CITY OF OTTAWA

LANSDOWNE PARK NORTH SIDE STANDS OTTAWA, ON SERVICING REPORT

JANUARY 22, 2025







LANSDOWNE PARK NORTH SIDE STANDS OTTAWA, ON SERVICING STUDY CITY OF OTTAWA

PROJECT NO.: CA0043476.7969 DATE: JANUARY 22, 2025

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City of Ottawa

Attention: Sean Moore

Dear Sir:

Subject: Lansdowne 2.0 North Side Stands Development for Site Plan Control Application

We are pleased to deliver this enclosed updated servicing report in support of the application for Site Plan Control for the subject Lansdowne 2.0 Phase 2 – North Side Stands. This report details the water and sanitary demands for the proposed development in coordination with the existing site and future phased works.

Should there be any questions or comments regarding this report, please do not hesitate to contact the undersigned.

Yours sincerely,

Winston Yang, P.Eng.

Lead Engineer – Technical Lead Land Development & Municipal

Delin for

Engineering, Ontario

WSP ref.: CA0033920.1056

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<u>January 22nd, 2024</u>

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1 GENERAL

1.1 EXECUTIVE SUMMARY

Following the Zoning By-Law Amendment submission in September 2023, the Lansdowne Park redevelopment project (Lansdowne 2.0) entered the Site Plan Control Application stage. WSP was again retained by the City of Ottawa to provide servicing, grading and stormwater management design services for the phase 1 (Event Centre) and phase 2 (North Side Stands) development of the project for Site Plan Control Application.

The Lansdowne site is home to many commercial, residential, and leisure facilities. This includes TD place Stadium, Aberdeen Pavilion, Horticultural Building, mixed-use retail/office/residential, and a subsurface parking lot. The overall site is approximately 15.4 ha, and borders Bank Street to the west, Holmwood Ave to the north, and Queen Elizabeth Drive to the south and east.

The overall proposed redevelopment of Lansdowne Park is divided into 3 phases: Phase 1 includes a new event centre and landscaping/south stands modifications, Phase 2 involves the reconstruction of the north stands and Grand Stairs, and Phase 3 is for a future commercial/residential block containing probably two residential towers and retail space. This report pertains to the infrastructure upgrades due to Lansdowne 2.0 redevelopment and specifically to Phase 2, the design of the new North Side Stands. See Appendix A for the architectural design upon which this report is based.

The site is located in the City of Ottawa per the Topographic Sketch of Lansdowne Park dated June 2024 and completed by Stantec Geomatics Ltd. Based on the topographic survey, the site slopes from the existing berm to the great lawn and the swale on the south side of the site. The existing Lansdowne site has been previously developed, as per phase 1 of Lansdowne 2.0 project, to convey flow to various underground tanks for detention. The private storm network eventually discharges to a 1050mm storm sewer on O'Connor Street. And runoff will drain overland to the Queen Elizabeth Drive exceeding 100 year event.

As per phase 1 of the Lansdowne 2.0 project, the drainage and stormwater management system for the redevelopment project has already been designed (refer to Servicing and Stormwater Management reports for Lansdowne Park Event Centre, prepared by WSP, September 2024). Therefore, for the purpose of this report, the stormwater management systems and the main servicing infrastructure will be referred to as existing.

This report outlines the design for water, sanitary wastewater, and stormwater connections to the existing network that have already been designed as per the phase 1 Servicing report for the Event Centre.

The format of this report matches that of the servicing study checklist found in Section 4 of the City of Ottawa's Servicing Study Guidelines for Development Applications, November 2009.

It is proposed that:

- Existing drainage patterns, previously established controlled flow rates and storm sewers will be maintained.
- Servicing connections for water, sanitary, and storm will be made to the existing servicing infrastructure and previously established conveyance patterns will be maintained.

1.2 DATE AND REVISION NUMBER

This version of the report is the second issue, dated January 22nd, 2025.

1.3 LOCATION MAP AND PLAN

The proposed development is located at 1015 Bank Street, Ottawa, Ontario at the location shown in Figure 1-1 below.



Figure 1-1 Lansdowne Site Location

1.4 ADHERENCE TO ZONING AND RELATED REQUIREMENTS

The proposed property use will be in conformance with zoning and related requirements prior to approval and construction and is understood to be in conformance with current zoning.

1.5 PRE-CONSULTATION MEETINGS

A pre-consultation meeting for the site plan control application of the new North Side Stands was held with the City of Ottawa on October 11, 2024. The notes from the meeting are provided in Appendix A for reference.

1.6 HIGHER LEVEL STUDIES

The review for servicing has been undertaken in conformance with, and utilizing information from, the following documents:

- Ottawa Sewer Design Guidelines, Second Edition, Document SDG002, October 2012, City of Ottawa including:
 - Technical Bulletin ISDTB-2012-4 (20 June 2012)
 - Technical Bulletin ISDTB-2014-01 (05 February 2014)
 - Technical Bulletin PIEDTB-2016-01 (September 6, 2018)
 - Technical Bulletin ISDTB-2018-01 (21 March 2018)
 - Technical Bulletin ISDTB-2018-04 (27 June 2018)
- Ottawa Design Guidelines Water Distribution, July 2010 (WDG001), including:
 - Technical Bulletin ISDTB-2014-02 (May 27, 2014)

- Technical Bulletin ISTB-2018-02 (21 March 2018)
- Stormwater Management Planning and Design Manual, Ontario Ministry of the Environment and Climate Change, March 2003 (SMPDM).
- Functional Servicing and Stormwater Management Report for Lansdowne Live Ottawa Sports and Entertainment Group, Project No. 09-378, January 2012, by DSEL.
- Stormwater Management Design Report for Lansdowne Urban Park, February 2012, by Stantec Consulting Ltd.
- Functional Servicing and Stormwater Management Study for Lansdowne Park Redevelopment 2.0, Project No. CA0000286.1662, September 2023, by WSP.
- Servicing Report for Lansdowne Park Event Centre, Report No. CA0033920.1056, September 2024, by WSP.
- Stormwater Management Design Report for Lansdowne Park Event Centre, Report No. CA0033920.1056, September 2024, by WSP.
- Geotechnical Investigation Proposed North Side Stands Lansdowne Park Redevelopment, Report No. PG6655-2, December 2024, by Patterson Group.
- Fire Underwriters Survey, Water Supply for Public Fire Protection (FUS), 2020.

1.7 STATEMENT OF OBJECTIVES AND SERVICING CRITERIA

The objective of the site servicing is to meet the requirements for the proposed modification of the site while adhering to the stipulations of the applicable higher-level studies and City of Ottawa servicing design guidelines. The current phase of the site plan includes new North Side Stands and Grand Stairs.

1.8 AVAILABLE EXISTING AND PROPOSED INFRASTRUCTURE

The site is currently serviced by a network of watermain, storm, and sanitary sewers constructed during the Lansdowne 1.0 redevelopment project completed between 2012 and 2015 and the phase 1 of the Lansdowne 2.0 redevelopment project, which is assumed will be constructed prior to the phase 2 of the Lansdowne 2.0 project. The Sport and Entertainment Group provided an as-built services and grading plan after its completion, contained in Appendix A. The WSP Lansdowne 2.0 phase 1 servicing design drawings have also been provided in Appendix A. These phase 1 design drawings are used as the basis for servicing infrastructure.

Based on the Phase 1 design by WSP, portable water supply is available within the site, and there should be adequate fire protection supply. As discussed in the Phase 1 servicing report, the Lansdowne Park has a peak dry and peak wet weather flow of 48.92 l/s and 53.54 l/s, respectively, in the post-development condition. These flows include the flows from the phase 1 (Event Centre) and the phase 2 (new North Side Stands) developments.

The existing minor storm system has been designed to convey all storms up to and including a 5-year storm event and detention up to and including a 100-year storm event has also been designed and provided on site with the use of existing and new subsurface tanks. The minor system has already been designed with the phase 2 flows in mind.

Since there is already existing infrastructure present, it is proposed to provide building sanitary, storm, and water service connections straight into the existing adjacent infrastructure. A series of trench drains leading into the existing storm sewer running parallel to the sports field are also proposed to capture some runoff from the North Stands and from ground level. No additional stormwater management is required as the phase 2 development has already been taken into account during the design of the phase 1 servicing and stormwater management facilities.

1.9 ENVIRONMENTALLY SIGNIFICANT AREAS, WATERCOURSES AND MUNICIPAL DRAINS

Rideau Canal is south to the Lansdowne site. From the previous design or the existing condition before Lansdowne 1.0 development, an outlet to the Rideau Canal exist. But the outlet to the Canal is no longer in used as per the current finding. And this outlet will be completely abandoned and removed to accommodate the changes for the proposed Lansdowne 2.0 redevelopment. Thus, the proposed changes to the site will not require any additional approvals or amendments to approvals pertaining to environmentally significant areas, watercourses or municipal drains.

1.10 CONCEPT LEVEL MASTER GRADING PLAN

As the design is being submitted for site plan approval, the grading plan has been developed for the Phase 2 modifications. The existing and proposed grading are shown on drawing C03 (Grading Plan). Existing grading information is based on the topographic survey of the site completed in June 2024. No changes in grading are proposed beyond the redevelopment area boundaries. The proposed grading plan confirms the feasibility of the drainage requirements for the phase 2 modifications. The geotechnical investigation was completed in 2024 by Patterson Group. The grading along the redevelopment extents is proposed to meet the existing grade.

1.11 IMPACTS ON PRIVATE SERVICES

There are no existing domestic private services (septic system and well) located on the site. There are no neighbouring properties using private services.

The existing on-site storm, sanitary and watermain services will remain as per the phase 2 design conditions. The overall site drainage system will remain unaffected. The drainage areas around the new North Side Stands will be slightly modified based on the proposed grading. Ultimately, all of the flows will still be conveyed through the same downstream on-site storm sewer system.

1.12 DEVELOPMENT PHASING

As previously mentioned, the redevelopment of Lansdowne 2.0 will be completed in 3 phases. This report focuses on phase 2 (New North Side Stands and Grand Stairs). The civil design in phase 1 for storm conveyance, stormwater management and wastewater took into consideration the ultimate design/demands (i.e. all 3 phases were taken into account). As mentioned in the phase 1 Servicing report, no changes to the existing watermain network are anticipated during phase 2.

1.13 GEOTECHNICAL STUDY

A geotechnical investigation report was previously prepared by Patterson Group. on May 30, 2024. No additional geotechnical information was required for the design of the modified site services, including paving. This geotechnical report will be included with the contract documents to be issued for construction, and the recommendations of the reports will be referenced in the construction specifications. The geotechnical study specifies a design recommendation based on a maximum groundwater elevation of 60.78m.

1.14 DRAWING REQUIREMENT

The engineering plans submitted for site plan approval will be in compliance with City requirements.

2 WATER DISTRIBUTION

2.1 CONSISTENCY WITH MASTER SERVICING STUDY AND AVAILABILITY OF PUBLIC INFRASTRUCTURE

Lansdowne Park resides within the City of Ottawa 1W Pressure Zone. Water supply is delivered to the subject property through existing 300mm on Bank Street, 400mm on Holmwood Ave and 200mm on Fifth Ave.

The new North Side Stands building's services (2 services will be required since the average day demands are greater than 50 m³/day) are proposed to connect to the existing on-site 200mm watermain. There is already one existing service connection on the southwest side of the north stands. The second service connection will be to the 200mm watermain to the southeast of the stands. The new North Side Stands will be protected with a fully supervised and automatic fire protection system sprinkler system. The fire department connection is assumed to be located near the east side of the building.

No changes are required to the existing City water distribution system to allow servicing for this property.

The Ottawa Sports and Entertainment Group have completed fire hydrant testing on site in September 2022. Table 2-1 summarizes the results of the hydrant testing. The associated hydrant testing results are located Appendix B.

Table 2-1: Fire Hydrant Testing Results

Hydrant Location	Color Code	Static Pressure (psi)	Dynamic Pressure (psi)	Pitot Pressure (psi)	Measured Flow (Gallons/min L/s)	Available Fire Flow at 20 psi (Gallons/min L/s)
Apartment Facing Field	Blue	68	62	39	875/55.0	2689/169.7
Back Entrance	Blue	70	62	44	929/58.6	2499/157.7
Behind Apartment (Bank St)	Blue	70	61	41	897/56.6	2264/142.8
Behind Apartment (Parkway)	Blue	70	62	38	863/54.5	2323/146.6
Box Office	Blue	68	62	42	908/57.3	2790/176.0
Cattle Castle	Blue	70	62	38	863/54.5	2323/146.6
Cineplex	Blue	66	61	38	863/54.5	2739/172.8
Filed Entrance*	Blue	70	60	39	875/55.2	2086/131.6
On Field*	Blue	70	62	43	918/57.9	2471/155.9
Goodlife*	Blue	67	60	37	852/53.8	2382/150.3
Milestones*	Blue	67	62	34	817/51.5	2739/172.8

Sporting Life Blue 65 58 41 897/56.6 2450/154.6

^{*}Fire hydrants proposed to meet the fire flow demands of the North Side Stands.

2.2 SYSTEM CONSTRAINTS AND BOUNDARY CONDITIONS

The existing water supply network is shown on As-Built Site Servicing Plan C01003 by DSEL. Boundary condition from the Lansdowne 1.0 post development is summarized below. A conservative estimate for the required fire supply of 9,000 L/min (150 L/s) was used for the analysis. Table 2-2 summarizes the DSEL anticipated water demands and boundary conditions under existing conditions.

Table 2-2: Water Demand and Boundary Conditions Existing Conditions from DSEL's analysis

Design Parameter	Existing Demand (L/s)	Boundary Condition (Hydraulic m/kPa)
Average Daily Demand	11.8	115.6/481.7
Max Day + Fire Flow	19.9+150=169.9	106.4/391.4
Peak Hour	38.0	103.1/359.0

^{*}Boundary conditions supplied by the City of Ottawa during Lansdowne 1.0. Assumed ground elevation 65.50m.

This report will focus on the existing total site and future total site water demands. Due to the lack of information for Phase 3, a hydraulic check should be conducted at the beginning of Phase 3 design to determine if modification to the existing watermain network is required.

During the design of the phase 1 servicing, a boundary request for the proposed Lansdowne 2.0 development was submitted to the City on December 11, 2024, based on the recent fire flows and domestic demands for the total site. The purpose of this exercise was to ensure the pre and post water pressure are consistent from the existing water network.

It is assumed that the future demand from the Lansdowne 2.0 development will be equal to or less than the demand of the existing system. The existing system's real-world demands were determined from the provided actual metering data as described below. The purpose of this exercise is to ensure the pre and post water pressure are consistent from the existing water network. The new North Side Stands has a fire flow demand of 6000 L/min (100 L/s). Refer to Appendix B for the fire flow calculations. Note that the fire flow of 150 L/s (as per existing conditions) was used to analyze the Lansdowne 2.0 development as this is more conservative, and thus, is why it was provided for boundary conditions.

Table 2-3 summarizes the anticipated Water Demands (per metering data) and Boundary Conditions under proposed conditions.

Table 2-3: Water Demand and Boundary Conditions Proposed Conditions

Design Parameter	Proposed Demand (L/s)	Boundary Condition 1 (Hydraulic m/kPa)	Boundary Condition 2 (Hydraulic m/kPa)
Average Daily Demand	5.41	114.6/481.4	114.6/465.7
Max Day + Fire Flow	13.52+150=163.52	107.8/414.7	106.5/386.3
Peak Hour	29.73	105.7/394.1	105.6/377.5

^{*}Boundary conditions supplied by the City of Ottawa. Assumed ground elevation 65.50m at Connection 1 and 67.10m at Connection 2. See Appendix B for detail boundary condition.

As demonstrated in Table 2-2 and 2-3, the pressure range is similar during Maximum Day plus Fire Flow as well as Peak Hour demands. Therefore, the existing water supply is available per the design requirement and conforms to all relevant City Guidelines and Policies.

For the purposes of determining accurate water demands for the ultimate condition, it has been assumed that the existing average day demands derived from the OSEG CARMA metering data for 2023 and 2024 will be equivalent, or greater than, the ultimate condition demands (see Appendix B for correspondence with the City of Ottawa regarding the use of metering data to determine the total site water demands and the OSEG CARMA metering data spreadsheet).

Based on the 12-month average of the November to December 2023 Metered Total readings in the OSEG CARMA Metering data and the January to October 2024 Metered Total readings, an average water consumption of 14,012,838 L/month was calculated. This is equivalent to 5.41 L/s. As per the City correspondence, 5.41 L/s and residential peaking factors is acceptable as the average day demand for the total site. The water demands for the entire site are as follows:

Average Day Demand = 5.41 L/s

Max. Day Demand = Average Day Demand x 2.5 (Residential Peaking Factor)

= 5.41 L/s x 2.5= 13.52 L/s

Peak Hour Demand = Max. Day Demand x 2.2 (Residential Peaking Factor)

= 13.53 L/s x 2.2 = 29.73 L/s

As previously stated, the fire flow of 150 L/s was used in the boundary condition request for the entire site to determine the adequacy of the watermain network.

The water demands of the individual buildings as per the CARMA metering report is as follows:

Table 2-4: Lansdowne Site Water Demands Breakdown per Building

Building	Avg. Day (L/mo)	Avg. Day (L/s)	Max. Day (L/s)	Peak Hour (L/s)
Abeerdeen	133,208	0.05	0.13	0.28
Horticulture	96,600	0.04	0.09	0.20
Plaza	5,975	0.00	0.01	0.01
Ice Rink	1,572,614	0.61	1.52	3.34
Bldg I	627,112	0.24	0.60	1.33

Bldg A - Condo	396,692	0.15	0.38	0.84
Bldg K	946,138	0.37	0.91	2.01
NTH Condo	376,627	0.15	0.36	0.80
Bldg A - Retail	34,866	0.01	0.03	0.07
Bldg B - Retail	785,189	0.30	0.76	1.67
Bldg C - Retail	765,755	0.30	0.74	1.62
Bldg D - Retail	477,617	0.18	0.46	1.01
Bldg G - Retail	1,240,308	0.48	1.20	2.63
Bldg H - Retail	992,625	0.38	0.96	2.11
Bldg J - Civil Centre	659,273	0.25	0.64	1.40
North Stands	3,780,750	1.46	3.65	8.02
South Stands	987,500	0.38	0.95	2.10
Stadium Public Realm	133,990	0.05	0.13	0.28
Total	14,012,838	5.41	13.52	29.73

2.3 CONFIRMATION OF ADEQUATE DOMESTIC SUPPLY AND PRESSURE

Existing water demands are based on existing information that was used in Lansdowne 1.0. The existing (Lansdowne 1.0) and proposed (Lansdowne 2.0) condition total site demands are listed in Table 2-5. As shown in the table, the Lansdowne 2.0 demands, as determined from the CARMA metering report, are lower than the DSEL approved demands. Since it is assumed that the ultimate demands will be less than or equal to the existing (CARMA metering) demands, therefore, the existing watermain network should be adequate to support the proposed developments. Refer to Appendix B for detail existing demands (as used in Lansdowne 1.0) calculation provided by DSEL.

Table 2-5: Existing and Proposed Water Demands and FUS for Phase 1 and Phase 2.

	Avg Day (L/s)	Max Day (L/s)	Peak HR (L/s)	FUS (L/s)
Lansdowne 1.0 Demands (as per DSEL calculations)	11.8	19.9	38.0	150
Lansdowne 2.0 Demands (as per OSEG CARMA Metering Data)	5.41	13.52	29.73	150*

^{*}FUS as per existing Lansdowne Park Building Service Summary by DSEL (Appendix B) to be conservative.

The 2010 City of Ottawa Water Distribution Guidelines stated that the preferred practice for design of a new distribution system is to have normal operating pressures range between 345 kPa (50 psi) and 552 kPa (80 psi) under maximum daily flow conditions. Other pressure criteria identified in 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 Maximum pressure at any point the distribution system shall not exceed 689 kPa (100 psi).

In accordance with the Ontario Building/Plumbing Code, the maximum pressure should not exceed 552 kPa (80 psi). Pressure reduction controls may be required for buildings where

it is not possible/feasible to maintain the system pressure below 552 kPa.

To demonstrate the proposed service connections are able to provide the required North Side Stands building fire sprinkler and peak hour demand, conservative approach has been taken into account that the watermain analysis would not be looped or interconnected. The residual pressure for the proposed building is calculated by subtracting the total headloss from the residual pressure measured on the two connections on Holmwood Ave and Bank Street from City Boundary Condition.

The flow capacity of a water pipe is commonly modelled by the Hazen-Williams equation to confirm the physical properties of the pipe and the pressure drop caused by friction:

$$H_L = \frac{10.67 * L * Q^{1.852}}{C^{1.852} * D^{4.87}}$$

Where: Q is volumetric flow rate

C is the Hazen-Williams friction coefficient

L is the pipe length
D is the pipe diameter
H_L is the friction head loss

Sample calculation for residual pressure at North Side Stands using Connection 1 and the Max. Day plus Fire Flow condition:

C = 110 (204mm diameter PVC pipe)

D = 0.205 mPipe Length = 360 m

Flow = 100 L/s + 13.52 L/s (use total site flow to be conservative)

= 114 L/s= 0.114 m³/s

Friction Head Loss is determined as follows:

$$H_L = \frac{10.67 * L * Q^{1.852}}{C^{1.852} * D^{4.87}}$$

$$H_L = \frac{10.67 * 360 \text{ m} * \left(\frac{0.114 \text{ m}^3}{\text{s}}\right)^{1.852}}{(110)^{1.852} * (0.204 \text{ m})^{4.87}}$$

$$H_L = 26.06 \text{ m}$$

Total Head Loss = Friction Head Loss + Static Head (elevation different between boundary

condition and building) = 26.06 m + 0.50 m

= 26.56 m

Residual Pressure = Ex. Residual Pressure – Total Head Loss

= 415 kPa - (26.56 m * 9.81)

= 154 kPa > 140 kPa

Residual pressure and pipe sizing check are summarized as shown in Table 2-6 and Table 2-7 in respect to the provided boundary condition. Refer to Appendix B for detail water services sizing and pressure analysis.

