 2017

JOB 106011

FIGURE FIGURE 2

SHT11X17.DWG 279mmX432mm

Table 1: Comparison of Peak Sanitary Flows

Development	Units		Population Density		Total Population	Area (ha)	Peaking Factor	Peak Sanitary Flow
	Towns	Condos	Towns	Condos				
Hillside Vista Towns (2015)	26	16	2.7	1.8	99	0.71	4	1.91 L/s
Hillside Vista Walk-Up Condos (2017)	18	90	2.7	1.88	218	1.31	4	3.90 L/s*

***** Calculated peak sanitary flow is different from the sanitary sewer design sheet due to rounding. This report considers the peak rate of sanitary flow from the Hillside Vista Walk-Up Condo Development as per the sanitary sewer design sheet (1.56L/s).

It is proposed to add an additional 1.99L/s of peak sanitary flow into the existing Récolte Private sanitary sewer from the proposed Hillside Vista Walk-Up Condos compared to the peak sanitary release rate from the approved SSMR 2015 report. The as-built sanitary design sheet of the Récolte Private and Eric Czapnik Way sanitary sewers confirms the pipes have a minimum excess capacity of 15.1L/s, downstream of the proposed site. Therefore, the existing sanitary sewers have adequate capacity to accept the additional 1.99L/s of peak sanitary flow from the Hillside Vista Walk-Up Condos. For reference, a copy of the Récolte Private and Eric Czapnik Way as-built sanitary sewer design sheet is included in **Appendix A**.

3.0 WATERMAIN

The site will be serviced from the existing Recolte Private 200mm dia. watermain. Services for Blocks 1-3 will connect to the Recolte Private watermain. Blocks 4 and 5 will be serviced by extending the existing Recolte Private watermain east.

The existing Recolte Private watermain connects to Silo Street to the west and Eric Czapnik Way to the north. The Silo Street watermain connects to Eric Czapnik Way. The Eric Czapnik Way watermain connects to the existing 400mm watermain on St. Joseph Boulevard. However, since the Silo Street and Recolte Private watermains connect to Eric Czapnik Way and the Eric Czapnik Way watermain has only a single connection to St. Joseph, the existing system is considered non-looped. To complete the looping of all watermains it is proposed to extend the Silo Street watermain south to St. Joseph Boulevard.

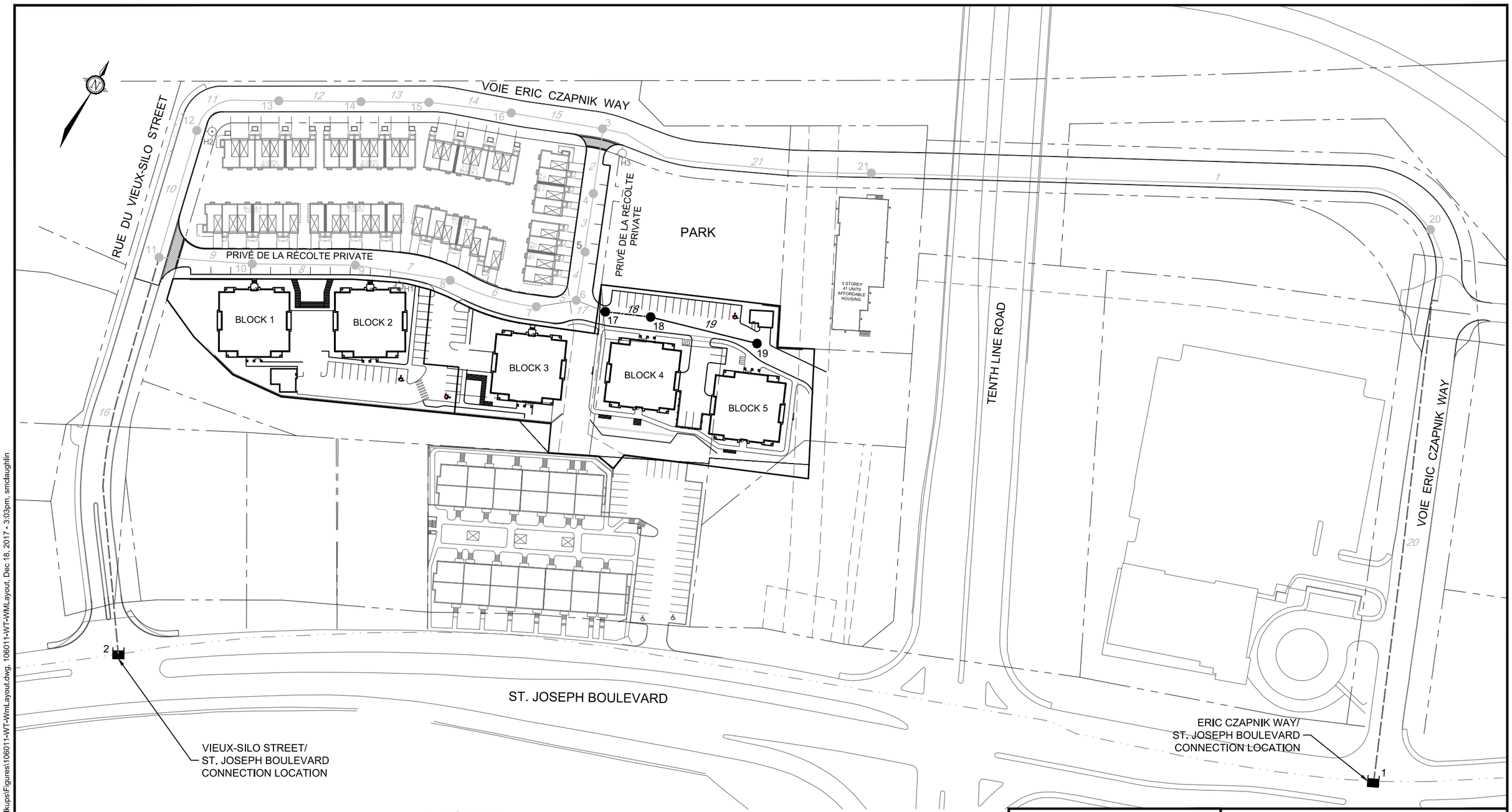
To ensure the system pressures in the looped system are maintained, the proposed Silo Street watermain to connect to St. Joseph Boulevard has been upsized to 300mm dia.

The existing and proposed watermain configuration are shown on **Figure 3.**

As per the City of Ottawa Watermain Design Guidelines for Water Distribution, preliminary watermain analysis of the proposed development was completed based on the following criteria:

Demands:

- Average Daily Demand = 350L/capita/day
- Maximum Daily Demand = 2.5 x Average Daily Demand
- Peak Hour Demand = 2.2 x Maximum Daily Demand
- Fire Flow = Fire Underwriter's Survey



LEGEND

- 19 — PROPOSED 200mmØ WATERMAIN PIPE
- 18 — PROPOSED 250mmØ WATERMAIN PIPE
- 18 ● — PROPOSED WATERMAIN NODE
- 1 ■ — RESERVOIR
- 4 — EXISTING 200mmØ WATERMAIN PIPE
- EXISTING 300mmØ WATERMAIN PIPE
- EXISTING 400mmØ WATERMAIN PIPE
- 4 ● — EXISTING WATERMAIN NODE
- H1 ⊙ — EXISTINGHYDRANT

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

HILLSIDE VISTA WALKUP CONDOS

WATERMAIN LAYOUT

SCALE 1 : 1250 (0 10 20 30 40 50)

DATE DEC 2017 | JOB 106011 | FIGURE FIGURE 3

SHT11X17.DWG - 279mmX432mm

System Requirements:

- Maximum Pressure (System) = 690kPa (100psi)
- Maximum Pressure (Service) = 552kPa (80psi)
- Minimum Pressure (w/o fire flow) = 275kPa (40psi)
- Minimum Pressure (w/ fire flow) = 140kPa (20psi)
- Maximum Age Onsite (Quality) = 192 hours
- Friction Factor: 200mm/300mm = 110/120

The Hillside Vista Walk-Up Condos' watermain was analyzed under three operating conditions: high pressure, maximum daily demand plus fire flow, and peak hour. The high-pressure condition (average daily demand) was analyzed to ensure the system meets the design criteria for maximum pressure and quality. The maximum daily demand plus fire flow and peak hour conditions were analyzed to ensure the system meets the design criteria for maximum flow and minimum pressure. The fire flow considered is based on the Fire Underwriter's Survey. The boundary conditions were provided by the City of Ottawa.

Hydraulic modelling was completed using EPANET 2.0. **Table 2** summarizes the performance of the watermain during all operating conditions.

Table 2: Water Demand Summary

Condition	Demand (L/s)	Fire Flow (L/s)	Allowable Pressure (kPa/psi)	Max/Min Pressure (kPa/psi)	Time (hrs)
High Pressure	1.54	N/A	690/80 (Max)	510.2/74.0 (Max)	15.2
Max Daily Demand and Fire Flow	3.86	233/250	138/20 (Min)	145.5/21.1 (Min)	N/A
Peak Hour	8.49	N/A	276/40 (Min)	144.1/20.9 (Min)	N/A

The analysis of the watermain during all operating conditions confirms the proposed watermain can service the site.

A copy of the City of Ottawa provided boundary conditions, fire flow calculations, and detailed hydraulic analysis results are included in **Appendix B**.

4.0 STORMWATER MANAGEMENT

4.1 Stormwater Management Criteria

The stormwater management criteria used in the design of the Hillside Vista Walk-Up Condos have been based on the following:

- *Serviceability and Stormwater Management Report, Orleans Town Centre East Lands, Ottawa, Ontario* (Novatech, June, 2011/Ref. # R-2008-151)
    - This report outlines the design criteria for all future development within the OTC East Lands, including the proposed Hillside Vista Walk-Up Condos development,
- City of Ottawa Sewer Design Guidelines (October, 2012).

4.1.1 Existing Storm Drainage Infrastructure (Privé de la Récolte)

To the north of the site, on the opposite side of Privé de la Récolte is the Hillside Vista Towns development. This development (consisting of row townhouses) is tributary to the storm sewer under Privé de la Récolte.

The Privé de la Récolte storm sewers were designed and approved as part of the Hillside Vista Towns development, based on the overall SWM Criteria developed for the OTC East site. The design of the Privé de la Récolte storm sewers accounted for the future development of the Hillside Vista Walk-Up Condos site. As such, there are no changes proposed to the previously approved design of these sewers.

4.1.2 Minor System (Storm Sewers)

- Storm sewers (of underground storage chambers) are to be designed to store runoff and attenuate peak flows to the allowable release rates established as a part of the OTC East report (127 L/s/ha);
- Ensure that the 1:100 year HGL in the storm sewer system is below the T/G elevations of the storm manholes;
- Units within the Hillside Vista Walk-Up Condos development are to be connected to a separate foundation drain system on Privé de la Récolte, and there will be no foundation connections from the units to the underground storage system.

4.1.3 Major System (Overland Flow)

- Provide on-site storage for storm runoff which exceeds the allowable minor system release rate from the site;
- Ensure major system flows do not adversely affect downstream infrastructure;
- Maximum flow depths and elevations on streets shall not exceed 0.30 m and shall be confined to the road right-of-way as well as not be within 0.30 m (vertical) to the nearest building opening;
    - The maximum flow depth on streets under either static and/ or dynamic conditions shall be 0.30 m.
- The product of the 100-year flow depth (m) on street and flow velocity (m/s) shall not exceed 0.6.

4.1.4 Water Quality Control

- Water quality control will be provided by the downstream Brisebois Creek SWM facility which has been designed to provide quantity and quality control for the proposed development.

4.1.5 Erosion and Sediment Control

- A qualified inspector should conduct daily visits during construction to ensure that the contractor is working in accord with the design drawings and that mitigation measures are being implemented as specified;
- Inserts and filter fabric are to be placed under all proposed and existing catchbasins and storm manhole covers;
- After complete build-out, all sewers are to be inspected and cleaned and all sediment and construction fencing is to be removed.

4.2 Hydrologic & Hydraulic Modeling (Autodesk Storm & Sanitary Analysis)

The *City of Ottawa Sewer Design Guidelines* (October 2012) require hydrologic modeling for all dual drainage systems. The performance of the proposed storm drainage system was evaluated using the *Autodesk Storm and Sanitary Analysis* (SSA) hydrologic/hydraulic model.

4.2.1 Design Storms

Hydrologic modeling completed for the previously approved serviceability study indicated that the 6-hour Chicago storm distribution generated the highest peak flows and storage requirements for the OTC East site and was chosen as the critical design event. The model of the Hillside Vista Walk-Up Condos development uses the same storm distribution. The 100-year 6-hour storm was also increased by 20% (intensity + total precipitation) to evaluate the impact of an extreme event on the performance of the major and minor system.

4.2.2 Model Development

The SSA model accounts for both minor and major system flows, including the routing of flows through the storm sewer network (minor system), and overland along the road network (major system). The results of the analysis were used to:

- Determine the total major and minor system runoff from the site;
- Ensure allowable release rates are not exceeded;
- Ensure no ponding in the right-of-ways following a 5-year event;
- Calculate the storm sewer hydraulic grade line for the 100-year storm event; and
- Evaluate overland flow depths and ponding volumes in the right-of-way during the 100-year event.

4.2.3 Storm Drainage Areas

For modeling purposes, the development lands have been divided into subcatchments based on the drainage areas tributary to each inlet of the proposed storm sewer system. The catchment areas are shown on the Storm Drainage Area Plans (**106011-ST1-WT & 106011-ST2-WT**).

In previous hydrologic models, overland flow contributions from the future development areas (including the proposed walk-up condo development) were accounted for, and have not been included in the walk-up condo development model

4.2.4 Minor System

The proposed on-site storm sewers were sized using the Rational Method based on a 5-year level of service. Refer to the General Plan of Services (**106011-GP-WT1** & **106011-GP-WT2**) for the layout of the minor system.

Blocks 1, 2, & 3

The storm sewer pipe between MH408 and MH 406 has been sized to convey flows from the 5-year storm. An underground storage system, using StormTech's SC-740 chambers is to be installed between MH406 and MH404 to provide the required storage to meet the allowable release rate of 54.6 L/s from the site.

Blocks 4 & 5

The storm sewer pipes between the CAP and MH412 have been sized to convey flows from the 5-year storm. An underground storage system, using StormTech's SC-740 chambers is to be installed between MH412 and MH410 to provide the required storage to meet the allowable release rate of 35.6 L/s.

Refer to the General Plan of Services (**106011-GP-WT1** & **106011-GP-WT2**) for the location and sizes of the pipes and manholes.

4.2.5 Inlet Control Devices

Five out of the six proposed catchbasins are located at low points. ICDs have been sized to restrict peak flows to the allowable release rate outlined in the SWM Criteria.

In addition to the ICDs in the three catchbasins, ICDs will also be installed on the downstream sides of manhole MH404 and MH410 to control flows from the underground storage for Blocks 1-3 and Blocks 4-5. ICDs have been sized using the SSA model and are as follows:

Blocks 1-3:

- Allowable release rate = 63.5 L/s
    - ICD size = 83mm – to be installed on the downstream side of MH 404

Blocks 4-5 + Future Development:

- Allowable release rate from Blocks 4-5 = 35.6 L/s
- Allowable release rate from Future Development = 56.6 L/s
- Total allowable release rate from MH 410 = 92.2 L/s
    - ICD size = 209mm – to be installed on downstream side of MH410.

4.2.6 Major System

Catchbasins at low points were modeled as storage nodes to account for the surface storage provided by the parking areas of the development. The stage-storage curves for each inlet were calculated based on the proposed surface shown on the Grading Plans (**106011-GR-WT1** & **106011-GR-WT2**).

In the previously approved model, storm connections for the future blocks (including the proposed Hillside Vista Condos development) were restricted to the allowable post-development release rates for those blocks. Major system flows were uncontrolled and followed existing drainage patterns. The areas from the Walk-Up Condos development that will flow uncontrolled onto Privé De La Récolte remain unchanged from the previously approved SSA model. As such, there will be little to no change to the major system flows from the Hillside Vista Walk-Up Condos development as calculated in the previous model for all storms up to the 100-year 6-hour event. Peak flow values are further discussed in the Stormwater Management Report.

4.2.7 Hydraulic Grade Line

Units within the Hillside Vista Walk-Up Condos development with connections to Privé De La Récolte will be connected to a separate foundation drain system. As such, there will be no foundation connections from the units to the underground storage system, precluding the requirement for 0.30 m of freeboard between the 100-year HGL elevation and the basement elevations.

A hydraulic grade line (HGL) analysis was completed to verify that the HGL within the pipes and underground storage system does not exceed the top of grate elevations of each manhole. This analysis has been included as a part of the Stormwater Management Report.

5.0 UTILITIES

The development will be serviced by hydro, phone, gas, and cable from the existing services on Récolte Private. A previous concept of the Hillside Vista Walk-Up Condos was included when the existing Hillside Vista Towns were issued to the utilities for design/approval. A revised Hillside Vista Walk-Up Condos concept has been resubmitted to the utilities for redesign/approval. The composite utility plan will be submitted under separate cover, once approved.

6.0 EROSION AND SEDIMENT CONTROL

Temporary erosion and sediment control measures will be implemented during construction in accordance with the "Guidelines on Erosion and Sediment Control for Urban Construction Sites" (Government of Ontario, May 1987). Details will be provided on the Erosion and Sediment Control Plan. Erosion and sediment control measures may include:

- Placement of insert in catchbasins and filter fabric under all maintenance holes;
- Silt fences around the area under construction placed as per OPSS 577 and OPSD 219.110;
- Light duty straw bale check dam per OPSD 219.180; and
- Application of topsoil and sod to disturbed areas.

The erosion and sediment control measures are to be installed to the satisfaction of the engineer, the City, and conservation authority prior to construction and will remain in place during construction until vegetation is established. The erosion and sediment control measures will also be subject to regular inspection to ensure the measures are operational.

7.0 CONCLUSIONS

This report confirms the proposed Hillside Vista Walk-Up Condos development can be adequately serviced with storm and sanitary sewers and watermain. The report is summarized below:

- The proposed and existing sanitary sewers have adequate capacity to service the site.
- The existing Eric Czapnik Way/Silo Street watermain must be looped by extending it south on Silo Street to St. Joseph Boulevard. Once looped, the proposed onsite watermain can adequately service the site.
- The stormwater management design for the Hillside Vista Condos development conforms to the criteria established as a part of this report. Further conclusions are provided in the Stormwater Management Report.

This report is respectfully submitted for site plan approval. Please contact the undersigned should you have questions or require additional information.

NOVATECH

Prepared by:

Mark Bowen, B. Eng.
Project Manager | Land Development Engineering

Prepared by:

Kallie Auld, P.Eng.
Project Coordinator | Water Resources

Reviewed by:

Drew Blair, P.Eng.
Project Manager | Land Development Engineering

Appendix A
Sanitary Sewer Design Sheets

SANITARY SEWER DESIGN SHEET

DESIGNED BY : Mark Bowen
CHECKED BY : Drew Blair, P. Eng.
DATE: Sept. 6, 2017
Revised: Dec. 15, 2017

PROJECT: **Hillside Vista Walkup Condos (OTC East)**
DEVELOPER: **DCR Phoenix**
PROJECT: **106011B**

NOVATECH ENGINEERING CONSULTANTS LTD.
ENGINEERS & PLANNERS

		UNITS					INDIVIDUAL		CUMULATIVE						PROPOSED SEWER					
FROM MH	TO MH	Single	Town	Apt Condo	Future Apt/Condo		Population (in 1000's)	AREA (ha.)	Population (in 1000's)	AREA (ha.)	PEAK FACTOR (M)	POPULATION FLOW (p) (L/s)	PEAK EXTRAN. FLOW Q(i) (L/s)	PEAK DESIGN FLOW Q(d) (L/s)	LENGTH (m)	PIPE SIZE (mm)	TYPE OF PIPE	GRADE %	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)
Cap (1)	203	0	0	18	0	0.034	0.034	0.17	0.034	0.17	4.0	**0.55**	0.05	0.60	39.0	200	PVC	0.32	**19.36**	0.60
203	201	0	0	18	0	0.034	0.034	0.20	0.068	0.37	4.0	**1.10**	0.10	1.21	36.1	200	PVC	0.32	**19.36**	0.60
201	153	0	0	0	0	0.000	0.000	0.06	0.068	0.43	4.0	**1.10**	0.12	1.22	8.2	200	PVC	1.00	**34.22**	1.06
173	171	0	8	18	0	0.055	0.056	0.35	0.056	0.35	4.0	**0.91**	0.10	1.01	48.0	200	PVC	3.10	**60.24**	1.86
171	169	0	5	18	0	0.047	0.048	0.20	0.104	0.55	4.0	**1.69**	0.15	1.84	25.4	200	PVC	1.00	**34.22**	1.06
169	167	0	5	0	0	0.014	0.014	0.24	0.118	0.79	4.0	**1.91**	0.22	2.13	36.2	200	PVC	1.00	**34.22**	1.06
167	153	0	0	18	0	0.034	0.034	0.09	0.152	0.88	4.0	**2.46**	0.25	2.71	18.9	200	PVC	1.00	**34.22**	1.06
153	151	0	0	0	0	0.000	0.000	0.00	0.220	1.31	4.0	**3.56**	0.37	3.93	50.1	200	PVC	3.99	**68.35**	2.11

Notes:
1. Population Densities: 3.4 people/single, 2.7people/townhouse, 1.88 people/apartment (average of 2.1 people/2 bedroom and 1.4 people/1 bedroom)
2. Peaking Factor (M) = Harmon Formula (4.0 max) = 1+(14/4+(Population/1000)^(1/2))
3. Population Flow = Q(p) = (Population X 350L/day/person X Peaking Factor) ÷ 86,400s/day
4. Infiltration Inflow = Q(i) = 0.28 L/sec/ha
5. Peak Flow = Q(d) = Q(p) + Q(i)

LICENSED PROFESSIONAL ENGINEER
D. D. BLAIR
100122737
Dec. 15. 2017
PROVINCE OF ONTARIO

SANITARY SEWER DESIGN SHEET

DESIGNED BY : Mark Bowen
CHECKED BY : Melanie Riddell
CREATE: Feb. 11/13 REVISED: Feb. 25/15
PROJECT # 106011

