



Assessment of Adequacy of Public Services Report

Official Plan Amendment and Zoning By-Law Amendment
400 Coventry Road, Ottawa, ON

Prepared for:

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LRL File No.: 220200

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1 INTRODUCTION AND SITE DESCRIPTION

LRL Associates Ltd. was retained by Groupe Oradev Inc. to prepare a functional serviceability report to review and assess the adequacy of public services to support a proposed re-development at the Coventry Road within the City of Ottawa.

The subject site is within the Rideau-Rockcliffe Ward, located on the south side of Coventry Road, and has an approximate area of **1.99 ha**. Under the City of Ottawa Zoning by-law, the property is currently zoned as GM6 H(34) for the northern half, and GM6 H(90) for the southern half of the property. Within the General Mixed Use Zone a variety of uses are permitted including residential, non-residential and a mix of both of the uses, with heights of up to 34 metres within the northern half and 90 metres within the southern half of the property. The land is currently used as an office building and fenced in storage yard for the business operations of Enbridge Gas distribution, consisting mainly of a building in the North East corner, a large paved area and landscaping. The subject site can be seen below in Figure 1.



Figure 1: Aerial View of Subject Lands

This serviceability report has been completed to further investigate the feasibility of the re-development of this parcel to consist of seven (7) high rise residential towers ranging from



eighteen (18) to thirty (30) storeys in height with commercial uses along Coventry Road, on site amenity spaces in between towers, as well as a public park and a new east-west public road. The site will be landscaped with soft and hardscaped surfaces with vehicle access above grade limited to the new public road, and a drive-aisle in between the buildings in the southern block.

The serviceability review summarized in this report has been completed to further investigate the serviceability of the subject parcel in support of a Zoning By-law amendment and an Official Plan amendment. The subject parcel is seeking rezoning to implement an appropriate Transit Oriented Development (TD) zone. In addition, an Official Plan amendment application is being submitted to seek relief from the current maximum building heights for this parcel of land. The planning documentation completed by Fotenn Consultants Inc. accompanying this submission further outlines this.

Following the Official Plan Amendment and Zoning By-law amendment application, a detailed design will advance with intentions for full Site Plan Control application submission.

2 PREVIOUS STUDIES FOR DEVELOPMENT

Historically, the City of Ottawa has completed plans and reports in relation to Transit Oriented Development (TOD) which includes the location of the subject land. The high-level analysis reviewed existing infrastructure capacities. This parcel of land falls within the 800m study area of the Tremblay Transit Oriented Development Plan.

Below is a brief summary of the notable conclusions gathered from the *Transit-Oriented Development (TOD) Plans- Lees, Hurdman, Tremblay, St. Laurent, Cyrville and Blair*, and the *LRT Transit Oriented Development Study Areas Servicing Overview Report (2012)* relating to the civil servicing and surrounding infrastructure for the site located at 400 Coventry Road;

- Sanitary:
 - The area north of the Highway discharges to the Rideau River Collector on North River Road just north of the RCMP facility and generally follows the Coventry Road corridor.
 - In a full buildout situation for the Tremblay/Train TOD area, surcharging of the Coventry corridor would exist.
- Water:
 - Recent upgrades completed for the watermain along Coventry (completed in 2014/2015) were noted to be used to service the lands north of the highway for future growth. Additionally, there are several looped pipe systems in this area which are intended to provide redundancy; however, this is to be confirmed during detailed design.
 - The existing and new feeder mains are all fed from a strong reliable source (Hurdman Bridge Pump Station) and are expected to be adequate to provide all peak domestic demands and fire flows to the TOD study areas.



- Storm:
 - The existing trunk storm sewers are of sufficient capacity to convey flows at the TOD build-out level.
 - Stormwater management will occur on the site of proposed development projects to provide 100 year level-of-service by containing storage volume on-site. Current City stormwater management criteria for redevelopment are sufficient and should continue to be implemented.
 - Weeping tile and roof tops will be directed to a storm sewer during redevelopment
- Transportation and ROW Upgrades:
 - The corner of Belfast and Coventry has been identified as a future Key Pedestrian Crossing within the Study. Both Coventry and Belfast have been highlighted to be critical to the planning of a bicycle network as well.
 - As part of the planning of future street network, this site has been identified to benefit from a future public Road, private road or Multi-use pathway intersecting the site in half in the north south direction, with the road running East-West. This is to be considered during planning and design while finalizing the site plan.
 - East of the development falls within the St. Laurent Street Network TOD Plan Area which outlines potential future roadway realignment and widening along Coventry.
- Hydro:
 - Circuit capacity will have to be increased by either upgrading existing lines or adding new lines, especially within the Lees, Hurdman, and Tremblay areas to support the City's vision of ultimate build out. and to a lesser extent, the St. Laurent and Blair areas.

3 EXISTING SITE AND AVAILABLE SERVICES

The site is consisting of an office building, asphalt parking lot and storage yard for the current building operations, as well as a landscaped buffer surrounding the exterior of the parcel.

Sewer and watermain mapping, along with as-built information collected from the City of Ottawa indicate the following existing infrastructure located within the adjacent Coventry Road right-of-way:

- 1350mmØ CONC Storm Sewer running across Coventry Road
- 300mmØ PVC Sanitary Sewer
- 914mmØ CONC Watermain (Feeder main)
- 300mmØ PVC Watermain

No service mains are located adjacent to the subject property on Belfast Road at this time.



4 PROPOSED DEVELOPMENT

The intention of this serviceability report is to review existing conditions to determine the servicing feasibility of a high-density residential development within the subject property. The proposed development includes seven (7) multi-storey residential buildings with underground parking with vehicular access from Belfast Road. The contemplated buildings transition down from 30 storeys at the south portion (bordered by Highway 417) to 18 storey as the site transitions to the Coventry Road corridor.

Tables 1 and 2 below, provide a breakdown of the unit types and the commercial and amenity areas within buildings A to E.

Table 1 – Residential Unit Breakdown

Building	Unit Types				Total
	Bachelor	1 Bedroom	2 Bedroom	3 Bedroom	
A	32	103	67	10	212
B + C1 + C2	141	452	204	66	863
D	81	60	88	16	245
E1 + E2	36	209	98	27	370
Total	290	824	457	119	1690

Table 2 – Commercial/ Amenity Areas

Building	Commercial Space (m ²)	Amenity Space (m ²)
A	0	545
B + C1 + C2	0	1200
D	0	430
E1 + E2	1700	434
Total	1700	2609

It was determined that a population of approximately 2,888 people would be associated with the 1,690 residential units proposed within the development.

Refer to Appendix A for an overview of the Site Plan prepared by NEUF Architects.

5 WATER SUPPLY SERVICING

The subject property lies within the City of Ottawa 1E water distribution network pressure zone of the central water distribution system. There is an existing 914 mm feeder main within Coventry Road as well as a 300 mm watermain which exists within the Coventry Road ROW currently servicing the site. As concluded from previous studies completed for the area, the existing feeder mains are all fed from a reliable source and are expected to be adequate to provide peak domestic demands and fire flows.



There are currently five (5) existing fire hydrants within proximity of the subject property. Refer to *Appendix D* for the water pressure zone and location of fire hydrants.

Given the ultimate build out scenario of the development, it is assumed that there will be an internal looped network running through the site. At the time of detailed design which will be completed for a site plan application, it would be recommended that a hydraulic model is developed to incorporate boundary conditions provided by the city at that time, as well as the connections to all buildings within the parcel. This will allow full review of peak domestic demands as well as fire demand scenarios to be further analyzed.

According to the City of Ottawa Water Distribution Guidelines (Technical Bulletin ISDTB-2014-02), since the subject buildings are anticipated to house more than 50 residential units, it is required to be serviced by two water service laterals, separated by an isolation valve, for redundancy and to avoid creation of a vulnerable service area. Hence, the contemplated buildings are anticipated to be serviced via two services connected to an internal network on the site which will then tie to the existing 300 mm watermain within Coventry Road. The service laterals are to be looped inside the building in coordination with the mechanical engineer at detailed design stage.

Table 3, included below, summarizes the City of Ottawa Design Guidelines design parameters in the preparation of the water demand estimate.

Table 3: City of Ottawa Design Guidelines- Water Design Parameters

Design Parameter	Value
Residential Bachelor / 1 Bedroom Apartment	1.4 P/unit
Residential 2 Bedroom Apartment	2.1 P/unit
Residential 3 Bedroom Apartment	3.1 P/unit ⁶
Commercial Average Daily Demand	2.8 L/m ² /d
Average Daily Demand	280 L/d/per
Minimum Depth of Cover	2.4 m from top of watermain to finished grade
Desired operating pressure range during normal operating conditions	350 kPa and 480 kPa
During normal operating conditions pressure must not drop below	275 kPa
During normal operating conditions pressure shall not exceed	552 kPa
During fire flow operating conditions pressure must not drop below	140 kPa
<i>*Table updated to reflect technical Bulletin ISDTB-2018-02</i>	



5.1 Residential Water Demands

Anticipated population demands have been interpreted from the Statistics table provided by Neuf Architects. The contemplated development is anticipated to include 1,690 residential units, which translates to a population of **2888** people. Table 4 below summarizes the proposed population count as interpreted using Table 4.1 of the *City of Ottawa Water Distribution Design Guidelines*.

Table 4: Development Residential Population Estimate

Unit Type	Persons Per Unit	Number of Units	Population
Bachelor	1.4	290	406
1 Bedroom	1.4	824	1153.6
2 Bedroom	2.1	457	959.7
3 Bedroom	3.1	119	368.9
Total		1690	2888.2

The required water supply requirements for the residential units in the proposed development have been calculated using the following formula:

$$\text{Where: } Q = (q \times P \times M)$$

q = average water consumption (L/capita/day)

P = design population (capita)

M = Peak factor

With reference to *Table 4.2 of the City of Ottawa Water Distribution Design Guidelines*, using an average water consumption rate of 280 L/c/d, a calculated Maximum Daily Demand Factor and Maximum Hour Demand Factor of 2.5 and 2.2, respectively, anticipated demands were calculated as follows:

- Average daily domestic water demand is **9.36 L/s**,
- Maximum daily demand is **23.40 L/s**, and
- Maximum hourly demand is **20.59 L/s**.

