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Design Brief
4840 Bank Street

Prepared for Pathways South Regional Inc.
by IBI Group
SEPTEMBER 2022

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Table of Contents

Table of Contents (continued)

Table of Contents (continued)

List of Figures

Table of Contents (continued)

List of Appendices

1 INTRODUCTION

1.1 Scope

IBI Group has been retained by Pathways South Regional Inc. to prepare the necessary engineering plans, specifications and documents to support a proposed Site Plan Application for the subject lands in accordance with the policies set out by the Planning and Development Branch of the City of Ottawa. This Brief will present a detailed servicing scheme to support development of the property, and will include sections that will review water supply, wastewater disposal, minor and major stormwater management along with erosion and sediment control.

1.2 Subject Site

The Block 204 Pathways South Apartments site is part of the Pathways South subdivision. It's eastern limit abuts Bank Street and is immediately south of the Home Hardware Site (4836 Bank Street). An undeveloped property is south of the site and a mid use residential development is located west of the site. The proposed development is approximately 1.55 hectares in size. Refer to **Figure 1.1** for more information regarding the site location.

The subject property is presently unimproved and is covered with trees and sporadic bushes. The proposed re-development of the site will include three new four storey apartment buildings each with 60 units; one vehicular access; dedicated surface parking spaces; an amenity space and landscaped areas. A current concept of the envisioned development is shown on **Figure 1.2**.

1.3 Previous Studies

Design of this project has been undertaken in accordance with the following reports:

- **2016 Updated Serviceability Report (Class EA OPA 76 Areas 8a, 9a & 9b) Leitrim Development Area (IBI Group, September 2016)** – The report is an update to an earlier servicing report completed in 2007. The updated report was needed to review the impacts on existing major infrastructure by developing an additional 87 ha in the LDA. IN 2012, under OPA 76, the City of Ottawa increased its urban envelope by over 900 ha including expansion areas 8a, 9a, and 9b in the LDA. The subject site is included in the OPA 76 Expansion Area. The report included a high level review of the development requirements of the subject site. The design of the subject site is based on the report recommendations.
- **Design Brief Pathways at Findlay Creek 4800 Bank Street (Remer Lands) Phase 1 (IBI Group July 2017)** – The report provides detail design criteria for adjacent developments including the subject site and identifies capacity for a water supply and both storm and sanitary sewers for the subject site.
- **Design Brief Bank Street Development 4836 Bank Street (IBI Group April 2019)** – The report covered development of the adjacent and downstream Home Hardware (HH) development. The HH site provides municipal servicing capacity for the subject site.

1.4 Pre-Consultation

A pre-consultation meeting with the Owner and City Staff was held on January 12, 2022. Attached in **Appendix A** is a copy of the meeting notes from that meeting. Some of the items discussed during the meeting dealt with the following subjects:

- Official Plan & Zoning
- Infrastructure/Servicing
- Planning

- Urban Design
- Parks
- Environment
- Transportation
- Forestry
- SNCA
- Waste Collection

1.5 Geotechnical Investigation

A geotechnical report entitled “Geotechnical Investigation, Proposed Multi-Storey Buildings, Idone South Apartments, 4840 Bank Street, Ottawa, Ontario” dated May 20, 2022 by Paterson Group has been prepared for the subject site.

The objective of the investigation report include:

- Determination of the subsoil and groundwater conditions;
- Provision of geotechnical recommendations pertaining to the design and development of the subject site including construction considerations.

Among other items, the report comments on the following:

- Site grading;
- Foundation design;
- Pavement structure;
- Infrastructure construction;
- Groundwater control;
- Contamination/corrosive environment.

The report concludes that the subject site is considered suitable for the proposed development

2 WATER SUPPLY

2.1 Existing Conditions

As previously noted, the 1.55 hectare Block 204 site is located west of Bank Street and south of the Home Hardware site. There is an existing 200 mm dia watermain along the south side of the Home Hardware site adjacent to the subject site. That watermain falls within the City of Ottawa's pressure district Zone 4C and will provide the water requirements to the site.

2.2 Design Criteria

2.2.1 Water Demands

Water demands have been calculated for the development using consumption rates from Table 4.2 of the Ottawa Design Guidelines – Water Distribution. The proposed development will include three four storey apartment buildings (buildings A, B and C), with each containing 60 apartments. Per unit population density and consumption rates are taken from Tables 4.1 and 4.2 at the Ottawa Design Guidelines – Water Distribution and are summarized as follows:

- Residential Average Day Demand 280 l/cap/day
- Residential Peak Daily Demand 700 l/cap/day
- Residential Peak Hour Demand 1540 l/cap/day

A watermain demand calculation sheet is included in **Appendix B** and the total water demands are summarized as follows:

- Average Day 1.05 l/s
- Maximum Day 2.63 l/s
- Peak Hour 5.78 l/s

2.2.2 System Pressure

The Ottawa Design Guidelines – Water Distribution (WDG001), July 2010, City of Ottawa, Clause 4.2.2 states that the preferred practice for design of a new distribution system is to have normal operating pressures range between 345 kPa (50 psi) and 480 kPa (80 psi) under maximum daily flow conditions. Other pressure criteria identified in Clause 4.2.2 of the guidelines are as follows:

Minimum Pressure	Minimum system pressure under peak hour demand conditions shall not be less than 276 kPa (40 psi)
Fire Flow	During the period of maximum day demand, the system pressure shall not be less than 140 kPa (20 psi) during a fire flow event.
Maximum Pressure	In accordance with the Ontario Building/Plumbing Code, the maximum pressure should not exceed 552 kPa (80 psi). Pressure reduction controls will be required for buildings where it is not possible/feasible to maintain the system pressure below 552 kPa.

2.2.3 Fire Flow Rates

The subject site plan will contain three apartment buildings. Calculations using the Fire Underwriting Survey (FUS) method were conducted to determine the fire flow requirement for the site for Building A, as its proximity to other buildings makes it the most vulnerable from a fire hazard perspective. The FUS method considers building floor area, type of building construction, type of occupancy, availability of sprinkler systems and separations from adjacent buildings. The architect has confirmed that the building construction will be non-combustible as defined by the FUS. The mechanical engineer has confirmed that the fire protection system is fully supervised and the sprinkler system will be in accordance to NFPA 13, therefore a reduction of 40% has been assumed in accordance with the FUS. An occupancy reduction has been applied since it is a residential building. Results of the calculations show a fire demand of 9,000 l/min (150.0 l/s) for Building A. A copy of the FUS calculation is included in **Appendix B**.

2.2.4 Boundary Conditions

The City of Ottawa has provided hydraulic boundary conditions at two locations, one at the existing main on Dun Skipper Drive at the entrance to the site and the other is on the existing Bank Street main at the Bank Street entrance. Boundary conditions have been supplied for the 2019 existing conditions and for the future SUC zone reconfiguration. The existing condition Max HGL is used for the basic day analysis to determine the maximum pressure as it represents the highest HGL elevation. For the peak hour and max day plus fire analysis the existing conditions is again used in the analysis as these represent the lowest HGL elevations. The boundary conditions are included in **Appendix B** and are summarized as follows;

Table 2.2.4: Boundary Conditions Summary

SCENARIO	CONDITION 1 DUN SKIPPER DRIVE	CONDITION 2 BANK STREET
Max HGL (Basic Day)	154.6m	154.6m
Peak Hour	143.7m	143.7m
Max Day + Fire (13,000 l/min)	122.3m	121.3m

2.2.5 Hydraulic Model

A computer model for the site has been developed using the Infowater 12.4 program by Innovyze. The model includes the propsed and existing watermains on Bank Street and Dun Skipper Drive and the boundary conditions provided by the City.

2.3 Proposed Water Plan

2.3.1 Modelling Results

The site will be serviced by two connections to the existing 400 mm watermains on Dun Skipper Drive and Bank Street. All watermains are 200 mm diameter. Results of the hydraulic analysis for the Site is included in **Appendix B** and is summarized as follows:

Table 2.3.1 Hydraulic Analysis Results

SCENARIO	Pressure (kPa)
Basic Day (Max HGL) Pressure (kPa)	506.6 – 526.2

Maximum Day plus Fire Flow Design Fire Flow of 9,000 l/s @ 140 kPa (kPa)	140.4-205.4
Peak Hour Pressure (kPa)	399.7 – 412.4

A comparison of the results and design criteria is summarized as follows:

Maximum Pressure	Under Basic Day there are no nodes in which the pressure exceeds 552 kPa (80 psi), thus no pressure reducing control is required. There is also no area where the pressure exceeds the maximum level of 689 kPa (100 psi) in unoccupied areas.
Minimum Pressure	The lowest minimum pressure during peak hour conditions is 399.7 kPa which exceeds the minimum 276 kPa (40 psi) requirement.
Fire Flow	The minimum design fireflow under maximum day conditions with minimum system pressure of 140 kPa (20psi) is 300 l/s which exceeds the requirement of 150.0 l/s.

2.3.2 Watermain Layout

In order to provide additional reliability to the system in case of a watermain break, two connections to the adjacent private watermain system are proposed. The proposed water plan is shown on Drawing 137175 C-001, the General Plan of Services, a copy of which is included in **Appendix F**. An accompanying Drawing C-010, Details and Notes is also included in **Appendix F**. Since the average daily water demand for each proposed apartment building is less than 50,000 m^3/day, only one 200 mm dia water service is proposed for each building. The proposed fire hydrant layout also includes an unobstructed path of no more than 45m between the hydrant and Siamese connections as required by the Ontario Building Code.

3 WASTEWATER DISPOSAL

3.1 Existing Conditions

The Block 204 Pathways South Apartment site at 4840 Bank Street is located within the Leitrim Development Area where sanitary flows ultimately outlet to the Leitrim Sanitary Pumping Station. As part of the adjacent downstream developments, the outlet sanitary sewer design for the subject site was completed. Those sewers were designed as per the recommendations of the 2016 Updated Serviceability Report. In particular, a proposed 200 mm diameter sanitary sewer in the adjacent Home Hardware (HH) development has been designed to service the subject site.

A highlighted copy of the sanitary sewer design sheet from the Home Hardware design, together with the related Sanitary Drainage Area Plan (drawing 119351-400) are included in **Appendix C**. The Home Hardware sanitary sewer design assumed the subject site would develop as a commercial site and based on the commercial design criteria, estimated the wastewater flow from Block 204 would be approximately 1.25 l/s. However the HH site is being phased and the section of sanitary sewer in that site which is needed to service the subject site has not yet been installed. Consequently, development of the subject site will likely include construction of some sanitary sewers on the HH site.

3.2 Design Criteria

The sanitary sewers for the subject site will be based on the City of Ottawa design criteria. It should be noted that the sanitary sewer design for this study incorporates the latest City of Ottawa design parameters identified in Technical Bulletin ISTB-2018-01. Some of the key criteria will include the following:

- Residential flow 280 l/p/d
- Unit Population 1.8 ppu
- Peaking factor Modified Harmon Formula
- Infiltration allowance 0.33 l/s/ha
- Velocities 0.60 m/s min. to 3.0 m/s max.

3.3 Recommended Wastewater Plan

The on-site sanitary system will consist of a network of 200mm sewers installed at normal depth and slope and will provide a single service connection to each apartment building. The sewers have been designed using the criteria noted above in Section 3.2 and outlet via a connection to the sanitary sewer at MH1A located north of Building A near the Home Hardware site. A copy of the sanitary drainage area plan 137175 C-400 and the sanitary sewer design sheet can be found in **Appendix C.** Please refer to the site servicing plan 137175 C-001, which is located in **Appendix F**, for further details.

Based on the proposed residential land use for Blcok 204, the calculated wastewater flow is estimated to be 4.13 l/s or about 2.9 l/s more than calculated in the downstream Home Hardware design. However, based on the sanitary design sheet from that site, the downstream wastewater system has more than sufficient available capacity to accommodate the proposed residential land use.

As noted previously, development of Block 204 will also include construction of some 200 mm dia sanitary sewers on the Home Hardware property. For reference a highlighted copy of drawing 119351-001, General Plan of Services from the Home Hardware site is included in **Appendix F**. The sanitary sewer system between MH4A and 1A will need to be construcated on the Home Hardware site to complete the wastewater servicing for the subject site.

4 SITE STORMWATER MANAGEMENT

4.1 Existing Conditions

Development of the downstream Home Hardware site (4836 Bank Street) included oversized storm sewers and minor storm sewer capacity for Block 204. The minor storm sewer design of the downstream development included a 600 mm dia storm sewer which is proposed to terminate near Building A at MH1. For reference, a highlighted copy of the Home Hardware site storm sewer design sheet together with a copy of drawing 119351-500, the associated Storm Drainage Area Plan are included in **Appendix D**. Based upon a review of the Home Hardware storm sewer design sheet, the calculated minor storm flow from the subject is about 249 l/s (3.29 A.C x 75.75 mm/hr).

However, development of the Home Hardware site will be phased and to date only the first phase of that property, which does not include the 600 mm dia storm sewer, has been constructed. The timing of the Phase 2 construction is unknown at this time. Consequently the development of the subject site may have to include construction of the oversized storm sewer in the Home Hardware site.

4.2 Phasing

Development of the subject site will be completed in one phase..

4.3 Design Criteria

The design of the minor storm sewer system in the downstream Home Hardware site included sewer capacity for the subject site, all in accordance with the recommendations from the 2016 Updated Serviceability Report. Based on the storm sewer design sheet for the Home Hardware site, a minor storm flow allowance of about 249 l/s was provided for the subject site. Please refer to the Home Hardware Storm Sewer Design Sheet located in **Appendix D**. Also in keeping with the recommendations from previous designs and reports, the 1:100 year storm event wil be self-contained with no overflow to adjacent properties. The emergency overflow for events greater than the 1:100 year event (stress test) will be towards Bank Street.

The stormwater system was designed following the principles of dual drainage, making accommodations for both major and minor flow.

Some of the key criteria include the following:

- Design Storm — 1:2 year return (Ottawa)
- Rational Method Sewer Sizing — 1:2 year return (Ottawa)
- Initial Time of Concentration — 10 minutes
- Runoff Coefficients
  - Landscaped Areas — C = 0.20
  - Asphalt/Concrete — C = 0.90
  - Roof — C = 0.90
- Pipe Velocities — 0.80 m/s to 6.0 m/s
- Minimum Pipe Size — 250 mm diameter (200 mm CB Leads)

4.4 Proposed Minor System

Using the criteria identified in Section 4.3, the proposed on-site storm sewers were sized accordingly. A detailed storm sewer design sheet and the associated Storm Sewer Drainage Area plan (drawing 137175 C-500) are both included in **Appendix D**. The General Plan of Services,

drawing 137175 C-001, depicting all on-site storm sewers can be found in **Appendix F**. Based on the Block 204 storm sewer design sheet, the calculated minor storm flow from the subject site will be 213.59 l/s which is less than the provided capacity of 249 l/s.

The proposed minor storm sewers will range in size between 300 mm diameter and 525 mm diameter. Catchbasin lead pipes will mostly be 200 mm diameter with the exception of the CB9 and CB10 lead pipe which will be 300 mm dia. The minor storm sewer outlet will be via the 600 mm dia sewer at MH1 located just north of Building A. That 600 mm pipe, and other downstream sewers on the Home Hardware site, have not yet been constructed. For reference, a marked copy of drawing 119351-001, Site Servicing Plan is included in **Appendix D**. That plan has been highlighted to show the downstream sewers on the Home Hardware property that will need to be constructed to service Block 204.

The existing downstream sewers in the Home Hardware site eventually outlet to the Findlay Creek Village SWMF. That facility provides 80% TSS removal, so no additional on-site stormwater quality control is required within the subject lands.

4.5 Stormwater Management

The subject site will be limited to a release rate established using the criteria described in section 4.3. This will be achieved through a combination of inlet control devices (ICD's) at inlet locations and surface storage.

Flows generated that are in excess of the site's allowable release rate will be stored on site in strategic surface storage areas or by the use of roof top storage and gradually released into the minor system so as not to exceed the site's allocation.

The maximum surface retention depth located within the developed areas will be limited to a maximum of 300mm during a 1:100 year event as shown on the drawings 137175 C-200, Site Grading Plan and 137175 C-600 Ponding Plan, both of which are located in **Appendix F.**

Overland flow routes will be provided in the grading to permit emergency overland flow, in excess of the 100 year event, from the site.

At the extremities of the site, north and east of Building A as well as south of buildings B and C, the opportunity to store runoff is limited due to grading constraints and building geometry, this area will flow uncontrolled to Bank Sreet. In addition, the storm drainage area MH1 (draining into CBMH2) will not be restricted due to grading constraints. These uncontrolled areas – 0.18 and 0.16 hectares in total, have an average C value of 0.30 and 0.88 respectively. Based on 1:100 year storm uncontrolled flows, the uncontrolled areas generate 112.93 l/s runoff (refer to Section 4.6 for the calculation).

The site grading and ponding has been designed to control water generated during the 1:100-year event, with no overflow leaving the site. Please refer to the SWM calculations in **Appendix E**.

4.6 Inlet Controls

During the stormwater management analysis for the downstream Home Hardware site, it was discussed that between that property and Block 204 a total release rate of 760 l/s was included in the earlier design of the Pathway subdivision The Home Hardware allowable release rate calculation was estimated to be 468.42 l/s. In accordance with that calculation, the allowable release rate for Block 204 is 291.58 l/s (i.e. 760-468.42=291.58). For reference a copy of the relevant calculation from the 2020 Home Hardware report section 4.6 Inlet Controls is included in **Appendix E**.

As noted in Section 4.5, a small portion of the site will be left to discharge to the Bank Street boulevard at an uncontrolled rate.

Based on a 1:100 year event, the flow from the uncontrolled areas can be determined as:

$\mathbf{Q_{uncontrolled1}}$ = **2.78** x **C** x $\mathbf{i_{100yr}}$ x **A** where:

C = Average runoff coefficient of uncontrolled area = 0.30*1.25

$\mathbf{i_{100yr}}$ = Intensity of 100-year storm event (mm/hr)

= $1735.688 \times (T_c + 6.014)^{0.820}$ = 178.56 mm/hr; where T_c = 10 minutes

A = Uncontrolled Area = 0.18 Ha

Therefore, uncontrolled release rate 1 can be determined as:

$\mathbf{Q_{uncontrolled1}}$ = **2.78** x **C** x $\mathbf{i_{100yr}}$ x **A**

= 2.78 x 0.38 x 178.56 x 0.18

= **33.51 L/s**

Also noted in Section 4.5, one drainage area will enter the storm system unrestricted at CBMH2.

Based on a 1:100 year event, the flow from the uncontrolled areas can be determined as:

$\mathbf{Q_{uncontrolled2}}$ = **2.78** x **C** x $\mathbf{i_{100yr}}$ x **A** where:

C = Average runoff coefficient of uncontrolled area = 0.88*1.25 (max 1.00)

$\mathbf{i_{100yr}}$ = Intensity of 100-year storm event (mm/hr)

= $1735.688 \times (T_c + 6.014)^{0.820}$ = 178.56 mm/hr; where T_c = 10 minutes

A = Uncontrolled Area = 0.16 Ha

Therefore, uncontrolled release rate 1 can be determined as:

$\mathbf{Q_{uncontrolled2}}$ = **2.78** x **C** x $\mathbf{i_{100yr}}$ x **A**

= 2.78 x 1.00 x 178.56 x 0.16

= **79.42 L/s**

The total uncontrolled release rate is then:

$\mathbf{Q_{uncontrolled}}$ = $\mathbf{Q_{uncontrolled1} + Q_{uncontrolled2}}$

= 33.51 + 79.42

= **112.93 L/s**

The maximum allowable release rate from the remainder of the site can then be determined as:

$\mathbf{Q_{max\ allowable}}$ = $\mathbf{Q_{restricted} - Q_{uncontrolled}}$

= 291.58 L/s – 112.93 L/s

= **178.65 L/s**

Based on the flow allowance at the various inlet locations, a combination of various sizes of inlet control devices (ICDs) were chosen for the design. The manufacturer's tech sheets can be found in **Appendix E**. The design of the inlet control devices is unique to each drainage area and is determined based on a number of factors, including hydraulic head and allowable release rate. The inlet control devices were sized according to the manufacturer's design charts. The restrictions will cause the on-site catchbasins and manholes to surcharge, generating surface ponding in the parking and landscaped areas. Ponding locations and elevations are summarized on the Ponding Plan drawing, 137175 C-600, which is included in **Appendix F**.

4.7 On-Site Detention

Any excess storm water up to the 100-year event is to be stored on-site in order to not surcharge the downstream municipal storm sewer system. Detention will be provided in parking and landscape areas and building rooftops, where feasible. As previously noted, the volume of storage is dependent on the characteristics of each individual drainage area and the ICD's were chosen accordingly. It should be noted that 0.30m of vertical separation has been provided from all maximum ponding elevations to lowest building openings.

4.7.1 Site Inlet Control

The following Table summarizes the on-site storage requirements during both the 1:5-year and 1:100-year events.

Table 4.7.1 SWM Summary

DRAINAGE AREA(s)	TRIBUTARY AREA	AVAILABLE STORAGE (M^3)	100-YEAR STORM		5-YEAR STORM	
			RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M^3)	RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M^3)
MH5A	0.11	17.12	12.00	22.49	12.00	5.67
MH5	0.08	28.66	10.00	20.04	10.00	3.88
MH3	0.07	56.01	8.00	18.03	8.00	4.91
MH3A	0.08	27.53	9.00	20.25	9.00	5.71
MH3B	0.07	27.53	8.00	18.03	8.00	5.17
MH3C	0.09	53.05	12.00	17.84	12.00	6.41
CBMH2	0.03	2.64	12.00	2.47	12.00	0.00
MH3D	0.11	10.79	40.00	10.48	40.00	0.00
MH4	0.04	1.75	25.00	1.23	25.00	0.00
RYCB1	0.05	6.37	6.00	0.75	6.00	0.00
TOTAL	**0.73**	**231.45**	**142.00**	**131.61**	**142.00**	**31.74**

In most instances within the parking lot, drainage areas meet the required storage volume with surface ponds and underground in structure/pipe storage which retain the stormwater and discharge at the restricted flow rate to the sewer system. Where the surface storage is insufficient (drainage areas MH5A and MH3D), the downstream drainage area has capacity to store the overflow. Refer to the SWM calculations in **Appendix E** for detailed storage information and Drawing 137175 C-600, Ponding Plan located in **Appendix F**. The calculations have been done with the requirement of restricting rooftop flows as well. Rooftop water storage requirements are detailed in Section 4.7.2.

4.7.2 Roof Inlet Controls

The proposed buildings will have roof inlet controls that help to control the amount of stormwater being released into the system. The restricted flow rate for the proposed building is shown below.

Table 4.7.2 Rooftop SWM Summary

ICD AREA	TRIBUTARY AREA	AVAILABLE STORAGE	100-YEAR STORM		5-YEAR STORM	
			RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M^3)	RESTRICTED FLOW (L/S)	REQUIRED STORAGE (M^3)
Bldg A	0.15	Min 48.00	12.00	47.36	12.00	17.47
Bldg B	0.15	Min 48.00	12.00	47.36	12.00	17.47
Bldg C	0.15	Min 48.00	12.00	47.36	12.00	17.47
TOTAL	**0.45**	**144.00**	**36.00**	**142.08**	**36.00**	**52.41**

4.7.3 Overall Release Rate

As noted above, the site uses new inlet control devices to restrict the 100 year storm event to the criteria approved by the City of Ottawa. Restricted stormwater will be contained onsite by utilizing surface ponding, in structure/pipe and rooftop storage. In the 100 year event, there will be no off-site overflow.

The sum of restrictions on the site, rooftops and uncontrolled flows is 290.93 l/s (142.00 l/s + 36.00 l/s + 112.93 l/s), which is less than the allowable release of 291.58 l/s noted in section 4.6.

5 SEDIMENT AND EROSION CONTROL PLAN

5.1 General

During construction, existing stream and conveyance systems can be exposed to significant sediment loadings. Although construction is only a temporary situation, it is proposed to possibly introduce a number of mitigative construction techniques to reduce unnecessary construction sediment loadings. These may include:

- Until the local storm sewer is constructed, groundwater in trenches will be pumped into a filter mechanism prior to release to the environment. One half diameter bulkhead barriers will be installed at the nearest downstream manhole in each sewer which connects to an existing downstream sewers.
- Seepage barriers will be constructed in any temporary drainage ditches (where applicable);
- Sediment capture filter socks will remain on open surface structures such as maintenance holes and catchbasins until these structures are commissioned and put into use.
- Silt fence on the site perimeter will be installed.

5.2 Trench Dewatering

Any trench dewatering using pumps will be discharged into a filter trap made up of geotextile filters and straw bales similar in design to the OPSD 219.240 Dewatering Trap. These will be constructed in a bowl shape with the fabric forming the bottom and the straw bales forming the sides. Any pumped groundwater will be filtered prior to release to the existing surface runoff. The contractor will inspect and maintain the filters as needed, including sediment removal and disposal and material replacement as needed. It should be noted that that the contractor will be responsible for the design and management of the trap(s).

5.3 Bulkhead Barriers

To further reduce downstream sediment loading, ½ diameter bulkheads will be constructed over the lower half of the outletting sewers during construction. These bulkheads will trap any sediment laden flows, thus preventing any construction-related contamination into existing sewers. The bulkheads will be inspected and maintained including periodic sediment removal as needed.

5.4 Seepage Barriers

In order to further reduce sediment loading to the surrounding area such as the Bank Street roadside ditch, seepage barriers will be installed on any surface water courses at appropriate locations that may become evident during construction. These barriers will be Light Duty Straw Bale Barriers per OPSD 219.100 and Heavy Duty Silt Fence Barriers per OPSD 219.130; locations are shown on the Erosion and Sedimentation Control Plan drawing 137175 C-900, included in **Appendix F**. They are typically made of layers of straw bales or geotextile fabric staked in place. All seepage barriers will be inspected and maintained as needed.

5.5 Surface Structure Filters

All catchbasins, and to a lesser degree, manholes, convey surface water to sewers. Until streets are asphalted and curbed, all catchbasins and manholes will be constructed with sediment capture inserts or equivalent located between the structure frame and cover. These will stay in place and be maintained during construction and build until it is appropriate to remove same.

6 APROVALS AND CITY REQUIREMENTS

6.1 City of Ottawa

The City of Ottawa reviews all development documents including this report and working drawings. Upon completion, the City will approve the local watermains under Permit No. 008-202, submit the sewer ECA application to the province, and eventually issue a Commence Work Notification.

6.2 Province of Ontario

The Ministry of Environment, Conservation and Parks (MECP) will approve the local sewers under Section 53 of the Ontario Water Resources Act and issue an Environmental Compliance Approval. The Ministry will also issue a Permit to Take Water.

6.3 Conservation Authority

The South Nation Conservation will be contacted to determine permitting requirements.

6.4 Federal Government

There are no required permits, authorizations or approvals needed expressly for this development from the federal government.

7 CONCLUSIONS & RECOMMENDATIONS

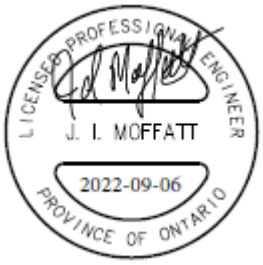
7.1 Conclusions

This report and the accompanying working drawings clearly indicate that the proposed development meets the requirements of the stakeholder regulators, including the City of Ottawa, provincial MECP and SNC. The proposed development is in general conformance with the recommendations of both the Pathways Phase 1 design and the design of the downstream Home Hardware site.

There is a reliable water supply available adjacent to the proposed development; a wastewater outlet is available adjacent to the site, local storm sewers have been installed adjacent to the site and an expansion to the existing Findlay Creek Village Stormwater Facility has been constructed to collect and treat runoff from the subject site.

7.2 Recommendations

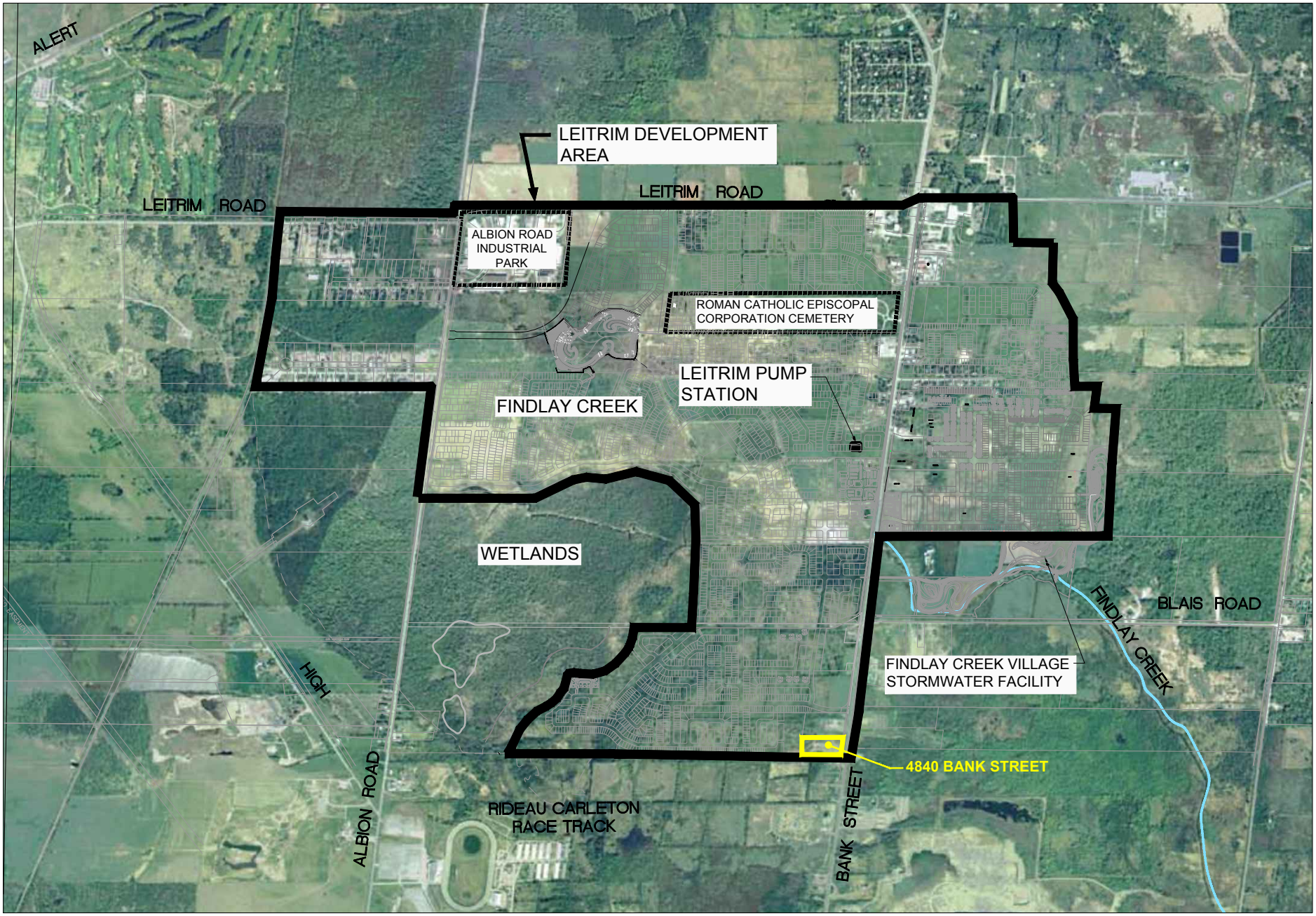
It is recommended that the regulators review this submission with an aim of providing the requisite approvals to permit the owners to proceed to the construction stage of the subject site.



Jim Moffatt, P.Eng.,
Associate

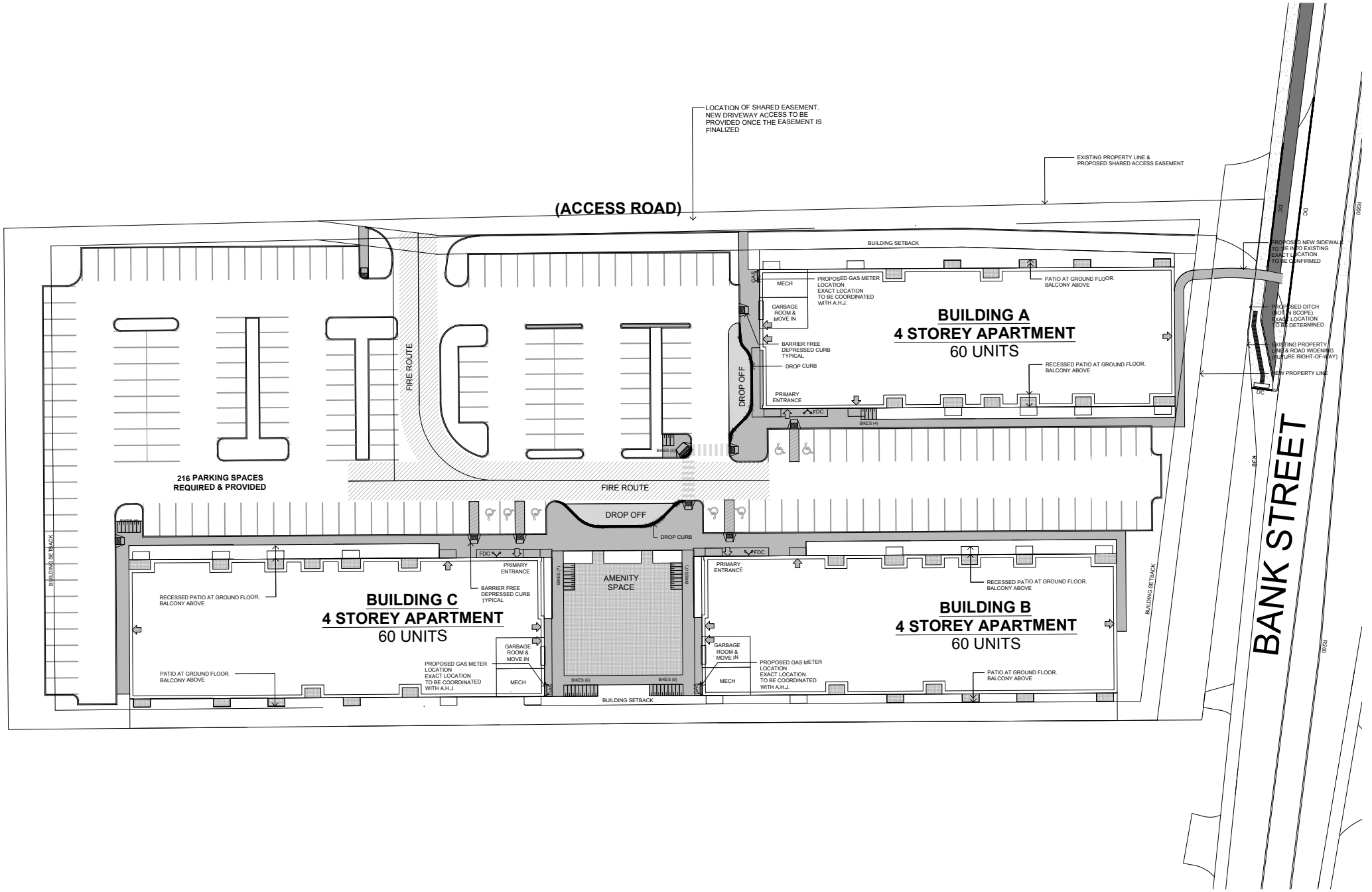
Samantha E. Labadie, P.Eng.,
Civil Engineer

https://ibigroup.sharepoint.com/sites/Projects2/137175/Internal Documents/6.0_Technical/6.04_Civil/03_Reports/Design Brief Submission 2_2022-08-26/CTR-Design Brief-2022-09-06.docx\2022-09-06\SL



J:\137175_Pathways_Sou\7.0_Production\7.03_Design\04_Civil_LAND\Design Brief\FIGURE 1.1 Site Location.dwg Layout Name: FIGURE 1.1

Scale	Project Title	Drawing Title	Sheet No.
N.T.S.	4840 BANK STREET	LOCATION PLAN	FIGURE 1.1



J:\137175_Pathways_Sou\7.0_Production\7.03_Design\04_Civil_LAND\Design Brief\FIGURE 1.2 Site Plan.dwg Layout Name: FIGURE 1.2

Scale	Project Title	Drawing Title	Sheet No.
N.T.S.	4840 BANK STREET	SITE PLAN	FIGURE 1.2

APPENDIX A

- **City Pre-Consultation Meeting Notes (January 12 2022)**

4840 Bank Street
Meeting Summary Notes
Jan 12, 2022, Online Teams Meeting

Attendees:

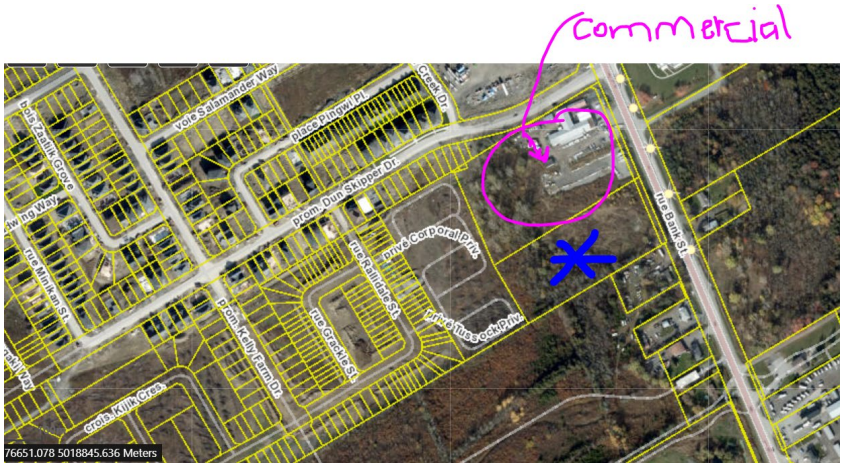
- Kelly Rhodenizer, Regional Group
- Nikita Jariwala, Regional Group
- Erin O'Connor – Regional Group;
- James Ireland (Novatech)
- David Hook – IBI, traffic
- Doug Cave (Jim Moffat) IBI, Civic
- Tyler Cassidy, Kelsey Charie (Project Manager, EIT, City of Ottawa)
- Christopher Moise (Urban Designer, Architect, City of Ottawa)
- Mark Richardson, Planning Forester
- James Holland, SNCA
- Burl Walker, Parks
- Tracey Scaramozzino (File Lead, Planner, City of Ottawa)

Not in Attendance:

- Matthew Hayley, Environmental Planner
- Mike Giampa (Transportation Project Manager, City of Ottawa)

Issue of Discussion:

- PUD Site Plan for 3, 6-storey rental apts, 92-units each; Total of 276 d/u; 173 parking at grade and 158 parking u/g
- Similar Product to a recently approved site plan at 2045, 2055, 2065 Portobello Blvd, Orleans.
- Within Idone Plan of Subdivision D07-16-17-0006



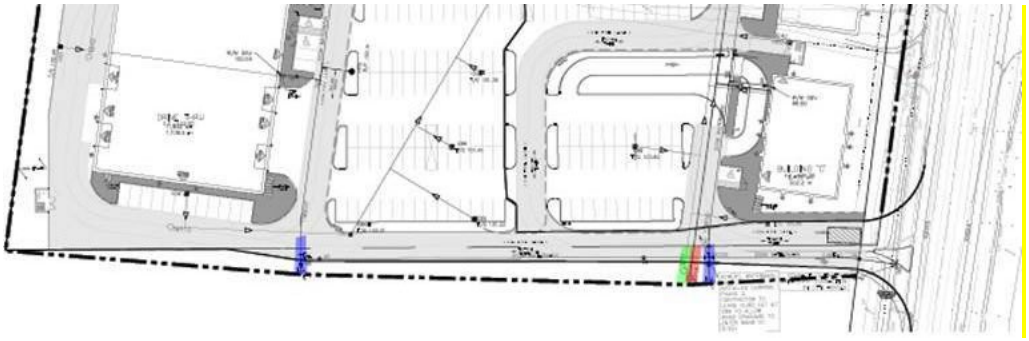
4. **Infrastructure/Servicing (Tyler Cassidy):**

1. The Servicing Study Guidelines for Development Applications are available at the following address:
https://ottawa.ca/en/city-hall/planning-and-development/how-developproperty/development-application-review-process-2/guide-preparing-studies-and-plans
2. Servicing and site works shall be in accordance with the following documents:
- Ottawa Sewer Design Guidelines (October 2012) and all the Technical Bulletins including, Technical Bulletin PIEDTB-2016-01 and ISTB-2018-01
- Ottawa Design Guidelines – Water Distribution (2010) and Technical Bulletins ISD-2010-2, ISDTB-2014-02 and ISTB-2018-02
- Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
- City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
- City of Ottawa Environmental Noise Control Guidelines (January, 2016)
- City of Ottawa Park and Pathway Development Manual (2012)
- City of Ottawa Accessibility Design Standards (2012)
- Ottawa Standard Tender Documents (latest version)
- Ontario Provincial Standards for Roads & Public Works (2013)

3. Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-2424 x 44455
4. The Stormwater Management Criteria, for the subject site, is to be based on the following background studies"
- 2016 Updated Servicability Report (Class EA OPA 76 Areas 8a, 9a & 9b) Leitrim Development Area (IBI Group, September 2016)
- Design Brief, Pathways at Findlay Creek, 4800 Bank Street (Remer Lands) Phase 1 (IBI Group July 2017)
- Design Brief, Bank Street Development, 4836 Bank Street (IBI Group April 2019).

