ADEQUACEY OF PUBLIC SERVICING REPORT

3996 Innes Road, Ottawa

Prepared by

EAU Structural & Environmental Services

Ottawa, Ontario, K1Y 4P9
Phone: 613 869 0523
Email: derrick.r.clark@rogers.com

Revision 2
March , 2023

1 Project Description:

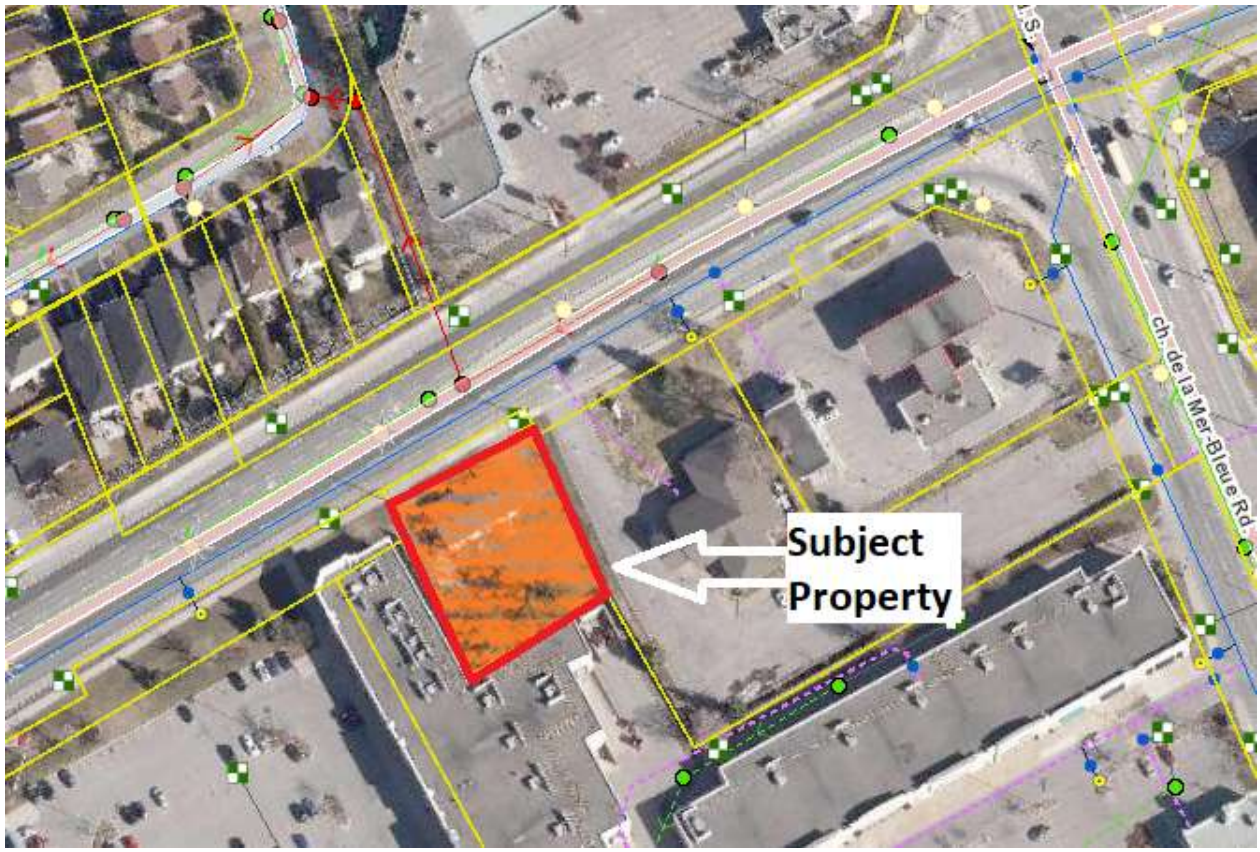
1.1. Introduction:

The property at 3996 Innes Road is located close to intersection of Mer Bleue Road and Innes Rd. The existing lot is 0.15 hectare, currently, contains a one story buildings built in circa 1970. It is proposed that the existing building to be demolished and a new 5-storey commercial/residential building be constructed. Property at 3996 Innes Road is currently zoned as AM (Arterial Mainstreet Zoning) which suits for the purpose of proposed development.