Table 2-6: Fire Service Pipe Sizing and Pressure Check for North Side Stands

	North Side Stand		
Boundary Condition	Connection 1	Connection 2	
Max Day + Fire Flow (l/s)	103.7	103.7	
Existing Residual Pressure (kPa)	415	386	
Length (m)	360	125	
Total Headloss (kPa)	261	94	
Residual Pressure for Site (kPa)	154	292	

Table 2-7: Domestic Service Pipe Sizing and Pressure Check for North Side Stands

	North Side Stand		
Boundary Condition	Connection 1	Connection 2	
Peak Hour (l/s)	8.02	8.02	
Existing Residual Pressure (kPa)	394	378	
Length (m)	360	125	
Total Headloss (kPa)	26	12	
Residual Pressure for Site (kPa)	368	365	

The minimum water pressure inside the building at the connection is determined with the minimum HGL condition, resulting in a pressure of 365 kPa for the North Side Stands which exceed the minimum requirement of 276 kPa per the guidelines.

Fire flow pressure at building connection is determined with the max day + fire HGL condition resulting in a pressure of 154 kPa for the North Side Stands which exceed the minimum requirement of 140 kPa during a fire flow event.

And based on the on-site hydrant flow test, the residual pressures of the hydrants that will be used to service the North Side Stands (Field Entrance, On Field, Goodlife, and Milestones) are 414 kPa, 427 kPa, 414 kPa, and 427 kPa, respectively. Thus, the hydrants meet the requirements for minimum system pressure. The measured hydrant flow at 20 psi were 2086 gpm (131.6 l/s), 2471 gpm (155.9 l/s), 2382 gpm (150.3 l/s), and 2739 gpm (172.8 l/s), respectively, which is greater than the existing hydrant maximum rating of 95 L/s.

2.4 CONFIRMATION OF ADEQUATE FIRE FLOW PROTECTION

The fire flow rate has been calculated using the Fire Underwriters Survey (FUS) method. The method takes into account the type of building construction, the building occupancy, the use of sprinklers and the exposures to adjacent structures.

Assuming fire resistive construction for North Side Stands and a fully supervised sprinkler system, the following have been determined: Fire flow demand of 6,000 l/min (100 l/s) for the North Side Stands. A copy of the FUS calculation sheet is included in Appendix B.

The existing available fire flow for the nearby private hydrants at 140 kPa range from 131.6 l/s to 176.0 l/s. The new North Side Stands can be serviced by two or more existing fire hydrants. The combined available fire flow exceeds the required fire flow by FUS for each proposed building.

And the boundary condition for Maximum Day and Fire Flow results in a pressure of 154 kPa for North Side Stands. In the guidelines, a minimum residual pressure of 140 kPa must be maintained in the distribution system for a fire flow and maximum day event. As a pressure of 154 kPa is achieved, the fire flow requirement is exceeded.

The existing fire hydrants that will be used to meet the required fire flow demand of 6,000 l/min (100 l/s) are located at the Field Entrance, On Field, Goodlife and Milestones as listed on Table 2-1. The Field Entrance hydrant is within 75m of the assumed Siamese connection and can provide up to 95 l/s. The remaining 3 hydrants are within 150m of the assumed fire department connection location and can each provide up to 63 l/s. Thus, the four hydrants have a combined total of 284 l/s which is greater than the FUS demand for the North Side Stands. Therefore, the watermain system will have adequate capacity to service the new North Side Stands.

2.5 CHECK OF HIGH PRESSURE

High pressure is not a concern.

Water pressure at building connection (at average day) check:

Max. HGL – Finished floor elevation = 114.6m - 67.54m = 47.3m = 461.4 kPa

The maximum water pressure inside the Event Centre at the connection is determined with the maximum HGL condition, resulting in a pressure of 461.4 kPa which is less than the 552 kPa threshold in the guideline in which pressure control is required. Based on this result, pressure control is not required for the building.

2.6 PHASING CONSTRAINTS

There are three different phases for the Lansdowne 2.0 redevelopment. Phase 1 was the new Event Centre. Phase 2 will be the new North Side Stands. Phase 3 will be the Air Rights residential tower and commercial podium. The ultimate design condition, which assumes the ultimate condition is to be equal to or less than the existing conditions, is used for design consideration of this report. No on site and off-site upgrades are anticipated during the Phase 2 developments.

2.7 RELIABILITY REQUIREMENTS

Existing shut off valves will remain as per existing conditions. Additional shut off valves have been provided on the domestic services connecting to the new North Side Stands.

2.8 NEED FOR PRESSURE ZONE BOUNDARY MODIFICATION

There is no need for a pressure zone boundary modification.

2.9 CAPABILITY OF MAJOR INFRASTRUCTURE TO SUPPLY SUFFICIENT WATER

The capability of the major infrastructure to supply sufficient water has already been confirmed. Refer to the WSP Servicing report for Lansdowne Park Event Centre for further details.

2.10 DESCRIPTION OF PROPOSED WATER DISTRIBUTION NETWORK

It is proposed to provide to provide two domestic services connecting to the existing on site water distribution network. The watermain will interconnect internally in the North Side Stands to provide looping. The overall site will continue to be serviced through existing 400mm and 200mm diameter watermains on Holmwood Avenue and Bank Street.

2.11 OFF-SITE REQUIREMENTS

No off-site improvements to watermains, feedermains, pumping stations, or other water infrastructure are required to maintain existing conditions and service the adjacent developments.

2.12 CALCULATION OF WATER DEMANDS

Water demands were calculated as described in Sections 2.3 and 2.4 above.

2.13 MODEL SCHEMATIC

The water works for 2 consist only a dual building services, the proposed condition are exactly the same as existing, a model schematic is not required for this development.

3 WASTEWATER DISPOSAL

3.1 DESIGN CRITERIA

In accordance with the City of Ottawa's Sewer Design Guidelines, the following design criteria have been utilized in order to predict wastewater flows generated by the subject site and complete the sewer design.

•	Minimum Velocity	0.6 m/s
•	Maximum Velocity	3.0 m/s
•	Manning Roughness Coefficient	0.013
•	Total est. hectares commercial and residential use	15.4

Average residential daily flow
 Average sanitary flow for institutional use
 280 L/cap/day
 28,000 L/Ha/day

Commercial/Institutional Peaking Factor
 1.5

Infiltration Allowance (Total)
 Minimum Sewer Slopes – 200 mm diameter
 0.33 L/Ha/s
 0.32%

The area of 15.4 ha represents the lot area of the Lansdowne Park. This is the sanitary collection area that is being considered to contribute to the existing 600mm trunk sanitary sewer along Holmwood Ave.

3.2 CONSISTENCY WITH MASTER SERVICING STUDY

The outlet for the sanitary service from the proposed buildings is the 375 mm diameter private sewer. The Ottawa Sewer Design Guidelines provide estimates of sewage flows based on residential development.

The criteria to determine anticipated actual peak flow based on site used as described in Ottawa Sewer Design Guidelines Appendix 4-A are described in the sanitary sewer design sheet in Appendix C.

As stated in the phase 1 servicing report by WSP, the contributing flows for the North Stands are based on the DSEL sanitary design sheet and Building Service Summary for Lansdowne Park (also found in Appendix C). The new North Side Stands is assumed to provide 7.6 l/s of sanitary flow. Although the number of seats for the new North Stands is actually less than the number of seats for the existing North Stands, and thus a lower flow would be generated, the anticipated flows of 7.6 l/s is used since it is more conservative.

The proposed Lansdowne 2.0 increases the peak dry weather flow from 42.1 l/s (pre-Lansdowne 2.0 development) to 48.92 l/s. Under wet weather flow condition, the peak discharge is also increased from 45.3 l/s (pre-Lansdowne 2.0 development) to 53.54 l/s. This is consistent with the approved peak flows stated in the ZBLA Functional Servicing and Stormwater Management Study.

3.3 REVIEW OF SOIL CONDITIONS

There are no specific local subsurface conditions that suggest the need for a higher extraneous flow allowance. Soil conditions have been reviewed by Patterson Group. Bedding and backfill will be provided as recommended, conventional sewer materials will be utilized, and dewatering will be undertaken as necessary in accordance with the geotechnical recommendations and conditions encountered. The geotechnical study specifies a design recommendation based on a maximum groundwater elevation of 60.78m. Therefore, groundwater should not be an issue for the sanitary network.

3.4 DESCRIPTION OF EXISTING SANITARY SEWER

The subject site lies within the Rideau River Interceptor catchment. The existing development is serviced by a 600mm diameter sanitary trunk sewer on Holmwood Street. The existing peak wastewater flow rates have been determined

employing City guidelines based on building type and usage. The anticipated dry weather peak wastewater discharge from the site is 48.92 l/s while the wet weather peak is 53.54 l/s. The peak discharge from the development assumes that both the retail and stadium will be operating at maximum capacity. The existing (pre-Lansdowne 2,0) and proposed (post Lansdowne 2.0) sanitary design sheets are found in Appendix C.

3.5 VERIFICATION OF AVAILABLE CAPACITY IN DOWNSTREAM SEWER

The capacity of the downstream 375 mm diameter private sewer from existing sanitary manhole 7 to existing sanitary manhole 6 has 67.91 l/s capacity with slope at 0.15%, which is adequate for the flow assumptions from the proposed addition as noted above. The servicing pipe capacity is capable to handle the estimated peak sanitary flow rate of 53.54 l/s for the site including both existing and proposed. Please refer to sanitary sewer design sheet in Appendix C.

3.6 CALCULATIONS FOR NEW SANITARY SEWER

Two sanitary service connections will be provided for the North Side stands. Since the total peak demand for the North Stands is 7.6 l/s, the service connections will each convey half (3.8 l/s) of the peak flow. Both of the services (service connection to existing sanitary manhole 15 and service connection to existing sanitary manhole 208) are 200 mm diameter sewers at a 1.00% slope. This size and slope of sewer provides a capacity of 34.22 l/s which is more than adequate for the flow of 3.8 l/s.

The downstream pipe size that conveys all the combined wastewater flows from the site is a 375 mm diameter sewer at a minimum slope of 0.15%. This size and slope of sewer provides a capacity of 67.91 l/s.

For the entire Lansdowne Park subject area, the post-development sanitary peak flow is calculated at a total flow of 53.54 l/s. Both the proposed and existing sanitary sewers will have adequate capacity to convey this flow. Refer to Appendix C for the sanitary design sheet for details and the Servicing Plan for the proposed and existing sanitary network.

3.7 DESCRIPTION OF PROPOSED SEWER NETWORK

Two 200 mm diameter service connections are proposed to service the new North Side Stands. These service connections will convey flow to the existing 375 mm diameter storm sewer that runs parallel to the north side of the sports field.

3.8 ENVIRONMENTAL CONSTRAINTS

There are no previously identified environmental constraints that impact the sanitary servicing design in order to preserve the physical condition of watercourses, vegetation, or soil cover, or to manage water quantity or quality.

3.9 PUMPING REQUIREMENTS

The proposed development will have no impact on existing pumping stations and will not require new pumping facilities.

3.10 FORCEMAINS

There are no sanitary forcemains proposed on this site.

3.11 FMFRGENCY OVERFLOWS FROM SANITARY PLIMPING STATIONS

No sanitary pumping stations are proposed on this site.

3.12 SPECIAL CONSIDERATIONS

There is no known need for special considerations for sanitary sewer design related to existing site conditions.

4 SITE STORM SERVICING

4.1 EXISTING CONDITION

The existing conditions on the Lansdowne site are as designed in the Stantec Stormwater Management Design Report – Lansdowne Urban Park (2012) and the WSP Lansdowne Park Event Centre Servicing Report (September 2024). The primary site stormwater outlet is to the storm sewer on O'Connor Street, which discharges to a combined sewer at the intersection with Fifth Street. During large storm events (i.e. exceeding 100-year return period) runoff is directed to the Rideau Canal through an overflow pipe and overland.

The existing stormwater management system consists of three subsurface storage tanks, outlet controls, and quality control structures. The three underground storage tanks provide 600 m³ in Basin 1, 2200 m³ in Basin 2, and 4777 m³ in Basin 3.

Based on the design criteria identified in the Stantec 2012 report (as per the OSDG 8.3.7.2 design criteria), the allowable release rate has been set to 616 l/s to O'Connor Street for all events from the 2-year to the 100-year return period. The stormwater management system has been designed with the new North Side Stands in mind during the Lansdowne 2.0 Phase 1 design, as summarized in the WSP Lansdowne Park Event Centre Servicing Report and Stormwater Management Report.

4.2 ANALYSIS OF AVAILABLE CAPACITY IN PUBLIC INFRASTRUCTURE

As the allowable release rate from the site will be unchanged and was determined in conjunction with the design of the public infrastructure and has already been taken into consideration for the North Side Stands in the phase 1 Stormwater Management report (WSP, 2024), there are no concerns related to the adequacy and available capacity of the downstream network. Capacity in the minor system is not a concern.

4.3 DRAINAGE DRAWING

Drawing C04 shows the detailed site sewer network. Drawings C03 provides proposed grading and drainage and includes existing grading information. Drawing C06 provides post-development drainage areas for the North Side Stands. The site sub-area information is also provided on the storm sewer design sheet attached in Appendix C. Drainage patterns and storm sewers outside of the study limits are to remain per the existing condition.

4.4 WATER QUANTITY CONTROL OBJECTIVE

Refer to the WSP Stormwater Management Report for the water quantity objective for the site. Since the North Side Stands has already been taken into account during the phase 1 design, stormwater management is not a concern for this report.

4.5 WATER QUALITY CONTROL OBJECTIVE

The Phase 1 design already took into consideration flows from the new North Side Stands in order to meet the MOE enhanced protection requirements (80% TSS removal of suspended solids). And as such, the stormtech chamber and OGS unit sized during the Event Centre design will meet the water quality control requirements. No further consideration is required for the purposes of this report. Refer to the Servicing report for the Lansdowne Park Event Centre for more information.

4.6 DESIGN CRITERIA

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

Some of the key criteria include the following:

Design Storm (minor system)
 1:5-year return (Ottawa)

• Rational Method Sewer Sizing

• Initial Time of Concentration 10 minutes

Runoff Coefficients

 $\begin{array}{ccc} \bullet & Landscaped Areas & C = 0.20 \\ \bullet & Asphalt/Concrete & C = 0.90 \\ \bullet & Traditional Roof & C = 0.90 \\ \end{array}$

Pipe Velocities 0.80 m/s to 6.0 m/s
Minimum Pipe Size 250 mm diameter

(200 mm CB Leads and service pipes)

4.7 PROPOSED MINOR AND MAJOR SYSTEMS

Under proposed conditions the majority of the site land use remains as it is under existing conditions. The minor system was designed during the phase 1 stage with the flows from the new North Stands taken into consideration. The North Stands' building roof will be serviced via two new service connections to the existing 825 mm diameter concrete storm sewer that runs parallel to the sports field. A portion of the North Stands will sheet flow to the proposed trench drains situated at the bottom of the North Stands which will convey flow to the 825 mm storm sewer. Refer to Appendix C for the North Stands catchment areas and the design sheet for sewer sizing.

The minor system for Phase 2 has been designed to convey the 5-year storm without ponding on the surface. The total site minor system outlets remain the same as they are in existing conditions. The primary outlet is to O'Connor Street to the north. Storm sewer design sheet for the new North Stands building connections are included in Appendix C.

The overland flow route will remain as designed in the Phase 1 design (as per the Lansdowne Park Event Centre Stormwater Management Report). The overland route is proposed to cascade southwards along the east side of the proposed Event Centre and eventually to the ditches along Queen Elizabeth Drive. During large storm events exceeding 100-year, runoff is directed to the Rideau Canal overland.

4.8 STORMWATER MANAGEMENT

Refer to the Stormwater Management Report for Lansdowne Park Event Centre, prepared by WSP, dated September 2024.

4.9 INLET CONTROLS

Refer to the Stormwater Management Report for Lansdowne Park Event Centre, prepared by WSP, dated September 2024.

4.10 ON-SITE DETENTION

Refer to the Stormwater Management Report for Lansdowne Park Event Centre, prepared by WSP, dated September 2024.

4.11 WATERCOURSES

There will be no modification to watercourses as a result of this proposed site plan.

4.12 PRE AND POST DEVELOPMENT PEAK FLOW RATES

Pre and post development peak flow rates have been noted in the Stormwater Management Report for Lansdowne Park Event Centre, prepared by WSP, dated September 2024.

4.13 DIVERSION OF DRAINAGE CATCHMENT AREAS

There will be no diversion of existing drainage catchment areas arising from the proposed work described in this report.

4.14 DOWNSTREAM CAPACITY WHERE QUANTITY CONTROL IS NOT PROPOSED

This checklist item is not applicable to this development as quantity control is provided.

4.15 IMPACTS TO RECEIVING WATERCOURSES

No significant negative impact is anticipated to downstream receiving watercourses due to proposed quantity and quality control measures.

4.16 MUNICIPAL DRAINS AND RELATED APPROVALS

There are no municipal drains on the site or associated with the drainage from the site.

4.17 MEANS OF CONVEYANCE AND STORAGE CAPACITY

The means of flow conveyance and storage capacity are described in Sections 4.7, 4.8, 4.9 and 4.10 above.

4.18 HYDRAULIC ANALYSIS

Hydraulic calculations for the site storm sewers are provided in the storm sewer design sheet.

4.19 IDENTIFICATION OF FLOODPLAINS

There are no designated floodplains on the site of this development.

4.20 FILL CONSTRAINTS

There are no known fill constraints applicable to this site related to any floodplain. The site is generally matching into existing conditions.

5 SEDIMENT AND EROSION CONTROL

5.1 GENERAL

During construction, existing storm sewer system can be exposed to sediment loadings. A number of construction techniques designed to reduce unnecessary construction sediment loadings will be used including:

- Silt sacks will remain on open surface structures such as manholes and catchbasins until these structures are commissioned and put into use.
- Installation of silt fence, where applicable, around the perimeter of the proposed work area.
- The installation of straw bales within existing drainage features surround the site.
- Bulkhead barriers will be installed in the outlet pipes.

During construction of the services, any trench dewatering using pumps will be fitted with a "filter sock." Thus, any pumped groundwater will be filtered prior to release to the existing surface runoff. The contractor will inspect and maintain the filter sock as needed including sediment removal and disposal.

All catchbasins, and to a lesser degree, manholes, convey surface water to sewers. Consequently, until the surrounding surface has been completed, these structures will be covered to prevent sediment from entering the minor storm sewer system. These measures will stay in place and be maintained during construction and build-out until it is appropriate to remove them.

During construction of any development both imported and native soils are placed in stockpiles. Mitigative measures and proper management to prevent these materials entering the sewer system are needed.

During construction of the deeper watermains and sewers, imported granular bedding materials are temporarily stockpiled on site. These materials are however quickly used up and generally placed before any catchbasins are installed.

Refer to the Erosion and Sedimentation Control Plan (drawing C06) provided in Appendix D.

6 APPROVAL AND PERMIT REQUIREMENTS

6.1 GENERAL

The proposed development is subject to site plan approval.

No approvals related to municipal drains are required.

No permits or approvals are anticipated to be required from the Ontario Ministry of Transportation, National Capital Commission, Parks Canada, Public Works and Government Services Canada, or any other provincial or federal regulatory agency.

7 CONCLUSION CHECKLIST

7.1 CONCLUSIONS AND RECOMMENDATIONS

It is concluded that the proposed development can meet all provided servicing constraints and associated requirements. It is recommended that this report be submitted to the City of Ottawa in support of the application for site plan approval.

7.2 COMMENTS RECEIVED FROM REVIEW AGENCIES

This issue addresses the deficiency comments received from the City January 17, 2025. The full list of technical comments has not yet been received for this report. This is the 2^{nd} revision of the report.

APPENDIX



- CITY COMMENTS
- LANSDOWNE CIVIL DRAWINGS STANTEC
- AS-BUILT DRAWINGS
- ARCHITECURAL PLANS
- TOPOGRAPHICAL SURVEY PLAN
- LANSDOWNE EVENT CENTRE CIVIL DRAWINGS -WSP



File No.: PC2024-0423

October 30, 2024

Patricia Warren
Fotenn Planning + Design
Via email: Warren@Fotenn

Via email: Warren@Fotenn.com

Subject: Pre-Consultation: Meeting Feedback

Proposed Site Plan Control Application – 945 & 1015 Bank Street

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on October 11, 2024.

Pre-Consultation Preliminary Assessment

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One (1) indicates that considerable major revisions are required while five (5) suggests that the proposal appears to meet the City's key land use policies and guidelines. This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.

Next Steps

- 1. A review of the proposal and materials submitted for the above-noted preconsultation has been undertaken. Please proceed to complete a Phase 3 Preconsultation Application Form and submit it together with the necessary studies and/or plans to planningcirculations@ottawa.ca.
- 2. In your subsequent pre-consultation submission, please ensure that all comments or issues detailed herein are addressed. A detailed cover letter stating how each issue has been addressed must be included with the submission materials. Please coordinate the numbering of your responses within the cover letter with the comment number(s) herein.
- 3. Please note, if your development proposal changes significantly in scope, design, or density before the Phase 3 pre-consultation, you may be required to complete or repeat the Phase 2 pre-consultation process.

Supporting Information and Material Requirements

1. The attached **Study and Plan Identification List** outlines the information and material that has been identified, during this phase of pre-consultation, as either required (R) or advised (A) as part of a future complete application submission.



a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.

Consultation with Technical Agencies

 You are encouraged to consult with technical agencies early in the development process and throughout the development of your project concept. A list of technical agencies and their contact information is enclosed.

Planning

Comments:

- 2. Staff strongly encourage further consideration be made into ensuring a harmonious interface between the proposed north side stands and future mixed-use podium and tower. Efforts should be made to mitigate any negative impacts between the two land uses, including but not limited to:
 - a. The ground-level laneway (previously a public promenade) should be designed with CPTED principles in mind, creating a pedestrian-friendly and animated area. Currently, it is staff's understanding that this area will functionally operate as the back-of-house for the commercial uses in the future podium. However, the area should be designed to positively integrate and connect with the remainder or Lansdowne Park, and incorporate glazing and quality surface treatment to resemble an active, safe, and visible component of the public realm.
 - b. Ensure that the height of the proposed north side stands, as well as the proposed northern elevation does not negatively impact the south-facing units within the future residential towers, ensuring adequate separation and views.
- 3. Please consider revisiting the design of the north side stands in order to better represent Lansdowne Park's identity as a dense, urban entertainment district requiring architectural merit and integrity. The skeletal nature of the current proposal could be studied further in an effort to better contribute to the historical and cultural significance of the surrounding area and interface to future phases of the development.
 - a. Please investigate opportunities to better treat the east, west, and northern façades to incorporate architectural elements which can screen the functional elements and activate the façade.