PROJECT: **Hillside Vista Development**
DEVELOPER: **DCR Phoenix**

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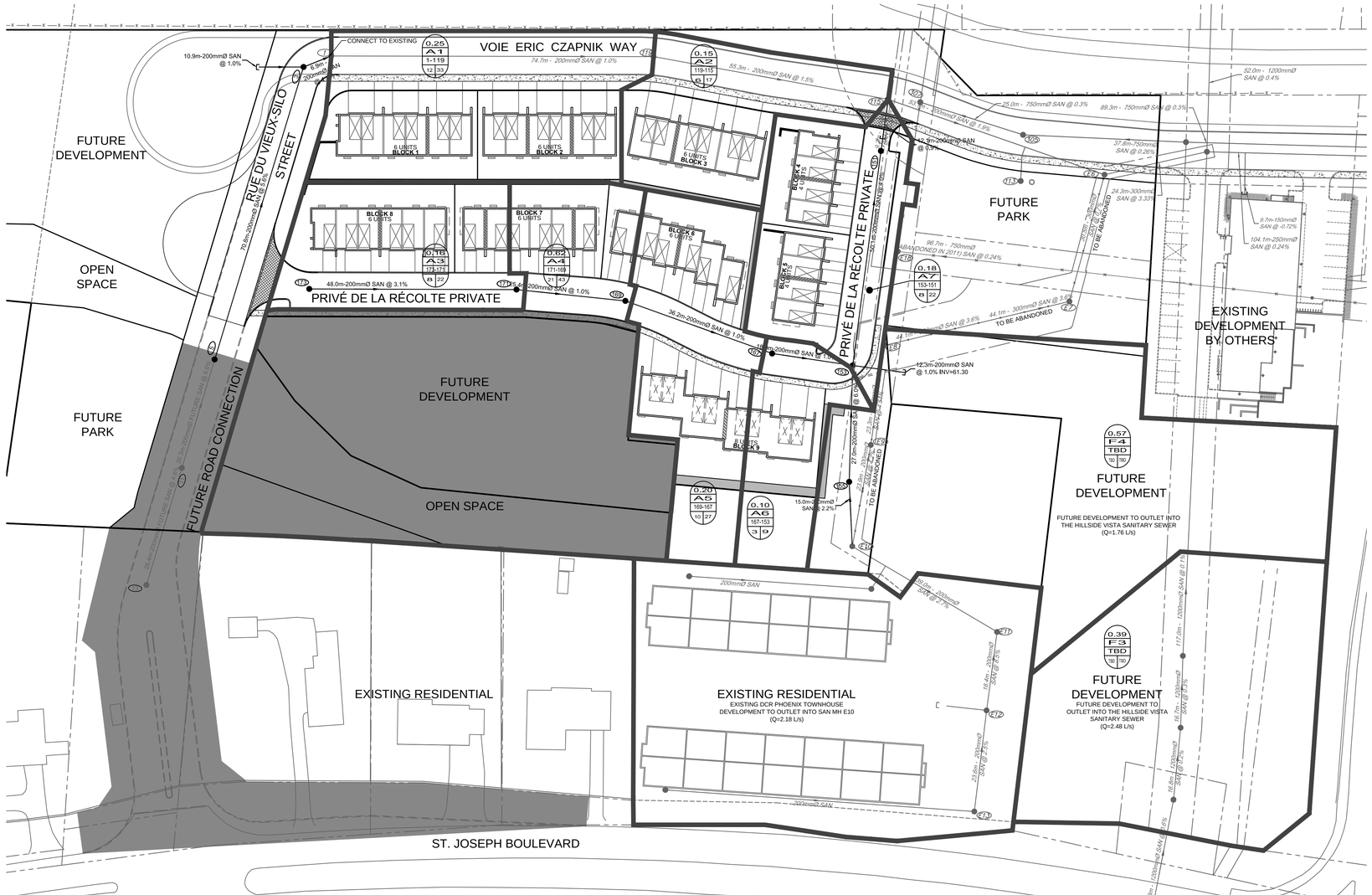
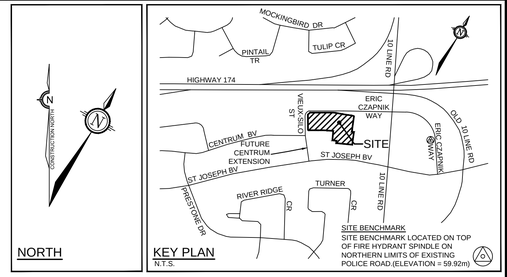
Engineers, Planners & Landscape Architects

Drainage Area	FROM MH	TO MH	UNITS				INDIVIDUAL		CUMULATIVE		PEAK FACTOR (M)	POPULATION FLOW (p) (L/s)	PEAK EXTRAN. FLOW Q(i) (L/s)	PEAK DESIGN FLOW Q(d) (L/s)	PROPOSED SEWER					
			Single	Town	Apt Condo	Future Apt/Condo (By Others)	Population (in 1000's)	AREA (ha.)	Population (in 1000's)	AREA (ha.)					LENGTH (m)	PIPE SIZE (mm)	TYPE OF PIPE	GRADE %	CAPACITY (L/s)	FULL FLOW VELOCITY (m/s)
A3	173	171	0	8	0	0	0.022	0.16	0.022	0.16	4.0	**0.35**	0.04	0.39	48.0	200	PVC	3.10	**60.24**	1.86
A4	171	169	0	5	0	16	0.042	0.62	0.064	0.78	4.0	**1.04**	0.22	1.25	25.4	200	PVC	1.00	**34.22**	1.06
A5	169	167	0	10	0	0	0.027	0.20	0.091	0.98	4.0	**1.47**	0.27	1.75	36.2	200	PVC	1.00	**34.22**	1.06
A6	167	153	0	3	0	0	0.008	0.10	0.099	1.08	4.0	**1.60**	0.30	1.91	18.9	200	PVC	1.00	**34.22**	1.06
Existing	E10	155	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**2.18**	N/A	2.18	15.0	200	PVC	2.20	**50.75**	1.56
F3/F4	155	153	N/A	N/A	N/A	N/A	TBC	0.96	TBC	0.96	4.0	**6.42**	0.27	6.69	27.0	200	PVC	6.00	**83.81**	2.58
A7	153	151	0	8	0	0	0.022	0.18	0.121	2.220	4.0	**9.98**	0.62	10.60	50.1	200	PVC	4.00	**68.43**	2.11
	151	115	0	0	0	0	0.000	0.00	0.121	2.220	N/A	**9.98**	N/A	10.60	14.9	200	PVC	1.00	**34.22**	1.06
A1	1	119	0	12	0	0	0.032	0.25	0.032	0.250	4.0	**5.86**	0.07	5.93	74.7	200	PVC	0.96	**33.53**	1.03
A2	119	115	0	6	0	0	0.016	0.15	0.049	0.40	4.0	**6.12**	0.11	6.23	55.3	200	PVC	1.50	**41.91**	1.29
	115	E6										**16.10**		16.83	53.1	200	PVC	1.89	**47.04**	1.45

Notes:
1. Unit counts are based on the City of Ottawa Sewer Design Guidelines: 3.4 people/single, 2.7people/townhouse, and 1.8 people/apartment.
2. Peaking Factor (M) = Harmon Formula (4.0 max) = 1+14/(4+(Population/1000)^(1/2))
3. Population Flow = Q(p) = (Population X 350L/day/person X Peaking Factor) ÷ 86,400s/day
4. Infiltration Inflow = Q(i) = 0.28 L/sec/ha
5. Peak Flow = Q(d) = Q(p) + Q(i)
6. Sanitary flows from the future development that will outlet into proposed Moisson Private sanitary sewers.
7. Sanitary flows from the existing Hillside Townhouse development (2.18L/s) as listed OTC East approved sanitary sewer design sheet and drawing 106011E-SAN, rev. 7.
8. Sanitary flows from adjacent future developments F3 (2.48L/s) and F4 (1.76L/s) as listed OTC East approved sanitary sewer design sheet and drawing 106011E-SAN, rev. 7.
9. Includes future upstream sanitary flow from Silo Street (5.33L/s) as listed in the OTC East approved sanitary sewer design sheet and drawing 106011E-SAN, rev. 7
10. There are no sanitary sewer works proposed between existing sanitary manhole 115 and E6 and is shown to confirm the downstream capacity only.





LEGEND

- 0.18 / A6 / 153-115 / 8 22 — DRAINAGE AREA (hectares); AREA ID; MANHOLE TO MANHOLE; POPULATION EQUIVALENT; NUMBER OF UNITS
- SANITARY DRAINAGE AREA BOUNDARY
- 250mmØ — PROPOSED SANITARY MANHOLE & SEWER
- 250mmØ — FUTURE SANITARY MANHOLE & SEWER
- 250mmø — EXISTING SANITARY MANHOLE & SEWER
- EXISTING SEWER TO BE ABANDONED
- FUTURE DEVELOPMENT

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
4.	MINOR REVISIONS; ISSUED FOR SITE PLAN APPROVAL	JUN 8/15	MER
3.	ISSUED FOR SITE PLAN APPROVAL	FEB 25/15	MER
2.	REVISED AS PER COMMENTS, REISSUED FOR SPA	SEP 15/14	MER
1.	ISSUED FOR SITE PLAN APPLICATION	OCT. 16/13	MER

SCALE
1:500
1:500
0 5 10 15 20

DESIGN MWB
CHECKED MER
DRAWN SAM/BET
CHECKED MWB
APPROVED MER

APPROVED ☐ REFUSED ☐
THIS ____ DAY OF _____, 20____
FELICE PETTI, P.ENG., MANAGER
DEVELOPMENT REVIEW, SUBURBAN SERVICES

LICENSED PROFESSIONAL ENGINEER
M.E. RIDDELL
100040125
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
HILLSIDE VISTA TOWNS

DRAWING NAME
SANITARY DRAINAGE AREA PLAN

PROJECT No. 106011
REV REV # 4
DRAWING No. 106011-SAN-T

D07-12-13-0208

Appendix B
Boundary Conditions, Fire Flow Calculations, and Hydraulic Analysis Results

Boundary Conditions for Hillside Vista

Information Provided:
Date provided: August 2017

Scenario	Demand	
	L/min	L/s
Average Daily Demand	75.6	1.26
Maximum Daily Demand	189.6	3.16
Peak Hour	417	7.0
Fire Flow Demand # 1	12180	203
Fire Flow Demand # 2	13020	217
Fire Flow Demand # 3	13980	233
Fire Flow Demand # 4	15000	250

Location:

Results:

Connection 1 - Du Vieux-Silo

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	113.2	53.8
Peak Hour	108.2	46.7
Max Day plus Fire (12,180 l/min)	101.3	36.9
Max Day plus Fire (13,020 l/min)	100.2	35.5
Max Day plus Fire (13,980 l/min)	99.0	33.7
Max Day plus Fire (15,000 l/min)	97.6	31.8

[1] Ground Elevation = 75.3m

Connection 2 - Eric Czapnik

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	113.2	66.9
Peak Hour	108.2	59.7
Max Day plus Fire (12,180 l/min)	100.8	49.3
Max Day plus Fire (13,020 l/min)	99.7	47.8
Max Day plus Fire (13,980 l/min)	98.4	45.9
Max Day plus Fire (15,000 l/min)	97.0	43.9

[1] Ground Elevation = 66.1m

Notes:

Disclaimer

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech #: 106011
Project Name: Hillside Vista Walk Up Condos
Date: 10-Jul-17
Input By: Mark Bowen

Legend: Input by User; No Information or Input Required

Building Description: Block 1 (3 Storey Condo)

Step			Choose	Multiplier Options	Value Used	Total Fire Flow (L/min)
	Required Fire Flow					
1	**Construction Material**					
	Coefficient related to type of construction C	Wood frame	Yes	1.5	1.5	
		Ordinary construction		1		
		Non-combustible construction		0.8		
		Fire resistive construction (< 3 hrs)		0.7		
		Fire resistive construction (> 3 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	475			
		Number of Floors/Storeys	3			
		Area of structure considered (m^2)			**1,425**	
	F	**Base fire flow without reductions**				**12,000**
		F = 220 C (A)$^{0.5}$				
	Reductions or Surcharges					
3	**Occupancy hazard reduction or surcharge**					
	(1)	Non-combustible		-25%	-15%	**10,200**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**					
	(2)	Adequately Designed System (NFPA 13)	No	-30%		***0***
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Total	**0%**	
5	***Exposure surcharge (cumulative (%))***					
	(3)	North Side	10.1 - 20 m		15%	**3,060**
		East Side	10.1 - 20 m		15%	
		South Side	> 45.1m		0%	
		West Side	> 45.1m		0%	
				Cumulative Total	**30%**	
	(1) + (2) + (3)	**Total Required fire Flow, rounded to nearest 1000L/min**			**L/min**	***13,000***
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**217**
				or	USGPM	3,435
		Required Duration of Fire Flow (hours)			Hours	2.5
		Required Volume of Fire Flow (m^3)			m^3	1950

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech #: 106011
Project Name: Hillside Vista Walk Up Condos
Date: 10-Jul-17
Input By: Mark Bowen

Legend: Input by User; No Information or Input Required

Building Description: Block 2 (3 Storey Condo)

Step			Choose	Multiplier Options	Value Used	Total Fire Flow (L/min)
	Required Fire Flow					
1	**Construction Material**					
	Coefficient related to type of construction C	Wood frame	Yes	1.5	1.5	
		Ordinary construction		1		
		Non-combustible construction		0.8		
		Fire resistive construction (< 3 hrs)		0.7		
		Fire resistive construction (> 3 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	475			
		Number of Floors/Storeys	3			
		Area of structure considered (m^2)			**1,425**	
	F	**Base fire flow without reductions**				**12,000**
		F = 220 C (A)$^{0.5}$				
	Reductions or Surcharges					
3	**Occupancy hazard reduction or surcharge**					
	(1)	Non-combustible		-25%	-15%	**10,200**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**					
	(2)	Adequately Designed System (NFPA 13)	No	-30%		***0***
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Total	**0%**	
5	***Exposure surcharge (cumulative (%))***					
	(3)	North Side	10.1 - 20 m		15%	**3,570**
		East Side	30.1- 45 m		5%	
		South Side	> 45.1m		0%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**35%**	
	(1) + (2) + (3)	**Total Required fire Flow, rounded to nearest 1000L/min**			**L/min**	***14,000***
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**233**
				or	USGPM	3,699
		Required Duration of Fire Flow (hours)			Hours	3
		Required Volume of Fire Flow (m^3)			m^3	2520

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech #: 106011
Project Name: Hillside Vista Walk Up Condos
Date: 10-Jul-17
Input By: Mark Bowen

Legend: Input by User; No Information or Input Required

Building Description: Block 2 (3 Storey Condo) **Revised building area per Aug. 11/17 architect's email confirming 2hr fire wall locations**

Step			Choose	Multiplier Options	Value Used	Total Fire Flow (L/min)
	Required Fire Flow					
1	**Construction Material**					
	Coefficient related to type of construction **C**	Wood frame	Yes	1.5	1.5	
		Ordinary construction		1		
		Non-combustible construction		0.8		
		Fire resistive construction (< 3 hrs)		0.7		
		Fire resistive construction (> 3 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	305			
		Number of Floors/Storeys	3			
		Area of structure considered (m^2)			**915**	
	F	**Base fire flow without reductions**				**9,982**
		F = 220 C (A)$^{0.5}$				
	Reductions or Surcharges					
3	**Occupancy hazard reduction or surcharge**					
	(1)	Non-combustible		-25%	-15%	**8,485**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**					
	(2)	Adequately Designed System (NFPA 13)	No	-30%		***0***
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Total	**0%**	
5	***Exposure surcharge (cumulative (%))***					
	(3)	North Side	10.1 - 20 m		15%	**4,242**
		East Side	20.1 - 30 m		10%	
		South Side	Fire Wall		10%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**50%**	
	(1) + (2) + (3)	**Total Required fire Flow, rounded to nearest 1000L/min**			**L/min**	***12,727***
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**212**
				or	USGPM	3,363
		Required Duration of Fire Flow (hours)			Hours	2.5
		Required Volume of Fire Flow (m^3)			m^3	1909.087925

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech #: 106011
Project Name: Hillside Vista Walk Up Condos
Date: 10-Jul-17
Input By: Mark Bowen

Legend: Input by User; No Information or Input Required

Building Description: Block 3 (3 Storey Condo)

Step			Choose	Multiplier Options	Value Used	Total Fire Flow (L/min)
	Required Fire Flow					
1	**Construction Material**					
	Coefficient related to type of construction C	Wood frame	Yes	1.5	1.5	
		Ordinary construction		1		
		Non-combustible construction		0.8		
		Fire resistive construction (< 3 hrs)		0.7		
		Fire resistive construction (> 3 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	475			
		Number of Floors/Storeys	3			
		Area of structure considered (m^2)			**1,425**	
	F	**Base fire flow without reductions**				**12,000**
		F = 220 C (A)$^{0.5}$				
	Reductions or Surcharges					
3	**Occupancy hazard reduction or surcharge**					
	(1)	Non-combustible		-25%	-15%	**10,200**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**					
	(2)	Adequately Designed System (NFPA 13)	No	-30%		***0***
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Total	**0%**	
5	***Exposure surcharge (cumulative (%))***					
	(3)	North Side	10.1 - 20 m		15%	**4,590**
		East Side	10.1 - 20 m		15%	
		South Side	20.1 - 30 m		10%	
		West Side	30.1- 45 m		5%	
				Cumulative Total	**45%**	
	(1) + (2) + (3)	**Total Required fire Flow, rounded to nearest 1000L/min**			**L/min**	***15,000***
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**250**
				or	USGPM	3,963
		Required Duration of Fire Flow (hours)			Hours	3
		Required Volume of Fire Flow (m^3)			m^3	2700

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech #: 106011
Project Name: Hillside Vista Walk Up Condos
Date: 10-Jul-17
Input By: Mark Bowen

Legend: Input by User; No Information or Input Required

Building Description: Block 3 (3 Storey Condo) **Revised building area per Aug. 11/17 architect's email confirming 2hr fire wall locations**

Step			Choose	Multiplier Options	Value Used	Total Fire Flow (L/min)
	Required Fire Flow					
1	**Construction Material**					
	Coefficient related to type of construction **C**	Wood frame	Yes	1.5	1.5	
		Ordinary construction		1		
		Non-combustible construction		0.8		
		Fire resistive construction (< 3 hrs)		0.7		
		Fire resistive construction (> 3 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	305			
		Number of Floors/Storeys	3			
		Area of structure considered (m^2)			**915**	
	F	**Base fire flow without reductions**				**9,982**
		F = 220 C (A)$^{0.5}$				
	Reductions or Surcharges					
3	**Occupancy hazard reduction or surcharge**					
	(1)	Non-combustible		-25%	-15%	**8,485**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**					
	(2)	Adequately Designed System (NFPA 13)	No	-30%		***0***
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Total	**0%**	
5	***Exposure surcharge (cumulative (%))***					
	(3)	North Side	10.1 - 20 m		15%	**3,818**
		East Side	10.1 - 20 m		15%	
		South Side	Fire Wall		10%	
		West Side	30.1- 45 m		5%	
				Cumulative Total	**45%**	
	(1) + (2) + (3)	**Total Required fire Flow, rounded to nearest 1000L/min**			**L/min**	***12,303***
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**205**
				or	USGPM	3,250
		Required Duration of Fire Flow (hours)			Hours	2.5
		Required Volume of Fire Flow (m^3)			m^3	1845.451661

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech #: 106011
Project Name: Hillside Vista Walk Up Condos
Date: 10-Jul-17
Input By: Mark Bowen

Legend: Input by User; No Information or Input Required

Building Description: Block 4 (3 Storey Condo)

Step			Choose	Multiplier Options	Value Used	Total Fire Flow (L/min)
	Required Fire Flow					
1	**Construction Material**					
	Coefficient related to type of construction C	Wood frame	Yes	1.5	1.5	
		Ordinary construction		1		
		Non-combustible construction		0.8		
		Fire resistive construction (< 3 hrs)		0.7		
		Fire resistive construction (> 3 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	475			
		Number of Floors/Storeys	3			
		Area of structure considered (m^2)			**1,425**	
	F	**Base fire flow without reductions**				**12,000**
		F = 220 C (A)$^{0.5}$				
	Reductions or Surcharges					
3	**Occupancy hazard reduction or surcharge**					
	(1)	Non-combustible		-25%	-15%	**10,200**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**					
	(2)	Adequately Designed System (NFPA 13)	No	-30%		***0***
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Total	**0%**	
5	***Exposure surcharge (cumulative (%))***					
	(3)	North Side	> 45.1m		0%	**4,080**
		East Side	10.1 - 20 m		15%	
		South Side	20.1 - 30 m		10%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**40%**	
	(1) + (2) + (3)	**Total Required fire Flow, rounded to nearest 1000L/min**			**L/min**	***14,000***
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**233**
				or	USGPM	3,699
		Required Duration of Fire Flow (hours)			Hours	3
		Required Volume of Fire Flow (m^3)			m^3	2520

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech #: 106011
Project Name: Hillside Vista Walk Up Condos
Date: 10-Jul-17
Input By: Mark Bowen

Legend: Input by User; No Information or Input Required

Building Description: Block 4 (3 Storey Condo) **Revised building area per Aug. 11/17 architect's email confirming 2hr fire wall location**

Step			Choose	Multiplier Options	Value Used	Total Fire Flow (L/min)
	Required Fire Flow					
1	**Construction Material**					
	Coefficient related to type of construction C	Wood frame	Yes	1.5	1.5	
		Ordinary construction		1		
		Non-combustible construction		0.8		
		Fire resistive construction (< 3 hrs)		0.7		
		Fire resistive construction (> 3 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	305			
		Number of Floors/Storeys	3			
		Area of structure considered (m^2)			**915**	
	F	**Base fire flow without reductions**				**9,982**
		F = 220 C (A)$^{0.5}$				
	Reductions or Surcharges					
3	**Occupancy hazard reduction or surcharge**					
	(1)	Non-combustible		-25%	-15%	**8,485**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**					
	(2)	Adequately Designed System (NFPA 13)	No	-30%		***0***
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Total	**0%**	
5	***Exposure surcharge (cumulative (%))***					
	(3)	North Side	> 45.1m		0%	**3,394**
		East Side	10.1 - 20 m		15%	
		South Side	Fire Wall		10%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**40%**	
	(1) + (2) + (3)	**Total Required fire Flow, rounded to nearest 1000L/min**			**L/min**	***11,879***
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**198**
				or	USGPM	3,138
		Required Duration of Fire Flow (hours)			Hours	2
		Required Volume of Fire Flow (m^3)			m^3	1425.452317

