4699 Bank Street, Ottawa
Assessment of Adequacy of Public Services

Project # CW-01-14

Prepared for:

Romanian Orthodox Church

"St. Nicolas", Ottawa

By:

Arch-Nova Design Inc.

January 2016

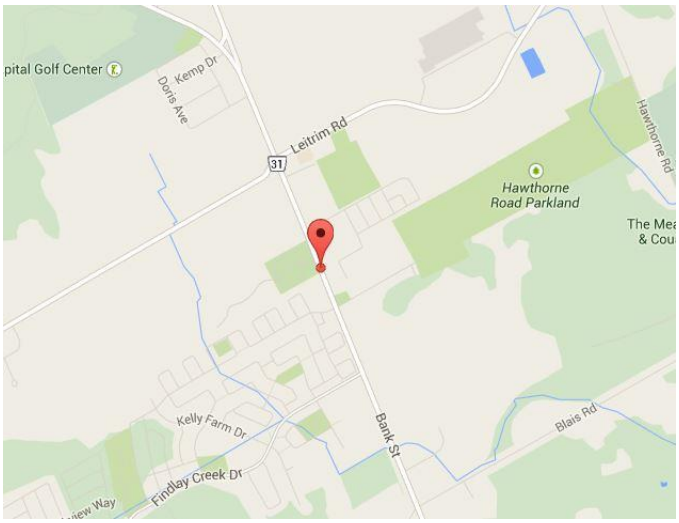
Table of Contents

1. Introduction

The subject property is located at 4699 Bank Street, Ottawa. The proposed work comprises of a church building, parking and a landscape area. For the purpose of this report the site is considered to run north-south.

Currently, a 1-storey house is located on the south-west side of the property. It is occupied but scheduled for demolition. The second building is located further north from this one and it's also scheduled for demolition. A yard covered with grass is located on the north side of the property. On south of the property an access driveway is stretched along the entire south property line. Another significant part is an easement which is also along the south side. It is now paved with asphalt and used as an access road to the newly developed subdivision east from the property.

The area is serviced by municipal water, sanitary and storm water systems. The Bank Street services are transmission main and forcemain and they cannot be used for the service connections.



4699 Bank Street, Ottawa: Location

2. Public Services Capacity

This section of the report will analyze existing municipal services and the potential impact of the proposed building at 4699 Bank Street on the existing service capacity.

2.1 Water Supply[1]

[2]The following are boundary conditions, HGL, for a hydraulic analysis at Fiddlehead Street, connecting to the 200 mm PVC watermain:

Max Day + FF = 141.45 m assuming a fire flow of 100 L/s or 53.4 psi

Peak Hourly GL = 146.10 m or 60.05 psi

Maximum HGL = 158.30 m or 77.39 psi. All pressures are within requirements of the Water Supply Design Criteria.

Table 1 presents the City of Ottawa design criteria based on MOE Guidelines.

Design Parameter	Value
Residential Average Apartment	1.8 P/unit
Residential Average Daily Demand	350 L/d/P
[3]Residential Maximum Daily Demand	2.5 x Average Daily
Residential Maximum Hourly	2.2 x Maximum Daily
Commercial Demand	2.5 L / m2 /d
Commercial Maximum Daily Demand	1.5 x Average Daily
Commercial Maximum Hourly	1.8 x Maximum Daily
Minimum Watermain Size	150mm diameter
Minimum Depth of Cover	2.4m from top of watermain to finished grade
During Peak Hourly Demand operating pressure must remain within	275kPa and 552kPa (40-80 psi; 28-56m)
During fire flow operating pressure must not drop below	140kPa (20 psi; 14 m)

Table 1: Water Supply Design Criteria

The consumption is expected to increase from **4.55 l/min (0.07 l/sec)** to **30.47 l/min (0.51 L/sec)** for peak period. The fire flow was calculated in

[1] City of Ottawa to provide actual flow and pressure. This report is to provide preliminary analysis based only on assumprions.

[2] City of Ottawa boundary condition information is based on current operation of the city water distribution system (also see Appendix A for complete correspondence information)

[3] Residential Max. Daily and Max. Hourly peaking factors per MOE Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons.

accordance with Fire Underwriter Survey and it was calculated to be 6,000 l/min (100 l/sec)[4] .

The table below summarizes the pressure for the designed parameters:

Design Parameter	Anticipated Demand[1] (L/min)	Boundary Condition (m)
Average Daily Demand	11.28	158.30
Max Day + Fire Flow	6,016.93	141.45
Peak Hour	30.47	146.10
Sprinkler System	1,620.00	

Table 2: Water Demand and Boundary Conditions

Sprinkler System: In accordance with the National Fire Protection Association (NFPA) standards a minimum fire sprinkler flow requirement is to provide 9.45 l/sec at 20psi and for 140 m2. Proposed building (Church) has 400m2 of floor plan.

[4] Fire Underwriters Survey: "Water Supply for Public Fire Protection" 1999

2.2 Sanitary Sewer

Current sanitary sewer outflow from the location of 4699 Bank Street is estimated from **0.01 l/sec** to **0.22 l/sec** (peak flow+wet weather). The estimated outflow for the new buildings is **0.08 l/sec** to **0.25 l/sec** (peak flow+wet weather), therefore the maximum flow increase is estimated to be **0.17 l/sec**.

Design Parameter	Value[5]
Residential Average Apartment	1.8 P/unit
Average Daily Demand	350 L/d/per
Peaking Factor	Harmon's Peaking Factor. Max 4.0, Min 2.0
Commercial Space	5L/m2/day
Infiltration and Inflow Allowance	0.28L/s/ha
Sanitary sewers are to be sized employing the Manning's Equation	$Q = (1/n)AR^{2/3}S^{1/2}$
Minimum Sewer Size	200mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6m/s
Maximum Full Flowing Velocity	3.0m/s

Table 3: Wastewater Design Criteria

Existing municipal sewer 250 mm has a capacity of 42.6 l/sec for 05% slope.

Detailed calculation of pre and post development flow is presented in Appendix A.

[5] Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, November 2004.

3. Stormwater

3.1 Existing Site Stormwater Services

The subject property is covered with different surfaces as shown in the Table 4. No other storm water services (i.e. storage, ponds) are on the property.

Surface Type	ID	Area (ha)	Percent of total Area	C	A X C (ha)
Yard	**A1**	0.0155	2.6%	0.90	0.014
Yard	**A2**	0.3251	53.6%	0.90	0.293
Access & House	**A3**	0.0902	14.9%	0.90	0.081
Int.Road & Yard	**A4**	0.1754	28.9%	0.25	0.044
TOTAL		0.6062	100.0%		0.432
Weighted C =					0.50

Table 4: Current Drainage Areas

Entire site drains uncontrolled over surface to either a ditch along Bank Street or a ditch along the south property line. The north part of the property drains further to the north side and partially infiltrates. Predevelopment C=0.5 is used for the calculation for the post development calculation.

A newly constructed municipal stormwater service 375 mm is provided on Fiddlehead Street on east edge of the property and has capacity of 57.06 l/sec for slope of 0.41%.

3.2 Proposed Development

The proposed church will be located on west part of the property facing Banks Street. South portion of the property will be paved and used as a parking space. Narrow area on north will be used as a garden. The parking will be the main stormwater runoff generator. It will also collect runoffs from surrounding areas. Difference in pre and post-development runoff will be compensated by an underground storage as shown on plans. It will have capacity of 66 m^3. Three proposed catch basins located on the parking will collect surface flow and direct it the storage. Outlet pipe 200 mm will have a function as an orifice with maximum flow of 18.39 l/sec. matching 5-year

predevelopment runoff. It will be connected to 375 mm main trunk on Fiddlehead Street.

Detailed hydraulic calculation of orifices is presented in the Appendices.

4. Conclusion and Recommendation

4.1 Water Supply

The water supply demand calculation is based on Fire Underwriters Survey (FUS) for the fire flow requirement; it is 6,000 l/min (100 l/sec). Under this condition the City personnel provided calculated a pressure of 141.45 m, which is sufficient for the fire protection (estimated building height is 15.85 m) and ground level is at 104.0 m.

4.2 Sanitary Sewer

The existing sanitary sewer 200 mm under 0.6% is expected to provide a flow of approximately 13.0 l/s and with a velocity of 0.47 m/sec. An increase of 0.25 l/sec (2%) for the peak wet weather flow will not overload the pipe. The connection from the site will be by gravity (as presented on the plan).

4.3 Stormwater

The stormwater system (weeping system, parking CB's and storage) of the property will be connected to the existing 375 mm pipe. A municipal stormwater service 375 mm is provided on Fiddlehead Street and has capacity of 57.06 l/sec for slope of 0.41%. There will be no increase in runoff flow as the onsite storage is proposed.

Drainage area and a storm calculation sheets (pre and post-development) are shown in Appendix A[6].

[6] Post Development calculation: amended May 2013

There will be an increased volume of 66.0 m^3 which is a result of increased imperviousness. This amount of water will be stored in the underground storage and released under the predevelopment conditions.

Details are presented in Appendix A.

Based on the information provided by the City of Ottawa, the existing municipal services are adequate and will not be overloaded after the construction of the buildings at 4699 Bank Street.