<u>The Stormwater Management Criteria is as follows</u>:
a. Allowable release rate of 291.58 L/s for the site.
b. Flows to the storm sewer in excess of the 2-year storm release rate, up to and including
c. the 100-year storm event, must be detained on site
d. Ensure no overland flow for all storms up to and including the 100-year event.
e. The 2-yr storm or 5-yr storm event using the IDF information derived from the
f. Meteorological Services of Canada rainfall data, taken from the Ottawa Macdonald Cartier International Airport, collected 1966 to 1997.
g. A calculated time of concentration (Cannot be less than 10 minutes).
h. Quality control requirements to be provided by Rideau Valley Conservation Authority (RVCA). Note that Quality Control for the site is provided by the Findlay Creek Stormwater Management Facility.

5. Deep Services



i. A plan view of the approximate services may be seen above. Services should ideally be grouped in a common trench to minimize the number of road cuts. The sizing of available future services is:

a. Connections (4836 Bank Street):

i. MH1 w/ 600 mm dia. STM (Conc.)
ii. 203 mm dia. Watermain (PVC)
iii. MH1A 200 mm dia. SAN (PVC)

ii. Provide existing servicing information and the recommended location for the proposed connections. Services should ideally be grouped in a common trench to minimize the number of road cuts.

iii. Provide information on the monitoring manhole requirements – should be located in an accessible location on private property near the property line (ie. Not in a parking area).

iv. Provide information on the type of connection permitted

Sewer connections to be made above the springline of the sewermain as per:

a. Std Dwg S11.1 for flexible main sewers – connections made using approved tee or wye fittings.
b. Std Dwg S11 (For rigid main sewers) – lateral must be less that 50% the diameter of the sewermain,
c. Std Dwg S11.2 (for rigid main sewers using bell end insert method) – for larger diameter laterals where manufactured inserts are not available; lateral must be less that 50% the diameter of the sewermain,
d. Connections to manholes permitted when the connection is to rigid main sewers where the lateral exceeds 50% the diameter of the sewermain. – Connect obvert to obvert with the outlet pipe unless pipes are a similar size.
e. No submerged outlet connections

v. Please note that coordination for servicing is required with the Owner of 4836 Bank Street to ensure that planned services are available for the site's designated outlet once development begins.

6. Civil consultant must request boundary conditions from the City's assigned Project Manager prior to first submission. Water Boundary condition requests must include the

location of the service and the expected loads required by the proposed development. Please provide the following information:

i. Location of service(s)
ii. Type of development and the amount of fire flow required (as per FUS, 1999).
iii. Average daily demand: ___ l/s.
iv. Maximum daily demand: ___l/s.
v. Maximum hourly daily demand: ___ l/s.
vi. Hydrant location and spacing to meet City's Water Design guidelines.
vii. Water supply redundancy will be required for more than 50 m3/day water demand.

7. Phase 1 ESAs and Phase 2 ESAs must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.
8. If applicable, MECP ECA Requirements –

All development applications should be considered for an Environmental Compliance Approval (ECA) by the Ministry of the Environment, Conservation, and Parks (MECP);

a. Consultant determines if an approval for sewage works under Section 53 of OWRA is required. Consultant then determines what type of application is required and the City's project manager confirms. (If the consultant is not clear if an ECA is required, they will work with the City to determine what is required. If the consultant it is still unclear or there is a difference of opinion only then will the City PM approach the MECP.

b. **In our opinion, the stormwater works for 4840 Bank Street are covered under existing ECA NUMBER 7857-BQ3J3V dated June 17, 2020 for 4836 Bank Street. However, please have your consultant review the ECA requirements and determine if one if required.**

6. Initial Planning Comments

1. This site was intended to be mixed-use as per the draft plan of subdivision. Why is it now being developed for residential only?
2. Provide street trees at ROW and ample landscaping around property line
3. What is view like on north side of site – abutting the commercial site?
4. Show elevations vis a vis the current and future development on abutting properties.
5. Show some uses in the amenity area – to give an idea of how they might be used and to give us a better understanding of their sizes.
6. Show surrounding uses in grey-ed out lines – especially the full access to the site.
7. Glad to see garbage is inside
8. Appreciate that a lot of the parking is u/g
9. Where is bike parking?
10. Will the site be fenced?
11. Ensure ped access to and through the site. – How does it interact with abutting sites?

12. Keep bird-safe principles in mind – in terms of glazing on corners, use of decals etc.
13. Please consider using a variety of Local, Native, Non-invasive species;
14. Speak to Councillor Darouze and relevant community associations.

7. Urban Design Comments (Christopher Moise):

Comments

- This proposal is not within the City's Design Priority Areas and does not need to attend the City's UDRP. Staff will be responsible for evaluating the proposal and providing design direction;
- If the decision has been made not to develop a mixed use project what are some of the intents that are being left out of the proposal and how can this project accommodate them?
    - Access from Bank street: Vehicles and pedestrians;
    - Buildings that support the public right of way: Buildings that provide a frontage and entrances facing Bank;
        - Create an urban street edge. Landscaping and primary entrances facing Bank Street;
        - Can the Bank Street treatment be designed to act as building front and not side yard condition?
    - Can surface parking be screened and separated from Bank Street with strategic landscaping?
    - We recommend a sidewalk on the Bank Street frontage that would help provide pedestrian connectivity to parks and commercial sites to the north on Bank Street;
    - Would a pedestrian connection to the properties to the west be beneficial?
    - How does the massing relate to the surrounding properties? Please illustrate the massing on the site with dimensions and illustrating transition if necessary;
    - Since there will be residents without cars will there be additional pedestrian connection to Bank street (bus network, etc.);
    - Trees: Are there trees on the site that can be preserved? Ie in the amenity space or around the perimeter of the site?
    - Landscaping: We recommend consideration for trees and screening elements be illustrated on the landscaping plan, detailing amenity spaces and public street frontages;
- We recommend the buildings fronting Bank street provide additional ground floor height to accommodate future commercial uses if possible;
- A scoped Design Brief is a required submittal (and separate from any UDRP submission) for all Site Plan/Re-zoning applications and can be combined with the Planning Rationale. Please see the Design Brief Terms of Reference provided.
    - We would like to see the massing on the site as well as the elevations for the buildings;

8. Parks (Burl Walker):

1. The applicant is proposing to develop three 6-storey rental apartment buildings with a total of 276 apartment dwelling units. The total site area is shown as 15,344 sq. m on the Site Plan. The property is described as Block 204 on Plan 4M-1653 within the Pathways at Findlay Creek South subdivision.

2. Condition C.13(a) to Schedule "H" of the Pathways at Findlay Creek South Phase 1 subdivision agreement describes the parkland dedication calculations for the subdivision. The calculations were based on the development of 100% commercial uses on Block 204. A combination of parkland conveyance and cash-in-lieu of parkland dedication was provided at the time of registration of the subdivision agreement. As per subsection 13(1)(b) of the Parkland Dedication By-law, parkland dedication will be required for the proposed development since land that was originally proposed for commercial purposes is now proposed for residential use.

3. This area of Leitrim is serviced by three parks – Salamander Park, Miikana Park and Dun Skipper Park. Salamander Park is currently under construction. Miikana Park is in the detail design phase with construction anticipated to commence this year. The Dun Skipper Park project was recently initiated. Salamander Park and Dun Skipper Park are located approximately 400m from the site, while Miikana Park is about 900m from the site. Additional parkland conveyance is not needed for this area. Cash-in-lieu of parkland dedication will be required as a condition of site plan approval.

4. The following is a draft cash-in-lieu of parkland dedication condition based on the provisions of the current Parkland Dedication By-law:

   The Owner agrees to provide cash-in-lieu of parkland dedication on the subject lands within Ward 20 such value of the land to be determined by the City's Realty Services Branch, to the satisfaction of the General Manager, Recreation, Cultural and Facility Services. The Owner further agrees to pay for the cost of the appraisal inclusive of HST. In accordance with the Planning Act and the City of Ottawa Parkland Dedication By-law, a land area of 0.121 ha has been calculated for the cash-in-lieu of parkland dedication requirement has been calculated as follows:

/ Land Use	Proposed Dwelling Units	Land Area	Cash-in-lieu of Parkland Dedication Rate	Parkland Dedication Requirement
Apartment	276	1.534 ha (area of site being developed)	1 ha per 500 dwelling units to a maximum of 10% of the area of the site being developed	0.153 ha
Commercial (credit for previous parkland dedication at the time of registration of the Phase 1 subdivision agreement)		1.594 ha (gross land area including Street Widening Block 212 on Plan 4M-1653 adjacent to Block 204)	2% of gross land area	(0.032 ha)
Net Parkland Dedication Requirement				0.121 ha

The cash-in-lieu of parkland dedication shall be directed 60% towards the Ward 20 cash-in-lieu of parkland reserve (Account 830309) and 40% towards the City-wide cash-in-lieu of parkland reserve (Account 830015).

5. The City will be replacing the Parkland Dedication By-law prior to September 18, 2022. If the new Parkland Dedication By-law comes into force during the Site Plan Control application process, the final cash-in-lieu of parkland dedication requirement will be determined based on the provisions of the new Parkland Dedication By-law and the applicable subsections of the Planning Act.

6. Consider how residents from the development will access the parks in the neighbourhood. Provide for connections to the future sidewalk on the west side of Bank Street adjacent to the site. Pedestrian linkages to the abutting commercial site to the north should also be provided to support pedestrian access through the commercial site to reach the sidewalks on Dun Skipper Drive, which connect to Dun Skipper Park and Miikana Park.

9. Trees (Mark Richardson):

TCR requirements:

1. A Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City
    a. an approved TCR is a requirement of Site Plan approval.
    b. The TCR may be combined with the LP or EIS provided all information is supplied
2. Any removal of privately-owned trees 10cm or larger in diameter, or City-owned trees of any diameter requires a tree permit issued under the Tree Protection Bylaw (Bylaw 2020 – 340); the permit will be based on an approved TCR and made available at or near plan approval.
3. The TCR must document all trees on site, as well as off-site trees if the CRZ extends into the developed area, by species, diameter and health condition
4. Please identify trees by ownership – private onsite, private on adjoining site, city owned, co-owned (trees on a property line)
5. If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained
6. All retained trees must be shown and all retained trees within the area impacted by the development process must be protected as per City guidelines available at Tree Protection Specification or by searching Ottawa.ca
7. The City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.
8. For more information on the TCR requirements or help with tree retention options, contact Mark Richardson mark.richardson@ottawa.ca or on City of Ottawa

LP tree planting requirements:

For additional information on the following please contact tracy.smith@Ottawa.ca

Minimum Setbacks

- Maintain 1.5m from sidewalk or MUP/cycle track.
- Maintain 2.5m from curb
- Coniferous species require a minimum 4.5m setback from curb, sidewalk or MUP/cycle track/pathway.
- Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing.
- Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.

Tree specifications

- Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
- Maximize the use of large deciduous species wherever possible to maximize future canopy coverage
- Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and include watering and warranty as described in the specification (can be provided by Forestry Services).
- Plant native trees whenever possible
- No root barriers, dead-man anchor systems, or planters are permitted.
- No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)

Hard surface planting

- Curb style planter is highly recommended
- No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.
- Trees are to be planted at grade

Soil Volume

- Please ensure adequate soil volumes are met:

Tree Type/Size	Single Tree Soil Volume (m3)	Multiple Tree Soil Volume (m3/tree)
Ornamental	15	9
Columnar	15	9
Small	20	12
Medium	25	15
Large	30	18

Conifer	25	15

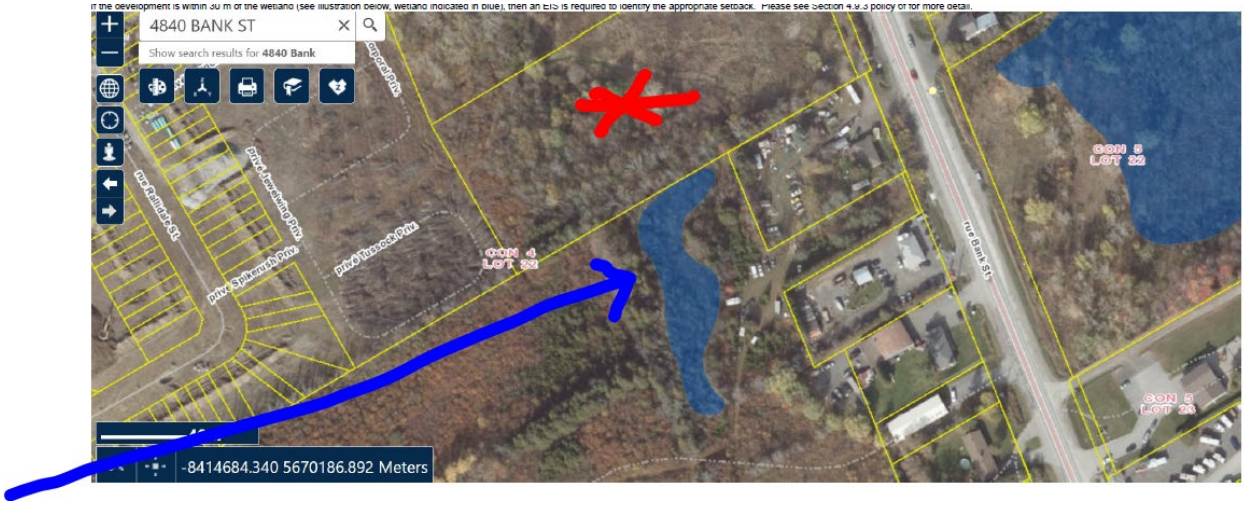
Please note that these soil volumes are not applicable in cases with Sensitive Marine Clay.

Sensitive Marine Clay

- Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines

10. Environment (Matthew Hayley):

1. Urban Heat Island
   Please add features that reduce the urban heat island effect (see OP 10.3.3) produced by the parking lot and a building footprint. For example, this impact can be reduced by adding large canopy trees, green roofs or vegetation walls, or constructing the parking lot or building differently.
2. Bird Safe
   Given the height of the proposal (mid to high rise) the proposal will need to review and incorporate bird safe design elements. Some of the risk factors include glass and related design traps such as corner glass and fly-through conditions, ventilation grates and open pipes, landscaping, light pollution. More guidance and solutions are available in the guidelines which can be found here: https://ottawa.ca/en/planning-development-and-construction/developing-property/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans .
3. Surface Water
   Setback may be required for the wetlands as per the OP and an EIS is required to determine appropriate setback. See OPs. 4.9.3, 6f for more details.



11. Conservation Authority (James Holland, SNCA)

Natural Heritage

- The CA's mapping does not identify natural heritage features for the site.

Stormwater Design

- If stormwater management is being directed to approved municipal infrastructure, the Conservation Authority does not complete a technical review of the design. If there is uncontrolled drainage or flows to a watercourse, a technical review may be completed. This will be determined during the first review.
- The stormwater quality control should achieve an 80% TSS removal. The design should include best management practices for sediment and erosion control.

CA Regulations

- Any interference with a watercourse may require a permit under O. Reg. 170/06, and restrictions may apply. This will be determined during the first review.

12. Transportation (Mike Giampa)

1. A TIA is warranted, please proceed to scoping.
2. The application will not be deemed complete until the submission of the draft step 2-4, including the functional draft RMA package (if applicable) and/or monitoring report (if applicable).
3. Although a full review of the TIA Strategy report (Step 4) is not required prior to an application, it is strongly recommended.
4. Synchro files are required at Step 4.
5. ROW protection on Bank Street is 44.5 m (to be confirmed with the approved Bank Street EA).
6. A Road Noise Impact Study is required
7. Clear throat requirements as per TAC guidelines- this applies to existing and proposed accesses.
8. Bank Street widening (Leitrim to Dunskipper) is tentatively scheduled to begin in 2023.

13. Waste Collection

1. Please see City's Waste Management Guidelines for multi-unit residential: http://ottawa.ca/calendar/ottawa/citycouncil/pec/2012/11-13/Solid%20Waste%20Collection%20Guidelines%20-%20Doc%201.pdf

14. General Information

1. Ensure that all plans and studies are prepared as per City guidelines – as available online:

https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development-application-review-process/development-application-submission/guide-preparing-studies-and-plans

APPENDIX B

- **Watermain Demand Calculation Sheets**
- **FUS Calculation**
- **Boundary Conditions from the City of Ottawa**
- **Hydraulic Analysis**
- **Non-Combustible Construction confirmation by Architect**
- **Fire Protection confirmation by Mechanical Engineer**

IBI GROUP
333 PRESTON STREET
OTTAWA, ON
K1S 5N4

WATERMAIN DEMAND CALCULATION SHEET

PROJECT : Pathways Block 204 Apartments
LOCATION : 4840 Bank Street
DEVELOPER : Regional Group

FILE: 137175.6.04
DATE PRINTED: 02-Jun-22
DESIGN: SEL

NODE	RESIDENTIAL UNITS SF	TH	APT	POP'N	NON-RESIDENTIAL INDTRL (ha.)	INST. (ha.)	COMM. (m^2)	AVERAGE DAILY DEMAND (l/s) Res.	Non-res.	Total	MAXIMUM DAILY DEMAND (l/s) Res.	Non-res.	Total	MAXIMUM HOURLY ` Res.	Non-res.	Total	FIRE DEMAND (l/s)
Site			180	324				1.05	0.00	1.05	2.63	0.00	2.63	5.78	0.00	5.78	150.0

ASSUMPTIONS

RESIDENTIAL DENSITIES

Single Family	3.4 persons/unit
Townhouse	2.7 persons/unit
Apartment	1.8 persons/unit

AVG. DAILY DEMAND

Residential 280 l / cap / day

MAX. DAILY DEMAND

Residential 700 l / cap / day

MAX. HOURLY DEMAND

Residential 1,540 l / cap / day

FIRE FLOW

Residential 9,000 l / min

Fire Flow Requirement from Fire Underwriters Survey

Building 'A' - 4 Storey Residential

Building Floor Area *inlcudes Firewall

Floors 1-4	2,911	m^2
Total	2,911	m^2

Fire Flow

$F = 220C\sqrt{A}$

C	0.8	C =	1.5	wood frame
A	2,911 m^2		1.0	ordinary
			0.8	non-combustile
F	9,496 l/min		0.6	fire-resistive
Use	9,000 l/min			

Occupancy Adjustment

		-25%	non-combustile
		-15%	limited combustile
Use	-15%	0%	combustile
		+15%	free burning
Adjustment	-1350 l/min	+25%	rapid burning
Fire flow	7,650 l/min		

Sprinkler Adjustment

		-30%	system conforming to NFPA 13
		-50%	complete automatic system
Use	-30%		
Adjustment	-2295 l/min		

Exposure Adjustment

Building Face	Separation (m)	Adjacent Exposed Wall			Exposure Charge *
		Length	Stories	L*H Factor	
north	19.9	19	1	19	10%
east	Firewall				10%
south	24.7	66	4	264	10%
west	>45				0%
Total					30%

Adjustment	2,295	l/min

Required Fire Flow

Total adjustments	-	l/min
Fire flow	7,650	l/min
Use	**8,000**	**l/min**
	133.3	**l/s**

Boundary Conditions
4840 Bank Street

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	63	1.05
Maximum Daily Demand	158	2.63
Peak Hour	347	5.78
Fire Flow Demand #1	13,000	216.67

Location

Results – Existing Conditions

Connection 1 – Dun Skipper Dr.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	154.6	77.5
Peak Hour	143.7	62.0
Max Day plus Fire 1	122.3	31.6

Ground Elevation = 100.1 m

Connection 2 – Bank St.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	154.6	78.4
Peak Hour	143.7	62.8
Max Day plus Fire 1	121.3	31.0

Ground Elevation = 99.5 m

Results – SUC Zone Reconfiguration

Connection 1 – Dun Skipper Dr.

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	148.9	69.4
Peak Hour	145.0	63.8
Max Day plus Fire 1	139.1	55.4

Ground Elevation = 100.1 m

Connection 2 – Bank St.

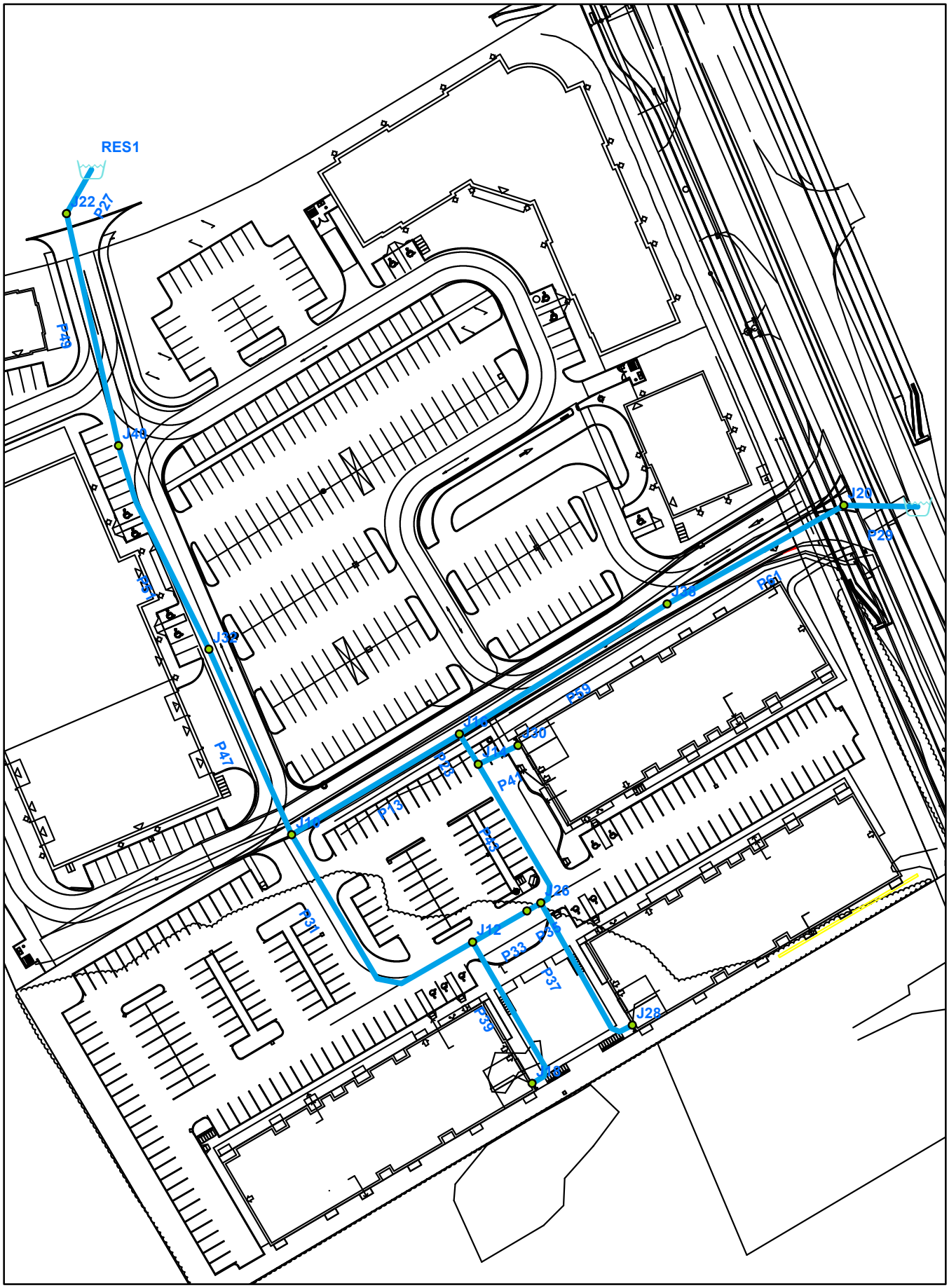
Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	148.9	70.3
Peak Hour	144.6	64.1
Max Day plus Fire 1	137.2	53.6

Ground Elevation = 99.5 m

Disclaimer

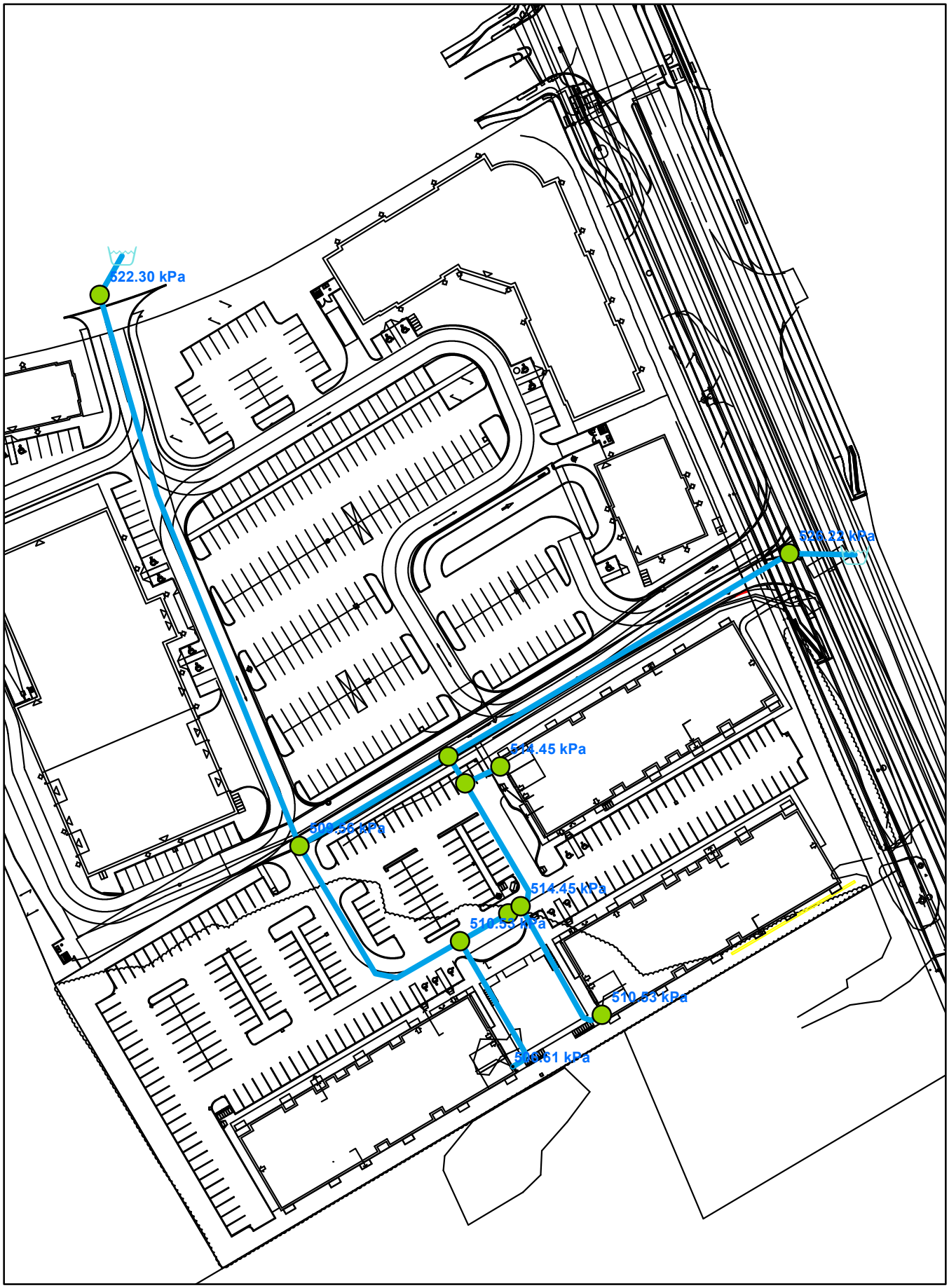
The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary 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.