5.2 Commercial Water Demands

As seen in Table 2 a portion of the floor area will be dedicated to commercial/retail space. As per floor plans provided by Neuf Architects of the proposed buildings, one of the towers fronting Coventry Road will have a retail space of **1700 m²**.

The required water supply for the commercial spaces within the proposed development have been calculated using the following formula:

$$\text{Where: } Q = (q \times A \times M)$$

q = average water consumption (L/m²/day)

A = commercial area (m²)

M = Peak factor



With reference to Table 4.2 of the *City of Ottawa Water Distribution Design Guidelines* and *technical bulletin ISTB-18-02*, using an average water consumption rate of 2.8 L/m²/d, a calculated Maximum Daily Demand Factor and Maximum Hour Demand Factor of 1.5 and 1.8, respectively, anticipated commercial demands were calculated as follows:

- Average daily domestic water demand is **0.06** L/s,
- Maximum daily demand is **0.08** L/s, and
- Maximum hourly demand is **0.10** L/s.

5.3 Total Water Demands

Based on calculated residential and commercial demands for the concept development, the total anticipated water demands are as follows;

- Average daily domestic water demand is **9.42** L/s,
- Maximum daily demand is **23.48** L/s, and
- Maximum hourly demand is **20.69** L/s.

For greater detail on Water Demand Calculations, please refer to **Appendix C**.

Once the subject development moves forward into the detailed design phase for Site Plan Application, floor plans will have to be finalized and detailed layout of water servicing will progress. At that time, it will be necessary to contact the City of Ottawa to obtain boundary conditions associated with the estimated water demand. This will be used to develop a hydraulic model for the site and confirm the available pressure for the water supply.

Once boundary conditions are received from the City of Ottawa, pressures available for average daily demands, maximum daily + maximum fire flow, as well as peak hour will need to be confirmed. Review will take place to ensure the scenarios noted above meet the required pressure range stated in Table 3 as per City of Ottawa Design Guidelines.

5.4 Fire Protection

The estimated flow will be calculated once the site layout is finalized, and floor plans are confirmed as the detailed design progresses. Recognizing that the towers are in close proximity to each other, the overall floor area used to calculate fire protection will be critical. These will be calculated in accordance with ISTB-2018-02. Critical details to consider when calculating the fire flow demands will include:

- Type of construction
- Building Separation
- Occupancy type
- Sprinkler Protection
- Floor Area

There are at least five (5) existing fire hydrants in close proximity to the contemplated buildings that are available to provide a maximum fire flow of **21,765 L/min**. Refer to **Appendix D** for fire hydrant locations.



Table 5 below summarizes the aggregate fire flow of the contributing hydrants in close proximity to the proposed development based on Table 18.5.4.3 of *ISTB-2018-02*.

Table 5: Fire Protection Hydrant Summary Table

	Max. Fire Flow Demand (L/min)	Fire Hydrants(s) within 75m	Fire Hydrant(s) within 150m	Fire Hydrant(s) within 300m	Available Combined Fire Flow (L/min)
Contemplated Development	To be determined during detailed design	2	2	1	(2 x 5678) + (2 x 3785) + (1 x 2839) = 21,765

The total available fire flow from contributing hydrants is equal to **21,765 L/min**. A certified fire protection system specialist will need to be employed to design the building's fire suppression system and confirm the actual fire flow demand.

6 SANITARY SERVICE

6.1 Proposed Connection and Demands

There is an existing 300mm municipal sanitary sewer located on Coventry Road. It is anticipated that the development will connect to the existing 300mm PVC sanitary main in Coventry. Given the layout of the site plan, and the assumption that one large parking garage will span under multiple towers, it is assumed that there will be a single sanitary service lateral from Coventry Road, which will then be routed and connected to all proposed buildings. However, shall this development be phased, further review will take place for options to extend available service tie in locations up the Belfast corridor. The detailed sizing and layout of the onsite network will be further investigated during the detailed design stage.

The total anticipated post development total flow was calculated to be is **28.49 L/s** as a result of the proposed residential population, commercial use and a small portion of infiltration. Refer to **Appendix E** for further information on the calculated sanitary flows.

6.2 Downstream Infrastructure Capacities

Based on correspondence between the City of Ottawa's Asset Management department, at the time of the preparation of this report, it was confirmed that the sanitary infrastructure in Coventry Road has the required 28.49L/s capacity.

However, it was noted that this capacity will only be allocated to the subject development once detailed design and site plan application is received. As noted in the TOD studies in the past, it is recognized that in a full buildout situation for the Tremblay/Train TOD area, surcharging of the Coventry corridor would exist. Therefore, the available capacity is not guaranteed shall much redevelopment take place on a similar timeline.



Refer to **Appendix G** for correspondence and confirmation e-mail for the available capacity along Coventry Road.

7 STORMWATER MANAGEMENT

7.1 Existing Conditions and Stormwater Infrastructure

There is an existing 1350mm municipal storm sewer located on Coventry Road.

In pre-development conditions, it appears that the the stormwater runoff from subject site would generally flow towards Coventry, in the westward direction. The site sits at a lower elevation than Belfast Road, and the profile of Coventry reduces in elevation as it proceeds west. During this review, it is not confirmed if existing stormwater management exists on the site; however, it is assumed that any collection and conveyance of stormwater in the underground sewers on site is directed to Coventry Road storm sewers.

7.2 Design Criteria

The stormwater management criteria for this development are based on general understanding of City of Ottawa design requirements, the City of Ottawa Sewer Design Guidelines including City of Ottawa Stormwater Management Design Guidelines, 2012 (City standards), as well as the Ministry of the Environment's Stormwater Planning and Design Manual, 2003 (SWMPD Manual).

The stormwater management will need to meet the following stormwater design criteria;

- Meet an allowable release rate based on the pre-development Rational Method Coefficient or a maximum of 0.50, employing the City of Ottawa IDF parameters for a 5-year storm with a calculated time of concentration equal to or greater than 10 minutes;
- Attenuate all storms up to and including the City of Ottawa 100-year storm event on site;
- It is assumed that enhanced quality treatment (80% TSS removal) prior to release from site will be required. Further consultation with the local conservation authority would confirm this prior to progressing with detailed Site Plan Control design; and

7.3 Proposed Stormwater Management System

The contemplated development is anticipated to outlet to the existing 1350mm municipal storm sewer located on Coventry Road. It is anticipated that area drains on the landscaped areas along with roof drains on building rooftops will be utilised to collect and direct runoff to the building's mechanical system in the underground garage.

7.3.1 Allowable Release Rate

The allowable release rate in post development conditions was calculated based on the design criteria outlined above in section 7.2. Based on stormwater objectives for the subject site, the



allowable release rate for the contemplated development is approximately 290.0 L/s for all storms up to and including the 100-year storms.(Refer to Appendix F for calculations)

7.3.2 Storm Servicing Strategy

To meet the stormwater objectives, the development will contain a combination of roof top flow attenuation along with surface and subsurface storage within the parking garage.

Table 6 below summarizes assumed post-development drainage areas based on the site development plan. Conservative assumptions were made at this time based on the concept plan provided to provide a magnitude of allowable flow. The following assumptions were made:

- 10% of the site will be uncontrolled due to grading constraints
- 15% of the controlled portion of the site will be landscaped with grass or equivalent.

Calculations can be seen in *Appendix F*.

Table 6: Post-Development Estimated Areas & Runoff Coefficients

	C=0.2 Pervious Area (ha)	C=0.9 Building Area/Asphalt (ha)	Total Area (ha)	Weighted Runoff Coefficient
Uncontrolled Areas	0.0995	0.0995	0.199	0.55
Controlled Areas	0.2689	1.5237	1.793	0.79
TOTAL	0.3684	1.6232	1.992	0.77

Table 7, below, summarizes post-development flow rates based on the assumptions and watershed areas summarized above.

Table 7: Summary of Post-Development Flow Rates

Catchment Area	Drainage Area (ha)	100-year Release Rate (L/s)	100-Year Required Storage (m3)
Uncontrolled Areas	0.199	67.91	0
Controlled Areas	1.793	220.30	448.48
TOTAL	1.1992	288.21	448.48

It is anticipated that approximately **448.48 m³** of storage will be required on site to attenuate flow to the established release rate of **288.21 L/s** in the 100-year storm; storage calculations are contained within *Appendix F*. At this time, it is assumed that the development will achieve required storage via a combination of roof top flow attenuation along with surface and subsurface storage including cistern storage in the parking garage. Actual storage volumes will need to be confirmed at the detailed design stage based on several factors, including grading constraints and landscape featured integrated into the site plan.



7.4 Quality Control

It is anticipated that the contemplated development would utilize an Oil/Grit Separator (OGS) to achieve the required 80% TSS removal treatment as specified by Rideau Valley Conservation Authority. The OGS would be required to treat all contaminated runoff collected in the surface parking lot before runoff is discharged into ditch.

8 GRADING

The detailed site grading will progress during the civil engineering design required for Site Plan Control. Due to the location of this site being on a corner parcel, the grading will be constrained greatly by the existing road profiles, the private approach bylaw, as well as the considerations given to on site stormwater management.

The proposed site grading will be designed so that major overland flow routes are provided to convey stormwater safely from the site to the surrounding ROW. Additionally, pedestrian pathways, entrances to the buildings, parkland and any hard surfaces will be designed to maximize on-site ponding while maintaining separation from the finished floor elevations to minimize runoff from the site.

9 CONCLUSION

This evaluation is limited to assessing the serviceability of the site described within this document to support an Official Plan Amendment and Zoning By-law Amendment.

Based on the Site Plan prepared by Neuf Architects included to *Appendix A*, the following conclusions, in relation to the serviceability of the site, can be made:

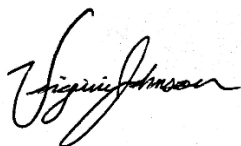
- **Water:**
 - The contemplated development is anticipated to be serviced via an internal looped service connection to the existing 300mm watermain within Coventry Rd. This will be further reviewed shall phasing of the development alter the feasibility of tie in location.
 - Domestic demands from the proposed concept re-development are expected to be in the range of **9.36 L/s** for the Average daily demand, **23.40 L/s** for the maximum daily and **20.59 L/s** for maximum hourly.
 - The maximum required fire flow will need to be calculated during the detailed design stage using the FUS method.
 - There are at least five (5) existing fire hydrants available to service the proposed development. They will provide a combined fire flow of **21,765 L/min** to the site.
 - It is recommended that a hydraulic model is completed during the detailed design stage to confirm fire flow, demands and input boundary conditions provided by the City of Ottawa at that time.
- **Sanitary:**
 - The post development total sanitary effluent was calculated to be is **28.49 L/s** considering proposed residential & commercial population and a small portion of infiltration.