This report will address the servicing requirements associated with the proposed development located at 3996 Innes Road within the City of Ottawa. This report is prepared in response to the request from City of Ottawa Planning department.

1.2. Existing Conditions:

The property measures a total area of approximately 0.15 hectare. The site is fronting 610mm diameter DI water main, 250mm diameter PVC sanitary main and 600mm diameter concrete storm main.



2 Guidelines, Previous Studies, And Reports

The following studies were utilized in the preparation of this report:

- Ottawa Sewer Design Guidelines,
  City of Ottawa, SDG002, October 2012.
  (City Standards)
  - Technical Bulletin ISTB-2018-01
    City of Ottawa, March 21, 2018.
    (ISTB-2018-01)
  - Technical Bulletin ISTB-2018-04
    City of Ottawa, June 27, 2018.
    (ISTB-2018-04)

- Ottawa Design Guidelines Water Distribution
  City of Ottawa, July 2010.
  (Water Supply Guidelines)
  - Technical Bulletin ISD-2010-2
    City of Ottawa, December 15, 2010.
    (ISD-2010-2)
  - Technical Bulletin ISDTB-2014-02
    City of Ottawa, May 27, 2014.
    (ISDTB-2014-02)
  - Technical Bulletin ISTB-2018-02
    City of Ottawa, March 21, 2018.
    (ISTB-2018-02)

- Design Guidelines for Sewage Works,
  Ministry of the Environment, 2008.
  (MOE Design Guidelines)

- Stormwater Planning and Design Manual,
  Ministry of the Environment, March 2003.
  (SWMP Design Manual)

- Ontario Building Code Compendium
  Ministry of Municipal Affairs and Housing Building Development Branch,
  January 1, 2012 Update. (OBC)

- Geotechnical Report
  Prepared by Paterson Group
  Report Number: PG5925-1
  Dated, November 17, 2021

3 Water Supply

Residential Water Demand:

The water demand is calculated based on the City of Ottawa Water Distribution Design Guidelines as follows:

Demand Type	Amount	Units
Commercial and Institutional		
- Shopping Centres	2500	L/(1000m^2/d)
- Hospitals	900	L/(bed/day)
- Schools	70	L/(Student/d)
- Trailer Parks no Hook-Ups	340	L/(space/d)
- Trailer Parks with Hook-Ups	800	L/(space/d)
- Campgrounds	225	L/(campsite/d)
- Mobile Home Parks	1000	L/(Space/d)
- Motels	150	L/(bed-space/d)
- Hotels	225	L/(bed-space/d)
- Tourist Commercial	28,000	L/gross ha/d
- Other Commercial	28,000	L/gross ha/d
Maximum Daily Demand		
Residential	2.5 x avg. day	L/c/d
Industrial	1.5 x avg. day	L/gross ha/d
Commercial	1.5 x avg. day	L/gross ha/d
Institutional	1.5 x avg. day	L/gross ha/d
Maximum Hour Demand		
Residential	2.2 x avg. day	L/c/d
Industrial	1.8 x avg. day	L/gross ha/d
Commercial	1.8 x avg. day	L/gross ha/d
Institutional	1.8 x avg. day	L/gross ha/d

- Residential occupancy :

1.4 persons per 18 bedroom apartment
2.1 persons per 2 bedroom apartment

 18 x 1.4 + 2 x 2.1 = 29.4

Total Residential Occupancy = 29.4 persons rounded up to 30 persons

Residential Average Daily Demand = 280 L/c/d.
 Average daily demand of 280 L/c/day x 30 persons =8400 Liters/day

- Commercial occupancy :

 28000 x 0.15 = 4200 L/d

Total Demand : 8400 + 4200 = 12,600 L/d or 0.15 L/s

- Maximum daily demand (factor of 2.5) is 0.15 L/s x 2.5 = 0.375 L/s
- Peak hourly demand (factor of 2.2) = 0.375 L/s x 2.2 = 0.825 L/s

Fire Fighting Requirement

Based on Fire Underwriter Survey Method

Fire flow protection requirements were calculated as per the Fire Underwriter's Survey (FUS). Please see next page.