Overall Plan - Node and Pipe IDs



		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1	☐	J10	0.00	102.60	154.60	509.56
2	☐	J12	0.00	102.50	154.60	510.53
3	☐	J14	0.00	101.90	154.60	516.41
4	☐	J16	0.00	101.60	154.60	519.35
5	☐	J18	0.35	102.90	154.60	506.61
6	☐	J20	0.00	100.90	154.60	526.22
7	☐	J22	0.00	101.30	154.60	522.30
8	☐	J24	0.00	102.10	154.60	514.45
9	☐	J26	0.00	102.10	154.60	514.45
10	☐	J28	0.35	102.50	154.60	510.53
11	☐	J30	0.35	102.10	154.60	514.45

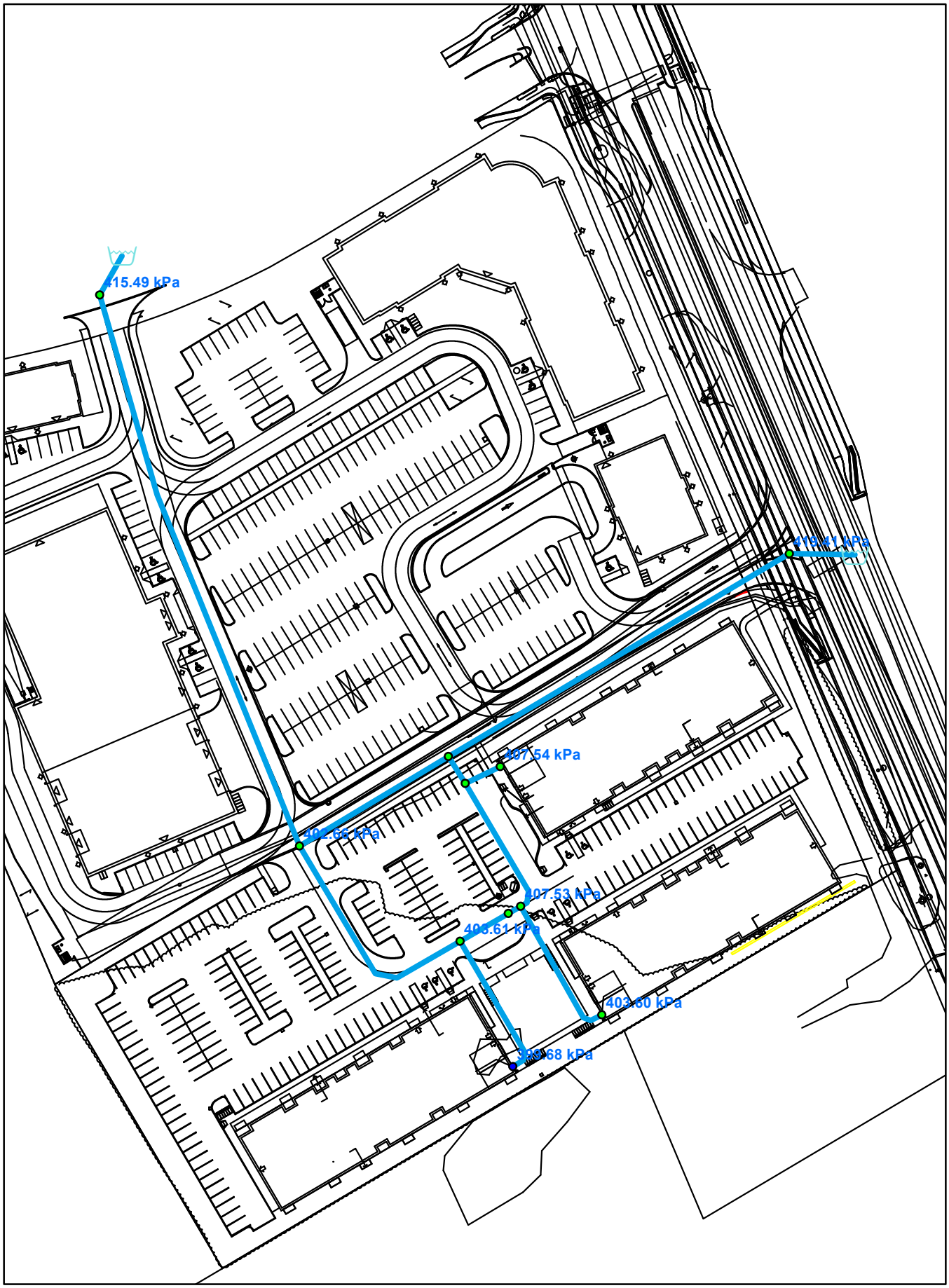
Avg Day - Junction Pressure



		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1	☐	J10	0.00	102.60	143.69	402.66
2	☐	J12	0.00	102.50	143.69	403.61
3	☐	J14	0.00	101.90	143.69	409.50
4	☐	J16	0.00	101.60	143.69	412.45
5	☐	J18	1.93	102.90	143.69	399.68
6	☐	J20	0.00	100.90	143.70	419.41
7	☐	J22	0.00	101.30	143.70	415.49
8	☐	J24	0.00	102.10	143.69	407.53
9	☐	J26	0.00	102.10	143.69	407.53
10	☐	J28	1.93	102.50	143.69	403.60
11	☐	J30	1.93	102.10	143.69	407.54

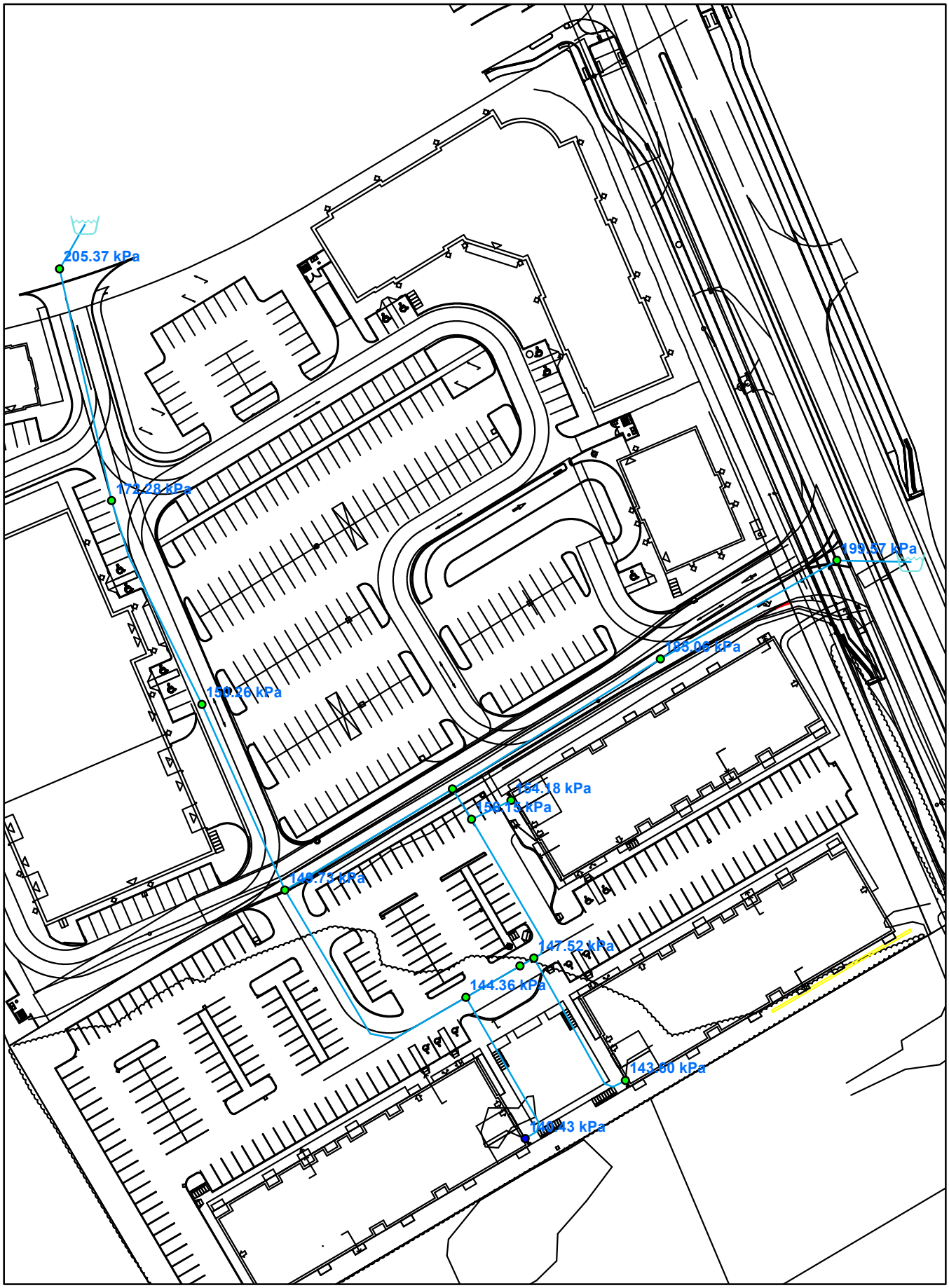
		ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)	Status	Flow Reversal Count
1	☐	P11	J22	J10	142.33	204.00	110.00	2.58	0.08	0.01	0.07	Open	0
2	☐	P13	J10	J16	42.13	204.00	110.00	0.57	0.02	0.00	0.00	Open	0
3	☐	P15	J16	J20	96.34	204.00	110.00	-3.21	0.10	0.01	0.10	Open	0
4	☐	P23	J14	J16	7.68	204.00	110.00	-3.78	0.12	0.00	0.13	Open	0
5	☐	P27	J22	RES1	1.00	204.00	110.00	-2.58	0.08	0.00	0.07	Open	0
6	☐	P29	J20	RES2	1.00	204.00	110.00	-3.21	0.10	0.00	0.10	Open	0
7	☐	P31	J10	J12	59.08	204.00	110.00	2.01	0.06	0.00	0.04	Open	0
8	☐	P33	J12	J24	13.52	204.00	110.00	0.08	0.00	0.00	0.00	Open	0
9	☐	P35	J24	J26	3.45	204.00	110.00	0.08	0.00	0.00	0.00	Open	0
10	☐	P37	J26	J28	35.95	204.00	110.00	1.93	0.06	0.00	0.04	Open	0
11	☐	P39	J12	J18	36.09	204.00	110.00	1.93	0.06	0.00	0.04	Open	0
12	☐	P41	J14	J30	9.48	204.00	110.00	1.93	0.06	0.00	0.04	Open	0
13	☐	P43	J14	J26	34.96	204.00	110.00	1.85	0.06	0.00	0.04	Open	0

Peak Hour - Junction Pressure



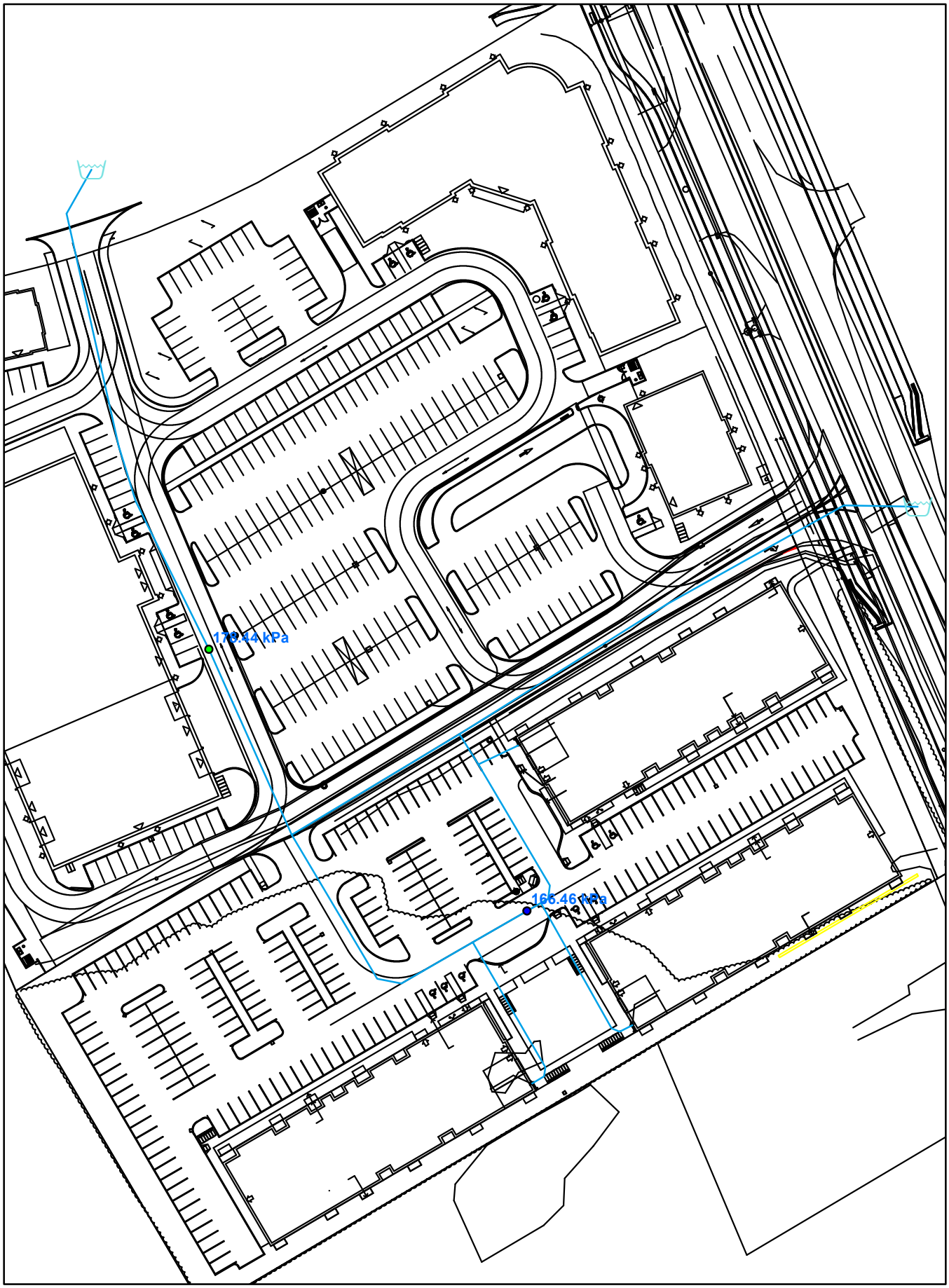
		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1	☐	J10	0.00	102.60	117.88	149.73
2	☐	J12	0.00	102.50	117.23	144.36
3	☐	J14	0.00	101.90	117.83	156.15
4	☐	J16	0.00	101.60	117.99	160.59
5	☐	J18	0.88	102.90	117.23	140.43
6	☐	J20	0.00	100.90	121.27	199.57
7	☐	J22	0.00	101.30	122.26	205.37
8	☐	J24	95.00	102.10	117.09	146.88
9	☐	J26	0.00	102.10	117.15	147.52
10	☐	J28	0.88	102.50	117.15	143.60
11	☐	J30	0.88	102.10	117.83	154.18
12	☐	J32	63.00	102.70	118.03	150.26
13	☐	J38	0.00	100.90	119.78	185.06
14	☐	J40	0.00	102.50	120.08	172.28

Max Day + Fire - Junction Pressures



		ID	Total Demand (L/s)	Hydrant Available Flow (L/s)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (kPa)	Critical Node Pressure at Fire Demand (kPa)	Critical Pressure for Design Run (kPa)	Hydrant Design Flow (L/s)	Hydrant Pressure at Design Flow (kPa)
1	☐	J24	95.00	140.47	J24	139.96	166.46	139.96	140.47	139.96
2	☐	J32	63.00	160.96	J32	139.96	178.44	139.96	160.96	139.96

Max Day + Fire - Residual Hydrant Pressures



Samantha Labadie

From: Jonathan Morin <jonathan.morin@groupecanam.com>
Sent: Tuesday, August 30, 2022 10:28 AM
To: Marianne Cieslewicz
Cc: steve.beaulieu@groupecanam.com; Pier-Luc Samson; Jackie Doucet; Linnea Chamberlain
Subject: Re: FW: Fire Underwriters Survey

Hi Marianne,

Steve is on vacation this week, but I can confirm that the buildings meet this definition.

If you have other questions, please let me know.

Thanks!

Jonathan Morin, Ing. Senior / Senior P. Eng.
Canam-bâtiments / Canam-Buildings
T 418 780-4186 #6619
jonathan.morin@groupecanam.com

On Mon, Aug 29, 2022 at 5:36 PM Marianne Cieslewicz <mcieslewicz@chamberlainipd.com> wrote:

> Hi Steve,
>
> We're looking at a couple items re: Ottawa and fireflows.
>
> Per Fire Underwriters Survey, can you confirm if our building's construction meets Non combustible construction definition as described below?
>
> Thanks!
>
> **Non-combustible Construction** - Any structures having all structural members including walls, columns, piers, beams, girders, trusses, floors, and roofs of non-combustible material and not qualifying as fire-resistive construction. For example, unprotected metal buildings.

Marianne Cieslewicz

CHAMBERLAIN ARCHITECT SERVICES LIMITED

shaping your world

✉: 4671 Palladium Way, Unit 1 . Burlington . Ontario . L7M 0W9 . Canada

☎: OFFICE - 905.631.7777 ext 240

☎: CELL - 905.580.1052

🖱: mcieslewicz@chamberlainIPD.com

💻: www.chamberlainIPD.com

Follow us @**ChamberlainARCH** on

From: Lance Erion <lerion@IBIGroup.com>
Subject: Fire Underwriters Survey

As per our meeting today we would like to clarify the building requirements in order to achieve the required Fire Underwriters Survey (FUS) fire flow for this site. Based on boundary conditions provided by the City of Ottawa and our hydraulic analysis we have determined the existing water supply can provide up to 158 l/s of 9,500 l/min of fire flow. The available fire flow will increase substantially after the City conducts a water district zone reconfiguration but this is not expected until the later half of 2024 per the City. As per the City of Ottawa water design guidelines the FUS method

is used to calculate a buildings required fire flow which uses building floor area, type of building construction, use of sprinkler system, occupancy use and separation from other buildings. In order to meet the flow the building construction is required to be **Non-combustible**, the definition of building construction types are shown below, the complete FUS guide is attached.

TYPES OF CONSTRUCTION

For the specific purpose of using the Guide, the following definitions may be used:

Fire-Resistive Construction - Any structure that is considered fully protected, having at least 3-hour rated structural members and floors. For example, reinforced concrete or protected steel.

Non-combustible Construction - Any structures having all structural members including walls, columns, piers, beams, girders, trusses, floors, and roofs of non-combustible material and not qualifying as fire-resistive construction. For example, unprotected metal buildings.

Ordinary Construction - Any structure having exterior walls of masonry or such non-combustible material, in which the other structural members, including but not limited to columns, floors, roofs, beams, girders, and joists, are wholly or partly of wood or other combustible material.

Wood Frame Construction - Any structure in which the structural members are wholly or partly of wood or other combustible material and the construction does not qualify as ordinary construction.

Using the non-combustible building type in the FUS calculation a further reduction is required for the sprinkler system, the FUS allows a 30% reduction for a system conforming to NFPA 13 however in order to meet the required fire flow a 35% reduction is required. As shown below an addition 10% reduction is allowed for a total reduction of 40% if the water supply is standard for both the system and fire department hose lines.

3. The value obtained in No.2 above may be reduced by up to 50% for complete automatic sprinkler protection depending upon adequacy of the system. The credit for the system will be a maximum of 30% for an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards. Additional credit of up to 10% may be granted if the water supply is standard for both the system and fire department hose lines required. The percentage reduction made for an automatic sprinkler system will depend upon the extent to which the system is judged to reduce the possibility of fires spreading within and beyond the fire area. Normally this reduction will not be the maximum allowed without proper system supervision including water flow and control valve alarm service. Additional credit may be given of up to 10% for a fully supervised system.

Can you please confirm that the building meets the requirements of the FUS definition for non-combustible construction and that a 35% reduction for the sprinkler can be achieved, please note if the building type can be fire-resistive then the 30% sprinkler reduction would be sufficient however this would require the structural members to have a 3 hour rating. Please let us know if you have any questions or require further information.

Regards,

Lance Erion P.ENG

Associate

IBI GROUP

Suite 500, 333 Preston Street

Ottawa ON K1S 5N4 Canada

tel +1 613 225 1311 ext 64047

Samantha Labadie

From: Lance Erion
Sent: Wednesday, August 31, 2022 4:57 PM
To: Kelly Rhodenizer; Doug Cave; Samantha Labadie
Cc: Taylor Marquis; Stefanie Kaminski; Linnea Chamberlain
Subject: RE: [EXTERNAL]FW: Pathways Block 204 - Fire Underwriters Survey

I believe this is sufficient for our resubmission to the City, Samantha can you update the FUS calculation in the design brief to show non-combustible construction and 40% sprinkler reduction.

Regards,

Lance Erion P.ENG

Associate

IBI GROUP
Suite 500, 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel +1 613 225 1311 ext 64047

Defining the cities of tomorrow
ibigroup.com

From: Kelly Rhodenizer <krhodenizer@regionalgroup.com>
Sent: Wednesday, August 31, 2022 10:28 AM
To: Doug Cave <doug.cave@ibigroup.com>; Samantha Labadie <samantha.labadie@ibigroup.com>; Lance Erion <lerion@ibigroup.com>
Cc: Taylor Marquis <TMarquis@regionalgroup.com>; Stefanie Kaminski <SKaminski@regionalgroup.com>; Linnea Chamberlain <lchamberlain@chamberlainipd.com>
Subject: FW: [EXTERNAL]FW: Pathways Block 204 - Fire Underwriters Survey

*** Exercise caution. This is an EXTERNAL email. DO NOT open attachments or click links from unknown senders or unexpected email. ***
Doug and Team,

Please see below. Let me know if this is sufficient to re-file our site plan and not add any further requirements.

Kelly Rhodenizer
Vice President, Commercial and Multi-Family Development
T: 613-230-2100 x 7229
C: 613-979-6547

krhodenizer@regionalgroup.com

From: Mark Sarasin <marks@gwal.com>
Sent: Wednesday, August 31, 2022 10:26 AM
To: Kelly Rhodenizer <krhodenizer@regionalgroup.com>
Cc: Bruce Thomas - Ron Eastern Construction Ltd (bthomas@recl.ca) <bthomas@recl.ca>; Linnea Chamberlain <lchamberlain@chamberlainipd.com>; Taylor Marquis <TMarquis@regionalgroup.com>; Stefanie Kaminski <SKaminski@regionalgroup.com>
Subject: RE: [EXTERNAL]FW: Pathways Block 204 - Fire Underwriters Survey

Hi Kelly,

I don't know why the city is enforcing FUS as it is not a code requirement. I've had this discussion with Dana at MH on past projects….

That said, from a building perspective, we need 25.3 l/s of water to meet our demand for the building (18.9 l/s for sprinklers and 6.3l/s for the 1-1/2 hose connection). That said, the 2-1/2" hose that the firemen use require 31.5 l/s (for two at 15.7 l/s) but that is provided by the fire department connection as the building is under 84 m. This will still need to be allocated for from a site demand though. You don't need to allow for both 1-1/2 and 2-1/2 at the same time by the way. From what I've been told we also don't need to allow for sprinklers and 2-1/2" flow at the same time so 31.5 l/s would be the peak demand for fire protection for the building.

The fire protection system is fully supervised and the sprinkler system will be in accordance to NFPA 13. Hose requirements is per OBC as that overrules NFPA.

Concerning pressure, if the pressure is to low at the building, then we will need a fire pump to provide pressure to supply the sprinklers at the top of the building. Again, OBC allows us to not provide 65 psi at the top for standpipe if the building is under 84 meters, which can be provided by the fire department connection via the fire pumper truck.

Hope this answers your question.

Mark

Mark Sarasin **P.Eng.**
Senior Associate, Mechanical Engineer

Goodkey, Weedmark & Associates Limited
Consulting Engineers
Office: 613-727-5111, ext. 308
Mobile: 613-816-0844
Email: m.sarasin@gwal.com
Web: www.gwal.com

Follow us on LinkedIn

1688 Woodward Drive | Ottawa , Ontario | K2C 3R8

From: Kelly Rhodenizer <krhodenizer@regionalgroup.com>
Sent: Wednesday, August 31, 2022 9:21 AM
To: Mark Sarasin <marks@gwal.com>
Cc: Bruce Thomas - Ron Eastern Construction Ltd (bthomas@recl.ca) <bthomas@recl.ca>; Linnea Chamberlain <lchamberlain@chamberlainipd.com>; Taylor Marquis <TMarquis@regionalgroup.com>; Stefanie Kaminski <SKaminski@regionalgroup.com>
Subject: [EXTERNAL]FW: Pathways Block 204 - Fire Underwriters Survey

Mark,

We are working through Site Plan for our second site in Leitrim with almost the exact design we did in Provence. We are waiting for ownership approval, but we are hoping to start detail design later this fall.

IBI is our Civil engineer on this file as they did the entire subdivision. They have confirmed there isn't sufficient water pressure and therefore a Firewall will be required to be installed or if we can achieve as per below then we don't need the firewall. Which I believe is more sprinklers we aren't sure exactly what its asking.

Would you or someone at your office be able to review and provide us with some guidance?

Thanks so much,

Kelly Rhodenizer
Vice President, Commercial and Multi-Family Development
T: 613-230-2100 x 7229
C: 613-979-6547

krhodenizer@regionalgroup.com

From: Doug Cave <doug.cave@ibigroup.com>
Sent: Tuesday, August 30, 2022 1:01 PM
To: Kelly Rhodenizer <krhodenizer@regionalgroup.com>
Cc: Stefanie Kaminski <SKaminski@regionalgroup.com>; Lance Erion <lerion@IBIGroup.com>; Samantha Labadie <samantha.labadie@ibigroup.com>; Marianne Cieslewicz <mcieslewicz@chamberlainIPD.com>; Linnea Chamberlain <lchamberlain@chamberlainipd.com>
Subject: FW: Pathways Block 204 - Fire Underwriters Survey

Kelly,

Please see email below with info regarding the sprinkler system.

Doug Cave C.E.T.
(he/him/his)

Sr. Project Manager
mob 613 402 9677

IBI GROUP
Suite 500, 333 Preston Street
Ottawa ON K1S 5N4 Canada

tel +1 613 225 1311 ext 64062

From: Lance Erion <lerion@IBIGroup.com>
Sent: Monday, August 29, 2022 5:30 PM
To: mcieslewicz@chamberlainipd.com; lchamberlain@chamberlainipd.com
Cc: Samantha Labadie <samantha.labadie@ibigroup.com>; Doug Cave <doug.cave@ibigroup.com>
Subject: Pathways Block 204 - Fire Underwriters Survey

As per our meeting today we would like to clarify the building requirements in order to achieve the required Fire Underwriters Survey (FUS) fire flow for this site. Based on boundary conditions provided by the City of Ottawa and our hydraulic analysis we have determined the existing water supply can provide up to 158 l/s of 9,500 l/min of fire flow. The available fire flow will increase substantially after the City conducts a water district zone reconfiguration but this is not expected until the later half of 2024 per the City. As per the City of Ottawa water design guidelines the FUS method is used to calculate a buildings required fire flow which uses building floor area, type of building construction, use of sprinkler system, occupancy use and separation from other buildings. In order to meet the flow the building construction is required to be **Non-combustible**, the definition of building construction types are shown below, the complete FUS guide is attached.

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Wood Frame Construction - Any structure in which the structural members are wholly or partly of wood or other combustible material and the construction does not qualify as ordinary construction.

Using the non-combustible building type in the FUS calculation a further reduction is required for the sprinkler system, the FUS allows a 30% reduction for a system conforming to NFPA 13 however in order to meet the required fire flow a 35% reduction is required. As shown below an addition 10% reduction is allowed for a total reduction of 40% if the water supply is standard for both the system and fire department hose lines.

3. The value obtained in No.2 above may be reduced by up to 50% for complete automatic sprinkler protection depending upon adequacy of the system. The credit for the system will be a maximum of 30% for an adequately designed system conforming to NFPA 13 and other NFPA sprinkler standards. Additional credit of up to 10% may be granted if the water supply is standard for both the system and fire department hose lines required. The percentage reduction made for an automatic sprinkler system will depend upon the extent to which the system is judged to reduce the possibility of fires spreading within and beyond the fire area. Normally this reduction will not be the maximum allowed without proper system supervision including water flow and control valve alarm service. Additional credit may be given of up to 10% for a fully supervised system.

Can you please confirm that the building meets the requirements of the FUS definition for non-combustible construction and that a 35% reduction for the sprinkler can be achieved, please note if the building type can be fire- resistive then the 30% sprinkler reduction would be sufficient however this would require the structural members to have a 3 hour rating. Please let us know if you have any questions or require further information.

Regards,

Lance Erion P.ENG

Associate

IBI GROUP
Suite 500, 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel +1 613 225 1311 ext 64047

APPENDIX C

- **Home Hardware Sanitary Sewer Design Sheet**
- **Drawing 119351-400 – Home Hardware Sanitary Drainage Area Plan**
- **Sanitary Sewer Design Sheet**
- **Drawing 137175 C-400 – Sanitary Drainage Area Plan**

IBI GROUP
400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
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SANITARY SEWER DESIGN SHEET

4836 Bank Street
CITY OF OTTAWA
Home Hardware

LOCATION				RESIDENTIAL										ICI AREAS								INFILTRATION ALLOWANCE			FIXED FLOW (L/s)		TOTAL FLOW	PROPOSED SEWER DESIGN						
				AREA w/ Units (Ha)	UNIT TYPES				AREA w/o Units (Ha)	POPULATION		RES PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)						ICI PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)		FLOW				CAPACITY	LENGTH	DIA	SLOPE	VELOCITY (full)	AVAILABLE CAPACITY	
STREET	AREA ID	FROM MH	TO MH		SF	SD	TH	APT		IND	CUM			INSTITUTIONAL		COMMERCIAL		INDUSTRIAL				IND	CUM	(L/s)	IND	CUM	(L/s)	(L/s)	(m)	(mm)	(%)	(m/s)	L/s	(%)
														IND	CUM	IND	CUM	IND	CUM														
		BLDG D	MH7A-MH5A							0.0	0.0	3.80	0.00			0.05	0.05			1.50	0.02	0.05	0.05	0.02	0.00	0.00	0.04	34.22	11.10	200	1.00	1.055	34.18	99.88%
		BLDG A	MH7A-MH5A							0.0	0.0	3.80	0.00			0.30	0.30			1.50	0.15	0.30	0.30	0.10	0.00	0.00	0.24	34.22	14.61	200	1.00	1.055	33.97	99.28%
		MH7A	MH5A							0.0	0.0	3.80	0.00			1.01	1.01			1.50	0.49	1.01	1.01	0.33	0.00	0.00	0.82	27.59	32.62	200	0.65	0.851	26.76	97.01%
		BLDG C	MH1A-MH2A							0.0	0.0	3.80	0.00			0.06	0.06			1.50	0.03	0.06	0.06	0.02	0.00	0.00	0.05	34.22	12.70	200	1.00	1.055	34.17	99.86%
Idone Commercial		MH1A	MH2A							0.0	0.0	3.80	0.00			2.35	2.35			1.50	1.14	2.35	2.35	0.78	0.00	0.00	1.92	20.24	83.16	200	0.35	0.624	18.32	90.53%
		BLDG B	MH2A-MH3A							0.0	0.0	3.80	0.00			0.22	0.22			1.50	0.11	0.22	0.22	0.07	0.00	0.00	0.18	34.22	17.46	200	1.00	1.055	34.04	99.48%
		MH2A	MH3A							0.0	0.0	3.80	0.00			0.37	2.72			1.50	1.32	0.37	2.72	0.90	0.00	0.00	2.22	20.24	12.25	200	0.35	0.624	18.02	89.03%
		MH3A	MH4A							0.0	0.0	3.80	0.00			0.15	2.87			1.50	1.40	0.15	2.87	0.95	0.00	0.00	2.34	20.24	68.50	200	0.35	0.624	17.90	88.43%
		MH4A	MH5A							0.0	0.0	3.80	0.00			0.02	2.89			1.50	1.40	0.02	2.89	0.95	0.00	0.00	2.36	20.24	14.90	200	0.35	0.624	17.88	88.35%
		MH5A	MH6A							0.0	0.0	3.80	0.00			0.17	4.07			1.50	1.98	0.17	4.07	1.34	0.00	0.00	3.32	20.24	33.69	200	0.35	0.624	16.92	83.59%

Design Parameters:

Residential			ICI Areas			
SF	3.4	p/p/u	INST	28,000	L/Ha/day	
TH/SD	2.7	p/p/u	COM	28,000	L/Ha/day	
APT	1.8	p/p/u	IND	35,000	L/Ha/day	MOE Chart
Other	60	p/p/Ha		17000	L/Ha/day	

Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 280 L/day 200 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peaking Factor:
   Harmon Formula = 1+(14/(4+(P/1000)^0.5))0.8
   where K = 0.8 Correction Factor
5. Commercial and Institutional Peak Factors based on total area,
   1.5 if greater than 20%, otherwise 1.0

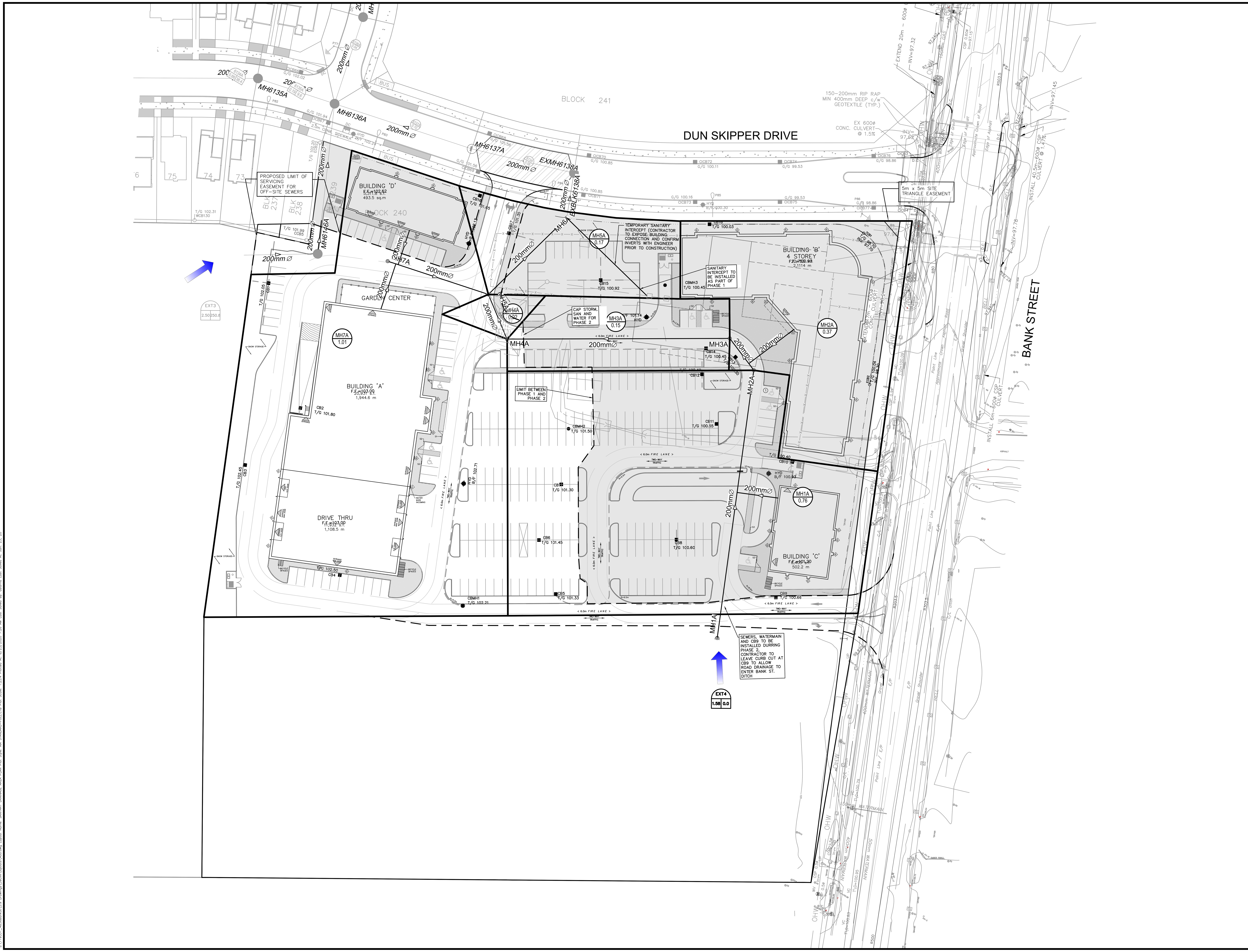
Designed: SEL

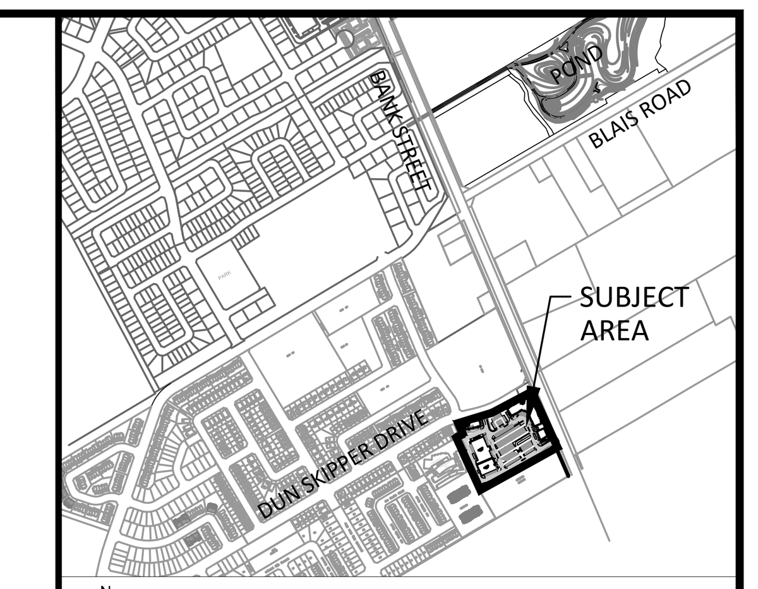
Checked: JIM

Dwg. Reference: 119351-501

No.	Revision	Date
1.	Report Name (Master Servicing Study, Adequacy of Public Services, Servicing Brief, ect) - Submission No. 1	2019-03-30

File Reference: 119351.5.7.1 **Date:** 2019-03-30 **Sheet No:** 1 of 1





KEY PLAN
(NTS)

NOTES:

1. SEE DRAWING C-010 FOR ADDITIONAL DETAILS AND NOTES.
2. SITE BENCHMARK TO BE OBTAINED FROM LEGAL SURVEYOR H.A. KEN SHIPMAN SURVEYING LTD.