- It is anticipated to service the contemplated development via a sanitary service lateral to be connected to the existing 300mm sanitary sewer on Coventry rd.
- The City has confirmed that the receiving sewer can accommodate the expected demands; however, it is on a “first come basis” for the contributing area. It will only be confirmed once a Site Plan Application is received.
- **Stormwater:**
 - Site stormwater runoff will need to be controlled to a pre-development release rate of approximately **290.0 L/s** and accommodate **448.48 m³** of stormwater storage during the 100-year storm event.
 - It is anticipated that an OGS will be installed to treat all contaminated runoff to an enhanced quality treatment level (80% TSS removal).
 - The subject site is anticipated to outlet into the existing 1350mm municipal storm sewer located on Coventry rd.

Prepared by:

LRL Associates Ltd.

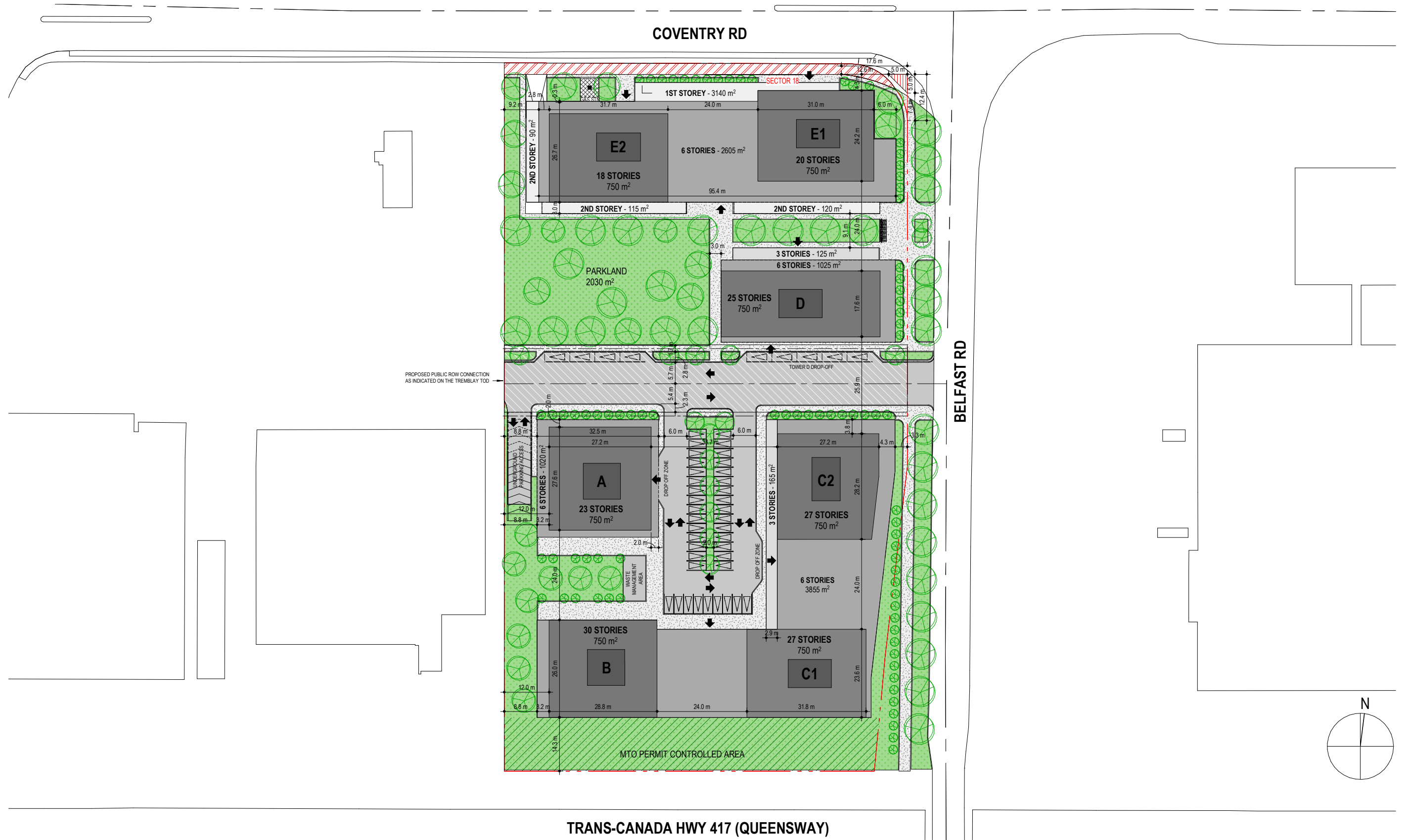


Virginia Johnson, P. Eng.
Civil Engineer



APPENDIX A
Architectural Site Plan and Building Statistics





12934 | DEVELOPMENT COVENTRY Rd. (2022-10-11)

PRELIMINARY MIX BY BUILDING 400 COVENTRY - BUIDING A

ÉTAGES	BACHELOR	1BD.	1BD. DEN	2BD.	2BD. DEN	3BD.	TOTAL
TOTAL PROJET	32	100	3	67	-	10	212
POURCENTAGE	15%	47%	1%	32%	0%	5%	100%

PRELIMINARY MIX BY BUILDING 400 COVENTRY - BUIDINGS B+C1+C2

ÉTAGES	BACHELOR	1BD.	1BD. DEN	2BD.	2BD. DEN	3BD.	TOTAL
TOTAL PROJET	141	372	80	196	8	66	863
POURCENTAGE	16%	43%	9%	23%	1%	8%	100%

PRELIMINARY MIX BY BUILDING 400 COVENTRY - BUIDING D

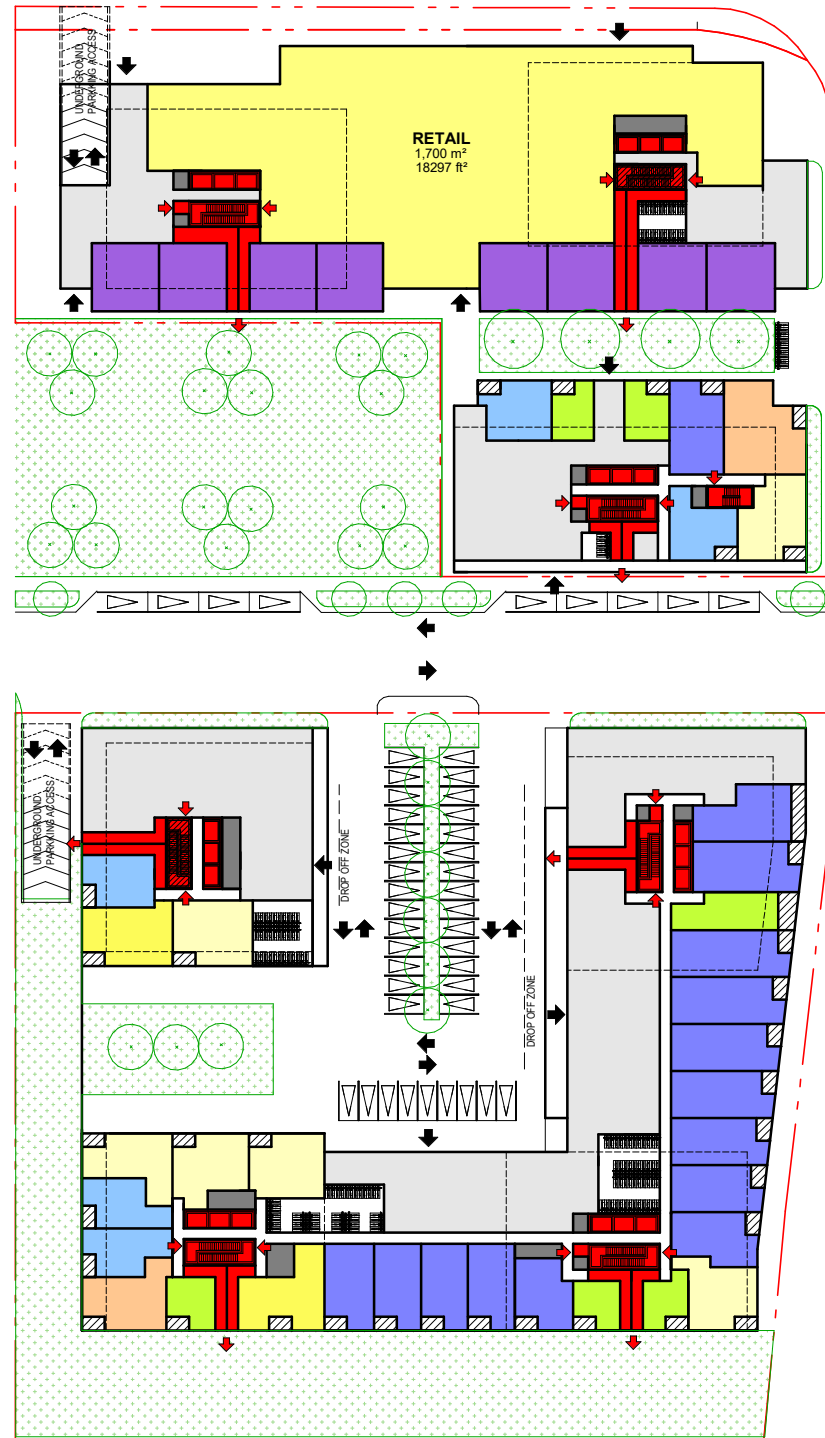
ÉTAGES	BACHELOR	1BD.	1BD. DEN	2BD.	2BD. DEN	3BD.	TOTAL
TOTAL PROJET	81	20	40	78	10	16	245
POURCENTAGE	33%	8%	16%	32%	4%	7%	100%