- b. Please describe the interim treatment of the north façade during the period of time starting after completion of the north side stands until the construction of the phase 3 residential towers.
- Priority should be given to the provision of accessible pedestrian pathways/connections between the phases forming Lansdowne 2.0 and the existing public realm.
- Please strive towards the coordination of construction timing for the north side stands and future phase of development to minimize the length of construction and impacts to Lansdowne Park/Exhibition Way.
- 6. Please provide further details on the bridges connecting the north side stands to the event centre, and the event centre to the south side stands.

Feel free to contact Jean-Charles Renaud – Planner III, or Jack Smith – Planner II, for follow-up questions.

Urban Design

Comments:

Submission Requirements

- 7. An Urban Design Brief is required. Please see attached customized Terms of Reference to guide the preparation.
 - a. The Urban Design Brief should be structured by generally following the headings highlighted under Section 3 – Contents of these Terms of Reference.
 - b. The following elements are particularly important for this development application and should be clearly illustrated:
 - i. Relationship with the proposed event centre and the public space in front of the event centre (east of the north stand).
 - ii. Relationship with the Aberdeen Pavilion.
 - iii. Relationship with the future proposed mixed-use development.
 - Relationship with the existing buildings on Bank Street (west of the north stand)
 - c. Please note that the Urban Design Brief will also serve as the submission to the Urban Design Review Panel (see notes below).



- 8. Additional drawings and studies are required as shown on the ASPIL. Please follow the terms of references (<u>Planning application submission information and materials | City of Ottawa</u>) the prepare these drawings and studies. These drawings and studies should be attached as appendixes to the Urban Design Brief. These include:
 - a. Site Plan
 - b. Landscape Plan
 - c. Building Floor Plans
 - d. Building Elevations
 - e. Building Sections
 - f. Site Servicing Plan
 - g. It will be useful to update the wind and shadow studies conducted at the master site plan stage. Wind conditions between the north stand and the future mixed-use development is of concern. Wind conditions on the north stand should also be carefully management/mitigated to ensure safety and comfort of the spectators.

Urban Design Review Panel Review and Report

- 9. The site is located within a Design Priority Area and is subject to review by the Urban Design Review Panel. UDRP review typically occurs within the preconsultation stage. To proceed with UDRP review, please contact udrp@ottawa.ca.
- 10. If the UDRP review occurs within the pre-consultation stage, the submission of a UDRP report is a requirement for deeming an application complete. Please follow the instructions provided in the Terms of Reference available here: <u>Urban Design Review Panel Report (ottawa.ca)</u>.

Comments on Preliminary Design

- 11. East façade and relationship with the future plaza, the Aberdeen Pavilion and the new event centre is a concern. Back of house functions are proposed at grade on the east side. Much of the east side of the structure also appears to be "façadeless" where a very large storage space is secured by chain-link fences. The future plaza is an important public space and should be animated and/or well landscaped. Please consider the following:
 - a. Allocate uses that can animate the plaza.
 - b. Provide appropriate landscaping.
 - c. Enclose the space under the stand and create a façade.



- 12. Height and location of the north stand and relationship with future development along Exhibition Way is a concern. The total height of the proposed north stand is 29.952m, which is approximately 9m taller than the concept shown in the master plan. The north stand is also significantly closer to the potential future mixed-use high-rise development. The overall relationship with the future development may be significantly impacted when compared to the concept shown in the master plan, resulting in concerns on the impacts of the north stand on the viability and livability of future development, particularly the residential aspect of the development.
- 13. In addition, the previously proposed pedestrian promenade is no longer contemplated. The applicant also indicated that Gate 3, which is an iconic feature of the master plan, is not a necessity for the operation of the north stand. These proposed and potential changes raise questions and concerns on the overall vision, connectivity, and public realm interface of the proposal.
- 14. Relationship with developments on Bank Street is a concern. Comparing with the current condition, the proposed north stand will protrude into the background of the existing plaza on Bank Street between the two buildings. How will the "façade-less" design of the north stand looks like from Bank Street? Similarly, at a height that is equivalent to a 9-storey building, the proposed stand will be highly visible from Exhibition Way. How will the "façade-less" design impact views from the Exhibition Way?
- 15. Wind conditions on and around the north stand should be further studied given the changes to both the north stand design and the zoning provisions for the future private development along Exhibition Way. Spectators should be safe and feel comfortable to sit and move around.
- 16. The main concourse of the north stand is set at over 9m above grade, which is approximately 2.5m higher than previously envisioned in the master concept plan. Climbing up to the main concourse is equivalent to walking up to the 4th floor of a residential building. Is it too tall?
- 17. With three major projects in a row, the event centre, the north stand, and the mixed-use high-rise development up to 40-storeys, Landsdowne Park Special District is likely to experience a prolonged period of construction activities. What is the plan to mitigate the impacts so that the District can continue to be a viable and vital destination during and after the construction? It appears that the north stand and the mixed-use high-rise development are intertwined by virtue of their location and close proximity, is there a plan to bundle the two projects so that the design can be integrated, and the construction can be coordinated?

Feel free to contact Randolph Wang, Urban Designer, for follow-up questions.



Engineering

Comments:

18. Stormwater Management Quantity and Quality Criteria

It is assumed that the stormwater management criteria for the subject site, is to follow the recommendations of the Functional Servicing and Stormwater Management Study prepared by WSP May 25, 2023, which was based on the design criteria as identified in the Stantec Stormwater Management Design Report – Lansdowne Urban Park (2012) as per OSDG 8.3.7.2. Design criteria are as follows:

- a. Peak flow rate of 616 L/s to O'Connor Street sewer for all events from the 2year to the 100-year return period
- b. <u>Stormwater shall be treated to MOE "enhanced" standard (80% TSS removal)</u>
- c. The "first flush" (i.e. 10mm event) shall be directed to the O'Connor Street sewer for the entire site drainage area.
- d. Outflow to O'Connor Street Sewer will be restricted if the downstream system surcharges and will be cut off when the receiving sewer HGL is higher than the onsite HGL.
- e. <u>Minor system shall be design for a 5-year level of service with minimal surface ponding.</u>
- f. <u>Major system shall provide a 100-year level of service while minimizing outflow to the canal.</u>
- h. The 5-yr storm event using the IDF information derived from the Meteorological Services of Canada rainfall data, taken from the MacDonald Cartier Airport, collected 1966 to 1997.
- i. For separated sewer system built pre-1970 the design of the storm sewers are based on a 2 year storm.
- j. The pre-development runoff coefficient or a maximum equivalent 'C' of 0.5, whichever is less (§ 8.3.7.3).
- k. A calculated time of concentration (Cannot be less than 10 minutes).
- I. Flows to the storm sewer in excess of the 5-year storm release rate, up to and including the 100-year storm event, must be detained on site.



- 19. Deep Services (Storm, Sanitary & Water Supply)
 - a. 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.
 - b. Connections to trunk sewers and easement sewers are typically not permitted.
 - c. 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).
 - d. Review provision of a high-level sewer.
 - e. Sewer connections to be made above the springline of the sewermain as per:
 - i. Std Dwg S11.1 for flexible main sewers connections made using approved tee or wye fittings.
 - ii. Std Dwg S11 (For rigid main sewers) lateral must be less that 50% the diameter of the sewermain,
 - iii. 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,
 - iv. When the connection is to rigid main sewers where the lateral exceeds 50% the diameter of the sewermain connection via Maintenance hole is required. Connect obvert to obvert with the outlet pipe.
 - v. No submerged outlet connections.
- 20. Water Boundary condition requests must include the location of the service (map or plan with connection location(s) indicated) and the expected loads required by the proposed development, including calculations. Please provide the following information:

a.	Location of service
b.	Type of development and the amount of fire flow required (as per FUS).
c.	Average daily demand: l/s.
d.	Maximum daily demand:l/s.



e. Maximum hourly daily demand: ____ l/s.

Please review Technical Bulletin ISTB-2018-02, maximum fire flow hydrant capacity is provided in Section 3 Table 1 of Appendix I. A hydrant coverage figure shall be provided and demonstrate there is adequate fire protection for the proposal.

[Fire flow demand requirements shall be based on **ISTB-2021-03**] Exposure separation distances shall be defined on a figure to support the FUS calculation and required fore flow (RFF).

Hydrant capacity shall be assessed to demonstrate the RFF can be achieved. Please identify which hydrants are being considered to meet the RFF on a fire hydrant coverage plan as part of the boundary conditions request.

- 21. An MECP Environmental Compliance Approval [Industrial Sewage Works or Municipal/Private Sewage Works] may be required for the proposed development. Please contact the Ministry of the Environment, Conservation and Parks, Ottawa District Office to arrange a pre-submission consultation:
 - a. Charlie Primeau at (613) 521-3450, ext. 251 or Charlie.Primeau@ontario.ca
 - b. Emily Diamond at (613) 521-3450, ext. 238 or Emily.Diamond@ontario.ca

22. Water

a. As per ISTB-2021-03, Industrial, commercial, institutional service areas with a basic day demand greater than 50 m³/day and residential areas serving 50 or more dwellings shall be connected with a minimum of two watermains, separated by an isolation valve, to avoid the creation of a vulnerable service area. Individual residential facilities with a basic day demand greater than 50 m³/day shall be connected with a minimum of two water services, separated by an isolation valve, to avoid the creation of a vulnerable service area.

23. Sewer (sanitary and storm)

- a. Sanitary sewer capacity, Please provide the new Sanitary sewer discharge and we confirm if sanitary sewer main has the capacity.
- b. Please note the sanitary capacity will be governed by the approved wet weather peak discharge of 53.54L/s as per the functional servicing and stormwater management study prepared by WSP September 22, 2023.
- c. Sanitary sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) *Monitoring Devices*.



d. A storm sewer monitoring maintenance hole is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) *Monitoring Devices*.

24. Stormwater

a. Underground Storage: Please note that the Modified Rational Method for storage computation in the Sewer Design Guidelines was originally intended to be used for above ground storage (i.e. parking lot) where the change in head over the orifice varied from 1.5 m to 1.2 m (assuming a 1.2 m deep CB and a max ponding depth of 0.3 m). This change in head was small and hence the release rate fluctuated little, therefore there was no need to use an average release rate.

When underground storage is used, the release rate fluctuates from a maximum peak flow based on maximum head down to a release rate of zero. This difference is large and has a significant impact on storage requirements. We therefore require that an average release rate equal to 50% of the peak allowable rate shall be applied to estimate the required volume. Alternatively, the consultant may choose to use a submersible pump in the design to ensure a constant release rate.

In the event that there is a disagreement from the designer regarding the required storage, The City will require that the designer demonstrate their rationale utilizing dynamic modelling, that will then be reviewed by City modellers in the Water Resources Group.

Provide information on type of underground storage system including product name and model, number of chambers, chamber configuration, confirm invert of chamber system, top of chamber system, required cover over system and details, interior bottom slope (for self-cleansing), chart of storage values, length, width and height, capacity, entry ports (maintenance) etc. UG storage to provide actual 2- and 100-year event storage requirements.

In regard to all proposed UG storage, ground water levels (and in particular HGW levels) will need to be reviewed to ensure that the proposed system does not become surcharged and thereby ineffective.

Modeling can be provided to ensure capacity for both storm and sanitary sewers for the proposed development by City's Water Distribution Dept. – Modeling Group, through PM and upon request.



- b. **If rooftop control** and storage is proposed as part of the SWM solutions sufficient details (Cl. 8.3.8.4) shall be discussed and document in the report and on the plans. Roof drains are to be connected downstream of any incorporated ICDs within the SWM system and not to the foundation drain system. Provide a **Roof Drain Plan** as part of the submission.
- c. Please note that the minimum orifice dia. for a plug style ICD is 83mm and the minimum flow rate from a vortex ICD is 6 L/s in order to reduce the likelihood of plugging.
- d. Quality Control Stormwater shall be treated to MOE "enhanced" standard (80% TSS removal)
- e. The "first flush" (i.e. 10mm event) shall be directed to the O'Connor Street sewer for the entire site drainage area.
- f. Document how any foundation drainage system will be integrated into the servicing design and show the positive outlet on the plan. Foundation drainage is to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention. It is recommended that the foundation drainage system be drained by a sump pump connection to the storm sewer to minimize risk of basement flooding as it will provide the best protection from the uncontrolled sewer system compared to relying on the backwater valve.

25. Grading

Post-development site grading shall match existing property line grades to minimize disruption to the adjacent residential properties. A **topographical plan of survey** shall be provided as part of the submission and a note provided on the plans.

26. Geotechnical (including sensitive marine clay, where appropriate)

A Geotechnical Study/Investigation shall be prepared in support of this development proposal.

Reducing the groundwater level in this area can lead to potential damages to surrounding structures due to excessive differential settlements of the ground. The impact of groundwater lowering on adjacent properties needs to be discussed and investigated to ensure there will be no short term and long-term damages associated with lowering the groundwater in this area.

Geotechnical Study shall be consistent with the Geotechnical Investigation and Reporting Guidelines for Development Applications. See the Studies Plans and Identification List for more information.



27. Excavation

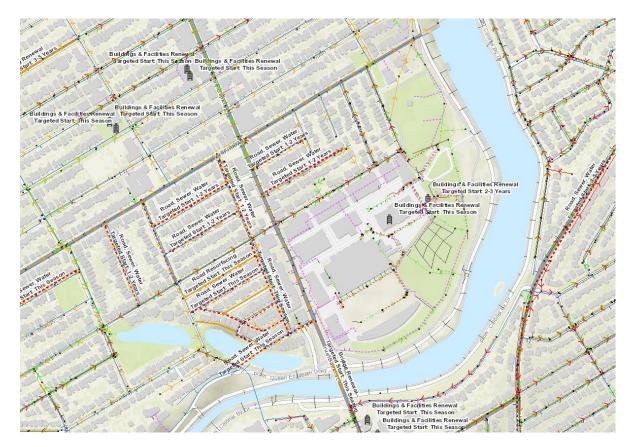
<u>Pre-Construction Survey</u> (Piling/Hoe Ramming, Rock Anchors, Shoring and/or close proximity to City Assets) or <u>Pre-Blasting Survey</u> will be required for any buildings/dwellings within proximity of 75m of the site. Circulation of notice of vibration/noise is required to residents within 150 m of site. Conditions for Pre-Construction/ Pre-Blast Survey & Use of Explosives will be applied to agreements. Refer to City's Standard S.P. No. F-1201 entitled *Use of Explosives*, as amended.

28. CCTV sewer inspection

CCTV sewer inspection required for pre and post construction conditions to ensure no damage to City Assets surrounding site.

29. Capital Works Projects scheduled

Various capital works project scheduled near by subject site please see image below from GeoOttawa.



Disclaimer:

The City of Ottawa does not guarantee the accuracy or completeness of the data and information contained on the above image(s) and does not assume any



responsibility or liability with respect to any damage or loss arising from the use or interpretation of the image(s) provided. This image is for schematic purposes only.

30. Snow Storage

Any portion of the subject property which is intended to be used for permanent or temporary snow storage shall be as shown on the approved site plan and grading plan. Snow storage shall not interfere with approved grading and drainage patters or servicing. Snow storage areas shall be setback from the property lines, foundations, fencing or landscaping a minimum of 1.5m. Snow storage areas shall not occupy driveways, aisles, required parking spaces or any portion of a road allowance. If snow is to be removed from the site please indicate this on the plan(s).

31. Road Reinstatement

Where servicing involves three or more service trenches, either a full road width or full lane width 40 mm asphalt overlay will be required, as per amended Road Activity By- Law 2003-445 and City Standard Detail Drawing R10. The amount of overlay will depend on condition of roadway and width of roadway(s).

32. Exterior Site Lighting

Any proposed light fixtures (both pole-mounted and wall mounted) must be part of the approved Site Plan. All external light fixtures must meet the criteria for Full Cut-off Classification as recognized by the Illuminating Engineering Society of North America (IESNA or IES), and must result in minimal light spillage onto adjacent properties (as a guideline, 0.5 fc is normally the maximum allowable spillage). In order to satisfy these criteria, the please provide the City with a **Certification (Statement) Letter** from an acceptable professional engineer stating that the design is compliant.

Required Engineering Plans and Studies:

PLANS:

- Existing Conditions and Removals Plan
- Site Specific/Phase 2 Site servicing Plan
- Site Specific/Phase 2 Grade Control and Drainage Plan
- Drainage Plan
- Road Reinstatement Plan
- Erosion and Sediment Control Plan
- Roof Drainage Plan
- Foundation Drainage System Detail (if applicable)
- Topographical survey



REPORTS:

- Site Specific/Phase 2 Site Servicing and Stormwater Management Report
- Geotechnical Study/Investigation
- Phase I ESA
- Phase II ESA (Depending on recommendations of Phase I ESA)
- Site lighting certificate

Feel free to contact Amy Whelan, Project Manager, Abdul Mottalib, Senior Engineer, or Brett Hughes, Project Manager, for follow-up questions.

Noise

Comments:

33. The following condition will be included as a condition of Site Plan Approval, as it is common that HVAC and other mechanical system design takes place at the detailed design stage:

Stationary Noise Study

The Owner covenants and agrees that it shall retain the services of an professional engineer licensed in the Province of Ontario to provide a Stationary Noise Study (the "Report") for review to Development Review (PRED-DR), prior to issuance of a building permit, further to City comments and requirements. The Owner further acknowledges and agrees that it shall provide the General Manager, Planning Real Estate and Economic Development Department (PRED) with confirmation issued by the professional engineer that the Owner has complied with all recommendations and provisions of the Report, prior to building occupancy, which confirmation shall be to the satisfaction of the General Manager, Planning Infrastructure and Economic Development Department.

Feel free to contact Amy Whelan, Project Manager, Abdul Mottalib, Senior Engineer, or Brett Hughes, Project Manager, for follow-up questions.

Transportation

Comments:

- 34. Access to development and on-site circulation to be reviewed through the site plan submission.
- 35. Right-of-way protection (Bank Street).
 - a. See Schedule C16 of the Official Plan.



- Any requests for exceptions to ROW protection requirements <u>must</u> be discussed with Transportation Planning and concurrence provided by Transportation Planning management.
- 36. A TIA is triggered so the applicant must proceed to Step 2 Scoping. The TIA Strategy and Synchro files is required two weeks (minimum) prior to an application.
- 37. Cycling and pedestrian connections to be reviewed through the site plan submission.

Feel free to contact Mike Giampa, Transportation Project Manager, for follow-up questions.

Community Recreation Core Programs

Comments:

38. Please refer to the feedback form dated October 24, 2024 (for the proposed event centre) relating to the construction zone required to facilitate the development of the lands.

Feel free to contact Natalie Ollson, Program Manager – Community Recreation Core Programs, for follow-up questions.

Park and Facilities Planning

Comments:

- 39. Similar to Urban Design comments, the east façade and its relationship with the future plaza, the Great Lawn, the Aberdeen Pavilion and the new event centre is a concern. Back of house functions are proposed at grade on the east side. Much of the east side of the structure also appears to be "façade-less" where a very large storage space is secured by chain-link fences. The future plaza is an important public space and should be animated and/or well landscaped. It is requested that the applicant consider the following:
 - a. Allocate uses that can animate the plaza.
 - b. Provide appropriate landscaping.
 - c. Enclose the space under the stand and create a façade.
- 40. Additional drawings are required, including:
 - Site Plan
 - Landscape Plan
 - Building Elevations, notably the east facade, showing the view from the future plaza, the Great Lawn/Aberdeen Pavilion and Event Centre,

Feel free to contact Paul Landry, Parks Planner, for follow-up questions.



<u>Heritage</u>

Comments:

- 41. The North Side Stands (NSS) should be designed to minimize the impact of the cultural heritage resources of Lansdowne Park.
- 42. A Heritage Impact Assessment is required to assess the impacts of the NSS on the cultural heritage resources of Lansdowne Park. This includes the Aberdeen Pavilion, the Horticulture Building and the adjacent resources of the Rideau Canal and the Queen Elizabeth Driveway, and Colonel By Drive cultural landscapes.

The HIA should be conducted in accordance with the "Terms of Reference: North Side Stands and TD Arena" prepared jointly by the City of Ottawa, NCC, Parks Canada and the Ontario Heritage Trust. A view analysis will be included as part of the HIA.

- 43. The interface of the North Side Stands and the Event Centre Plaza is an important consideration as the public space can highlight the Aberdeen Pavilion. Heritage staff reiterate the comments provided by Urban Design staff that it would be beneficial to provide landscaping and enclose an area under the stands to create a façade on the western edge of the plaza that would frame the space.
- 44. A Documentation and Heritage Salvage Plan for the North Side Stands and former Frank Clair Stadium will be required and should be made a condition of site plan approval.

Feel free to contact Anne Fitzpatrick, Heritage Planner, for follow-up questions.

Environmental Remediation Unit

Comments:

45. The Environmental Remediation Unit notes that Phase One and Phase Two Environmental Site Assessments are required.

Feel free to contact Richard Barker, Environmental Remediation Specialist, for follow-up questions.