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January, 2016

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Appendix A: Calculations

Project Number: CW-05-13 4699 Bank Street South, Ottawa

PRE-DEVELOPMENT (FRONT DRAINAGE AREA)

The pre-development time of concentration is 20 minutes

where:

$I_5 = 998.071 / (Tc + 6.053)^{0.814}$ $I_{100} = 1735.688 / (Tc + 6.014)^{0.820}$

I_5 = 70.3 mm/hr I_{100} = **120.0 mm/hr**

Surface Type	ID	Area (ha)	Percent of total Area	C	A X C (ha)
Yard	A1	0.0155	2.6%	0.25	0.004
Yard	A2	0.3251	53.6%	0.25	0.081
Access & House	A3	0.0902	14.9%	0.90	0.081
Int.Road & Yard	A4	0.1754	28.9%	0.40	0.070
TOTAL		0.6062	100.0%		0.237
Weighted C =					0.50

0.390143

C=0.5 used for predevelopment calculation (City of Ottawa requirement)

$Q_{5pre} = (2.78)*(C)*(I_5)*(A)$

Q_{5pre} = 2.78 x 0.50 x 70.3 x 0.6062

Q_{5pre} = 59.24 L/s

$Q_{100pre} = (2.78)*(C)*(I_{100})*(A)$

Q_{100pre} = 2.78 x 0.62 x 120.0 x 0.6062

Q_{100pre} = 126.40 L/s

POST-DEVELOPMENT (UNCONTROLLED RUNOFF)

The post-development time of concentration is 20 minutes

where:

$I_5 = 998.071 / (Tc + 6.053)^{0.814}$ $I_{100} = 1735.688 / (Tc + 6.014)^{0.820}$

I_5 = 70.3 mm/hr I_{100} = **120.0 mm/hr**

Surface Type	ID	Area (ha)	Percent of total Area	C	A X C (ha)
Church Entrance	A1	0.0369	10.1%	0.60	0.022
Parking Entrance	A2	0.0238	6.5%	0.90	0.021
Claridge easment	A3	0.1032	28.1%	0.90	0.093
Church & landscape	A5	0.2027	55.3%	0.35	0.072
TOTAL		0.3667	100.0%		0.208
Weighted C =					0.57

$Q_{5post} = (2.78)*(C)*(I_5)*(A)$

Q_{5post} = 2.78 x 0.57 x 70.3 x 0.3667

Q_{5post} = 40.84 L/s

$Q_{100post} = (2.78)*(C)*(I_{100})*(A)$

$Q_{100post}$ = 2.78 x 0.57 x 120.0 x 0.3667

$Q_{100post}$ = 69.72 L/s

Project Number: CW-05-13 4699 Bank Street South, Ottawa

ARCH-NOVA DESIGN INC.
Architecture
Engineering
Consulting

PRE-DEVELOPMENT (FRONT DRAINAGE AREA)

The pre-development time of concentration is 20 minutes

where:

$I_5 = 998.071 / (Tc + 6.053)^{0.814}$ $I_{100} = 1735.688 / (Tc + 6.014)^{0.820}$

I_5 = 70.3 mm/hr I_{100} = **120.0 mm/hr**

Surface Type	ID	Area (ha)	Percent of total Area	C	A X C (ha)
Yard	A1	0.0155	2.6%	0.95	0.015
Yard	A2	0.3251	53.6%	0.95	0.309
Access & House	A3	0.0902	14.9%	0.90	0.081
Int.Road & Yard	A4	0.1754	28.9%	0.25	0.044
TOTAL		0.6062	100.0%		0.449
Weighted C =					0.50

C=0.5 used for predevelopment calculation (City of Ottawa requirement)

$Q_{5pre} = (2.78)*(C)*(I_5)*(A)$
Q_{5pre} = 2.78 x 0.50 x 70.3 x 0.6062
Q_{5pre} = 59.24 L/s

$Q_{100pre} = (2.78)*(C)*(I_{100})*(A)$
Q_{100pre} = 2.78 x 0.50 x 120.0 x 0.6062
Q_{100pre} = 101.12 L/s

POST-DEVELOPMENT (CONTROLLED RUNOFF)

The post-development time of concentration is 20 minutes

where:

$I_5 = 998.071 / (Tc + 6.053)^{0.814}$ $I_{100} = 1735.688 / (Tc + 6.014)^{0.820}$

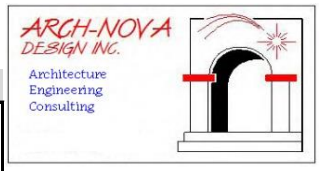
I_5 = 70.3 mm/hr I_{100} = **120.0 mm/hr**

Surface Type	ID	Area (ha)	Percent of total Area	C	A X C (ha)
Parking & landscape	A4	0.2380	100.0%	0.90	0.214
TOTAL		0.2380	100.0%		0.214
Weighted C =					0.90

$Q_{5post} = (2.78)*(C)*(I_5)*(A)$
Q_{5post} = 2.78 x 0.90 x 70.3 x 0.2380
Q_{5post} = 41.86 L/s

$Q_{100post} = (2.78)*(C)*(I_{100})*(A)$
$Q_{100post}$ = 2.78 x 0.90 x 120.0 x 0.2380
$Q_{100post}$ = 71.46 L/s

ALLOWABLE RUNOFF



Predevelopment Runoff:		
Uncontrolled Runoff		
5-year	59.24	l/sec
100-year	126.40	l/sec
Controlled Runoff:		
5-year	0.00	l/sec
100-year	0.00	l/sec

Postdevelopment Runoff:		
Uncontrolled Runoff		
5-year	40.84	l/sec
100-year	69.72	l/sec
Controlled Runoff:		
5-year	41.86	l/sec
100-year	71.46	l/sec

Controlled allowable runoff		
Controlled Runoff:		
5-year	18.39	l/sec
100-year	56.68	l/sec

Comment:

Storage Volumes (5-Year Storm)

Project: 4699 Bank Street South

Tc = 20 (mins)
C_{AVG} = 0.90 (dimmensionless)
Area = 0.2380 (hectares)
Storm = 5 (year)
Release Rate = 18.39 (L/sec)
Time Interval = 5 (mins)

Duration (min)	Rainfall Intensity (mm/hr)	Peak Flow (L/sec)	Release Rate (L/sec)	Storage Rate (L/sec)	Storage (m^3)
1	204	6.1	18.39		
6	132	23.5	18.39	5.11	1.84
11	99	32.5	18.39	14.09	9.30
16	80	38.3	18.39	19.93	19.14
21	68	40.6	18.39	22.17	27.94
26	59	35.3	18.39	16.94	26.43
31	53	31.4	18.39	13.01	24.20
36	48	28.3	18.39	9.94	21.46
41	43	25.9	18.39	7.46	18.35
46	40	23.8	18.39	5.42	14.96
51	37	22.1	18.39	3.71	11.34
56	35	20.6	18.39	2.25	7.54
61	33	19.4	18.39	0.98	3.60
66	31	18.3	18.39	-0.12	-0.47
71	29	17.3	18.39	-1.09	-4.64
76	28	16.4	18.39	-1.95	-8.91
81	26	15.7	18.39	-2.73	-13.25
86	25	15.0	18.39	-3.42	-17.66
91	24	14.3	18.39	-4.05	-22.13
96	23	13.8	18.39	-4.63	-26.66
101	22	13.2	18.39	-5.15	-31.23
106	21	12.8	18.39	-5.64	-35.85
111	21	12.3	18.39	-6.08	-40.51
116	20	11.9	18.39	-6.49	-45.20
121	19	11.5	18.39	-6.88	-49.93
126	19	11.2	18.39	-7.23	-54.68
131	18	10.8	18.39	-7.57	-59.47
136	18	10.5	18.39	-7.88	-64.28

Notes

1) For a storm duration that is less than the time of concentration the peak flow is equal to the product of 2.78CIA and the ratio of the storm duration to the time of concentration.

2) Rainfall Intensity, I = 998.071 / (Tc + 6.053)^0.814 (5 year, City of Ottawa)
3) Peak Flow = Duration/Tc x 2.78 x C x I x A (Duration < Tc)
4) Peak Flow = 2.78 x C x I x A (Duration > Tc)
5) Storage = Duration x Storage Rate

Storage Volumes (100-Year Storm)

Tc = 20 (mins)
C_{AVG} = 0.90 (dimmensionless)
Area = 0.2380 (hectares)
Storm = 100 (year)
Release Rate = 18.39 (L/sec)
Time Interval = 5 (mins)

Duration (min)	Rainfall Intensity (mm/hr)	Peak Flow (L/sec)	Release Rate (L/sec)	Storage Rate (L/sec)	Storage (m^3)
1	351	10.5	1.43		
6	226	40.4	18.39	21.98	7.91
11	170	55.6	18.39	37.25	24.59
16	138	65.5	18.39	47.13	45.25
21	116	69.3	18.39	50.86	64.08
26	101	60.3	18.39	41.86	65.29
31	90	53.5	18.39	35.10	65.28
36	81	48.2	18.39	29.82	64.40
41	74	44.0	18.39	25.57	62.90
46	68	40.5	18.39	22.07	60.92
51	63	37.5	18.39	19.14	58.57
56	59	35.0	18.39	16.64	55.91
61	55	32.9	18.39	14.48	53.00
66	52	31.0	18.39	12.60	49.89
71	49	29.3	18.39	10.94	46.59
76	47	27.9	18.39	9.46	43.15
81	45	26.5	18.39	8.14	39.58
86	43	25.3	18.39	6.95	35.89
91	41	24.3	18.39	5.88	32.10
96	39	23.3	18.39	4.90	28.22
101	38	22.4	18.39	4.00	24.25
106	36	21.6	18.39	3.18	20.22
111	35	20.8	18.39	2.42	16.12
116	34	20.1	18.39	1.72	11.96
121	33	19.5	18.39	1.07	7.74
126	32	18.9	18.39	0.46	3.48
131	31	18.3	18.39	-0.11	-0.83
136	30	17.8	18.39	-0.64	-5.19

Notes

1) For a storm duration that is less than the time of concentration the peak flow is equal to the product of 2.78CIA and the ratio of the storm duration to the time of concentration.