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech #: 106011
Project Name: Hillside Vista Walk Up Condos
Date: 10-Jul-17
Input By: Mark Bowen

Legend: Input by User; No Information or Input Required

Building Description: Block 5 (3 Storey Condo)

Step			Choose	Multiplier Options	Value Used	Total Fire Flow (L/min)
	Required Fire Flow					
1	**Construction Material**					
	Coefficient related to type of construction C	Wood frame	Yes	1.5	1.5	
		Ordinary construction		1		
		Non-combustible construction		0.8		
		Fire resistive construction (< 3 hrs)		0.7		
		Fire resistive construction (> 3 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	475			
		Number of Floors/Storeys	3			
		Area of structure considered (m^2)			**1,425**	
	F	**Base fire flow without reductions**				**12,457**
		F = 220 C (A)$^{0.5}$				
	Reductions or Surcharges					
3	**Occupancy hazard reduction or surcharge**					
	(1)	Non-combustible		-25%	-15%	**10,589**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**					
	(2)	Adequately Designed System (NFPA 13)	No	-30%		***0***
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Total	**0%**	
5	***Exposure surcharge (cumulative (%))***					
	(3)	North Side	> 45.1m		0%	**1,588**
		East Side	> 45.1m		0%	
		South Side	> 45.1m		0%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**15%**	
	(1) + (2) + (3)	**Total Required fire Flow, rounded to nearest 1000L/min**			**L/min**	***12,177***
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**203**
				or	USGPM	3,217
		Required Duration of Fire Flow (hours)			Hours	2.5
		Required Volume of Fire Flow (m^3)			m^3	1826.540882

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech #: 106011
Project Name: Hillside Vista Walk Up Condos
Date: 10-Jul-17
Input By: Mark Bowen

Legend: Input by User; No Information or Input Required

Building Description: Block 5 (3 Storey Condo) **Revised building area per Aug. 11/17 architect's email confirming 2hr fire wall location**

Step			Choose	Multiplier Options	Value Used	Total Fire Flow (L/min)
	Required Fire Flow					
1	**Construction Material**					
	Coefficient related to type of construction **C**	Wood frame	Yes	1.5	1.5	
		Ordinary construction		1		
		Non-combustible construction		0.8		
		Fire resistive construction (< 3 hrs)		0.7		
		Fire resistive construction (> 3 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	305			
		Number of Floors/Storeys	3			
		Area of structure considered (m^2)			**915**	
	F	**Base fire flow without reductions**				**9,982**
		F = 220 C (A)$^{0.5}$				
	Reductions or Surcharges					
3	**Occupancy hazard reduction or surcharge**					
	(1)	Non-combustible		-25%	-15%	**8,485**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**					
	(2)	Adequately Designed System (NFPA 13)	No	-30%		***0***
		Standard Water Supply	No	-10%		
		Fully Supervised System	No	-10%		
				Cumulative Total	**0%**	
5	***Exposure surcharge (cumulative (%))***					
	(3)	North Side	> 45.1m		0%	**2,121**
		East Side	> 45.1m		0%	
		South Side	Fire Wall		10%	
		West Side	10.1 - 20 m		15%	
				Cumulative Total	**25%**	
	(1) + (2) + (3)	**Total Required fire Flow, rounded to nearest 1000L/min**			**L/min**	***10,606***
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**177**
				or	USGPM	2,802
		Required Duration of Fire Flow (hours)			Hours	2
		Required Volume of Fire Flow (m^3)			m^3	1272.725283

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ENGINEERS & PLANNERS

JOB NO. 106011B

Table B1
Hillside Vista Walkup Condos
High Pressure Check

Node	Elevation (m)	Demand (LPS)	Head (m)	Pressure (m)	Pressure (PSI)	Age (hrs)
1*	N/A	N/A	113.2	N/A	N/A	N/A
2*	N/A	N/A	113.2	N/A	N/A	N/A
3	61.0	0.00	113.2	52.2	74.0	11.6
4	61.9	0.04	113.2	51.3	72.7	12.4
5	63.4	0.04	113.2	49.9	70.7	13.3
6	64.4	0.00	113.2	48.8	69.3	12.1
7	65.1	0.14	113.2	48.1	68.2	5.7
8	65.9	0.07	113.2	47.3	67.1	4.6
9	66.9	0.21	113.2	46.3	65.7	3.6
10	68.0	0.21	113.2	45.2	64.1	3.0
11	68.9	0.00	113.2	44.3	62.8	2.5
12	66.4	0.00	113.2	46.8	66.4	3.3
13	65.6	0.07	113.2	47.6	67.5	4.1
14	63.8	0.07	113.2	49.5	70.1	4.9
15	63.0	0.00	113.2	50.2	71.2	5.4
16	62.2	0.07	113.2	51.0	72.3	6.2
17	64.5	0.00	113.2	48.7	69.1	12.4
18	64.7	0.14	113.2	48.5	68.8	13.0
19	64.6	0.14	113.2	48.6	68.9	15.2
20	59.1	0.00	113.2	54.1	76.8	8.3
21	59.6	0.35	113.2	53.6	76.0	14.7

*** Boundary Condition**

Maximum Pressure
Maximum Age

Prepared By:
NOVATECH ENGINEERING CONSULTANTS LTD.
Date: June 9, 2017
Revised: Dec. 15, 2017

Table B2a
Hillside Vista Walkup Condos
Max Daily Demand & Fire Flow Node 8

Node	Elevation (m)	Demand (LPS)	Head (m)	Pressure (m)	Pressure (PSI)
1*	N/A	N/A	98.4	N/A	N/A
2*	N/A	N/A	99.0	N/A	N/A
3	61.0	0.00	89.2	28.2	40.0
4	61.9	0.11	87.6	25.7	36.4
5	63.4	0.11	85.8	22.4	31.8
6	64.4	0.00	84.2	19.8	28.1
7	65.1	0.34	82.9	17.9	25.3
8	65.9	250.2	80.7	14.9	21.1
9	66.9	0.52	85.0	18.1	25.7
10	68.0	0.52	89.3	21.3	30.1
11	68.9	0.00	93.6	24.7	35.0
12	66.4	0.00	92.7	26.3	37.4
13	65.6	0.17	91.9	26.3	37.2
14	63.8	0.17	91.1	27.4	38.8
15	63.0	0.00	90.7	27.7	39.3
16	62.2	0.17	90.2	28.0	39.6
17	64.5	0.00	84.2	19.7	27.9
18	64.7	0.34	84.2	19.5	27.6
19	64.6	0.34	84.2	19.6	27.7
20	59.1	0.00	96.6	37.6	53.2
21	59.6	0.88	90.9	31.3	44.4

*** Boundary Condition**

Minimum Pressure

Table B2b
Hillside Vista Walkup Condos
Max Daily Demand & Fire Flow at Node 18

Node	Elevation (m)	Demand (LPS)	Head (m)	Pressure (m)	Pressure (PSI)
1*	N/A	N/A	99.0	N/A	N/A
2*	N/A	N/A	98.4	N/A	N/A
3	61.0	0.00	89.8	28.8	40.9
4	61.9	0.11	87.8	25.9	36.7
5	63.4	0.11	85.6	22.3	31.6
6	64.4	0.00	83.7	19.3	27.4
7	65.1	0.34	85.0	19.9	28.2
8	65.9	0.17	87.3	21.5	30.4
9	66.9	0.52	90.1	23.2	32.9
10	68.0	0.52	92.9	24.9	35.3
11	68.9	0.00	95.7	26.8	38.0
12	66.4	0.00	94.6	28.2	39.9
13	65.6	0.17	93.4	27.8	39.4
14	63.8	0.17	92.4	28.7	40.7
15	63.0	0.00	91.8	28.9	40.9
16	62.2	0.17	91.1	28.9	41.0
17	64.5	0.00	80.6	16.1	22.8
18	64.7	233.3	79.5	14.8	20.9
19	64.6	0.34	79.5	14.9	21.1
20	59.1	0.00	98.0	38.9	55.2
21	59.6	0.88	91.7	32.1	45.5

*** Boundary Condition**

Minimum Pressure

Table B3
Hillside Vista Walkup Condos
Peak Hour Check

Node	Elevation (m)	Demand (LPS)	Head (m)	Pressure (m)	Pressure (PSI)
1*	N/A	N/A	108.2	N/A	N/A
2*	N/A	N/A	108.2	N/A	N/A
3	61.0	0.00	108.2	47.2	66.9
4	61.9	0.25	108.2	46.3	65.6
5	63.4	0.25	108.2	44.8	63.6
6	64.4	0.00	108.2	43.8	62.1
7	65.1	0.76	108.2	43.1	61.1
8	65.9	0.38	108.2	42.3	60.0
9	66.9	1.14	108.2	41.3	58.5
10	68.0	1.14	108.2	40.2	57.0
11	68.9	0.00	108.2	39.3	55.7
12	66.4	0.00	108.2	41.8	59.3
13	65.6	0.38	108.2	42.6	60.4
14	63.8	0.38	108.2	44.4	63.0
15	63.0	0.00	108.2	45.2	64.1
16	62.2	0.38	108.2	46.0	65.2
17	64.5	0.00	108.2	43.7	61.9
18	64.7	0.76	108.2	43.5	61.7
19	64.6	0.76	108.2	43.6	61.8
20	59.1	0.00	108.2	49.1	69.7
21	59.6	1.94	108.2	48.6	68.9

*** Boundary Condition**

Minimum Pressure

Table B4
Pipe Data

Pipe	Length (m)	Diameter (mm)	Roughness
1	285	200	110
2	22	200	110
3	24	200	110
4	22	200	110
5	17	200	110
6	30	200	110
7	35	200	110
8	35	200	110
9	35	200	110
10	38	200	110
11	40	200	110
12	33	200	110
13	20	200	110
14	25	200	110
1 5	45	200	110
16	150	300	120
17	10	200	110
18	13	250	120
19	34	200	110
20	165	300	120
21	86	200	110

Table B5
Hillside Vista Walk-Up Condos
Watermain Demand Calculations

Node	Units		Pop.	Demand (L/s)		
	Town	Condo		High Pres.	Max Daily	Peak Hour
1*	0	0	0	0.00	0.00	0.00
2*	0	0	0	0.00	0.00	0.00
3	0	0	0	0.00	0.00	0.00
4	*4*	0	11	0.04	0.11	0.25
5	*4*	0	11	0.04	0.11	0.25
6	0	0	0	0.00	0.00	0.00
7	0	18	34	0.14	0.34	0.76
8	*6*	0	17	0.07	0.17	0.38
9	*6*	18	51	0.21	0.52	1.14
10	*6*	18	51	0.21	0.52	1.14
11	0	0	0	0.00	0.00	0.00
12	0	0	0	0.00	0.00	0.00
13	*6*	0	17	0.07	0.17	0.38
14	*6*	0	17	0.07	0.17	0.38
15	0	0	0	0.00	0.00	0.00
16	*6*	0	17	0.07	0.17	0.38
17	0	0	0	0.00	0.00	0.00
18	0	18	34	0.14	0.34	0.76
19	0	18	34	0.14	0.34	0.76
20	0	0	0	0.00	0.00	0.00
21	0	*41*	87	0.35	0.88	1.94
	44	**131**	**381**	**1.54**	**3.86**	**8.49**

1. Population density: 2.7 ppl/town, 2.1 ppl/ ex. apartment, and 1.89 ppl/proposed apartment
***2. Italics* donotes exisiting demand**
3. High Pressure demand = 350L/s/p/d
4. Maximum Daily demand = 2.5 x High Pressure Demand
5. Peak Hour Demand = 2.2 x Maximum Daily Demand
6. * Denotes boundary condition

Prepared By:
NOVATECH
Date: June 13, 2017
Revised: Dec. 15, 2017

Appendix C
Stormwater Management

STORM SEWER DESIGN SHEET

DESIGNED BY : Kallie Auld, P.Eng.
CHECKED BY : Drew Blair, P.Eng.
DATE: December 15, 2017
PROJECT #: 106011

PROJECT: Hillside Vista Walk-Up Condos
DEVELOPER: OTCP Residential Lands G.P. Inc

NOVATECH
Engineers, Planners & Landscape Architects

Drainage Area ID	LOCATION		AREA (ha)			FLOW (L/s)								PROPOSED SEWER								
	FROM	TO	Area	TIMP [4]	Runoff Coefficient	Individual	Cummulative	Time of Conc.	5-year			100-year		Pipe	Size [2]	Grade	Length	Capacity	$Q_{controlled}/Q_{full}$ (5-year)	Full Flow Velocity [3]	Design Flow Velocity (5-year)	Time of Flow
	M.H.	M.H.	(ha)	%	(C)	2.78 AR	2.78 AR	(min)	Rainfall Intensity (mm/hr)	Peak Flow (L/s)	Controlled Flow (L/s)	Rainfall Intensity (mm/hr)	Peak Flow (L/s)	Type	(mm)	%	(m)	(L/s)	(%)	(m/s)	(m/s)	(min)
B-01	-	-	0.07	36%	0.45	0.09	0.09	10.00	104.2	**9.1**		178.6	**15.6**	-	-	-	-	-	-	-	-	-
B-03	-	-	0.01	100%	0.90	0.02	0.11	10.00	104.2	**20.6**		178.6	**19.7**	-	-	-	-	-	-	-	-	-
B-02	408	406	0.04	93%	0.85	0.09	0.20	10.00	104.2	**41.9**		178.6	**36.5**	CONC	250	1.00	41.1	**62.0**	**68%**	N/A	0.85	0.80
											54.6											
B-04	406	UGS1	0.16	57%	0.60	0.27	0.47	10.80	100.1	**47.2**		171.5	**80.9**	CONC	250	1.00	5.0	**62.0**	**76%**	N/A	0.96	0.09
B-06	UGS1	404	0.16	79%	0.75	0.33	0.81	10.89	99.7	**80.3**		170.8	**137.5**	CONC	250	1.00	8.5	**62.0**	**88%**	N/A	1.64	0.09
-	404	OUT	-	-	-	0.00	0.81	10.98	99.3	**80.3**		170.1	**137.0**	CONC	250	1.00	4.3	**62.0**	**88%**	N/A	1.64	0.04
B-10	CAP	412	0.51	79%	0.75	1.06	1.06	10.00	104.2	**110.8**	**56.6**	178.6	**189.9**	CONC	375	0.34	39.0	**106.7**	**53%**	N/A	0.51	1.27
B-09	412	UGS2	0.24	79%	0.75	0.50	1.56	11.27	97.9	**209.8**		167.7	**262.3**	CONC	375	0.40	5.0	**115.7**	**80%**	N/A	1.90	0.04
B-08	UGS2	410	0.04	79%	0.75	0.08	1.65	11.31	97.7	**370.7**	**92.2**	167.4	**275.7**	CONC	525	0.40	5.0	**283.8**	**32%**	N/A	1.71	0.05
-	410	136	-	-	-	0.00	1.65	11.36	97.5	**370.7**		167.0	**275.1**	CONC	525	1.00	8.2	**448.7**	**21%**	N/A	1.71	0.08

Notes:
1. Peak flows from Blocks 1-3 controlled to allowable release rate (127 L/s/ha, or 54.6 L/s) via a 83mm orifice at the south-west inlet of MH404
2. Peak flows from Future Development Block (B10) controlled to 56.6L/s
3. Peak flows from Blocks 4-5 controlled to allowable release rate (127 L/s/ha, or 36 L/s) via a 209mm orifice at the outlet of MH410
4. Peak flows from Blocks 4-5 plus Future Development Block are to be controlled to 92.2L/s
5. TIMP values calculated based on TIMP = (C -0.2)/0.7

Appendix D
Development Servicing Study Checklist

Development Servicing Study Checklist

4.1 General Content	Addressed (Y/N/NA)	Section	Comments
Executive Summary (for larger reports only).	NA		
Date and revision number of the report.	Y	Cover	
Location map and plan showing municipal address, boundary, and layout of proposed development.	Y	Fig 1	
Plan showing the site and location of all existing services.	Y	Fig 2	… and Engineering Drawings
Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.	N		The site was included in the approved Hillside Vista Towns (2014) and OTC East (2011) approved site plan applications. This report follows the recommendations of the previsouly approved reports.
Summary of Pre-consultation Meetings with City and other approval agencies.	N		
Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.	Y	1.0	
Statement of objectives and servicing criteria.	Y	1.0	
Identification of existing and proposed infrastructure available in the immediate area.	Y		Engineering Drawings
Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).	Y	4.0	
Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighboring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.	Y		Engineering Drawings

Development Servicing Study Checklist

4.1 General Content	Addressed (Y/N/NA)	Section	Comments
Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts.	Y	4.0	
Proposed phasing of the development, if applicable.	N		
Reference to geotechnical studies and recommendations concerning servicing.	N		Geotechnical Reprot submitted under separate cover
All preliminary and formal site plan submissions should have the following information:			
Metric scale	Y		Engineering Drawings
North arrow (including construction North)	Y		Engineering Drawings
Key plan	Y		Engineering Drawings
Name and contact information of applicant and property owner	Y		Engineering Drawings
Property limits including bearings and dimensions	Y		Engineering Drawings
Existing and proposed structures and parking areas	Y		Engineering Drawings
Easements, road widening and rights-of-way	Y		Engineering Drawings
Adjacent street names	Y		Engineering Drawings

Development Servicing Study Checklist

4.2 Water	Addressed (Y/N/NA)	Section	Comments
Confirm consistency with Master Servicing Study, if available.	N		
Availability of public infrastructure to service proposed development.	Y	3.0	
Identification of system constraints.	Y	3.0	
Identify boundary conditions.	Y	3.0	
Confirmation of adequate domestic supply and pressure.	Y	3.0	
Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.	Y	3.0	
Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.	Y	3.0	
Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design.	Y	3.0	
Address reliability requirements such as appropriate location of shut-off valves.	Y	3.0	
Check on the necessity of a pressure zone boundary modification.	NA		
Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range.	Y	3.0	
Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.	Y	3.0	
Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.	Y	3.0	
Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.	Y	3.0	
Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.	Y	3.0	Figure 3

Development Servicing Study Checklist

4.3 Wastewater	Addressed (Y/N/NA)	Section	Comments
Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).	Y	2.0	
Confirm consistency with Master Servicing Study and/or justifications for deviations.	Y	1.0, 2.0	
Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.	NA		
Description of existing sanitary sewer available for discharge of wastewater from proposed development.	Y	2.0	
Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)	Y	2.0	
Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.	Y	2.0 App B	Appendix B
Description of proposed sewer network including sewers, pumping stations, and forcemains.	Y	2.0	Engineering Drawings
Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).	NA		
Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.	NA		
Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.	NA		
Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.	NA		
Special considerations such as contamination, corrosive environment etc.	NA		

Development Servicing Study Checklist

4.4 Stormwater	Addressed (Y/N/NA)	Section	Comments
Description of drainage outlets and downstream constraints including legality of outlet (i.e. municipal drain, right-of-way, watercourse, or private property).	Y	3.0	
Analysis of the available capacity in existing public infrastructure.	Y		Appendix A
A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns and proposed drainage patterns.	Y		Fig. 1, Fig. 2, WT-ST 1& 2, WTGR 1& 2
Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.	Y	3.0	
Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.	Y	3.0	
Description of stormwater management concept with facility locations and descriptions with references and supporting information.	Y	5.0	
Set-back from private sewage disposal systems.	NA		
Watercourse and hazard lands setbacks.	N/A		
Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.	Y		
Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.	N/A		
Storage requirements (complete with calcs) and conveyance capacity for 5 yr and 100 yr events.	Y	5.0	Appendix A
Identification of watercourse within the proposed development and how watercourses will be protected, or, if necessary, altered by the proposed development with applicable approvals.	N/A		
Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.	Y	5.0	Appendix A
Any proposed diversion of drainage catchment areas from one outlet to another.	Y	5.0	
Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and SWM facilities.	Y	3.0	
If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event.	NA		

Development Servicing Study Checklist

4.4 Stormwater	Addressed (Y/N/NA)	Section	Comments
Identification of municipal drains and related approval requirements.	N/A		
Description of how the conveyance and storage capacity will be achieved for the development.	Y	4.0	
100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.	N/A		
Inclusion of hydraulic analysis including HGL elevations.	Y	5.0	Appendix A
Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.	Y	6.0	
Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.	N/A		
Identification of fill constrains related to floodplain and geotechnical investigation.	NA		

Development Servicing Study Checklist

4.5 Approval and Permit Requirements	Addressed (Y/N/NA)	Section	Comments
Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.	Y		This was achieved during the 2011/2014 site plan applications.
Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.	NA		
Changes to Municipal Drains.	NA		
Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)	NA		

4.6 Conclusion	Addressed (Y/N/NA)	Section	Comments
Clearly stated conclusions and recommendations.	Y	7.0	
Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.	N		
All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario.	Y		

Appendix E
Drawings

WATERMAIN NOTES:

1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22, W23	CITY OF OTTAWA
WATERMAIN CROSSING BELOW SEWER	W25	CITY OF OTTAWA
WATERMAIN CROSSING ABOVE SEWER	W25.2	CITY OF OTTAWA
WATERMAIN PIPE	PVC DR 18(CLASS 150)	CITY OF OTTAWA
VALVE CHAMBER	W11	CITY OF OTTAWA
VALVE BOX	W24	CITY OF OTTAWA
TVS CONNECTION	W4	CITY OF OTTAWA