Community issues

Glebe CA:

46. We support Old Ottawa South CA's comments and questions.

Old Ottawa East CA:

- 47. We endorse OOSCA's comments and add the following:
- 48. **Context:** The consideration of NSS as a separate project and not in the context of the whole of Lansdowne 2.0 is difficult and not satisfactory. While the City may be trying to rush approvals so that work can begin as soon as possible, without seeing the NSS site in relation to how the residential towers are proposed makes it difficult to fully understand and comment how the new stands will work. Similarly, the transportation analysis both within the park and on the roadways serving the park should be done in the context of all of the new elements of L2.0, i.e., the event centre, the NSS, the added commercial and, the two towers, one of which may be partially a hotel. Time really should have been spent on an overarching master plan, then the components should have been considered.
- 49. *Accessibility*: Despite repeated City and OSEG claims of vastly improved accessibility with L2.0, there is little evidence that this will really be the case. Aside from possible improvements to accessibility to field-level accommodation, attendees will have to use elevators to get to the rest of the stadium. There appears to be no significant additional accessible ramps. The notional grand staircase to be built later might end up being grand for those who can climb a lot of stairs but for anybody with mobility challenges they will just be the flaunting of a flawed vision. If the City wants to have a grand staircase for rather unimposing stands, it should also have a grand ramp that provides accessibility. Further, as we argued in discussion of the event centre, accessibility getting to Lansdowne Park will not be improved. Indeed, by virtue of more vehicles going to the towers and event centre in the middle of the park, the streets (especially QED and Bank) will become more clogged than they already are.
- 50. **Architectural Merit**: The new stands have no architecturally redeeming features, quite unlike the existing NSS. Indeed, the east and west elevations are routine, basic, and boring totally inappropriate in comparison to the heritage-protected Aberdeen Pavilion and the Horticulture Building. As for the north elevation, it sounds as though the goal is to hide it with the towers and the podium hardly a sound design. The "new" southside stands were wrapped in wood and actually have some visual appeal. Similar treatment should be used with the NSS.
- 51. **Transportation and Parking:** The only thing that is clear is that more vehicles will be penetrating the site making it less safe and comfortable for pedestrians and cyclists. Until we know how the towers residents' (and hotel visitors'?) and delivery vehicles are going to access the towers and how residents' and visitors'



parking needs will be resolved, it is premature to discuss how the NSS vehicular access will work. And as has been said: 60 parking spaces for cyclists seriously underserves active transportation objectives. As we noted in our comments on the event centre, the location of the main loading dock for both the event centre and the stands means many more large vehicles must use Exhibition Way or Marché Way, thus conflicting with pedestrian and cyclist use of Lansdowne Park. The loading dock should be near Bank Street and the underground parking space should allow vehicular access to the event centre.

52. **Capacity / Features:** It's been said before but bears repeating: no roof makes no sense. Secondly, reduced capacity seems to fly in the face of the objective to better host major events. Not only will there be less seating in NSS but, with the construction of the event centre, the one of the two areas where temporary seating was built for large events will be mostly gone.

Old Ottawa South CA:

Access

Vehicular Traffic

53. Vehicular access has been an Achilles heel for Lansdowne. Traffic backups to reach the access points to the underground parking garage on Exhibition Way east of Bank Street and on Princess Patricia Way west of Queen Elizabeth Driveway, result in long queues along Bank Street and Queen Elizabeth Drive whenever there are games and other larger events at Lansdowne. Innovative transportation management strategies and additional traffic control measures, beyond the purview of the Site Plan Control process for the North Stands, are needed, as the current vehicular traffic issues are not tenable in the long-term.

Parking

54. Additional bicycle parking spaces are required to support development of the North Stands. Although City of Ottawa Parking By-Law requirements for bicycle parking spaces may be being met by the current proposal, a substantial increase in additional bicycle parking spaces is needed to support the City's active transportation initiatives and, importantly, to offer visitors viable and secure end-to-end transportation alternatives to help alleviate Lansdowne's vehicular traffic issues.

Pedestrian

55. If not already undertaken, it is suggested that pedestrian and vehicular volumes, movement patterns and potential interaction near Gates 2 and 4 be modelled to ensure any potential conflicts are identified, particularly in the area approaching the vehicular drop off near Gate 2.



Emergency Access Gate 2

56. Turning radii for emergency vehicle access at Gate 2 should be reviewed.

Accessibility

57. Given that accessibility improvements have been presented as an important rationale for the demolition of the existing North Stands in favour of new stands that meet up-to-date accessibility standards, it is important to clarify where and how equitable access to seating options and stadium circulation are being provided for the North Stands. The location and number of accessible parking spaces for stadium patrons should be clearly indicated. Is the proposed connecting walkway between the North and South Stands fully accessible? Additionally, as the project proceeds beyond the Site Plan Control process, will accessible wheelchair viewing spaces be made available from various viewpoints and at all concourse levels, to allow for equitable viewing? Will the Phase II walkway from the North Stands to the Events Centre be fully accessibility?

Aesthetics

East Facade

58. It is understood that the podium levels of the future development to the north of the stands will temper end-state views to and from the North Stands to the Aberdeen Pavilion. In addition, this elevation has an important view relationship with the outdoor public areas to the east. The proposed metal panel façade material as well as the proposed installation of a chain link fence enclosure wall fall short of the expected level of attention to this elevation as it relates to both the heritage building and the public realm. The design team has indicated that the design for this area is evolving and we look forward to its future iteration.

Exterior Lighting

- 59. Although exterior lighting was not discussed at the pre-consultation meeting, impacts from proposed lighting strategies for the North Stands should be studied and coordinated with those of the existing field and South Stands, as well as the future Events Centre. The effects of proposed exterior lighting strategies on the overall landscape should also be carefully studied. While it is understood that stadium lighting levels will likely be dominant during nighttime stadium events, it is important that the primacy of the Aberdeen Pavilion in the night sky be maintained within a lighting framework for the overall site that emphasizes subtlety in night lighting design.
- 60. Finally, consistent with our previous questions on indigenous consultations as part of stakeholder engagement, we wonder if an organized strategy has been developed for consultations with the various Indigenous communities workshops, reviews, formal comments on the Master Plan, the Events Centre



design, and the North Stands — which can then become part of the wider public conversation?

Other Public Comment:

61. The plans for Lansdowne 2.0 look amazing, except for one major omission; the North Side stands will no longer be covered. The protection a roof provides is one of the main reasons my wife and I have continued to purchase season tickets to the Redblacks. Other cities have football stadiums with roofs, and Ottawa, being Canada's Capital, should have a roof as well. Without the protection of a roof, we will most likely not be renewing our subscription. We are hoping the design will be modified to include a roof.

Other

- 62. The High-Performance Development Standard (HPDS) is a collection of voluntary and required standards that raise the performance of new building projects to achieve sustainable and resilient design and will be applicable to Site Plan Control and Plan of Subdivision applications.
 - a. The HPDS was passed by Council on April 13, 2022, but is not in effect at this time, as Council has referred the 2023 HPDS Update Report back to staff with the direction to bring forward an updated report to Committee at a later date. The timing of an updated report to Committee is unknown at this time, and updates will be shared when they are available.
 - b. Please refer to the HPDS information at ottawa.ca/HPDS for more information.
- 63. Under the Affordable Housing Community Improvement Plan, a Tax Increment Equivalent Grant (TIEG) program was created to incentivize the development of affordable rental units. It provides a yearly fixed grant for 20 years. The grant helps offset the revenue loss housing providers experience when incorporating affordable units in their developments.
 - a. To be eligible for the TIEG program you must meet the following criteria:
 - i. the greater of five units OR 15 per cent of the total number of units within the development must be made affordable
 - ii. provide a minimum of 15 per cent of each unit type in the development as affordable
 - iii. enter into an agreement with the city to ensure the units maintain affordable for a minimum period of 20 years at or below the city-wide average market rent for the entire housing stock based on building form and unit type, as defined by the Canada Mortgage and Housing Corporation



- iv. must apply after a formal Site Plan Control submission, or Building Permit submission for projects not requiring Site Plan Control, and prior to Occupancy Permit issuance
- b. Please refer to the TIEG information at <u>Affordable housing community</u> <u>improvement plan / Plan d'améliorations communautaires pour le</u> <u>logement abordable</u> for more details or contact the TIEG coordinator via email at <u>affordablehousingcip</u> @ottawa.ca.

Submission Requirements and Fees

- 1. A Site Plan Application is required.
 - a. Additional information regarding fees related to planning applications can be found here.
- 2. The attached **Study and Plan Identification List** outlines the information and material that has been identified as either required (R) or advised (A) as part of a future complete application submission.
 - a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.
- 3. <u>All</u> of the above comments or issues should be addressed to ensure the effectiveness of the application submission review.

Should there be any questions, please do not hesitate to contact myself or the contact identified for the above areas / disciplines.

Yours Truly

Jean-Charles Renaud, Planner III

c.c. Jack Smith, Planner II

Andrew McCreight. Manager, DR Central

Randolph Wang, Urban Designer

Amy Whelan, Infrastructure Project Manager

Brett Hughes, Infrastructure Project Manager

Abdul Mottalib, Senior Engineer

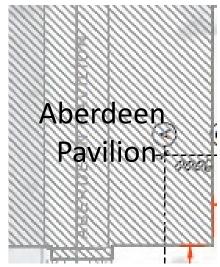
Mike Giampa, Transportation Project Manager

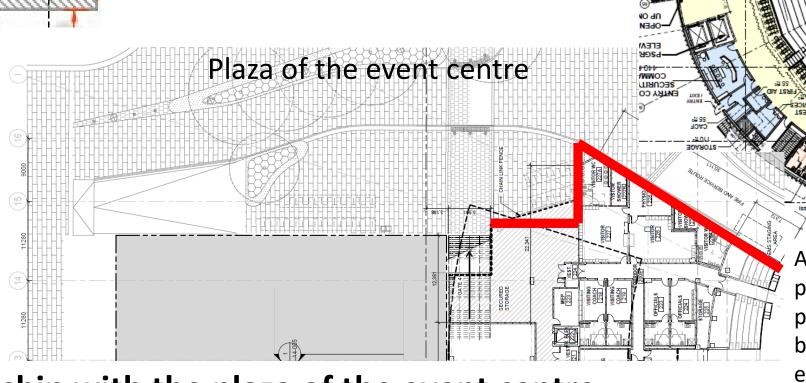
Natalie Ollson, Program Manager – Community Recreation Core Programs

Paul Landry, Parks Planner

Anne Fitzpatrick, Heritage Planner

Richard Barker, Environmental Remediation Unit

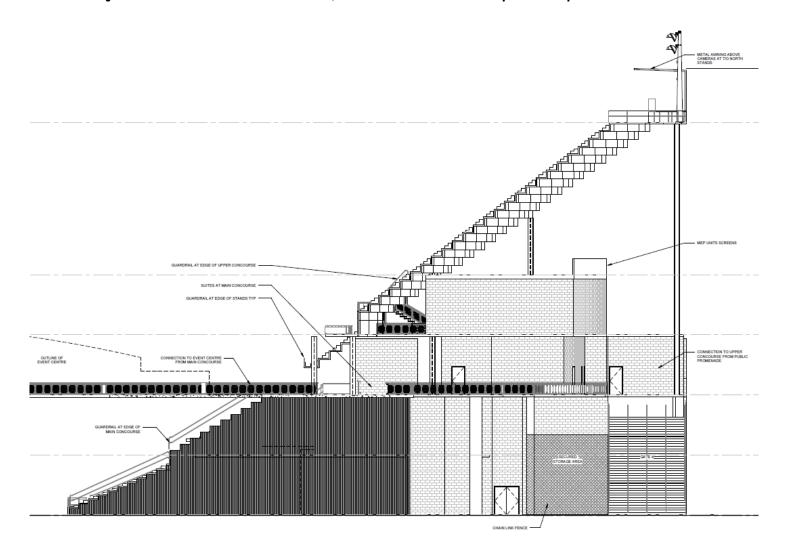


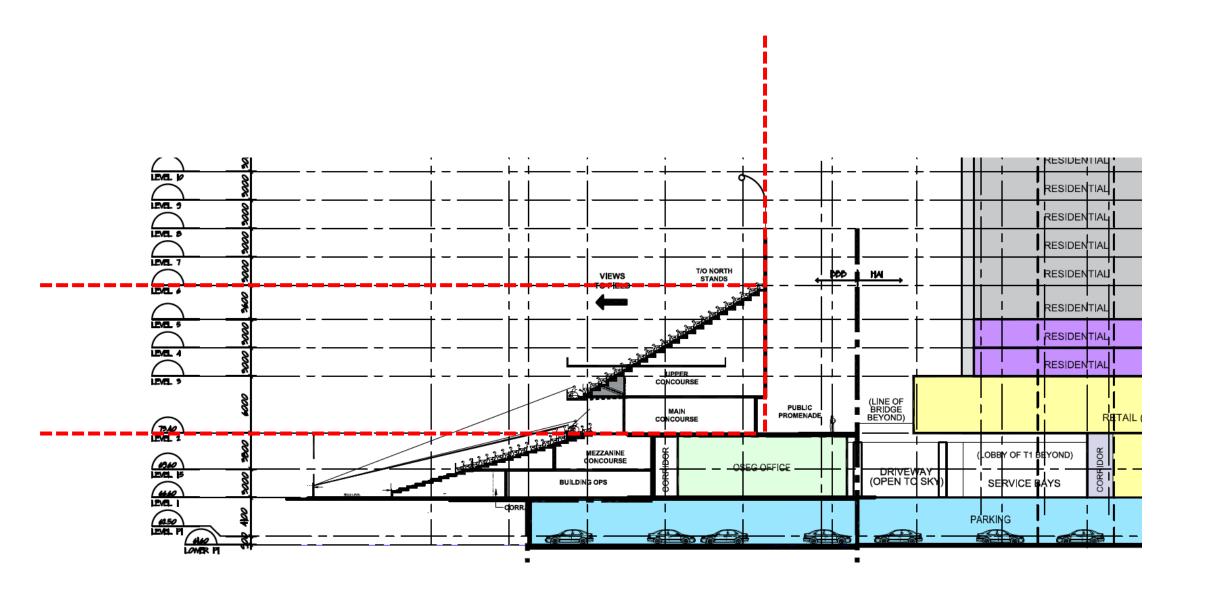


Relationship with the plaza of the event centre

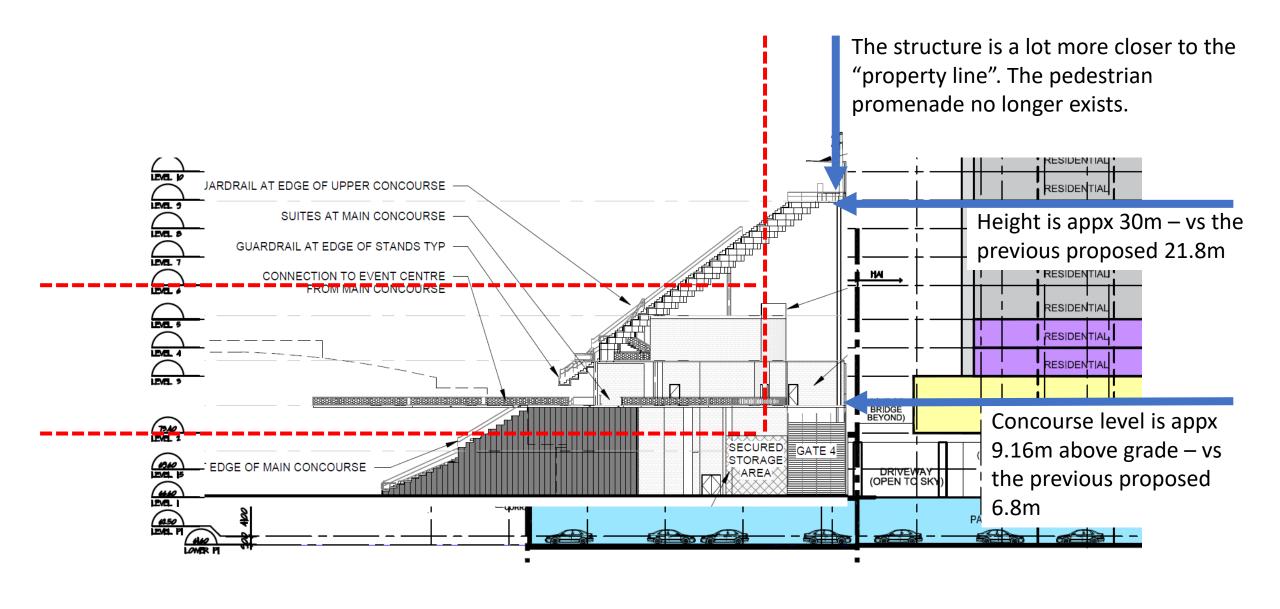
Animated uses are preferred. Or at least proper landscaping should be provided along the edge.

East façade of the north stand, visible from the public plaza





Relationship with future development – shown in the master plan

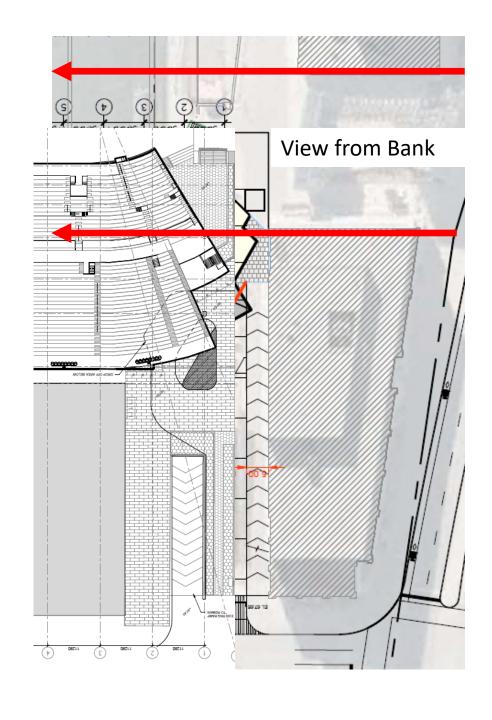


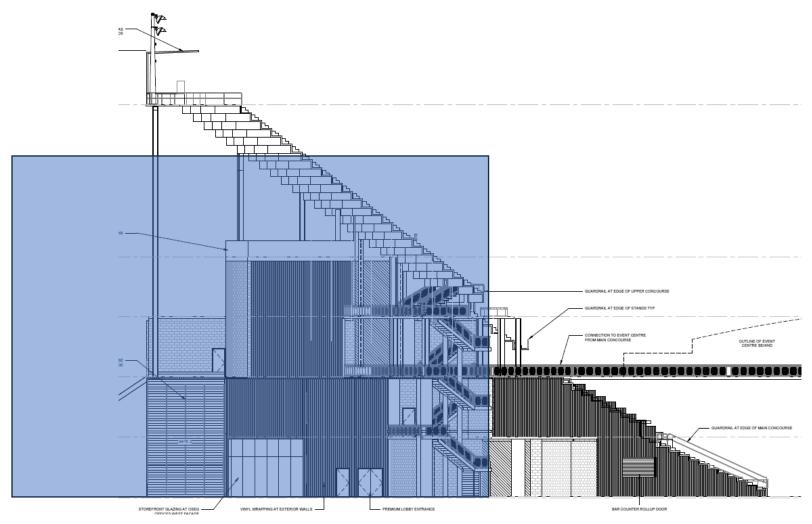
Relationship with future development – current proposal





Relationship with Bank Street



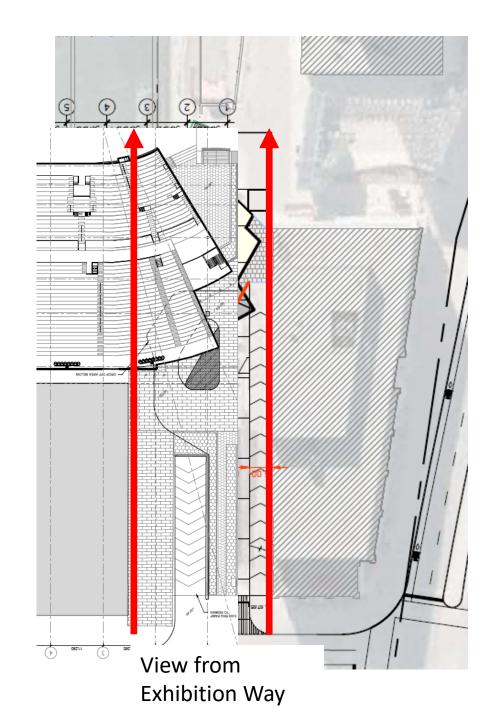


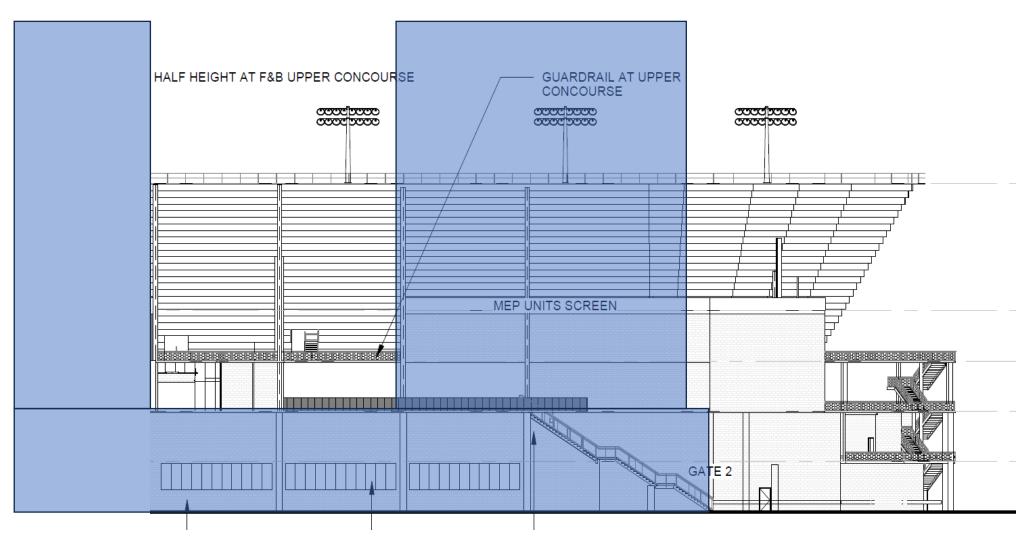
West façade of the north stand, a large portion visible from Bank Street.





Relationship with Bank Street





North façade of the north stand, a portion visible from Exhibition Way

What are the wind conditions in these areas? Is there a need to install wind-mitigation features?