LEGEND :

- 6115A — EXISTING AREA NUMBER
- 43.2 — EXISTING POPULATION
- 0.81 — EXISTING AREA IN HECTARES
- FUTURE FLOW DIRECTION
- MH2A — EXISTING AREA NUMBER
- 0.37 — EXISTING AREA IN HECTARES
- MH2A — AREA NUMBER
- 0.37 — AREA IN HECTARES

No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5	ADD PHASING	JIM	2020:06:23
4	REVISED AS PER CITY COMMENTS	JIM	2020:04:20
3	REVISED AS PER CITY COMMENTS	JIM	2019:12:09
2	REVISED AS PER NEW SITE PLAN AND CITY COMMENTS	JIM	2019:10:11
1	ISSUED FOR SPA	JIM	2019:04:15

IBI GROUP
400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

Project Title

BANK STREET DEVELOPMENT
4836 BANK STREET

LICENSED PROFESSIONAL ENGINEER
J. I. MOFFATT
2020/06/23
PROVINCE OF ONTARIO

Drawing Title

SANITARY DRAINAGE AREA PLAN

Scale 1 : 500

Design	SEL	Date	FEB. 2019
Drawn	DPS	Checked	JIM
Project No.	119351	Drawing No.	400

D07-12-19-0092

#17977

IBI GROUP
400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

SANITARY SEWER DESIGN SHEET

4840 Bank Street
CITY OF OTTAWA
Block 204 Pathways South Apartments

LOCATION				RESIDENTIAL										ICI AREAS								INFILTRATION ALLOWANCE			FIXED FLOW (L/s)		TOTAL FLOW	PROPOSED SEWER DESIGN							
				AREA w/ Units (Ha)	UNIT TYPES				AREA w/o Units (Ha)	POPULATION		RES PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)						ICI PEAK FACTOR	PEAK FLOW (L/s)	AREA (Ha)		FLOW				CAPACITY	LENGTH	DIA	SLOPE	VELOCITY (full)	AVAILABLE CAPACITY	
STREET	AREA ID	FROM MH	TO MH		SF	SD	TH	APT		IND	CUM			INSTITUTIONAL IND	INSTITUTIONAL CUM	COMMERCIAL IND	COMMERCIAL CUM	INDUSTRIAL IND	INDUSTRIAL CUM			IND	CUM	(L/s)	IND	CUM	(L/s)	(L/s)	(m)	(mm)	(%)	(m/s)	L/s	(%)
		MH 5A	MH 3A	0.42				60		108.0	108.0	3.59	1.26									0.42	0.42	0.14			1.39	41.91	57.14	200	1.50	1.292	40.51	96.67%
		MH 4A	MH 3A	0.28				60		108.0	108.0	3.59	1.26									0.28	0.28	0.09			1.35	26.50	29.52	200	0.60	0.817	25.16	94.91%
		MH 3A	MH 2A	0.52				0		0.0	216.0	3.51	2.46									0.52	1.22	0.40			2.86	24.19	38.66	200	0.50	0.746	21.34	88.19%
		MH 2A	MH 1A	0.00				0		0.0	216.0	3.51	2.46									0.00	1.22	0.40			2.86	24.19	44.18	200	0.50	0.746	21.34	88.19%
		MH 1A	Out	0.32				60		108.0	324.0	3.45	3.62									0.32	1.54	0.51			4.13	20.24	0.00	200	0.35	0.624	16.11	79.59%

Design Parameters:

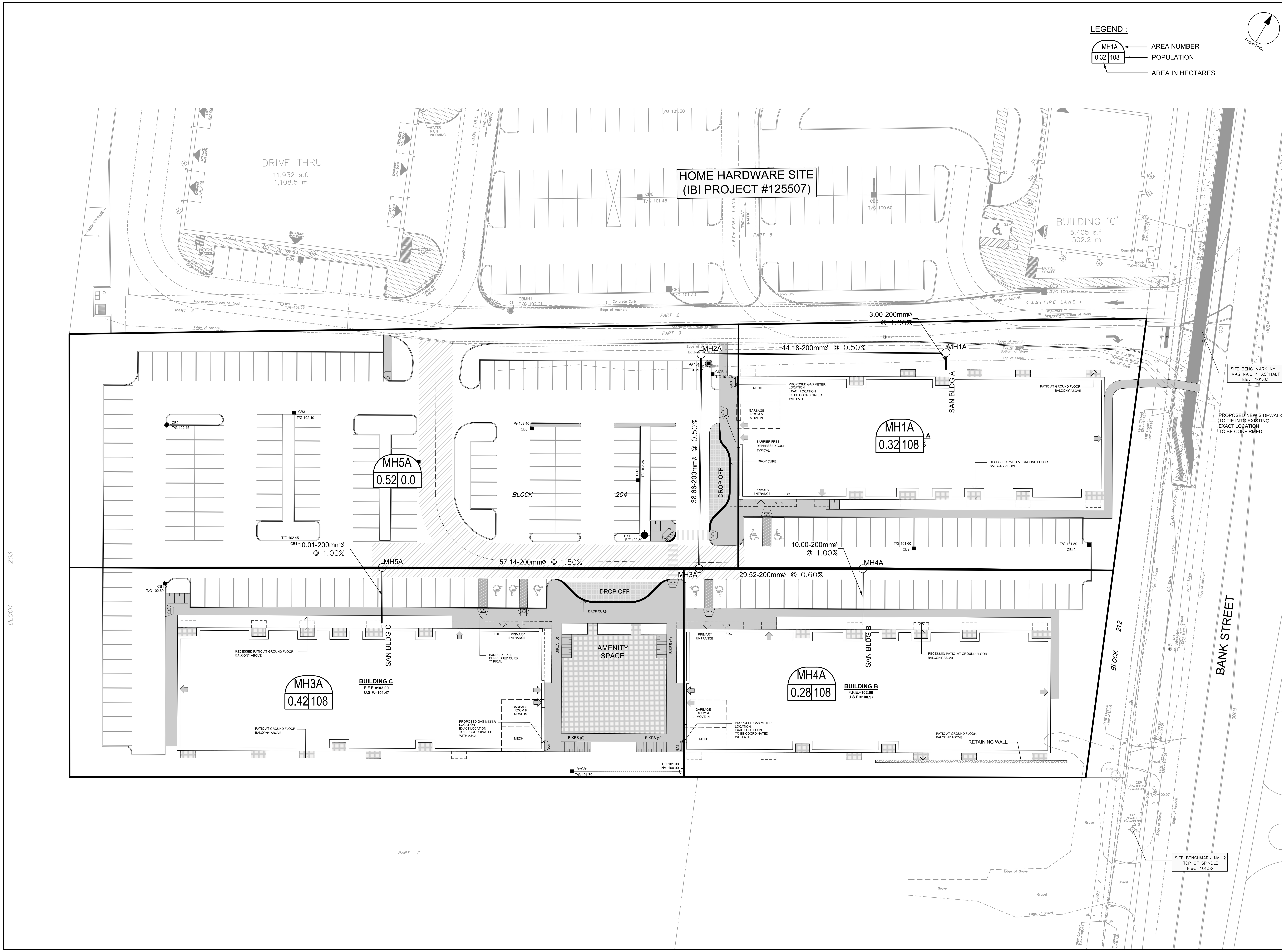
Residential			ICI Areas			
SF	3.4	p/p/u				
TH/SD	2.7	p/p/u	INST	28,000	L/Ha/day	
APT	1.8	p/p/u	COM	28,000	L/Ha/day	
Other	60	p/p/Ha	IND	35,000	L/Ha/day	MOE Chart
				17000	L/Ha/day	

Notes:
1. Mannings coefficient (n) = 0.013
2. Demand (per capita): 280 L/day 200 L/day
3. Infiltration allowance: 0.33 L/s/Ha
4. Residential Peaking Factor:
   Harmon Formula = 1+(14/(4+(P/1000)^0.5))0.8
   where K = 0.8 Correction Factor
5. Commercial and Institutional Peak Factors based on total area, 1.5 if greater than 20%, otherwise 1.0

Designed: SEL
Checked: JIM
Dwg. Reference: 137175-400

No.	Revision	Date
1.	Submission No. 1 For City Approval	2022-06-03
2.	Submission No. 2 For City Approval	2022-08-22

File Reference: 137175.6-0.6-04.04.Sanitary
Date: 2022-08-22
Sheet No: 1 of 1



CLIENT

PATHWAYS SOUTH REGIONAL INC.

1737 WOODWARD DRIVE, OTTAWA, ON

ISSUES

No.	DESCRIPTION	DATE
1	SUBMISSION NO. 1 FOR CITY REVIEW	2022-06-03
2	SUBMISSION NO. 2 FOR CITY REVIEW	2022-08-26
3		
4		
5		
6		
7		
8		

SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS

KEY PLAN

CONSULTANTS

SEAL

J. I. MOFFATT
2022-08-26

IBI GROUP
400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

PROJECT

4840 BANK STREET

PROJECT NO:
137175

DRAWN BY:	CHECKED BY:
M.M.	S.E.L.
PROJECT MGR:	APPROVED BY:
D.C.	J.I.M.

SHEET TITLE

SANITARY DRAINAGE AREA PLAN

SHEET NUMBER: C-400
ISSUE: 2

CITY FILE No. D07-12-22-0097

CITY PLAN No. xxxxx

APPENDIX D

- **Home Hardware Storm Sewer Design Sheet**
- **Drawing 119351-500 – Home Hardware Storm Drainage Area Plan**
- **Storm Sewer Design Sheet**
- **Drawing 137175 C-500 – Storm Drainage Area Plan**
- **Highlighted Drawing 119351 001 Home Hardware Site Servicing Plan**

IBI GROUP
400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

STORM SEWER DESIGN SHEET

4836 Bank Street
City of Ottawa
Home Hardware

LOCATION				AREA (Ha)										RATIONAL DESIGN FLOW													SEWER DATA								
STREET	AREA ID	FROM	TO	C= 0.20	C= 0.30	C= 0.40	C= 0.50	C= 0.55	C= 0.65	C= 0.70	C= 0.75	C= 0.90	C= 1.00	IND 2.78AC	CUM 2.78AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	10yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm) DIA	W	H	SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (2yr) (L/s)	(%)
		CB3	MH9-MH8								0.12			0.25	0.25	10.00	0.11	10.11	76.81	104.19	122.14	178.56	19.22	26.07	30.56	44.68		19.22	34.22	6.73	200			1.00	1.055	15.00	43.84%
		CB2	MH9-MH8									0.02		0.05	0.05	10.00	0.12	10.12	76.81	104.19	122.14	178.56	3.84	5.21	6.11	8.94		3.84	34.22	7.69	200			1.00	1.055	30.37	88.77%
		MH9	MH8											0.00	0.30	10.12	0.64	10.76	76.34	103.56	121.39	177.46	22.92	31.09	36.45	53.28		22.92	158.41	53.17	375			0.75	1.389	135.48	85.53%
		CB1	MH8-MH7								0.17			0.35	0.35	10.00	0.17	10.17	76.81	104.19	122.14	178.56	27.22	36.93	43.29	63.29		27.22	34.22	10.80	200			1.00	1.055	6.99	20.44%
		MH8	MH7											0.00	0.65	10.76	0.41	11.17	74.01	100.35	117.61	171.90	48.45	65.70	77.00	112.54		48.45	53.73	26.20	250			0.75	1.060	5.28	9.82%
		BLDG D	MH7-MH5									0.05		0.13	0.13	10.00	0.20	10.20	76.81	104.19	122.14	178.56	9.61	13.03	15.28	22.34		9.61	34.22	12.60	200			1.00	1.055	24.61	71.92%
		BLDG A	MH7-MH5									0.30		0.75	0.75	10.00	0.18	10.18	76.81	104.19	122.14	178.56	57.65	78.21	91.68	134.03		57.65	62.04	12.97	250			1.00	1.224	4.39	7.07%
		MH7	MH5											0.00	1.53	11.17	0.46	11.63	72.58	98.39	115.31	168.52	111.08	150.57	176.46	257.90		111.08	230.39	38.63	450			0.60	1.403	119.31	51.79%
		CB4	MH10-CBMH1									0.03		0.08	0.08	10.00	0.12	10.12	76.81	104.19	122.14	178.56	5.76	7.82	9.17	13.40		5.76	34.22	7.78	200			1.00	1.055	28.45	83.15%
		MH10	CBMH1											0.00	0.08	10.12	0.73	10.85	76.34	103.55	121.38	177.44	5.73	7.77	9.11	13.32		5.73	48.06	41.57	250			0.60	0.948	42.33	88.08%
		CB5	CBMH1-CBMH2									0.06		0.15	0.15	10.00	0.36	10.36	76.81	104.19	122.14	178.56	11.53	15.64	18.34	26.81		11.53	34.22	22.72	200			1.00	1.055	22.69	66.30%
		CB6	CBMH1-CBMH2									0.07		0.18	0.18	10.00	0.15	10.15	76.81	104.19	122.14	178.56	13.45	18.25	21.39	31.27		13.45	34.22	9.78	200			1.00	1.055	20.76	60.69%
		CB7	CBMH1-CBMH2									0.08		0.20	0.20	10.00	0.15	10.15	76.81	104.19	122.14	178.56	15.37	20.86	24.45	35.74		15.37	34.22	9.59	200			1.00	1.055	18.84	55.07%
		CBMH1	CBMH2									0.08		0.20	0.80	10.85	0.80	11.66	73.68	99.89	117.07	171.12	58.99	79.98	93.73	137.00		58.99	66.53	63.40	250			1.15	1.313	7.54	11.33%
		CBMH2	MH4											0.00	0.80	11.66	0.68	12.33	70.98	96.18	112.71	164.70	56.83	77.01	90.24	131.87		56.83	59.68	33.14	300			0.35	0.818	2.86	4.79%
		CB9	MH1-MH2									0.15		0.38	0.38	10.00	0.28	10.28	76.81	104.19	122.14	178.56	28.82	39.10	45.84	67.01		28.82	34.22	17.68	200			1.00	1.055	5.39	15.76%
		CB8	MH1-MH2									0.17		0.43	0.43	10.00	0.24	10.24	76.81	104.19	122.14	178.56	32.67	44.32	51.95	75.95		32.67	34.22	14.99	200			1.00	1.055	1.55	4.53%
		BLDG C	MH1-MH2									0.05		0.13	0.13	10.00	0.22	10.22	76.81	104.19	122.14	178.56	9.61	13.03	15.28	22.34		9.61	34.22	14.20	200			1.00	1.055	24.61	71.92%
		CB10	MH1-MH2									0.13		0.33	0.33	10.00	0.27	10.27	76.81	104.19	122.14	178.56	24.98	33.89	39.73	58.08		24.98	34.22	17.04	200			1.00	1.055	9.23	26.99%
		CB11	MH1-MH2									0.03		0.08	0.08	10.00	0.11	10.11	76.81	104.19	122.14	178.56	5.76	7.82	9.17	13.40		5.76	34.22	6.75	200			1.00	1.055	28.45	83.15%
		CB12	CB13									0.06		0.15	0.15	10.00	0.18	10.18	76.81	104.19	122.14	178.56	11.53	15.64	18.34	26.81		11.53	34.22	11.50	200			1.00	1.055	22.69	66.30%
Idone Commercial		MH1	MH2								1.58			3.29	4.77	10.28	0.87	11.15	75.75	102.74	120.43	176.05	361.36	490.12	574.51	839.82		361.36	452.94	81.04	600			0.50	1.552	91.59	20.22%
		CB13	MH2-MH3									0.18		0.45	0.45	10.00	0.01	10.01	76.81	104.19	122.14	178.56	34.59	46.92	55.01	80.42		34.59	40.49	1.00	200			1.40	1.248	5.90	14.56%
		BLDG B	MH2-MH3									0.22		0.55	0.55	10.00	0.26	10.26	76.81	104.19	122.14	178.56	42.28	57.35	67.23	98.29		42.28	62.04	19.00	250			1.00	1.224	19.76	31.85%
		MH2	MH3											0.00	5.77	11.15	0.14	11.29	72.66	98.49	115.42	168.69	419.32	568.41	666.14	973.56		419.32	480.32	10.88	675			0.30	1.300	61.00	12.70%
		CB14	MH3-MH4									0.15		0.38	0.38	10.00	0.03	10.03	76.81	104.19	122.14	178.56	28.82	39.10	45.84	67.01		28.82	34.22	1.63	200			1.00	1.055	5.39	15.76%
		CB15	CBMH3								0.09			0.19	0.19	10.00	0.31	10.31	76.81	104.19	122.14	178.56	14.41	19.55	22.92	33.51		14.41	34.22	19.85	200			1.00	1.055	19.80	57.88%
		CB18	MH11		0.16									0.13	0.13	10.00	0.27	10.27	76.81	104.19	122.14	178.56	10.25	13.90	16.30	23.83		10.25	27.59	13.80	200			0.65	0.851	17.34	62.85%
		MH11	CBMH3											0.00	0.13	10.27	0.34	10.61	75.78	102.79	120.48	176.12	10.11	13.72	16.08	23.50		10.11	27.59	17.50	200			0.65	0.851	17.47	63.34%
		CBMH3	MH3-MH4						0.02					0.04	0.36	10.31	0.35	10.67	75.62	102.57	120.22	175.74	27.01	36.64	42.95	62.78		27.01	27.59	17.94	200			0.65	0.851	0.57	2.07%
		MH3	MH4											0.00	6.50	11.29	1.01	12.30	72.19	97.84	114.66	167.58	469.49	636.36	745.75	1,089.88		469.49	519.40	69.31	750			0.20	1.139	49.91	9.61%
		MH4	MH5											0.00	7.30	12.30	0.20	12.51	68.96	93.42	109.46	159.93	503.74	682.38	799.52	1,168.19		503.74	580.71	15.46	750			0.25	1.273	76.96	13.25%
		CB17	MH5-MH12									0.09		0.23	0.23	10.00	0.04	10.04	76.81	104.19	122.14	178.56	17.29	23.46	27.50	40.21		17.29	34.22	2.55	200			1.00	1.055	16.92	49.45%
		CB16	MH5-MH12		0.01									0.01	0.01	10.00	0.14	10.14	76.81	104.19	122.14	178.56	0.64	0.87	1.02	1.49		0.64	34.22	9.09	200			1.00	1.055	33.58	98.13%
		MH5	MH12											0.00	9.07	12.51	0.34	12.85	68.36	92.59	108.48	158.49	619.90	839.64	983.73	1,437.28		619.90	687.10	31.13	750			0.35	1.507	67.20	9.78%
		MH12	EX 1350 SEWER											0.00	9.07	12.85	0.17	13.02	67.36	91.21	106.86	156.12	610.81	827.17	969.05	1,415.73		610.81	687.10	15.71	750			0.35	1.507	76.29	11.10%

Definitions:
Q = 2.78CiA, where:
Q = Peak Flow in Litres per Second (L/s)
A = Area in Hectares (Ha)
i = Rainfall intensity in millimeters per hour (mm/hr)
[i = 732.951 / (TC+6.199)^0.810] 2 YEAR
[i = 998.071 / (TC+6.053)^0.814] 5 YEAR
[i = 1174.184 / (TC+6.014)^0.816] 10 YEAR
[i = 1735.688 / (TC+6.014)^0.820] 100 YEAR

Notes:
1. Mannings coefficient (n) = 0.013

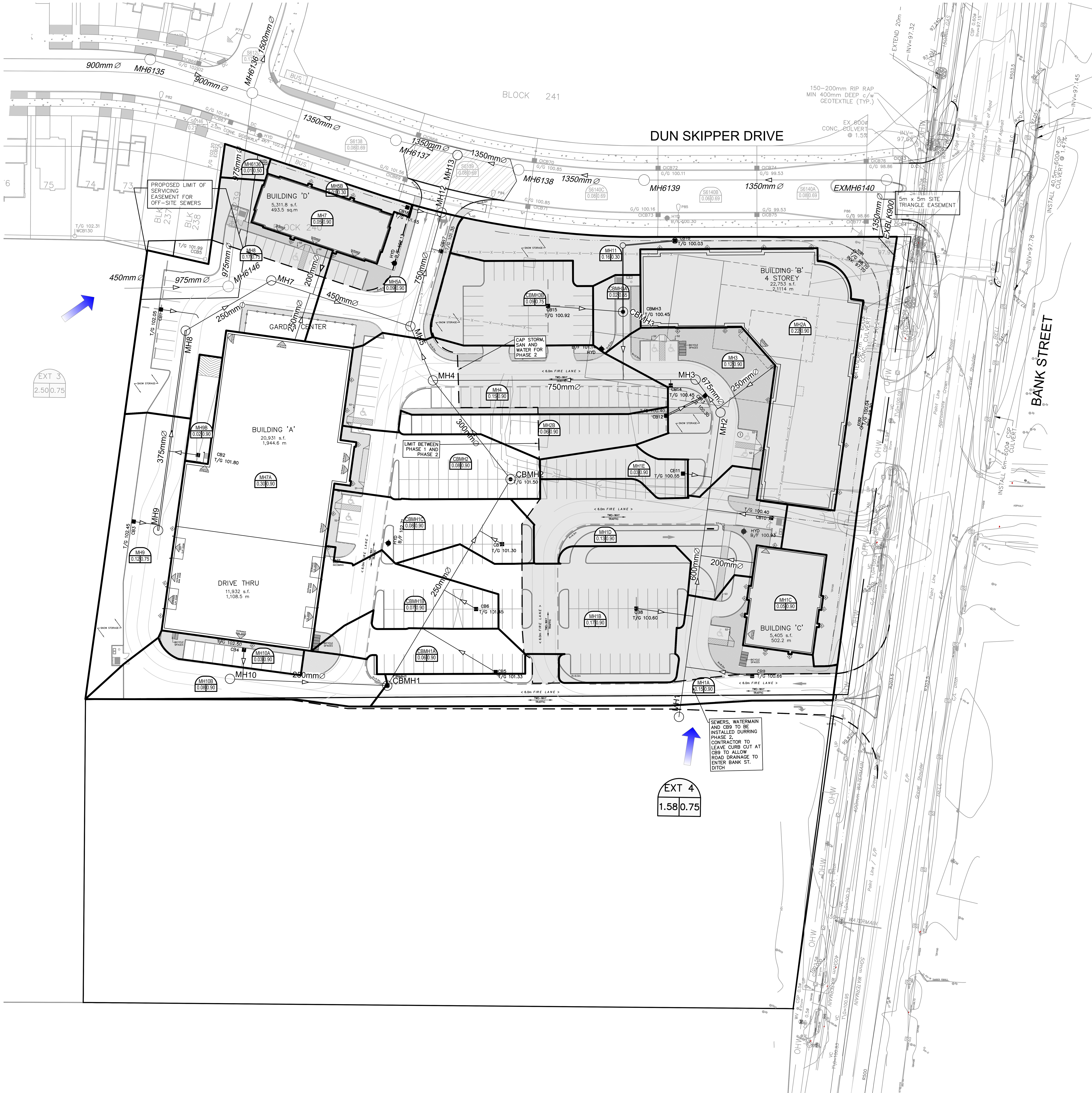
Designed: JEB

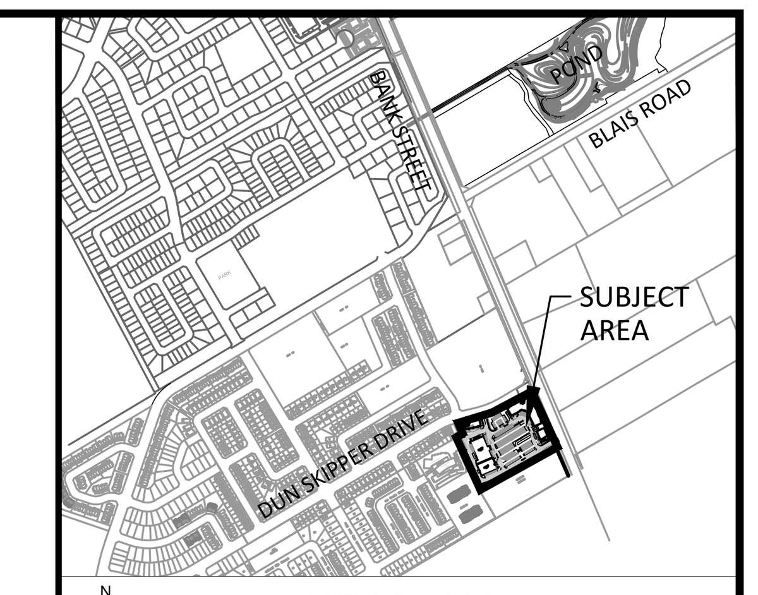
Checked: JIM

Dwg. Reference: 119351-500

No.	Revision	Date
1.	- Submission No. 1	2019-03-30
2.	Revised per City Comments	2020-04-20

File Reference: 119351.5.7.1
Date: 2019-03-30
Sheet No: 1 of 1





KEY PLAN
(NTS)

NOTES:

1. SEE DRAWING C-010 FOR ADDITIONAL DETAILS AND NOTES.
2. SITE BENCHMARK TO BE OBTAINED FROM LEGAL SURVEYOR H.A. KEN SHIPMAN SURVEYING LTD.

LEGEND:

DRAINAGE AREA LIMITS

XX / 0.01 0.30 — AREA ID; RUNOFF COEFFICIENT; AREA IN HECTARES

XX / 0.01 0.30 — EXISTING AREA ID; EXISTING RUNOFF COEFFICIENT; EXISTING AREA IN HECTARES

No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8			
7			
6			
5			
4	ADD PHASING	JIM	2020:06:23
3	REVISED AS PER CITY COMMENTS	JIM	2019:12:09
2	REVISED AS PER NEW SITE PLAN AND CITY COMMENTS	JIM	2019:10:11
1	ISSUED FOR SPA	JIM	2019:04:15

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Project Title

BANK STREET DEVELOPMENT

4836 BANK STREET

LICENSED PROFESSIONAL ENGINEER
J. I. MOFFATT
2020/06/23
PROVINCE OF ONTARIO

Drawing Title

STORM DRAINAGE AREA PLAN

Scale 1 : 500

Design	SEL	Date	FEB. 2019
Drawn	DPS	Checked	JIM
Project No.	119351	Drawing No.	500

APPROVED ☐ REFUSED ☐

THIS____DAY OF____________, 20______

DON HERWEYER, MCIP, RPP
MANAGER, DEVELOPMENT REVIEW - SOUTH
PLANNING, INFRASTRUCTURE & ECONOMIC DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

D07-12-19-0092

#17977

IBI GROUP
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Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

1.34 1.51

STORM SEWER DESIGN SHEET

4840 Bank Street
City of Ottawa
Block 204 Pathways South Apartments

LOCATION				AREA (Ha)										RATIONAL DESIGN FLOW												SEWER DATA								
STREET	AREA ID	FROM	TO	C= 0.20	C= 0.67	C= 0.70	C= 0.80	C= 0.82	C= 0.87	C= 0.88	C= 0.89	C= 0.90	C= 1.00	IND 2.78AC	CUM 2.78AC	INLET (min)	TIME IN PIPE	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (10) (mm/hr)	i (100) (mm/hr)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	10yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	FIXED FLOW (L/s)	DESIGN FLOW (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE SIZE (mm) DIA	W	H	SLOPE (%)	VELOCITY (m/s)	AVAIL CAP (2yr) (L/s)	AVAIL CAP (2yr) (%)
	CB1 to CB6, Bldg C,RYCB1	MH5	MH3	0.05	0.11	0.08	0.15	0.07	0.09			0.15		1.47	1.47	10.00	1.31	11.31	76.81	104.19	122.14	178.56	113.25	153.63	180.10	263.29		113.25	141.68	97.67	375			0.60	1.243	28.43	20.07%
	CB9,CB10,Bldg B	MH4	MH3				0.04	0.11				0.15		0.72	0.72	10.00	0.70	10.70	76.81	104.19	122.14	178.56	54.92	74.50	87.33	127.67		54.92	78.14	45.00	300			0.60	1.071	23.23	29.72%
	CB7	MH3	CBMH2								0.03			0.07	2.26	11.31	0.50	11.81	72.12	97.75	114.55	167.41	163.25	221.28	259.32	378.98		163.25	210.32	38.68	450			0.50	1.281	47.06	22.38%
	CBMH2, Bldg A	CBMH2	MH1							0.16		0.15		0.77	3.03	11.81	0.48	12.29	70.48	95.50	111.91	163.53	213.59	289.41	339.13	495.56		213.59	317.25	40.86	525			0.50	1.420	103.66	32.67%

Definitions:
Q = 2.78CiA, where:
Q = Peak Flow in Litres per Second (L/s)
A = Area in Hectares (Ha)
i = Rainfall intensity in millimeters per hour (mm/hr)
[i = 732.951 / (TC+6.199)^0.810] 2 YEAR
[i = 998.071 / (TC+6.053)^0.814] 5 YEAR
[i = 1174.184 / (TC+6.014)^0.816] 10 YEAR
[i = 1735.688 / (TC+6.014)^0.820] 100 YEAR

Notes:
1. Mannings coefficient (n) = 0.013

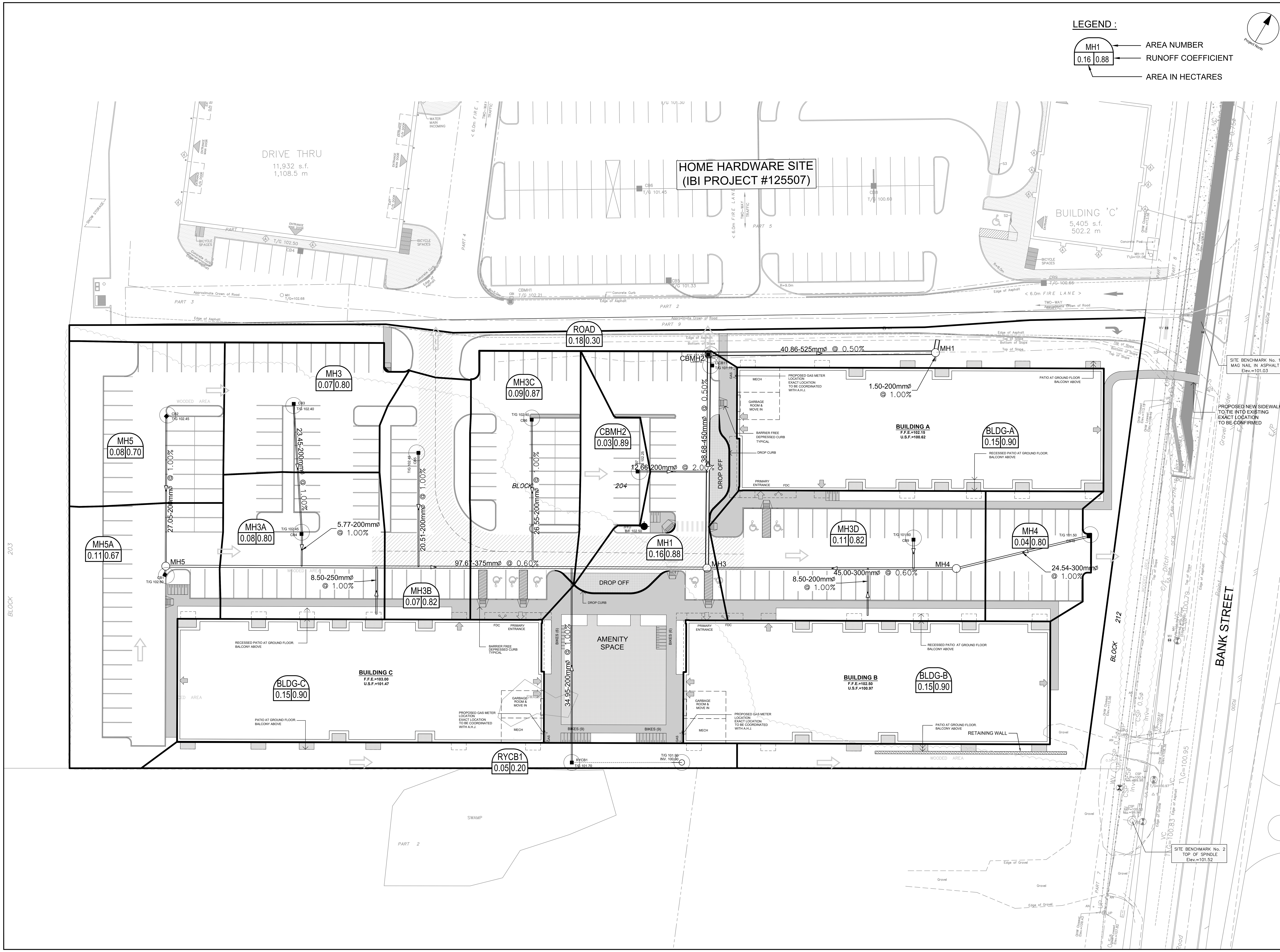
Designed: SL

Checked: JIM

Dwg. Reference: 137175-500

No.	Revision	Date
1.	Submission No. 1 For City Comments	2022-06-03
2.	Submission No. 2 For City Comments	2022-08-22

File Reference: 137175.6-0.6.04.04.Storm
Date: 2022-08-22
Sheet No: 1 of 1


LEGEND :
MH1
0.16 0.88
AREA NUMBER
RUNOFF COEFFICIENT
AREA IN HECTARES
Project North
HOME HARDWARE SITE
(IBI PROJECT #125507)
DRIVE THRU
BUILDING 'C'
ROAD
0.18 0.30
MH1
0.16 0.88
MH3
0.07 0.80
MH3C
0.09 0.87
CBMH2
0.03 0.89
MH5
0.08 0.70
MH5A
0.11 0.67
MH3A
0.08 0.80
MH3B
0.07 0.82
MH3D
0.11 0.82
MH4
0.04 0.80
BLDG-A
0.15 0.90
BLDG-B
0.15 0.90
BLDG-C
0.15 0.90
RYCB1
0.05 0.20
40.86-525mmø @ 0.50%
1.50-200mmø @ 1.00%
38.68-450mmø @ 0.50%
12.66-200mmø @ 2.00%
23.45-200mmø @ 1.00%
27.05-200mmø @ 1.00%
5.77-200mmø @ 1.00%
20.51-200mmø @ 1.00%
26.55-200mmø @ 1.00%
97.61-375mmø @ 0.60%
8.50-250mmø @ 1.00%
8.50-200mmø @ 1.00%
45.00-300mmø @ 0.60%
24.54-300mmø @ 1.00%
34.95-200mmø @ 1.00%
BUILDING A
F.F.E.=102.15
U.S.F.=100.62
BUILDING B
F.F.E.=102.50
U.S.F.=100.97
BUILDING C
F.F.E.=103.00
U.S.F.=101.47
AMENITY SPACE
DROP OFF
BLOCK 204
BLOCK 212
BLOCK 203
BANK STREET
SWAMP
RETAINING WALL
SITE BENCHMARK No. 1
MAG NAIL IN ASPHALT
Elev.=101.03
SITE BENCHMARK No. 2
TOP OF SPINDLE
Elev.=101.52
PROPOSED NEW SIDEWALK
TO TIE INTO EXISTING
EXACT LOCATION
TO BE CONFIRMED

CLIENT

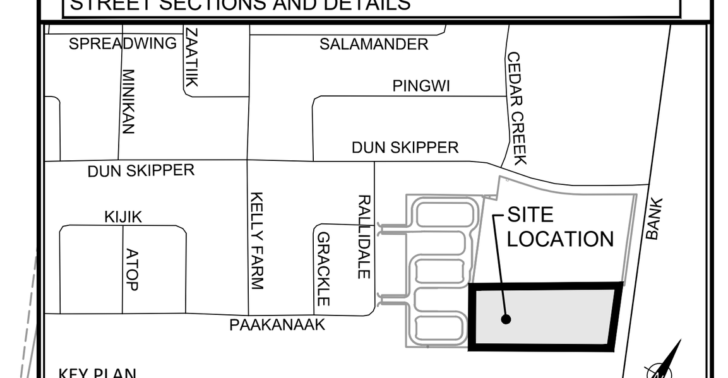
PATHWAYS SOUTH REGIONAL INC.

1737 WOODWARD DRIVE, OTTAWA, ON

ISSUES

No.	DESCRIPTION	DATE
1	SUBMISSION NO. 1 FOR CITY REVIEW	2022-06-03
2	SUBMISSION NO. 2 FOR CITY REVIEW	2022-08-26
3		
4		
5		
6		
7		
8		

SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS



KEY PLAN

CONSULTANTS

1:300

SEAL

J. I. MOFFATT
2022-08-26
LICENSED PROFESSIONAL ENGINEER
PROVINCE OF ONTARIO

IBI GROUP
400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

PROJECT

4840 BANK STREET

PROJECT NO: 137175	
DRAWN BY: M.M.	CHECKED BY: S.E.L.
PROJECT MGR: D.C.	APPROVED BY: J.I.M.