2. SUPPLY AND CONSTRUCT ALL WATERMAINS AND APPURTENANCES IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. EXCAVATION, INSTALLATION, BACKFILL AND RESTORATION OF ALL WATERMAINS BY THE CONTRACTOR. CONNECTIONS AND SHUT-OFFS AT THE MAIN AND CHLORINATION OF THE WATER SYSTEM SHALL BE PERFORMED BY CITY OFFICIALS. NO WORK SHALL COMMENCE UNLESS A CITY WATER WORKS INSPECTOR IS ON SITE. REFER TO CITY OF OTTAWA SPECIFICATIONS F-4411, F-4412, F-4413, F-4414, F-4415, F-4417, F-4418, F-4419, F-4491, F-4492, F-4493, F-4494 AND ANY OTHER APPLICABLE SPECIFICATIONS.
3. WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED.
4. WATERMAIN BEDDING DEPTH TO BE AS PER EXP GEOTECH REPORT DATED DECEMBER 2017.
5. MINIMUM CLEARNCE BETWEEN CROSSING PIPES TO BE 0.25m WHEN WATER CROSSES ABOVE THE PIPE AS PER CITY OF OTTAWA SPECIFICATION W 25.2 AND 0.50m WHEN WATER CROSSES BELOW THE PIPE AS PER CITY OF OTTAWA SPECIFICATION W 25.
6. INSULATE ALL WATERMAIN AT ALL CATCHBASINS AND LEADS AS PER W-23.
7. FIRE HYDRANTS AS PER CITY OF OTTAWA DETAILS W-18 AND W-19.
8. ALL WATERMAIN TO BE INSTALLED WITH THRUST BLOCKS AND RESTRAINING RINGS AS PER F-4492, W25.3, W25.4, W25.5 AND W25.6. NOTE LOCAL SOIL IS A CLAY WITH A BEARING CAPACITY BETWEEN 125 AND 175 kPa. THEREFORE, USE TABLES FOR BEARING CAPACITY OF 100-199 kPa.
9. THRUST BLOCKS TO BE INSTALLED ON ALL CAPS, TEES, CROSSES, HORIZONTAL BENDS, TAPPING VALVES, OTHER FITTINGS THAT STOP FLOW OR CHANGE DIRECTION OF FLOW AND HYDRANTS.
10. RESTRAINING RINGS TO BE INSTALLED ON ALL CAPS, TEES, CROSSES, HORIZONTAL AND VERTICAL BENDS, REDUCERS, SLEEVES, COUPLINGS, CURB-STUBS, AUXILIARY, ISOLATION/LINE/BRANCH VALVES, TAPPING VALVES, HYDRANTS, OTHER FITTINGS THAT STOP FLOW OR CHANGE DIRECTION AND PUSH ON JOINTS WITHIN RESTRAINED LENGTH AS PER CITY OF OTTAWA DETAIL W25.5 AND W25.6.
11. WHERE WATERMAIN DEFLECTION IS REQUIRED, DEFLECT AT A MAXIMUM 1/2 THE MANUFACTURERS RECOMMENDATION, MAXIMUM 1.5 ° PER DEFLECTION.
12. WATER SERVICE IS TO BE CONSTRUCTED TO WITHIN 1.0m OF FOUNDATION WALL AND CAPPED, UNLESS OTHERWISE INDICATED.
13. IN ACCORDANCE WITH THE CITY OF OTTAWA STANDARD W-18, NO DRIVEWAY SHALL BE LOCATED WITHIN 3.0m OF A FIRE HYDRANT, NO OBJECTS INCLUDING VEGETATION SHALL BE PLACED OR PLANTED WITHIN A 3.0m CORRIDOR BETWEEN A FIRE HYDRANT AND THE EDGE OF A ROADWAY OR A 1.5m RADIUS BESIDE OR BEHIND A FIRE HYDRANT.
14. CATHODIC PROTECTION REQUIRED FOR PVC WATERMAIN SYSTEMS AS PER CITY OF OTTAWA W40,W42, AND F-4494, ALL WATERMAIN TO BE INSTALLED COMPLETE WITH TRACER WIRE AS PER CITY OF OTTAWA W-36 AND F-4493.
15. WATERMAIN TESTING REQUIRED AS PER CITY OF OTTAWA SPECIFICATIONS F-4491 INCLUDING THE USE OF CHLORINATION NOZZLE AS PER CITY OF OTTAWA W46.

SEWER NOTES:

1. ALL WORKS SHALL BE PERFORMED IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS AND SPECIFICATIONS F-4070, F-4080, F-4100 AND ANY OTHER APPLICABLE SPECIFICATION.
2. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
CATCHBASIN (600x600mm)	S1	CITY OF OTTAWA
STORM / SANITARY MANHOLE (1200Ø)	701.010	OPSD
CB & CBMH FRAME & COVER	S19, 400.020	CITY OF OTTAWA, OPSD
STORM / SANITARY MH FRAME & COVER	S24,S24.1,S25	CITY OF OTTAWA
SEWER TRENCH - BEDDING (GRANULAR A)	S6,S7	CITY OF OTTAWA
COVER (GRANULAR A OR SAND)	S6,S7	CITY OF OTTAWA
STORM SEWER	PVC SDR 35/CONC	
SANITARY SEWER	PVC SDR 35 WITH RUBBER GASKETS	
CATCHBASIN LEAD	PVC SDR 35 MINIMUM 1%, 250mmØ	

3. STORM SEWER TYPE AND CLASS AS PER OPSD 807.010.
4. INSULATE ALL STORM AND SANITARY PIPES THAT HAVE LESS THAN 2.0m COVER AS PER CITY OF OTTAWA F-4102.
5. SEWER BEDDING SHALL BE CLASS 'B' AS PER CITY OF OTTAWA STANDARDS S6 AND S7 UNLESS OTHERWISE NOTED.
6. PIPE BEDDING, COVER AND BACKFILL ARE TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. THE USE OF CLEAR CRUSHED STONE AS A BEDDING LAYER SHALL NOT BE PERMITTED. PIPE BEDDING DEPTH AS PER EXP GEOTECH REPORT DATED NOVEMBER 27, 2017.
7. FLEXIBLE CONNECTIONS ARE REQUIRED FOR ALL CONNECTIONS TO MANHOLES AND CONCRETE PIPES. CONTRACTOR TO USE KOR-N-SEAL OR EQUIVALENT.
8. THE OWNER SHALL REQUIRE THAT THE SITE SERVICING CONTRACTOR PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. SPECIFICALLY THE LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16 AND 407.07.25, THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF A CERTIFIED PROFESSIONAL ENGINEER WHO SHALL SUBMIT A CERTIFIED COPY OF THE TEST RESULTS.
9. STORM MANHOLES WITH PIPES LESS THAN 900mm DIAMETER TO HAVE 300mm SUMP.
10. ALL CATCHBASINS ARE TO HAVE 600mm SUMPS AND INCLUDE 3m OF SUBDRAIN EXTENDED IN TWO DIRECTIONS AND PARALLEL WITH THE CURB FACE.
11. CONTRACTOR TO TELEVISE (CCTV) ALL PROPOSED SEWERS AS PER OPSS 409 AND CITY OF OTTAWA F-4090 AND DYE TEST SANITARY SEWERS.
12. SEWER TRENCHES TO BE BACKFILLED WITH NATIVE SOIL TO MATCH THE EXISTING SOIL PROFILE, IN ORDER TO MINIMIZE THE DIFFERENTIAL FROST HEAVING OVER THE SERVICES.
13. BEDDING AT THE ROCK/SOIL INTERFACE IS TO BE TRANSITIONED AT 5H:1V MINIMUM.
14. ALL SEWER PIPES INSTALLED TO A GRADIENT OF 0.50% OR LOWER USING A LASER DEVICE AND SHALL BE CHECKED WITH A LEVEL INSTRUMENT PRIOR TO BACKFILLING.
15. CONTRACTOR TO INSTALL CLAY SEALS IN SERVICE TRENCHES WHERE INDICATED. CLAY SEALS PER CITY OF OTTAWA STANDARD S8 AND MUST EXTEND A MINIMUM OF 1.5m.
16. SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM FACE OF BUILDING AT A MINIMUM SLOPE OF 1.0%. ALL SERVICES TO INCLUDE BACKWATER VALVES AS PER CITY OF OTTAWA SPECIFICATIONS S14 AND S14.1
17. CONTRACTOR TO TELEVISE (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT, UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.
18. STORMTECH SC-740 (OR APPROVED EQUIVALENT) TO BE INSTALLED AS PER MANUFACTURERS SPECIFICATIONS AND DESIGN. REFER TO STORMWATER MANAGEMENT REPORT FOR FURTHER DETAILS. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR REVIEW.

BLOCK 1 SERVICE TABLE

STATION	SERVICE ELEVATION @ CAP	SERVICE DESCRIPTION
3+041,38	65,46m	EXISTING 100mmØ STM INVERT
3+041,39	65,48m	PROPOSED 100mmØ STM INVERT @ CAP
3+041,88	65,56m	EXISTING 50mmØ WM OBVERT
3+041,89	65,58m	PROPOSED 50mmØ WM OBVERT @ CAP
3+042,38	65,41m	EXISTING 150mmØ SAN INVERT
3+042,39	65,43m	PROPOSED 150mmØ SAN INVERT @ CAP

BLOCK 2 SERVICE TABLE

STATION	SERVICE ELEVATION @ CAP	SERVICE DESCRIPTION
3+084,41	64,07m	PROPOSED 100mmØ STM INVERT @ CAP
3+084,91	64,17m	PROPOSED 50mmØ WM OBVERT @ CAP
3+085,41	64,02m	PROPOSED 150mmØ SAN INVERT @ CAP

BLOCK 3 SERVICE TABLE

STATION	SERVICE ELEVATION @ CAP	SERVICE DESCRIPTION
3+141,73	62,09m	EXISTING 100mmØ STM INVERT
3+141,88	62,10m	PROPOSED 100mmØ STM INVERT @ CAP
3+142,23	62,23m	EXISTING 50mmØ WM OBVERT
3+142,39	62,24m	PROPOSED 50mmØ WM OBVERT @ CAP
3+142,74	62,02m	EXISTING 150mmØ SAN INVERT
3+142,89	62,03m	PROPOSED 150mmØ SAN INVERT @ CAP

CATCHBASIN TABLE

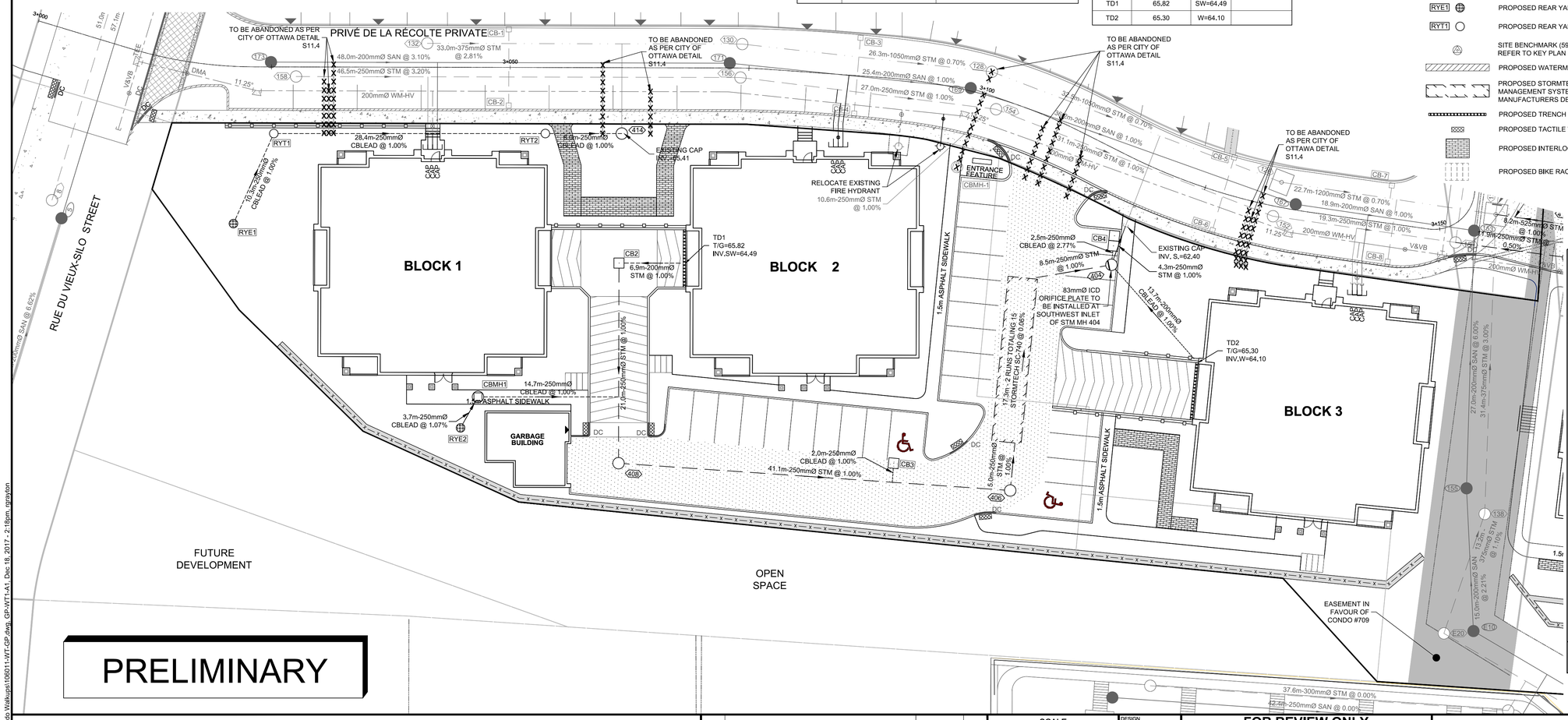
CB No.	T/G ELEVATION	INVERT	ICD DIA.
CB2	65,82	64,42	94mmØ
CB3	66,65	65,25	83mmØ
CB4	65,44	64,04	108mmØ

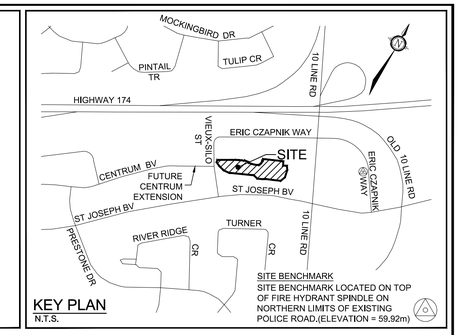
STM MANHOLE TABLE

MANHOLE ID	T/G ELEV	INVERT
404	65,60	E=63,96 NW=63,76 N=62,44 SW=63,28
406	66,96	SW=63,49 NW=63,43
408	67,19	NW=64,21 NE=63,90
414	67,46	SW=65,47 NW=65,41
EX. CAP	65,52	S=62,40
STORMTECH1 INLET	66,54	SE=63,38
STORMTECH1 OUTLET	66,03	NE=63,37

REAR YARD CATCHBASIN TABLE

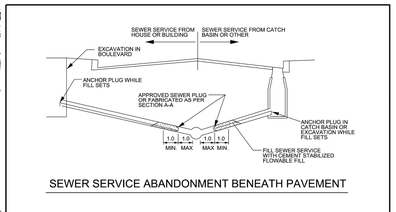
RYCB No.	T/G ELEVATION	INVERT	ICD. DIA
CBMH1	67.74	S=66.06 NE=65.77	83mmØ
RYE1	67.40	N=65.99	-
RYE2	67.50	N=66.10	-
RYT1	67.50	NE=65,83 S=65,89	-
RYT2	67.55	NE=65,55 SW=65,55	CB-LANDSCAPE
TD1	65,82	SW=64,49	
TD2	65,30	W=64,10	



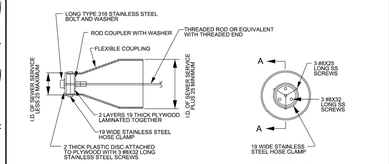


LEGEND

- SITE PLAN BOUNDARY/PROPERTY LINE
- PROPOSED BARRIER CURB
- PROPOSED DEPRESSED CURB
- PROPOSED WATERMAIN AND DIAMETER
- PROPOSED VALVE & VALVE BOX
- PROPOSED STANDPOST
- PROPOSED WATERMAIN BEND & THRUSTBLOCK
- PROPOSED SANITARY/STORM/WATERMAIN CAP
- PROPOSED WATERMAIN TEE
- PROPOSED FIRE HYDRANT C/W LEAD AND VALVE
- PROPOSED SANITARY MANHOLE & SEWER WITH DIRECTION OF FLOW
- PROPOSED STORM MANHOLE & SEWER WITH DIRECTION OF FLOW
- PROPOSED CATCHBASIN
- PROPOSED CATCH BASIN MANHOLE
- PROPOSED REAR YARD ELBOW
- PROPOSED REAR YARD TEE
- SITE BENCHMARK (59.92m) REFER TO KEY PLAN FOR LOCATION
- PROPOSED WATERMAIN INSULATION (W23)
- PROPOSED STORMTECH STORMWATER MANAGEMENT SYSTEM (REFER TO MANUFACTURERS DETAILS IN SWM REPORT)
- PROPOSED TRENCH DRAIN
- PROPOSED TACTILE WALKING SURFACE INDICATOR (TWSI)
- PROPOSED INTERLOCK STONE
- PROPOSED BIKE RACKS
- PROPOSED RETAINING WALL
- PROPOSED RETAINING WALL C/W 1.2m HIGH CHAINLINK FENCE
- PROPOSED RETAINING WALL C/W DECORATIVE RAILING
- DECORATIVE RAILING
- PIPE CROSSING (REFER TO TABLE)
- *EXISTING STORM BOX MANHOLE WITH ICD ORIFICE PLATE*
- *EXISTING SANITARY MH & SEWER WITH DIRECTION OF FLOW*
- *EXISTING STORM MH & SEWER WITH DIRECTION OF FLOW*
- *EXISTING WATERMAIN*
- *EXISTING HYDRANT*
- *EXISTING VALVE & VALVE BOX*
- *EXISTING CATCHBASIN MANHOLE*
- *EXISTING CATCHBASIN*
- *EXISTING TOWNHOUSE SERVICE LOCATION*
- *EXISTING PADMOUNT HYDRO TRANSFORMER*
- *EXISTING CABLE TELEVISION PEDESTAL*
- *EXISTING BELL GRADE LEVEL BOX*
- *EXISTING STREET LIGHT*
- *EXISTING TOWNHOUSE SERVICE LOCATION*
- *EXISTING PAVER*



SEWER SERVICE ABANDONMENT BENEATH PAVEMENT



SECTION A - A FABRICATED SEWER PLUG

FRONT VIEW

NOTES:
1. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE SHOWN.

N.T.S.

Ottawa	SEWER SERVICE ABANDONMENT BENEATH PAVEMENT	DATE: MARCH 2011 REV.: DATE: DWG. No.: S11.4

D07-12-16-0133

REFER TO 106011-GR-WT FOR ADDITIONAL NOTES

PRELIMINARY

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

APPROVED ☐ REFUSED ☐

THIS ____ DAY OF _____, 20____

JEFF MCEWEN, P.ENG., MANAGER
DEVELOPMENT REVIEW, SUBURBAN SERVICES

No.	REVISION	DATE	BY
4.	ISSUED FOR SITE PLAN SUBMISSION	DEC 15/17	DDB
3.	ISSUED FOR SITE PLAN APPROVAL	AUG 26/16	DDB
2.	ISSUED FOR COORDINATION	JUL 4/16	DDB
1.	ISSUED FOR CLIENT REVIEW	JAN 29/16	DDB

SCALE: 1:250 (1:250, 0 2 4 6 8 10)

DESIGN: MWB
CHECKED: DDB
DRAWN: SAM
CHECKED: DDB
APPROVED: DDB

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
D.D. BLAIR
100122737
Dec. 15, 2017
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
HILLSIDE VISTA WALK-UP CONDOS

DRAWING NAME
GENERAL PLAN OF SERVICES

PROJECT No. 106011
REV REV # 4
DRAWING No. 106011-GP-WT1

M:\2006\106011\CAD\DESIGN - EAST\Condo Walkups\106011-WT-GP.dwg, GP-WT1-A1, Dec 18, 2017 - 2:18pm, rgraydon

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1. SPECIFICATIONS:

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VALVE CHAMBER	W11	CITY OF OTTAWA
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13. BEDDING AT THE ROCK/SOIL INTERFACE IS TO BE TRANSITIONED AT 5H:1V MINIMUM.
14. ALL SEWER PIPES INSTALLED TO A GRADIENT OF 0.50% OR LOWER USING A LASER DEVICE AND SHALL BE CHECKED WITH A LEVEL INSTRUMENT PRIOR TO BACKFILLING.
15. CONTRACTOR TO INSTALL CLAY SEALS IN SERVICE TRENCHES WHERE INDICATED. CLAY SEALS PER CITY OF OTTAWA STANDARD S8 AND MUST EXTEND A MINIMUM OF 1.5m.
16. SERVICES ARE TO BE CONSTRUCTED TO 1.0m FROM FACE OF BUILDING AT A MINIMUM SLOPE OF 1.0%. ALL SERVICES TO INCLUDE BACKWATER VALVES AS PER CITY OF OTTAWA SPECIFICATIONS S14 AND S14.1
17. CONTRACTOR TO TELEVISE (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT, UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.
18. STORMTECH SC-740 (OR APPROVED EQUIVALENT) TO BE INSTALLED AS PER MANUFACTURERS SPECIFICATIONS AND DESIGN. REFER TO STORMWATER MANAGEMENT REPORT FOR FURTHER DETAILS. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR REVIEW.