Based on calculation, 145 L/S required duration 2.5 hours. In fact, any fire hydrant in the City of Ottawa has minimum of 150L/S capacity. Knowing the fact that the closest fire hydrant is 30m from the frontage property lines, we can assure that there is enough capacity for the proposed development. The boundary condition is requested and here is the result:

Demand Scenario	Head (m)	Pressure[1] (psi)	KPa
Maximum HGL	130.3	56.5	390
Peak Hour	127.0	51.8	358
Max Day plus Fire #1	128.5	53.9	372
Max Day plus Fire #2	127.6	52.7	363

1. Consult proposed connection to the 610mm transmission main with Drinking Water Services

Analyzing results:

- Ground Elevation = 90.50 m

Floor Elevation	Head (m)	Pressure (KPa) at Each Floor
Ground Floor EL. = 90.50m	127	358
Second Floor EL. = 92.90m	124.6	334
Third Floor EL. = 95.30m	122.2	311
Fourth Floor EL. = 97.70m	119.8	287
Fifth Floor EL. = 100.10m	117.4	264

Based on City of Ottawa Design Guidelines – Water Distribution, minimum water pressure of 275KPa is required for domestic use. From the above table, the fifth floor water pressure is slightly less that the minimum requirement. Note that due to the presence of the sprinkler, the size of water later is proposed to be 100mm diameter connecting to existing 610mm diameter DI water main on Innes road. Due to a large lateral connect for this size of the building, the water supply would adequate for the entire development.

Fire Flow Calculations as per Fire Underwriter's Survey Guidelines

F=220C√A

where

F= Required fire flow in L/min

C= Coefficient related to the type of construction

A= Total floor area in m²

Address:

File No.:

C

Coefficient Related to Type of Construction		C-Value
• Wood Frame Construction	☐	1.5
• Ordinary Construction	☑	1.0
• Non-Combustible Construction	☐	0.8
• Fire-Resistive Construction	☐	0.6

C = 1.0

A

Total Floor Area (m²)

32095.5 ft² ◄► **2981.77** m²

F

Required Fire Flow (L/min)

= 220·C·√A

= **12013** L/min

Occupancy Reductions or Surcharges

• Non-Combustible	☑	-25%
• Limited Combustible	☐	-15%
• Combustible	☐	0%
• Free Burning	☐	15%
• Rapid Burning	☐	25%
		-25%

9010 L/min

Sprinkler Reduction

• Adequately Designed System	☑	-30%
• Water Supply is Standard	☐	-10%
• Fully Supervised System	☐	-10%
		-30%

9010 L/min

Reduction: 2703 L/min

Fire Flow **6307 L/min**

Exposure Surcharge

Distance	Charge	# of Sides	
• 0 to 3m	25%		
• 3.1 to 10m	20%	1	20%
• 10.1 to 20m	15%		
• 20.1 to 30m	10%	1	10%
• 30.1 to 45m	5%	2	10%
			40%

6307 L/min

Surcharge: 2523 L/min

Fire Flow: **8830 L/min**

REQUIRED FIRE FLOW

Cannot exceed 45,000 L/min nor be less than 2,000 L/min

8830 L/min

or 147 L/s

or 1942 IGPM

4 Sanitary Sewage

Sanitary Sewage Calculation

Design Flows

- Residential occupancy :

1.4 persons per 18 bedroom apartment
2.1 persons per 2 bedroom apartment

 18 x 1.4 + 2 x 2.1 = 29.4

Total Residential Occupancy = 29.4 persons rounded up to 30 persons

Residential Average Daily Demand = 280 L/c/d.
 Average daily demand of 280 L/c/day x 30 persons =8400 Liters/day

- Commercial occupancy :

 28000 x 0.15 = 4200 L/d

Total: 8400 + 4200 = 12,600 L/d or 0.15 L/s

Peaking Factor = 1 + 14/(4 + (7/ 1000)^0.5)*0.8 = 3.54 *use 4 maximum

Q Peak Domestic = 0.15 L/sec x 4.0 = 0.6 L/sec

Infiltration

Q Infiltration = 0.33 L/S/Gross hectare x 0.15 ha = 0.05 L/sec

Total Peak Sanitary Flow = 0.6 + 0.05 = 0.65 L/sec

The Ontario Building Code specifies minimum pipe size and maximum hydraulic loading for sanitary sewer pipe. OBC 7.4.10.8 (2) states "Horizontal sanitary drainage pipe shall be designed to carry no more than 65% of its full capacity." A 200mm diameter sanitary service with a minimum slope of 1.0% has a capacity of 65.0 Litres per second. The maximum peak sanitary flows for the site is 0.65 L/s. Since 0.65 L/s is much less than 0.65 x65.0 = 42.3 L/s, therefore, 200mm diameter PVC pipe will be satisfactory.