SHEET TITLE

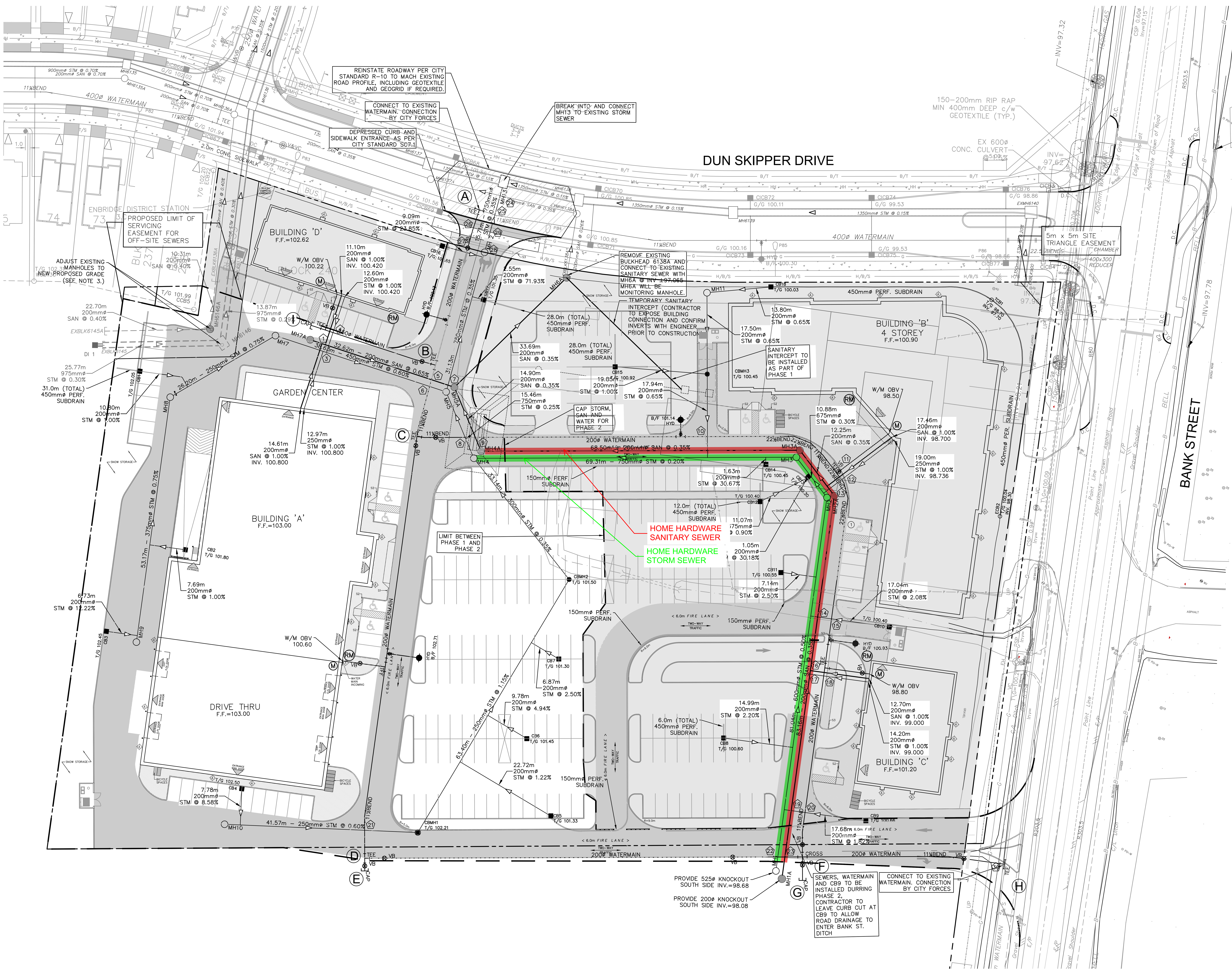
STORM DRAINAGE AREA PLAN

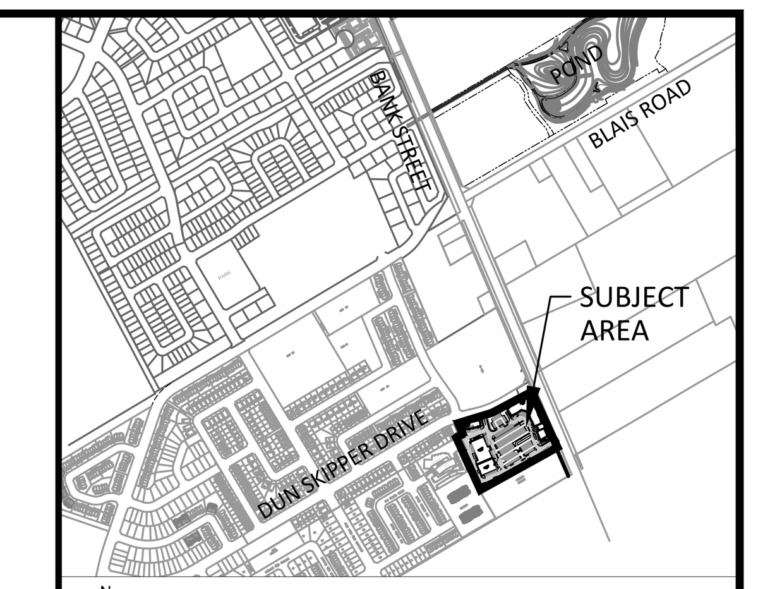
SHEET NUMBER C-500

ISSUE 2

CITY FILE No. D07-12-22-0097

CITY PLAN No. xxxxx





KEY PLAN
(NTS)

NOTES:
1. SEE DRAWING C-010 FOR ADDITIONAL DETAILS AND NOTES.
2. SITE BENCHMARK TO BE OBTAINED FROM LEGAL SURVEYOR H.A. KEN SHIPMAN SURVEYING LTD.
3.0 EXISTING SANITARY MANHOLE - MH6146A AS-BUILT F/C = 102.019 TO BE ADJUSTED TO ±102.160 EXISTING STORM MANHOLE - MH61646 AS-BUILT F/C = 102.018 TO BE ADJUSTED TO ±102.24.

No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
8	ADD PHASING	JIM	2020:06:23
7	REVISED AS PER CITY COMMENTS	JIM	2020:04:20
6	REVISED AS PER CITY COMMENTS	JIM	2020:04:02
5	ISSUED FOR TENDER	JIM	2020:03:18
4	REVISED AS PER CITY COMMENTS	JIM	2020:03:13
3	REVISED AS PER CITY COMMENTS	JIM	2019:12:09
2	REVISED AS PER NEW SITE PLAN AND CITY COMMENTS	JIM	2019:10:11
1	ISSUED FOR SPA	JIM	2019:04:15

IBI GROUP
400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

Project Title
BANK STREET DEVELOPMENT
4836 BANK STREET

LICENSED PROFESSIONAL ENGINEER
J. I. MOFFATT
2020/06/23
PROVINCE OF ONTARIO

Drawing Title
SITE SERVICING PLAN

Scale
1 : 400

Design	SEL	Date	FEB. 2019
Drawn	DPS	Checked	JIM
Project No.	119351	Drawing No.	001

D07-12-19-0092

#17977

APPENDIX E

- **Home Hardware Inlet Controls Calculations**
- **Stormwater Management Calculations**
- **A104c - Roof Plan**
- **Tempest ICD Technical Sheet**
- **Watts Roof Drain ICD Spec Sheet**

- Asphalt/Concrete	C = 0.90
- Roof	C = 0.90
• Pipe Velocities	0.80 m/s to 6.0 m/s
• Minimum Pipe Size	250 mm diameter (200 mm CB Leads)

4.4 Proposed Minor System

Using the criteria identified in Section 4.3, the proposed on-site storm sewers were sized accordingly. A detailed storm sewer design sheet and the associated Storm Sewer Drainage Area plan (drawing 119351-500) are both included in **Appendix D**. The Site Servicing Plan, depicting all on-site storm sewers can be found in **Appendix G**.

The proposed minor storm sewer will range in size between 200 mm diameter and 750 mm diameter. Catchbasin lead pipes will mostly be 200 mm diameter with some 250 mm diameter exceptions. The minor storm sewer outlet will be via the 750 mm diameter pipe which is proposed to connect to the existing 1350 mm diameter storm sewer in Dun Skipper Drive. The existing 1350 mm diameter storm sewer behind building B will be terminated with a manhole and will receive some minor storm flow from the landscaped areas behind Building B. The proposed design has also provided minor storm sewer capacity for the future Idone commercial site near MH1.

The 1350 mm diameter storm sewer in Dun Skipper Drive ultimatly outlets to the Findlay Creek Village SWMF. This facility provides 80% TSS removal, as such no additional on-site stormwater quality control is required withn the subject lands.

4.5 Stormwater Management

The subject site will be limited to a release rate established using the criteria described in section 4.2. This will be achieved through a combination of inlet control devices (ICD's) at inlet locations and surface storage.

Flows generated that are in excess of the site's allowable release rate will be stored on site in strategic surface storage areas or by the use of roof top storage and gradually released into the minor system so as not to exceed the site's allocation.

The maximum surface retention depth located within the developed areas will be limited to 300mm during a 1:100 year event as shown on the ponding and grading plans located in **Appendix G.**

Overland flow routes will be provided in the grading to permit emergency overland flow, in excess of the 100 year event, from the site.

At a single location within the site, west of building D, the opportunity to store runoff is limited due to grading constraints and building geometry, this area will flow uncontrolled to the Dun Skipper right-of-way. This uncontrolled areas – 0.01 hectares in total, have an average C value of 0.6250. Based on 1:100 year storm uncontrolled flows, the uncontrolled areas generate 3.10 l/s runoff (refer to Section 4.6 for the calculation).

The site grading and ponding has been designed to control water generated during the 1:100-year event, with no overflow leaving the site. Please refer to the SWM calculations in **Appendix E**.

4.6 Inlet Controls

The allowable release rate for the 2.49 Ha site can be calculated as follows:

$Q_{allowable}$ = 760 L/s as per IBI Pathways Phase 1 Report – EXT 4 drainage area
Area Total EXT4 = 4.04 Ha

Subject lands share = 62% of EXT4 release rate (2.5 Ha / 4.04 Ha = 0.62)

$Q_{Subject\ Lands}$ = 468.42 L/s

As noted in Section 4.5, a small portion of the site just west of Building D will be left to discharge to the Dun Skipper Drive boulevard at an uncontrolled rate.

Based on a 1:100 year event, the flow from the 0.01 Ha uncontrolled areas can be determined as:

$Q_{uncontrolled}$ = **2.78** x **C** x i_{100yr} x **A** where:

C = Average runoff coefficient of uncontrolled area = 0.625

i_{100yr} = Intensity of 100-year storm event (mm/hr)

= $1735.688 \times (T_c + 6.014)^{0.820}$ = 178.56 mm/hr; where T_c = 10 minutes

A = Uncontrolled Area = 0.01 Ha

Therefore, the uncontrolled release rate can be determined as:

$Q_{uncontrolled}$ = **2.78** x **C** x i_{100yr} x **A**

= 2.78 x 0.625 x 178.56 x 0.01

= **3.10 L/s**

The maximum allowable release rate from the remainder of the site can then be determined as:

$Q_{max\ allowable}$ = $Q_{restricted} - Q_{uncontrolled}$

= 468.42 L/s – 3.10 L/s

= **465.31 L/s**

Based on the flow allowance at the various inlet locations, a combination of various sizes of inlet control devices (ICDs) were chosen for the design. The design of the inlet control devices is unique to each drainage area and is determined based on a number of factors, including hydraulic head and allowable release rate. The inlet control devices were sized according to the manufacturer's design charts. The restrictions will cause the on-site catchbasins and manholes to surcharge, generating surface ponding in the parking and landscaped areas. Ponding locations and elevations are summarized on drawing 119351-600, Ponding Plan 119351-600 which is included in **Appendix G**.

4.7 On-Site Detention

Any excess storm water up to the 100-year event is to be stored on-site in order to not surcharge the downstream municipal storm sewer system. Detention will be provided in parking and landscape areas and building rooftops, where feasible. As previously noted, the volume of storage is dependent on the characteristics of each individual drainage area and the ICD's were chosen accordingly. It should be noted that 0.30m of vertical separation has been provided from all maximum ponding elevations to lowest building openings.

4.7.1 Site Inlet Control

The following Table summarizes the on-site storage requirements during both the 1:5-year and 1:100-year events.

IBI GROUP
400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

PROJECT: Pathways Blk 2
DATE: 2022-08-22
FILE: 137175.6.04.04
REV #: 2
DESIGNED BY: SEL
CHECKED BY: JIM

STORMWATER MANAGEMENT

Formulas and Descriptions

i_{2yr} = 1:2 year Intensity = 732.951 / $(T_c+6.199)^{0.810}$
i_{5yr} = 1:5 year Intensity = 998.071 / $(T_c+6.053)^{0.814}$
i_{100yr} = 1:100 year Intensity = 1735.688 / $(T_c+6.014)^{0.820}$
T_c = Time of Concentration (min)
C = Average Runoff Coefficient
A = Area (Ha)
Q = Flow = 2.78CiA (L/s)

Maximum Allowable Release Rate

Restricted Flowrate
Taken from City of Ottawa approved Design Brief "Pathways at Findlay Creek" (D07-16-13-0023) drainage area EXT 4

EXT 4 Release Rate	760.00	L/s
Area EXT 4 $_{TOTAL}$ =	4.04	Ha
Area Subject Lands	1.55	Ha
Perscentage Share of release rate	38%	
Q_{TOTAL} =	291.58	L/s

Uncontrolled Release ROAD (Q_{un1} = 2.78*C*i_{100yr} *$A_{uncontrolled}$)

C =	0.38	
T_c =	10	min
i_{100yr} =	178.56	mm/hr
$A_{uncontrolled}$ =	0.180	Ha
Q_{un1} =	33.51	L/s

Uncontrolled Release MH1 (Q_{un2} = 2.78*C*i_{100yr} *$A_{uncontrolled}$)

C =	1.00	
T_c =	10	min
i_{100yr} =	178.56	mm/hr
$A_{uncontrolled}$ =	0.160	Ha
Q_{un2} =	79.42	L/s

Total Uncontrolled Release ($Q_{uncontrolled}$ = 2.78*C*i_{100yr} *$A_{uncontrolled}$)

$Q_{uncontrolled}$ =	112.93	L/s

Maximum Allowable Release Rate ($Q_{max\ allowable}$ = $Q_{restricted}$ - $Q_{uncontrolled}$)

$Q_{max\ allowable}$ =	178.65	L/s

MODIFIED RATIONAL METHOD (100-Year, 5-Year & 2-Year Ponding)

Drainage Area	MH5A
Area (Ha)	0.11
C =	0.84

Restricted Flow Q_r (L/s)= 12.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
16	137.55	35.23	12.00	23.23	22.30
18	128.08	32.80	12.00	20.80	22.47
19	123.87	31.72	12.00	19.72	**22.49**
20	119.95	30.72	12.00	18.72	22.46
22	112.88	28.91	12.00	16.91	22.32

100Yr +20%

100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
38.07	26.07	**29.72**

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance	100+20 Overflow	100+20 Required	100+20 Balance
0.00	22.49	17.12	0	5.37	0.00	29.72	12.60

overflows to: MH5

Drainage Area	MH5
Area (Ha)	0.08
C =	0.88

Restricted Flow Q_r (L/s)= 10.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
25	103.85	20.21	10.00	10.21	15.31
27	98.66	19.20	10.00	9.20	14.90
28	96.27	18.74	10.00	8.74	**14.67**
29	94.01	18.30	10.00	8.30	14.43
31	89.83	17.48	10.00	7.48	13.91

100Yr +20%

100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
22.48	12.48	**20.97**

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance	100+20 Overflow	100+20 Required	100+20 Balance
5.37	20.04	28.66	0	0.00	12.60	33.57	4.91

overflows to: MH3

Drainage Area	MH5A
Area (Ha)	0.11
C =	0.67

Restricted Flow Q_r (L/s)= 12.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
5	141.18	28.93	12.00	16.93	5.08
7	123.30	25.26	12.00	13.26	5.57
9	109.79	22.50	12.00	10.50	**5.67**
11	99.19	20.32	12.00	8.32	5.49
13	90.63	18.57	12.00	6.57	5.12

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	5.67	17.12	0	0.00

overflows to: MH5

Drainage Area	MH5
Area (Ha)	0.08
C =	0.70

Restricted Flow Q_r (L/s)= 10.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
4	152.51	23.74	10.00	13.74	3.30
6	131.57	20.48	10.00	10.48	3.77
8	116.11	18.08	10.00	8.08	**3.88**
10	104.19	16.22	10.00	6.22	3.73
12	94.70	14.74	10.00	4.74	3.41

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	3.88	28.66	0	0.00

overflows to: MH3

Drainage Area	MH5A
Area (Ha)	0.11
C =	0.67

Restricted Flow Q_r (L/s)= 12.00

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 2yr (m^3)
7	90.66	18.58	12.00	6.58	2.76
9	80.87	16.57	12.00	4.57	2.47
10	76.81	15.74	12.00	3.74	**2.24**
11	73.17	14.99	12.00	2.99	1.97
13	66.93	13.71	12.00	1.71	1.34

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	2.24	17.12	0	0.00

overflows to: MH5

Drainage Area	MH5
Area (Ha)	0.08
C =	0.70

Restricted Flow Q_r (L/s)= 10.00

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 2yr (m^3)
7	90.66	14.11	10.00	4.11	1.73
9	80.87	12.59	10.00	2.59	1.40
10	76.81	11.96	10.00	1.96	**1.17**
11	73.17	11.39	10.00	1.39	0.92
13	66.93	10.42	10.00	0.42	0.33

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	1.17	28.66	0	0.00

overflows to: MH3

Drainage Area	MH3
Area (Ha)	0.07
C =	1.00

Restricted Flow Q_r (L/s)= 8.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
25	103.85	20.21	8.00	12.21	18.31
27	98.66	19.20	8.00	11.20	18.14
28	96.27	18.74	8.00	10.74	**18.03**
29	94.01	18.30	8.00	10.30	17.91
31	89.83	17.48	8.00	9.48	17.63

100Yr +20%

100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
22.48	14.48	**24.33**

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	18.03	56.01	0	0.00

100+20

Overflow	Required	Balance
4.91	29.24	0.00

overflows to: MH3B

Drainage Area	MH3A
Area (Ha)	0.08
C =	1.00

Restricted Flow Q_r (L/s)= 9.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
29	94.01	20.91	9.00	11.91	20.72
31	89.83	19.98	9.00	10.98	20.42
32	87.89	19.55	9.00	10.55	**20.25**
33	86.03	19.13	9.00	10.13	20.07
35	82.58	18.37	9.00	9.37	19.67

100Yr +20%

100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
23.45	14.45	**27.75**

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	20.25	27.53	0	0.00

100+20

Overflow	Required	Balance
0.00	27.75	0.22

overflows to: MH3B

Drainage Area	MH3
Area (Ha)	0.07
C =	0.80

Restricted Flow Q_r (L/s)= 8.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
7	123.30	19.20	8.00	11.20	4.70
9	109.79	17.09	8.00	9.09	4.91
11	99.19	15.44	8.00	7.44	**4.91**
13	90.63	14.11	8.00	6.11	4.77
15	83.56	13.01	8.00	5.01	4.51

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	4.91	56.01	0	0.00

overflows to: MH3B

Drainage Area	MH3A
Area (Ha)	0.08
C =	0.80

Restricted Flow Q_r (L/s)= 9.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
7	123.30	21.94	9.00	12.94	5.43
9	109.79	19.53	9.00	10.53	5.69
11	99.19	17.65	9.00	8.65	**5.71**
13	90.63	16.12	9.00	7.12	5.56
15	83.56	14.87	9.00	5.87	5.28

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	5.71	27.53	0	0.00

overflows to: MH3B

Drainage Area	MH3
Area (Ha)	0.07
C =	0.80

Restricted Flow Q_r (L/s)= 8.00

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 2yr (m^3)
7	90.66	14.11	8.00	6.11	2.57
9	80.87	12.59	8.00	4.59	2.48
10	76.81	11.96	8.00	3.96	**2.37**
11	73.17	11.39	8.00	3.39	2.24
13	66.93	10.42	8.00	2.42	1.89

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	2.37	56.01	0	0.00

overflows to: MH3B

Drainage Area	MH3A
Area (Ha)	0.08
C =	0.80

Restricted Flow Q_r (L/s)= 9.00

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 2yr (m^3)
7	90.66	16.13	9.00	7.13	3.00
9	80.87	14.39	9.00	5.39	2.91
10	76.81	13.67	9.00	4.67	**2.80**
11	73.17	13.02	9.00	4.02	2.65
13	66.93	11.91	9.00	2.91	2.27

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	2.80	27.53	0	0.00

overflows to: MH3B

Drainage Area	MH3B
Area (Ha)	0.07
C =	1.00

Restricted Flow Q_r (L/s)= 8.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
25	103.85	20.21	8.00	12.21	18.31
27	98.66	19.20	8.00	11.20	18.14
28	96.27	18.74	8.00	10.74	**18.03**
29	94.01	18.30	8.00	10.30	17.91
31	89.83	17.48	8.00	9.48	17.63

100Yr +20%

100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
22.48	14.48	**24.33**

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	18.03	27.53	0	0.00

100+20

Overflow	Required	Balance
0.22	24.55	0.00

overflows to: MH3C

Drainage Area	MH3C
Area (Ha)	0.09
C =	1.00

Restricted Flow Q_r (L/s)= 12.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
33	86.03	21.53	12.00	9.53	18.86
35	82.58	20.66	12.00	8.66	18.19
36	80.96	20.26	12.00	8.26	**17.84**
37	79.42	19.87	12.00	7.87	17.47
39	76.51	19.14	12.00	7.14	16.72

100Yr +20%

100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
24.31	12.31	**26.59**

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	17.84	53.05	0	0.00

100+20

Overflow	Required	Balance
0.00	26.59	0.00

overflows to: CBMH2

Drainage Area	MH3B
Area (Ha)	0.07
C =	0.82

Restricted Flow Q_r (L/s)= 8.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
7	123.30	19.68	8.00	11.68	4.90
9	109.79	17.52	8.00	9.52	5.14
11	99.19	15.83	8.00	7.83	**5.17**
13	90.63	14.46	8.00	6.46	5.04
15	83.56	13.33	8.00	5.33	4.80

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	5.17	27.53	0	0.00

overflows to: MH3C

Drainage Area	MH3C
Area (Ha)	0.09
C =	0.87

Restricted Flow Q_r (L/s)= 12.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
6	131.57	28.64	12.00	16.64	5.99
8	116.11	25.27	12.00	13.27	6.37
10	104.19	22.68	12.00	10.68	**6.41**
12	94.70	20.61	12.00	8.61	6.20
14	86.93	18.92	12.00	6.92	5.82

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	6.41	53.05	0	0.00

overflows to: CBMH2

Drainage Area	MH3B
Area (Ha)	0.07
C =	0.82

Restricted Flow Q_r (L/s)= 8.00

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 2yr (m^3)
7	90.66	14.47	8.00	6.47	2.72
9	80.87	12.91	8.00	4.91	2.65
10	76.81	12.26	8.00	4.26	**2.55**
11	73.17	11.68	8.00	3.68	2.43
13	66.93	10.68	8.00	2.68	2.09

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	2.55	27.53	0	0.00

overflows to: MH3C

Drainage Area	MH3C
Area (Ha)	0.09
C =	0.87

Restricted Flow Q_r (L/s)= 12.00

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 2yr (m^3)
7	90.66	19.74	12.00	7.74	3.25
9	80.87	17.60	12.00	5.60	3.03
10	76.81	16.72	12.00	4.72	**2.83**
11	73.17	15.93	12.00	3.93	2.59
13	66.93	14.57	12.00	2.57	2.00

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	2.83	53.05	0	0.00

overflows to: CBMH2

Drainage Area	CBMH2		
Area (Ha)	0.03		
C =	1.00	Restricted Flow Q_r (L/s)=	12.00

100-Year Ponding						100Yr +20%		
T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)	100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
2	315.00	26.27	12.00	14.27	1.71			
4	262.41	21.88	12.00	9.88	2.37			
5	242.70	20.24	12.00	8.24	**2.47**	24.29	12.29	**3.69**
6	226.01	18.85	12.00	6.85	2.47			
8	199.20	16.61	12.00	4.61	2.21			

Storage (m^3)					100+20		
Overflow	Required	Surface	Sub-surface	Balance	Overflow	Required	Balance
0.00	2.47	2.64	0	**0.00**	0.00	3.69	1.05

overflows to: MH1/OUT

Drainage Area	CBMH2		
Area (Ha)	0.03		
C =	0.89	Restricted Flow Q_r (L/s)=	12.00

5-Year Ponding					
T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
-2	319.47	23.71	12.00	11.71	-1.41
0	230.48	17.11	12.00	5.11	0.00
2	182.69	13.56	12.00	1.56	**0.19**
4	152.51	11.32	12.00	-0.68	-0.16
6	131.57	9.77	12.00	-2.23	-0.80

Storage (m^3)				
Overflow	Required	Surface	Sub-surface	Balance
0.00	0.19	2.64	0	0.00

overflows to: MH1/OUT

Drainage Area	CBMH2		
Area (Ha)	0.03		
C =	0.89	Restricted Flow Q_r (L/s)=	12.00

2-Year Ponding					
T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 2yr (m^3)
7	90.66	6.73	12.00	-5.27	-2.21
9	80.87	6.00	12.00	-6.00	-3.24
10	76.81	5.70	12.00	-6.30	**-3.78**
11	73.17	5.43	12.00	-6.57	-4.34
13	66.93	4.97	12.00	-7.03	-5.49

Storage (m^3)				
Overflow	Required	Surface	Sub-surface	Balance
0.00	-3.78	2.64	0	0.00

overflows to: MH1/OUT

Drainage Area	MH3D
Area (Ha)	0.11
C =	1.00
Restricted Flow Q_r (L/s)=	40.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
3	286.05	87.47	40.00	47.47	8.55
5	242.70	74.22	40.00	34.22	10.27
6	226.01	69.11	40.00	29.11	**10.48**
7	211.67	64.73	40.00	24.73	10.39
9	188.25	57.57	40.00	17.57	9.49

100Yr +20%

100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
82.94	42.94	**15.46**

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance	Overflow (100+20)	Required (100+20)	Balance (100+20)
0.00	10.48	10.79	0	**0.00**	0.00	15.46	4.67

overflows to: MH4

Drainage Area	MH4
Area (Ha)	0.04
C =	1.00
Restricted Flow Q_r (L/s)=	25.00

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
0	398.62	44.33	25.00	19.33	0.00
2	315.00	35.03	25.00	10.03	1.20
3	286.05	31.81	25.00	6.81	**1.23**
4	262.41	29.18	25.00	4.18	1.00
6	226.01	25.13	25.00	0.13	0.05

100Yr +20%

100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
38.17	13.17	**2.37**

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance	Overflow (100+20)	Required (100+20)	Balance (100+20)
0.00	1.23	1.75	0	**0.00**	4.67	7.04	5.29

overflows to: OUT

Drainage Area	MH3D
Area (Ha)	0.11
C =	0.82
Restricted Flow Q_r (L/s)=	40.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
-2	319.47	80.11	40.00	40.11	-4.81
0	230.48	57.79	40.00	17.79	0.00
2	182.69	45.81	40.00	5.81	**0.70**
4	152.51	38.24	40.00	-1.76	-0.42
6	131.57	32.99	40.00	-7.01	-2.52

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	0.70	10.79	0	0.00

overflows to: MH4

Drainage Area	MH4
Area (Ha)	0.04
C =	0.80
Restricted Flow Q_r (L/s)=	25.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
-4	555.75	49.44	25.00	24.44	-5.87
-2	319.47	28.42	25.00	3.42	-0.41
0	230.48	20.50	25.00	-4.50	**0.00**
2	182.69	16.25	25.00	-8.75	-1.05
4	152.51	13.57	25.00	-11.43	-2.74

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	0.00	1.75	0	0.00

overflows to: OUT

Drainage Area	MH3D
Area (Ha)	0.11
C =	0.82
Restricted Flow Q_r (L/s)=	40.00

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 2yr (m^3)
7	90.66	22.73	40.00	-17.27	-7.25
9	80.87	20.28	40.00	-19.72	-10.65
10	76.81	19.26	40.00	-20.74	**-12.44**
11	73.17	18.35	40.00	-21.65	-14.29
13	66.93	16.78	40.00	-23.22	-18.11

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	-12.44	10.79	0	0.00

overflows to: MH4

Drainage Area	MH4
Area (Ha)	0.04
C =	0.80
Restricted Flow Q_r (L/s)=	25.00

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 2yr (m^3)
7	90.66	8.07	25.00	-16.93	-7.11
9	80.87	7.19	25.00	-17.81	-9.61
10	76.81	6.83	25.00	-18.17	**-10.90**
11	73.17	6.51	25.00	-18.49	-12.20
13	66.93	5.95	25.00	-19.05	-14.86

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	-10.90	1.75	0	0.00

overflows to: OUT

Drainage Area	RYCB1
Area (Ha)	0.05
C =	0.25
Restricted Flow Q_r (L/s)=	6.00

100-Year Ponding						100Yr +20%		
T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)	100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
1	351.38	12.21	6.00	6.21	0.37			
3	286.05	9.94	6.00	3.94	0.71			
4	262.41	9.12	6.00	3.12	**0.75**	10.94	4.94	**1.19**
5	242.70	8.43	6.00	2.43	0.73			
7	211.67	7.36	6.00	1.36	0.57			

Storage (m^3)					100+20		
Overflow	Required	Surface	Sub-surface	Balance	Overflow	Required	Balance
0.00	0.75	6.37	0	**0.00**	5.29	6.47	0.10

overflows to: OUT

Drainage Area	BLDG A
Area (Ha)	0.15
C =	1.00
Restricted Flow Q_r (L/s)=	12.00

100-Year Ponding						100Yr +20%		
T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)	100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
27	98.66	41.14	12.00	29.14	47.21			
29	94.01	39.20	12.00	27.20	47.33			
30	91.87	38.31	12.00	26.31	**47.36**	45.97	33.97	**61.15**
31	89.83	37.46	12.00	25.46	47.35			
33	86.03	35.88	12.00	23.88	47.27			

Storage (m^3)					100+20		
Overflow	Required	Surface	Sub-surface	Balance	Overflow	Required	Balance
0.00	47.36	48.00	0	**0.00**	0.10	61.25	13.25

overflows to: OUT

Drainage Area	RYCB1
Area (Ha)	0.05
C =	0.20
Restricted Flow Q_r (L/s)=	6.00

5-Year Ponding					
T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
-4	555.75	15.45	6.00	9.45	-2.27
-2	319.47	8.88	6.00	2.88	-0.35
0	230.48	6.41	6.00	0.41	**0.00**
2	182.69	5.08	6.00	-0.92	-0.11
4	152.51	4.24	6.00	-1.76	-0.42

Storage (m^3)				
Overflow	Required	Surface	Sub-surface	Balance
0.00	0.00	6.37	0	0.00

overflows to: OUT

Drainage Area	BLDG A
Area (Ha)	0.15
C =	0.90
Restricted Flow Q_r (L/s)=	12.00

5-Year Ponding					
T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
13	90.63	34.01	12.00	22.01	17.17
15	83.56	31.36	12.00	19.36	17.42
17	77.61	29.13	12.00	17.13	**17.47**
19	72.53	27.22	12.00	15.22	17.35
21	68.13	25.57	12.00	13.57	17.10

Storage (m^3)				
Overflow	Required	Surface	Sub-surface	Balance
0.00	17.47	48.00	0	0.00

overflows to: OUT

Drainage Area	RYCB1
Area (Ha)	0.05
C =	0.20
Restricted Flow Q_r (L/s)=	6.00

2-Year Ponding					
T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 2yr (m^3)
7	90.66	2.52	6.00	-3.48	-1.46
9	80.87	2.25	6.00	-3.75	-2.03
10	76.81	2.14	6.00	-3.86	**-2.32**
11	73.17	2.03	6.00	-3.97	-2.62
13	66.93	1.86	6.00	-4.14	-3.23

Storage (m^3)				
Overflow	Required	Surface	Sub-surface	Balance
0.00	-2.32	6.37	0	0.00

overflows to: OUT

Drainage Area	BLDG A
Area (Ha)	0.15
C =	0.90
Restricted Flow Q_r (L/s)=	12.00

2-Year Ponding					
T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 2yr (m^3)
9	80.87	30.35	12.00	18.35	9.91
11	73.17	27.46	12.00	15.46	10.20
12	69.89	26.23	12.00	14.23	**10.25**
13	66.93	25.12	12.00	13.12	10.23
15	61.77	23.18	12.00	11.18	10.06

Storage (m^3)				
Overflow	Required	Surface	Sub-surface	Balance
0.00	10.25	48.00	0	0.00

overflows to: OUT

Drainage Area	BLDG B
Area (Ha)	0.15
C =	1.00
Restricted Flow Q_r (L/s)=	12.00

100-Year Ponding | **100Yr +20%**

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)	100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
27	98.66	41.14	12.00	29.14	47.21			
29	94.01	39.20	12.00	27.20	47.33			
30	91.87	38.31	12.00	26.31	**47.36**	45.97	33.97	**61.15**
31	89.83	37.46	12.00	25.46	47.35			
33	86.03	35.88	12.00	23.88	47.27			

Storage (m^3)					100+20		
Overflow	Required	Surface	Sub-surface	Balance	Overflow	Required	Balance
0.00	47.36	48.00	0	**0.00**	13.25	74.40	26.40

overflows to: OUT

Drainage Area	BLDG C
Area (Ha)	0.15
C =	1.00
Restricted Flow Q_r (L/s)=	12.00

100-Year Ponding | **100Yr +20%**

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)	100YRQp 20% (L/s)	Qp - Qr (L/s)	Volume 100+20 (m3)
27	98.66	41.14	12.00	29.14	47.21			
29	94.01	39.20	12.00	27.20	47.33			
30	91.87	38.31	12.00	26.31	**47.36**	45.97	33.97	**61.15**
31	89.83	37.46	12.00	25.46	47.35			
33	86.03	35.88	12.00	23.88	47.27			

Storage (m^3)					100+20		
Overflow	Required	Surface	Sub-surface	Balance	Overflow	Required	Balance
0.00	47.36	48.00	0	**0.00**	26.40	87.55	39.55

overflows to: OUT

Drainage Area	BLDG B
Area (Ha)	0.15
C =	0.90
Restricted Flow Q_r (L/s)=	12.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
13	90.63	34.01	12.00	22.01	17.17
15	83.56	31.36	12.00	19.36	17.42
17	77.61	29.13	12.00	17.13	**17.47**
19	72.53	27.22	12.00	15.22	17.35
21	68.13	25.57	12.00	13.57	17.10

Storage (m^3)				
Overflow	Required	Surface	Sub-surface	Balance
0.00	17.47	48.00	0	0.00

overflows to: OUT

Drainage Area	BLDG C
Area (Ha)	0.15
C =	0.90
Restricted Flow Q_r (L/s)=	12.00

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
13	90.63	34.01	12.00	22.01	17.17
15	83.56	31.36	12.00	19.36	17.42
17	77.61	29.13	12.00	17.13	**17.47**
19	72.53	27.22	12.00	15.22	17.35
21	68.13	25.57	12.00	13.57	17.10

Storage (m^3)				
Overflow	Required	Surface	Sub-surface	Balance
0.00	17.47	48.00	0	0.00

overflows to: OUT

Drainage Area	BLDG B
Area (Ha)	0.15
C =	0.90
Restricted Flow Q_r (L/s)=	12.00

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 2yr (m^3)
9	80.87	30.35	12.00	18.35	9.91
11	73.17	27.46	12.00	15.46	10.20
12	69.89	26.23	12.00	14.23	**10.25**
13	66.93	25.12	12.00	13.12	10.23
15	61.77	23.18	12.00	11.18	10.06

Storage (m^3)				
Overflow	Required	Surface	Sub-surface	Balance
0.00	10.25	48.00	0	0.00

overflows to: OUT

Drainage Area	BLDG C
Area (Ha)	0.15
C =	0.90
Restricted Flow Q_r (L/s)=	12.00

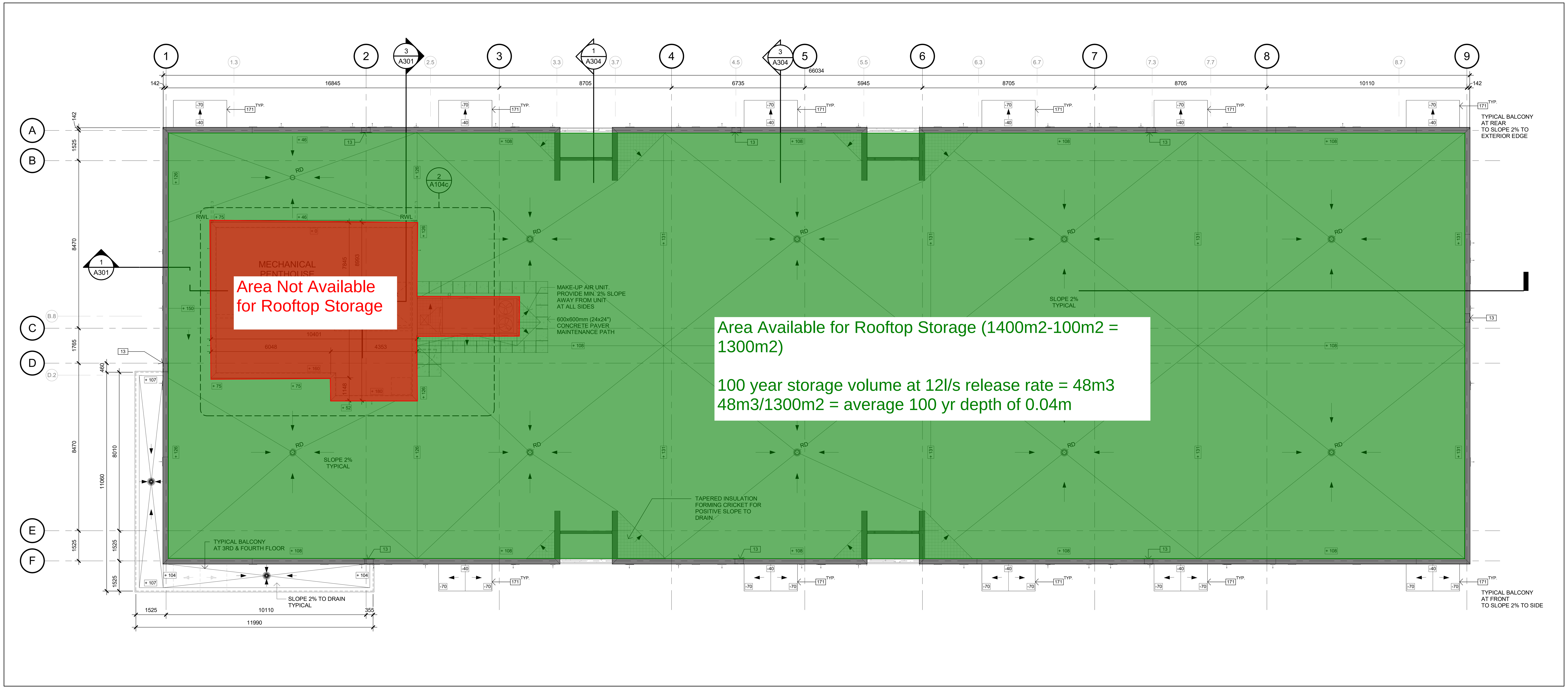
2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 2yr (m^3)
7	90.66	34.03	12.00	22.03	9.25
9	80.87	30.35	12.00	18.35	9.91
10	76.81	28.82	12.00	16.82	**10.09**
11	73.17	27.46	12.00	15.46	10.20
13	66.93	25.12	12.00	13.12	10.23