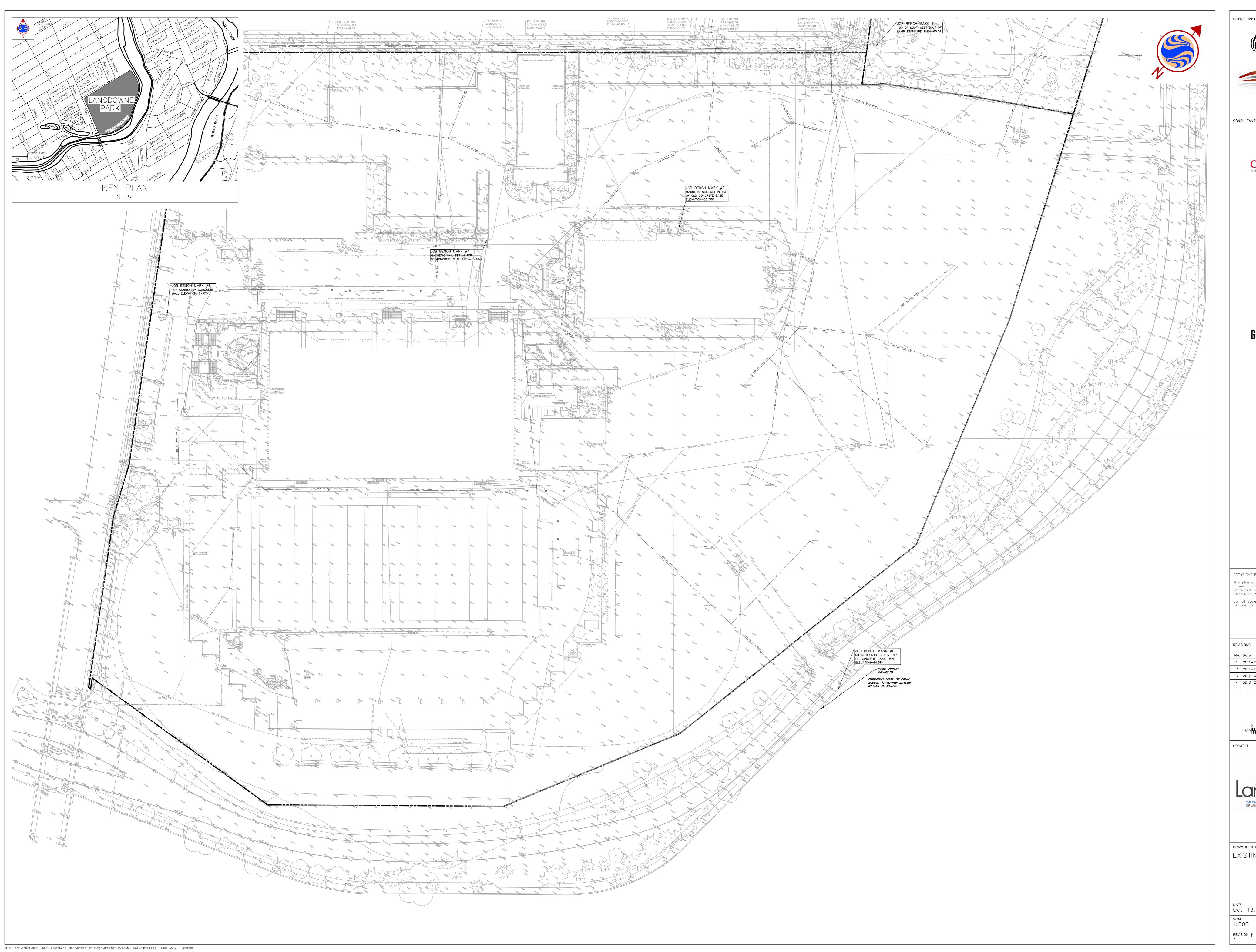


FIGURE 11A: SPRING - WIND COMFORT, PUBLIC PROMENADE



FIGURE 11B: SUMMER – WIND COMFORT, PUBLIC PROMENADE

Wind conditions on and around the north stand





CONSULTANT TEAM











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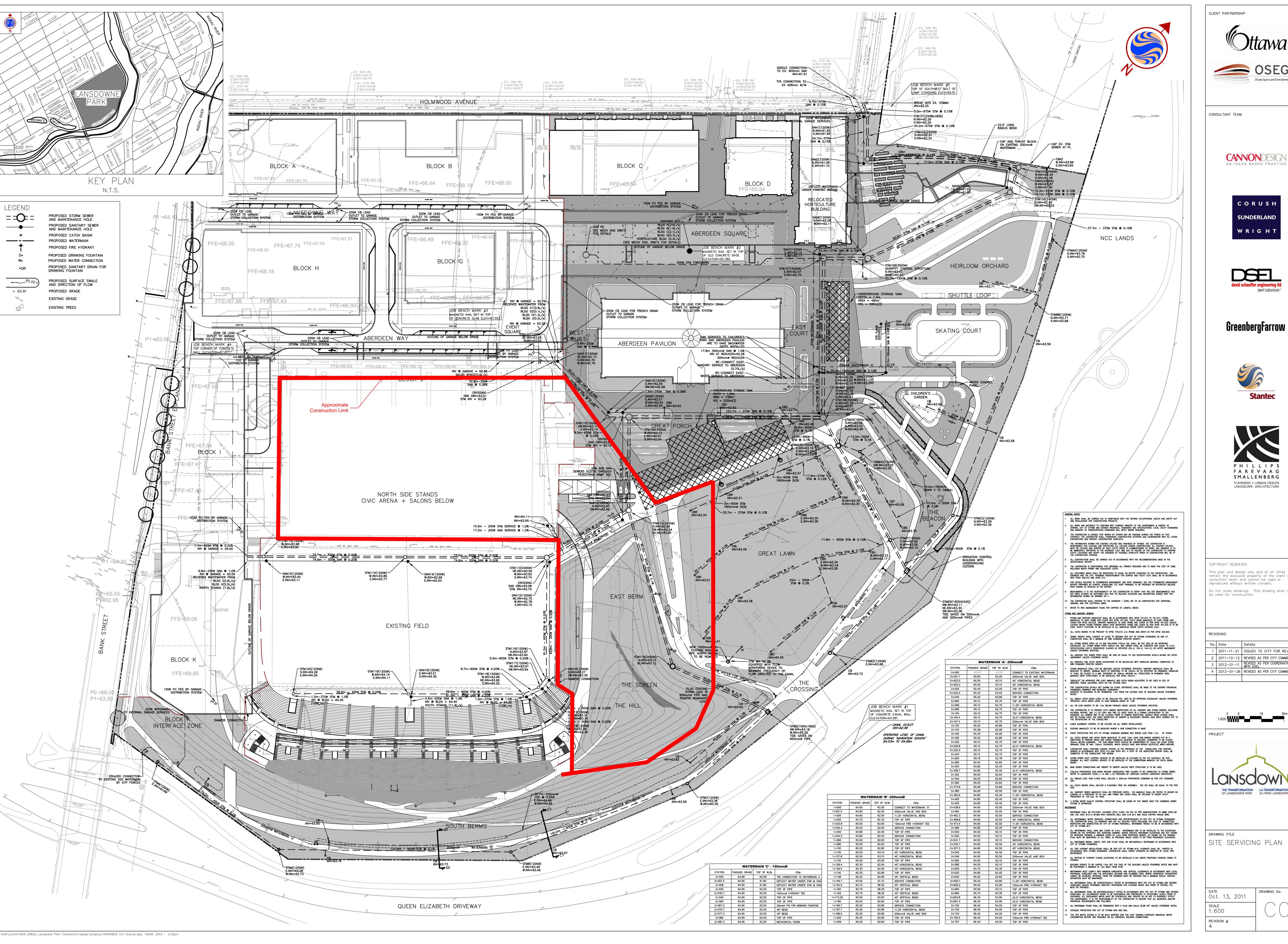
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No	. Date	Details	Ву
1	2011-11-21	ISSUED TO CITY FOR REVIEW	JVG
2	2011-12-12	REVISED AS PER CITY COMMENTS	JVG
3	2012-01-11	REVISED AS PER COORDINATION WITH DSEL.	JVG
4	2012-01-26	REVISED AS PER CITY COMMENTS	JVG





EXISTING CONDITIONS PLAN



CANNONDESIGN





GreenbergFarrow





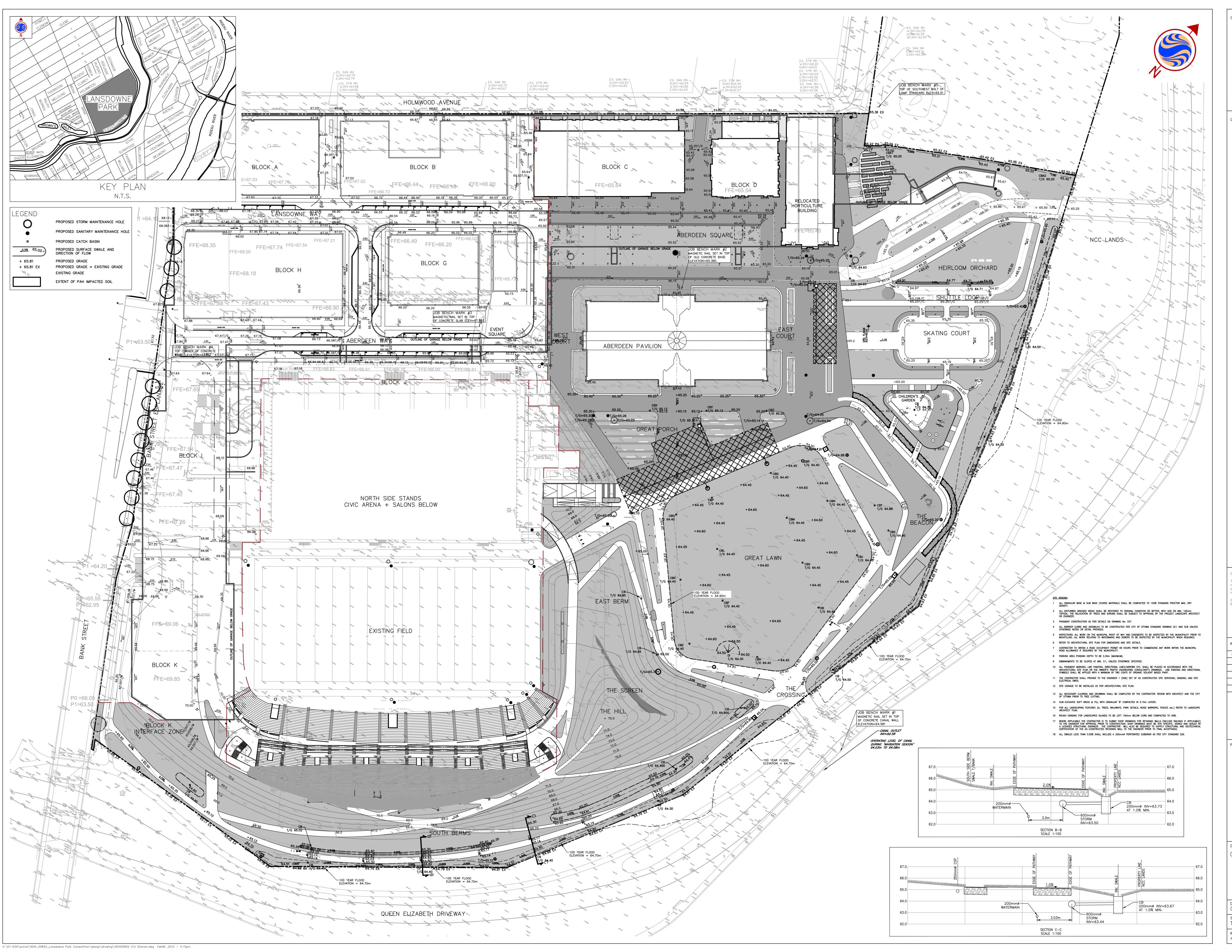
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2011-11-21 | ISSUED TO CITY FOR REVIEW JVG 4 | 2012-01-26 | REVISED AS PER CITY COMMENTS JVG



SITE SERVICING PLAN

DRAWING No.





CONSULTANT TEAM

CANNONDESIGN AN IDEAS BASED PRACTICE





reenbergFarrow





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Date	Details	Ву
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2012-01-26	REVISED AS PER CITY COMMENTS	IVC

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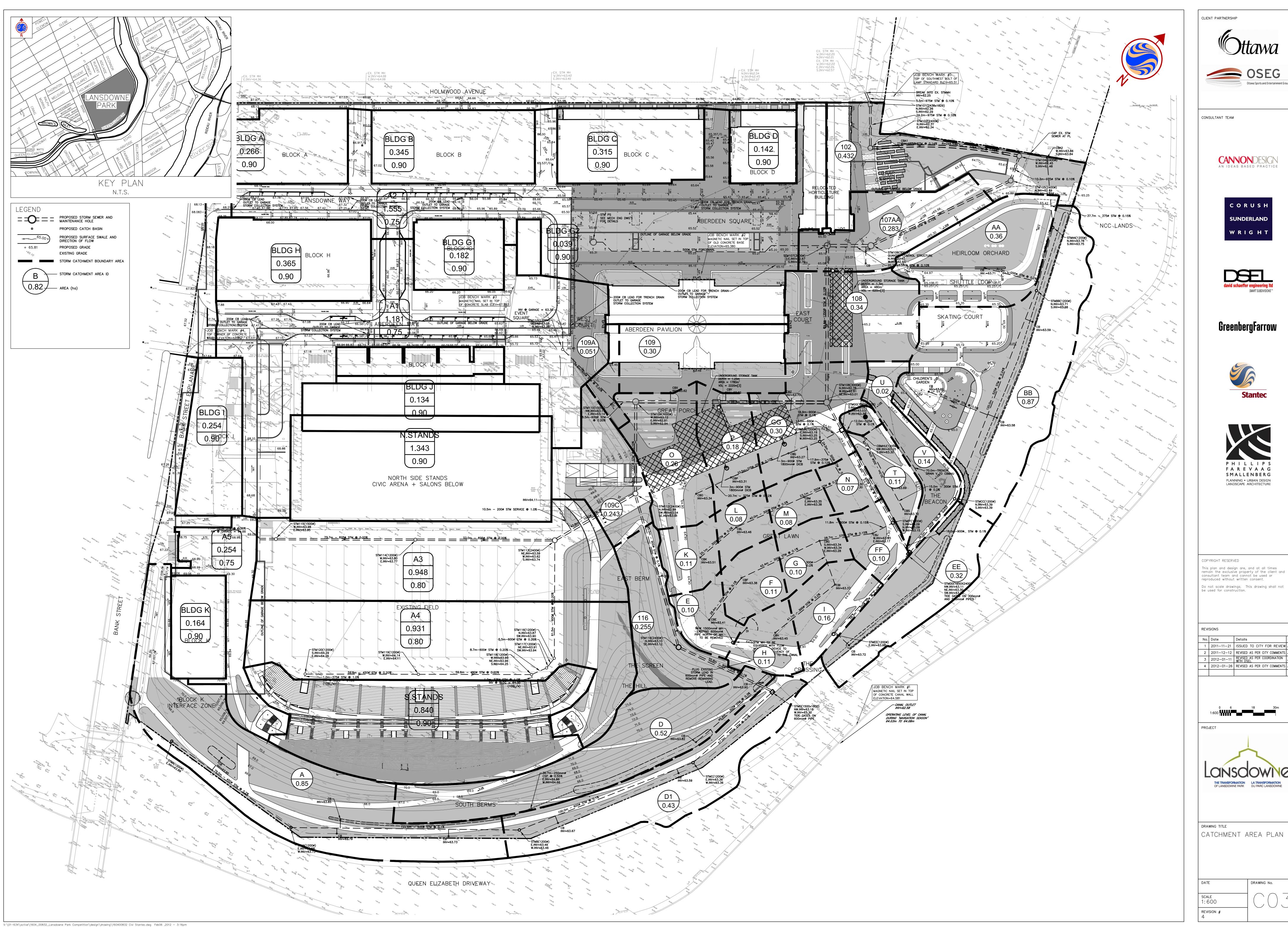


GRADING PLAN

DATE Oct. 13, 2011

SCALE 1: 600

REVISION #



CLIENT PARTNERSHIP

CONSULTANT TEAM





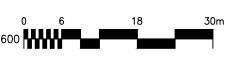






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No. Date Details 1 2011-11-21 ISSUED TO CITY FOR REVIEW JVG 2 2011-12-12 REVISED AS PER CITY COMMENTS JVG 3 2012-01-11 REVISED AS PER COORDINATION JVG 4 2012-01-26 REVISED AS PER CITY COMMENTS JVG

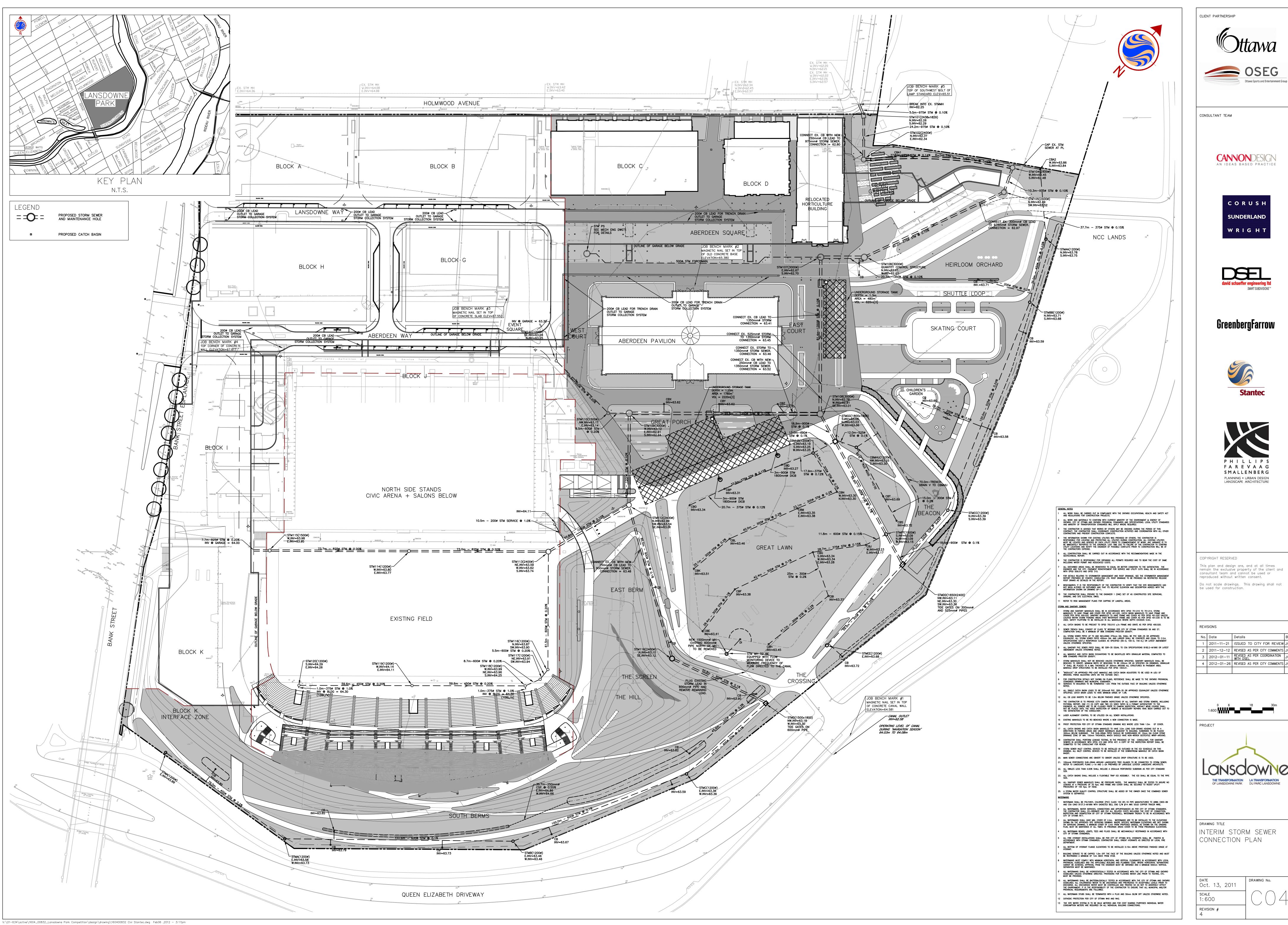




DRAWING TITLE CATCHMENT AREA PLAN

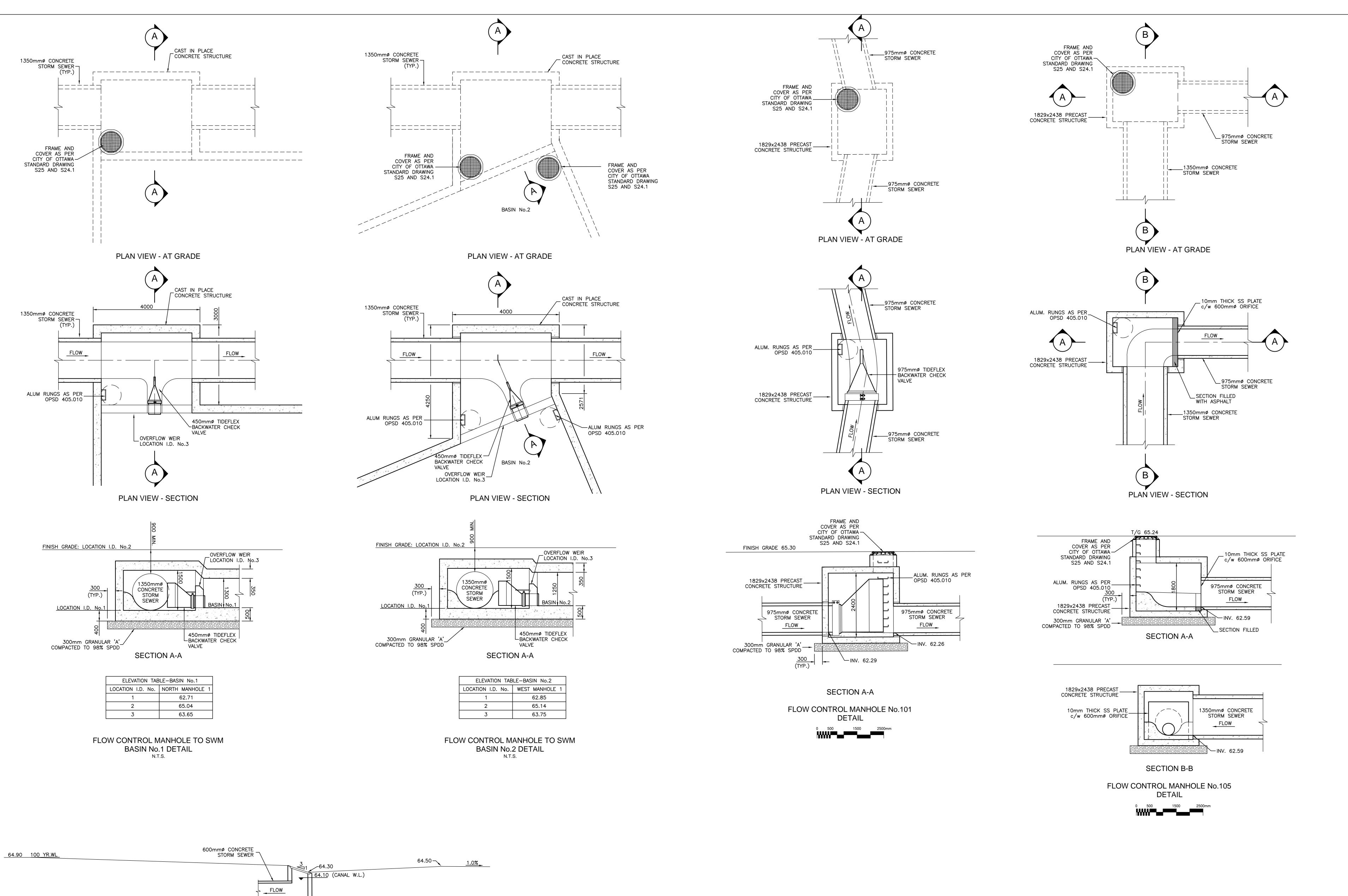
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DRAWING No.