Sewage discharges will be domestic in type and in compliance with the Ontario Building Code. The proposed service connection from the proposed building will be made to the existing sanitary sewer on Innes Road. The proposed service will be a 200mm diameter PVC pipe installed at a minimum slope of 1%.

The peak sanitary flow from the proposed development is less than 10 percent of the capacity of the existing sanitary. As such the proposed increase in sanitary flow as a result of the construction of the proposed building is negligible and there is sufficient available capacity for the proposed development.

5 Geotechnical Report Recommendation

The Geotechnical report, prepared by Patersongroup Inc., recommends that a perimeter foundation drainage system be provided for the proposed structures. The system should consist of a 100 to 150 mm diameter perforated, corrugated plastic pipe which is surrounded on all sides by 150 mm of 19 mm clear crushed stone and is placed at the footing level around the exterior perimeter of the structure.All other Geotechnical recommendation shall be implemented on its entire context.

6 Conclusions

This report addresses the storm water management of the proposed site. The following list below itemizes the conclusions of this report.

- The allowable release rate for the site and required storage volume for 5year and 100year storm event calculated.
- Runoff from the roof and parking area will be retained in the parking and driveway area then discharged to the City storm system via an ICD
- During all construction activities, erosion and sedimentation shall be controlled be techniques outlined in this report.

Should you have any question, do not hesitate to let us know.

Yours truly,
Derrick R. Clark, P. Eng.

APPENDIX A:

GeoOttawa Map

NORTH
ch. de la Mer-Bleue Rd
ch. de la Mer-Bleue Rd

APPENDIX B:

Correspondents

Boundary Conditions
3996 Innes Road

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	9	0.15
Maximum Daily Demand	22.5	0.375
Peak Hour	49.5	0.825
Fire Flow Demand #1	8700	145
Fire Flow Demand #2	12000	200

Location

Results

Connection 1 – Innes Road

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.3	56.5
Peak Hour	127.0	51.8
Max Day plus Fire #1	128.5	53.9
Max Day plus Fire #2	127.6	52.7