2) Rainfall Intensity, I = 1735.688 / (Tc + 6.014)^0.820 (100 year, City of Ottawa)
3) Peak Flow = Duration/Tc x 2.78 x C x I x A (Duration < Tc)
4) Peak Flow = 2.78 x C x I x A (Duration > Tc)
5) Storage = Duration x Storage Rate

4699 BANK STREET
SWM PREDEVELOPMENT

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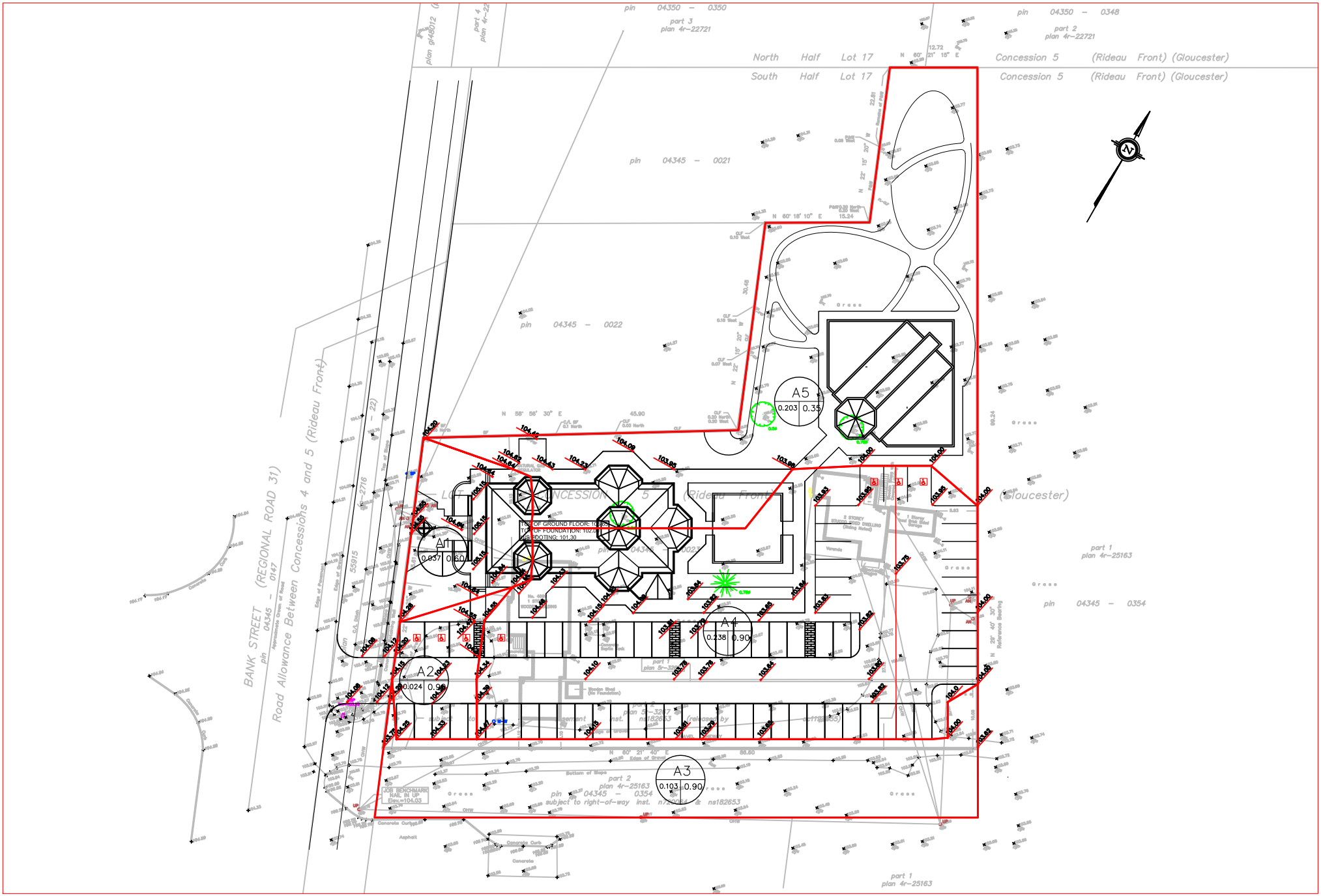
613-829-5722 contact@archnova.ca



4699 BANK STREET
SWM POST DEVELOPMENT

ARCH-NOVA Design Inc.
45 Banner Road NEPEAN ON K2H 8X5
613-829-5722 contact@archnova.ca

Boundary Conditions 4699 Bank Street

Information Provided

Date provided: December 9th 2015

Criteria	Demand (L/s)
Average Demand	0.188
Maximum Daily Demand	0.282
Maximum Hourly Demand	0.508
Fire Flow Demand	100

Location

Results

Connection

Criteria	Head (m)	Pressure (psi)
Max HGL	158.30	77.39
PKHR	146.10	60.05
MXDY + Fire Flow (100 L/s)	141.45	53.44

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.

Water Supply Design Criteria

Design Parameter	Value
Residential Average Apartment	1.8 P/unit
Residential Average Daily Demand	350 L/d/P
Residential Maximum Daily Demand	2.5 x Average Daily *
Residential Maximum Hourly	2.2 x Maximum Daily *
Commercial Demand	2.5 L / m2 /d
Commercial Maximum Daily Demand	1.5 x Average Daily
Commercial Maximum Hourly	1.8 x Maximum Daily
Minimum Watermain Size	150mm diameter
Minimum Depth of Cover	2.4m from top of watermain to finished grade
must remain within	275kPa and 552kPa (40-80 psi; 28-56m)
During fire flow operating pressure must not drop below	140kPa (20 psi; 14 m)
* Residential Max. Daily and Max. Hourly peaking factors per MOE Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons.	

Romanian Church
4699 Bank Street,Ottawa

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4	1	3
Semi-detached	2.7		0
Townhouse	2.7		0
Apartment			0
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0

	Pop	Avg. Daily		Max Day		Peak Hour	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	3	1.19	0.83	2.98	2.07	6.55	4.55

Institutional / Commercial / Industrial Demand

				Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**		**Units**	m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Commercial floor space	2.5	L/m2/d	0	0.00	0.00	0.00	0.00	0.00	0.00
Office	75.0	L/9.3m2/d							
Restaurant*	125.0	L/seat/d							
Industrial -Light	35,000.0	L/gross ha/d							
Industrial -Heavy	55,000.0	L/gross ha/d							
Total I/C/I Demand				0.00	0.00	0.00	0.00	0.00	0.00

Total Demand	1.19	0.83	2.98	2.07	6.55	4.55

* Estimated number of seats at 1seat per 9.3m2

Wastewater Design Criteria

Design Parameter	Value
Residential Average Apartment	1.8 P/unit
Average Daily Demand	350 L/d/per
Peaking Factor	Harmon's Peaking Factor. Max 4.0, Min 2.0
Commercial Space	5L/m2/day
Infiltration and Inflow Allowance	0.28L/s/ha
Sanitary sewers are to be sized employing the Manning's Equation	$Q = (1/n)AR^{2/3}S^{1/2}$
Minimum Sewer Size	200mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6m/s
Maximum Full Flowing Velocity	3.0m/s
Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, November 2004.	

Romanian Church
4699 Bank Street,Ottawa

Sanitary Sewer Post Development Outflow

Site Area	**0.605 ha**
Extraneous Flow Allowances	
Infiltration / Inflow	**0.1694 L/s**

Domestic Contributions

Unit Type	Unit Rate	Units	**Pop**
Single Family	3.4	1	3.4
Semi-detached and duplex	2.7		0
Duplex	2.3		0
Townhouse	2.7		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0
Total Population			**3.4**
Average Domestic Flow			**0.01 L/s**
Peaking Factor			**4.00**
Peak Domestic Flow			**0.06 L/s**

Institutional / Commercial / Industrial Contributions

Property Type	**Unit Rate**	**No. of Units**	**Avg Wastewater (L/s)**
Commercial floor space*	5 L/m2/d		0
Hospitals	900 L/bed/d		0
Industrial - Light**	35,000 L/gross ha/d	0	0
Industrial - Heavy**	55,000 L/gross ha/d		0
School	70 L/student/d		0
Institutional Buildings (Church)***	36 L/Seat/d	0	0
Average I/C/I Flow			**0**
Peak Institutional / Commercial Flow			
Peak Industrial Flow**			
Peak I/C/I Flow			

Total Estimated Average Dry Weather Flow Rate	**0.01**
Total Estimated Peak Dry Weather Flow Rate	**0.06**
Total Estimated Peak Wet Weather Flow Rate	**0.22**

* assuming a 12 hour commercial operation

** peak industrial flow per City of Ottawa Sewer Design Guidelines Appendix 4B

*** Churches and Similar Places of Worship - per seat; Kitchen facilities provided
OBC (2012) Div.B, Section 8.2.1.3, Table B

Water Supply Design Criteria

Design Parameter	Value
Residential Average Apartment	1.8 P/unit
Residential Average Daily Demand	350 L/d/P
Residential Maximum Daily Demand	2.5 x Average Daily *
Residential Maximum Hourly	2.2 x Maximum Daily *
Commercial Demand	2.5 L / m2 /d
Commercial Maximum Daily Demand	1.5 x Average Daily
Commercial Maximum Hourly	1.8 x Maximum Daily
Minimum Watermain Size	150mm diameter
Minimum Depth of Cover	2.4m from top of watermain to finished grade
must remain within	275kPa and 552kPa (40-80 psi; 28-56m)
During fire flow operating pressure must not drop below	140kPa (20 psi; 14 m)
* Residential Max. Daily and Max. Hourly peaking factors per MOE Guidelines for Drinking-Water Systems Table 3-3 for 0 to 500 persons.	

Water Demand and Boundary Conditions
Proposed Conditions

Design Parameter	Anticipated Demand[1] (L/min)	Boundary Condition[2] (m)
Average Daily Demand	11.28	
Max Day + Fire Flow	6,016.93	
Peak Hour	30.47	
Sprinkler System[3]	1,620.00	

[1)] Water demand calculation per Water Supply Guidelines. See Appendix B for detailed calculations.