REVISIONS			
No.	Date	Details	Ву
1	2011-11-21	ISSUED TO CITY FOR REVIEW	JVC
2	2011-12-12	REVISED AS PER CITY COMMENTS	JVC
3	2012-01-11	REVISED AS PER COORDINATION WITH DSEL.	JVG
4	2012-01-26	REVISED AS PER CITY COMMENTS	JVG

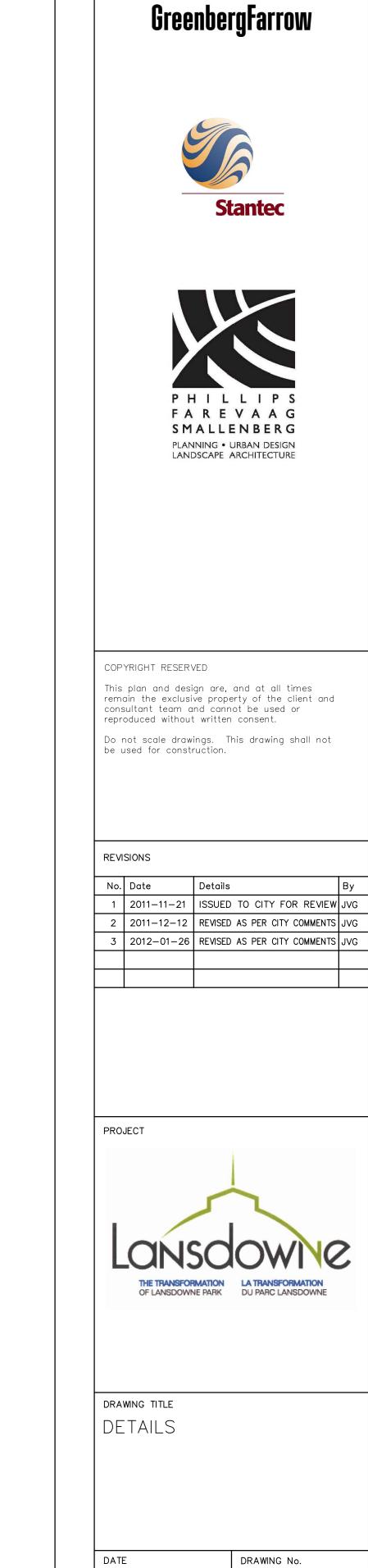




300mm GRANULAR 'A' COMPACTED TO 98% SPDD

V:\01-634\active\1604 00832 Lansdowne Park Competition\desian\drawina\160400832 Chamber Details Stantec.dwa Feb06 .2012 - 3:18pm

CANAL FLOW CONTROL MANHOLE



CLIENT PARTNERSHIP

CONSULTANT TEAM

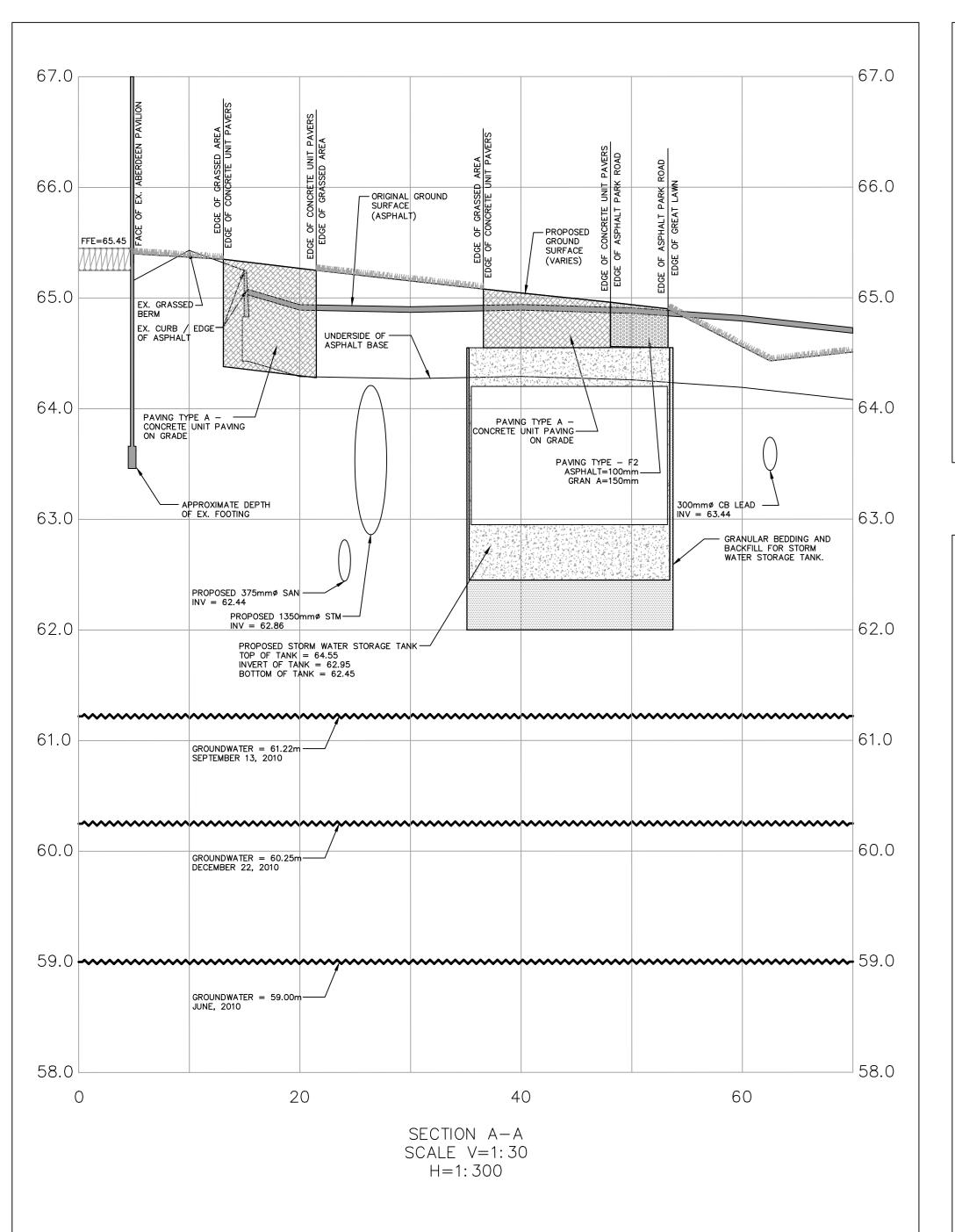
AN IDEAS BASED PRACTICE

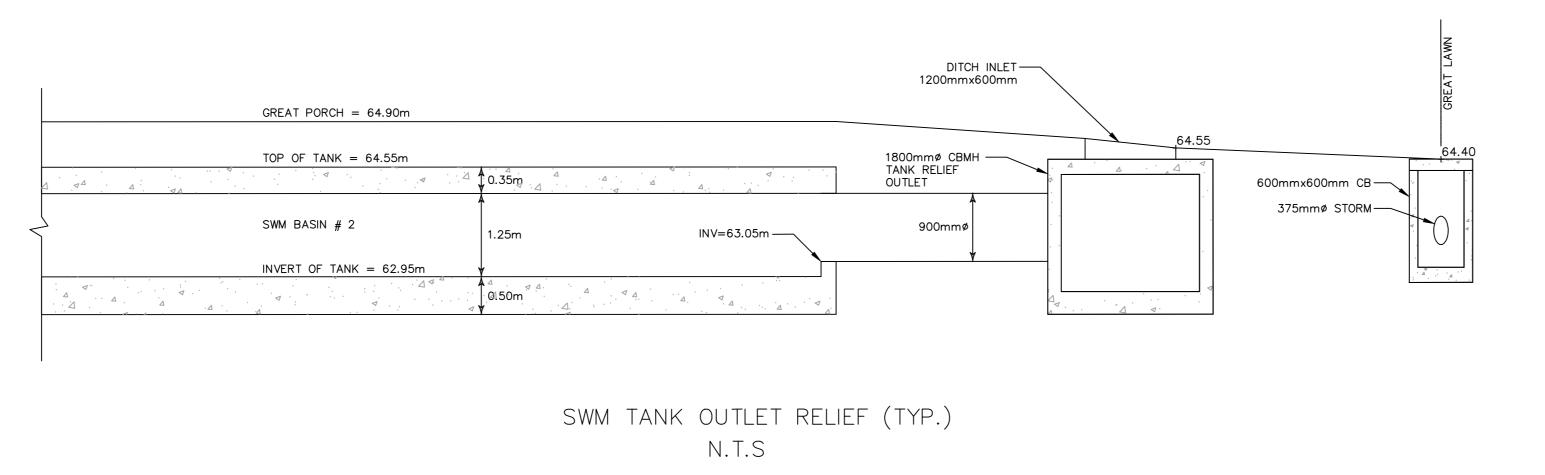
CORUSH

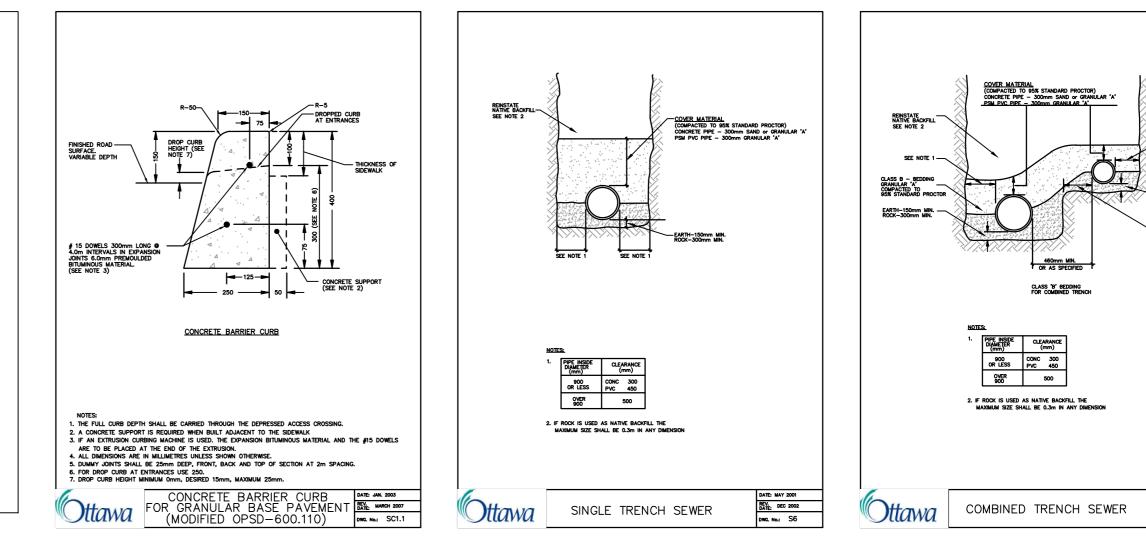
SUNDERLAND

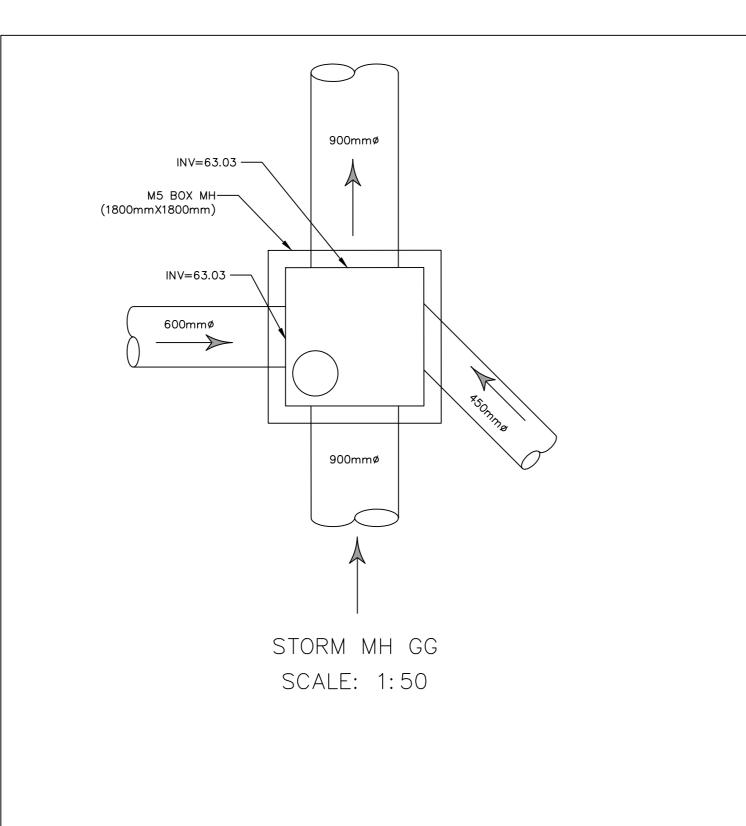
WRIGHT

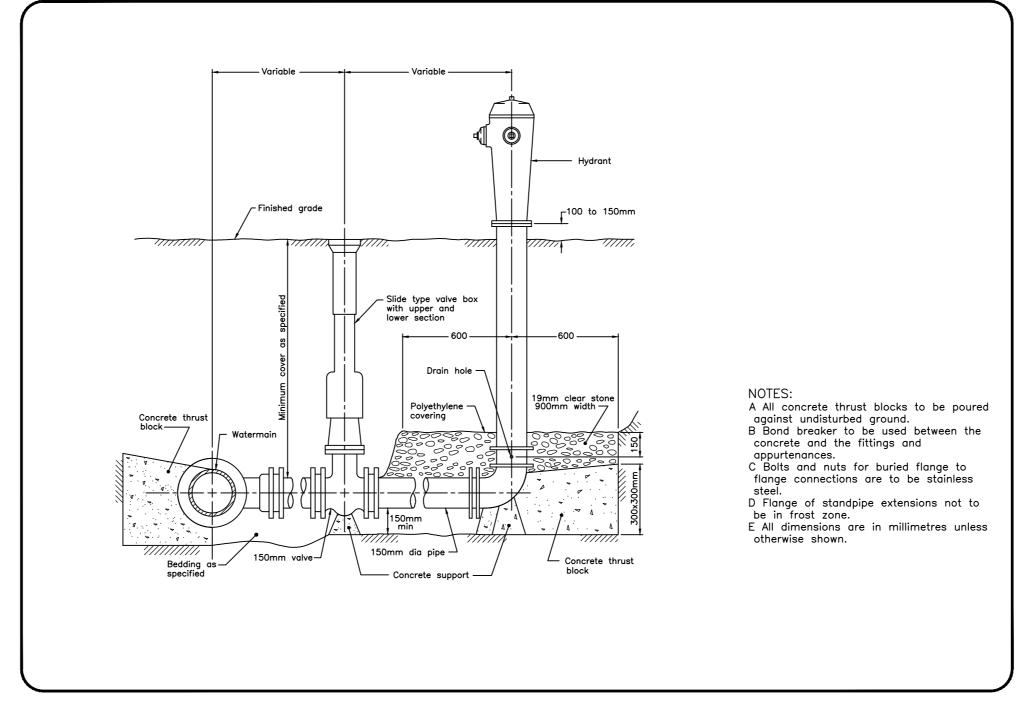
DRAWING No. AS SHOWN REVISION #

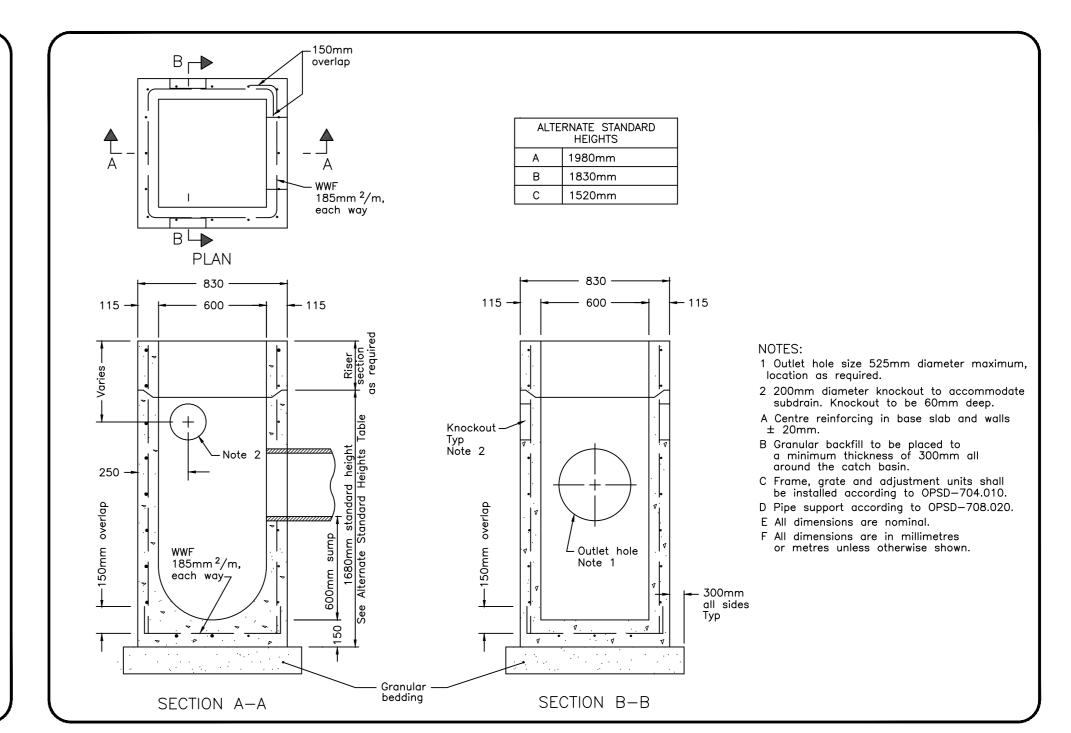


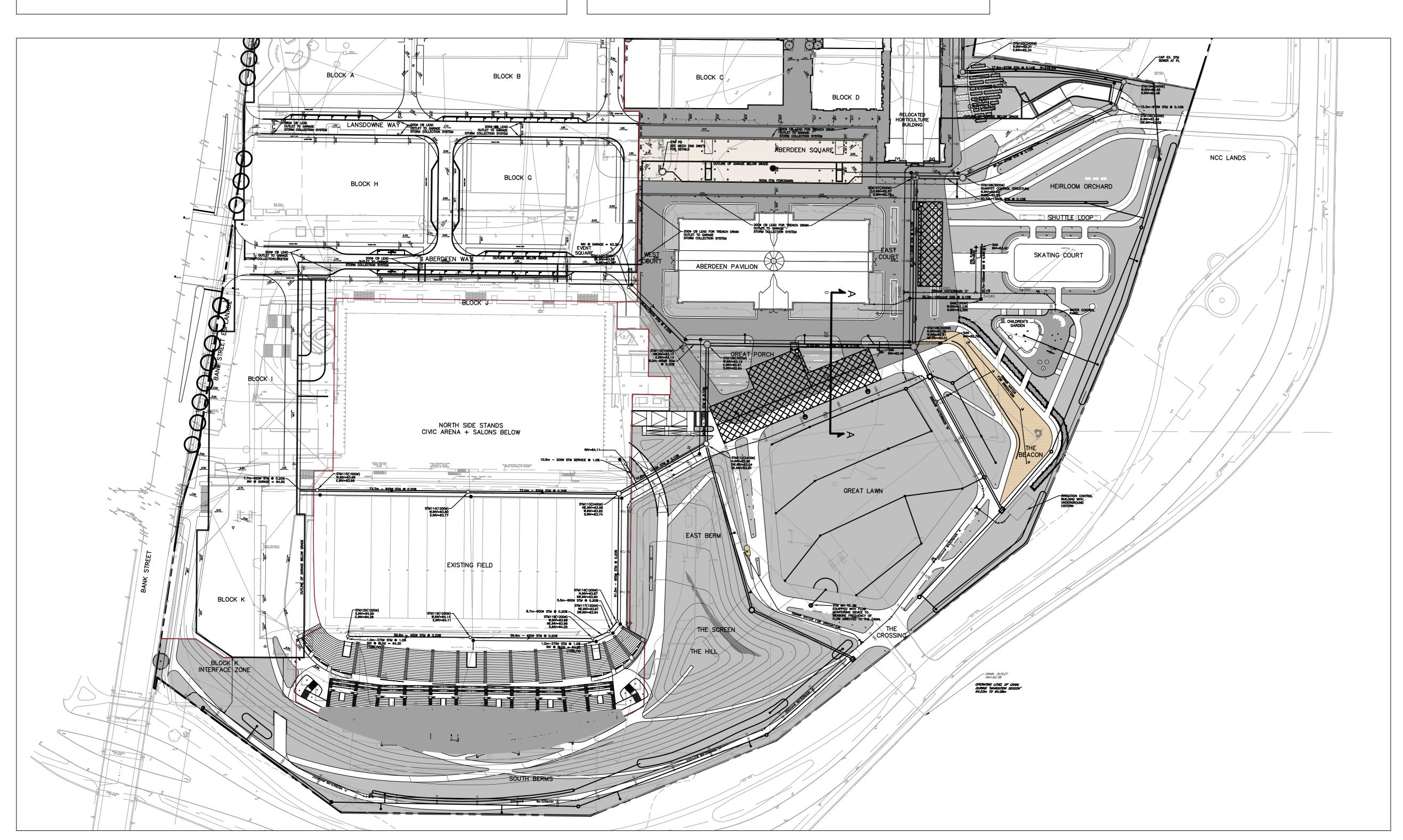


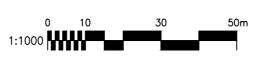
















CONSULTANT TEAM

CLASS 'B' BEDDING FOR COMBINED TRENCH







GreenbergFarrow



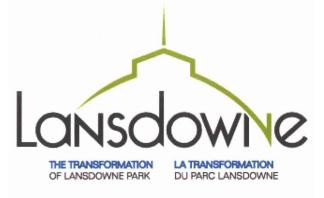


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Do not scale drawings. This drawing shall not be used for construction.