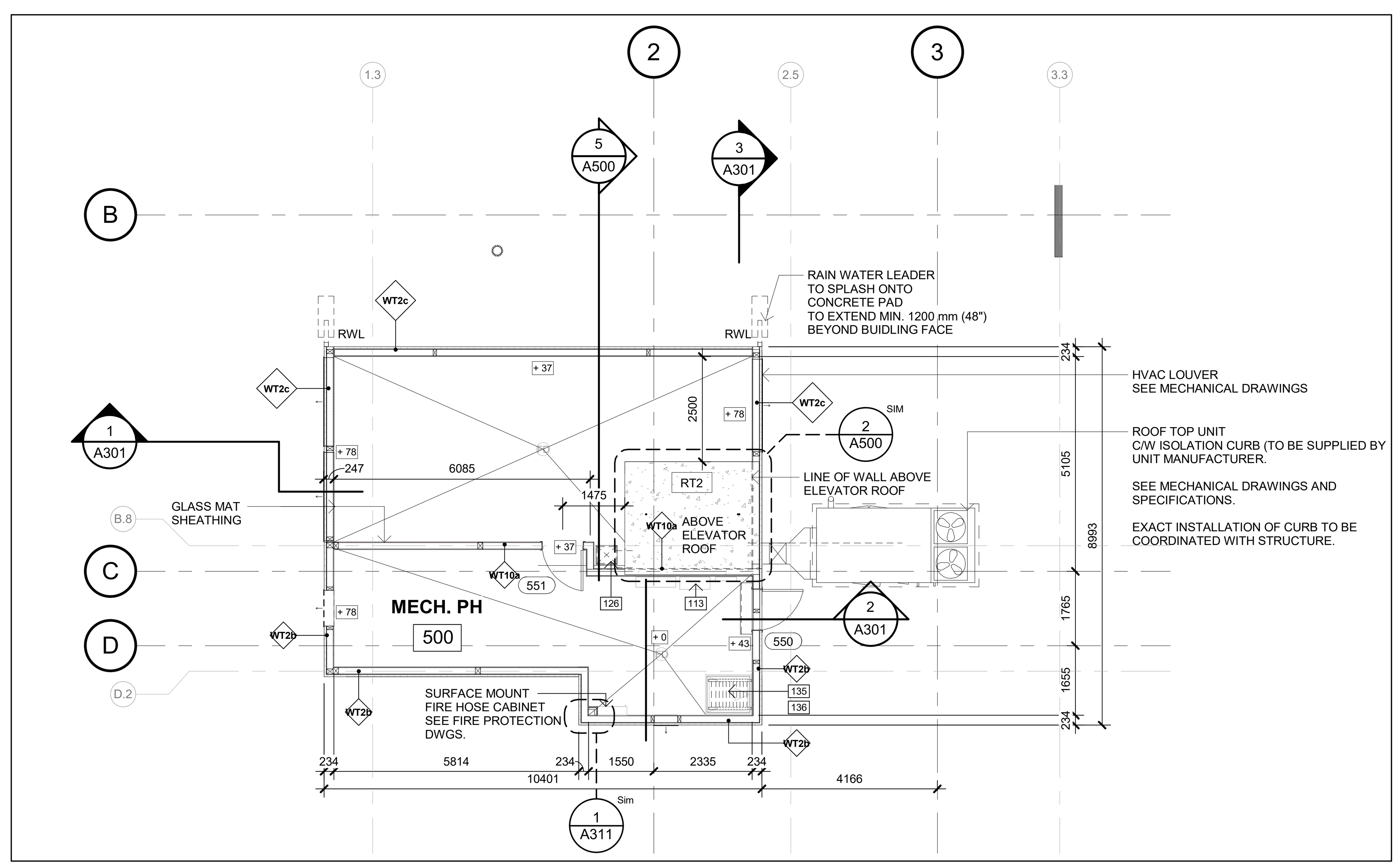
Storage (m^3)				
Overflow	Required	Surface	Sub-surface	Balance
0.00	10.09	48.00	0	0.00

overflows to: OUT

Drainage Area	Tributary Area	Restricted Flow	Req Storage	Avail Storage	Overflow	100-yr + 20% Ponding	5-yr Ponding	2-yr Ponding
MH5A	0.11	12.00	22.49	17.12	5.37	29.72	5.67	2.24
MH5	0.08	10.00	20.04	28.66	-5.37	33.57	3.88	1.17
MH3	0.07	8.00	18.03	56.01	0.00	29.24	4.91	2.37
MH3A	0.08	9.00	20.25	27.53	0.00	27.75	5.71	2.80
MH3B	0.07	8.00	18.03	27.53	0.00	24.55	5.17	2.55
MH3C	0.09	12.00	17.84	53.05	0.00	26.59	6.41	2.83
CBMH2	0.03	12.00	2.47	2.64	0.00	3.69	0.00	0.00
MH3D	0.11	40.00	10.48	10.79	0.00	15.46	0.00	0.00
MH4	0.04	25.00	1.23	1.75	0.00	7.04	0.00	0.00
RYCB1	0.05	6.00	0.75	6.37	0.00	6.47	0.00	0.00
Total Surface	0.73	142.00	131.61	231.45	0.00			
BLDG A	0.15	12.00	47.36	48.00	0.00			
BLDG B	0.15	12.00	47.36	48.00	0.00			
BLDG C	0.15	12.00	47.36	48.00	0.00			
Total Buildings	0.45	36.00	142.07	144.00	0.00			
Total	**1.18**	**178.00**	**273.67**	**375.45**	**0.00**			
	Max Allowable	**178.65**						



1 BUILDING C - ROOF PLAN
A104c 1 : 100



2 BUILDING C - MECHANICAL PH
A104c 1 : 100

KEYNOTE LEGEND

13	SCUPPER TO BE LOCATED 150mm ABOVE FINISHED ROOF, EQUALLY SPACED (AS MUCH AS POSSIBLE) AT MIN. 30m O.C. ALONG FACE OF WALL; EXACT LOCATION TBD BY PANEL MFR. SCUPPER FINISH TO MATCH ADJACENT. ROOF MEMBRANE TO LAP INTO OPENING. SEE TYPICAL DETAIL.
113	PANEL. SEE ELECTRICAL DRAWINGS. PROVIDE FIRE RETARDANT TREATED WOOD (FRTW) PLYWOOD BLOCKING AS REQUIRED TO ENSURE SECURE MOUNTING AND ATTACHMENT.
126	MECHANICAL SHAFT. ALL DUCTS TO BE PROTECTED WITH FIRE DAMPER AT FLOOR LEVEL (SEE MECHANICAL DRAWINGS). ALL OTHER PENETRATIONS TO BE SEALED WITH APPROVED F.R.R. ASSEMBLY TO MAINTAIN MIN. 1 HR. FIRE RATING AT FLOOR ASSEMBLY, AND BETWEEN FLOORS.
136	MIN. 865x900 FLOOR ACCESS HATCH TO BE INSTALLED INTO CONCRETE SLAB. ROUGH OPENING AND INSTALLATION AS RECOMMENDED BY MFR.
171	PRECAST CONCRETE BALCONY, TO BE FINISHED WITH TRAFFIC COATING; SEE SPECIFICATIONS FOR PRODUCT.

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Architects Constructors Managers

Chamberlain Architect Services Limited

4671 Palladium Way (Unit 1)
Burlington, Ontario. L7M 0W9
CANADA

Phone: 905.631.7777

www.chamberlainIPD.com

NO.	ISSUED	DATE
1	ISSUED FOR PERMIT	MAR. 24, 2022
2	ISSUED FOR TENDER	APR. 12, 2022
3	TENDER ADDENDUM 1	APR. 19, 2022
4	BP REV. 1	MAY 11, 2022
5	COORDINATION	JUN 13, 2022
6	ISSUED FOR CONSTRUCTION	JUN 20, 2022

SEAL

ONTARIO ASSOCIATION OF ARCHITECTS
STEPHEN A. MAURO
LICENCE
8514
120024 - March 2022

PROVENCE APARTMENTS ORLEANS

REGIONAL

A - 2045 PORTOBELLO BLVD.
B - 2055 PORTOBELLO BLVD.
C - 2065 PORTOBELLO BLVD.

OTTAWA, ONTARIO

SHEET NAME

BLDG C - ROOF PLAN

START DATE	AUG 31, 2020
DRAWN BY	MC
CHECKED BY	LC
SCALE	1 : 100
PROJECT NO.	120024

DRAWING

A104c

Volume III: TEMPEST INLET CONTROL DEVICES

Municipal Technical Manual Series

SECOND EDITION

LMF (Low to Medium Flow) ICD

HF (High Flow) ICD

MHF (Medium to High Flow) ICD

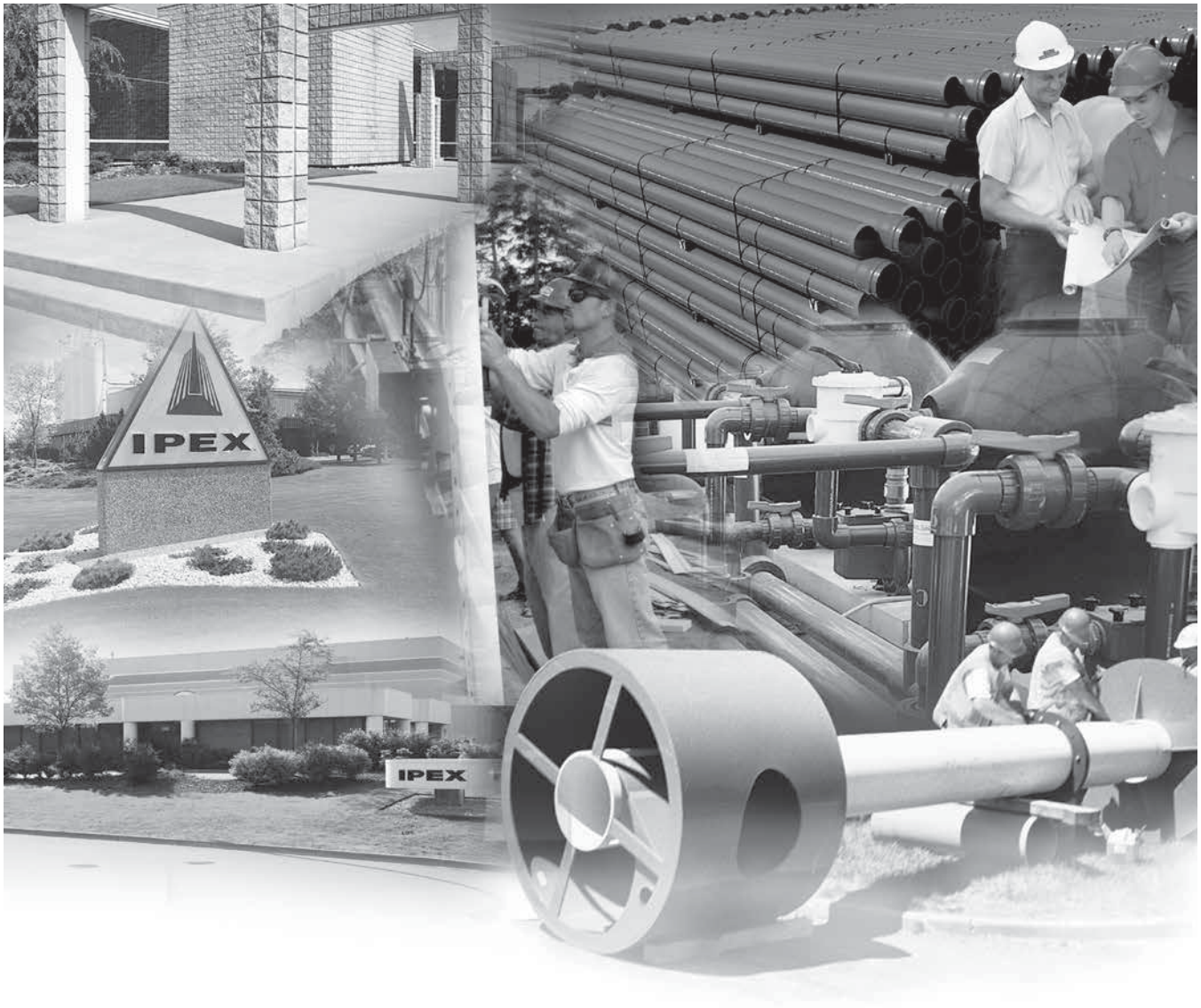
IPEX
by aliaxis

IPEX Tempest™ Inlet Control Devices

Municipal Technical Manual Series

Vol. I, 2nd Edition

For information contact: IPEX, Marketing,
1425 North Service Road East, Oakville, Ontario, Canada, L6H 1A7



ABOUT IPEX

At IPEX, we have been manufacturing non-metallic pipe and fittings since 1951. We formulate our own compounds and maintain strict quality control during production. Our products are made available for customers thanks to a network of regional stocking locations throughout North America. We offer a wide variety of systems including complete lines of piping, fittings, valves and custom-fabricated items.

More importantly, we are committed to meeting our customers' needs. As a leader in the plastic piping industry, IPEX continually develops new products, modernizes manufacturing facilities and acquires innovative process technology. In addition, our staff take pride in their work, making available to customers their extensive thermoplastic knowledge and field experience. IPEX personnel are committed to improving the safety, reliability and performance of thermoplastic materials. We are involved in several standards committees and are members of and/or comply with the organizations listed on this page.

For specific details about any IPEX product, contact our customer service department.

CONTENTS

PRODUCT INFORMATION: TEMPEST LOW, MEDIUM FLOW (LMF) ICD

Purpose

To control the amount of storm water runoff entering a sewer system by allowing a specified flow volume out of a catch basin or manhole at a specified head. This approach conserves pipe capacity so that catch basins downstream do not become uncontrollably surcharged, which can lead to basement floods, flash floods and combined sewer overflows.

Product Description

Our LMF ICD is designed to accommodate catch basins or manholes with sewer outlet pipes 6" in diameter and larger. Any storm sewer larger than 12" may require custom modification. However, IPEX can custom build a TEMPEST device to accommodate virtually any storm sewer size.

Available in 14 preset flow curves, the LMF ICD has the ability to provide flow rates: 2lps – 17lps (31gpm – 270gpm)

Product Function

The LMF ICD vortex flow action allows the LMF ICD to provide a narrower flow curve using a larger orifice than a conventional orifice plate ICD, making it less likely to clog. When comparing flows at the same head level, the LMF ICD has the ability to restrict more flow than a conventional ICD during a rain event, preserving greater sewer capacity.

Product Construction

Constructed from durable PVC, the LMF ICD is light weight 8.9 Kg (19.7 lbs).

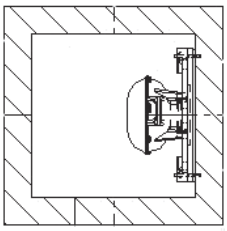
Product Applications

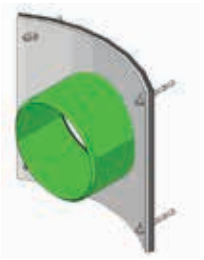
Will accommodate both square and round applications:

Square Application

Round Application

Universal Mounting Plate





+

Spigot CB Wall Plate

=

Universal Mounting Plate Hub Adapter

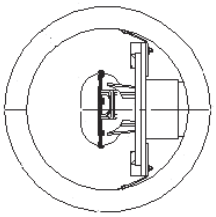


Chart 1: LMF 14 Preset Flow Curves

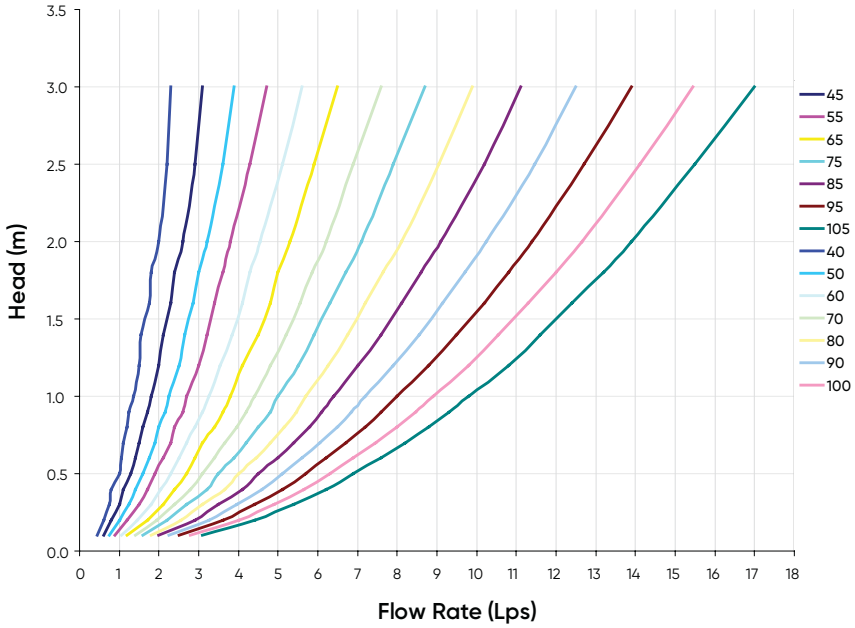
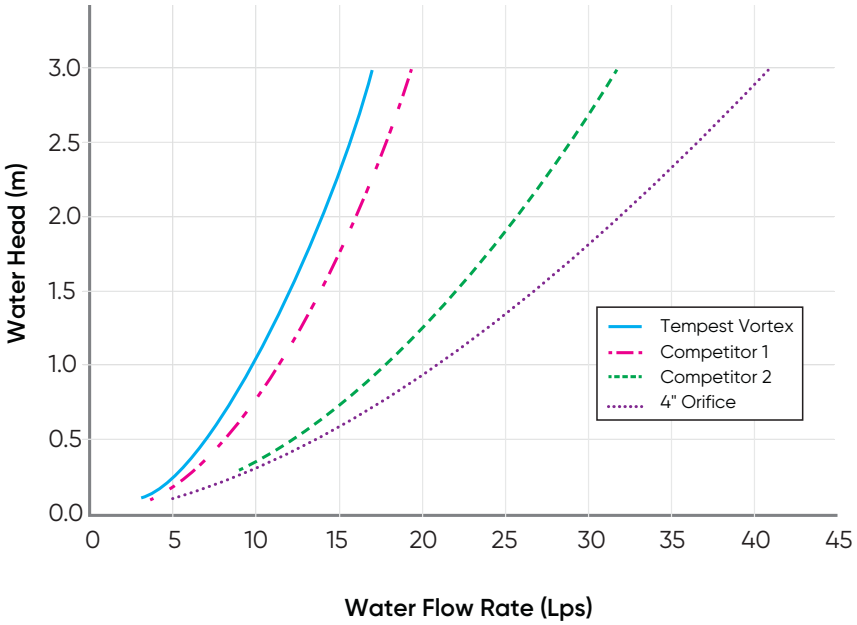


Chart 2: LMF Flow vs. ICD Alternatives



PRODUCT INSTALLATION

Instructions to assemble a TEMPEST LMF ICD into a Square Catch Basin:

STEPS:

1. Materials and tooling verification:
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level, and marker.
   - Material: (4) concrete anchor 3/8 x 3-1/2, (4) washers, (4) nuts, universal mounting plate, ICD device.
2. Use the mounting wall plate to locate and mark the hole (4) pattern on the catch basin wall. You should use a level to ensure that the plate is at the horizontal.
3. Use an impact drill with a 3/8" concrete bit to make the four holes at a minimum of 1-1/2" depth up to 2-1/2". Clean the concrete dust from the holes.
4. Install the anchors (4) in the holes by using a hammer. Thread the nuts on the top of the anchors to protect the threads when you hit the anchors with the hammer. Remove the nuts from the ends of the anchors.
5. Install the universal mounting plate on the anchors and screw the 4 nuts in place with a maximum torque of 40 N.m (30 lbf-ft). There should be no gap between the wall mounting plate and the catch basin wall.
6. From the ground above using a reach bar, lower the ICD device by hooking the end of the reach bar to the handle of the ICD device. Align the triangular plate portion into the mounting wall plate. Push down the device to be sure it has centered in to the universal mounting plate and has created a seal.

⚠ WARNING

- Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut down the pipe flush to the catch basin wall.
- Call your IPEX representative for more information or if you have any questions about our products.

Instructions to assemble a TEMPEST LMF ICD into a Round Catch Basin:

STEPS:

1. Materials and tooling verification.
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level and marker.
   - Material: (4) concrete anchor 3/8 x 3-1/2, (4) washers and (4) nuts, spigot CB wall plate, universal mounting plate hub adapter, ICD device.
2. Use the spigot catch basin wall plate to locate and mark the hole (4) pattern on the catch basin wall. You should use a level to ensure that the plate is at the horizontal.
3. Use an impact drill with a 3/8" concrete bit to make the four holes at a depth between 1-1/2" to 2-1/2". Clean the concrete dust from the holes.
4. Install the anchors (4) in the holes by using a hammer. Thread the nuts on the top of the anchors to protect the threads when you hit the anchors with the hammer. Remove the nuts from the ends of the anchors.
5. Install the CB spigot wall plate on the anchors and screw the 4 nuts in place with a maximum torque of 40 N.m (30 lbf-ft). There should be no gap between the spigot wall plate and the catch basin wall.
6. Apply solvent cement on the hub of the universal mounting plate, hub adapter and the spigot of the CB wall plate, then slide the hub over the spigot. Make sure the universal mounting plate is at the horizontal and its hub is completely inserted onto the spigot. Normally, the corners of the universal mounting plate hub adapter should touch the catch basin wall.
7. From ground above using a reach bar, lower the ICD device by hooking the end of the reach bar to the handle of the ICD device. Align the triangular plate portion into the mounting wall plate. Push down the device to be sure it has centered in to the mounting plate and has created a seal.

⚠ WARNING

- Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut back the pipe flush to the catch basin wall.
- The solvent cement which is used in this installation is to be approved for PVC.
- The solvent cement should not be used below 0°C (32°F) or in a high humidity environment. Refer to the IPEX solvent cement guide to confirm the required curing time or visit the IPEX Online Solvent Cement Training Course available at ipexna.com.
- Call your IPEX representative for more information or if you have any questions about our products.

NOTE: Do not use or test the products in this manual with compressed air or other gases including air-over-water-boosters

PRODUCT TECHNICAL SPECIFICATION

General

Inlet control devices (ICD's) are designed to provide flow control at a specified rate for a given water head level and also provide odour and floatable control. All ICD's will be IPEX Tempest or approved equal.

All devices shall be removable from a universal mounting plate. An operator from street level using only a T-bar with a hook will be able to retrieve the device while leaving the universal mounting plate secured to the catch basin wall face. The removal of the TEMPEST devices listed above must not require any unbolting or special manipulation or any special tools.

High Flow (HF) Sump devices will consist of a removable threaded cap which can be accessible from street level with out entry into the catchbasin (CB). The removal of the threaded cap shall not require any special tools other than the operator's hand.

ICD's shall have no moving parts.

Materials

ICD's are to be manufactured from Polyvinyl Chloride (PVC) or Polyurethane material, designed to be durable enough to withstand multiple freeze-thaw cycles and exposure to harsh elements.

The inner ring seal will be manufactured using a Buna or Nitrile material with hardness between Duro 50 and Duro 70.

The wall seal is to be comprised of a 3/8" thick Neoprene Closed Cell Sponge gasket which is attached to the back of the wall plate.

All hardware will be made from 304 stainless steel.

Dimensioning

The Low Medium Flow (LMF), High Flow (HF) and the High Flow (HF) Sump shall allow for a minimum outlet pipe diameter of 200mm with a 600mm deep Catch Basin sump.

Installation

Contractor shall be responsible for securing, supporting and connecting the ICD's to the existing influent pipe and catchbasin/manhole structure as specified and designed by the Engineer.

PRODUCT INFORMATION: TEMPEST HF & MHF ICD

Product Description

Our HF, HF Sump and MHF ICD's are designed to accommodate catch basins or manholes with sewer outlet pipes 6" in diameter or larger. Any storm sewer larger than 12" may require custom modification. However, IPEX can custom build a TEMPEST device to accommodate virtually any storm sewer size.

Available in 5 preset flow curves, these ICDs have the ability to provide constant flow rates: 9lps (143 gpm) and greater

Product Function

TEMPEST HF (High Flow): designed to manage moderate to higher flows 15 L/s (240 gpm) or greater and prevent the propagation of odour and floatables. With this device, the cross-sectional area of the device is larger than the orifice diameter and has been designed to limit head losses. The HF ICD can also be ordered without flow control when only odour and floatable control is required.

TEMPEST HF (High Flow) Sump: The height of a sewer outlet pipe in a catch basin is not always conveniently located. At times it may be located very close to the catch basin floor, not providing enough sump for one of the other TEMPEST ICDs with universal back plate to be installed. In these applications, the HF Sump is offered. The HF Sump offers the same features and benefits as the HF ICD; however, is designed to raise the outlet in a square or round catch basin structure. When installed, the HF sump is fixed in place and not easily removed. Any required service to the device is performed through a clean-out located in the top of the device which can be often accessed from ground level.

TEMPEST MHF (Medium to High Flow): The MHF plate or plug is designed to control flow rates 9 L/s (143 gpm) or greater. It is not designed to prevent the propagation of odour and floatables.

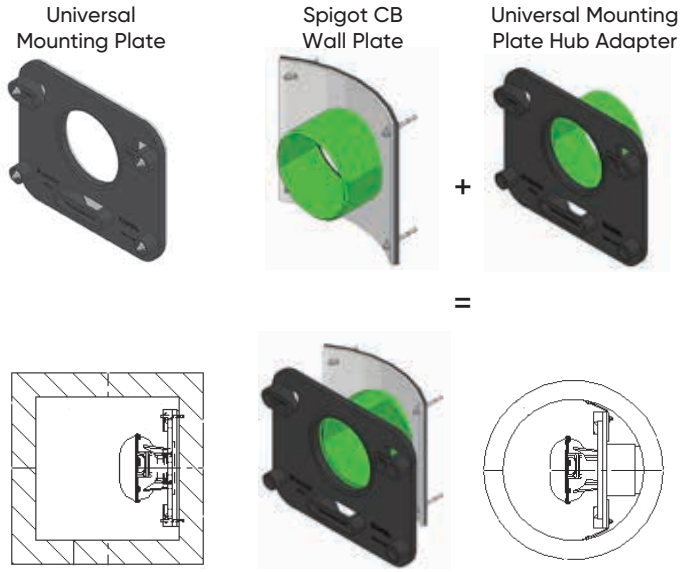
Product Construction

The HF, HF Sump and MHF ICDs are built to be light weight at a maximum weight of 6.8 Kg (14.6 lbs).

Product Applications

The HF and MHF ICD's are available to accommodate both square and round applications:

Square Application **Round Application**



The HF Sump is available to accommodate low to no sump applications in both square and round catch basins:

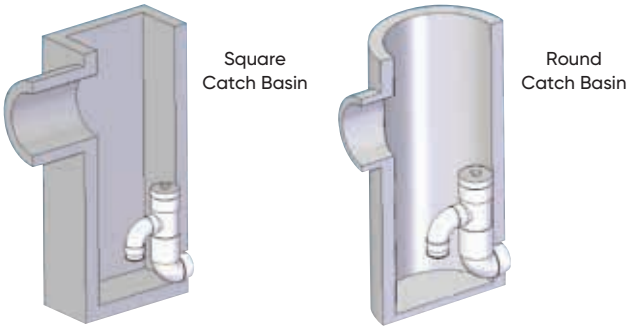
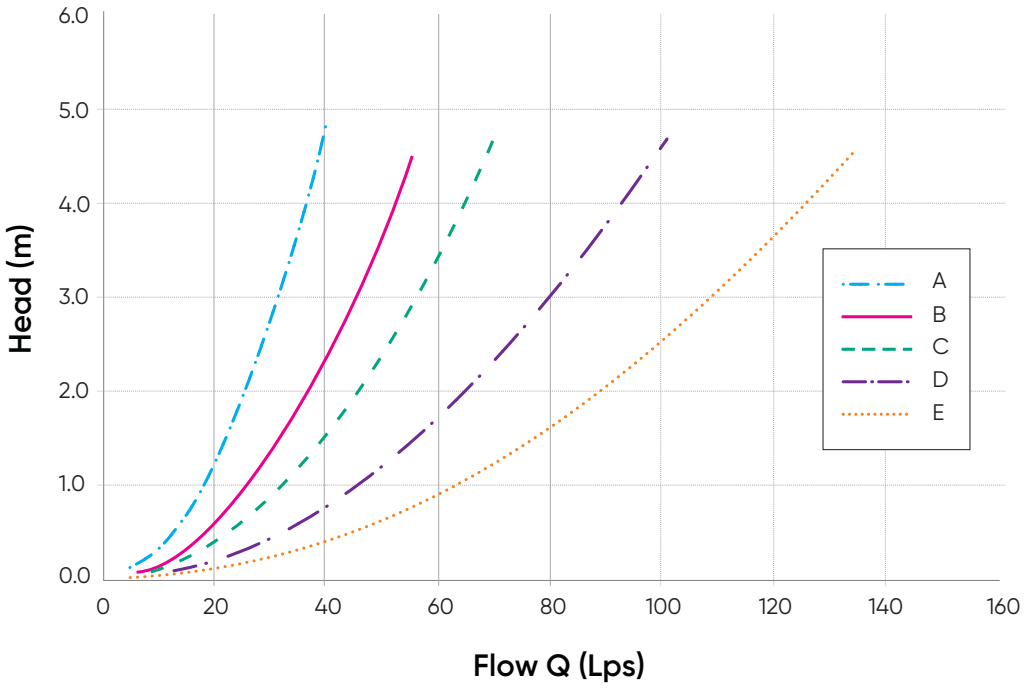


Chart 3: HF & MHF Preset Flow Curves



PRODUCT INSTALLATION

Instructions to assemble a TEMPEST HF or MHF ICD into a Square Catch Basin:

1. Materials and tooling verification:
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level, and marker.
   - Material: (4) concrete anchor 3/8 x 3-1/2, (4) washers, (4) nuts, universal mounting plate, ICD device
2. Use the mounting wall plate to locate and mark the hole (4) pattern on the catch basin wall. You should use a level to ensure that the plate is at the horizontal.
3. Use an impact drill with a 3/8" concrete bit to make the four holes at a minimum of 1-1/2" depth up to 2-1/2". Clean the concrete dust from the holes.
4. Install the anchors (4) in the holes by using a hammer. Thread the nuts on the top of the anchors to protect the threads when you hit the anchors with the hammer. Remove the nuts from the ends of the anchors.
5. Install the universal wall mounting plate on the anchors and screw the 4 nuts in place with a maximum torque of 40 N.m (30 lbf-ft). There should be no gap between the wall mounting plate and the catch basin wall.
6. From the ground above using a reach bar, lower the device by hooking the end of the reach bar to the handle of the ICD device. Align the triangular plate portion into the mounting wall plate. Push down the device to be sure it has centered in to the universal wall mounting plate and has created a seal.

⚠ WARNING

- Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut down the pipe flush to the catch basin wall.
- Call your IPEX representative for more information or if you have any questions about our products.

Instructions to assemble a TEMPEST HF or MHF ICD into a Round Catch Basin:

STEPS:

1. Materials and tooling verification.
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level and marker.
   - Material: (4) concrete anchor 3/8 x 3-1/2, (4) washers and (4) nuts, spigot CB wall plate, universal mounting plate hub adapter, ICD device.
2. Use the round catch basin spigot adaptor to locate and mark the hole (4) pattern on the catch basin wall. You should use a level to ensure that the plate is at the horizontal.
3. Use an impact drill with a 3/8" concrete bit to make the four holes at a depth between 1-1/2" to 2-1/2". Clean the concrete dust from the holes.
4. Install the anchors (4) in the holes by using a hammer. Thread the nuts on the top of the anchors to protect the threads when you hit the anchors with the hammer. Remove the nuts from the ends of the anchors.
5. Install the spigot CB wall plate on the anchors and screw the 4 nuts in place with a maximum torque of 40 N.m (30 lbf-ft). There should be no gap between the spigot CB wall plate and the catch basin wall.
6. Put solvent cement on the hub of the universal mounting plate, hub adapter and the spigot of the CB wall plate, then slide the hub over the spigot. Make sure the universal mounting plate is at the horizontal and its hub is completely inserted onto the spigot. Normally, the corners of the hub adapter should touch the catch basin wall.
7. From ground above using a reach bar, lower the device by hooking the end of the reach bar to the handle of the ICD device. Align the triangular plate portion into the mounting wall plate. Push down the device to be sure it has centered in to the wall mounting plate and has created a seal.

⚠ WARNING

- Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut down the pipe flush to the catch basin wall.
- The solvent cement which is used in this installation is to be approved for PVC.
- The solvent cement should not be used below 0°C (32°F) or in a high humidity environment. Refer to the IPEX solvent cement guide to confirm the required curing time or visit the IPEX Online Solvent Cement Training Course available at www.ipexinc.com.
- Call your IPEX representative for more information or if you have any questions about our products.

NOTE: Do not use or test the products in this manual with compressed air or other gases including air-over-water-boosters

Instructions to assemble a TEMPEST HF Sump into a Square or Round Catch Basin:

STEPS:

1. Materials and tooling verification:
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level, mastic tape and metal strapping
   - Material: (2) concrete anchor 3/8 x 3-1/2, (2) washers, (2) nuts, HF Sump pieces (2).
2. Apply solvent cement to the spigot end of the top half of the sump. Apply solvent cement to the hub of the bottom half of the sump. Insert the spigot of the top half of the sump into the hub of the bottom half of the sump.
3. Install the 8" spigot of the device into the outlet pipe. Use the mastic tape to seal the device spigot into the outlet pipe. You should use a level to be sure that the fitting is standing at the vertical.
4. Use an impact drill with a 3/8" concrete bit to make a series of 2 holes along each side of the body throat. The depth of the hole should be between 1-1/2" to 2-1/2". Clean the concrete dust from the 2 holes.
5. Install the anchors (2) in the holes by using a hammer. Put the nuts on the top of the anchors to protect the threads when you hit the anchors. Remove the nuts from the ends of the anchors.
6. Cut the metal strapping to length and connect each end of the strapping to the anchors. Screw the nuts in place with a maximum torque of 40 N.m (30 lbf-ft). The device should be completely flush with the catch basin wall.

⚠ WARNING

- **Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut down the pipe flush to the catch basin wall.**
- **The solvent cement which is used in this installation is to be approved for PVC.**
- **The solvent cement should not be used below 0°C (32°F) or in a high humidity environment. Refer to the IPEX solvent cement guide to confirm the required curing time or visit the IPEX Online Solvent Cement Training Course available at www.ipexinc.com.**
- **Call your IPEX representative for more information or if you have any questions about our products.**

PRODUCT TECHNICAL SPECIFICATION

General

Inlet control devices (ICD's) are designed to provide flow control at a specified rate for a given water head level and also provide odour and floatable control where specified. All ICD's will be IPEX Tempest or approved equal.