PRELIMINARY MIX BY BUILDING 400 COVENTRY - BUIDING E-1+E2

ÉTAGES	BACHELOR	1BD.	1BD. DEN	2BD.	2BD. DEN	3BD.	TOTAL
TOTAL PROJET	36	161	48	98	-	27	370
POURCENTAGE	10%	44%	13%	26%	0%	7%	100%

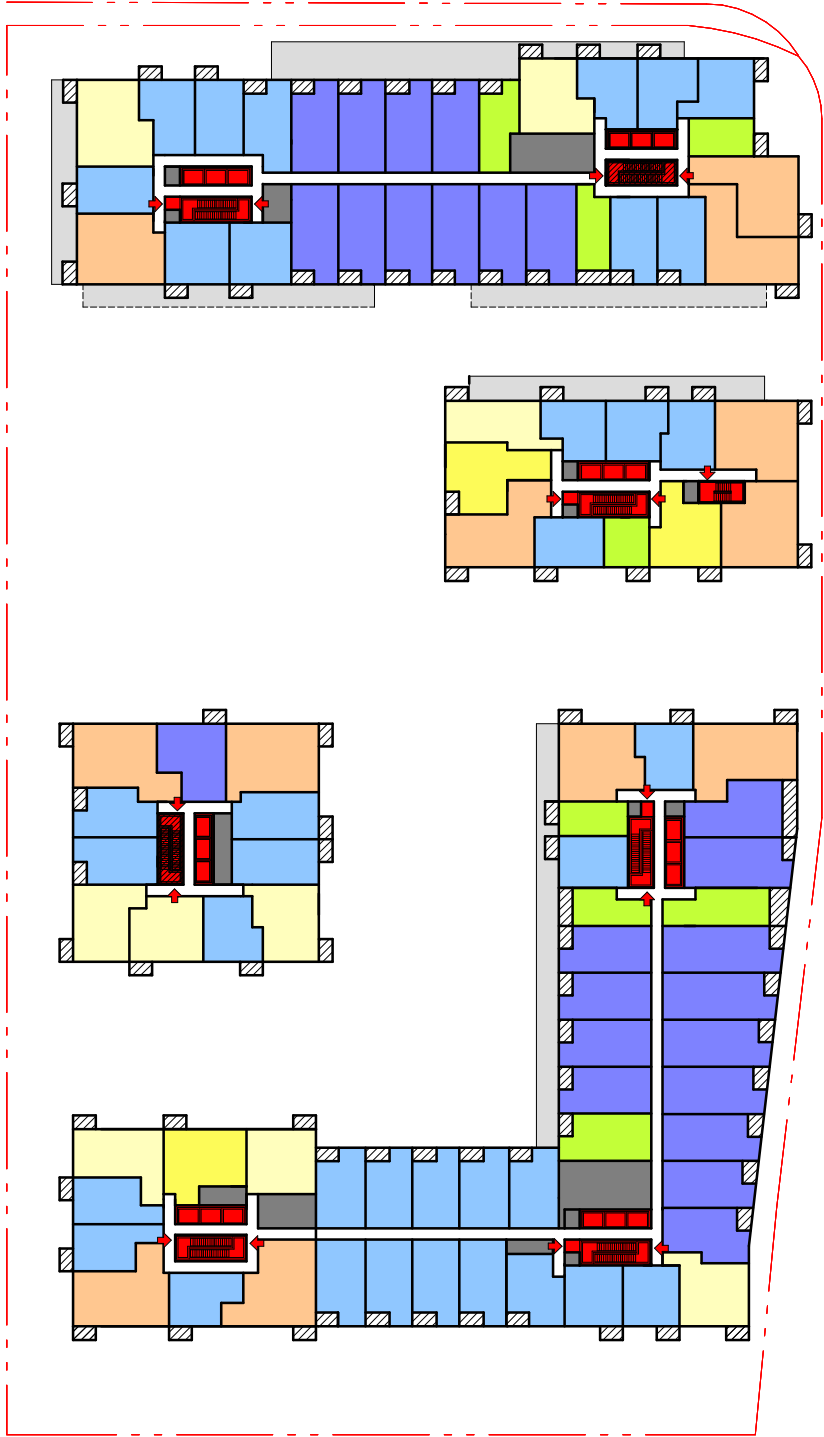
PRELIMINARY MIX 400 COVENTRY

ÉTAGES	BACHELOR	1BD.	1BD. DEN	2BD.	2BD. DEN	3BD.	TOTAL
TOTAL PROJET	290	653	171	439	18	119	1 690
POURCENTAGE	17%	39%	10%	26%	1%	7%	100%



PLAN TYPE BASILAR - 4TH FLOOR

1:1000

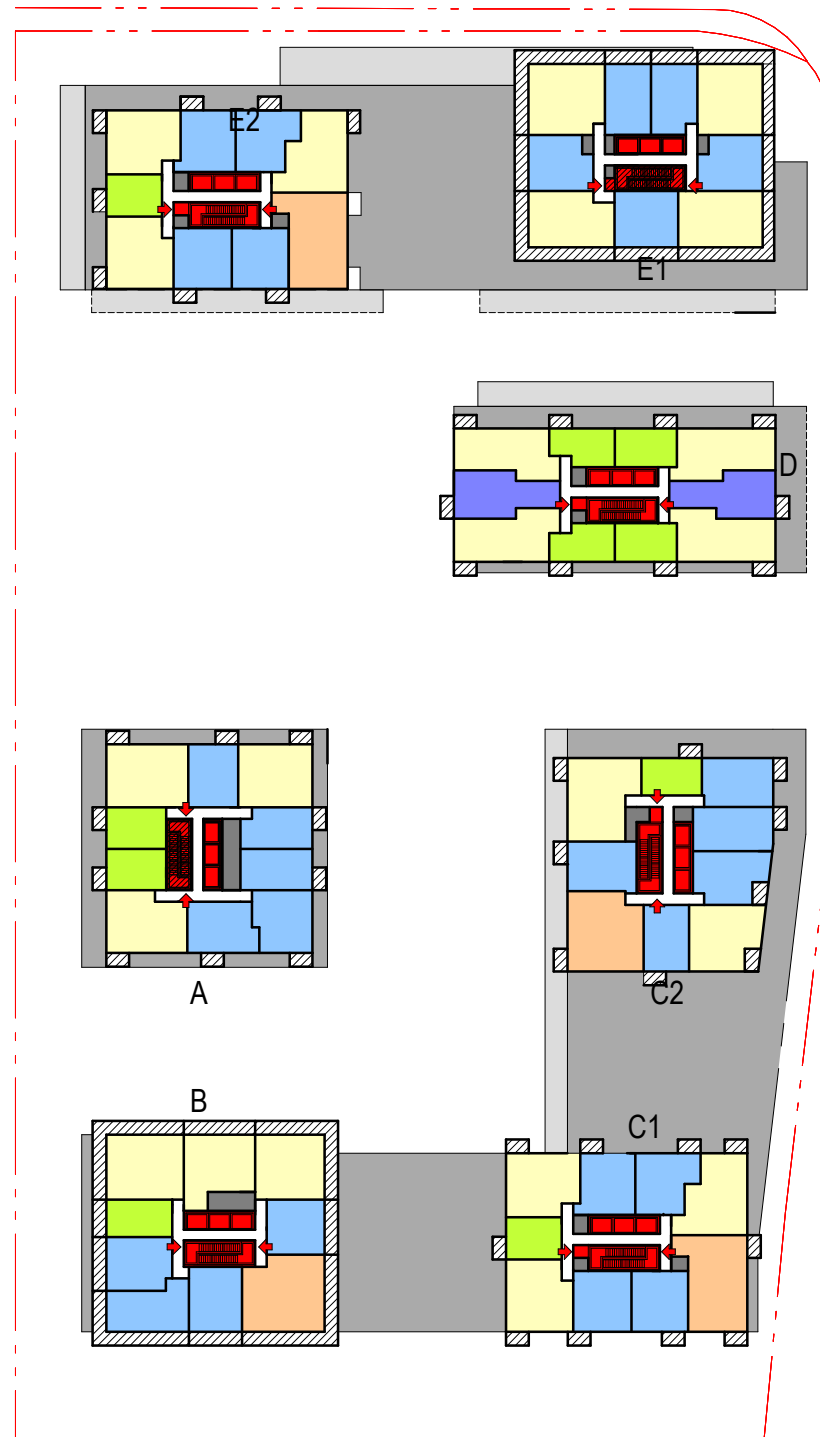


- BACHELOR
- 1 BEDROOM
- 1 BEDROOM + DEN
- 2 BEDROOMS
- 2 BEDROOMS + DEN
- 3 BEDROOMS
- VERTICAL CIRCULATION
- MEC/SERVICES