[2)] Boundary conditions supplied by the City of Ottawa. See Appendix B for correspondence with the City.

[3)] Sprinkler System: In accordance with the National Fire Protection Association (NFPA) standards a minimum fire sprinkler flow requirement is to provide 9.45 l/sec at 20psi and for 140 m^2. Proposed building (Church) has 400m^2 of floor plan.

Romanian Church
4699 Bank Street,Ottawa

Domestic Demand

Type of Housing	Per / Unit	Units	Pop
Single Family	3.4	0	0
Semi-detached	2.7		0
Townhouse	2.7		0
Apartment			0
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0

	Pop	Avg. Daily		Max Day		Peak Hour	
		m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Total Domestic Demand	0	0.00	0.00	0.00	0.00	0.00	0.00

Institutional / Commercial / Industrial Demand

				Avg. Daily		Max Day		Peak Hour	
Property Type	**Unit Rate**		**Units**	m^3/d	L/min	m^3/d	L/min	m^3/d	L/min
Commercial floor space	2.5	L/m2/d		0.00	0.00	0.00	0.00	0.00	0.00
Office	75.0	L/9.3m2/d		0.00	0.00	0.00	0.00	0.00	0.00
Restaurant*	125	L/seat/d	130	16.25	11.28	24.38	16.93	43.88	30.47
Church	0.1	l/sec	0	0.00	0.00	0.00	0.00	0.00	0.00
Industrial -Light	35,000.0	L/gross ha/d		0.00	0.00	0.00	0.00	0.00	0.00
Industrial -Heavy	55,000.0	L/gross ha/d		0.00	0.00	0.00	0.00	0.00	0.00
Total I/C/I Demand				16.25	11.28	24.38	16.93	43.88	30.47

Total Demand	16.25	11.28	24.38	16.93	43.88	30.47

* Estimated number of seats at 1seat per 9.3m2

Wastewater Design Criteria

Design Parameter	Value
Residential Average Apartment	1.8 P/unit
Average Daily Demand	350 L/d/per
Peaking Factor	Harmon's Peaking Factor. Max 4.0, Min 2.0
Commercial Space	5L/m2/day
Infiltration and Inflow Allowance	0.28L/s/ha
Sanitary sewers are to be sized employing the Manning's Equation	$Q = (1/n)AR^{2/3}S^{1/2}$
Minimum Sewer Size	200mm diameter
Minimum Manning's 'n'	0.013
Minimum Depth of Cover	2.5m from crown of sewer to grade
Minimum Full Flowing Velocity	0.6m/s
Maximum Full Flowing Velocity	3.0m/s
Extracted from Sections 4 and 6 of the City of Ottawa Sewer Design Guidelines, November 2004.	

Romanian Church
4699 Bank Street,Ottawa

Sanitary Sewer Post Development Outflow

Site Area	**0.605 ha**
Extraneous Flow Allowances	
Infiltration / Inflow	**0.1694 L/s**

Domestic Contributions

Unit Type	Unit Rate	Units	**Pop**
Single Family	3.4	0	0
Semi-detached and duplex	2.7		0
Duplex	2.3		0
Townhouse	2.7		0
Apartment			
Bachelor	1.4		0
1 Bedroom	1.4		0
2 Bedroom	2.1		0
3 Bedroom	3.1		0
Average	1.8		0
Total Population			**0**
Average Domestic Flow			**0.00 L/s**
Peaking Factor			**4.00**
Peak Domestic Flow			**0.00 L/s**

Institutional / Commercial / Industrial Contributions

Property Type	**Unit Rate**	**No. of Units**	**Avg Wastewater (L/s)**
Commercial floor space*	5 L/m2/d		0
Hospitals	900 L/bed/d		0
Industrial - Light**	35,000 L/gross ha/d	0	0
Industrial - Heavy**	55,000 L/gross ha/d		0
School	70 L/student/d		0
Institutional Buildings (Church)***	36 L/Seat/d	130	0.0542
Average I/C/I Flow			**0.0542**
Peak Institutional / Commercial Flow			**0.0813**
Peak Industrial Flow**			
Peak I/C/I Flow			

Total Estimated Average Dry Weather Flow Rate	**0.05**
Total Estimated Peak Dry Weather Flow Rate	**0.08**
Total Estimated Peak Wet Weather Flow Rate	**0.25**

* assuming a 12 hour commercial operation

** peak industrial flow per City of Ottawa Sewer Design Guidelines Appendix 4B

*** Churches and Similar Places of Worship - per seat; Kitchen facilities provided OBC (2012) Div.B, Section 8.2.1.3, Table B

Part A - Identification

Water Data Card

Contact City for New Release

rs_v3-14x

Water Meter Service Address:	4699 Bank Street, Ottawa
Project Proposed (New / Existing):	New
Property Owner:	
Building Service Class (BSC):	Other Institutions
Questionnaire Completed by:	Zoran Mrdja, P.Eng.
Contact Phone Number:	613-829-5722
Mechanical Contractor (if applicable):	
Mech. Contact Phone Number:	
Submission Date: (dd-mmm-yy)	Today is: 14-Jan-16

Part B - Fixtures *

Fixture Description	# of Fixtures
Bathtub	
Bedpan Washers	
Bidet	
Dental Unit	
Drinking Fountains	
Faucet (kitchen sink)	1
Faucet (lavatory)	6
Shower (single head)	
Utility Sink	1
Toilet (flush valve)	4
Toilet (tank)	
Urinal (flush valve)	2
Urinal (wall or stall)	
Dishwasher	1
Clothes Washer	
1/2" Hose (50 ft. Wash Down)	1
5/8" Hose (50 ft. Wash Down)	
3/4" Hose (50 ft. Wash Down)	

Enter Continuous Demand below (if applicable) *

fixture description	Qty.	(USGPM)	

Note: Irrigation is assumed to occur off peak demand period.

Part C - Technical Information

		Value	Units	Response
Property Area	*Class Code : I5*	0.60	ha	.01 to 200
# of Connections to City Watermain:		1		0 to 20
# of Buildings on Site:		1		0 to 100
Length of Private Main (if applicable)			km	.01 to 100
# of Private Hydrants on Property:				0 to 200
Maximum Fire Flow Available		6,000	l/min.	1,000 to 50,000
Phased Development?		No		yes/no
Static Main Pressure @ Property Line		*80*	***psi***	*36 to 99*
Service Length (supply main to meter)		*16.0*	***m***	*2 to 1,500*
Service Dia. (supply main to building)		*50*	***mm***	*19 to 406*
Supply main elev. minus meter elev.		*-3.0*	***m***	*-30 to 30*
Existing Isolation Valve Clearance:		1,000	mm	190 to 3,000
Meter Isolation Valve Size:		*2"*	***in***	*3/4" to 6"*
Pipe Dia. (outlet side of meter)		*50*	***mm***	*19 to 406*
Required Fire Flow @ 20 psi		100	l/sec	*10 to 1000*
# of Units/Suites/Apts		1		1 to 2,000
# of Stories (above grade)		1		1 to 50
Booster Pumps (Domestic Supply)		No		yes/no
Booster Pumps (Fire Protection)		No		yes/no
				Calc. Value
Fixture Value Total			(FV)	#VALUE!
Maximum/Peak Demand (Domestic)		*30*	***l/min.***	#N/A
Continuous Demand (if applicable)			***l/min.***	#VALUE!
		30	total	***#N/A***
				#N/A

Contact (613) 580-2424 x22617

				14-Jan-16
		42463		
			l/min.	
			psi	
			psi	
			psi	
			psi	
Meter Size/Type			HL@ GD >	
			Safe max.	
template size/length			mm (B)	
Min. Isolation Valves Clearance (MIVC)			mm (A)	

Water Data Card - Instructions and Definitions
Owner/Applicant to complete Parts A, B and C and return to City of Ottawa

Water Meter Service Address

Contact the Customer Service Department at (613) 580-2424 ext 22300, to determine the service address for existing meters. New service addresses will be assigned by the City, and may differ from the Property Address.

Project Proposed (New / Existing)

New - No previous meter for the address
Existing - Previous meter at this address; includes any additions, renovations or meter sizing reviews.

Building Service Class - Class Code

Single Detached - R1, Semi Detached - R2 Duplex - R3,
Row & Townhouse - R5
Apartment Less Than 5 Floors - R7
Apartment With More Than 4 Floors - R8
Residential - Commercial - RC
Government & Private Offices - OF
Regional Shopping Center - C1
Strip Mall - C2, Other Commercial - C3
Transportation Facility - TR
Agricultural Farms - AG, Utilities - UT
Active Recreational Facilities - RA,
Passive Recreational Facilities - RP, Indust-Manuf
Warehousing &Whole - M1 Industrial Mall - M2,
Elementary School - I1
Secondary School - I2
Post-Secondary School - I3
Hospital, Rehab/Nursing Home - I4
Other Institutions - I5, Vacant Land - V1

Length of Private Main (if applicable)

Do you have watermains on your property?
Private watermains are potable water pipes that supply water to water services and hydrants. The length of private watermain is the cummulative length measured from the property line to any connected private hydrant. All other pipes on private property are defined as "water services".

Maximum Fire Flow Available

NOTE: Complete only if your site has Private Hydrant's
The highest calculated flow rate achievable from a maximum of two private hydrants flowing simultaneously @ 20 psi dynamic, through any one City connection. This calculation is likely obtained through a hydraulic analysis.

Phased Development?

Often larger developments or projects are phased over several years which means oversizing piping initially to meet anticioated future demand requirements. Water meters will be sized for the initial phase with provision for the installation of a larger meter in the future when the expansion occurs.

Static Main Pressure @ Property Line

The pressure is used for determining meter sizing. A request for this information can be made to the Customer Service Department at (613) 580-2424 ext 22300.

Service Length (watermain to meter)

"Water service" means a potable water pipe of any size, tapped or teed from a watermain to a building.