All devices shall be removable from a universal mounting plate. An operator from street level using only a T-bar with a hook shall be able to retrieve the device while leaving the universal mounting plate secured to the catch basin wall face. The removal of the TEMPEST devices listed above shall not require any unbolting or special manipulation or any special tools.

High Flow (HF) Sump devices shall consist of a removable threaded cap which can be accessible from street level with out entry into the catchbasin (CB). The removal of the threaded cap shall not require any special tools other than the operator's hand.

ICD's shall have no moving parts.

Materials

ICD's are to be manufactured from Polyvinyl Chloride (PVC) or Polyurethane material, designed to be durable enough to withstand multiple freeze-thaw cycles and exposure to harsh elements.

The inner ring seal will be manufactured using a Buna or Nitrile material with hardness between Duro 50 and Duro 70.

The wall seal is to be comprised of a 3/8" thick Neoprene Closed Cell Sponge gasket which is attached to the back of the wall plate.

All hardware will be made from 304 stainless steel.

Dimensioning

The Low Medium Flow (LMF), High Flow (HF) and the High Flow (HF) Sump shall allow for a minimum outlet pipe diameter of 200mm with a 600mm deep Catch Basin sump.

Installation

Contractor shall be responsible for securing, supporting and connecting the ICD's to the existing influent pipe and catchbasin/manhole structure as specified and designed by the Engineer.

NOTES

SALES AND CUSTOMER SERVICE

IPEX Inc.
Toll Free: (866) 473-9462
ipexna.com

About the IPEX Group of Companies

As leading suppliers of thermoplastic piping systems, the IPEX Group of Companies provides our customers with some of the largest and most comprehensive product lines. All IPEX products are backed by more than 50 years of experience. With state-of-the-art manufacturing facilities and distribution centers across North America, we have established a reputation for product innovation, quality, end-user focus and performance.

Markets served by IPEX group products are:

- Electrical systems
- Telecommunications and utility piping systems
- PVC, CPVC, PP, ABS, PEX, FR-PVDF and PE pipe and fittings (1/4" to 48")
- Industrial process piping systems
- Municipal pressure and gravity piping systems
- Plumbing and mechanical piping systems
- PE Electrofusion systems for gas and water
- Industrial, plumbing and electrical cements
- Irrigation systems

Products manufactured by IPEX Inc.
Tempest™ is a trademark of IPEX Branding Inc.

IPEX by aliaxis

MNMNTPIP110817RC

WATTS®	Adjustable Accutrol Weir Tag: _____	Adjustable Flow Control for Roof Drains

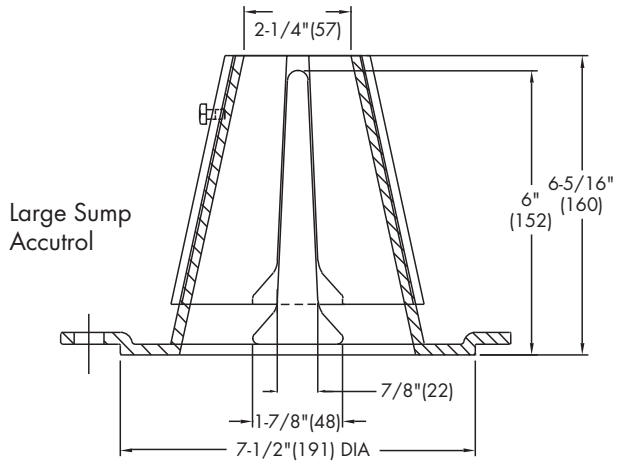
ADJUSTABLE ACCUTROL (for Large Sump Roof Drains only)

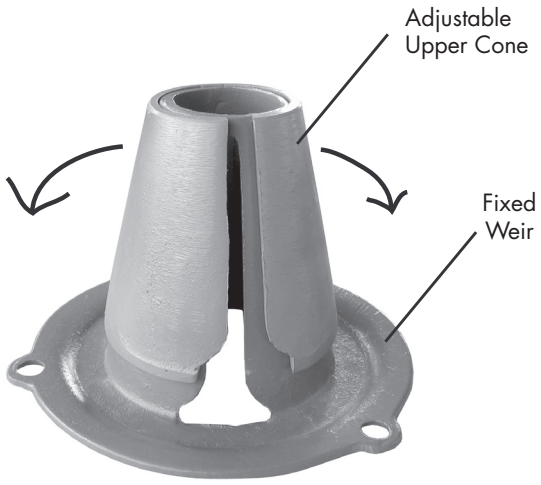
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the flow rate for depths over 2" of head, set the slot in the adjustable upper cone according to the flow rate required. Refer to Table 1 below.
Note: Flow rates are directly proportional to the amount of weir opening that is exposed.

EXAMPLE:

For example, if the adjustable upper cone is set to cover 1/2 of the weir opening, flow rates above 2"of head will be restricted to 2-1/2 gpm per inch of head.

Therefore, at 3"of head, the flow rate through the Accutrol Weir that has 1/2 the slot exposed will be:
[5 gpm (per inch of head) x 2 inches of head] + 2-1/2 gpm (for the third inch of head) = 12-1/2 gpm.





1/2 Weir Opening Exposed Shown Above

TABLE 1. Adjustable Accutrol Flow Rate Settings

Weir Opening Exposed	1"	2"	3"	4"	5"	6"
	Flow Rate (gallons per minute)					
Fully Exposed	5	10	15	20	25	30
3/4	5	10	13.75	17.5	21.25	25
1/2	5	10	12.5	15	17.5	20
1/4	5	10	11.25	12.5	13.75	15
Closed	5	5	5	5	5	5

Job Name _____ Contractor _____

Job Location _____ Contractor's P.O. No. _____

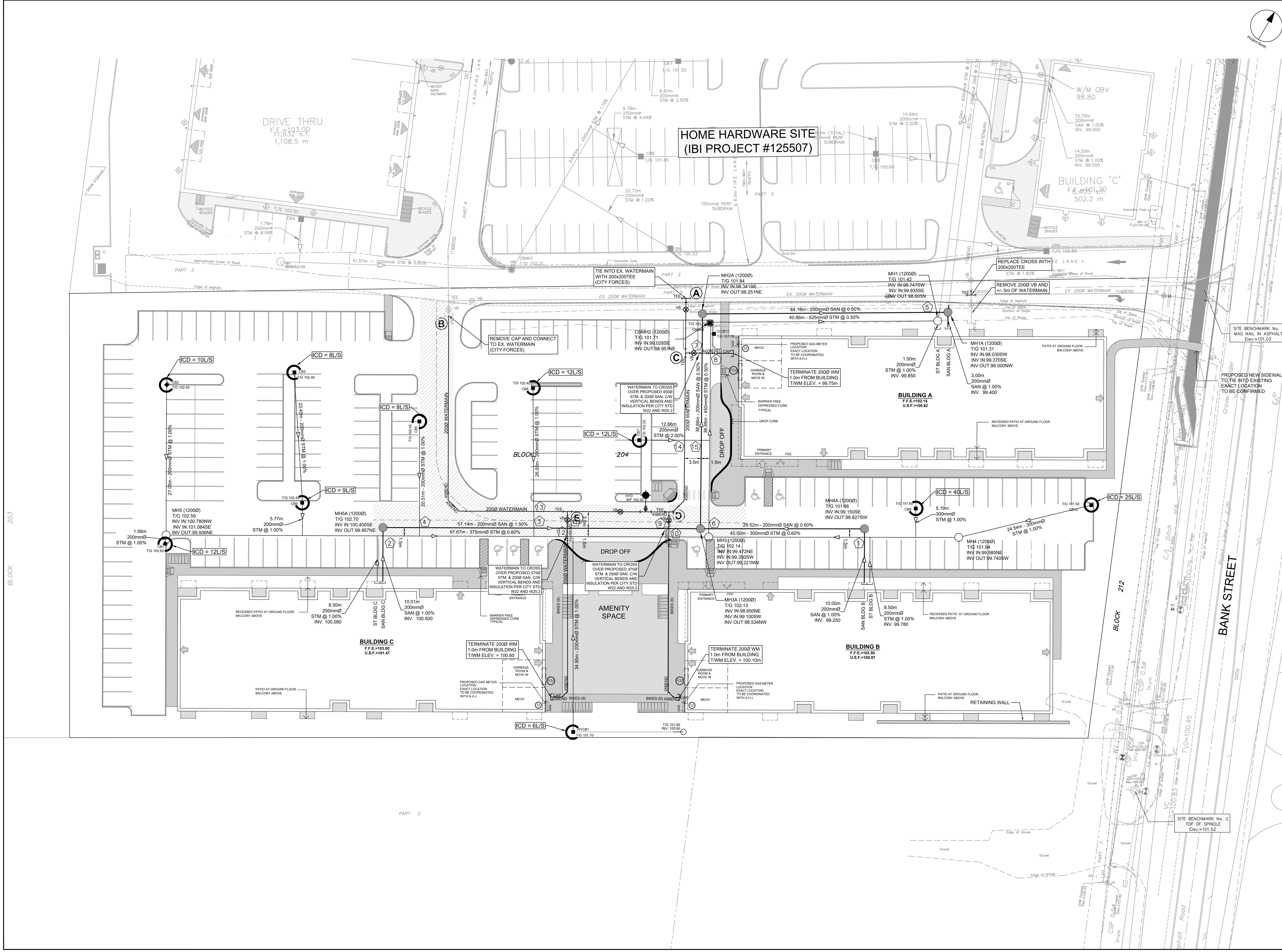
Engineer _____ Representative _____

WATTS®
A Watts Water Technologies Company

USA: Tel: (800) 338-2581 • Fax: (828) 248-3929 • Watts.com
Canada: Tel: (905) 332-4090 • Fax: (905) 332-7068 • Watts.ca
Latin America: Tel: (52) 81-1001-8600 • Fax: (52) 81-8000-7091 • Watts.com

APPENDIX F

- **Drawing 137175-001 – Site Servicing Plan**
- **Drawing 137175-010 – Details and Notes**
- **Drawing 137175-200 – Site Grading Plan**
- **Drawing 137175-600 – Ponding Plan**
- **Drawing 137175-900 – Erosion and Sedimentation Control Plan**



CLIENT

PATHWAYS SOUTH REGIONAL INC.

1737 WOODWARD DRIVE, OTTAWA, ON

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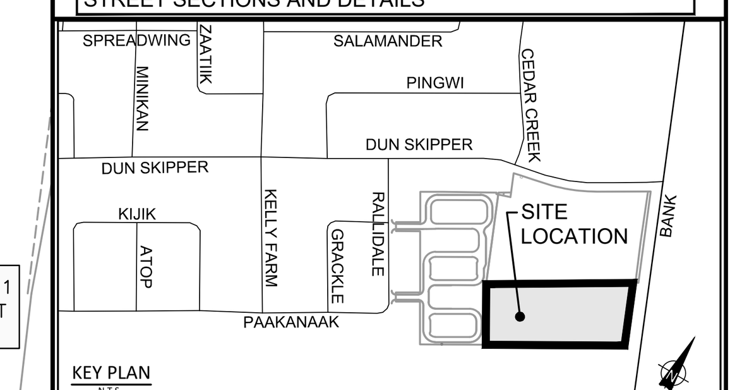
ISSUES

No.	DESCRIPTION	DATE
1	SUBMISSION NO. 1 FOR CITY REVIEW	2022-06-03
2	SUBMISSION NO. 2 FOR CITY REVIEW	2022-08-26
3		
4		
5		
6		
7		
8		

SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS



KEY PLAN
N.T.S.

CONSULTANTS

SEAL

IBI GROUP
400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

PROJECT

4840 BANK STREET

PROJECT NO:	
137175	
DRAWN BY: M.M.	CHECKED BY: S.E.L.
PROJECT MGR: D.C.	APPROVED BY: J.I.M.

SHEET TITLE

GENERAL PLAN OF SERVICES

SHEET NUMBER	ISSUE
C-001	2

CITY FILE No. D07-12-22-0097

CITY PLAN No. xxxxx

DRAWING NOTES

1.0 GENERAL

1.1 CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

1.2 DO NOT SCALE DRAWINGS.

1.3 CONTRACTOR TO REPORT ALL DISCOVERIES OF ERRORS, OMISSIONS OR DISCREPANCIES TO THE ARCHITECT OR DESIGN ENGINEER AS APPLICABLE.

1.4 USE ONLY THE LATEST REVISED DRAWINGS OR THOSE THAT ARE MARKED "ISSUED FOR CONSTRUCTION".

1.5 ALL CONSTRUCTION SHALL COMPLY WITH CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS.

1.6 THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL RELEVANT DRAWINGS AND SPECIFICATIONS.

1.7 FOR LEGAL SURVEY INFORMATION REFER TO REGISTERED PLAN.

1.8 REFER TO SITE PLAN BY CHAMBERLAIN ARCHITECT SERVICES LIMITED.

1.09 CONTRACTOR TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES AS IDENTIFIED IN THE EROSION AND SEDIMENT CONTROL PLAN TO THE SATISFACTION OF THE CITY OF OTTAWA, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.). DURING ALL PHASES OF THE SITE PREPARATION AND CONSTRUCTION THE MEASURES ARE TO BE MAINTAINED TO THE SATISFACTION OF THE ENGINEER AND CITY OF OTTAWA IN ACCORDANCE WITH THE BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL. SHOULD ANY ADDITIONAL MEASURES BE REQUIRED TO ADDRESS FIELD CONDITIONS THEY SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER OR THE CITY OF OTTAWA. SUCH ADDITIONAL MEASURES MAY INCLUDE BUT NOT BE LIMITED TO INSTALLATION OF FILTER CLOTHS ACROSS MANHOLE AND CATCHBASIN LIDS TO PREVENT SEDIMENT FROM ENTERING THE STRUCTURE AND INSTALLATION AND MAINTENANCE OF A LIGHT DUTY SILT FENCE BARRIER AS REQUIRED.

1.10 ALL IRON WORK ELEVATIONS SHOWN ARE APPROXIMATE AND ARE SUBJECT TO MINOR ADJUSTMENTS AS DETERMINED BY THE ENGINEER.

1.11 ALL CONCRETE CURBS AND SIDEWALKS TO CONFORM TO CITY STANDARDS SC1.1 AND SC1.4. ALL ONSITE CURBS TO BE BARRIER TYPE, WITH DEPRESSIONS AS NOTED.

1.12 ALL CONCRETE SHALL BE "NORMAL PORTLAND CEMENT" IN ACCORDANCE WITH O.P.S.S. 1350 AND SHALL ACHIEVE A MINIMUM STRENGTH OF 30MPa AT 28 DAYS.

1.13 ALL CONSTRUCTION TRAFFIC TO ACCESS SITE FROM BANK STREET.

1.14 FOR GEOTECHNICAL REPORT SEE GEOTECHNICAL INVESTIGATION PROPOSED MULTI-STOREY BUILDINGS IDONE SOUTH APARTMENTS 4840 BANK STREET, OTTAWA, ON, REPORT No. PG6255 BY PATERSON GROUP DATED MAY 20, 2022.

1.15 CONTRACTOR TO PROTECT EXISTING INFRASTRUCTURE AND PROPERTY SUCH AS TREES, PARKING METERS, SIDEWALKS, CURBS, ASPHALT, AND STREET SIGNS FROM DAMAGE DURING CONSTRUCTION. CONTRACTOR TO PAY THE COST TO REINSTATE OR REPLACE ANY DAMAGED INFRASTRUCTURE OR PROPERTY TO THE SATISFACTION OF THE CITY.

1.16 THE POSITION OF POLE LINES, CONDUITS, WATERMAIN, SEWERS, AND OTHER UNDERGROUND AND ABOVEGROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK THE CONTRACTOR SHALL INFORM ITSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, SHALL PROTECT ALL UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

1.17 CONTRACTOR TO SUPPLY SUITABLE FILL MATERIAL WHERE REQUIRED TO ROUGH GRADE THE SITE. ALL IMPORTED FILL MATERIAL TO BE CERTIFIED AS ACCEPTABLE BY THE GEOTECHNICAL ENGINEER.

1.18 CONTRACTOR TO HAUL EXCESS MATERIAL OFFSITE AS NECESSARY TO GRADE SITE TO MEET THE PROPOSED GRADES. ALL EXCESS MATERIAL TO BE HAULED OFFSITE AND DISPOSED OF AT AN APPROVED DUMP SITE. SHOULD THE CONTRACTOR DISCOVER ANY HAZARDOUS MATERIAL, CONTRACTOR IS TO NOTIFY ENGINEER. ENGINEER TO DETERMINE APPROPRIATE DISPOSAL METHOD/LOCATION.

1.19 FILL MATERIAL WITHIN THE PARKING LOT AND BUILDING PAD AREAS, AND SUPPORTING BUILDING FOUNDATIONS SHALL BE COMPACTED TO 98% STANDARD MODIFIED PROCTOR DENSITY AND TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.

1.20 ALL COMPACTION METHODS TO BE PERFORMED TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER TO INCLUDE BUT NOT BE LIMITED TO THE THICKNESS OF LIFTS, AND COMPACTION EQUIPMENT USED.

1.21 ALL DISTURBED BOULEVARDS TO BE REINSTATED WITH SOD ON 100mm TOPSOIL.

1.22 UTILITY DUCTS TO BE INSTALLED PRIOR TO ROAD BASE CONSTRUCTION.

1.23 CLAY DIKES TO BE INSTALLED WHERE INDICATED ON THE DRAWINGS OR AS APPROVED AND DIRECTED BY THE GEOTECHNICAL ENGINEER ALL IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS AND SPECIFICATIONS.

1.24 ALL UTILITY BOXES (i.e. PEDESTALS, TRANSFORMERS, ETC) ARE TO BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF OTTAWA'S "GUIDELINES FOR UTILITY PEDESTALS WITHIN THE ROAD RIGHT OF WAY"

1.25 FOR SITE BENCH MARK SEE SURVEY BY ANNIS O'SULLIVAN, VOLLEBEKK LTD. JOB No. 20749-22 REGIONAL BLK 204 4M-1653 T DI.

2.0 SANITARY

2.1 ALL SANITARY SEWER MAINS TO BE CSA CERTIFIED, BELL AND SPIGOT TYPE. ONLY FACTORY FITTINGS TO BE USED. SEWER TO BE INSTALLED AS PER OSPD 1005.01. SANITARY SEWER MATERIALS TO BE:
200mmØ AND SMALLER - PVC DR 35

2.2 ALL SANITARY MAINTENANCE HOLES TO BE 1.2m DIAMETER AS PER CITY OF OTTAWA STANDARDS COMPLETE WITH BENCHING, RUNGS, FRAME AND COVER, DROP PIPES AND LANDINGS WHERE NEEDED.

2.3 SANITARY MANHOLE COVERS TO BE CITY OF OTTAWA STD. 525 (MOD. OPSD. 401.020). SANITARY MANHOLE COVER TO BE CLOSED COVER TYPE, AS PER CITY STANDARD S24.

2.4 SANITARY SEWER LEAKAGE TEST AND CCTV INSPECTION SHALL BE COMPLETED AS PER CITY SPECIFICATIONS PRIOR TO INSTALLATION OF BASE COURSE ASPHALT.

2.5 ANY SANITARY SEWER WITH LESS THAN 2.0m COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD W22, OR AS APPROVED BY THE ENGINEER.

2.6 CONNECTION TO THE EXISTING SANITARY SEWER TO BE INCLUDED IN THE COST FOR SANITARY SEWER INSTALLATION. THIS INCLUDES REINSTATEMENT OF ROAD CUTS TO CITY STANDARDS.

3.0 STORM

3.1 ALL STORM SEWERS TO BE CSA CERTIFIED, BELL AND SPIGOT TYPE. ALL STORM SEWERS TO BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS. ONLY FACTORY FITTINGS TO BE USED. STORM SEWER MATERIALS TO BE : 375mmØ AND SMALLER - PVC DR 35
450mmØ AND LARGER - 100-D REINFORCED CONCRETE.

3.2 ALL STORM MAINTENANCE HOLES TO BE SIZED IN ACCORDANCE WITH THE PLANS AND AS PER CITY OF OTTAWA STANDARDS COMPLETE WITH BENCHING, RUNGS, AND FRAME AND COVER.

3.3 STORM MH COVERS TO BE OPEN TYPE, AS PER CITY STANDARD S24, FRAMES TO BE PER CITY OF OTTAWA STD. S25. CONTRACTOR TO INSTALL FILTER FABRIC UNDER STORM MH COVER UNTIL SODDING IS COMPLETE.

3.4 STORM MAINTENANCE HOLES TO BE OPSD. SIZE AS SPECIFIED. TAPER TOP.

3.5 ALL CATCH BASINS TO BE AS PER OPSD 705.010, FRAME & FISH TYPE GRATE AS PER CITY OF OTTAWA STD. S19.1.

3.6 150mm DIAMETER SOCK-WRAPPED PERFORATED PVC SUBDRAINS TO BE INSTALLED AT THE LIMIT OF THE HEAVY DUTY ROAD STRUCTURE WHERE IT MEETS THE LIGHT DUTY ROAD STRUCTURE AND AT ALL CB'S IN HEAVY DUTY ROADS AS IDENTIFIED ON PLAN. SUBDRAINS TO DISCHARGE TO CB'S AS SHOWN.

3.7 ANY STORM SEWER WITH LESS THAN 2.0m COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD W22, OR AS APPROVED BY THE ENGINEER.

3.8 CONNECTION TO THE EXISTING STORM SEWER TO BE INCLUDED IN THE COST FOR STORM SEWER INSTALLATION. THIS INCLUDES REINSTATEMENT OF ROAD CUT TO CITY STANDARDS.

3.9 CONTRACTOR TO PROVIDE IPEX-TEMPEST MHF ICD'S SHOP DRAWINGS, OR EQUIVALENT, FOR ENGINEERS REVIEW PRIOR TO ORDERING ICD'S.

4.0 WATER

4.1 ALL WATERMAINS TO BE PVC DR 18, WITH MINIMUM COVER OF 2.4m AND INSTALLED PER CITY OF OTTAWA STANDARDS W17. ALL DOMESTIC WATER SERVICES ARE TO BE 200mmØ

4.2 THRUST BLOCKS TO BE INSTALLED AT ALL BENDS, TEES, AND CAPS ALL TO CITY STANDARDS W25.3 AND W25.4.

4.3 CONTRACTOR TO CONDUCT PRESSURE AND LEAKAGE TESTING OF ALL WATERMAINS AND DISINFECT AND CHLORINATE ALL WATERMAINS TO THE SATISFACTION OF M.O.E. AND THE CITY OF OTTAWA.

4.4 TRACER WIRE TO BE INSTALLED ALONG THE FULL LENGTH OF WATERMAIN AND ATTACHED TO EACH MAIN STOP AS PER CITY OF OTTAWA STANDARD W36.

4.5 ALL COMPONENTS OF THE WATER DISTRIBUTION SYSTEM SHALL BE CATHODICALLY PROTECTED AS PER CITY OF OTTAWA STANDARD W40.

4.6 ALL VALVES & VALVE BOXES AND CHAMBERS, HYDRANTS, AND HYDRANT VALVES AND ASSEMBLIES SHALL BE INSTALLED AS PER CITY OF OTTAWA STANDARDS W19 & W24.

4.7 ANY WATERMAIN WITH LESS THAN 2.4m COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD W22, OR AS APPROVED BY THE ENGINEER.

4.8 CONTRACTOR IS RESPONSIBLE FOR ACQUIRING THE WATER PERMIT FROM THE CITY OF OTTAWA AND PAYMENT OF ANY FEES ASSOCIATED WITH SECURING THE WATER PERMIT. OWNER IS RESPONSIBLE FOR REIMBURSING THE CONTRACTOR FOR THE ACTUAL COST OF ACQUIRING THE WATER PERMIT.

4.9 CONNECTION TO EXISTING WATERMAIN TO BE INCLUDED IN THE COST FOR THE WATERMAIN INSTALLATION. THIS COST INCLUDES REINSTATEMENT OF ROAD CUTS TO CITY STANDARD R10.

5.0 PARKING LOT AND WORK IN PUBLIC RIGHTS OF WAY

5.1 CONTRACTOR TO REINSTATE ROAD CUTS PER CITY OF OTTAWA STANDARD R-10.

5.2 THE CONTRACTOR SHALL PREPARE A TRAFFIC MANAGEMENT PLAN FOR REVIEW AND APPROVAL BY THE CITY OF OTTAWA. CONTRACTOR TO MAINTAIN TRAFFIC FLOW DURING THE ENTIRE CONSTRUCTION PERIOD. MAINTENANCE OF ROAD CUTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. PROVISION OF FLAGMEN, DETOURS AS NECESSARY, BARRICADES AND SIGNS TO THE FULL SATISFACTION OF THE ENGINEER AND ROAD AUTHORITY SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

5.3 CONTRACTOR TO PREPARE SUBGRADE, INCLUDING PROOFROLLING, TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER PRIOR TO THE COMMENCEMENT OF PLACEMENT OF GRANULAR B MATERIAL.

5.4 FILL TO BE PLACED AND COMPACTED PER THE GEOTECHNICAL REPORT REQUIREMENTS.

5.5 CONTRACTOR TO SUPPLY, PLACE AND COMPACT GRANULAR B MATERIAL IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER. CONTRACTOR TO PROVIDE ENGINEER WITH SAMPLES OF GRANULAR B MATERIAL FOR TESTING AND CERTIFICATION FROM THE GEOTECHNICAL ENGINEER THAT THE MATERIAL MEETS THE GRADATION REQUIREMENTS SPECIFIED IN THE GEOTECHNICAL REPORT.

5.6 GRANULAR A MATERIAL TO BE PLACED ONLY UPON APPROVAL BY THE GEOTECHNICAL ENGINEER OF GRANULAR B PLACEMENT.

5.7 CONTRACTOR TO SUPPLY, PLACE AND COMPACT GRANULAR A MATERIAL IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOETCHNICAL ENGINEER. CONTRACTOR TO PROVIDE ENGINEER WITH SAMPLES OF GRANULAR A MATERIAL FOR TESTING AND CERTIFICATION FROM THE GEOTECHNICAL ENGINEER THAT THE MATERIAL MEETS THE GRADATION REQUIREMENTS SPECIFIED IN THE GEOTECHNICAL REPORT.

5.8 ASPHALT MATERIAL TO BE PLACED ONLY UPON APPROVAL BY THE GEOTECHNICAL ENGINEER OF GRANULAR A PLACEMENT.

5.9 CONTRACTOR TO SUPPLY, PLACE AND COMPACT ASPHALT MATERIAL IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER. CONTRACTOR TO PROVIDE ENGINEER WITH SAMPLES OF ASPHALT MATERIAL FOR TESTING AND CERTIFICATION FROM THE GEOTECHNICAL ENGINEER THAT THE MATERIAL MEETS THE REQUIREMENTS SPECIFIED IN THE GEOTECHNICAL REPORT.

5.10 CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING LINE AND GRADE IN ACCORDANCE WITH THE PLANS, AND FOR PROVIDING THE ENGINEER WITH VERIFICATION PRIOR TO PLACEMENT.

5.11 DITCHES DISTURBED DURING CULVERT INSTALLATION AND GRADING OPERATIONS ARE TO BE REINSTATED TO THEIR ORIGINAL CONDITION AND FLOWLINE GRADES.

5.13 ALL EXCESS MATERIAL TO BE HAULED OFFSITE AND DISPOSED OF AT AN APPROVED DUMP SITE. SHOULD THE CONTRACTOR DISCOVER ANY HAZARDOUS MATERIAL, CONTRACTOR IS TO NOTIFY ENGINEER. ENGINEER TO DETERMINE APPROPRIATE DISPOSAL METHOD/LOCATION.

5.14 PAVEMENT STRUCTURE (MATERIAL TYPES AND THICKNESSES) FOR HEAVY DUTY AND LIGHT DUTY AREAS TO BE AS SPECIFIED IN THE GEOTECHNICAL REPORT AND SHOWN ON THE PLANS.

CATCHBASIN DATA TABLE

STRUCTURE ID	STORM AREA ID	STRUCTURE	FRAME & COVER	ELEVATION			OUTLET PIPE		INLET CONTROL DEVICE		
				TOP OF GRATE	INVERT		DIAMETER	TYPE	HEAD	FLOW	ICD TYPE
					INLET	OUTLET	(mm)		(m)	(l/s)	
CB1	MH5A	OPSD 705.010	S19	102.50		101.10	200	PVC DR35	1.650	12.00	IPEX MHF
CB2	MH5	OPSD 705.010	S19	102.45		101.05	200	PVC DR35	1.650	10.00	IPEX MHF
CB3	MH3	OPSD 705.010	S19	102.40		101.00	200	PVC DR35	1.650	8.00	IPEX MHF
CB4	MH3A	OPSD 705.010	S19	102.45	100.77	100.75	200	PVC DR35	1.650	9.00	IPEX MHF
CB5	MH3B	OPSD 705.010	S19	102.45		101.05	200	PVC DR35	1.650	8.00	IPEX MHF
CB6	MH3C	OPSD 705.010	S19	102.40		101.00	200	PVC DR35	1.650	12.00	IPEX MHF
CB7	CBMH2	OPSD 705.010	S19	102.25		100.85	200	PVC DR35	1.650	12.00	IPEX MHF
CB9	MH3D	OPSD 705.010	S19	101.60		100.10	300	PVC DR35	1.650	40.00	IPEX MHF
CB10	MH4	OPSD 705.010	S19	101.50		100.10	300	PVC DR35	1.650	25.00	IPEX MHF
CICB11	MH1	OPSD 705.010	S19	101.72		100.32	200	PVC DR35	1.650		
RYCB1	RYCB1	OPSD 705.010	S19	101.70		100.30	200	PVC DR35	1.400	6.00	IPEX LMF

WATERMAIN SCHEDULE

	Station	Description	Finished Grade	Top of Waterain	As Built Waterain
A	0+000.00	TEE	101.700	99.300	
	0+002.00	VB	101.830	99.430	
C	0+009.85	TEE	101.940	99.540	
	0+025.66	STM CROSSING	101.970	99.570	
	0+036.47	45° BEND	102.070	99.670	
	0+039.30	45° BEND	102.070	99.670	
D	0+040.02	TEE	102.080	99.680	
	0+044.20	HYDRANT	102.250	99.850	
	0+048.75	VB	102.440	100.040	
E	0+058.28	TEE	102.670	100.270	
	0+064.50	STM CROSSING	102.620	100.220	
	0+077.76	45° BEND	102.680	100.280	
	0+080.59	45° BEND	102.660	100.260	
B	0+113.70	EX CAP	102.580	100.180	
C	0+000	TEE	101.940	99.540	
	0+001.5	VB	101.870	99.470	
	0+002.80	V BEND	101.802	99.402	
	0+003.20	SAN CROSSING	101.790	100.065	
	0+003.90	STM CROSSING	101.810	100.065	
	0+004.00	V BEND	101.784	100.065	
	0+005.00	V BEND	101.830	100.065	
	0+006.00	V BEND	101.859	99.459	
	0+008.6	BLDG A	102.150	99.750	
D	0+000	TEE	102.080	99.680	
	0+001.5	VB	102.090	99.690	
	0+002.00	V BEND	102.091	99.691	
	0+002.75	V BEND	102.097	100.300	
	0+003.14	SAN CROSSING	102.100	100.300	
	0+004.25	STM CROSSING	102.110	100.300	
	0+005.00	V BEND	102.165	100.300	
	0+006.00	V BEND	102.227	99.827	
	0+032.38	45° BEND	102.450	100.050	
	0+033.79	45° BEND	102.460	100.060	
	0+034.80	BLDG B	102.450	100.050	
E	0+000	TEE	102.670	100.270	
	0+001.5	VB	102.700	100.300	
	0+002.00	V BEND	102.702	100.100	

Pipe Interference Table

Crossing No.	PIPE 1	PIPE 2	Clearance
1	STM Bottom 99.631	SAN Top 99.371	0.260
2	SAN Bottom 100.409	STM Top 100.088	0.321
3	STM Bottom 100.743	SAN Top 99.756	0.987
4	STM Bottom 100.853	SAN Top 100.065	0.788
5	STM Bottom 98.502	SAN Top 98.274	0.258
6	STM Bottom 99.130	SAN Top 98.965	0.265
7	WTR Bottom 99.660	SAN Top 98.582	1.077
8	WTR Bottom 99.839	STM Top 99.589	0.250
9	WTR Bottom 100.074	SAN Top 99.392	0.682
10	WTR Bottom 100.074	STM Top 99.779	0.295
11	WTR Bottom 100.184	SAN Top 99.665	0.519
12	WTR Bottom 100.184	STM Top 99.889	0.295
13	STM Bottom 100.773	WTR Top 100.270	0.553
14	STM Bottom 100.680	WTR Top 99.600	1.110
15	STM Bottom 100.620	SAN Top 98.661	1.959

PAVEMENT STRUCTURE:

LIGHT WEIGHT AREAS:

50mm	- SUPERPAVE 12.5 ASPHALTIC CONCRETE
150mm	- OPSS GRANULAR "A" CRUSHED STONE
300mm	- OPSS GRANULAR "B" TYPE II

HEAVY DUTY AREAS

40mm	- SUPERPAVE 12.5 ASPHALTIC CONCRETE
50mm	- SUPERPAVE 19.0 ASPHALTIC CONCRETE
150mm	- OPSS GRANULAR "A" CRUSHED STONE
450mm	- OPSS GRANULAR "B" TYPE II

LEGEND:

- MH3A — EXISTING SANITARY MANHOLE
- MH3 — EXISTING STORM MANHOLE
- CB T/G 99.76 — EXISTING STREET CATCHBASIN
- CICB G/G 99.76 — EXISTING CURB INLET CATCHBASIN
- V&VB — EXISTING VALVE AND VALVE BOX
- V&C — EXISTING VALVE AND CHAMBER
- HYD B/F 100.56 — EXISTING HYDRANT
- EXISTING BARRIER CURB
- D.C. — EXISTING DEPRESSED BARRIER CURB
- EXISTING CONCRETE SIDEWALK
- SIAMESE CONNECTION (IF REQUIRED)
- M — METER
- RM — REMOTE METER
- PRV — PRESSURE REDUCING VALVE
- 1 — PIPE CROSSING IDENTIFICATION
- HEAVY DUTY ASPHALT / FIRE ROUTE
- PROPERTY LINE

- MH3A — SANITARY MANHOLE
- MH3 — STORM MANHOLE
- CB T/G 99.76 — CATCHBASIN c/w TOP OF GRATE
- RYCB T/G 99.76 — REAR YARD CATCHBASIN c/w GUTTER GRADE
- ECB T/G 100.25 — REAR YARD "END" CATCHBASIN C/W TOP OF GRATE 300Ø)
- CBMH T/G 101.55 — CATCHBASIN MANHOLE c/w TOP OF GRATE
- V&VB — VALVE AND VALVE BOX
- V&C — VALVE AND CHAMBER
- HYD B/F 100.56 — HYDRANT c/w BOTTOM OF FLANGE ELEVATION
- D.C. — DEPRESSED BARRIER CURB AS PER SC1.1
- BARRIER CURB AND GUTTER AS PER SC1.2
- MOUNTABLE CURB AS PER SC1.3
- PROPOSED CONCRETE SIDEWALK
- 200mmØ SAN — SANITARY SEWER & FLOW DIRECTION
- 825mmØ STM — STORM SEWER & FLOW DIRECTION
- 200Ø WATERMAIN — WATERMAIN

- PROPOSED SWALE C/W FLOW DIRECTION
- 0.5% — PROPOSED DITCH C/W FLOW DIRECTION AND SLOPE
- 1.3% — SLOPE C/W FLOW DIRECTION
- MAJOR OVERLAND FLOW ROUTE
- 104.62 — PROPOSED SPOT GRADE
- 104.40 (S) — PROPOSED SWALE GRADE
- 104.50 (S)HP — PROPOSED SWALE HIGH POINT
- 104.60 / 103.59 — LOT CORNER GRADE C/W EXISTING GROUND
- 86.45 EX — TIE INTO EXISTING GRADE
- 96.79 — FULL STATIC PONDING GRADE
- RETAINING WALL
- 105.30 T/W — TOP OF RETAINING WALL
- 103.50 B/W — PROPOSED BOTTOM OF RETAINING WALL
- TERRACING 3:1 MAXIMUM UNLESS NOTED OTHERWISE
- F.F.E.=106.30 — PROPOSED BUILDING FINISHED FLOOR ELEVATION
- U.S.F.=104.30 — PROPOSED UNDERSIDE OF FOOTING ELEVATION

CLIENT

PATHWAYS SOUTH REGIONAL INC.