PLAN TYPE - 12TH FLOOR

1:1000



1 BEDROOM

2 BEDROOMS

3 BEDROOMS

VERTICAL CIRCULATION

MEC/SERVICES

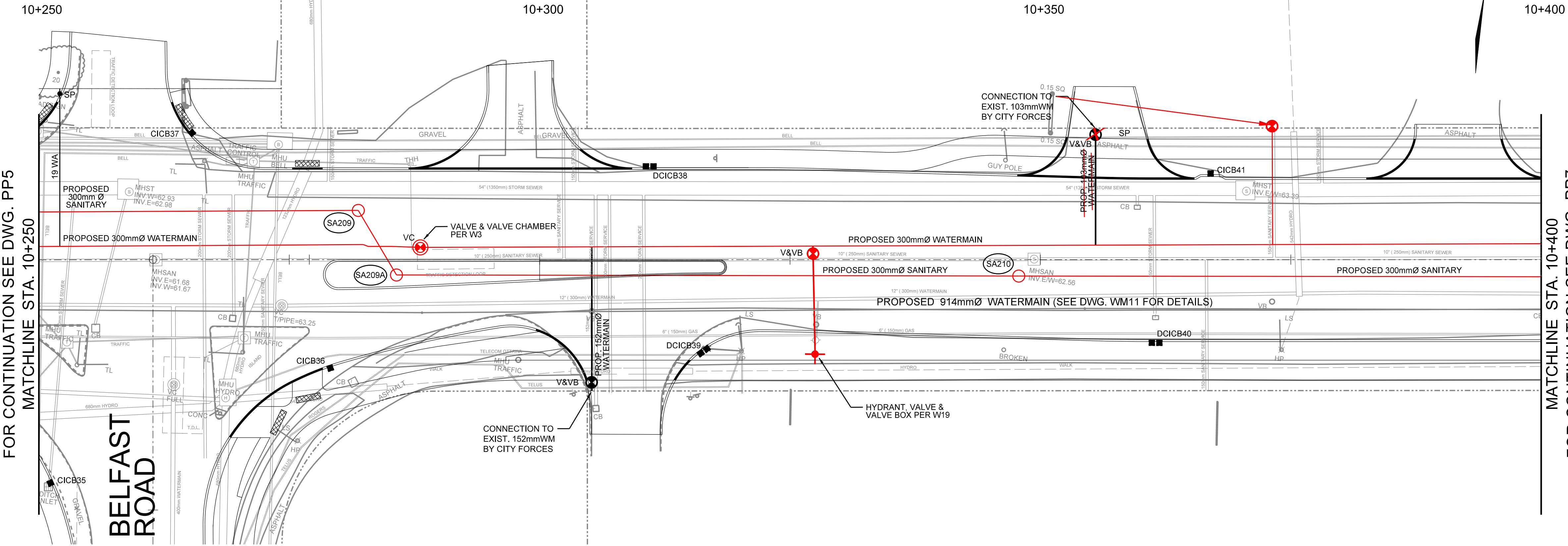


APPENDIX B

Coventry Road Profiles



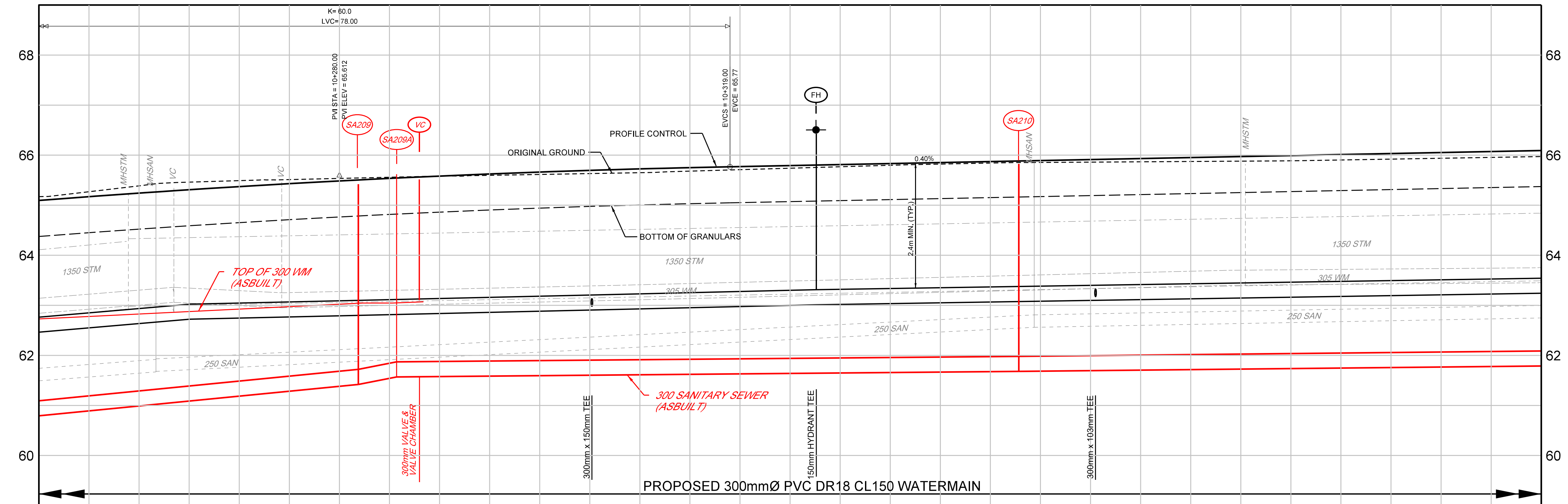
COVENTRY ROAD



FOR CONTINUATION SEE DWG. PP5
MATCHLINE STA. 10+250

MATCHLINE STA. 10+400
FOR CONTINUATION SEE DWG. PP7

BELFAST ROAD



65.095		65.431		65.662		65.792		65.892		65.992		66.092	PROPOSED C PROFILE													
62.763		63.022		63.068		63.090		63.102		63.070		63.183	63.207	63.300		63.311		63.383		63.400		63.462		63.541	PROPOSED TOP OF WATERMAIN	
																										PROPOSED STORM SEWER INVERT
																										PROPOSED SANITARY SEWER INVERT
10+250		10+265.1		10+275.8		10+279.8		10+282.4		10+300		10+305.2		10+325		10+327.5		10+350		10+355.5		10+375		10+400	STATION	

ORLEANS WATERMAIN
LINK - WEST

Contract No. **ISD12-3028** Dwg. No. **PP6**

Sheet of

Asset No.

Asset Group

Des. I.M. Chk'd. P.L.

Dwn. I.M. Chk'd. P.L.

Utility Circ. No. Index No.

Const. Inspector

Scale: HORIZONTAL 1:10
VERTICAL 1:2

Robinson Consultants

AS-BUILT

RECORD INFORMATION PROVIDED BY CITY OF OTTAWA
ALL NUMERICAL VALUES THAT ARE NOT STROKED OUT AND REPLACED IN ITALICS ON AS-BUILT DRAWINGS ARE CONSIDERED TO BE DESIGN VALUES ONLY AND NOT MEASURED IN THE FIELD.

NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

No.	Description	By	Date (dd/mm/yy)
1	ISSUED FOR PRELIMINARY CIRCULATION	G.B.	28.02.13
2	ISSUED FOR TENDER	G.B.	30.05.13
3	ISSUED FOR CONSTRUCTION	P.C.	20.05.14
4	ISSUED FOR CHANGE ORDER	P.L.	09.07.14
5	AS-BUILT	P.L.	29.04.18

SEWER SCHEDULES NOT AS-BUILT

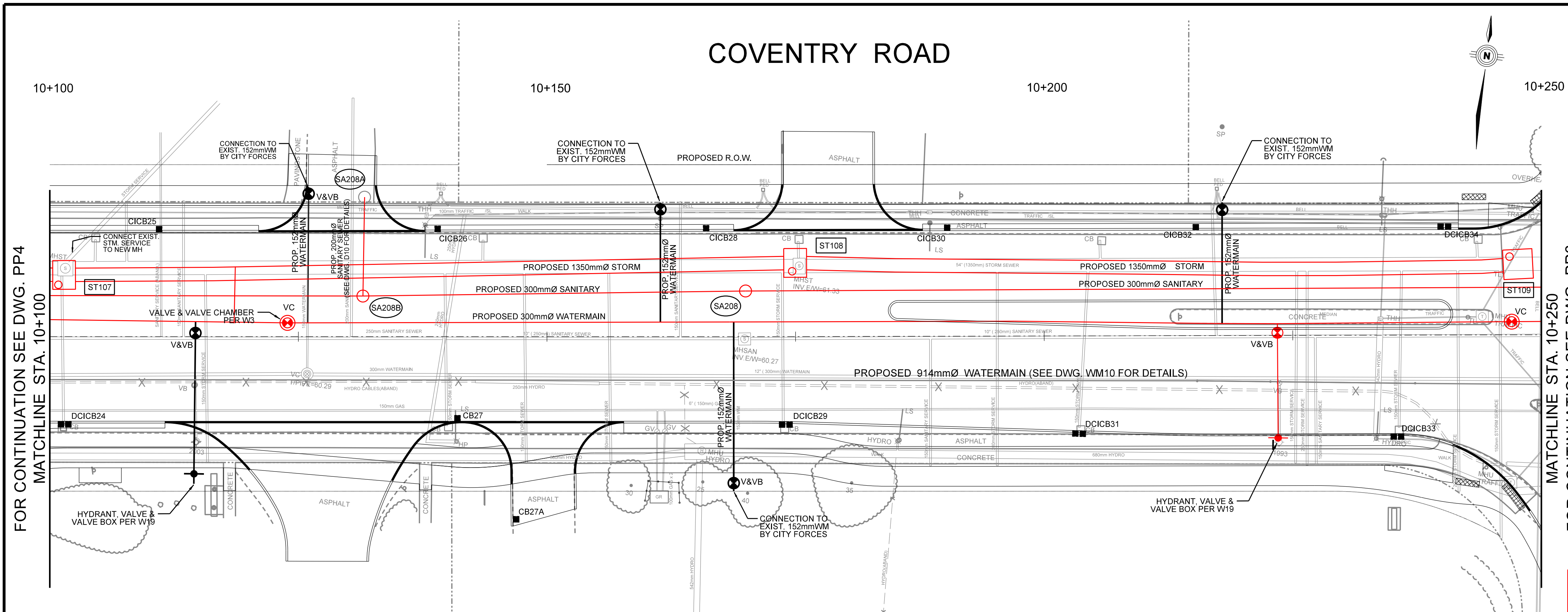
STORM SEWER MH DATA							
No.	Station	Offset (m)	Type	Structure	Cover	Elevations	Grate to Invert
ST109	10+258.93	7.06 L	2440x2440	S24/S25	65.25	62.26	2.99

SANITARY SEWER MH DATA							
No.	Station	Offset (m)	Type	Structure	Cover	Elevations	Grate to Invert
SA209	10+276.87	3.00 L	701.010	S24/S25	65.40	61.15	4.25
SA209A	10+278.87	1.00 L	701.010	S24/S25	65.46	61.23	4.23
SA210	10+351.37	1.06 L	701.010	S24/S25	65.75	61.57	4.18

CATCH BASIN DATA							
No.	Station	Offset (m)	Type	Structure	Grate	Elevations	Grate to Invert
CICB35	10+251.38	22.16 R	705.010	S22 / S23	63.35	63.50	1.15
CICB36	10+279.00	10.55 R	705.010	S22 / S23	65.48	63.93	1.55
CICB37	10+265.06	12.45 L	705.010	S22 / S23	65.43	63.88	1.55
DCICB38	10+311.00	9.00 L	705.020	S22 / S23 (2)	65.58	63.98	1.60
DCICB39	10+316.21	8.89 R	705.020	S22 / S23 (2)	65.86	64.26	1.60
DCICB40	10+361.50	8.00 R	705.020	S22 / S23 (2)	65.80	64.20	1.60
CICB41	10+367.00	8.30 L	705.010	S22 / S23	65.82	64.27	1.55