SAN MANHOLE TABLE

MANHOLE ID	T/G ELEV	INVERT
201	64.27	E=61.30 W=61.30
203	64.31	W=61.42 E=61.45
SAN CAP1	62.54	W=61.58

PROPOSED PIPE CROSSING TABLE

CROSSING #	WATERMAIN	STORM	SANITARY
1	62.25 BWM 62.50 TWM	61.87 INV 61.97 OBV	
2	62.25 BWM 62.50 TWM		61.72 INV 61.87 OBV
3		61.70 INV 61.95 OBV	61.40 INV 61.55 OBV
4	62.45 BWM 62.70 TWM	62.07 INV 62.17 OBV	
5	62.45 BWM 62.70 TWM		61.73 INV 61.88 OBV
6		61.91 INV 62.16 OBV	61.55 INV 61.70 OBV

STM MANHOLE TABLE

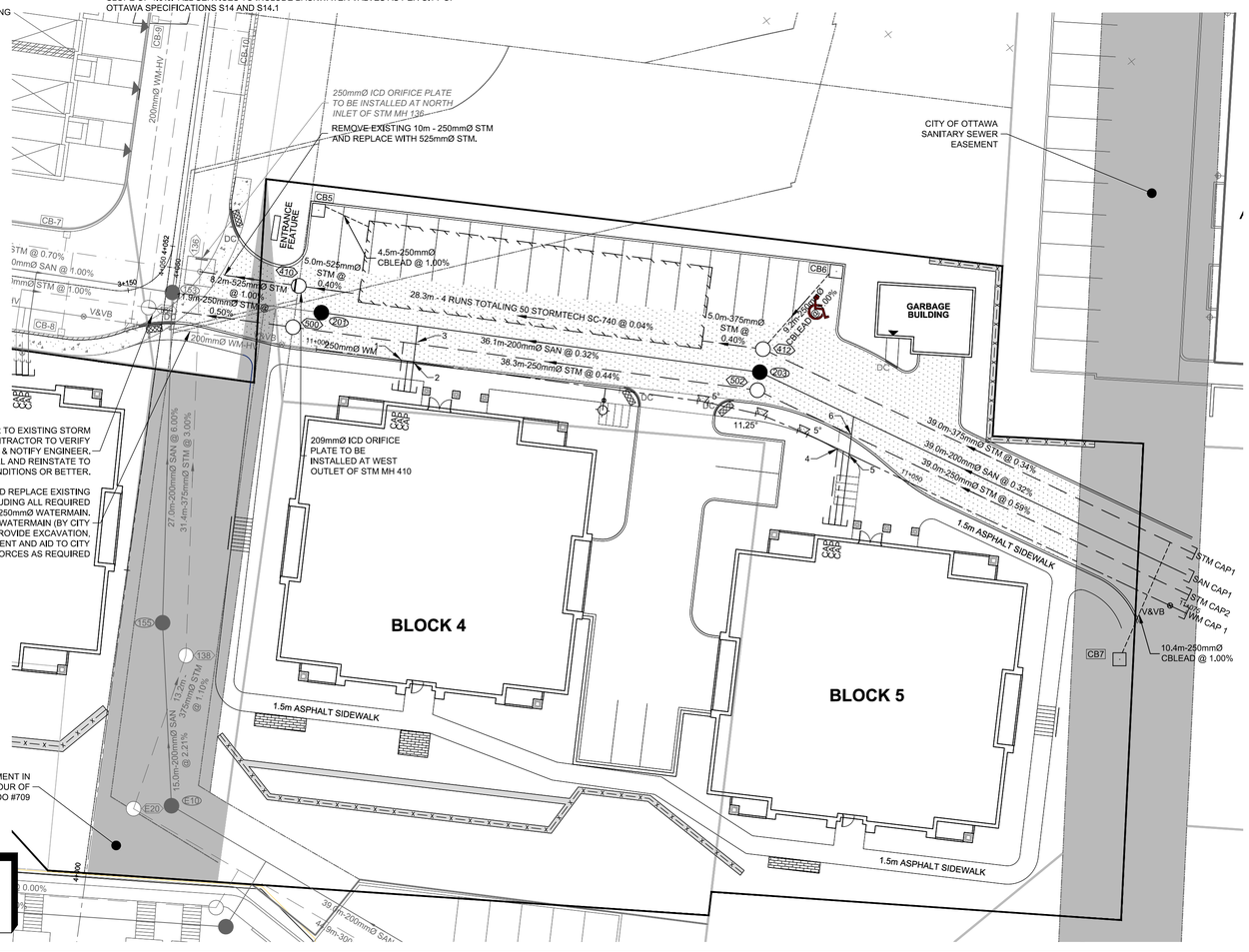
MANHOLE ID	T/G ELEV	INVERT
136	*64.21*	E=61.57 *E=62.07* *SE=62.42* *W=61.50* *N=58.01*
150	*64.35*	E=61,60 *W=60.21* *N=60.08*
410	64,17	E=61,65 W=61,65
412	64,25	W=61,70 E=61,73 N=62,22
500	64.26	W=61,66 E=61,66
502	64,35	W=61,83 E=61,86
STM CAP1	64,21	W=61.86
STM CAP2	64,49	W=62,09
STORMTECH2 INLET	64.23	E=61.68
STORMTECH2 OUTLET	64.24	W=61.67

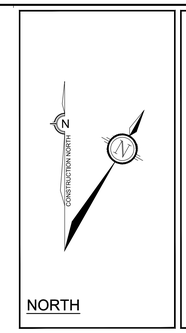
WATERMAIN TABLE

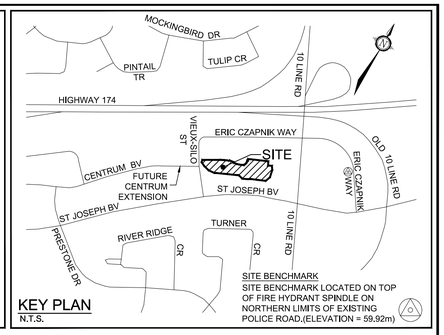
Station	F/G ELEVATION	TOP OF WATERMAIN	DESCRIPTION
11+000,00	64,35	61,95	EX CAP
11+005,52	64,48	62,01	45° V.BEND
11+006.01	64.52	62.50	45° V.BEND
11+009.01	64,67	62,50	45° V.BEND
11+009,48	64,68	62,03	45° V.BEND
11+023,84	64,54	62,14	HYD
11+025,00	64,53	62,13	
11+031,85	64,38	61,98	5°
11+036,73	64,60	62,20	11,25°
11+040,43	64,70	62,30	5°
11+042,17	64,72	62,30	45° V.BEND
11+042,57	64,72	62,70	45° V.BEND
11+045,62	64,79	62,70	45° V.BEND
11+046,02	64,79	62,30	45° V.BEND
11+050,00	64,70	62,30	
11+073,61	64,88	62,48	V&VB
11+075,11	64,91	62,51	WM CAP 1

CATCHBASIN TABLE

CB No.	T/G ELEVATION	INVERT	ICD DIA.
CB5	63.96	62,31	83mmØ
CB6	63.96	62,31	152mmØ
CB7	64,50	63,10	-







LEGEND

- SITE PLAN BOUNDARY/PROPERTY LINE
- DC — PROPOSED BARRIER CURB
- PROPOSED DEPRESSED CURB
- 150mmØ — PROPOSED WATERMAIN AND DIAMETER
- V&VB ⊗ — PROPOSED VALVE & VALVE BOX
- ⊗ — PROPOSED STANDPOST
- 11.25°,22.5° — PROPOSED WATERMAIN BEND & THRUSTBLOCK
- PROPOSED SANITARY/STORM/WATERMAIN CAP
- PROPOSED WATERMAIN TEE
- PROPOSED FIRE HYDRANT C/W LEAD AND VALVE
- 101 250mmØ — PROPOSED SANITARY MANHOLE & SEWER WITH DIRECTION OF FLOW
- 100 250mmØ — PROPOSED STORM MANHOLE & SEWER WITH DIRECTION OF FLOW
- CB-1 — PROPOSED CATCHBASIN
- CBMH-1 — PROPOSED CATCH BASIN MANHOLE
- RYE1 — PROPOSED REAR YARD ELBOW
- RYT1 — PROPOSED REAR YARD TEE
- SITE BENCHMARK (59.92m) REFER TO KEY PLAN FOR LOCATION
- PROPOSED WATERMAIN INSULATION (W23)
- PROPOSED STORMTECH STORMWATER MANAGEMENT SYSTEM (REFER TO MANUFACTURERS DETAILS IN SWM REPORT)
- PROPOSED TRENCH DRAIN
- PROPOSED TACTILE WALKING SURFACE INDICATOR (TWSI)
- PROPOSED INTERLOCK STONE
- PROPOSED BIKE RACKS
- PROPOSED RETAINING WALL
- PROPOSED RETAINING WALL C/W 1.2m HIGH CHAINLINK FENCE
- PROPOSED RETAINING WALL C/W DECORATIVE RAILING
- DECORATIVE RAILING
- 1 — PIPE CROSSING (REFER TO TABLE)
- 136 — *EXISTING STORM BOX MANHOLE WITH ICD ORIFICE PLATE*
- *750mmØ SAN* — *EXISTING SANITARY MH & SEWER WITH DIRECTION OF FLOW*
- *300mmØ STM* — *EXISTING STORM MH & SEWER WITH DIRECTION OF FLOW*
- *EXISTING WATERMAIN*
- *HYD* — *EXISTING HYDRANT*
- *V&VB* — *EXISTING VALVE & VALVE BOX*
- *CBMH* — *EXISTING CATCHBASIN MANHOLE*
- *CB* — *EXISTING CATCHBASIN*
- *EXISTING TOWNHOUSE SERVICE LOCATION*
- *EXISTING PADMOUNT HYDRO TRANSFORMER*
- *EXISTING CABLE TELEVISION PEDESTAL*
- *EXISTING BELL GRADE LEVEL BOX*
- *EXISTING STREET LIGHT*
- *EXISTING TOWNHOUSE SERVICE LOCATION*
- *EXISTING PAVER*

BLOCK 4 SERVICE TABLE

STATION	SERVICE ELEVATION @ CAP	SERVICE DESCRIPTION
11+007,05	62,30m	PROPOSED 100mmØ STM INVERT @ CAP
11+007.55	62,40m	PROPOSED 50mmØ WM OBVERT @ CAP
11+008,05	62,25m	PROPOSED 150mmØ SAN INVERT @ CAP

BLOCK 5 SERVICE TABLE

STATION	SERVICE ELEVATION @ CAP	SERVICE DESCRIPTION
11+045,54	62,45m	PROPOSED 100mmØ STM INVERT @ CAP
11+046,02	62,55m	PROPOSED 50mmØ WM OBVERT @ CAP
11+046,49	62,40m	PROPOSED 150mmØ SAN INVERT @ CAP

D07-12-16-0133

REFER TO 106011-GR-WT FOR ADDITIONAL NOTES

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

APPROVED ☐ REFUSED ☐

THIS _____ DAY OF _____, 20____

JEFF MCEWEN, P.ENG., MANAGER
DEVELOPMENT REVIEW, SUBURBAN SERVICES

No.	REVISION	DATE	BY
4.	ISSUED FOR SITE PLAN SUBMISSION	DEC 15/17	DDB
3.	ISSUED FOR SITE PLAN APPROVAL	AUG 26/16	DDB
2.	ISSUED FOR COORDINATION	JUL 4/16	DDB
1.	ISSUED FOR CLIENT REVIEW	JAN 29/16	DDB

SCALE 1:250 (1:250, 0 2 4 6 8 10)

DESIGN MWB
CHECKED DDB
DRAWN SAM
CHECKED DDB
APPROVED DDB

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER D.D. BLAIR 100122737 Dec 15, 2017 PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
HILLSIDE VISTA WALK-UP CONDOS

DRAWING NAME
GENERAL PLAN OF SERVICES

PROJECT No. 106011
REV REV # 4
DRAWING No. 106011-GP-WT2

M:\2006\106011\CAD\DESIGN - EAST\Condo Walkups\106011-WT-GP.dwg, GP-WT2-A1 Dec 18, 2017 - 2:18pm, rgrayton

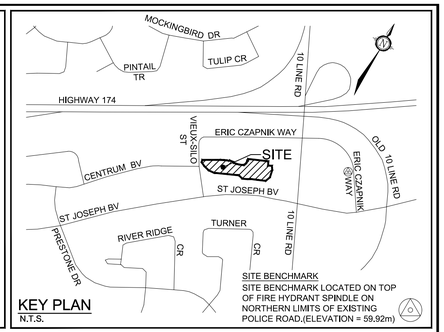
GENERAL NOTES:

1. ALL WORK TO BE COMPLETED IN ACCORDANCE WITH CITY OF OTTAWA AND OPS DRAWINGS AND SPECIFICATIONS, UNLESS OTHERWISE NOTED.
2. COORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
3. CONTRACTOR IS TO PROCURE COPIES OF THE APPLICABLE STANDARDS AND KEEP ON SITE.
4. DIMENSIONS AND LAYOUT INFORMATION SHALL BE CONFIRMED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
5. THE ORIGINAL TOPOGRAPHY AND GROUND ELEVATIONS, SERVICING AND SURVEY INFORMATION SHOWN ON THIS PLAN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF ALL INFORMATION OBTAINED FROM THIS PLAN.
6. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THIS DRAWING.
7. OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE CITY OF OTTAWA BEFORE COMMENCING CONSTRUCTION.
8. BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR $5,000,000.00, INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.
9. RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES, SURFACES AND FENCES ON PUBLIC ROAD ALLOWANCES, PRIVATE SITES AND ALONG ORC/HONI TRANSMISSION CORRIDOR TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
10. REMOVE FROM SITE ALL EXCESS STOCK PILED MATERIALS, EXCAVATED MATERIAL, ORGANIC MATERIAL, BOULDERS, CONCRETE AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER.
11. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS.
12. REFER TO GEOTECHNICAL REPORT OTT-00241432-A0 GEOTECHNICAL INVESTIGATION - HILLSIDE VISTA WALK-UP CONDOS, ST. JOSEPH BOULEVARD & TENTH LINE ROAD, ORLEANS, OTTAWA, ONTARIO (NOVEMBER 27, 2017) PREPARED BY EXP. FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS.
13. PRIOR TO CONSTRUCTION ALL SUBGRADE SURFACES FOR FOOTING AND PAVEMENT STRUCTURES ARE TO BE INSPECTED BY A GEOTECHNICAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO.
14. SIDE SLOPES FOR ALL EXCAVATIONS ARE TO BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT (ONTARIO REGULATION 213/91). ONSITE FILL IS CLASSIFIED AS TYPE 3 SOILS. THEREFORE, EXCAVATION SLOPES ARE TO BE MAXIMUM 1H:1.2V OR FLATTER PLUS CLAY IS CLASSIFIED AS TYPE 3 SOIL, SLOPES OF MAXIMUM 1H:1V OR FLATTER.
15. PRIOR TO ANY ROCK EXCAVATION THE CONTRACTOR IS REQUIRED TO COMPLETE A PRE-BLAST SURVEY ACCORDING TO CITY OF OTTAWA SPECIFICATION F-1201, AND PROVINCIAL SPECIFICATION No. OPS 120.
16. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
17. REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARDSURFACE AREAS AND DIMENSIONS.
18. PROVIDE LINE/PARKING PAINTING.
19. REFER TO SERVICEABILITY AND STORMWATER MANAGEMENT REPORT (R-2016-116) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
20. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GENERAL PLAN OF SERVICES INDICATING ALL SERVICING AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INCLUDE: PIPE MATERIAL, SIZES, LENGTHS, SLOPES, INVERT AND T/G ELEVATIONS, STRUCTURE LOCATIONS, VALVE AND HYDRANT LOCATIONS, T/WM ELEVATIONS AND ANY ALIGNMENT CHANGES, ETC.

GRADING NOTES:

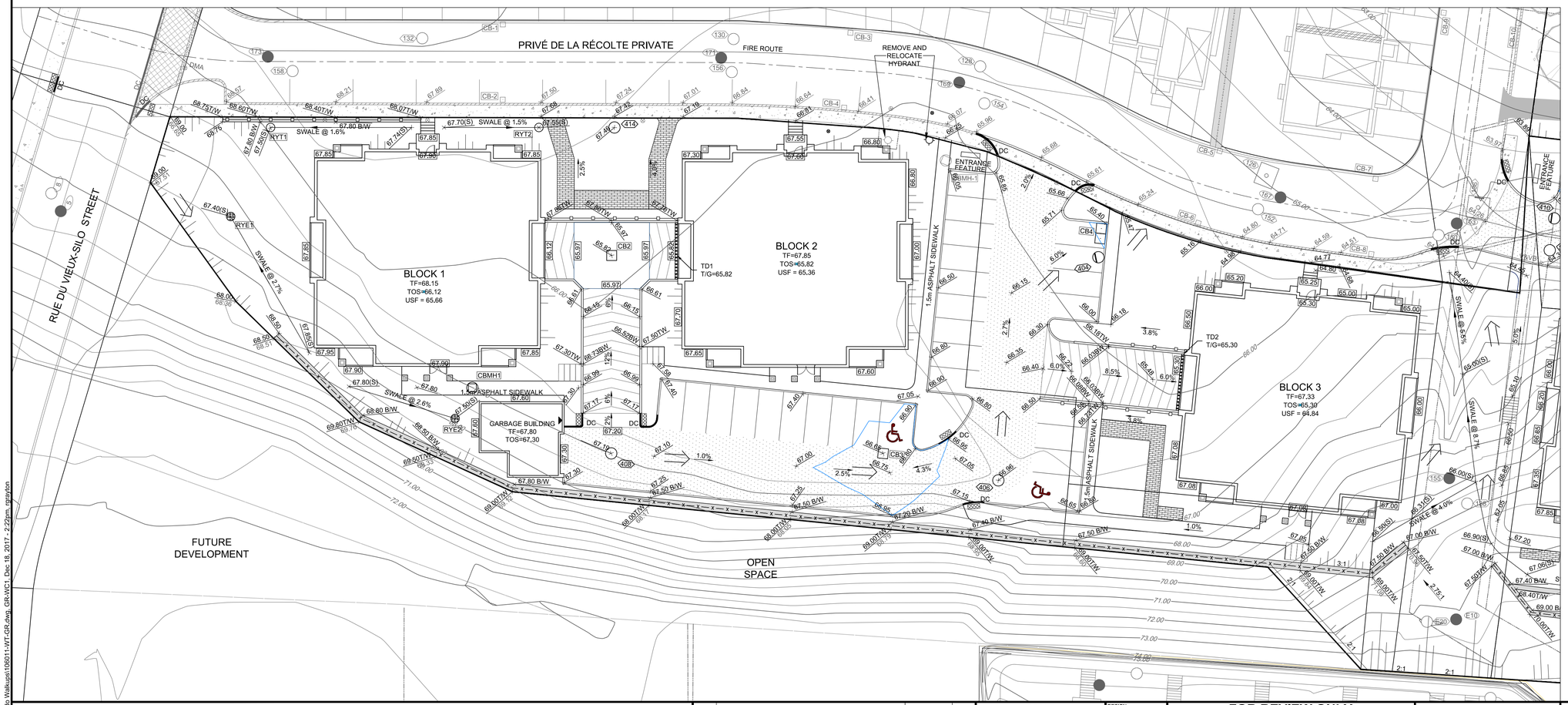
1. ALL TOPSOIL, ORGANICS AND ANY SOFT, WET OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED PAVED AREAS AS DIRECTED BY THE SITE ENGINEER OR GEOTECHNICAL ENGINEER IN PREPARATION OF THE SUBGRADE.
2. ALL EXCESS EXCAVATED MATERIAL TO BE STOCKPILED OR SPREAD ONSITE AS DIRECTED BY THE ENGINEER. ALL ORGANIC MATERIAL AND DEBRIS TO BE USED OR STOCKPILED ONSITE AS INSTRUCTED BY THE ENGINEER.
3. EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE PROOF ROLLED WITH A LARGE STEEL DRUM ROLLER AND INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF GRANULARS.
4. ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUB-EXCAVATED AND REPLACED WITH SUITABLE MATERIAL THAT IS FROST COMPATIBLE WITH THE EXISTING SOILS AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
5. THE GRANULAR BASE SHOULD BE COMPACTED TO AT LEAST 98% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE. ANY ADDITIONAL GRANULAR FILL USED BELOW THE PROPOSED PAVEMENT SHOULD BE COMPACTED TO AT LEAST 98% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE.
6. PRIOR TO CONSTRUCTION ALL SUBGRADE SURFACES FOR FOOTING AND PAVEMENT STRUCTURES ARE TO BE INSPECTED BY A GEOTECHNICAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO.
7. ROADWAY SUBGRADE TO BE INSPECTED BY THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION TO REVIEW THE GRANULAR 'B' DEPTH AND FOR THE NECESSITY OF A WOVEN GEOTEXTILE BELOW THE GRANULAR MATERIALS.
8. ENSURE POSITIVE DRAINAGE WHETHER INDICATED OR NOT.
9. SIDEWALK CROSSFALL NOT TO EXCEED 2.0%.
10. ALL ROADWAYS TO HAVE 3% CROSSFALL INCLUDING SUBGRADE AND GRANULAR BASE UNLESS OTHERWISE NOTED ON THE DRAWINGS.
11. MINIMUM OF 2% GRADE FOR ALL GRASS AREAS UNLESS OTHERWISE NOTED.
12. MAXIMUM TERRACING GRADE TO BE 3:1 UNLESS OTHERWISE NOTED.
13. MATCH EXISTING ELEVATIONS AT ALL PROPERTY LINES.
14. GRADE AND/OR FILL WHERE REQUIRED.
15. ALL GRADES BY CURBS ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE INDICATED.
16. ALL CURBS SHALL BE BARRIER CURB UNLESS OTHERWISE NOTED AND CONSTRUCTED AS PER CITY OF OTTAWA STANDARDS (SC 1.1).
17. ALL ASPHALT TO BE PG 58-34. ALL PAVEMENT MATERIALS TO ADHERE TO OPSS, DIVISION 3.
18. ASPHALTIC CONCRETE TO BE COMPACTED TO AT LEAST 97% OF MARSHALL DENSITY.
19. PRIOR TO THE PLACEMENT OF TOPLIFT (SUPERPAVE), CONTRACTOR IS TO ADJUST ALL STRUCTURES AS PER CITY OF OTTAWA STANDARD F 4080.
20. ALL CONCRETE SIDEWALKS SHALL BE CONSTRUCTED AS PER CITY OF OTTAWA STANDARDS SC7 AND SC7.1.
21. CONNECT TO EXISTING ROADS, INCLUDING ALL RESTORATION WORK NECESSARY TO REINSTATE SURFACES TO EXISTING CONDITIONS OR BETTER AS PER CITY OF OTTAWA R10.
22. REFER TO LANDSCAPE PLAN FOR PLANTING AND OTHER LANDSCAPE FEATURE DETAILS.
23. PROVIDE LINE/PARKING PAINTING.
24. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GRADING PLAN INDICATING AS-BUILT ELEVATIONS OF ALL DESIGN GRADES SHOWN ON THIS PLAN.
25. ALL RETAINING WALLS ARE TO BE STONE STRONG (OR APPROVED EQUIVALENT) RETAINING WALLS AND EQUIPPED WITH 1.2m CHAINLINK FENCE WHERE INDICATED. REFER TO GEOTECH REPORT AND RETAINING WALL SUPPLIER FOR STONE STRONG RETAINING WALL DETAILED DESIGN.