Ground Elevation = 90.5 m

Results

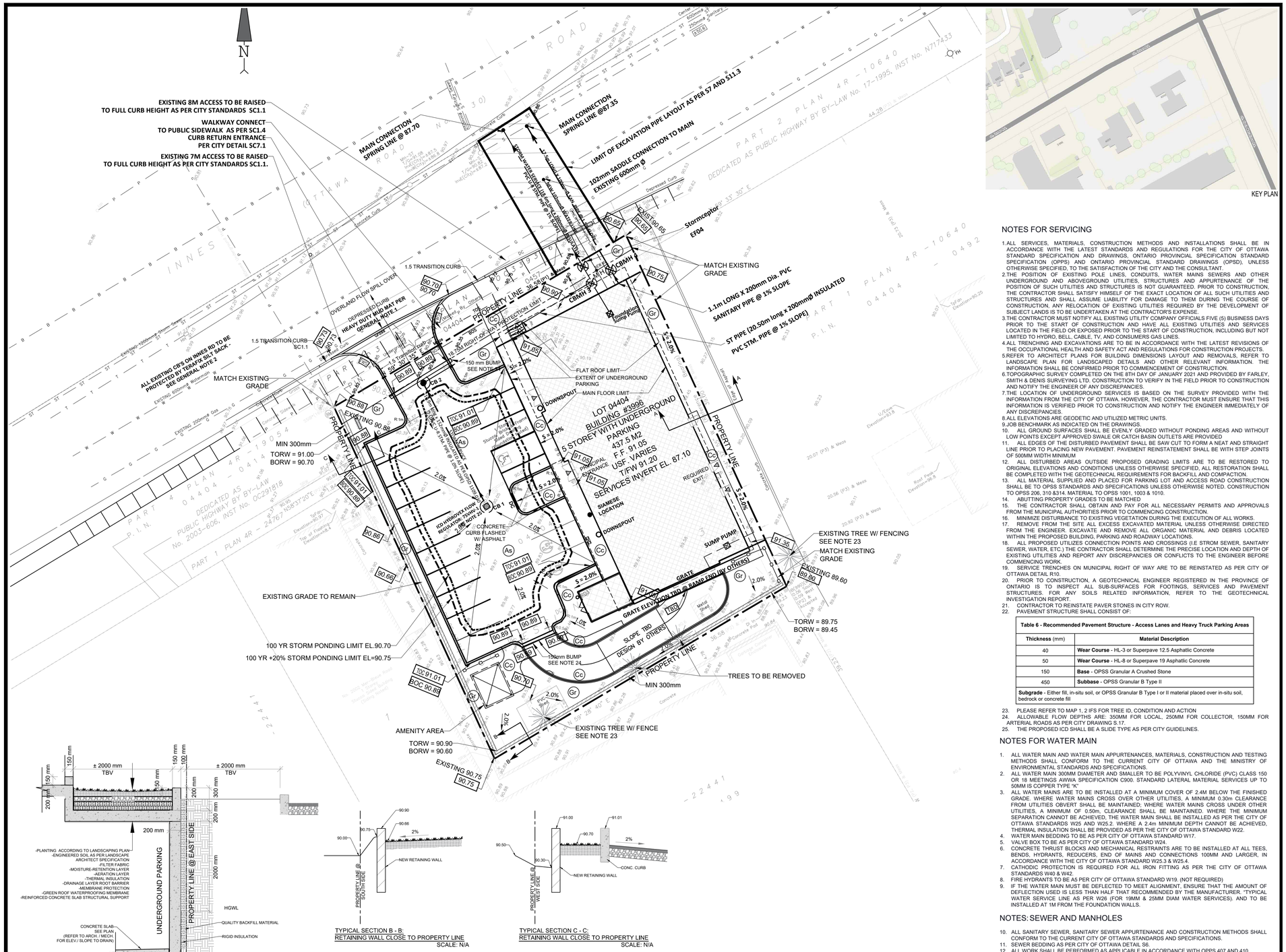
1. Consult proposed connection to the 610mm transmission main with Drinking Water Services