CATCH BASIN LEAD DATA							
Structure to Structure	Dia.	Type	Length	Invert Elevations	ICD Ctrl. Device Type		
CICB35 TO MAIN	200mm	PVC	28.7	63.50	63.21	1	
CICB36 TO MAIN	200mm	PVC	17.3	63.93	63.76	1	
CICB37 TO MAIN	200mm	PVC	5.2	63.88	63.83	1	
DCICB38 TO MAIN	250mm	PVC	1.2	63.98	63.97	2	
DCICB39 TO MAIN	250mm	PVC	15.0	64.26	64.11	2	
DCICB40 TO MAIN	250mm	PVC	14.4	64.20	64.06	2	
CICB41 TO MAIN	200mm	PVC	1.3	64.27	64.26	1	

COVENTRY ROAD



FOR CONTINUATION SEE DWG. PP4
MATCHLINE STA. 10+100

MATCHLINE STA. 10+250
FOR CONTINUATION SEE DWG. PP6

ORLEANS WATERMAIN LINK - WEST

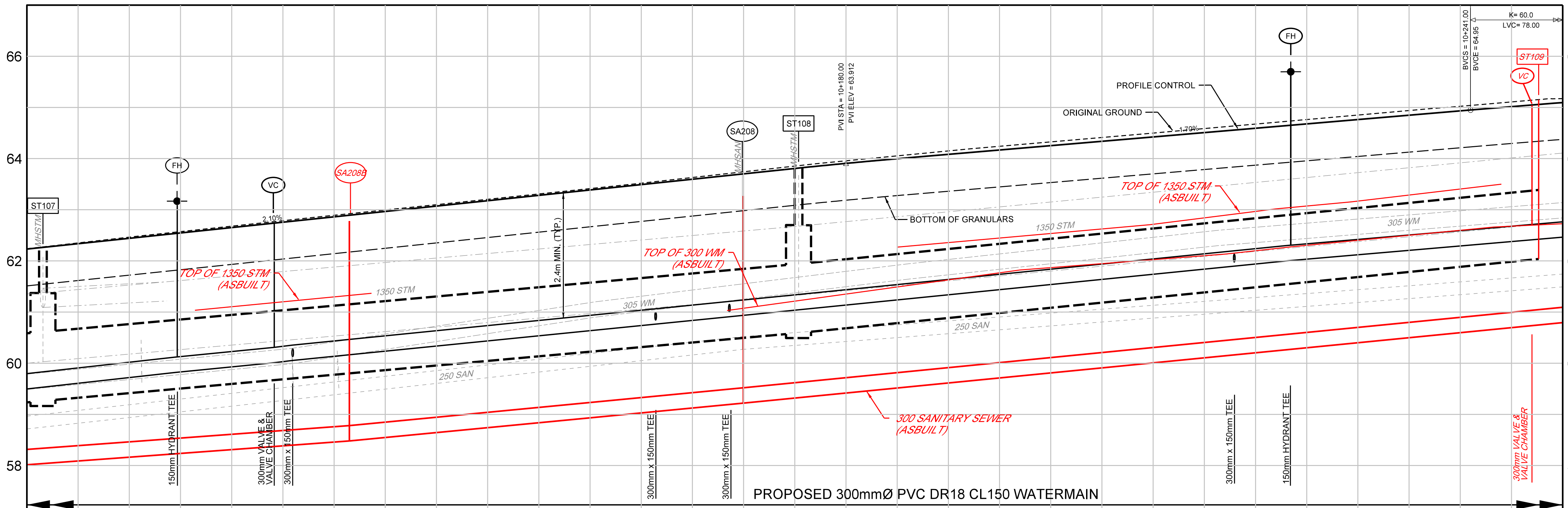
GRADING & DRAINAGE
STA. 10+100 TO STA. 10+250

Robinson Consultants

AS-BUILT

RECORD INFORMATION PROVIDED BY CITY OF OTTAWA
ALL NUMERICAL VALUES THAT ARE NOT STROKED OUT AND REPLACED IN ITALICS ON AS-BUILT DRAWINGS ARE CONSIDERED TO BE DESIGN VALUES ONLY AND NOT MEASURED IN THE FIELD.

No.	Description	By	Date (dd/mm/yy)
1	ISSUED FOR PRELIMINARY CIRCULATION	G.B.	28.02.13
2	ISSUED FOR TENDER	G.B.	30.05.13
3	ISSUED FOR ADDENDUM	G.B.	12.07.13
4	ISSUED FOR CONSTRUCTION	P.C.	20.05.14
5	ISSUED FOR CHANGE ORDER	P.L.	09.07.14
6	AS BUILT	P.L.	28.04.16



Station	Proposed Profile	Proposed Top of Watermain	Proposed Storm Sewer Invert	Proposed Sanitary Sewer Invert	Station
10+100	62.232	59.797	-55.52	-56.49	10+110
10+110	62.120	60.120	-55.52	-56.49	10+120
10+120	62.310	60.310	-55.52	-56.49	10+130
10+130	63.282	60.836	-55.52	-56.49	10+140
10+140	61.063	61.211	-55.52	-56.49	10+150
10+150	61.336	61.838	-55.52	-56.49	10+160
10+160	62.198	62.300	-55.52	-56.49	10+170
10+170	62.334	62.334	-55.52	-56.49	10+180
10+180	62.660	62.763	-55.52	-56.49	10+190
10+190	64.252	64.677	-55.52	-56.49	10+200
10+200	62.198	62.300	-55.52	-56.49	10+210
10+210	62.334	62.334	-55.52	-56.49	10+220
10+220	62.763	62.763	-55.52	-56.49	10+230
10+230	64.252	64.677	-55.52	-56.49	10+240
10+240	62.198	62.300	-55.52	-56.49	10+250

SEWER SCHEDULES NOT AS-BUILT

STORM SEWER MH DATA						
No.	Station	Offset (m)	Structure	Type	Elevations	Grate to Invert
ST107	10+101.88	6.88 L	2440X2440	S24.1/S25	62.14	59.26 2.88
ST108	10+175.43	7.07 L	2440X2440	S24.1/S25	63.72	60.59 3.13

SANITARY SEWER MH DATA						
No.	Station	Offset (m)	Structure	Type	Elevations	Grate to Invert
SA208A	10+130.42	14.54 L	701.010	S24/S25	63.73	58.78 4.95
SA208	10+169.87	3.23 L	701.010	S24/S25	63.64	59.24 4.40
SA208B	10+130.44	3.15 L	701.010	S24/S25	62.81	58.54 4.27

CATCH BASIN DATA						
No.	Station	Offset (m)	Structure	Type	Elevations	Grate to Invert
DCICB24	10+101.50	8.50 R	705.020	S22 / S23 (2)	62.24	60.34 1.90
DCICB25	10+111.00	10.50 L	705.010	S22 / S23	62.40	60.55 1.85
DCICB26	10+139.00	10.53 L	705.010	S22 / S23	63.00	61.15 1.85
CB27	10+141.00	8.50 R	705.010	S19	62.92	61.22 1.70
CB27A	10+146.90	18.35 R	705.010	S19	63.10	61.40 1.70
DCICB28	10+166.00	10.50 L	705.010	S22 / S23	63.56	61.71 1.85
DCICB29	10+174.00	8.54 R	705.020	S22 / S23 (2)	63.77	61.87 1.90
DCICB30	10+190.28	10.60 L	705.010	S22 / S23	64.17	62.32 1.85
DCICB31	10+203.50	9.52 R	705.020	S22 / S23 (2)	64.37	62.47 1.90
DCICB32	10+215.28	10.60 L	705.010	S22 / S23	64.68	62.83 1.85
DCICB33	10+235.50	9.90 R	705.020	S22 / S23 (2)	65.02	63.12 1.90
DCICB34	10+240.28	10.60 L	705.020	S22 / S23 (2)	65.16	63.26 1.90

CATCH BASIN LEAD DATA						
Structure to Structure	Dia.	Type	Length	Invert Elevations	ICD Ctrl.	Device Type
DCICB24 TO MAIN	250mm	PVC	14.5	60.34 60.20		2
DCICB25 TO MAIN	200mm	PVC	5.2	60.51 60.46		1
DCICB26 TO MAIN	200mm	PVC	5.2	61.10 61.05		1
DCICB27 TO MAIN	200mm	PVC	14.5	61.22 61.08		1
DCICB27A TO MAIN	200mm	PVC	24.7	61.70 61.56		1
DCICB28 TO MAIN	200mm	PVC	5.2	61.67 61.62		1
DCICB29 TO MAIN	250mm	PVC	15.2	61.87 61.72		2
DCICB30 TO MAIN	200mm	PVC	5.2	62.28 62.23		1
DCICB31 TO MAIN	250mm	PVC	15.9	62.47 62.31		2
DCICB32 TO MAIN	200mm	PVC	5.2	62.79 62.74		1
DCICB33 TO MAIN	250mm	PVC	16.3	63.12 62.96		2
DCICB34 TO MAIN	250mm	PVC	5.2	63.22 63.17		2

APPENDIX C

Water Demand Calculations





Water Supply Calculations

LRL File No. 220200
 Project 400 Coventry Road
 Date October 19, 2022
 Prepared by Tamara Harb

Water Demand based on the City of Ottawa Design Guidelines-Water Distribution, 2010

Domestic Demand			
Unit Type	Persons Per Unit	Number of Units	Population
Bachelor	1.4	290	406
1 Bedroom	1.4	824	1153.6
2 Bedroom	2.1	457	959.7
3 Bedroom	3.1	119	368.9
Total		1690	2888.2

Average Water Consumption Rate 280 L/c/d
Average Day Demand 808,696 L/d 9.36 L/s
 Maximum Day Factor 2.5 (Design Guidelines-Water Distribution Table 4.2)
Maximum Daily Demand 2,021,740 L/d 23.40 L/s
 Peak Hour Factor 2.2 (Design Guidelines-Water Distribution Table 4.2)
Maximum Hour Demand 1,779,131 L/d 20.59 L/s

Institutional / Commercial / Industrial Demand			
Property Type	Unit Rate	Units (m ²)	Demand (L/d)
Commercial - Retail	2.8 L/m ² /d	1700.0	4760.0