NORTH



KEY PLAN
N.T.S.

PRELIMINARY



LEGEND

- SITE PLAN BOUNDARY/PROPERTY LINE
- PROPOSED BARRIER CURB
- DC — PROPOSED DEPRESSED CURB
- 65.60 / *64.90* — PROPOSED ELEVATION / *EXISTING ELEVATION*
- 65.60T/C — PROPOSED TOP OF CURB ELEVATION
- 63.47(IS) — PROPOSED SWALE
- 63.78(BW) — PROPOSED BOTTOM OF RETAINING WALL
- 65.81(TW) — PROPOSED TOP OF RETAINING WALL
- FF = FINISHED FLOOR ELEVATION; TF = TOP OF FOUNDATION; USF = UNDERSIDE OF FOOTING ELEVATION; TOS= TOP OF SLAB ELEVATION
- 67.83 — PROPOSED TERRACE ELEVATION
- 3.2% — SLOPE GRADE AND DIRECTION
- ℄ SWALE C/W DIRECTION OF FLOW
- MAXIMUM 2:1 SIDESLOPE
- PROPOSED RETAINING WALL
- PROPOSED RETAINING WALL C/W 1.2m HIGH CHAINLINK FENCE
- PROPOSED RETAINING WALL C/W DECORATIVE RAILING
- DECORATIVE RAILING
- SITE BENCHMARK (59.92m) REFER TO KEY PLAN FOR LOCATION
- OVERLAND FLOW DIRECTION
- PROPOSED CHAINLINK FENCE
- (202) — PROPOSED SANITARY MANHOLE
- (401) — PROPOSED STORM MANHOLE
- CB-1 — PROPOSED CATCHBASIN
- PROPOSED TRENCH DRAIN
- PROPOSED STAND POST
- PROPOSED TACTILE WALKING SURFACE INDICATOR (TWSI)
- PROPOSED INTERLOCK STONE
- PROPOSED BIKE RACKS
- (101) — *EXISTING SANITARY MANHOLE*
- (100) — *EXISTING STORM MANHOLE*
- (136) — *EXISTING STORM BOX MANHOLE WITH ICD ORIFICE PLATE*
- HYD — *EXISTING HYDRANT*
- V&VB — *EXISTING DRAIN MANHOLE*
- DMA — *EXISTING AREA CHAMBER*
- *EXISTING CATCHBASIN MANHOLE*
- *EXISTING CATCHBASIN*
- *EXISTING PADMOUNT HYDRO TRANSFORMER*
- *EXISTING CABLE TELEVISION PEDESTAL*
- *EXISTING BELL CSP PEDESTAL*
- *EXISTING BELL GRADE LEVEL BOX*
- *EXISTING STREET LIGHT*
- *EXISTING 1.5m CONCRETE SIDEWALK*
- *62.00 / 62.00 / 61.50* — *EXISTING CONTOUR LINE AND CONTOUR ELEVATION*

PAVEMENT STRUCTURE:

HEAVY DUTY (FIRE ROUTE)
40mm SUPERPAVE 12.5 (CAT B) ASPHALT
50mm SUPERPAVE 19.0 (CAT B) ASPHALT
150mm GRANULAR 'A'
450mm GRANULAR 'B'

LIGHT DUTY (PARKING SPACES)
65mm HL3 ASPHALT
150mm GRANULAR 'A'
300mm GRANULAR 'B'

D07-12-16-0133

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APPROVED ☐ REFUSED ☐

THIS _____ DAY OF _____, 20____

JEFF MCEWEN, P.ENG., MANAGER
DEVELOPMENT REVIEW, SUBURBAN SERVICES

No.	REVISION	DATE	BY
5.	ISSUED FOR SITE PLAN SUBMISSION	DEC 15/17	DDB
4.	ISSUED FOR COORDINATION	MAY 9/17	DDB
3.	ISSUED FOR SITE PLAN APPROVAL	AUG 26/16	DDB
2.	ISSUED FOR COORDINATION	JUL 4/16	DDB
1.	ISSUED FOR CLIENT REVIEW	JAN 29/16	DDB

SCALE: 1:250 (1:250, 0 2 4 6 8 10)

DESIGN: DDB
CHECKED: DDB
DRAWN: SAM
CHECKED: DDB
APPROVED: DDB

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — D.D. BLAIR — 100122737 — Dec 15, 2017 — PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
HILLSIDE VISTA WALK-UP CONDOS

DRAWING NAME
GRADING PLAN

PROJECT No. 106011
REV # 5
DRAWING No. 106011-GR-WT1

M:\2006\106011\CAD\DESIGN - EAST\Condo Walkups\106011-WT-GR.dwg, GR-WC1, Dec 18, 2017 - 2:22pm, rgraydon

GENERAL NOTES:

1. ALL WORK TO BE COMPLETED IN ACCORDANCE WITH CITY OF OTTAWA AND OPS DRAWINGS AND SPECIFICATIONS, UNLESS OTHERWISE NOTED.
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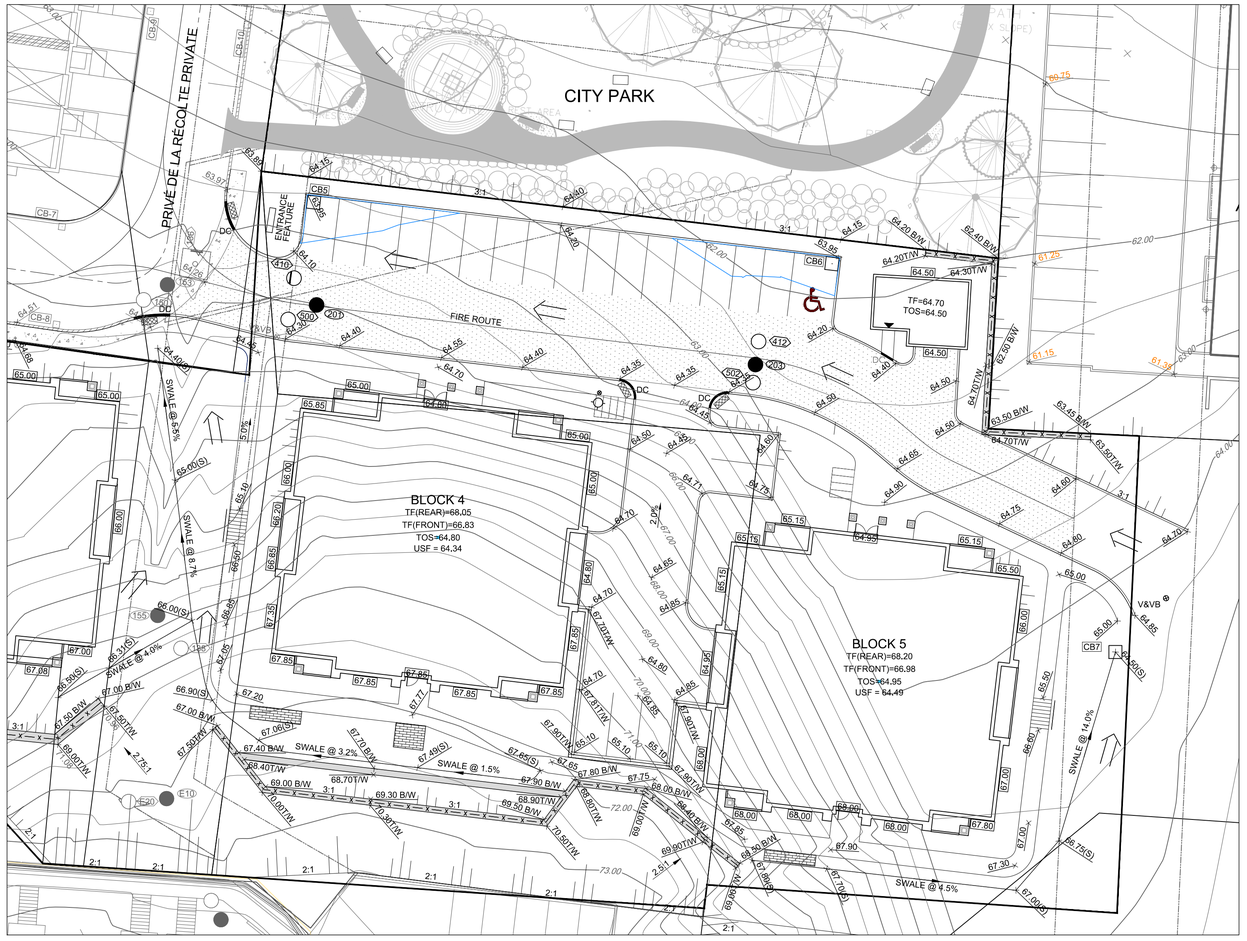
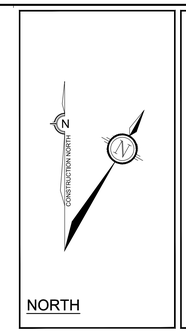
8. BEFORE COMMENCING CONSTRUCTION OBTAIN AND PROVIDE PROOF OF COMPREHENSIVE, ALL RISK AND OPERATIONAL LIABILITY INSURANCE FOR $5,000,000.00, INSURANCE POLICY TO NAME OWNERS, ENGINEERS AND ARCHITECTS AS CO-INSURED.
9. RESTORE ALL DISTURBED AREAS ON-SITE AND OFF-SITE, INCLUDING TRENCHES, SURFACES AND FENCES ON PUBLIC ROAD ALLOWANCES, PRIVATE SITES AND ALONG ORC/HONI TRANSMISSION CORRIDOR TO EXISTING CONDITIONS OR BETTER TO THE SATISFACTION OF THE CITY OF OTTAWA AND ENGINEER.
10. REMOVE FROM SITE ALL EXCESS STOCK PILED MATERIALS, EXCAVATED MATERIAL, ORGANIC MATERIAL, BOULDERS, CONCRETE AND DEBRIS UNLESS OTHERWISE INSTRUCTED BY ENGINEER.
11. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS.
12. REFER TO GEOTECHNICAL REPORT OTT-00241432-A0 GEOTECHNICAL INVESTIGATION - HILLSIDE VISTA WALK-UP CONDOS, ST. JOSEPH BOULEVARD & TENTH LINE ROAD, ORLEANS, OTTAWA, ONTARIO (NOVEMBER 27, 2017) PREPARED BY EXP. FOR SUBSURFACE CONDITIONS, CONSTRUCTION RECOMMENDATIONS, AND GEOTECHNICAL INSPECTION REQUIREMENTS.
13. PRIOR TO CONSTRUCTION ALL SUBGRADE SURFACES FOR FOOTING AND PAVEMENT STRUCTURES ARE TO BE INSPECTED BY A GEOTECHNICAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO.
14. SIDE SLOPES FOR ALL EXCAVATIONS ARE TO BE IN ACCORDANCE WITH THE OCCUPATIONAL HEALTH AND SAFETY ACT (ONTARIO REGULATION 213/91). ONSITE FILL IS CLASSIFIED AS TYPE 3 SOILS. THEREFORE, EXCAVATION SLOPES ARE TO BE MAXIMUM 1H:1.2V OR FLATTER PLUS CLAY IS CLASSIFIED AS TYPE 3 SOIL, SLOPES OF MAXIMUM 1H:1V OR FLATTER.
15. PRIOR TO ANY ROCK EXCAVATION THE CONTRACTOR IS REQUIRED TO COMPLETE A PRE-BLAST SURVEY ACCORDING TO CITY OF OTTAWA SPECIFICATION F-1201, AND PROVINCIAL SPECIFICATION No. OPS 120.
16. SAW CUT AND KEY GRIND ASPHALT AT ALL ROAD CUTS AND ASPHALT TIE IN POINTS AS PER CITY OF OTTAWA STANDARDS (R10).
17. REFER TO ARCHITECT'S AND LANDSCAPE ARCHITECT'S DRAWINGS FOR BUILDING AND HARDSURFACE AREAS AND DIMENSIONS.
18. PROVIDE LINE/PARKING PAINTING.
19. REFER TO SERVICEABILITY AND STORMWATER MANAGEMENT REPORT (R-2016-116) PREPARED BY NOVATECH ENGINEERING CONSULTANTS LTD.
20. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GENERAL PLAN OF SERVICES INDICATING ALL SERVICING AS-BUILT INFORMATION SHOWN ON THIS PLAN. AS-BUILT INFORMATION MUST INCLUDE: PIPE MATERIAL, SIZES, LENGTHS, SLOPES, INVERT AND T/G ELEVATIONS, STRUCTURE LOCATIONS, VALVE AND HYDRANT LOCATIONS, T/WM ELEVATIONS AND ANY ALIGNMENT CHANGES, ETC.

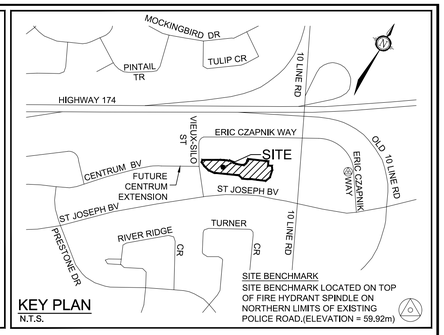
GRADING NOTES:

1. ALL TOPSOIL, ORGANICS AND ANY SOFT, WET OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED PAVED AREAS AS DIRECTED BY THE SITE ENGINEER OR GEOTECHNICAL ENGINEER IN PREPARATION OF THE SUBGRADE.
2. ALL EXCESS EXCAVATED MATERIAL TO BE STOCKPILED OR SPREAD ONSITE AS DIRECTED BY THE ENGINEER. ALL ORGANIC MATERIAL AND DEBRIS TO BE USED OR STOCKPILED ONSITE AS INSTRUCTED BY THE ENGINEER.
3. EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE PROOF ROLLED WITH A LARGE STEEL DRUM ROLLER AND INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF GRANULARS.
4. ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUB-EXCAVATED AND REPLACED WITH SUITABLE MATERIAL THAT IS FROST COMPATIBLE WITH THE EXISTING SOILS AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
5. THE GRANULAR BASE SHOULD BE COMPACTED TO AT LEAST 98% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE. ANY ADDITIONAL GRANULAR FILL USED BELOW THE PROPOSED PAVEMENT SHOULD BE COMPACTED TO AT LEAST 98% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE.
6. PRIOR TO CONSTRUCTION ALL SUBGRADE SURFACES FOR FOOTING AND PAVEMENT STRUCTURES ARE TO BE INSPECTED BY A GEOTECHNICAL ENGINEER LICENSED IN THE PROVINCE OF ONTARIO.
7. ROADWAY SUBGRADE TO BE INSPECTED BY THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION TO REVIEW THE GRANULAR 'B' DEPTH AND FOR THE NECESSITY OF A WOVEN GEOTEXTILE BELOW THE GRANULAR MATERIALS.
8. ENSURE POSITIVE DRAINAGE WHETHER INDICATED OR NOT.
9. SIDEWALK CROSSFALL NOT TO EXCEED 2.0%.
10. ALL ROADWAYS TO HAVE 3% CROSSFALL INCLUDING SUBGRADE AND GRANULAR BASE UNLESS OTHERWISE NOTED ON THE DRAWINGS.
11. MINIMUM OF 2% GRADE FOR ALL GRASS AREAS UNLESS OTHERWISE NOTED.
12. MAXIMUM TERRACING GRADE TO BE 3:1 UNLESS OTHERWISE NOTED.
13. MATCH EXISTING ELEVATIONS AT ALL PROPERTY LINES.
14. GRADE AND/OR FILL WHERE REQUIRED.
15. ALL GRADES BY CURBS ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE INDICATED.
16. ALL CURBS SHALL BE BARRIER CURB UNLESS OTHERWISE NOTED AND CONSTRUCTED AS PER CITY OF OTTAWA STANDARDS (SC 1.1).
17. ALL ASPHALT TO BE PG 58-34. ALL PAVEMENT MATERIALS TO ADHERE TO OPSS, DIVISION 3.
18. ASPHALTIC CONCRETE TO BE COMPACTED TO AT LEAST 97% OF MARSHALL DENSITY.
19. PRIOR TO THE PLACEMENT OF TOPLIFT (SUPERPAVE), CONTRACTOR IS TO ADJUST ALL STRUCTURES AS PER CITY OF OTTAWA STANDARD F 4080.
20. ALL CONCRETE SIDEWALKS SHALL BE CONSTRUCTED AS PER CITY OF OTTAWA STANDARDS SC7 AND SC7.1.
21. CONNECT TO EXISTING ROADS, INCLUDING ALL RESTORATION WORK NECESSARY TO REINSTATE SURFACES TO EXISTING CONDITIONS OR BETTER AS PER CITY OF OTTAWA R10.
22. REFER TO LANDSCAPE PLAN FOR PLANTING AND OTHER LANDSCAPE FEATURE DETAILS.
23. PROVIDE LINE/PARKING PAINTING.
24. CONTRACTOR TO PROVIDE THE CONSULTANT WITH A GRADING PLAN INDICATING AS-BUILT ELEVATIONS OF ALL DESIGN GRADES SHOWN ON THIS PLAN.
25. ALL RETAINING WALLS ARE TO BE STONE STRONG (OR APPROVED EQUIVALENT) RETAINING WALLS AND EQUIPPED WITH 1.2m CHAINLINK FENCE WHERE INDICATED. REFER TO GEOTECH REPORT AND RETAINING WALL SUPPLIER FOR STONE STRONG RETAINING WALL DETAILED DESIGN.

PRELIMINARY







LEGEND

- SITE PLAN BOUNDARY/PROPERTY LINE
- PROPOSED BARRIER CURB
- DC — PROPOSED DEPRESSED CURB
- 65.60 / × 64.90 — PROPOSED ELEVATION / *EXISTING ELEVATION*
- 65.60T/C — PROPOSED TOP OF CURB ELEVATION
- 63.47(IS) — PROPOSED SWALE
- 63.78(BW) — PROPOSED BOTTOM OF RETAINING WALL
- 65.81(TW) — PROPOSED TOP OF RETAINING WALL
- FF = FINISHED FLOOR ELEVATION; TF = TOP OF FOUNDATION; USF = UNDERSIDE OF FOOTING ELEVATION; TOS= TOP OF SLAB ELEVATION
- 67.83 — PROPOSED TERRACE ELEVATION
- 3.2% — SLOPE GRADE AND DIRECTION
- ℄ SWALE C/W DIRECTION OF FLOW
- MAXIMUM 2:1 SIDESLOPE
- PROPOSED RETAINING WALL
- PROPOSED RETAINING WALL C/W 1.2m HIGH CHAINLINK FENCE
- PROPOSED RETAINING WALL C/W DECORATIVE RAILING
- DECORATIVE RAILING
- SITE BENCHMARK (59.92m) REFER TO KEY PLAN FOR LOCATION
- OVERLAND FLOW DIRECTION
- PROPOSED CHAINLINK FENCE
- (202) — PROPOSED SANITARY MANHOLE
- (401) — PROPOSED STORM MANHOLE
- CB-1 — PROPOSED CATCHBASIN
- PROPOSED TRENCH DRAIN
- PROPOSED STAND POST
- PROPOSED TACTILE WALKING SURFACE INDICATOR (TWSI)
- PROPOSED INTERLOCK STONE
- PROPOSED BIKE RACKS
- (101) — *EXISTING SANITARY MANHOLE*
- (100) — *EXISTING STORM MANHOLE*
- (136) — *EXISTING STORM BOX MANHOLE WITH ICD ORIFICE PLATE*
- HYD — *EXISTING HYDRANT*
- V&VB — *EXISTING VALVE & VALVE BOX*
- DMA — *EXISTING DRAINAGE AREA CHAMBER*
- *EXISTING CATCHBASIN MANHOLE*
- *EXISTING CATCHBASIN*
- *EXISTING PADMOUNT HYDRO TRANSFORMER*
- *EXISTING CABLE TELEVISION PEDESTAL*
- *EXISTING BELL CSP PEDESTAL*
- *EXISTING BELL GRADE LEVEL BOX*
- *EXISTING STREET LIGHT*
- *EXISTING 1.5m CONCRETE SIDEWALK*
- 62.50 / 62.00 / 61.50 — *EXISTING CONTOUR LINE AND CONTOUR ELEVATION*

PAVEMENT STRUCTURE:

HEAVY DUTY (FIRE ROUTE)
40mm SUPERPAVE 12.5 (CAT B) ASPHALT
50mm SUPERPAVE 19,0 (CAT B) ASPHALT
150mm GRANULAR 'A'
450mm GRANULAR 'B'

LIGHT DUTY (PARKING SPACES)
65mm HL3 ASPHALT
150mm GRANULAR 'A'
300mm GRANULAR 'B'

D07-12-16-0133

NOTE:
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APPROVED ☐ REFUSED ☐

THIS _____ DAY OF _____, 20____

JEFF MCEWEN, P.ENG., MANAGER
DEVELOPMENT REVIEW, SUBURBAN SERVICES

No.	REVISION	DATE	BY
5.	ISSUED FOR SITE PLAN SUBMISSION	DEC 15/17	DDB
4.	ISSUED FOR COORDINATION	MAY 9/17	DDB
3.	ISSUED FOR SITE PLAN APPROVAL	AUG 26/16	DDB
2.	ISSUED FOR COORDINATION	JUL 4/16	DDB
1.	ISSUED FOR CLIENT REVIEW	JAN 29/16	DDB

SCALE: 1:250 (1:250, 0 2 4 6 8 10)

DESIGN: DDB
CHECKED: DDB
DRAWN: SAM
CHECKED: DDB
APPROVED: DDB

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — D.D. BLAIR 100122737 — Dec 15, 2017 — PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
HILLSIDE VISTA WALK-UP CONDOS