Pipe Diameter (outlet side of meter)

Pipe diameter downstream of the water meter is used to evaluate water meter sizing. This pipe may in some cases be refered to as the "header".

Fixture Value Total

Each plumbing fixture is given a fixture unit value. "Fixture values", (FV) are used for water meter sizing purposes. Completion of Part B - Fixtures will assist in determining the Fixture Value Total.

Maximum/Peak Demand (Domestic)

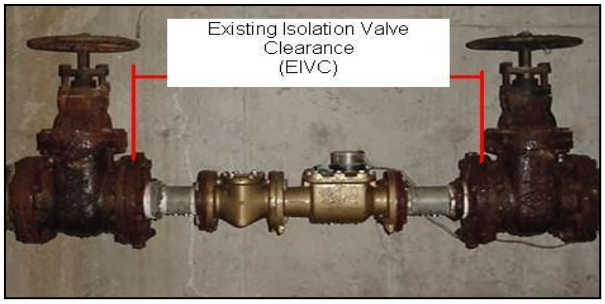
The maximum/peak demand is used for meter and service sizing and has been calculated based upon AWWA standard curves.

Continuous Demand (if applicable)

Continuous demands are known demands expressed in (US) gallons/min. For example a new car wash will use 20 USGPM. Continous requirments for water are typically seen in industry and manufacting. (Do not include the usgpm requirements for closed systems).

Existing/Minimum Isolation Valve Clearance

Existing Installations - the distance (flange to flange) between the meter isolation valves in millimeters.
New Installations - the minimum distance (flange to flange) to be maintained between the meter isolation valves in millimeters.



Elevation Differential (supply main elevation minus meter elevation)

Calculate the "elevation differential" between the watermain and the meter. Watermains are typically buried 2.4m below grade.

Required Fire Flow @ 20 psi (FUS or OBC)

NOTE: Complete only as required by the Approvals Department.

Some developments may require a Site Servicing Study. In these cases, or as directed by the City, the required fire flow @ 20 psi must be calculated. Boundary conditions can be provided upon request by the City.

FUS Fire Flow Calculations

Project: 4699 Bank Street , Ottawa

Calculations Based on 1999 Publication "Water Supply for Public Fire Protection " by Fire Underwriters' Survey (FUS)
Project Name: 4699 Bank Street, Ottawa
Date: December 03, 2015
Data input by: Zoran Mrdja, P.Eng.

Fire Flow Calculation #: 1
Building Type/Description/Name:Apartment Building

Table A: Fire Underwriters Survey Determination of Required Fire Flow - Long Method

Step	Task	Term	Options	Multiplier Associated with Option	Choose:	Value Used	Unit	Total Fire Flow (L/min)
		Framing Material						
1	Choose Frame Used for Construction of Unit	Coefficient related to type of construction (C)	Wood Frame	1.50	Ordinary Construction	1.00	m	
			Ordinary construction	1.00				
			Non-combustible construction	0.80				
			Fire resistive construction (< 2 hrs)	0.70				
			Fire resistive construction (> 2 hrs)	0.60				
		Floor Space Area						
2	Choose Type of Housing (if TH, Enter Number of Units Per TH Block)	Type of Housing	Single Family	1	Other (Comm, ind)	1	Units	
			Townhouse - indicate # of units	1				
			Other (Comm, Ind, etc.)	1				
2.2	# of Storeys	Number of Floors/ Storeys in the Unit (do not include basement):			1	1	Storeys	
3	Enter Ground Floor Area of One Unit	Enter Ground Floor Area (A) of One Unit Only :				777	Area in Square Meters (m^2)	
		Measurement Units	Square Feet (ft^2)	0.093	Square Metres (m^2)			
			Square Metres (m^2)	1				
			Hectares (ha)	10000				
4	Obtain Required Fire Flow without Reductions	Required Fire Flow(without reductions or increases per FUS) (F = 220 * C * √A) Round to nearest 1000L/min						6,132
5	Apply Factors Affecting Burning	Reductions/Increases Due to Factors Affecting Burning						
5.1	Choose Combustibility of Building Contents	Occupancy content hazard reduction or surcharge	Non-combustible	-0.25	Combustible	0.00	N/A	0
			Limited combustible	-0.15				
			Combustible	0				
			Free burning	0.15				
			Rapid burning	0.25				
5.2	Choose Reduction Due to Presence of Sprinklers	Sprinkler reduction	Complete Automatic Sprinkler Protection	-0.3	Complete Automatic Sprinkler Protection	-0.30	N/A	-1,840
			None	0				
5.3	Choose Separation Distance Between Units	Exposure Distance Between Units	North Side	30.1 to 45.0m	0.05	0.20	m	1,226
			East Side	30.1 to 45.0m	0.05			
			South Side	30.1 to 45.0m	0.05			
			West Side	30.1 to 45.0m	0.05			
6	Obtain Required Fire Flow, Duration & Volume	Total Required Fire Flow, rounded to nearest 1000 L/min, with max/min limits applied:						6,000
		Total Required Fire Flow (above) in L/s:						100
		Required Duration of Fire Flow (hrs)						2.00
		Required Volume of Fire Flow (m^3)						720

Note: The most current FUS document should be referenced before design to ensure that the above figures are consistent with the intent of the Guideline

Legend	
	Drop down menu - choose option, or enter value.
	No Information, No input required.

Note:

The most current FUS document should be referenced before design to ensure that the above figures are consistent with the intent of the Guideline.
The basement of the builidng will be used as a gathering/dining area and it is recommended to be equiped with sprinkler system

Appendix B: Correspondence

zoran@archnova

From: Burda, Dave <Dave.Burda@ottawa.ca>
Sent: December 11, 2015 9:21 AM
To: 'Zoran@archnova'
Subject: RE: 4699 Bank Street (new Romanian Church): Boundary conditions
Attachments: Boundary Conditions 4699 Bank Street.docx

Hi Zoran

Please find your revised boundary conditions enclosed.
Regards

David Burda, C.E.T., rcsi
Project Manager, Infrastructure Approvals
Development Review - Suburban Services - East Unit
Gestionnaire de projet, Approbation des demandes d'infrastructure
Examen des demandes d'aménagement (Services suburbains est)

PLANNING AND GROWTH MANAGEMENT
URBANISME ET GESTION DE LA CROISSANCE

City of Ottawa | Ville d'Ottawa
613.580.2424 ext. 27885
ottawa.ca/planning / ottawa.ca/urbanisme

From: Zoran@archnova [mailto:zoran@archnova.ca]
Sent: Friday, December 04, 2015 9:07 AM
To: Burda, Dave
Subject: Re: 4699 Bank Street (new Romanian Church): Boundary conditions

Hello Dave,

There is some change in size of the building so the site services plan reflects changes. Also my calculation is updated. The architectural plans are ready so I have to complete my documents for submission.

Regards,

Zoran Mrdja
Sent from my iPhone

On 04.12.2015., at 08.50, "Burda, Dave" <Dave.Burda@ottawa.ca> wrote:

> Hi Zoran
>
> Has there been any major changes in your design since you last emailed me back in 2014?
> Is the applicant ready to submit a site plan application? I am not sure where you are in the process right now.
> Thanks

David Burda, C.E.T., rcsi
Project Manager, Infrastructure Approvals
Development Review - Suburban Services - East Unit
Gestionnaire de projet, Approbation des demandes d'infrastructure
Examen des demandes d'aménagement (Services suburbains est)

City of Ottawa | Ville d'Ottawa
613.580.2424 ext. 27885
ottawa.ca/planning / ottawa.ca/urbanisme

From: zoran@archnova [mailto:zoran@archnova.ca]
Sent: Thursday, December 03, 2015 11:05 PM
To: Burda, Dave
Subject: 4699 Bank Street (new Romanian Church): Boundary conditions

Mr. Burda,

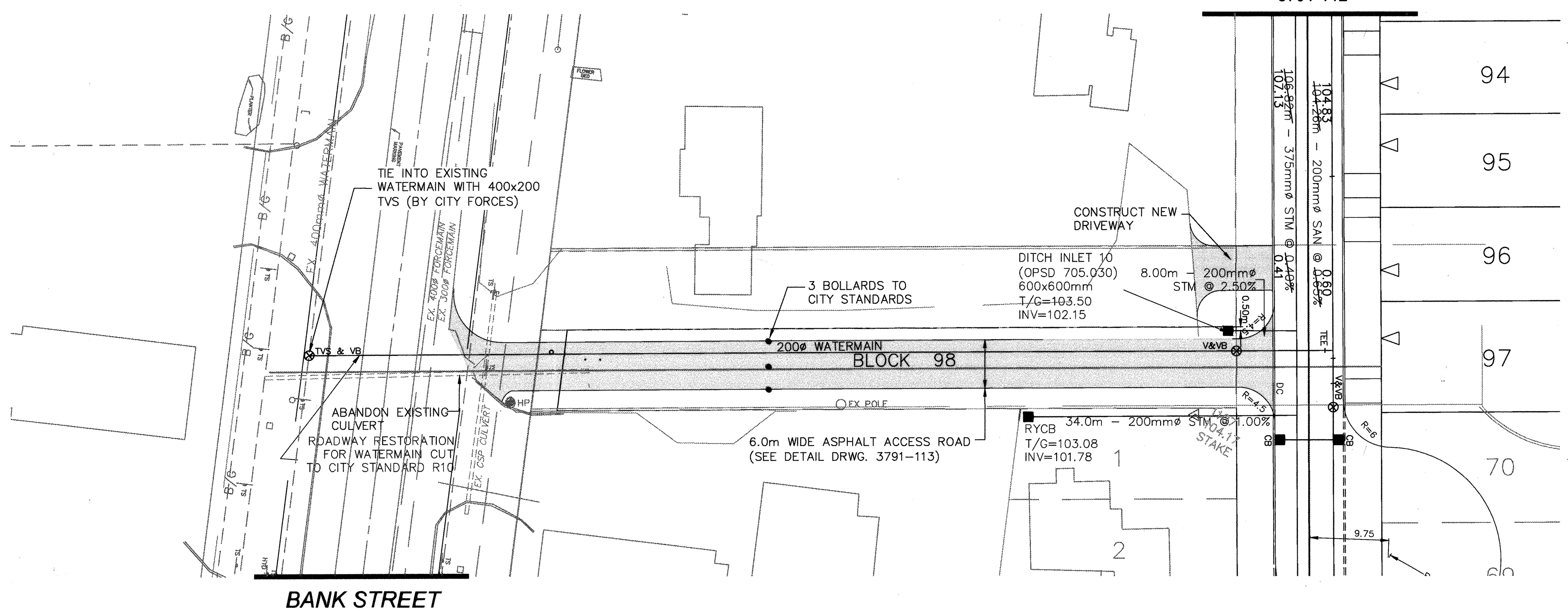
I am sending to you requirements for the boundary conditions for location of 4699 Bank Street Ottawa where a new Romanian Orthodox Church is to be built.