REVISIONS

No.	Date	Details	Ву
1	2011-11-21	ISSUED TO CITY FOR REVIEW	JVG
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3	2012-01-26	REVISED AS PER CITY COMMENTS	JVG



DETAILS

REVISION #

DRAWING No.

REDEVELOPMENT OF LANSDOWNE PARK

















1505 Laperriere Avenue Ottawa, Ontario, K1Z 7T1

Tel. (613) 722-4420

Fax. (613) 722-2799

GENERAL NOTES . ALL WORKS AND MATERIALS SHALL CONFORM TO THE LATEST REVISION OF THE STANDARDS AND SPECIFICATIONS FOR THE CITY OF OTTAWA, ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS), WHERE APPLICABLE. LOCAL UTILITY STANDARDS AND MINISTRY OF TRANSPORTATION STANDARDS WILL APPLY WHERE REQUIRED. THE CONTRACTOR SHALL CONFIRM TH 2. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL EXISTING UTILITIES WITHIN THE SITE AND ADJACENT WORK AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ANY SERVICES OR UTILITIES DISTURBED DURING CONSTRUCTION, TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION.

DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFIRM UTILIT LOCATIONS AND NOTIFY ENGINEER OF POSSIBLE CONFLICTS PRIOR T CONSTRUCTION WILL BE AT THE CONTRACTORS EXPENSE. 4. ANY AREAS BEYOND THE LIMIT OF THE SITE DISTURBED DURIN CONSTRUCTION SHALL BE RESTORED TO ORIGINAL CONDITION O BETTER TO THE SATISFACTION OF THE AUTHORITY HAVIN JURISDICTION AT THE CONTRACTOR'S EXPENSE. RELOCATION OF EXISTING SERVICES AND/OR UTILITIES SHALL BE AS SHOWN ON THE DRAWINGS OR DIRECTED BY THE ENGINEER AT THE EXPENSE OF THE DEVELOPER. 3. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH TH 'OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.' THE GENERAL CONTRACTOR SHALL BE DEEMED TO BE THE 'CONSTRUCTOR' AS DEFINED IN THE ACT. 7. ALL CONSTRUCTION SIGNAGE MUST CONFORM TO THE MINISTRY OF TRANSPORTATION OF ONTARIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PER LATEST AMENDMENT. 8. THE CONTRACTOR IS ADVISED THAT WORKS BY OTHERS MAY BE ONGOING DURING THE PERIOD OF THIS CONTRACT. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES TO PREVENT CONFLICTS. 9. ALL DIMENSIONS ARE IN METRES UNLESS SPECIFIED OTHERWISE. THERE WILL BE NO SUBSTITUTION OF MATERIALS UNLESS PRIOF WRITTEN APPROVAL IS RECEIVED FROM THE ENGINEER. 1. ALL CONSTRUCTION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE MANAGEMENT REPORT. ALL SEWERS CONSTRUCTED WITH GRADES LESS THAN 1.0% SHA INSTALLED USING LASER ALIGNMENT AND CHECKED WITH INSTRUMENT PRIOR TO BACKFILLING. 14. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED AND TO BEAR THE COST OF THE SAME. 15. THE CONTRACTOR WILL BE RESPONSIBLE FOR ADDITIONAL BEDDING, OF ADDITIONAL STRENGTH PIPE IF THE MAXIMUM TRENCH WIDTH AS SPECIFIED BY OPSD IS EXCEEDED. 16. ALL PIPE / CULVERT SECTION SIZES REFER TO INSIDE DIMENSIONS. 17. SHOULD DEEPLY BURIED ARCHAEOLOGICAL REMAINS BE FOUND ON THE PROPERTY DURING CONSTRUCTION ACTIVITIES, THE HERITAGE OPERATIONS UNIT OF THE ONTARIO MINISTRY OF CULTURE MUST BE NOTIFIED IMMEDIATELY. 8. ALL NECESSARY CLEARING AND GRUBBING SHALL BE COMPLETED B
THE CONTRACTOR. REVIEW WITH CONTRACT ADMINISTRATOR AND TH CITY OF OTTAWA PRIOR TO ANY TREE CUTTING / REMOVAL. DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE ARCHITECTURA SITE PLAN. 20. THE CONTRACTOR SHALL PROVIDE THE PROJECT ENGINEER ONE SET OF AS CONSTRUCTED SITE SERVICING AND GRADING DRAWINGS. 21. BENCHMARKS: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THAT THE SITE BENCHMARK(S) HAS NOT BEEN ALTERED OR DISTURBED AND THAT ITS RELATIVE ELEVATION AND DESCRIPTION AGREES WITH THE INFORMATION DEPICTED ON THIS PLAN.

TOPOGRAPHIC INFORMATION & WOODLEAND LTD.

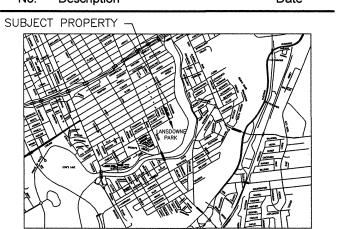
PROJ. NO. P19500 SITE PLAN INFORMATION TOPOGRAPHIC INFORMATION PROVIDED BY CORUSH, SUNDERLAND, AND WRIGHT BENCH MARK

MAGNETIC NAIL SET IN TOP OF CONCRETE WALL OF CANAL LOCATED AT SOUTH EAST SITE ACCESS ELEV=64.581

20	Issued to City
9	Revised Bldg G1 Siamese cor
8	Revised Siamese connections
7	Revised FH Bank Street
_	

16 Revised per municipal comments Added Meter and Remote Meter locations Revised water meter at Bank street,

updated per CCN-SS-9r3, CCN-SS-10, CD-SS-3, CD-SS-4 No. Description

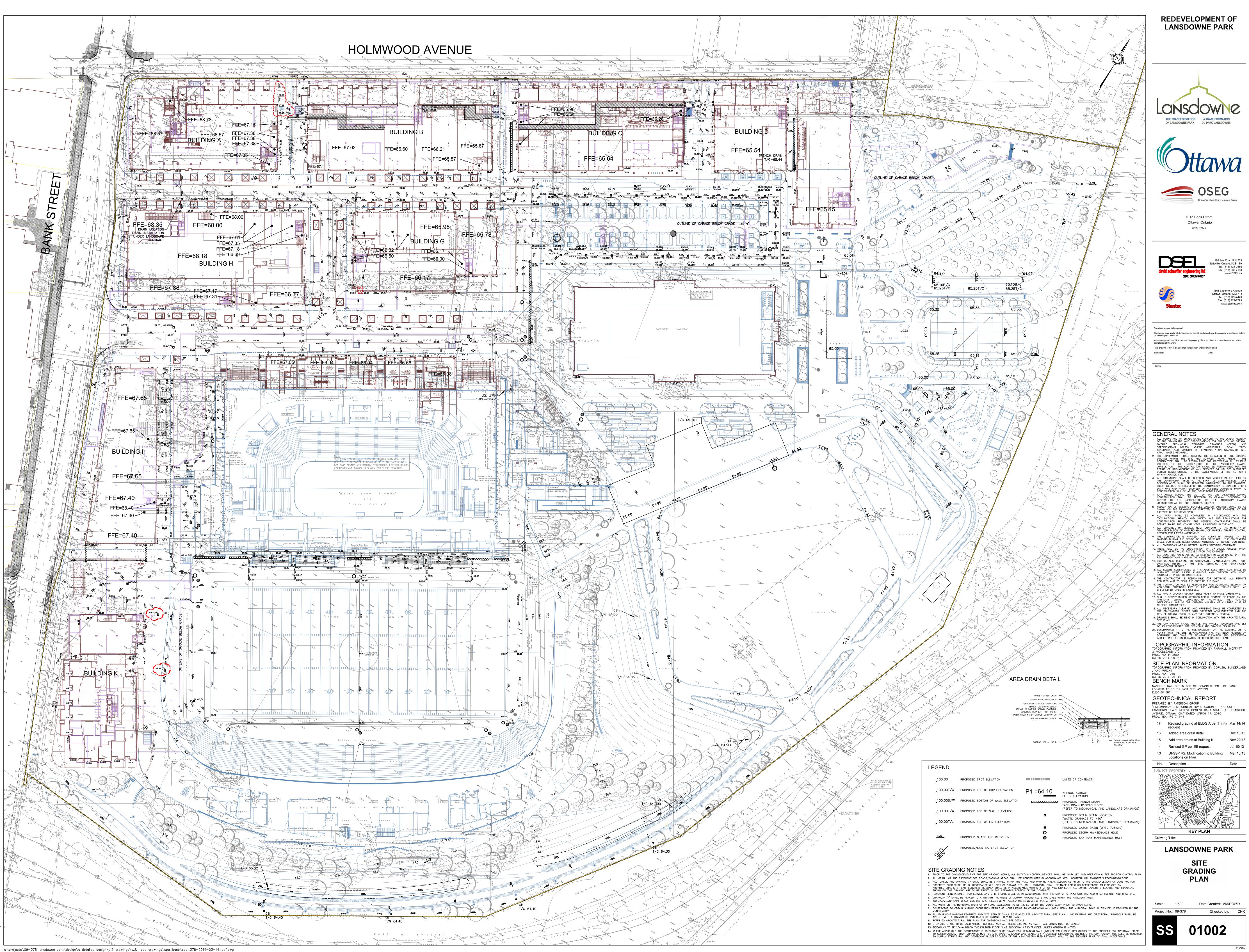


Drawing Title: LANSDOWNE PARK

> SERVICING PLAN

Date Created: MM/DD/YR Checked by: CHK Project No.: 09-378 01003

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REDEVELOPMENT OF LANSDOWNE PARK

THE TRANSFORMATION
OF LANSDOWNE PARK

LA TRANSFORMATION
DU PARC LANSDOWNE





Ottawa, Ontario

K1S 3W7



Contractor must verify all dimensions on the job and report any discrepancy to architects before proceeding with the work All drawings and specifications are the property of the architect and must be returned at the completion of the work

This drawing is not to be used for construction until countersigned.

GENERAL NOTES ALL WORKS AND MATERIALS SHALL CONFORM TO THE LATEST REVISION OF THE STANDARDS AND SPECIFICATIONS FOR THE CITY OF OTTAWA, ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD) AND SPECIFICATIONS (OPSS), WHERE APPLICABLE. LOCAL UTILITY STANDARDS AND MINISTRY OF TRANSPORTATION STANDARDS WILL APPLY WHERE REQUIRED. APPLY WHERE REQUIRED.

2. THE CONTRACTOR SHALL CONFIRM THE LOCATION OF ALL EXISTING UTILITIES WITHIN THE SITE AND ADJACENT WORK AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ANY SERVICES OR UTILITIES DISTURBED DURING CONSTRUCTION, TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION. 3. ALL DIMENSIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER. LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFINU TILITY LOCATIONS AND NOTIFY ENGINEER OF POSSIBLE CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT THE CONTRACTORS EXPENSE. ANY AREAS BEYOND THE LIMIT OF THE SITE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION AT THE CONTRACTOR'S EXPENSE. 5. RELOCATION OF EXISTING SERVICES AND/OR UTILITIES SHALL BE AS SHOWN ON THE DRAWINGS OR DIRECTED BY THE ENGINEER AT THE EXPENSE OF THE DEVELOPER.

6. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE 'OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.' THE GENERAL CONTRACTOR SHALL BE DEEMED TO BE THE 'CONSTRUCTIOR' AS DEFINED IN THE ACT. ALL CONSTRUCTION SIGNAGE MUST CONFORM TO THE MINISTRY OF TRANSPORTATION OF ONTARIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES PER LATEST AMENDMENT. THE CONTRACTOR IS ADVISED THAT WORKS BY OTHERS MAY BE ONGOING DURING THE PERIOD OF THIS CONTRACT. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES TO PREVENT CONFLICTS. 9. ALL DIMENSIONS ARE IN METRES UNLESS SPECIFIED OTHERWISE. 10. THERE WILL BE NO SUBSTITUTION OF MATERIALS UNLESS PRIOR WRITTEN APPROVAL IS RECEIVED FROM THE ENGINEER. 11. ALL CONSTRUCTION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE GEOTECHNICAL REPORT. 12. FOR DETAILS RELATING TO STORMWATER MANAGEMENT AND ROOF DRAINAGE REFER TO THE SITE SERVICING AND STORMWATER MANAGEMENT REPORT.

13. ALL SEWERS CONSTRUCTED WITH GRADES LESS THAN 1.0% SHALL BE INSTALLED USING LASER ALIGNMENT AND CHECKED WITH LEVEL INSTRUMENT PRIOR TO BACKFILLING. 14. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMIT: REQUIRED AND TO BEAR THE COST OF THE SAME. 15. THE CONTRACTOR WILL BE RESPONSIBLE FOR ADDITIONAL BEDDING, OR ADDITIONAL STRENGTH PIPE IF THE MAXIMUM TRENCH WIDTH AS SPECIFIED BY OPSD IS EXCEEDED. 16. ALL PIPE / CULVERT SECTION SIZES REFER TO INSIDE DIMENSIONS. SHOULD DEEPLY BURIED ARCHAEOLOGICAL REMAINS BE FOUND ON THE PROPERTY DURING CONSTRUCTION ACTIVITIES, THE HERITAGE OPERATIONS UNIT OF THE ONTARIO MINISTRY OF CULTURE MUST BE NOTIFIED IMMEDIATELY.

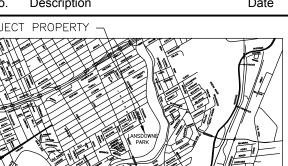
VERIFY THAT THE SITE BENCHMARK(S) HAS NOT BEEN ALTERED OR DISTURBED AND THAT ITS RELATIVE ELEVATION AND DESCRIPTION AGREES WITH THE INFORMATION DEPICTED ON THIS PLAN. TOPOGRAPHIC INFORMATION TOPOGRAPHIC INFORMATION PROVIDED BY FAIRHALL, MOFFATT & WOODLEAND LTD.

SITE PLAN INFORMATION
TOPOGRAPHIC INFORMATION PROVIDED BY CORUSH, SUNDERLAND **BENCH MARK** MAGNETIC NAIL SET IN TOP OF CONCRETE WALL OF CANAL LOCATED AT SOUTH EAST SITE ACCESS ELEV=64.581

GEOTECHNICAL REPORT PREPARED BY PATERSON GROUP "PRELIMINARY GEOTECHNICAL INVESTIGATION — PROPOSED LANSDOWNE PARK REDEVELOPMENT BANK STREET AT HOLMWOOD AVENUE, OTTAWA, ON." DATED MARCH 17, 2010 PROJ. NO.: PG1744-1

17 Revised grading at BLDG A per Trinity Mar 14/14 16 Added area drain detail 15 Add area drains at Building K 14 Revised GP per IBI request

13 SI-SS-1R2: Modification to Building Mar 13/13 Locations on Plan

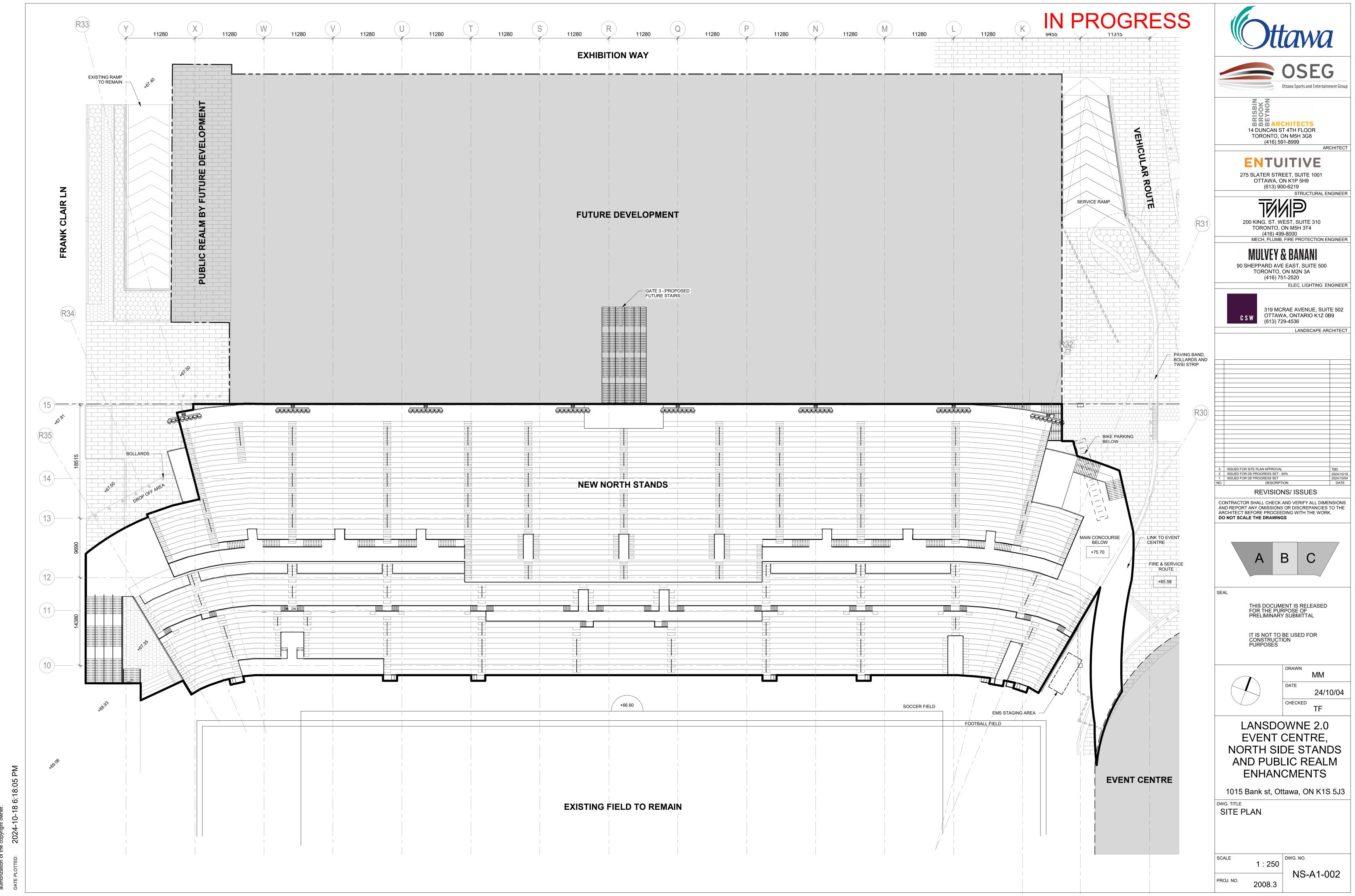


KEY PLAN

LANSDOWNE PARK

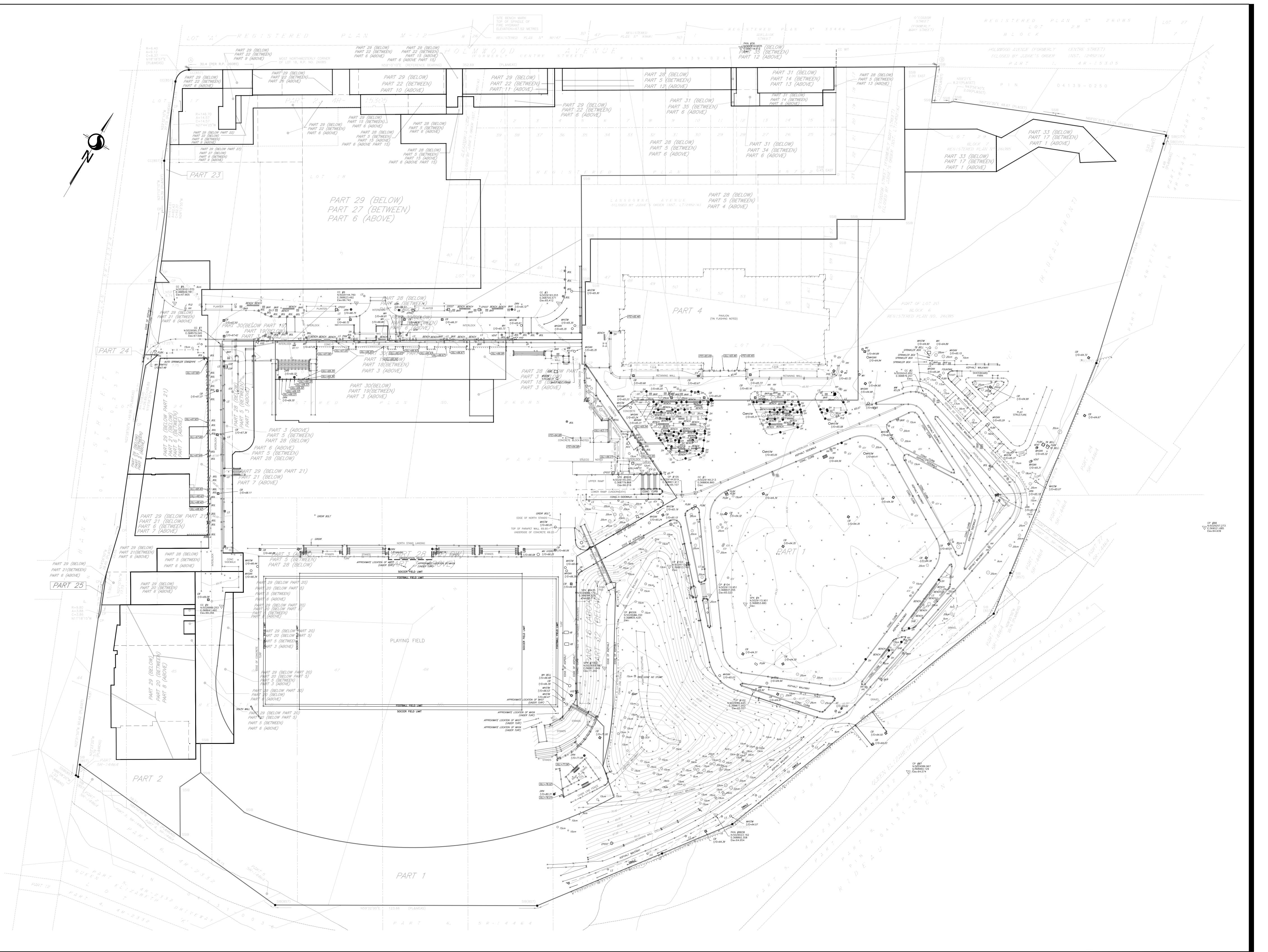
GRADING PLAN

Date Created: MM/DD/YR Checked by: CHK











Stantec Geomatics Ltd.
300-1331 Clyde Avenue
Ottawa ON
Tel. 613.722.4420

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TOPOGRAPHIC SKETCH OF

CITY OF OTTAWA

Stantec Geomatics Ltd.