DRAWING NAME
GRADING PLAN

PROJECT No. 106011
REV REV # 5
DRAWING No. 106011-GR-WT2

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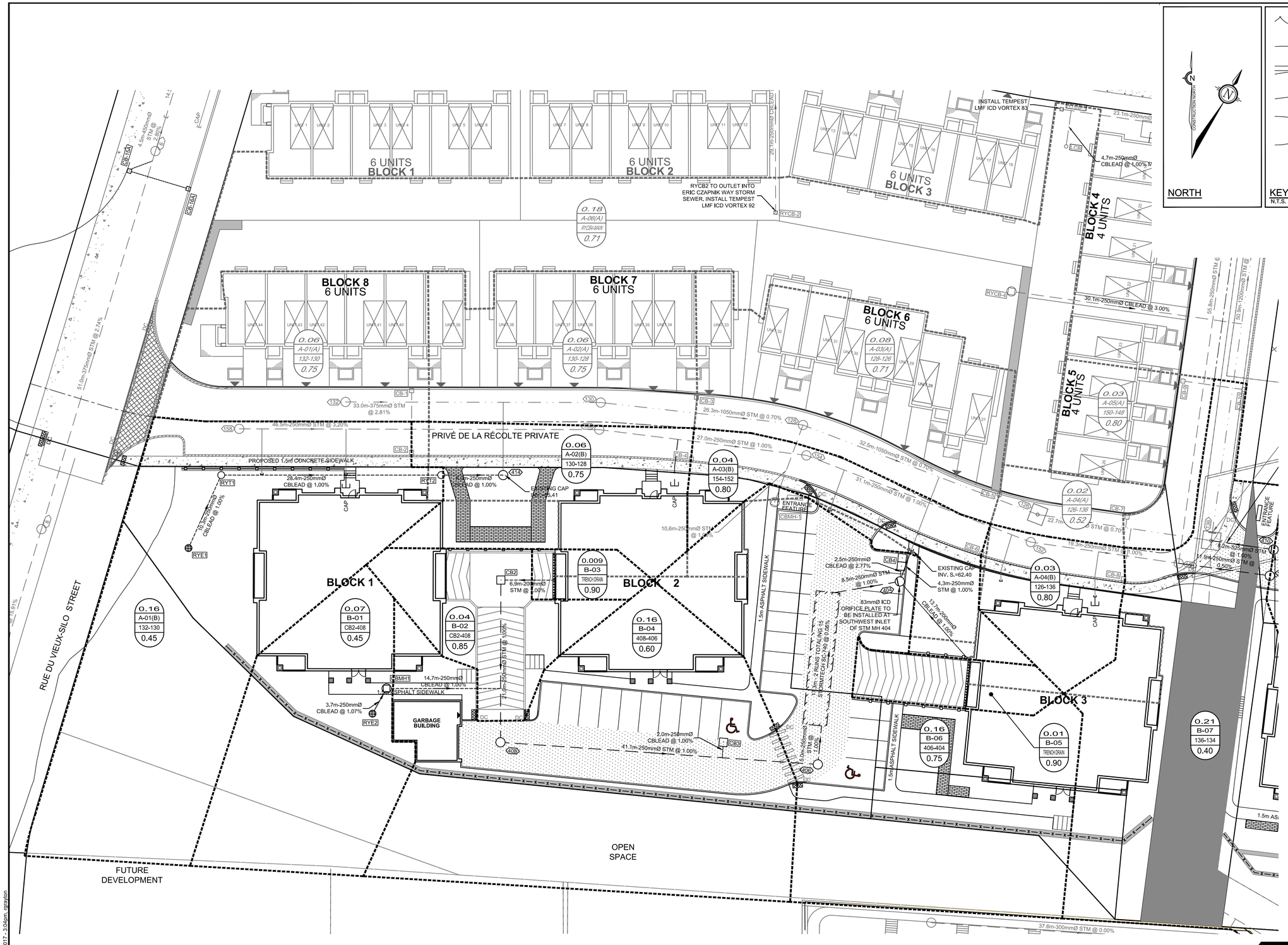

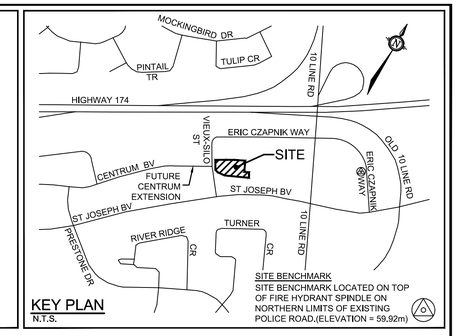

LEGEND

- A / 0.38 / 114-116 / 0.45 — AREA NUMBER; AREA (ha); MANHOLE TO MANHOLE; RUNOFF COEFFICIENT
- ????? / ????? / ????? / ?? — EXISTING AREA NUMBER; AREA (ha); MANHOLE TO MANHOLE; RUNOFF COEFFICIENT
- STORM DRAINAGE AREA BOUNDARY
- EXISTING STORM DRAINAGE AREA BOUNDARY
- STMMH 100 — PROPOSED STORM MH & SEWER WITH DIRECTION OF FLOW
- CB 2 — PROPOSED CATCHBASIN
- EXISTING STORM MH & SEWER WITH DIRECTION OF FLOW
- CB 2 — EXISTING CATCHBASIN
- CBMH — EXISTING CATCHBASIN MANHOLE
- EXISTING STORM BOX MANHOLE WITH ICD ORIFICE PLATE

PRELIMINARY

D07-12-16-0133

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APPROVED ☐ REFUSED ☐

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JEFF MCEWEN, P.ENG., MANAGER
DEVELOPMENT REVIEW, SUBURBAN SERVICES

No.	REVISION	DATE	BY
2.	ISSUED FOR SITE PLAN SUBMISSION	DEC 15/17	DDB
1.	ISSUED FOR SITE PLAN APPROVAL	AUG 26/16	KJA

SCALE 1:250 (1:250, 0 2 4 6 8 10)

DESIGN DDB
CHECKED DDB
DRAWN SAM
CHECKED DDB
APPROVED DDB

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
D.D. BLAIR
100122737
Dec 15, 2017
PROVINCE OF ONTARIO

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LOCATION
CITY OF OTTAWA
HILLSIDE VISTA WALKUP CONDOS

DRAWING NAME
STORM DRAINAGE AREA PLAN

PROJECT No. 106011
REV REV # 2
DRAWING No. 106011-ST1-WT

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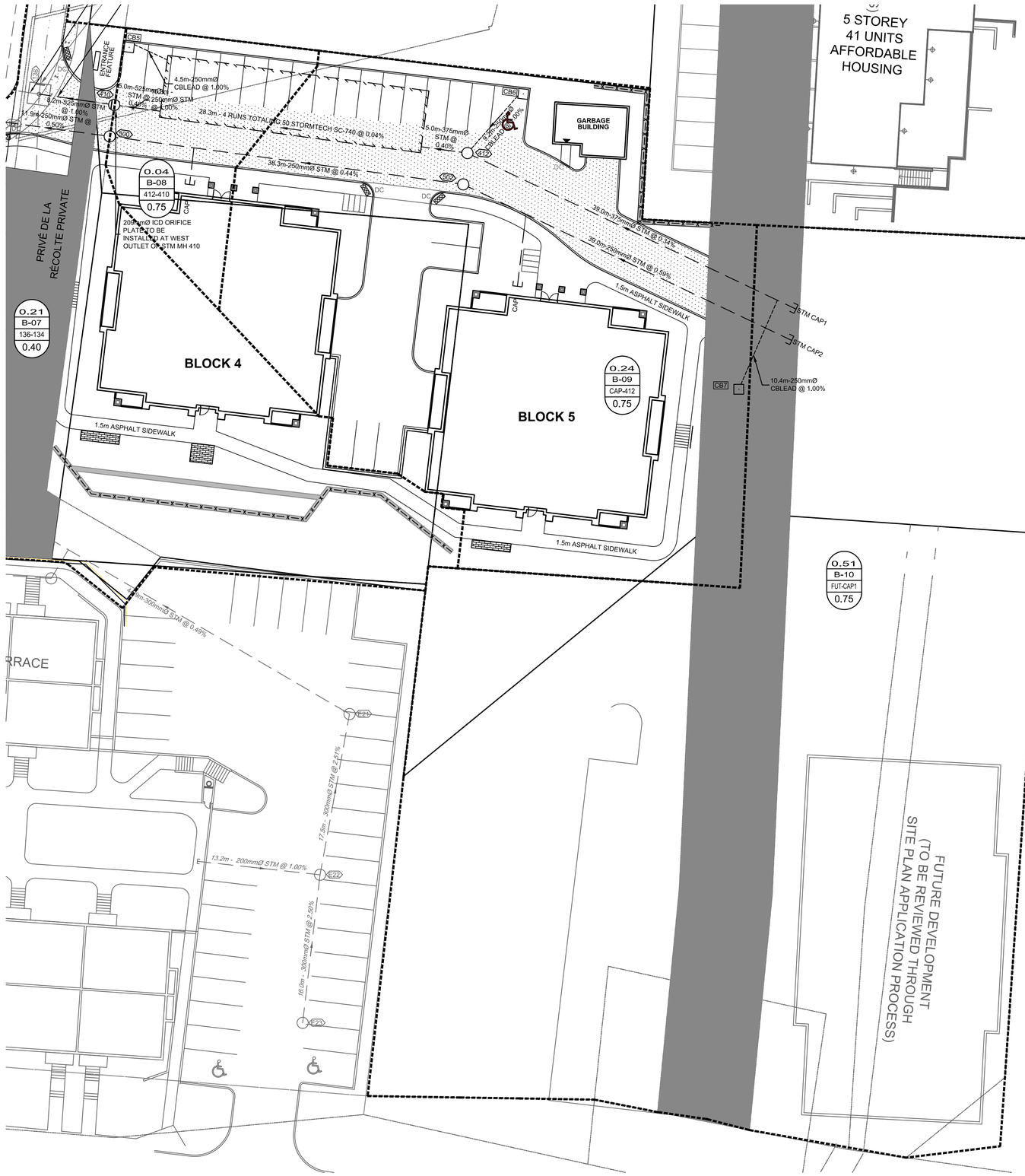

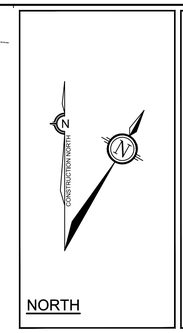

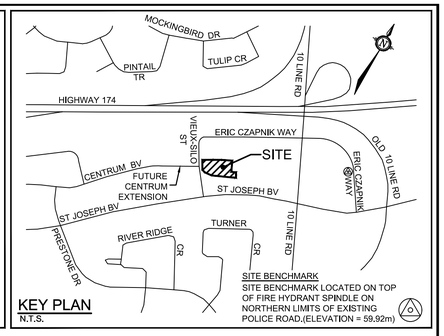

LEGEND

- A / 0.38 / 114-116 / 0.45 — AREA NUMBER; AREA (ha); MANHOLE TO MANHOLE; RUNOFF COEFFICIENT
- ????? / ????? / ????? / ?? — *EXISTING AREA NUMBER; AREA (ha); MANHOLE TO MANHOLE; RUNOFF COEFFICIENT*
- STORM DRAINAGE AREA BOUNDARY
- EXISTING STORM DRAINAGE AREA BOUNDARY
- STMMH 100 — PROPOSED STORM MH & SEWER WITH DIRECTION OF FLOW
- CB 2 — PROPOSED CATCHBASIN
- *EXISTING STORM MH & SEWER WITH DIRECTION OF FLOW*
- CB 2 — *EXISTING CATCHBASIN*
- CBMH — *EXISTING CATCHBASIN MANHOLE*
- 136 — *EXISTING STORM BOX MANHOLE WITH ICD ORIFICE PLATE*

PRELIMINARY

D07-12-16-0133

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No.	REVISION	DATE	BY
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1.	ISSUED FOR SITE PLAN APPROVAL	AUG 26/16	KJA

SCALE 1:250

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DESIGN DDB
CHECKED DDB
DRAWN SAM
CHECKED DDB
APPROVED DDB

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
D.D. BLAIR
100122737
Dec 15, 2017
PROVINCE OF ONTARIO

NOVATECH
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Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
HILLSIDE VISTA WALKUP CONDOS

DRAWING NAME
STORM DRAINAGE AREA PLAN

PROJECT No. 106011
REV REV # 2
DRAWING No. 106011-ST2-WT

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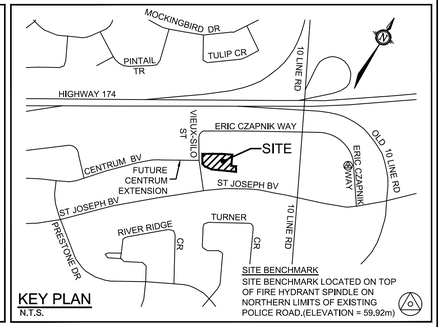

LEGEND

- AREA ID / MANHOLE TO MANHOLE / POPULATION / DRAINAGE AREA (ha)
- SANITARY DRAINAGE AREA BOUNDARY
- PROPOSED SANITARY MANHOLE & SEWER
- PROPOSED SANITARY SERVICE (Ø150mm)
- EXISTING SANITARY SERVICE TO BE EXTENDED (Ø150mm)
- EXISTING SANITARY MANHOLE & SEWER
- EXISTING ABANDONED SEWER
- EXISTING SANITARY SERVICE TO BE REMOVED (Ø150mm)

PRELIMINARY

D07-12-16-0133

NOTE:
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THIS ____ DAY OF _____, 20____

JEFF MCEWEN, P.ENG., MANAGER
DEVELOPMENT REVIEW, SUBURBAN SERVICES

No.	REVISION	DATE	BY
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1.	ISSUED FOR SITE PLAN APPROVAL	AUG 26/16	KJA

SCALE: 1:250 (1:250 0 2 4 6 8 10)

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Dec. 15, 2017
PROVINCE OF ONTARIO

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Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
HILLSIDE VISTA WALKUP CONDOS

DRAWING NAME
SANITARY DRAINAGE AREA PLAN

PROJECT No. 106011
REV REV # 2
DRAWING No. 106011-SAN1-WT

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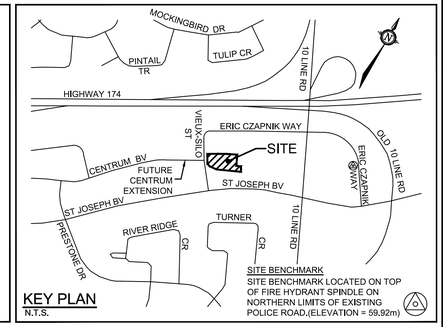
NORTH



KEY PLAN
N.T.S.

SITE BENCHMARK
SITE BENCHMARK LOCATED ON TOP OF FIRE HYDRANT SPINDLE ON NORTHERN LIMITS OF EXISTING POLICE ROAD.(ELEVATION = 59.92m)

LEGEND

- A1 / 0.36 / 173-171 / 26 56 — AREA ID; DRAINAGE AREA (HECTARES); MANHOLE TO MANHOLE; POPULATION EQUIVALENT; NUMBER OF UNITS
- SANITARY DRAINAGE AREA BOUNDARY
- 200mmØ — PROPOSED SANITARY MANHOLE & SEWER
- PROPOSED SANITARY SERVICE (Ø150mm)
- EXISTING SANITARY SERVICE TO BE EXTENDED (Ø150mm)
- 250mmØ — *EXISTING SANITARY MANHOLE & SEWER*
- *EXISTING ABANDONED SEWER*
- *EXISTING SANITARY SERVICE TO BE REMOVED (Ø150mm)*

PRELIMINARY

D07-12-16-0133

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APPROVED ☐ REFUSED ☐

THIS ____ DAY OF _____, 20____

JEFF MCEWEN, P.ENG., MANAGER
DEVELOPMENT REVIEW, SUBURBAN SERVICES

No.	REVISION	DATE	BY
2.	ISSUED FOR SITE PLAN SUBMISSION	DEC 15/17	DDB
1.	ISSUED FOR SITE PLAN APPROVAL	AUG 26/16	KJA

SCALE: 1:250 (1:250, 0 2 4 6 8 10)

DESIGN DDB
CHECKED DDB
DRAWN SAM
CHECKED DDB
APPROVED DDB

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LICENSED PROFESSIONAL ENGINEER
D.D. BLAIR
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Dec 15. 2017
PROVINCE OF ONTARIO

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LOCATION
CITY OF OTTAWA
HILLSIDE VISTA WALKUP CONDOS

DRAWING NAME
SANITARY DRAINAGE AREA PLAN

PROJECT No. 106011
REV REV # 2
DRAWING No. 106011-SAN2-WT

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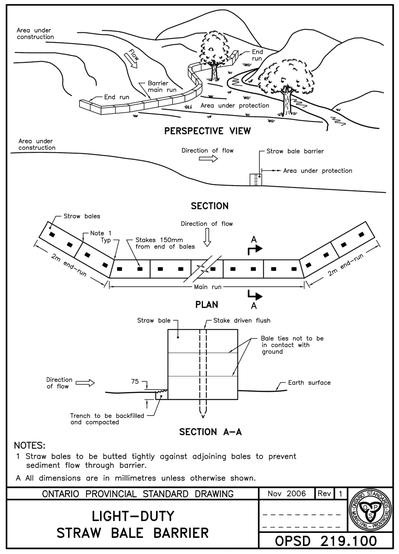
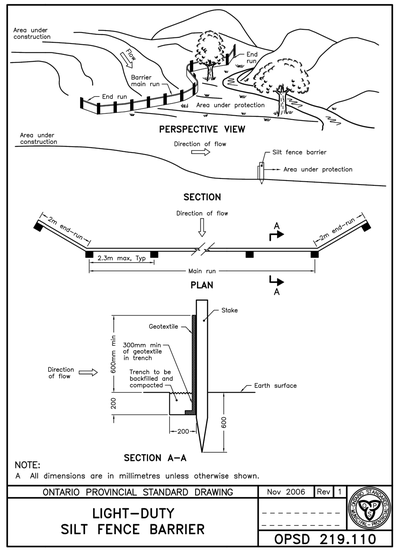
EROSION AND SEDIMENT CONTROL NOTES:

1. ALL EROSION AND SEDIMENT CONTROLS ARE TO BE INSTALLED TO THE SATISFACTION OF THE ENGINEER, THE CITY OF OTTAWA, AND THE RIDEAU VALLEY CONSERVATION AUTHORITY, THEY ARE TO BE APPROPRIATE TO THE SITE CONDITIONS, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.) AND DURING ALL PHASES OF SITE PREPARATION AND CONSTRUCTION. THESE PRACTICES ARE TO BE IMPLEMENTED IN ACCORDANCE WITH THE CURRENT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL SUCH AS BUT NOT LIMITED TO: INSTALLING INSERTS UNDER CATCHBASIN GRATES AND FILTER CLOTH UNDER MANHOLE GRATES TO PREVENT SEDIMENT FROM ENTERING THE STRUCTURE AND INSTALLING AND MAINTAINING A LIGHT DUTY SILT FENCE BARRIER AS REQUIRED AS PER OPSD 219.110.
2. TO PREVENT SURFACE EROSION FROM ENTERING THE STORM SYSTEM DURING CONSTRUCTION, INSERTS AND FILTER CLOTH WILL BE PLACED UNDER ALL PROPOSED AND NEAR BY CATCHBASINS AND MANHOLES, THE FILTER CLOTH WILL REMAIN IN PLACE UNTIL VEGETATION HAS BEEN ESTABLISHED AND CONSTRUCTION COMPLETE.
3. TO LIMIT EROSION: MINIMIZE THE AMOUNT OF EXPOSED SOILS AT ANY GIVEN TIME, RE-VEGETATE EXPOSED AREAS AND SLOPES AS SOON AS POSSIBLE AND PROTECT EXPOSED SLOPES WITH NATURAL OR SYNTHETIC MULCHES.
4. ANY ONSITE STOCKPILES SHALL BE LOCATED IN AREAS TO BE DESIGNATED BY THE ENGINEER AND WELL AWAY FROM DRAINAGE SWALES AND OUTLET DITCHES.
5. THE CONTRACTOR SHALL IMPLEMENT SEQUENTIAL MEASURES ARRANGED SO AS TO ACHIEVE THE REQUIRED LEVEL OF SEDIMENT AND RUNOFF CONTROL. SOME ONSITE MEASURES INCLUDE, BUT ARE NOT LIMITED TO: SEDIMENT PONDS, SILT FENCES, STRAW BALES, FILTER CLOTHS, CATCHBASIN INSERTS, DAMS AND/OR BERMS, OR OTHER RECOGNIZED TECHNOLOGIES, SPECIFIC MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF OPSS 805 WHERE APPROPRIATE, OR IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
6. EROSION AND SEDIMENT CONTROL MEASURES WILL BE IMPLEMENTED DURING CONSTRUCTION IN ACCORDANCE WITH THE "GUIDELINES ON EROSION AND SEDIMENT CONTROL FOR URBAN CONSTRUCTION SITES" (GOVERNMENT OF ONTARIO, MAY 1987). THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MEETING ALL REGULATORY AGENCY REQUIREMENTS.
7. WHERE, IN THE OPINION OF THE ENGINEER OR REGULATORY AGENCY, THE INSTALLED EROSION CONTROL MEASURES FAIL TO PERFORM ADEQUATELY, THE CONTRACTOR SHALL SUPPLY AND INSTALL ADDITIONAL OR ALTERNATIVE EROSION CONTROL MEASURES AS DIRECTED BY THE ENGINEER OR THE REGULATORY AGENCY, IF THE CONTRACTOR FAILS TO REVISE THE EROSION CONTROL MEASURES AS REQUESTED THE ENGINEER AND REGULATORY AGENCY HAS THE RIGHT TO IMMEDIATELY WITHDRAW ITS PERMISSION TO CONTINUE THE WORK. THE ENGINEER OR REGULATORY AGENCY MAY RENEW ITS PERMISSION TO CONTINUE THE WORK UPON BEING SATISFIED THAT THE DEFAULTS OR DEFICIENCIES HAVE BEEN RECTIFIED.
8. A VISUAL INSPECTION OF THE SEDIMENT CONTROL MEASURES WILL BE PERFORMED DAILY BY THE CONTRACTOR. THE CONTRACTOR SHALL SUBMIT TO THE CONTRACT ADMINISTRATOR WEEKLY INSPECTION REPORTS DETAILING AND PROVING THE SPECIFIED AND REQUIRED PERFORMANCE OF THE INSTALLED MEASURES, THE CONTRACTOR SHALL PERIODICALLY, AND WHEN REQUESTED BY THE ENGINEER, CLEAN OUT ACCUMULATED SEDIMENT DEPOSITS AS REQUIRED AT THE SEDIMENT CONTROL DEVICES WITHOUT DAMAGING THE DEVICES OR CAUSING DISCHARGE INTO THE SEWERS OR NEARBY WATERCOURSES.
9. THE SEDIMENT CONTROL MEASURES SHALL ONLY BE REMOVED WHEN, IN THE OPINION OF THE ENGINEER, THE MEASURE OR MEASURES, IS NO LONGER REQUIRED. NO CONTROL MEASURE MAY BE PERMANENTLY REMOVED WITHOUT PRIOR AUTHORIZATION FROM THE ENGINEER.
10. THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY ACCIDENTAL DISCHARGES OF SEDIMENT MATERIAL INTO ANY DITCH OR STORM SEWER SYSTEM. APPROPRIATE RESPONSE MEASURES, INCLUDING ANY REPAIRS TO EXISTING CONTROL MEASURES OR THE IMPLEMENTATION OF ADDITIONAL CONTROL MEASURES, SHALL BE CARRIED OUT BY THE CONTRACTOR WITHOUT DELAY.
11. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
12. ALL STREETS TO BE SWEPT WEEKLY ONCE THE ROADWAYS ARE PAVED AND TO CONTINUE FOR THE DURATION OF CONSTRUCTION, SURROUNDING EXISTING STREETS TO BE SWEPT REGULARLY AS REQUIRED OR AS DIRECTED BY THE ENGINEER AND/OR CITY OF OTTAWA.
13. THE CONTRACTOR SHALL ENSURE THAT ALL WORKS, INCLUDING SUB-CONTRACTORS, IN THE WORKING AREA ARE AWARE OF THE IMPORTANCE OF THE EROSION AND SEDIMENT CONTROL MEASURES AND INFORMED OF THE CONSEQUENCES OF THE FAILURE TO COMPLY WITH THE REQUIREMENTS OF ALL REGULATORY AGENCIES AND THE SPECIFICATIONS DETAILED HEREIN.
14. THE CONTRACTOR SHALL MONITOR ALL WEATHER FORECASTS AND SCHEDULE THE WORK IN ORDER TO MINIMIZE THE RISK OF SEDIMENT-LADEN RUNOFF ENTERING ANY WATERCOURSE OR SEWER SYSTEM.
15. THE CONTRACTOR SHALL KEEP MATERIAL FOR ADDITIONAL EROSION AND SEDIMENT CONTROLS ONSITE AT ALL TIMES, THESE MATERIALS INCLUDE BUT ARE NOT LIMITED TO: SILT FENCES, STRAW BALES, SEDIMENT BAGS AND CLEAR STONE. A CONTINGENCY PLAN TO INCLUDE THE PROVISION OF ADDITIONAL LABOUR, EQUIPMENT OR MATERIALS TO INSTALL ADDITIONAL CONTROL MEASURES, AS WELL AS PROVIDE AN EMERGENCY RESPONSE PLAN IN CASE OF AN ACCIDENTAL EVENT, AS SUCH, THE CONTRACTOR SHALL HAVE ADDITIONAL CONTROL MATERIALS ON SITE AT ALL TIMES WHICH ARE EASILY ACCESSIBLE AND MAY BE IMPLEMENTED AT A MOMENT'S NOTICE.
16. IN ADDITION TO ANY OTHER REMEDY AND/OR PENALTY PROVIDED BY LAW, WHERE THERE HAS BEEN DEFAULT OR NON-COMPLIANCE WITH ANY OF THE TERMS SPECIFIED HEREIN AND THE CONTRACTOR REFUSES TO PERFORM OR RECTIFY WITHIN FORTY-EIGHT (48) HOURS OF THE RECEIPT OF THE WRITTEN DEMAND OF THE CONTRACT ADMINISTRATOR TO DO SO, THE OWNER IS HEREBY ENTITLED TO ENTER UPON THE WORKING AREA AND EITHER COMPLETE THE WORK IN CONFORMANCE WITH THE CONTRACT OR HAVE THE WORK DONE THAT IT CONSIDERS NECESSARY TO COMPLETE THE WORK TO ITS INTENDED CONDITION, WHICHEVER, IN THE OWNER'S SOLE OPINION, IS THE MOST REASONABLE COURSE OF ACTION. THE CONTRACTOR AND THE OWNER FURTHER AGREE THAT THE COST INCURRED FOR ANY SUCH WORK SHALL BE RETAINED BY THE OWNER FROM MONIES OTHERWISE DUE TO THE CONTRACTOR.
17. MUDMATS ARE TO BE INSTALLED AND MAINTAINED AT CONSTRUCTION ACCESS POINTS TO MINIMIZE SEDIMENT TRANSFER TO EXISTING ROADWAYS.
18. ENSURE PROPER DUST CONTROL WITH (AT MINIMUM) THE APPLICATION OF WATER (AND IF REQUIRED, CALCIUM CHLORIDE) DURING DRY PERIODS.
19. IF REQUIRED, ONSITE DEWATERING TO BE DIRECTED TO A SEDIMENT TRAP AND/OR GRAVEL SPLASH PAD AND DISCHARGED SAFELY TO AN AREA AS DIRECTED BY THE ENGINEER.
20. EROSION AND SEDIMENT CONTROL MEASURES MAY BE MODIFIED IN THE FIELD AT THE DISCRETION OF CITY OF OTTAWA SITE INSPECTOR OR CONSERVATION AUTHORITY



NOTES:
1 Straw bales to be butted tightly against adjoining bales to prevent sediment flow through barrier.
A All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev. 1
LIGHT–DUTY STRAW BALE BARRIER		OPSD 219.100



NOTE:
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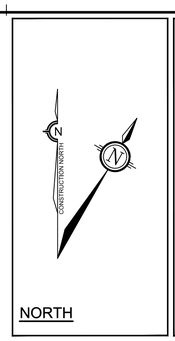
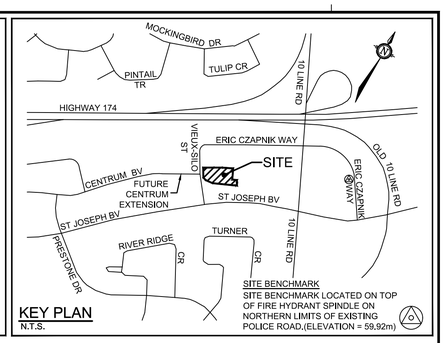
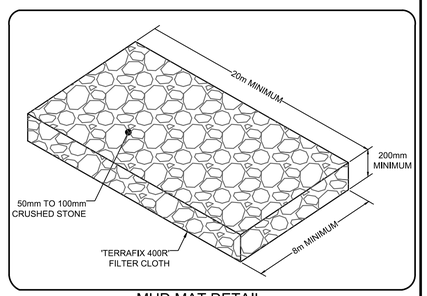
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev. 1
LIGHT–DUTY SILT FENCE BARRIER		OPSD 219.110



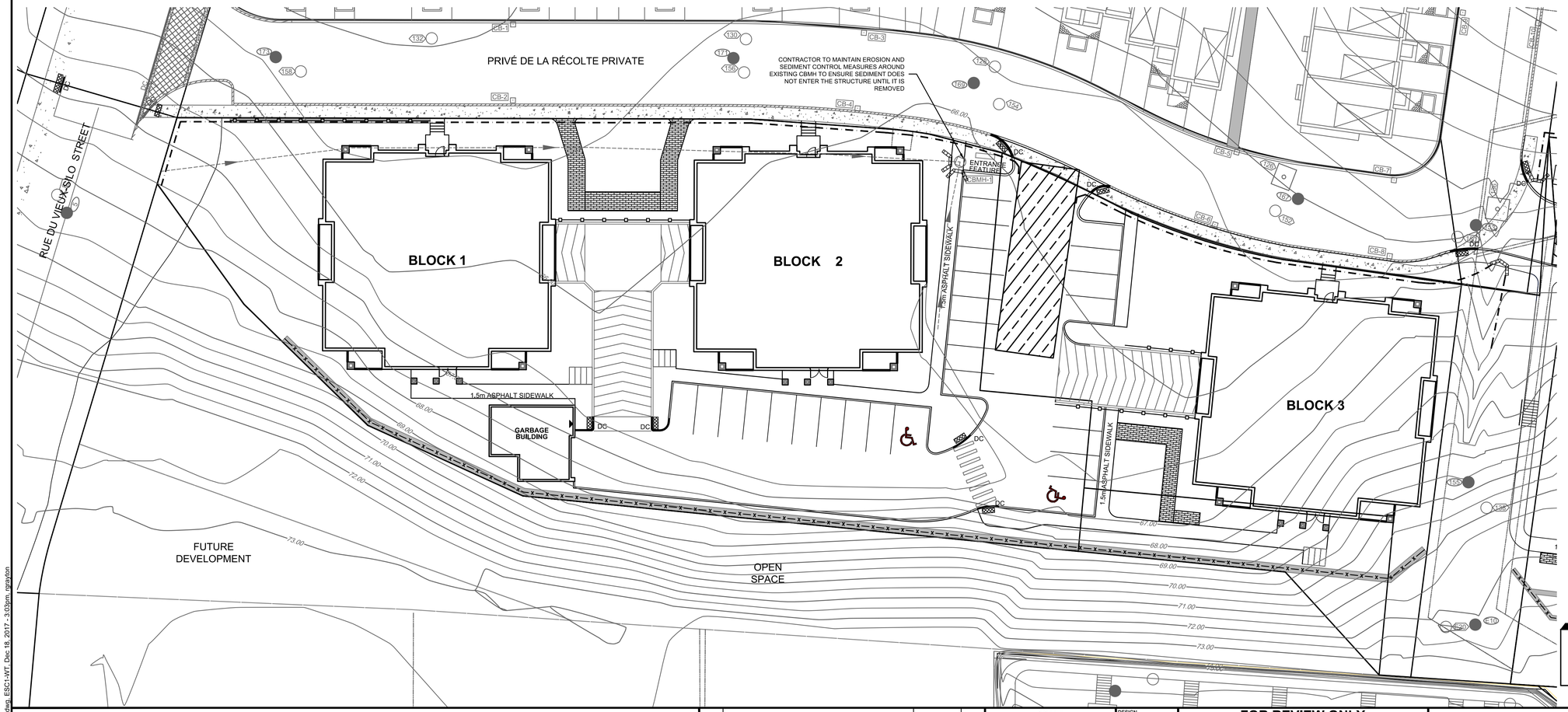


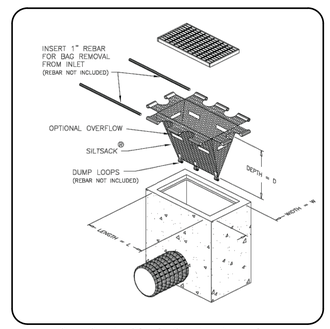
LEGEND

- SILT FENCE AS PER OPSD 219.110
- LIGHT DUTY STRAW BALE BARRIER AS PER OPSD 219.00
- PROPOSED MUD MAT
- EXISTING SWALE



MUD MAT DETAIL
N.T.S.





CATCHBASIN INSERT DETAIL
N.T.S.

PRELIMINARY

D07-12-16-0133

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

APPROVED ☐ REFUSED ☐

THIS ____ DAY OF _____, 20____

JEFF MCEWEN, P.ENG., MANAGER
DEVELOPMENT REVIEW, SUBURBAN SERVICES

No.	REVISION	DATE	BY
2.	ISSUED FOR SITE PLAN SUBMISSION	DEC 15/17	DDB
1.	ISSUED FOR SITE PLAN APPROVAL	AUG 26/16	DDB

SCALE: 1:250 (1:250, 0 2 4 6 8 10)

DESIGN DDB
CHECKED DDB
DRAWN SAM
CHECKED DDB
APPROVED DDB

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
D.D. BLAIR
100122737
Dec 15, 2017
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
HILLSIDE VISTA WALKUP TOWNS

DRAWING NAME
EROSION AND SEDIMENT CONTROL PLAN

PROJECT No. 106011
REV REV # 2
DRAWING No. 106011-ESC1-WT

C:\Temp\AcPublish_6396\106011-WT-ESC.dwg, ESC1-WT, Dec 18, 2017 - 3:03pm, rgraydon

PLANAT.DWG - 841mmx594mm

EROSION AND SEDIMENT CONTROL NOTES:

1. ALL EROSION AND SEDIMENT CONTROLS ARE TO BE INSTALLED TO THE SATISFACTION OF THE ENGINEER, THE CITY OF OTTAWA, AND THE RIDEAU VALLEY CONSERVATION AUTHORITY. THEY ARE TO BE APPROPRIATE TO THE SITE CONDITIONS, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.) AND DURING ALL PHASES OF SITE PREPARATION AND CONSTRUCTION. THESE PRACTICES ARE TO BE IMPLEMENTED IN ACCORDANCE WITH THE CURRENT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL SUCH AS BUT NOT LIMITED TO: INSTALLING INSERTS UNDER CATCHBASIN GRATES AND FILTER CLOTH UNDER MANHOLE GRATES TO PREVENT SEDIMENT FROM ENTERING THE STRUCTURE AND INSTALLING AND MAINTAINING A LIGHT DUTY SILT FENCE BARRIER AS REQUIRED AS PER OPSD 219.110.
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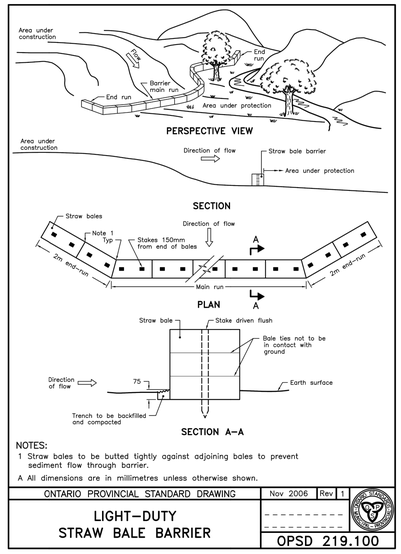

NOTES:
1 Straw bales to be butted tightly against adjoining bales to prevent sediment flow through barrier.
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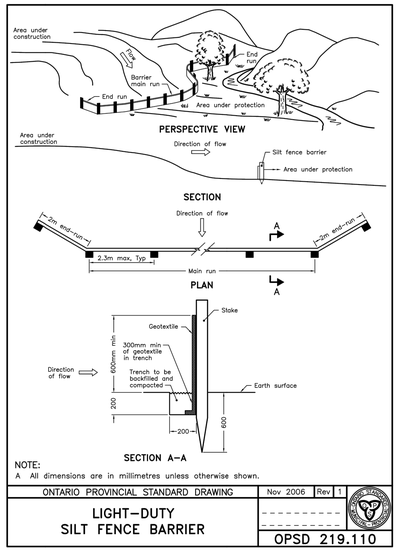
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev. 1
LIGHT–DUTY STRAW BALE BARRIER		OPSD 219.100



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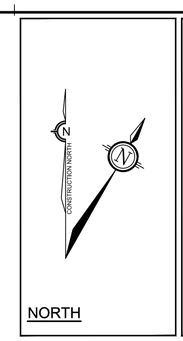
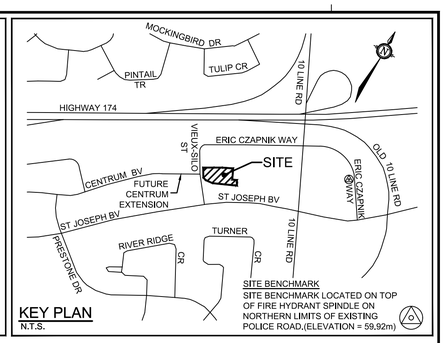
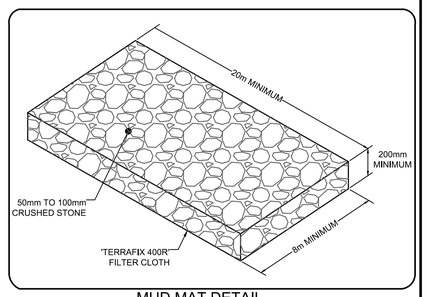
ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev. 1
LIGHT–DUTY SILT FENCE BARRIER		OPSD 219.110





LEGEND

- SILT FENCE AS PER OPSD 219.110
- LIGHT DUTY STRAW BALE BARRIER AS PER OPSD 219.00
- PROPOSED MUD MAT
- EXISTING SWALE



MUD MAT DETAIL
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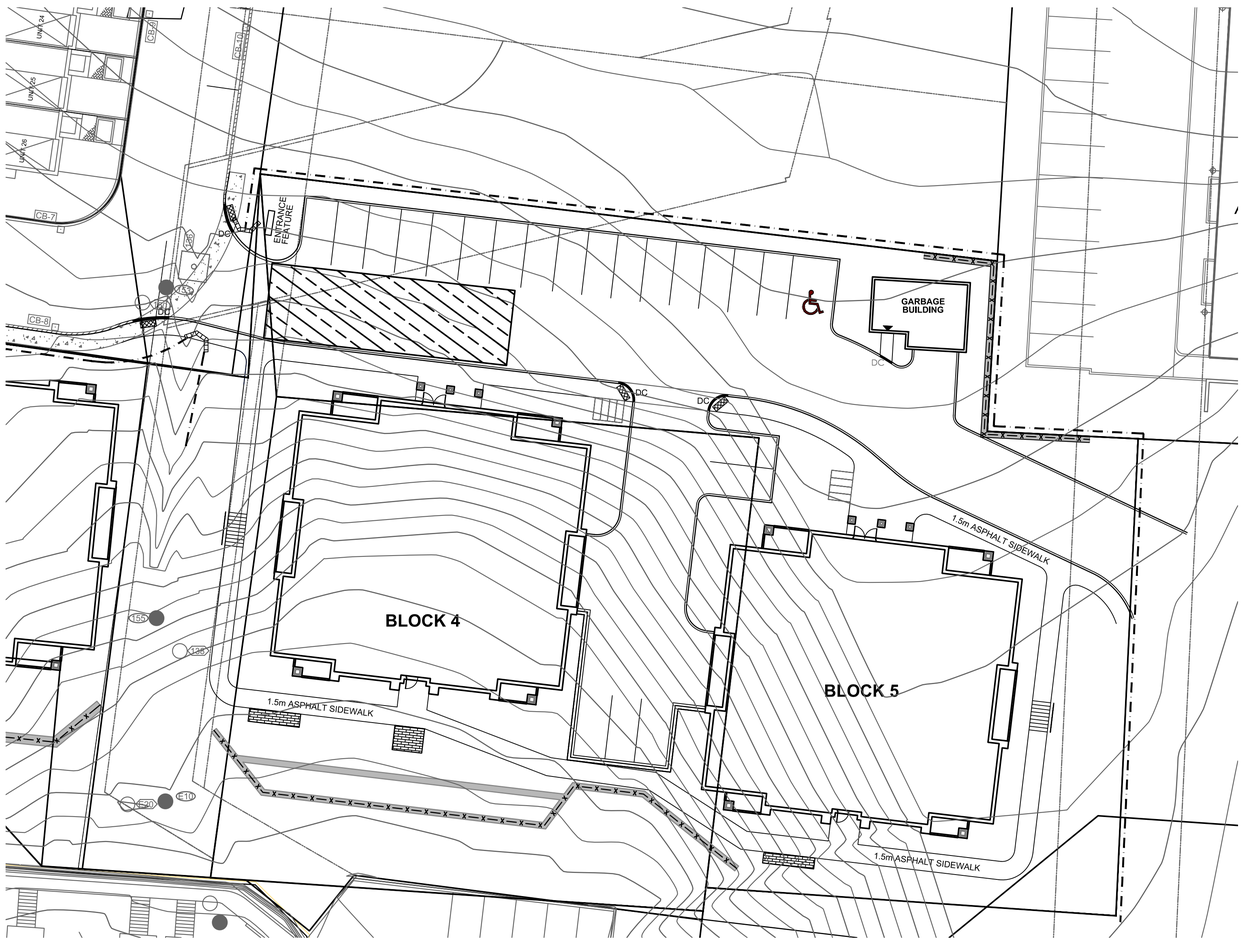

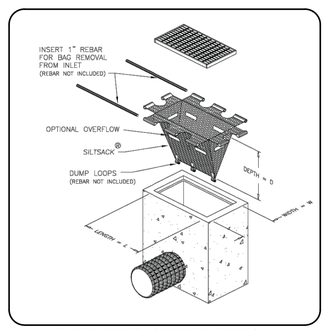

CATCHBASIN INSERT DETAIL
N.T.S.

PRELIMINARY

D07-12-16-0133

NOTE:
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APPROVED ☐ REFUSED ☐

THIS ____ DAY OF _____, 20____

JEFF MCEWEN, P.ENG., MANAGER
DEVELOPMENT REVIEW, SUBURBAN SERVICES

No.	REVISION	DATE	BY
2.	ISSUED FOR SITE PLAN SUBMISSION	DEC 15/17	DDB
1.	ISSUED FOR SITE PLAN APPROVAL	AUG 26/16	DDB

SCALE: 1:250 (1:250 0 2 4 6 8 10)

DESIGN DDB
CHECKED DDB
DRAWN SAM
CHECKED DDB
APPROVED DDB

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER D.D. BLAIR 100122737 Dec 15, 2017 PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
CITY OF OTTAWA
HILLSIDE VISTA WALKUP TOWNS

DRAWING NAME
EROSION AND SEDIMENT CONTROL PLAN

PROJECT No. 106011
REV REV # 2
DRAWING No. 106011-ESC2-WT

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