1737 WOODWARD DRIVE, OTTAWA, ON

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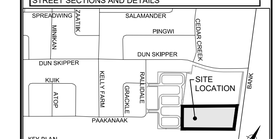
ISSUES

No.	DESCRIPTION	DATE
1	SUBMISSION NO. 1 FOR CITY REVIEW	2022-06-03
2	SUBMISSION NO. 2 FOR CITY REVIEW	2022-08-26
3		
4		
5		
6		
7		
8		

SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS



CONSULTANTS

SEAL

IBI GROUP
400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

PROJECT
4840 BANK STREET

PROJECT NO: 137175

DRAWN BY:	CHECKED BY:
M.M.	S.E.L.
PROJECT MGR:	APPROVED BY:
D.C.	J.I.M.

SHEET TITLE
NOTES LEGEND CB DATA

SHEET NUMBER C-010 | ISSUE 2

CITY FILE No. D07-12-22-0097

CITY PLAN No. xxxxx

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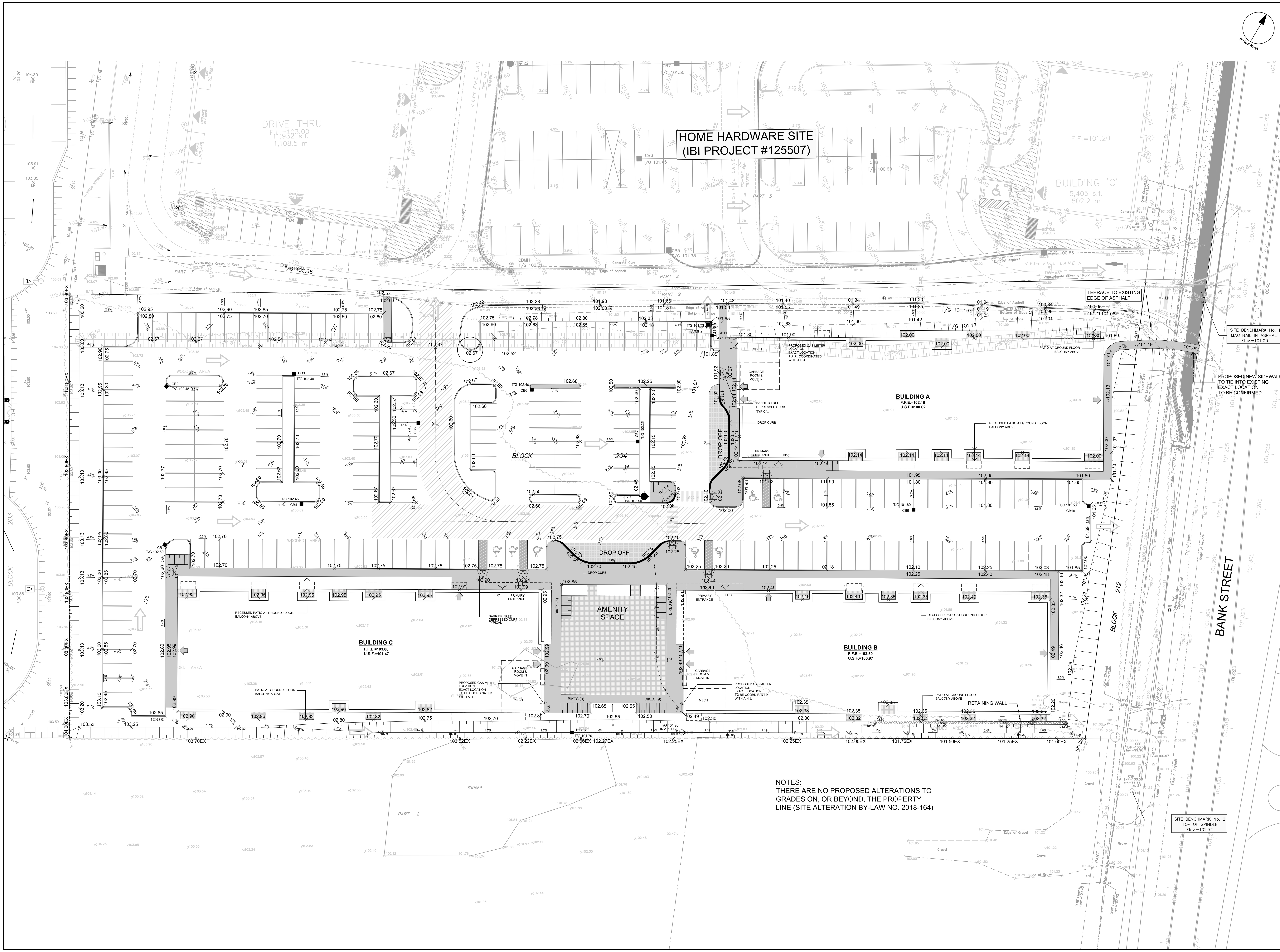

NOTES:
THERE ARE NO PROPOSED ALTERATIONS TO GRADES ON, OR BEYOND, THE PROPERTY LINE (SITE ALTERATION BY-LAW NO. 2018-164)

CLIENT

PATHWAYS SOUTH REGIONAL GROUP

1737 WOODWARD DRIVE, OTTAWA, ON

ISSUES

No.	DESCRIPTION	DATE
1	ISSUED FOR CLIENT REVIEW	2022-05-19
2	SUBMISSION NO. 1 FOR CITY REVIEW	2022-06-03
3	SUBMISSION NO. 2 FOR CITY REVIEW	2022-08-26
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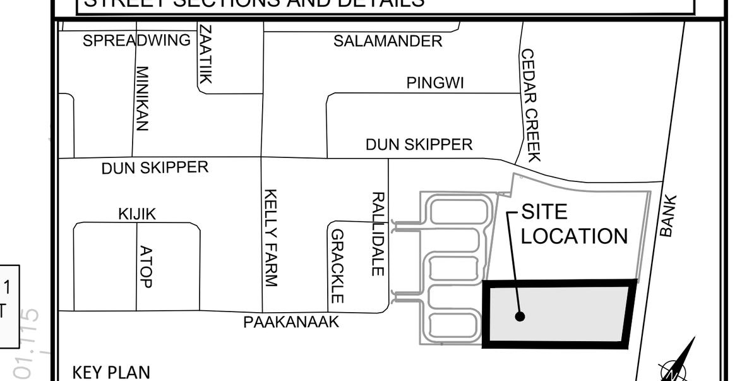

KEY PLAN
N.T.S.

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SEAL

IBI GROUP
400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

PROJECT
4840 BANK STREET

PROJECT NO:
137175

DRAWN BY:	CHECKED BY:
M.M.	**S.E.L.**
PROJECT MGR:	APPROVED BY:
D.C.	**J.I.M.**

SHEET TITLE
SITE GRADING PLAN

SHEET NUMBER
C-200

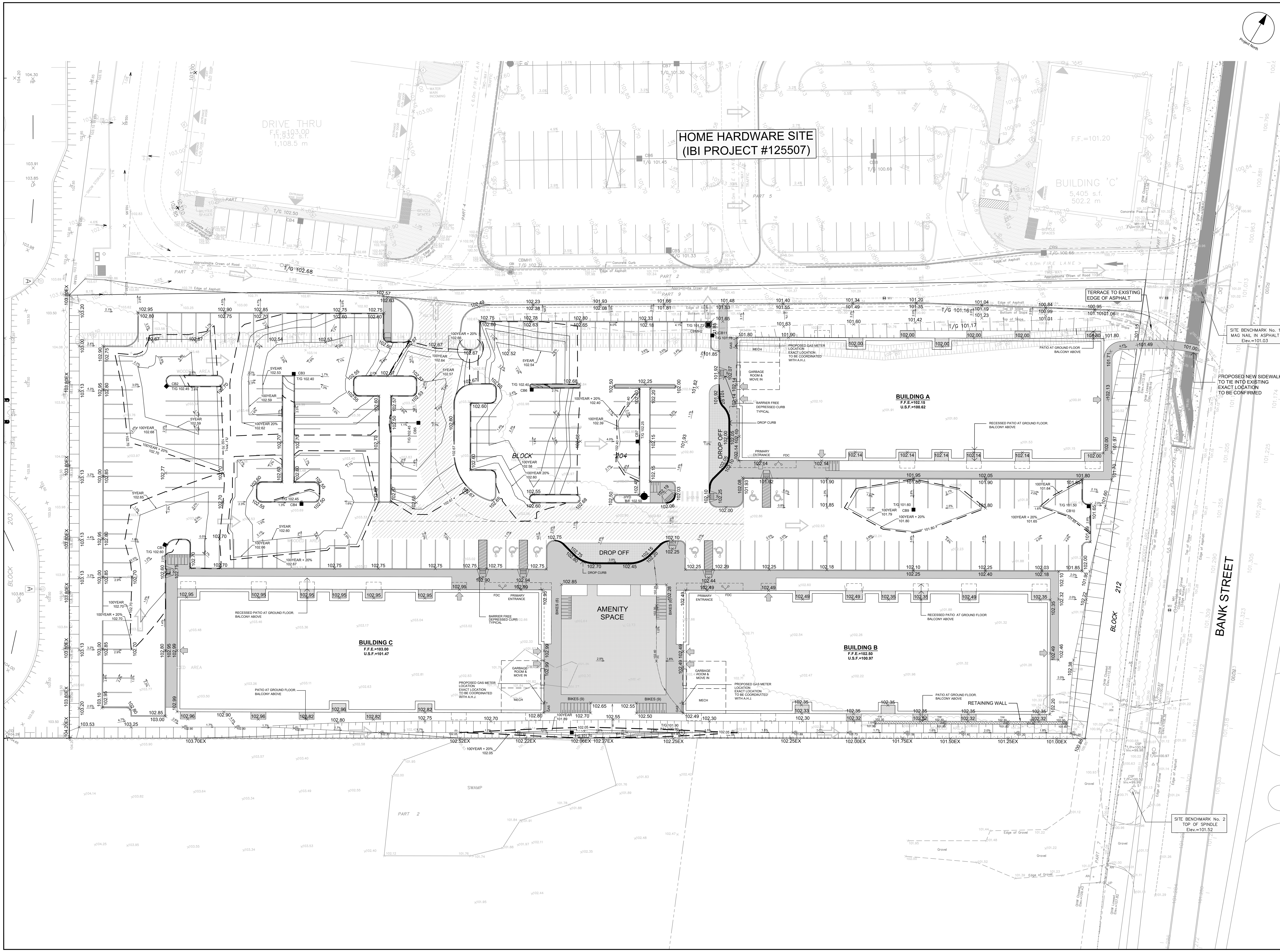
ISSUE
3

CITY PLAN No. xxxxx

File Location: J:\137175_Pathways_Sou\7.0_Production\7.03_Design\04_Civil\Sheets\C-200 SITE GRADING PLAN.dwg Last Saved: August 24, 2022, by ddore Plotted: Friday, August 26, 2022 2:46:11 PM by Stefan Geisser

SCALE CHECK 1 in 10mm

CITY FILE No. D07-12-22-0097



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PATHWAYS SOUTH
REGIONAL GROUP

1737 WOODWARD DRIVE, OTTAWA, ON

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ISSUES

No.	DESCRIPTION	DATE
1	SUBMISSION NO. 1 FOR CITY REVIEW	2022-06-03
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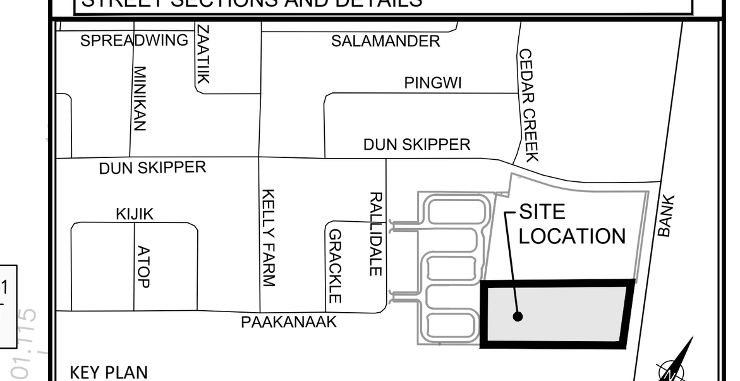
SEE 010, 011, 012 FOR NOTES, LEGEND, CB TABLE, STREET SECTIONS AND DETAILS



KEY PLAN

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SEAL

IBI GROUP
400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

PROJECT
4840 BANK STREET

PROJECT NO: 137175	
DRAWN BY: M.M.	CHECKED BY: S.E.L.
PROJECT MGR: D.C.	APPROVED BY: J.I.M.

SHEET TITLE
PONDING PLAN

SHEET NUMBER	ISSUE
C-600	2

CITY FILE No. D07-12-22-0097

CITY PLAN No. xxxxx

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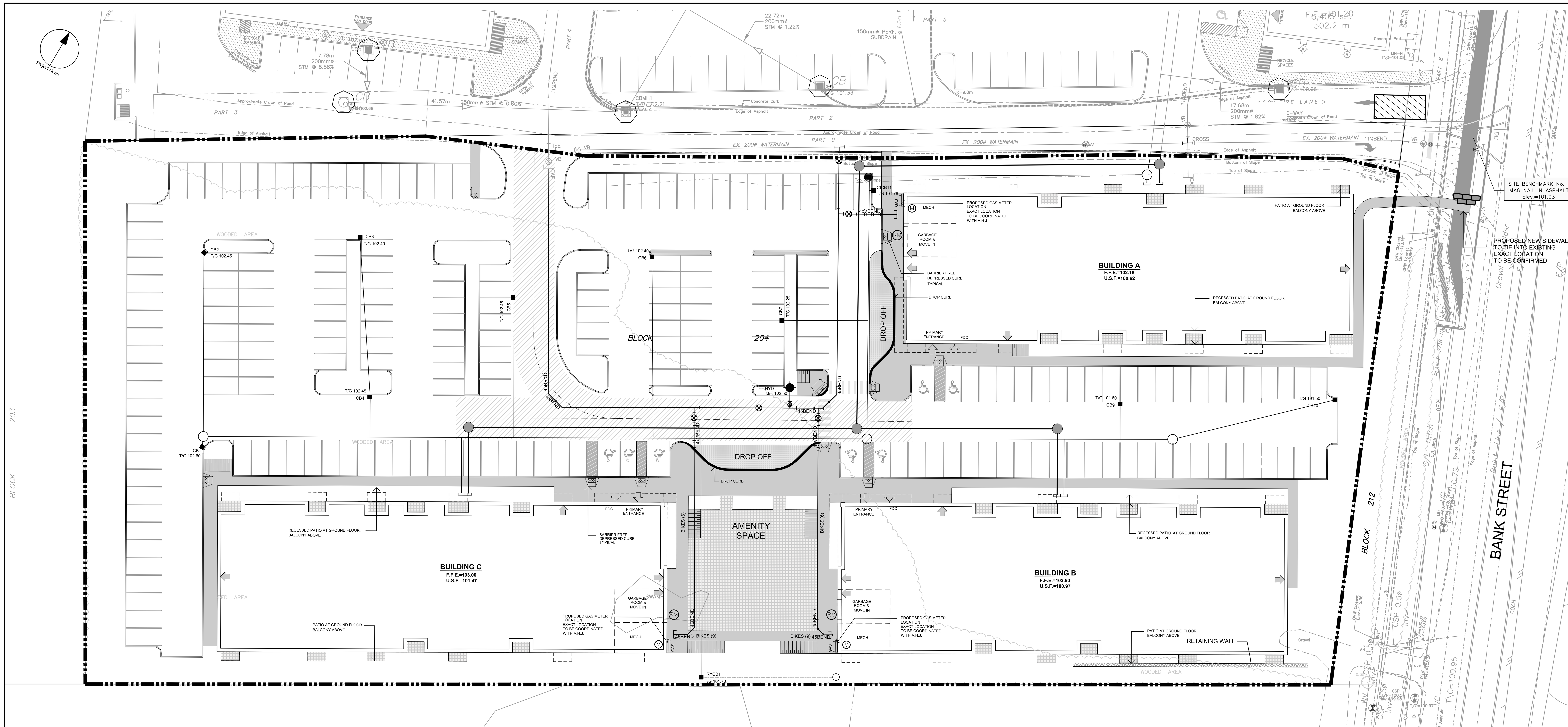

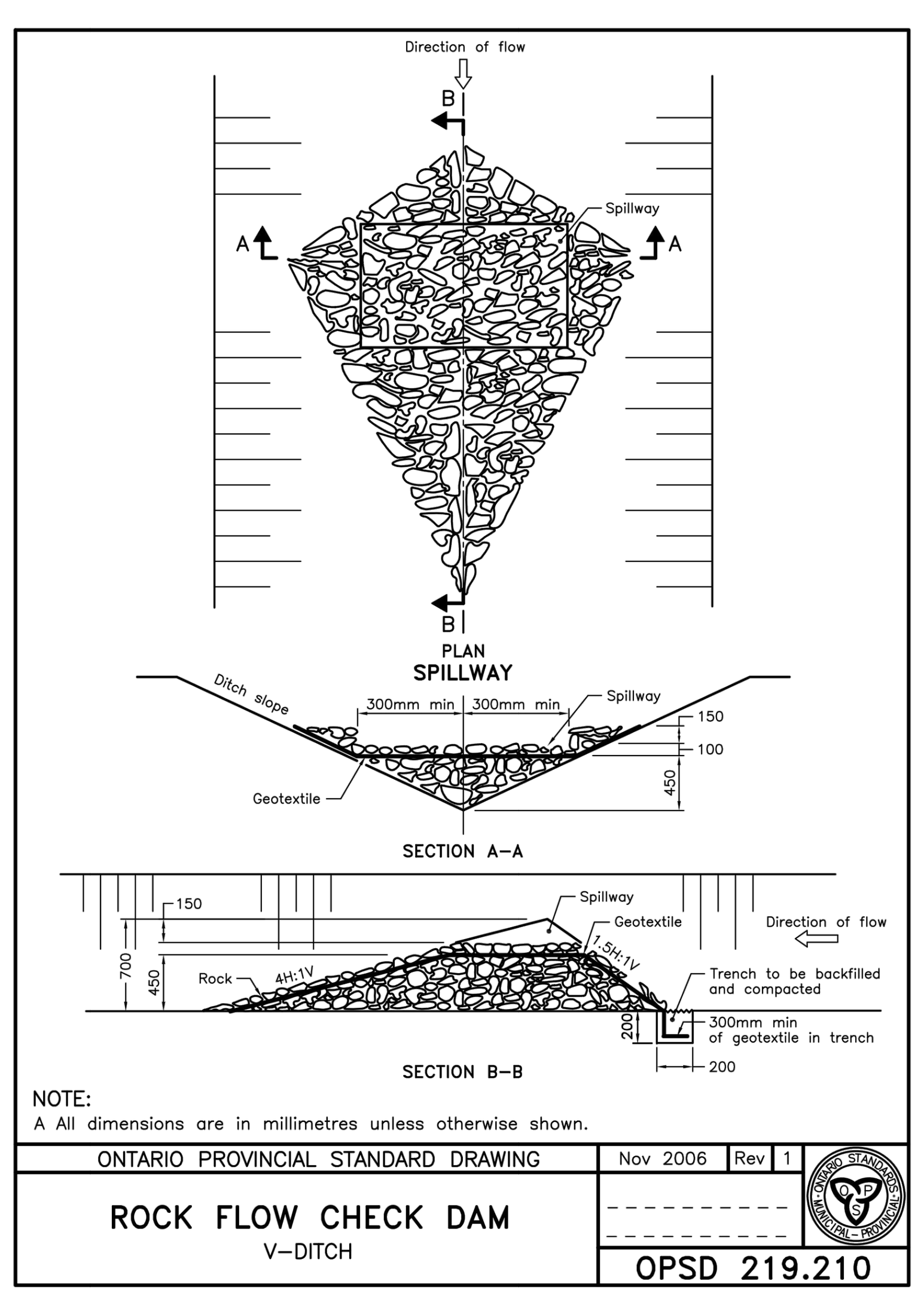

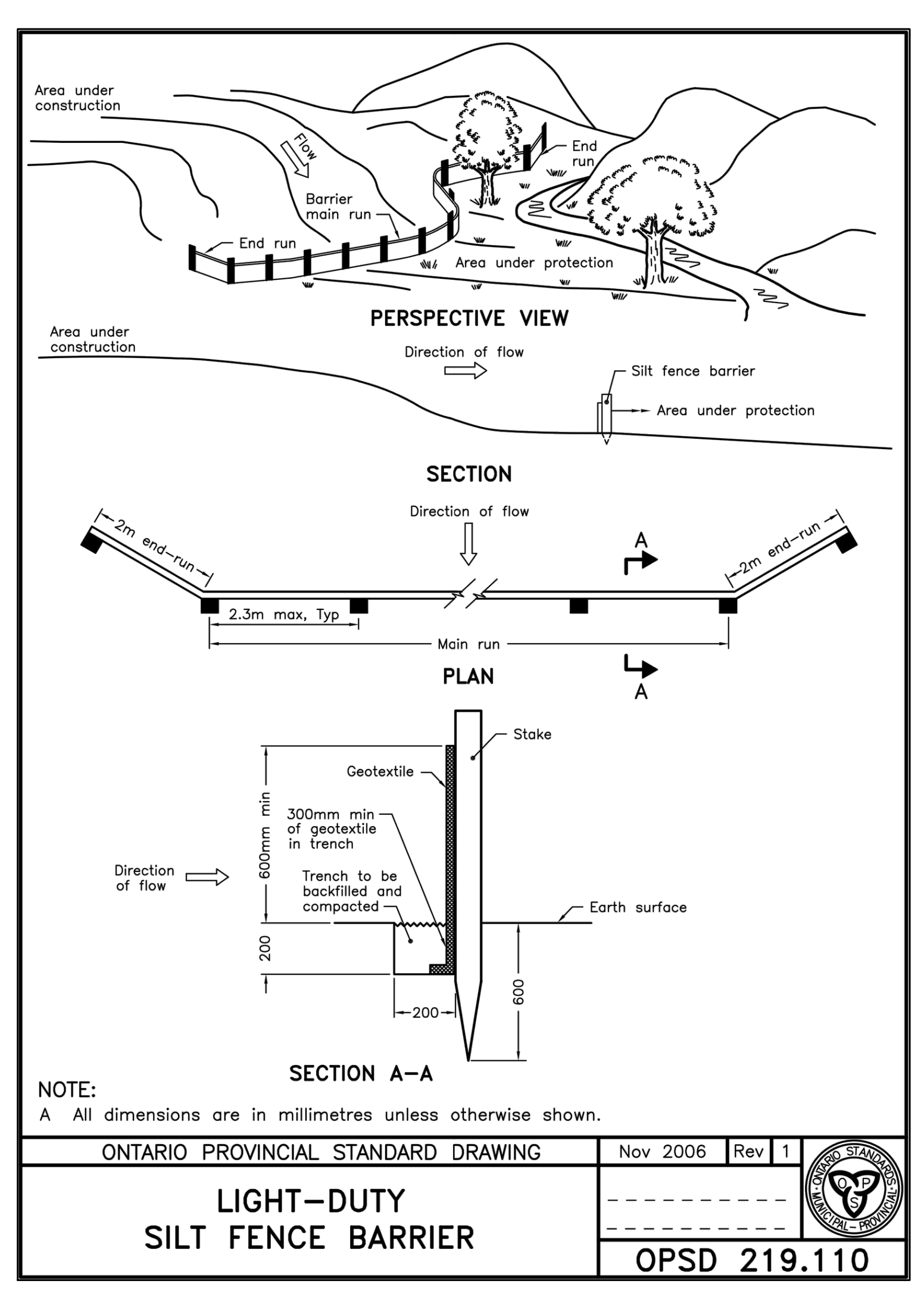

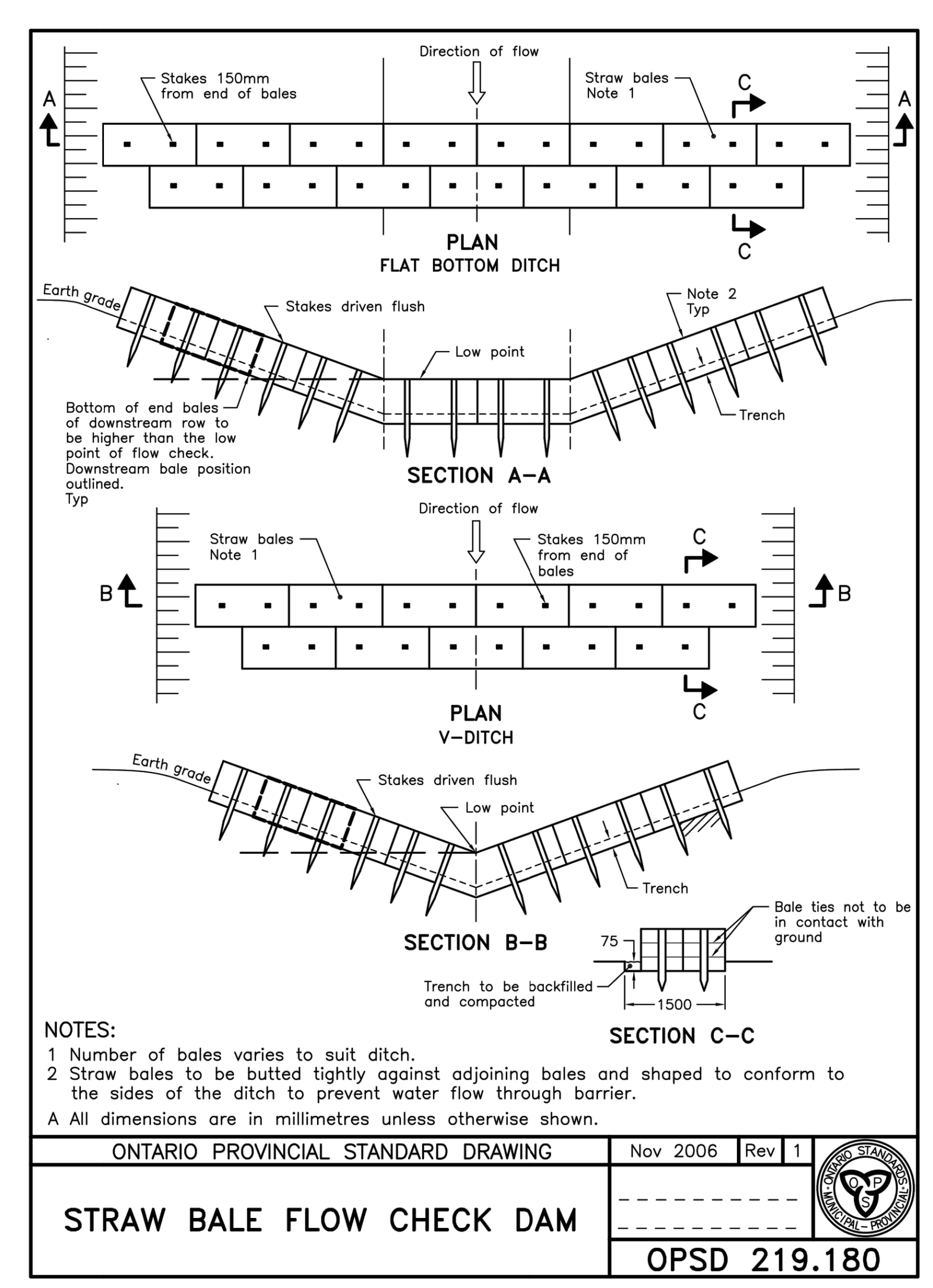

LEGEND :

- LIGHT DUTY SILT FENCE AS PER OPSD-219.110
- SNOW FENCE
- STRAW BALE CHECK DAM AS PER OPSD-219.180
- ROCK CHECK DAM AS PER OPSD-219.210
- SILT SACK PLACED UNDER EXISTING CB COVER
- TEMPORARY MUD MAT 0.15m THICK 50mm CLEAR STONE ON NON WOVEN FILTER CLOTH (15.0 × 7.0)

NOTES:

1. SILT FENCE TO BE ERECTED PRIOR TO EARTH WORKS BEING COMMENCED. SILT FENCE TO BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED OR UNTIL START OF SUBSEQUENT PHASE.
2. STRAW BALE SEDIMENT TRAPS TO BE CONSTRUCTED IN EXISTING ROAD SIDE DITCHES. TRAPS TO REMAIN AND BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED.
3. SILT SACK TO BE PLACED AND MAINTAINED UNDER COVER OF ALL CATCHBASINS. GEOTEXTILE SILT SACK IN STREET CBs TO REMAIN UNTIL ALL CURBS ARE CONSTRUCTED. GEOTEXTILE FABRIC IN RYCBs TO REMAIN UNTIL VEGETATION IS ESTABLISHED. ALL CATCHBASINS TO BE REGULARLY INSPECTED AND CLEANED, AS NECESSARY, UNTIL SOD AND CURBS ARE CONSTRUCTED.
4. WORKS NOTED ABOVE ARE TO BE INSTALLED, INSPECTED, MAINTAINED AND ULTIMATELY REMOVED BY SERVICING CONTRACTOR.
5. THIS IS A "LIVING DOCUMENT" AND MAY BE MODIFIED IN THE EVENT THE PROPOSED CONTROL MEASURES ARE INSUFFICIENT.
6. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE, DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.

CLIENT

PATHWAYS SOUTH REGIONAL INC.

1737 WOODWARD DRIVE, OTTAWA, ON

ISSUES

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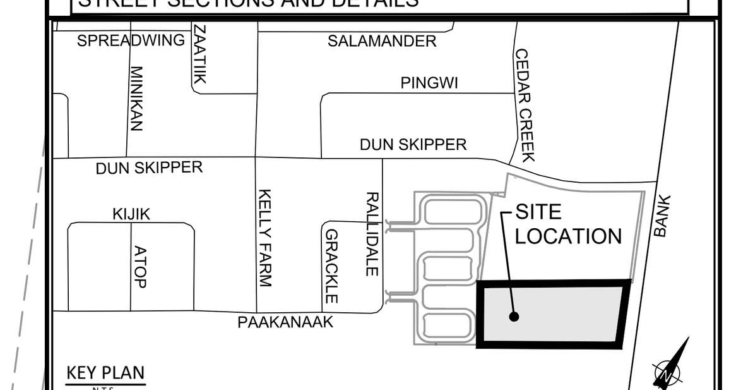

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1:300

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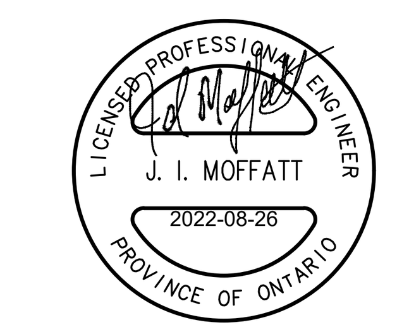


IBI GROUP
400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

PROJECT

4840 BANK STREET

PROJECT NO: 137175	
DRAWN BY: M.M.	CHECKED BY: S.E.L.
PROJECT MGR: D.C.	APPROVED BY: J.I.M.

SHEET TITLE

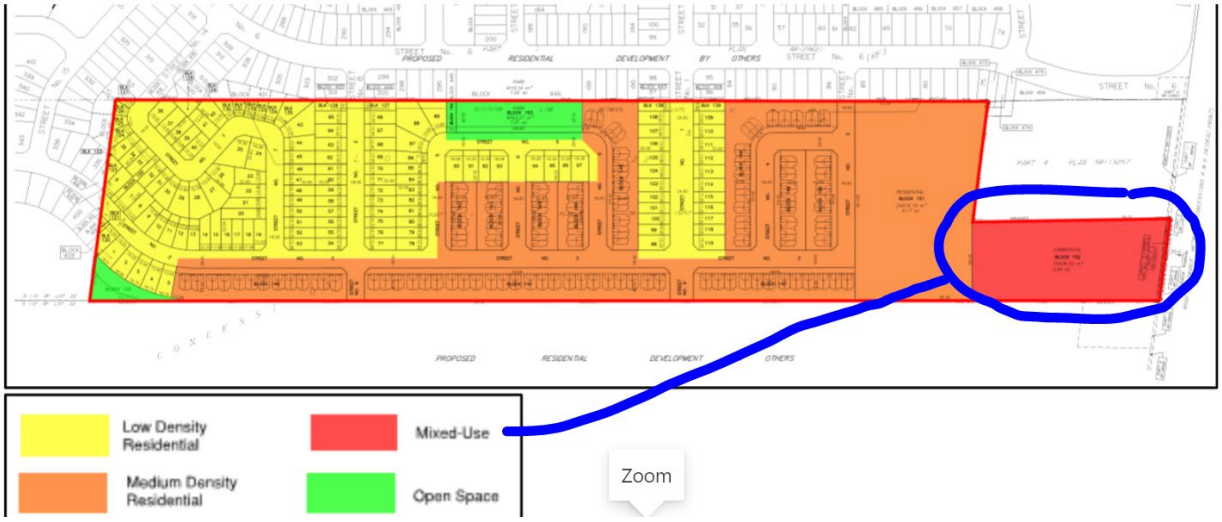
SEDIMENT AND EROSION CONTROL PLAN

SHEET NUMBER	ISSUE
C-900	2

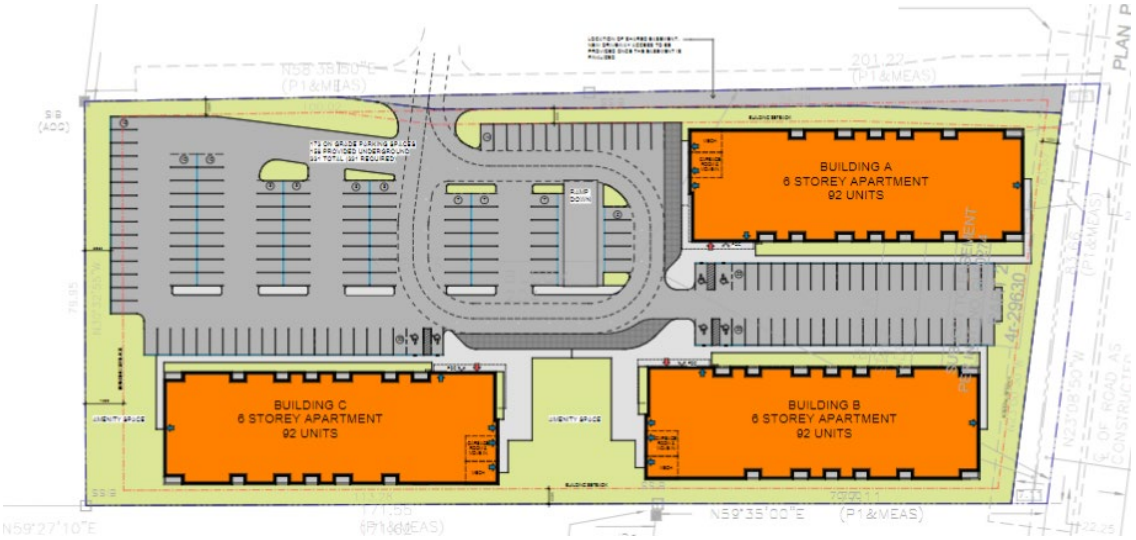
CITY FILE No. D07-12-22-0097

CITY PLAN No. xxxxx

File Location: J:\137175_Pathways_Sou\7.0_Production\7.03_Design\04_Civil\Sheets\C-900 SEDIMENT AND EROSION.dwg Last Saved: August 24, 2022 by ddore Plotted: Friday, August 26, 2022 2:47:27 PM by Stefan Geisser



Planning Rationale from the Ione Draft Plan of Subdivision



Proposal

Elevations from 2045, 2055, 2065 Portobello Blvd, Orleans – similar to current proposal

1. **Current Official Plan**
    1. General urban, Developing Community/Expansion Area

2. **Draft Official Plan**
    1. Suburban Transect, Hub and Evolving n'hood designation

3. **Zoning Information**
    1. GM (with R5 to west, GM to north and rural to the south)
    2. Clarification that this site falls is in Area D of the parking schedule and tenant parking is required at 1 space/du.

Table 101- Minimum parking space rates R12 to R21 (By-law 2016-249)

Row	I Land Use	II Area X and Y on Schedule 1A	III Area B on Schedule 1A	IV Area C on Schedule 1A	V Area D on Schedule 1A
R12	Dwelli Mid-high Rise Apartme	0.5 per dwelling unit	0.5 per dwelling unit	1.2 per dwelling unit	1 per dwelling unit
R13	[reserved]				