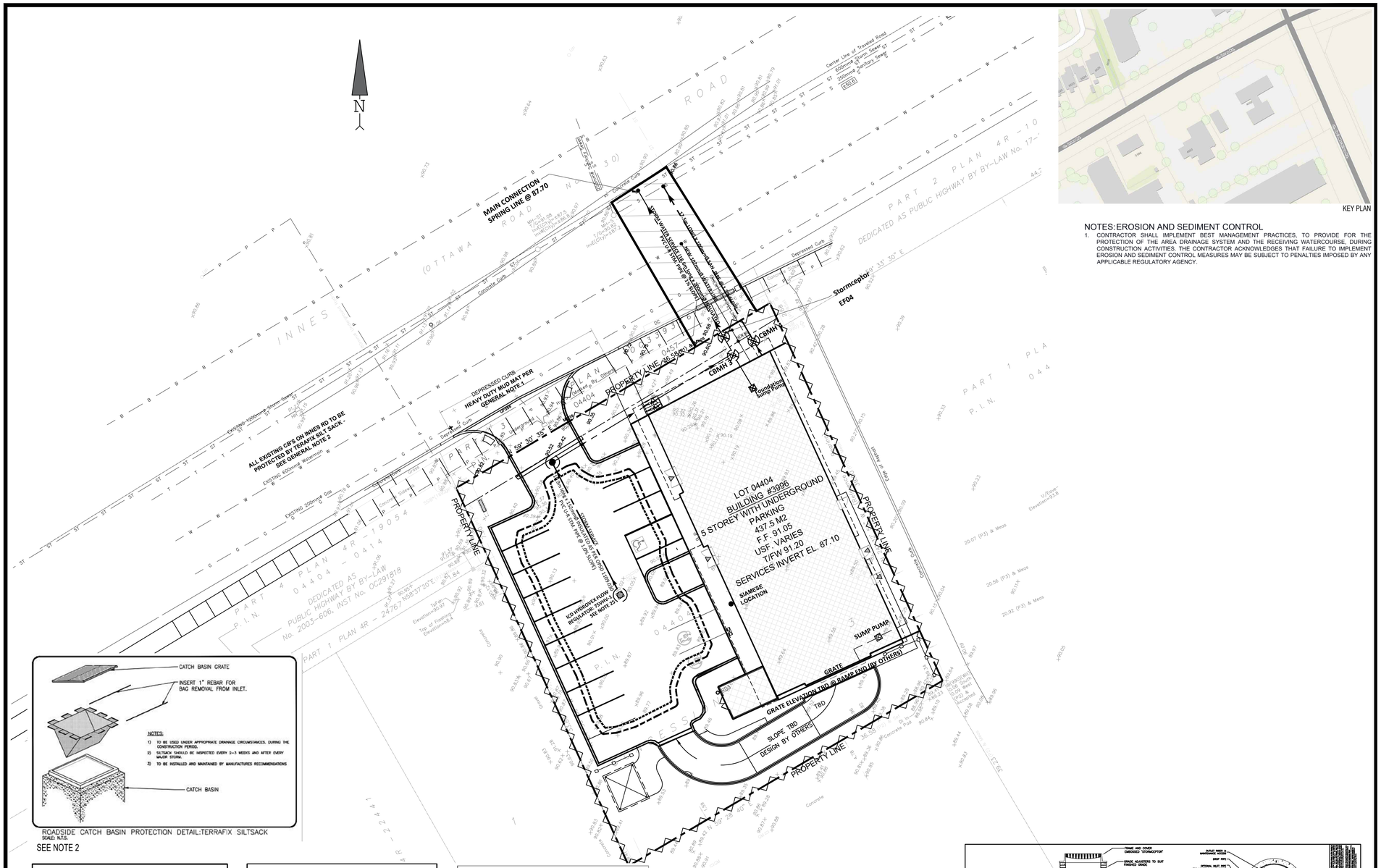
Disclaimer

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.

APPENDIX C:

Engineering Drawings

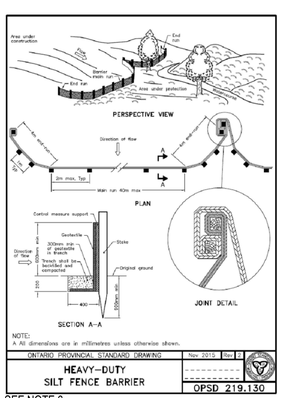

EXISTING 8M ACCESS TO BE RAISED TO FULL CURB HEIGHT AS PER CITY STANDARDS SC1.1
WALKWAY CONNECT TO PUBLIC SIDEWALK AS PER SC1.4
CURB RETURN ENTRANCE PER CITY DETAIL SC7.1
EXISTING 7M ACCESS TO BE RAISED TO FULL CURB HEIGHT AS PER CITY STANDARDS SC1.1.
MAIN CONNECTION SPRING LINE @ 87.70
MAIN CONNECTION SPRING LINE @87.35
LIMIT OF EXCAVATION PIPE LAYOUT AS PER S7 AND S11.3
102mm SADDLE CONNECTION TO MAIN
EXISTING 600mm Ø
ASPHALT WALKWAY SLOPES AWAY FROM BUILDING
TOP OF WALL ELEVATION=90.75
INVERT OF WALL ELEVATION=90.25
Stormceptor EF04
EXISTING 90.65
EXISTING 90.65
MATCH EXISTING GRADE
1.1m LONG X 200mm Dia. PVC SANITARY PIPE @ 1% SLOPE
ST PIPE (20.50m long x 200mmØ INSULATED PVC STM. PIPE @ 1% SLOPE)
1.5 TRANSITION CURB
OVERLAND FLOW SPILL OVER
DEPRESSED CURB
HEAVY DUTY MUD MAT PER GENERAL NOTE 1
1.5 TRANSITION CURB SC1.1
ALL EXISTING CB'S ON INNES RD TO BE PROTECTED BY TERRAFIX SILT SACK SEE GENERAL NOTE 2
EXISTING 600mm Watermain
EXISTING 250mm Gas
EXISTING 200mm Gas
MATCH EXISTING GRADE
PROPERTY LINE
1.5 Transition Curb
1.8 HEIGHT OF WALL
150 mm BUMP SEE NOTE 24
FLAT ROOF LIMIT
EXTENT OF UNDERGROUND PARKING
MAIN FLOOR LIMIT
DOWNSPOUT
LOT 04404
BUILDING #3996
5 STOREY WITH UNDERGROUND PARKING
437.5 M2
F.F. 91.05
USF VARIES
T/FW 91.20
SERVICES INVERT EL. 87.10
PRINCIPAL ENTRANCE
SIAMESE LOCATION
REQUIRED EXIT
PROPERTY LINE
MIN 300mm
TORW = 91.00
BORW = 90.70
EXISTING 90.88
CB 2
CB 1
ICD HYDROVEX FLOW REGULATOR, FLOW=1.5 L/s (SEE NOTE 20)
CONCRETE CURB FLASHED W/ ASPHALT
SUMP PUMP
GRATE
GRATE ELEVATION TBD @ RAMP END (BY OTHERS)
SLOPE TBD DESIGN BY OTHERS
EXISTING TREE W/ FENCING SEE NOTE 23
MATCH EXISTING GRADE
EXISTING 89.60
TORW = 89.75
BORW = 89.45
EXISTING GRADE TO REMAIN
100 YR STORM PONDING LIMIT EL.90.70
100 YR +20% STORM PONDING LIMIT EL=90.75
150mm BUMP SEE NOTE 24
TREES TO BE REMOVED
MIN 300mm
AMENITY AREA
TORW = 90.90
BORW = 90.60
EXISTING 90.75
EXISTING TREE W/ FENCE SEE NOTE 23
TOC 91.01
BOC 90.89
INNES ROAD
PART 1 PLAN 4R - 10640
PART 2 PLAN 4R - 10640
PART 1 PLAN 4R - 24767
PART 4 PLAN 4R - 24767
PART 1 PLAN 4R - 19904
PART 4 PLAN 4R - 04404
PART 1 PLAN 4R - 04404
PART 1 PLAN 4R - 04392
PART 1 PLAN 4R - 04392
PART 1 PLAN 4R - 04392



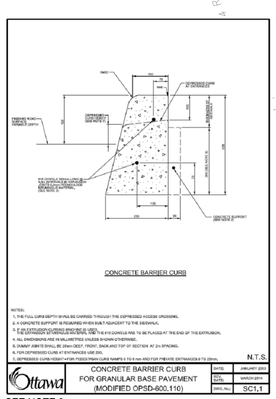
NOTES: EROSION AND SEDIMENT CONTROL

1. CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR THE PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.

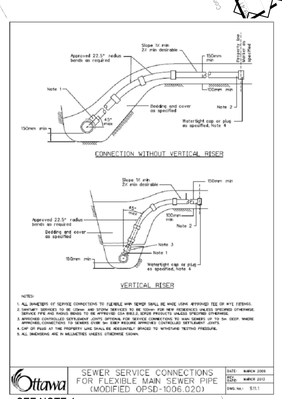
ROADSIDE CATCH BASIN PROTECTION DETAIL: TERRAFIX SILTSACK
SCALE: N.T.S.
SEE NOTE 2