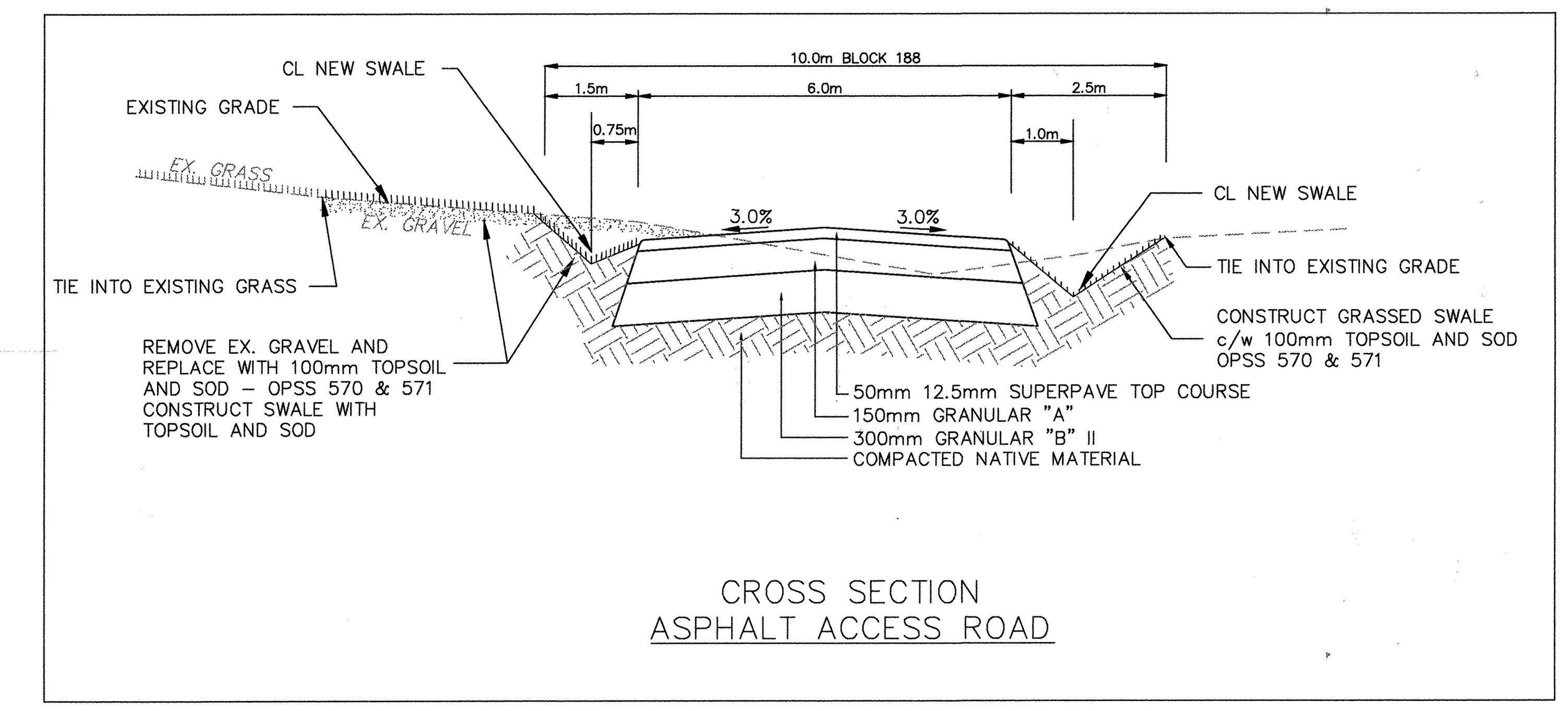
Attached are water demand calculations as well as the fire flow calculation and water card. Also attached is the draft servicing plan and existing municipal services plans.

Total area: 0.6 ha
Floor area (main floor): 200 m2
Max Day Flow+Fire Flow= 6016.93 l/min
Peak flow: 30.47 l/min
Top of ground floor: 105.65

Should you need more information please do not hesitate to contact us,

Zoran Mrdja, P.Eng., FEC
Arch-Nova Design Inc.
613-829-5722





CROSS SECTION
ASPHALT ACCESS ROAD

LEGEND:

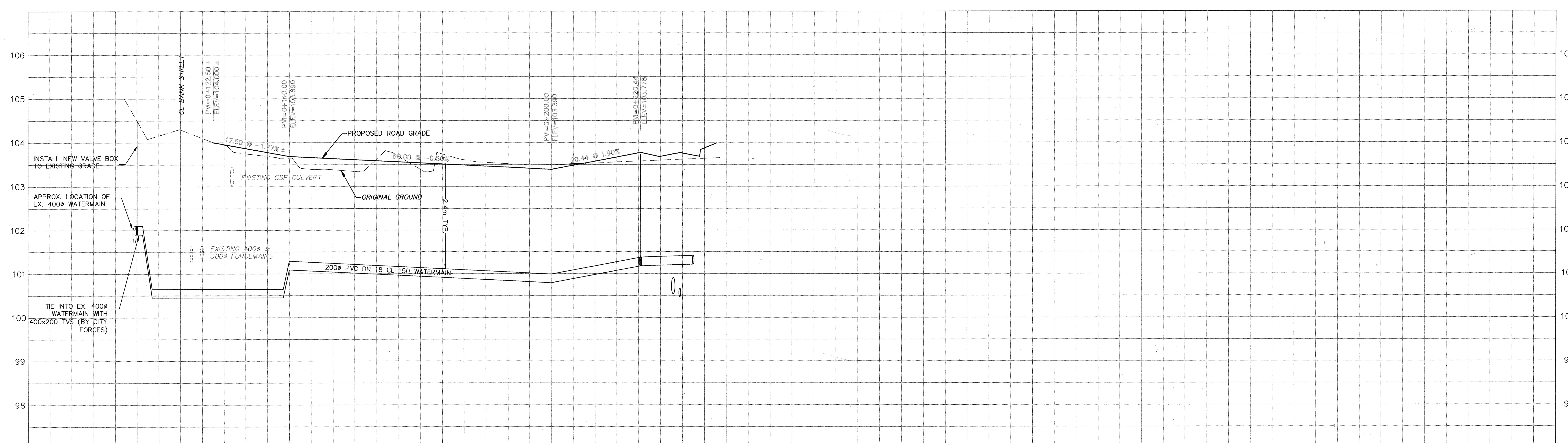
- SINGLE SERVICE LOCATION
- DOUBLE SERVICE LOCATION
- DRIVEWAY LOCATION
- 200ø STORM — STORM SEWER
- 200ø SANITARY — SANITARY SEWER
- 200ø WATERMAIN — WATERMAIN
- HYD B/F 85.68 — HYDRANT c/w BOTTOM OF FLANGE ELEV.
- BARRIER CURB
- MOUNTABLE CURB
- TP06-06 — TESTPIT #
- BH10-2 — BOREHOLE #
- WR — TOP OF WEATHERED ROCK
- BR — TOP OF SOLID ROCK
- (102.29) — HGL BASED ON 3 HR CHICAGO STORM
- (101.34) — HGL BASE ON 24 HR SCS TYPE II STORM

LEGEND
STREET AND REARYARD CATCHBASINS

- CATCHBASIN c/w ICD 16.4 l/s
- CATCHBASIN c/w ICD 20 l/s
- CATCHBASIN c/w ICD 22 l/s
- CATCHBASIN c/w ICD 30 l/s
- CATCHBASIN c/w ICD 42 l/s
- CATCHBASIN c/w 150 VHV-2
- CATCHBASIN c/w 125 VHV-2
- CATCHBASIN c/w 100 VHV-2

NOTES :