Average Day Demand 4,760 L/d 0.06 L/s
 Maximum Day Factor 1.5 (Design Guidelines-Water Distribution Table 4.2)
Maximum Daily Demand 7,140 L/d 0.08 L/s
 Peak Hour Factor 1.8 (Design Guidelines-Water Distribution Table 4.2)
Maximum Hour Demand 8,568 L/d 0.10 L/s

TOTAL DEMAND			
Average Day Demand	813,456 L/d	9.42 L/s	
Maximum Daily Demand	2,028,880 L/d	23.48 L/s	
Maximum Hour Demand	1,787,699 L/d	20.69 L/s	

Water Service Pipe Sizing

$$Q = VA$$

Where: V = velocity
 A = area of pipe
 Q = flow rate

Assuming a maximum velocity of 1.8m/s, the diameter of pipe is calculated as:

$$\begin{aligned} \text{Minimum pipe diameter (d)} &= (4Q/\pi V)^{1/2} \\ &= 0.129 \text{ m} \\ &= 129 \text{ mm} \end{aligned}$$

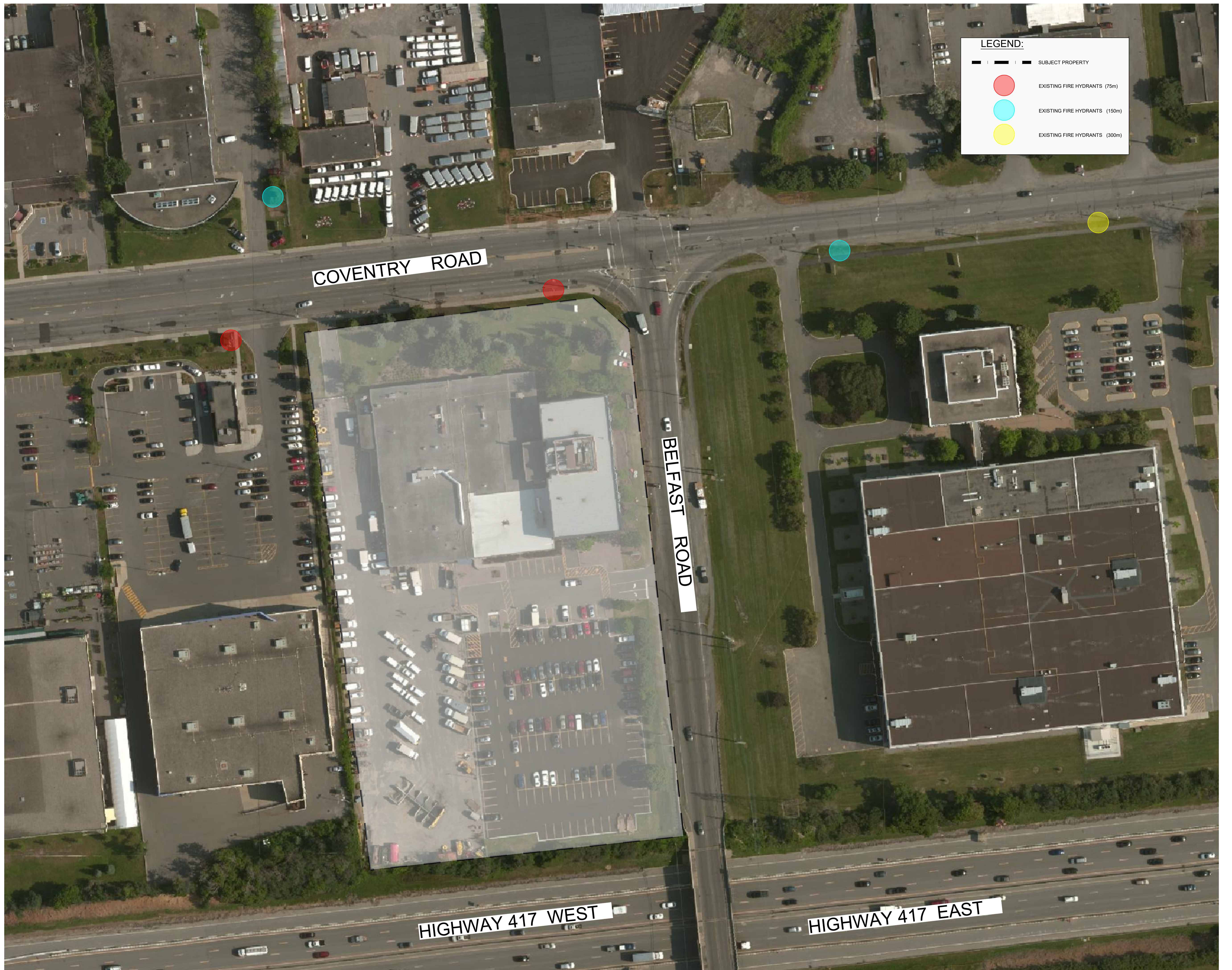
$$\begin{aligned} \text{Proposed pipe diameter (d)} &= 150 \text{ mm} \\ &= 6 \text{ Inches} \end{aligned}$$

APPENDIX D
Fire Hydrant Coverage and Pressure Map

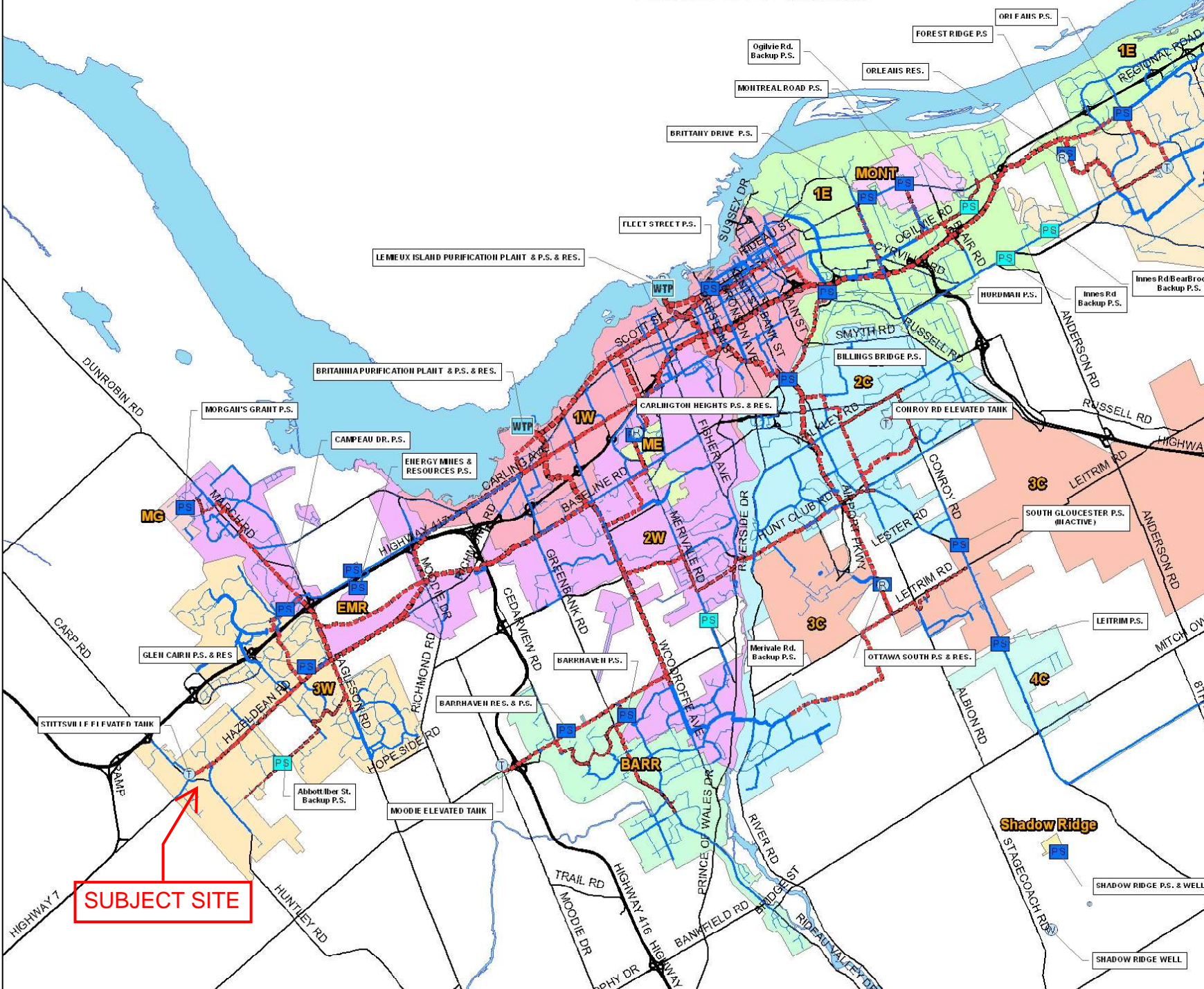


LEGEND:

- SUBJECT PROPERTY
- EXISTING FIRE HYDRANTS (75m)
- EXISTING FIRE HYDRANTS (150m)
- EXISTING FIRE HYDRANTS (300m)



City of Ottawa - Water Distribution System Facilities & FeederMains



APPENDIX E

Sanitary Flow Calculations





LRL File No. 220200
Project: Mixed-Use Development/High Density Residential
Location: 400 Coventry Road
Date: October 19,2022

Sanitary Design Parameters

Average Daily Flow = 280 L/p/day
 Commercial & Institutional Flow = 28000 L/ha/day
 Light Industrial Flow = 35000 L/ha/day
 Heavy Industrial Flow = 55000 L/ha/day
 Maximum Residential Peak Factor = 4.0
 Commercial & Institutional Peak Factor = 1.00

Industrial Peak Factor = as per Appendix 4-B = 7
 Extraneous Flow = 0.33L/s/gross ha