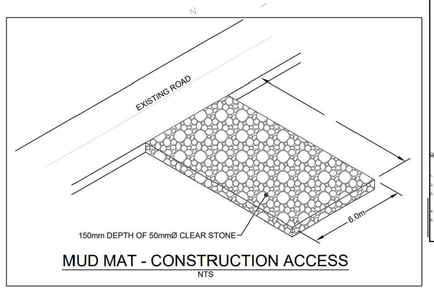
SEE NOTE 6



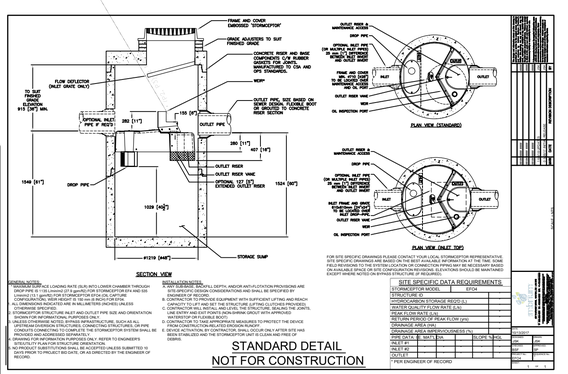
SEE NOTE 3



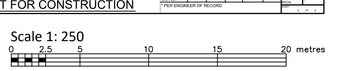
SEE NOTE 4



SEE NOTE 1



SEE NOTE 5



Structural Environmental Services

Derrick Clark PEng
EAU Structural & Environnemental Svs
tel., 613 869 0523, derrick.r.clark@rogers.com

Consultants

PTabet architecte
2232 rue Saint-Louis, Gatineau QC J8T 5L6
t.: 819.568.3994
c.: 613.797.5375
pierretabetarchitecte.com

No	DATE	ISSUED FOR	App.
1	2022/09/14	SITE PLAN CONTROL	D.K.
2	2022/12/31	PER CITY REVIEW	D.R.C
3	2023/03/30	PER CITY REVIEW	D.R.C
4			
5			

GENERAL NOTES & LEGEND:

- PROPERTY LINE
- SILT FENCE PER OPSD 219.130
- PROPOSED BUILDING ENVELOPE
- EXISTING FIRE HYDRANT
- DC — PROPOSED CONCRETE CURB WITH DEPRESSION
- HP — EXISTING HYDRO POLE
- +XX.XX — EXISTING GROUND ELEVATION
- PROPOSED ELEVATION
- PROPOSED DOOR ENTRANCE
- X.X% — DIRECTION AND SLOPE OF SURFACE WATER FLOW
- F.F. — PROPOSED FINISHED FLOOR ELEVATION
- USF — PROPOSED UNDERSIDE OF FOOTING ELEVATION
- BM — SITE BENCHMARK SITE BENCHMARK 2 NAILS IN UTILITY POLE ELEVATION=91.06
- TORW — PROPOSED TOP OF RETAINING WALL
- BORW — PROPOSED BOTTOM OF RETAINING WALL
- 100 YEAR STORM PONDING LIMIT CONTOUR LINE
- 100 YEAR + 20% STORM PONDING LIMIT CONTOUR LINE
- As — ASPHALT
- Cc — CONCRETE
- Gr — GRASS
- TREE

1. HEAVY DUTY MUD MAT IS REQUIRED AT SITE ENTRANCE
2. ALL CB TO BE PROTECTED WITH TERAFIX SILT SACK
3. CONCRETE BARRIER CURB PER OPSD 600.110
4. SEWER/STORM LATERAL CONNECTIONS PER OPSD 1006.020
5. THE CONTRACTOR IS REQUIRED TO GET WRITTEN PERMISSION FROM ADJACENT PROPERTY OWNERS FOR WORK OUTSIDE THE PROPERTY LINE.
6. HEAVY DUTY SILT FENCE PER OPSD 219.136.
7. THE FOLLOWING DOCUMENTS HAVE BEEN REVIEWED
   - CITY OF OTTAWA STANDARD TENDER DOCUMENTS FOR UNIT PRICE (DO-006F 1004&F1005)
   - GUIDELINES ON EROSION & SEDIMENT CONTROL FOR URBAN SITES, MAY 1987.
8. ENVIROMENTAL GUIDELINES FOR ACCESS ROADS & WATER CROSINGS BY O.M.N.R.

Stamp

LICENSED PROFESSIONAL ENGINEER — D. R. CLARK — PROVINCE OF ONTARIO

C2

Project

ORLEANS RESIDENTIAL & MEDICAL FACILITY

3996 Innes Road, Ottawa, ON.

Title	Drawn /: A.F.	Scale	1:250
EROSION & SEDIMENT CONTROL PLAN	Verif. /: D.K.		
Date: 2023/03/30	Revision: 1	Drawing #	ES

FILE #D07 - 12 - 4 - 0209 CITY PLAN #18675