1. ALL CONSTRUCTION IN ACCORDANCE WITH CURRENT CITY OF OTTAWA DRAWINGS AND SPECIFICATIONS.
2. ALL CONNECTIONS TO EXISTING WATERMAIN BY CITY OF OTTAWA FORCES. CONTRACTOR TO EXCAVATE, BACKFILL, COMPACT AND REINSTATE.
3. ROADWAY SECTIONS REQUIRING GRADE RAISE TO PROPOSED SUB GRADE LEVEL TO BE FILLED WITH ACCEPTABLE NATIVE EARTH BORROW OR IMPORTED OPSS SELECTED SUBGRADE MATERIAL IF NATIVE MATERIAL IS DEFICIENT.
4. NO WATERMAIN TO BE LAID ON ENGINEERED FILL UNTIL THE DENSITY TEST REPORTS HAVE BEEN SUBMITTED TO AND APPROVED BY THE CITY. FILL TO BE PLACED TO 0.60m MIN. ABOVE THE TOP OF THE WATERMAIN GRADES AND COMPACTED TO MIN. 100ø STANDARD PROCTOR IN 0.30m LIFTS. TESTS SHALL BE TAKEN ALONG THE CENTRE OF THE LIFT. ALL TEES, HORIZONTAL BENDS, AND BRANCH VALVES IN FILL AREAS TO BE TIED WITH THRUST RESTRAINING JOINTS AND THRUST BLOCKS.
5. TYPE F HYDRANTS TO BE USED ON WATERMAINS WITH 2.70m COVER.
6. REFER TO DRAWING 3791-100B FOR INLET CONTROL DEVICE SIZES FOR DITCH INLETS AND CBMH1.
7. REFER TO DRAWING 3791-100B FOR INLET CONTROL DEVICE SIZES AND SPECIFICATIONS FOR STREET AND REARYARD CATCHBASINS.
8. THE HYDRAULIC GRADE LINE IS SHOWN ONLY WHEN IT IS HIGHER THAN THE SEWER OBVERT.
9. REFER TO GEOTECHNICAL INVESTIGATION REPORT NO. 09-1121-1102, DATED, APRIL 2010, PREPARED BY GOLDER ASSOCIATES LTD. INFORMATION PRESENTED ON THIS DRAWING HAS BEEN INTERPOLATED FROM THE GEOTECHNICAL REPORT AND ACCURACY IS NOT GUARANTEED. CONTRACTORS ARE ADVISED TO READ THE GEOTECHNICAL REPORT AND ASSUME THEIR OWN CONCLUSIONS.
10. ALL CURBS TO BE BARRIER TYPE, EXCEPT FOR KINGSWELL STREET AND LAGUNA STREET WHICH WILL HAVE MOUNTABLE CURBS.
11. REFER TO DRAWING 3791-100C FOR ROAD STRUCTURE.



ROAD GRADE	TOP OF WATERMAIN	STM SEWER INVERT	SAN SEWER INVERT	STATION
	102.100		EXIST. WM TVS & VB 22 VERT. BEND 22 VERT. BEND	±0+104.65 -400x200 0+106.3 0+108.5
	100.650			
	100.650			0+120
103.867	100.650			
103.690	101.290		22 VERT. BEND 22 VERT. BEND	0+138.6 0+140
103.640	101.240			
103.590	101.190			0+160
103.540	101.140			
103.490	101.090			0+180
103.440	101.040			
103.390	100.990			0+200
103.580	101.180			
103.770	101.370		200V&VB	0+220 0+220.435
103.760	101.409		200x200TEE	0+232.440

No.	REVISIONS	By	Date
14			
13			
12			
11	AS-BUILT		13:04:22
10	REVISED PER FINAL 4M-PLAN		11:11:01
9	REVISED ROAD CROSS SECTION		11:09:26
8	RE-ISSUED FOR MOE APPROVAL		11:08:17
7	ISSUED FOR CONSTRUCTION		11:05:13
6	ISSUED FOR MOE APPROVAL		11:03:11
5	REVISED AS PER CITY COMMENTS		10:12:21
4	REVISED AS PER CITY COMMENTS		10:09:21
3	REVISED AS PER CITY COMMENTS		10:05:27
2	RE-ISSUED FOR CITY COMMENTS		10:04:09
1	ISSUED FOR CITY COMMENTS		10:02:05

CLARIDGE HOMES

IBI GROUP
333 Preston Street
Tower 1, Suite 400
Ottawa, Ontario
Canada K1S 5N4
Tel (613)225-1311
FAX (613)225-9868

Project Title
SUNDANCE VILLAGE
PHASE 1

LICENSED PROFESSIONAL ENGINEER
J. I. MOFFATT
22/04/13
PROVINCE OF ONTARIO

N

Drawing Title
BLOCK 98 WATERMAIN BANK ST. TO STA. 0+280

Scale 1:500 1:50

Design R.K
Date FEBRUARY '10
Drawn M.M.
Checked J.I.M.
Project No. 3791
Drawing No. 113