Pipe Design Parameters

Minimum Velocity = 0.60 m/s
 Manning's n = 0.013

LOCATION			RESIDENTIAL AREA AND POPULATION						COMMERCIAL		INDUSTRIAL			INSTITUTIONAL		C+I+I	INFILTRATION			TOTAL FLOW (l/s)	PIPE					
STREET	FROM	TO	AREA (Ha)	POP.	CUMMULATIVE		PEAK FACT.	PEAK FLOW (l/s)	AREA (Ha)	ACCU. AREA (Ha)	AREA (Ha)	ACCU. AREA (Ha)	PEAK FACT.	AREA (Ha)	ACCU. AREA (Ha)	PEAK FLOW (l/s)	TOTAL AREA (Ha)	ACCU. AREA (Ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	LENGTH (m)	DIA. (mm)	SLOPE (%)	MATERIAL	CAP. (FULL) (l/s)	VEL. (FULL) (m/s)
					AREA (Ha)	POP.																				
Coventry Road	Bldg	EX. 300mm PVC SAN SEWER	1.990	2888.2	1.99	2888.2	3.0	27.75	0.170	0.170	0.00	0.00	7.0	0.0	0.0	0.08	1.990	1.990	0.66	28.49	17.1	250	1.00%	PVC	59.47	1.21

NOTES	Populations have been estimated based on concept plan
	Areas of commercial space have been estimated based on concept plan

Designed: TH	PROJECT: Mixed-Use Development/High Density Residential		
Checked: V.J.	LOCATION: 400 Coventry Road		
Dwg. Reference: C.401	File Ref.: 220200	Date: 2022-10-19	Sheet No. 1 of 1

APPENDIX F
Stormwater Management Design Calculations



LRL Associates Ltd.
Storm Watershed Summary



LRL File No. 220200
Project: Mixed-use Development/High Density Residential
Location: 400 Coventry Road
Date: April 13, 2022
Designed: Virginia Johnson
Drawing Reference: Concept Plan

Post-Development Catchments (Based on Conceptual Development)

WATERSHED	C = 0.20	C = 0.70	C = 0.90	Total Area (m²)	Total Area (ha)	Combined C
WS-01 (UNCONTROLLED) (Assumed 10% of Site)	995.0		995.0	1990.0	0.199	0.55
WS-02 (CONTROLLED)	2689.0		15237.0	17926.0	1.793	0.79
TOTAL	3684.0	0.0	16232.0	19916.0	1.992	0.77



LRL File No. 220200
Project: Mixed-use Development/High Density Residential
Location: 400 Coventry Road
Date: April 13, 2022
Designed: Virginia Johnson

Stormwater Management
 Design Sheet

Runoff Equation

$Q = 2.78CIA$ (L/s)
 C = Runoff coefficient
 $I = \text{Rainfall intensity (mm/hr)}$ $= A / (Td + C)^B$
 A = Area (ha)
 T_c = Time of concentration (min)

Pre-development Stormwater Management

$I_s = 998.071 / (Td + 6.053)^{0.814}$ **a = 998.071** **b = 0.814** **C = 6.053**

C = 0.50 max of 0.5 as per City of Ottawa
 I = 104.2 mm/hr
 T_c = 10 min
 Total Area = 1.990 ha

Allowable Release Rate = 288.21 L/s

Post-development Stormwater Management

	Total Site Area =	1.9916	ha	ΣR=	ΣR ₂₈₅	ΣR ₁₀₀
Controlled	WS-02 (Roof)	1.793	ha	R=	0.79	0.99
	Total Controlled =	1.793	ha	ΣR=	0.79	0.99
Un-controlled	WS-01	0.199	ha	R=	0.55	0.69
	Total Un-Controlled =	0.199	ha	ΣR=	0.55	0.69

Post-development Stormwater Management (Uncontrolled Areas)

100 Year Storm Event:

$I_{100} = 1735.688 / (Td + 6.014)^{0.820}$ **a = 1735.688** **b = 0.820** **C = 6.014**

Time (min)	Intensity (mm/hr)	Uncontrolled Runoff (L/s)	Controlled Release Rate Constant (L/s)	Total Release Rate (L/s)
10	178.6	67.91	0.00	67.91

Post-development Stormwater Management (Controlled Areas)

100 Year Storm Event:

$I_{100} = 1735.688 / (Td + 6.014)^{0.820}$ **a = 1735.688** **b = 0.820** **C = 6.014**

Time (min)	Intensity (mm/hr)	Storage Required		Controlled Release Rate Constant (L/s)	Uncontrolled Runoff (L/s)	Total Release Rate (L/s)
		Controlled Runoff (L/s)	Storage Volume (m ³)			
10	178.6	884.27	398.38	220.30	0.00	220.30
15	142.9	707.65	438.62	220.30	0.00	220.30
20	120.0	594.03	448.48	220.30	0.00	220.30
25	103.8	514.28	440.97	220.30	0.00	220.30
30	91.9	454.95	422.39	220.30	0.00	220.30
35	82.6	408.95	396.18	220.30	0.00	220.30
40	75.1	372.14	364.42	220.30	0.00	220.30
45	69.1	341.96	328.48	220.30	0.00	220.30
50	64.0	316.72	289.27	220.30	0.00	220.30
60	55.9	276.80	203.43	220.30	0.00	220.30
70	49.8	246.57	110.36	220.30	0.00	220.30
80	45.0	222.81	12.05	220.30	0.00	220.30
90	41.1	203.59	0.00	220.30	0.00	220.30
100	37.9	187.71	0.00	220.30	0.00	220.30
110	35.2	174.33	0.00	220.30	0.00	220.30
120	32.9	162.90	0.00	220.30	0.00	220.30

Total Storage Required = 448.48 m³

Summary of release Rates and Storage Volumes

Catchment Area	Drainage Area (ha)	100-year Release Rate (L/s)	100-Year Required Storage (m ³)
Uncontrolled Areas	0.199	67.91	0
Controlled Areas	1.793	220.30	448.48
TOTAL	1.992	288.21	448.48

APPENDIX G
City Correspondence - Sanitary Capacity Confirmation



Virginia Johnson

From: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Sent: April 14, 2022 3:05 PM
To: Virginia Johnson
Cc: Renaud, Jean-Charles
Subject: RE: 400 Coventry Road- Engineering Contact

Hello Virginia,

The Sanitary infrastructure in Coventry Road has the required 28.82L/s capacity. Again, this is on a first come first serve basis, so we will only confirm capacity once a site plan application is submitted.

Thanks
Nishant

From: Virginia Johnson <vjohnson@lrl.ca>
Sent: April 13, 2022 12:52 PM
To: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Cc: Renaud, Jean-Charles <Jean-Charles.Renaud@ottawa.ca>
Subject: RE: 400 Coventry Road- Engineering Contact

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ATTENTION : Ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.

Hello,

Thank you for sending through the history on this file as well.

For the proposed demands, the client is looking at fairly high density, with a portion of commercial space as well.

I have calculated a total flow equal to:

Residential (based on population of 2920) + 0.28 ha commercial space + 1.99 hs land for infiltration= 28.82 L/s.

Looking forward to your comments back on the viability of this.

Thank you,

Virginia Johnson, P. Eng.

Partner
Civil Engineering Department Lead



LRL Engineering

5430 Canotek Road
Ottawa, Ontario K1J 9G2

C (613) 915-9503

T (613) 842-3434 or (877) 632-5664 ext 223

F (613) 842-4338

E vjohnson@lrl.ca

W www.lrl.ca

Please note, I will be stepping away from the office at the end of April to welcome a baby into this world! I will continue to offer ongoing support and have contact with our team here at LRL to ensure a smooth transition and continuity for all our ongoing projects and communication.



From: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Sent: April 13, 2022 12:03 PM
To: Virginia Johnson <vjohnson@lrl.ca>
Cc: Renaud, Jean-Charles <Jean-Charles.Renaud@ottawa.ca>
Subject: RE: 400 Coventry Road- Engineering Contact

Hello Virginia,

I checked with the Asset management group, we will need to see the proposed sanitary demand to comment if the demands can be met or no.

Also please note that we cannot guarantee the availability unless we receive the Site plan control application. Please refer the attached email that was sent earlier to Fotenn.

In terms of Water service connection, yes, Service connection will be to the 300mm watermain. Please let me know if there are any further questions.

Regards

Nishant Jhamb, P.Eng
Project Manager |Gestionnaire de projet
Planning, Real Estate and Economic Development Department
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 23112, nishant.jhamb@ottawa.ca

From: Virginia Johnson <vjohnson@lrl.ca>
Sent: April 12, 2022 3:53 PM
To: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Cc: Renaud, Jean-Charles <Jean-Charles.Renaud@ottawa.ca>
Subject: RE: 400 Coventry Road- Engineering Contact

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ATTENTION : Ce courriel provient d'un expéditeur externe. Ne cliquez sur aucun lien et n'ouvrez pas de pièce jointe, excepté si vous connaissez l'expéditeur.

Thank you for getting back to me Nishant.

I am currently completing a high level serviceability review of the property located here to assist a client of ours looking to ultimately redevelop it to high rise residential in the future. This is based off of studies completed by Fotenn to present the highest and best use for the lands based on the current policies and character of the surrounding area including the 2021 Official Plan.

However, can you provide me some insight on the capacity of the existing 300mm (transitioning to a 525mm) sanitary sewer running along Coventry. I will progress with effluent calculations; however, wanted to first get high level feedback on the viability of increasing the demands at this location.

Additionally, based on the profiles we were provided, the Watermain along Coventry (300mm) is also paired with a 900mm. However, I assume the 900mm is a forcemain for supply to the east, and any servicing would come directly from the 300mm in Coventry?

Thank you,

Virginia Johnson, P. Eng.

Partner



Civil Engineering Department Lead

LRL Engineering

5430 Canotek Road

Ottawa, Ontario K1J 9G2

C (613) 915-9503

T (613) 842-3434 or (877) 632-5664 ext 223

F (613) 842-4338

E vjohnson@lrl.ca

W www.lrl.ca

Please note, I will be stepping away from the office at the end of April to welcome a baby into this world! I will continue to offer ongoing support and have contact with our team here at LRL to ensure a smooth transition and continuity for all our ongoing projects and communication.



From: Jhamb, Nishant <nishant.jhamb@ottawa.ca>

Sent: April 12, 2022 3:06 PM

To: Virginia Johnson <vjohnson@lrl.ca>

Cc: Renaud, Jean-Charles <Jean-Charles.Renaud@ottawa.ca>

Subject: RE: 400 Coventry Road- Engineering Contact

Hello Virginia

I will be the infrastructure project manager on this application. Please feel free to reach out.