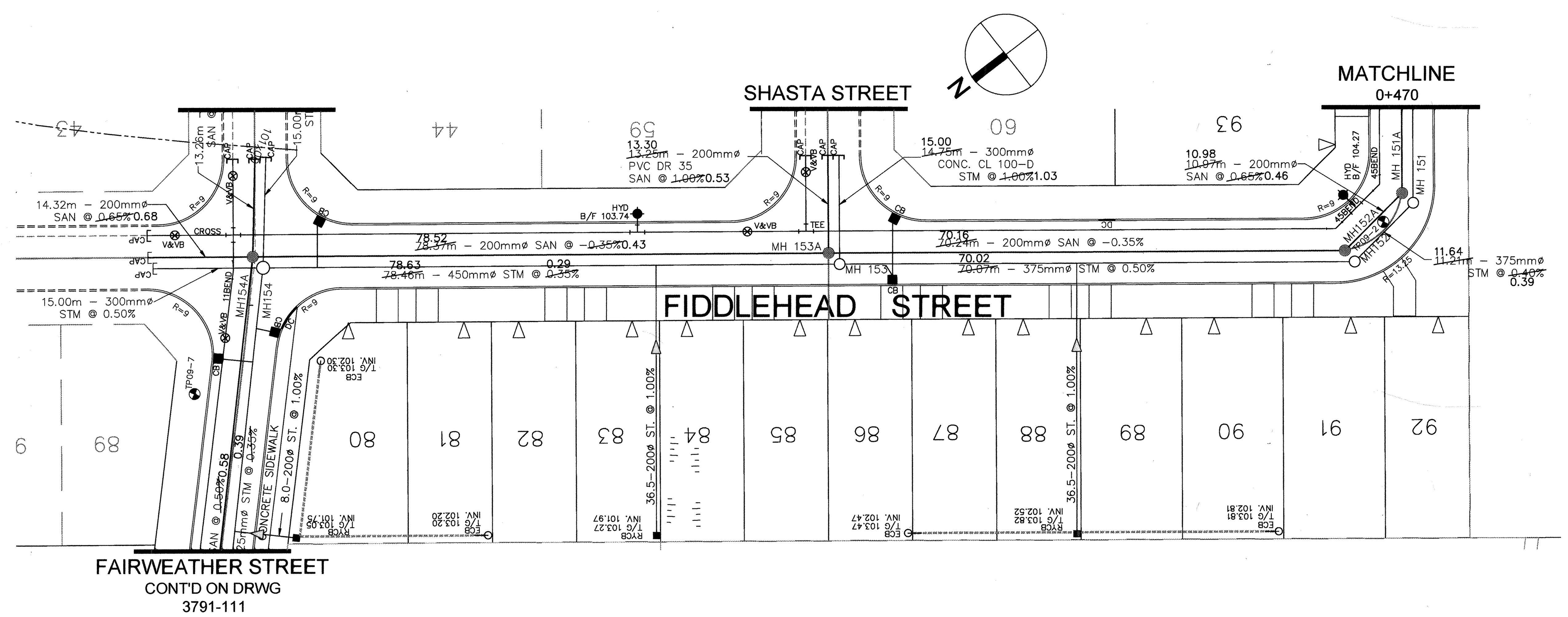
15886

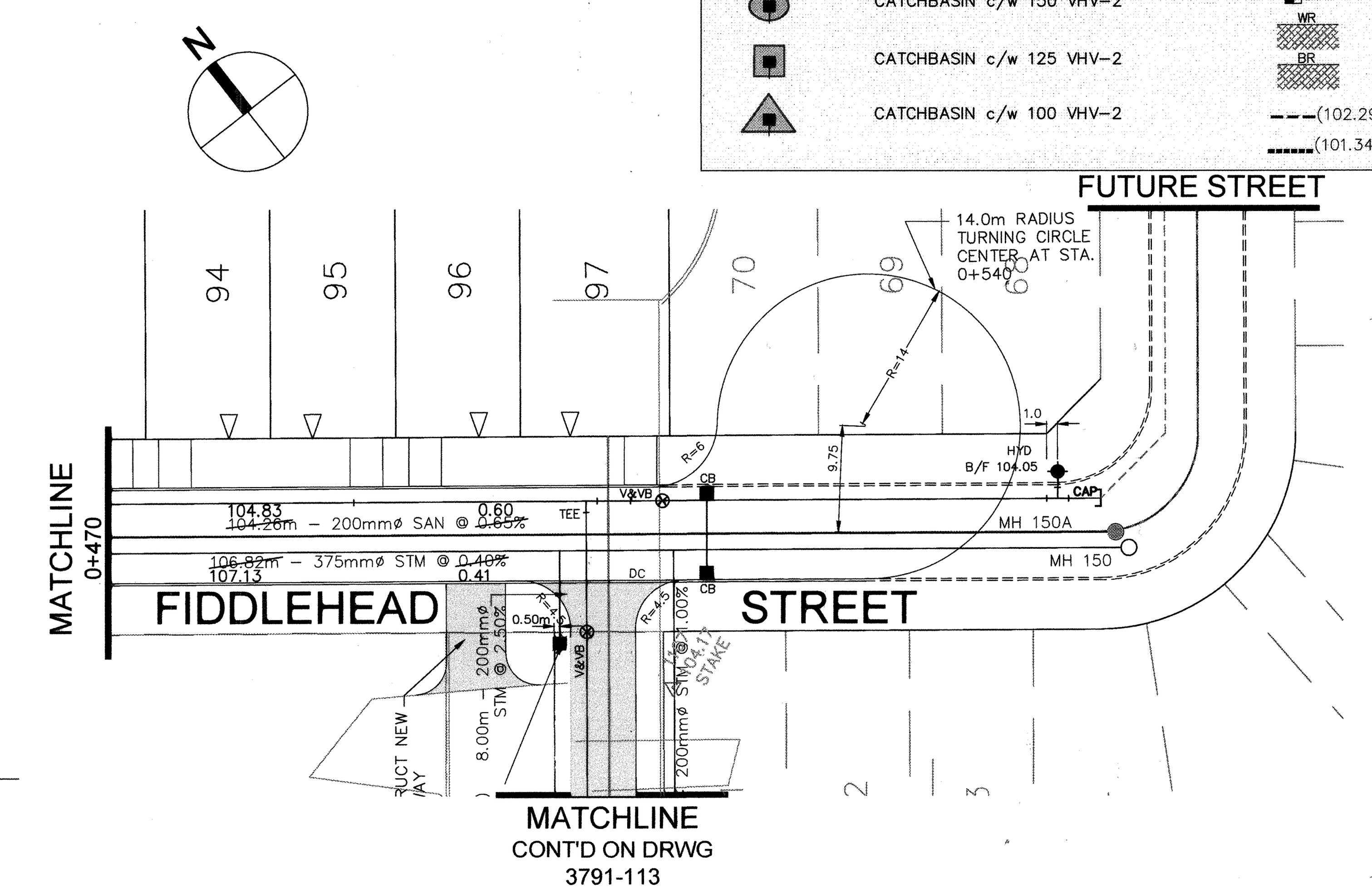
LEGEND
STREET AND REARYARD CATCHBASINS

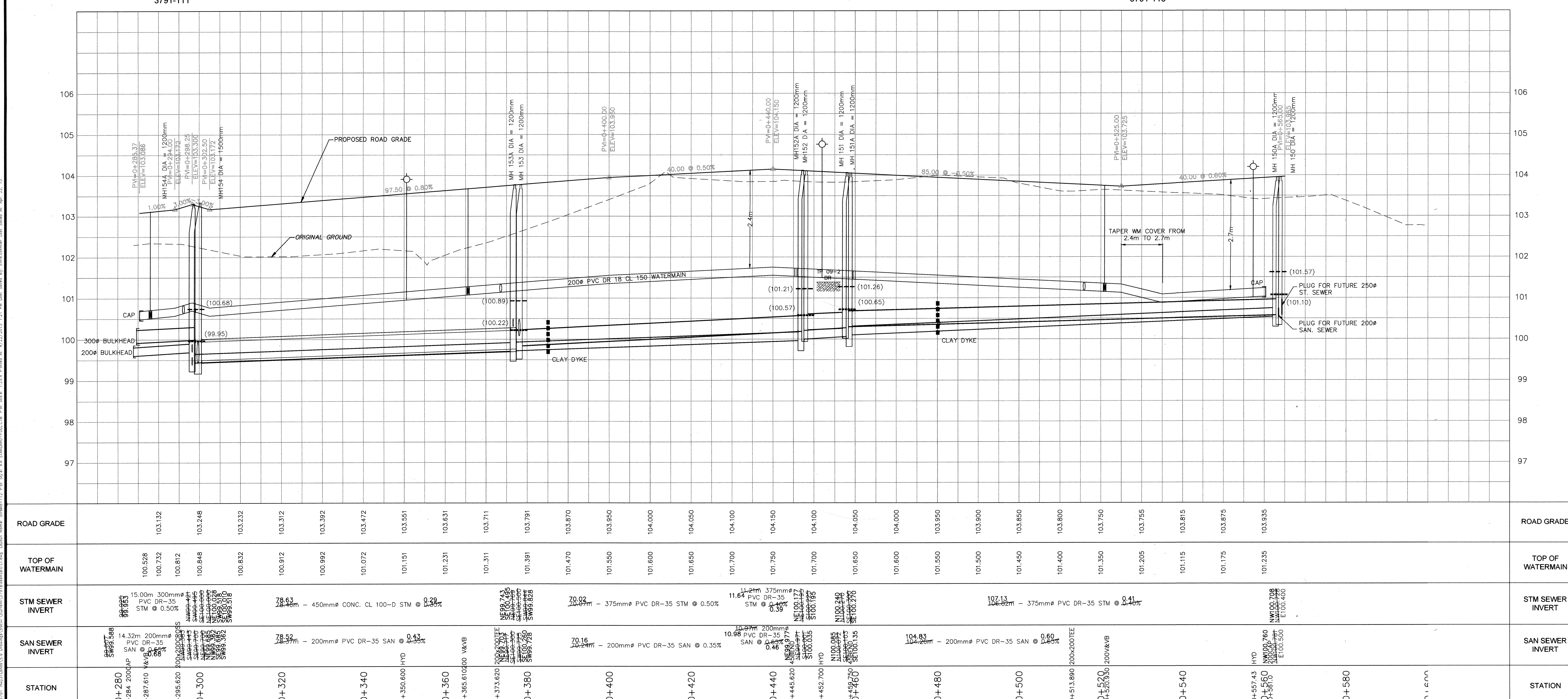
- CATCHBASIN c/w ICD 16.4 l/s
- CATCHBASIN c/w ICD 20 l/s
- CATCHBASIN c/w ICD 22 l/s
- CATCHBASIN c/w ICD 30 l/s
- CATCHBASIN c/w ICD 42 l/s
- CATCHBASIN c/w 150 VHV-2
- CATCHBASIN c/w 125 VHV-2
- CATCHBASIN c/w 100 VHV-2

LEGEND:

- SINGLE SERVICE LOCATION
- DOUBLE SERVICE LOCATION
- DRIVEWAY LOCATION
- 200ø STORM — STORM SEWER
- 200ø SANITARY — SANITARY SEWER
- 200ø WATERMAIN — WATERMAIN
- HYD B/F 85.68 — HYDRANT c/w BOTTOM OF FLANGE ELEV.
- BARRIER CURB
- MOUNTABLE CURB
- TP06-06 — TESTPIT #
- BH10-2 — BOREHOLE #
- WR — TOP OF WEATHERED ROCK
- BR — TOP OF SOLID ROCK
- (102.29) — HGL BASED ON 3 HR CHICAGO STORM
- (101.34) — HGL BASE ON 24 HR SCS TYPE II STORM







NOTES :

1. ALL CONSTRUCTION IN ACCORDANCE WITH CURRENT CITY OF OTTAWA DRAWINGS AND SPECIFICATIONS.
2. ALL CONNECTIONS TO EXISTING WATERMAIN BY CITY OF OTTAWA FORCES. CONTRACTOR TO EXCAVATE, BACKFILL, COMPACT AND REINSTATE.
3. ROADWAY SECTIONS REQUIRING GRADE RAISE TO PROPOSED SUB GRADE LEVEL TO BE FILLED WITH ACCEPTABLE NATIVE EARTH BORROW OR IMPORTED OPSS SELECTED SUBGRADE MATERIAL IF NATIVE MATERIAL IS DEFICIENT.
4. NO WATERMAIN TO BE LAID ON ENGINEERED FILL UNTIL THE DENSITY TEST REPORTS HAVE BEEN SUBMITTED TO AND APPROVED BY THE CITY. FILL TO BE PLACED TO 0.60m MIN. ABOVE THE TOP OF THE WATERMAIN GRADES AND COMPACTED TO MIN. 100ø STANDARD PROCTOR IN 0.30m LIFTS. TESTS SHALL BE TAKEN ALONG THE CENTRE OF THE LIFT. ALL TEES, HORIZONTAL BENDS, AND BRANCH VALVES IN FILL AREAS TO BE TIED WITH THRUST RESTRAINING JOINTS AND THRUST BLOCKS.
5. TYPE F HYDRANTS TO BE USED ON WATERMAINS WITH 2.70m COVER.
6. REFER TO DRAWING 3791–100B FOR INLET CONTROL DEVICE SIZES FOR DITCH INLETS AND CBMH1.
7. REFER TO DRAWING 3791–100B FOR INLET CONTROL DEVICE SIZES AND SPECIFICATIONS FOR STREET AND REARYARD CATCHBASINS.
8. THE HYDRAULIC GRADE LINE IS SHOWN ONLY WHEN IT IS HIGHER THAN THE SEWER OBVERT.
9. REFER TO GEOTECHNICAL INVESTIGATION REPORT NO. 09–1121–1102, DATED, APRIL 2010, PREPARED BY GOLDER ASSOCIATES LTD. INFORMATION PRESENTED ON THIS DRAWING HAS BEEN INTERPOLATED FROM THE GEOTECHNICAL REPORT AND ACCURACY IS NOT GUARANTEED. CONTRACTORS ARE ADVISED TO READ THE GEOTECHNICAL REPORT AND ASSUME THEIR OWN CONCLUSIONS.
10. ALL CURBS TO BE BARRIER TYPE, EXCEPT FOR KINGSWELL STREET AND LAGUNA STREET WHICH WILL HAVE MOUNTABLE CURBS.
11. REFER TO DRAWING 3791–100C FOR ROAD STRUCTURE.

No.	REVISIONS	By	Date
14			
13			
12			
11			
10	AS–BUILT		13:04:22
9	REVISED PER FINAL 4M–PLAN		11:11:01
8	RE–ISSUED FOR MOE APPROVAL		11:08:17
7	ISSUED FOR CONSTRUCTION		11:05:13
6	ISSUED FOR MOE APPROVAL		11:03:11
5	REVISED AS PER CITY COMMENTS		10:12:21
4	REVISED AS PER CITY COMMENTS		10:09:21
3	REVISED AS PER CITY COMMENTS		10:05:27
2	RE–ISSUED FOR CITY COMMENTS		10:04:09
1	ISSUED FOR CITY COMMENTS		10:02:02

CLARIDGE HOMES

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Project Title

SUNDANCE VILLAGE PHASE 1

LICENSED PROFESSIONAL ENGINEER — J. I. MOFFATT — 22/04/13 — PROVINCE OF ONTARIO

Drawing Title

FIDDLEHEAD STREET STA. 0+280 TO STA. 0+520

Scale 1:500 / 1:50

Design: R.K — Date: FEBRUARY '10

Drawn: M.M. — Checked: J.I.M.

Project No. 3791 — Drawing No. 112

15886