ONTARIO LAND SURVEYORS

METRIC CONVERSION

METRIC CONVERSION

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

CONVERTED TO FEET BY DIVIDING BY 0.3048

HORIZONTAL DATUM NOTE
PROJECTION: MODIFIED TRANSVERSE MERCATOR

(MTM, ZONE 9, CM76°30'W)

DATUM: NAD 83 (ORIGINAL)

DISTANCES ON THIS PLAN MAY BE CONVERTED TO GROUND DISTANCES BY DIVIDING BY

A COMBINED SCALE FACTOR OF 0.999XXX.

VERTICAL DATUM NOTE

ELEVATIONS ARE REFERRED TO THE CANADIAN GEODETIC VERTICAL DATUM

(CGVD-1928:1978)

BOUNDARY NOTE

BOUNDARY LINEWORK AND INFORMATION IS COMPILED FROM PLAN

BOUNDARY LINEWORK AND INFORMATION IS COMPILED FROM PLAN VARIOUS SOURCES AND IS NOT BASED ON ACTUAL SURVEY.

LEGEND

DENOTES FOUND MONUMENTS SET MONUMENTS IRON BAR ROUND IRON BAR STANDARD IRON BAR SHORT STANDARD IRON BAR CUT CROSS CONCRETE PIN PROPERTY IDENTIFICATION NUMBER *M/MEAS* MEASURED PROPORTIONED ORIGIN UNKNOWN STANTEC GEOMATICS LTD. AIR CONDITIONING UNIT ANCHOR AIR PUMP ANTENNA BOREHOLE HOSE BIB BIKE RACK BENCH BOLLARD BOULDER DOUBLE CB CB MANHOLE DOUBLE CB MANHOLE CHIMNEY CLEAN OUT **CURB STOP VALVE** ELECTRICAL OUTLET FLOOD LIGHT FUEL TANK FILLER CAP GARBAGE CAN PIPE FLANGE (GAS) GAS FUEL PUMP **POLE GUYWIRE** GAS SERVICE REGULATO GAS VALVE HICKENBOTTOM HEADSTONE HYDRO LIGHT STANDARD HYDRO METER HYDRO TRANSFORMER JUNCTION BOX LIGHT STANDARD MAILBOX MONITORING PIN MAINTENANCE HOLE UNIDENTIFIED MAINTENANCE HOLE BELL MAINTENANCE HOLE FIBRE OPTION MAINTENANCE HOLE HYDRO MAINTENANCE HOLE SANITARY MAINTENANCE HOLE STORM MAINTENANCE HOLE TRAFFIC MONITORING WELL **NEWS PAPER BOX** LIGHT STANDARD ORNAMENTA OBSERVATION WELL PARKING METER PULL BOX PLAQUE PILLAR PIEZIOMETER RED LIGHT CAMERA RAILWAY SWITCH STAND SATELLITE DISH SCULPTURE SUMP/CATCH PIT SPRINKLER CONTROL VALVE SPRINKLER HEAD SIAMESE CONNECTION SOLAR PANEL SEPTIC TANK LID TERMINAL BOX - BELL TERMINAL BOX - CABLE TRAFFIC CONTROL BOX TRAFFIC SIGNAL LIGHT MARKER BELL UNDERGROUND MARKER CABLE UNDERGROUND MARKER GAS UNDERGROUND MARKER OIL UNDERGROUND

TREE DECIDUOUS
(D.B.H. SHOWN)

T UNDERGROUND TELEPHONE
UNDERGROUND HYDRO
WATERMAIN
G G GASMAIN
STORM SEWER
UNDERGROUND FIBRE OPTIC

VALVE BOX

VALVE CHAMBER

TREE CONIFEROUS (D.B.H. SHOWN)

WATER VALVE TREE STUMP

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THE SURVEY WAS COMPLETED ON THE 18th DAY OF JUNE, 2024.

DATE R.G. BENNETT
ONTARIO LAND SURVEYOR

DRAWN: DM CHECKED: CT PM: CT FIELD: CA/ZL/RJ/AW PROJECT No.: 161614737-111

GENERAL

- 1. DRAWINGS TO BE READ IN CONJUNCTION WITH ARCHITECTURAL AND LANDSCAPE DRAWINGS.
- 2. ALL SERVICES, MATERIALS, CONSTRUCTION METHODS AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND REGULATIONS OF THE: CITY OF OTTAWA STANDARD SPECIFICATIONS AND DRAWINGS, ONTARIO PROVINCIAL SPECIFICATION STANDARD SPECIFICATION (OPSS) AND ONTARIO PROVINCIAL STANDARD DRAWINGS (OPSD), UNLESS OTHERWISE SPECIFIED, TO THE SATISFACTION OF THE CITY AND THE CONSULTANT.
- 3. THE POSITION OF EXISTING POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND ABOVEGROUND UTILITIES, STRUCTURES AND APPURTENANCES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWING, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SATISFY HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM DURING THE COURSE OF CONSTRUCTION. ANY RELOCATION OF EXISTING UTILITIES REQUIRED BY THE DEVELOPMENT OF SUBJECT LANDS IS TO BE UNDERTAKEN AT CONTRACTOR'S EXPENSE.
- 4. THE CONTRACTOR MUST NOTIFY ALL EXISTING UTILITY COMPANY OFFICIALS FIVE (5) BUSINESS DAYS PRIOR TO START OF CONSTRUCTION AND HAVE ALL EXISTING UTILITIES AND SERVICES LOCATED IN THE FIELD OR EXPOSED PRIOR TO THE START OF CONSTRUCTION, INCLUDING BUT NOT LIMITED TO HYDRO, BELL, CABLE TV, AND CONSUMERS GAS LINES.
- 5. ALL TRENCHING AND EXCAVATIONS TO BE IN ACCORDANCE WITH THE LATEST REVISIONS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS. ALL INFORMATION SHALL BE CONFIRMED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- 6. REFER TO ARCHITECTS PLANS FOR BUILDING DIMENSIONS, ELEVATIONS, LAYOUT AND REMOVALS. REFER TO LANDSCAPE PLAN FOR LANDSCAPED DETAILS AND OTHER RELEVANT INFORMATION. ALL INFORMATION SHALL BE CONFIRMED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- 7. TOPOGRAPHIC SURVEY COMPLETED AND PROVIDED BY STANTEC GEOMATICS LTD. DATED JUNE 18, 2024. CONTRACTOR TO VERIFY IN THE FIELD PRIOR TO CONSTRUCTION OF ANY WORK AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
- 8. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS. VERIFY THAT JOB BENCHMARKS HAVE NOT BEEN ALTERED OR DISTURBED.
- 9. ALL GROUND SURFACES SHALL BE EVENLY GRADED WITHOUT PONDING AREAS AND WITHOUT LOW POINTS EXCEPT WHERE APPROVED SWALE OR DRAIN OUTLETS ARE PROVIDED.
- 10. ALL EDGES OF DISTURBED PAVEMENT SHALL BE SAW CUT TO FORM A NEAT AND STRAIGHT LINE PRIOR TO PLACING NEW PAVEMENT. PAVEMENT REINSTATEMENT SHALL BE WITH STEP JOINTS OF 500mm WIDTH MINIMUM.
- 11. ALL DISTURBED AREAS OUTSIDE PROPOSED GRADING LIMITS TO BE RESTORED TO ORIGINAL ELEVATIONS AND CONDITIONS UNLESS OTHERWISE SPECIFIED. EXISTING PARKING LOT SHALL BE RE-ASPHALTED AT EXISTING GRADES EXCEPT AS NOTED TO EVEN OUT GRADES. ALL RESTORATION SHALL BE COMPLETED WITH THE GEOTECHNICAL REQUIREMENTS FOR BACKFILL AND COMPACTION.
- 12. ABUTTING PROPERTY GRADES TO BE MATCHED.
- 13. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS FROM THE MUNICIPAL AUTHORITIES PRIOR TO COMMENCING CONSTRUCTION, INCLUDING WATER PERMIT AND ROAD CUT PERMIT
- MINIMIZE DISTURBANCE TO EXISTING VEGETATION DURING THE EXECUTION OF ALL WORKS.
- 15. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL UNLESS OTHERWISE DIRECTED FROM THE ENGINEER. EXCAVATE AND REMOVE ALL ORGANIC MATERIAL AND DEBRIS LOCATED WITHIN THE PROPOSED BUILDING, PARKING AND ROADWAY LOCATIONS.
- 16. AT PROPOSED UTILITY CONNECTION POINTS AND CROSSINGS (I.E. STORM SEWER, SANITARY SEWER, WATER, ETC.) THE CONTRACTOR SHALL DETERMINE THE PRECISE LOCATION AND DEPTH OF EXISTING UTILITIES AND REPORT ANY DISCREPANCIES OR CONFLICTS TO THE ENGINEER BEFORE COMMENCING WORK.
- 17. PRIOR TO CONSTRUCTION, A GEOTECHNICAL ENGINEER REGISTERED IN THE PROVINCE OF ONTARIO IS TO INSPECT ALL SUB-SURFACES FOR FOOTINGS, SERVICES AND PAVEMENT STRUCTURES.
- 18. CONTRACTOR TO OBTAIN POST-CONSTRUCTION TOPOGRAPHIC SURVEY PERFORMED BY CERTIFIED OLS OR P.ENG. CONFIRMING COMPLIANCE WITH DESIGN GRADING AND SERVICING. SURVEY IS TO INCLUDE LOCATION AND INVERTS FOR BURIED UTILITIES.
- 19. PROVIDE CCTV INSPECTION REPORT FOR ALL SEWERS AND CATCHBASIN LEADS 200MM DIAMETER AND LARGER. REPEAT CCTV INSPECTION FOLLOWING RECTIFICATION OF ANY DEFICIENCIES.
- 20. REPORT REFERENCES
- 20.1. GEOTECHNICAL INVESTIGATION PROPOSED EVENT CENTRE LANSDOWNE PARK REDEVELOPMENT, REPORT NO. PG6655-1, MAY
- 20.2. FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT FOR LANSDOWNE LIVE OTTAWA SPORT AND ENTERTAINMENT GROUP, PROJECT NO. 09-378, JANUARY 2012, BY DSEL.
- FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT STUDY FOR LANSDOWNE PARK REDEVELOPMENT 2.0, PROJECT NO. CA0000286.1662, SEPTEMBER 2023, BY WSP.
- STORMWATER MANAGEMENT DESIGN REPORT FOR LANSDOWNE URBAN PARK, FEBRUARY 2012, BY STANTEC CONSULTING LTD. SERVICING REPORT FOR LANSDOWNE PARK EVENT CENTRE, REPORT NO.CA0033920.1056, JANUARY 2025, PREPARED BY WSP. SOTRMWATER MANAGEMENT DESIGN REPORT FOR LANSDOWNE PARK EVENT CENTRE, REPORT NO.CA0033920.1056 JANUARY
- PARKING LOT AND WORK IN PUBLIC RIGHTS OF WAY

2025. PREPARED BY WSP.

- 1. CONTRACTOR TO REINSTATE ROAD CUTS AS PER CITY OF OTTAWA DETAIL R10.
- GEOTECHNICAL INVESTIGATION PROPOSED EVENT CENTRE LANSDOWNE PARK REDEVELOPMENT, REPORT NO. PG6655-1, MAY 2024, BY PATTERSON GROUP.
- 3. CONTRACTOR TO PREPARE SUBGRADE, INCLUDING PROOFROLLING, TO THE SATISFACTION OF THE GEOTECHNICAL CONSULTANT PRIOR TO THE COMMENCEMENT OF PLACEMENT OF GRANULAR B MATERIAL.
- 4. FILL TO BE PLACED AND COMPACTED PER THE GEOTECHNICAL REPORT REQUIREMENTS.
- 5. CONTRACTOR TO SUPPLY, PLACE AND COMPACT GRANULAR B MATERIAL IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL CONSULTANT. CONTRACTOR TO PROVIDE CONSULTANT WITH SAMPLES OF GRANULAR B MATERIAL FOR TESTING AND CERTIFICATION FROM THE GEOTECHNICAL CONSULTANT THAT THE MATERIAL MEETS THE GRADATION REQUIREMENTS SPECIFIED IN THE GEOTECHNICAL REPORT.
- 6. GRANULAR A MATERIAL TO BE PLACED ONLY UPON APPROVAL BY THE GEOTECHNICAL CONSULTANT OF GRANULAR B PLACEMENT.
- 7. CONTRACTOR TO SUPPLY, PLACE AND COMPACT GRANULAR A MATERIAL IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL CONSULTANT. CONTRACTOR TO PROVIDE CONSULTANT WITH SAMPLES OF GRANULAR A MATERIAL FOR TESTING AND CERTIFICATION FROM THE GEOTECHNICAL CONSULTANT THAT THE MATERIAL MEETS THE GRADATION REQUIREMENTS SPECIFIED IN THE GEOTECHNICAL REPORT.
- 8. ASPHALT MATERIAL TO BE PLACED ONLY UPON APPROVAL BY THE GEOTECHNICAL CONSULTANT OF GRANULAR A PLACEMENT.
- 9. CONTRACTOR TO SUPPLY, PLACE AND COMPACT ASPHALT MATERIAL IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL CONSULTANT. CONTRACTOR TO PROVIDE CONSULTANT WITH SAMPLES OF ASPHALT MATERIAL FOR TESTING AND CERTIFICATION FROM THE GEOTECHNICAL CONSULTANT THAT THE MATERIAL MEETS THE REQUIREMENTS SPECIFIED IN THE GEOTECHNICAL REPORT.
- 10. CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING LINE AND GRADE IN ACCORDANCE WITH THE PLANS, AND FOR PROVIDING THE CONSULTANT WITH VERIFICATION PRIOR TO PLACEMENT.
- 11. 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 CONSULTANT. CONSULTANT TO DETERMINE APPROPRIATE DISPOSAL METHOD/LOCATION.
- 12. PAVEMENT STRUCTURE (MATERIAL TYPES AND THICKNESS) TO BE AS SPECIFIED IN THE GEOTECHNICAL REPORT.

STORM SEWERS AND STRUCTURES

- 1. ALL STORM SEWER MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO THE CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. PROVIDE CCTV INSPECTION REPORTS FOR ALL NEW STORM SEWERS, SERVICES AND CB LEADS.
- 2. STORM SEWERS 450mm DIAMETER AND SMALLER SHALL BE PVC SDR-35, WITH RUBBER GASKET PER CSA A-257.3.
- STORM SEWER LARGER THAN 450mm SHALL BE REINFORCED CONCRETE CLASS 100D.
- 4. SEWER BEDDING AS PER CITY OF OTTAWA DETAIL S6.
- ALL STORM MANHOLES TO BE AS PER STORM STRUCTURE TABLE.
- ANY NEW OR EXISTING STORM SEWER WITH LESS THAN 2.0m COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD W22. OR APPROVED BY THE ENGINEER.
- 7. ALL CATCHBASIN LEADS TO BE MINIMUM 200mm DIAMETER AT MINIMUM 1.0% SLOPE UNLESS OTHERWISE
- STORM CATCHBASINS AS PER OPSD 705.010 AND FRAME/COVER AS PER CITY STANDARD DRAWINGS S19. STORM

CBMH'S AS INDICATED IN TABLE WITH SUMP, ADJUSTMENT SECTIONS SHALL BE AS PER OPSD 704.010.

- 9. INSTALLATION OF FLOW CONTROL ICD'S TO BE VERIFIED BY QUALITY VERIFICATION ENGINEER RETAINED BY
- 10. PROVIDE BACKWATER VALVE ON FOUNDATION DRAIN, STORM DISCHARGE, AND OVERFLOW DISCHARGE PER
- 11. ALL CATCHBASINS EXCLUDING LANDSCAPE CATCHBASINS TO HAVE 150 MMØ PERFORATED PIPE FOR 3.0M ON ALL AVAILABLE SIDES AT AN ELEVATION OF 300mm BELOW SUBGRADE LEVEL AS PER CITY OF OTTAWA STANDARD DRAWING 'R1'

SANITARY SEWER AND STRUCTURES

- ALL SANITARY SEWER, SANITARY SEWER APPURTENANCES AND CONSTRUCTION METHODS SHALL CONFORM TO THE CURRENT CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. PROVIDE CCTV INSPECTION REPORTS FOR ALL NEW SANITARY PIPING.
- 2. SANITARY SEWER PIPE SIZE 150mm DIAMETER AND GREATER TO BE PVC SDR-35 (UNLESS SPECIFIED OTHERWISE) WITH RUBBER GASKET TYPE JOINTS IN CONFORMANCE WITH CSA B-182.2,3,4.
- 3. SEWER BEDDING AS PER CITY OF OTTAWA DETAIL S6.
- ALL SANITARY MANHOLES 1200mm IN DIAMETER TO BE AS PER OPSD 701.01. FRAME AND COVER TO BE AS PER CITY OF OTTAWA STANDARD S25 AND S24.
- MAINTENANCE HOLE BENCHING AND PIPE OPENING ALTERNATIVES AS PER THE OPSD 701.021
- 6. ANY SANITARY SEWER WITH LESS THAN 2.0m COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD W22, OR APPROVED BY THE ENGINEER.
- 7. PROVIDE BACKWATER VALVE FOR BUILDING SANITARY SERVICES PER \$14.1

in-situ soil or fill

- ALL WATERMAIN AND WATERMAIN APPURTANANCES, MATERIALS, CONSTRUCTION AND TESTING METHODS SHALL CONFORM TO THE CURRENT CITY OF OTTAWA AND MINISTRY OF ENVIRONMENT STANDARDS AND SPECIFICATIONS.
- 2. ALL WATERMAIN 300mm DIAMETER AND SMALLER TO BE POLY VINYL CHLORIDE (PVC) CLASS 150 DR 18 MEETING AWWA SPECIFICATION C900.
- ALL WATERMAIN TO BE INSTALLED AT MINIMUM COVER OF 2.4m BELOW FINISHED GRADE. WHERE WATERMAINS CROSS OVER OTHER UTILITIES. A MINIMUM 0.30m CLEARANCE SHALL BE MAINTAINED: WHERE WATERMAINS CROSS UNDER OTHER UTILITIES, A MINIMUM 0.50m CLEARANCE SHALL BE MAINTAINED. WHERE THE MINIMUM SEPARATION CANNOT BE ACHIEVED, THE WATERMAIN SHALL BE INSTALLED AS PER CITY OF OTTAWA STANDARDS W25 AND W25.2. WHERE 2.4m MINIMUM DEPTH CANNOT BE ACHIEVED, THERMAL INSULATION SHALL BE PROVIDED AS PER CITY OF OTTAWA STANDARD W22. WHERE A WATERMAIN IS IN CLOSE PROXIMITY TO AN OPEN STRUCTURE, THERMAL INSULATION SHALL BE PROVIDED AS PER CITY OF OTTAWA STANDARD W23.
- 4. CONCRETE THRUST BLOCKS AND MECHANICAL RESTRAINTS ARE TO BE INSTALLED AT ALL TEES, BENDS, HYDRANTS, REDUCERS, ENDS OF MAINS AND CONNECTIONS 100mm AND LARGER, IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS W25.3 & W25.4.
- 5. CATHODIC PROTECTION REQUIRED FOR ALL IRON FITTINGS AS PER CITY OF OTTAWA STANDARD W40 & W42.
- 6. ALL VALVES AND VALVE BOXES AND CHAMBERS, HYDRANTS, AND HYDRANT VALVES AND ASSEMBLES SHALL BE INSTALLED AS PER CITY OF OTTAWA STANDARD
- 7. FIRE HYDRANT LOCATION AND INSTALLATION AS PER CITY OF OTTAWA STANDARD W18 & W19. CONTRACTOR TO
- PROVIDE FLOW TEST AND PAINTING OF NEW HYDRANT IN ACCORDANCE WITH CITY STANDARDS.
- 8. IF WATER MAIN MUST BE DEFLECTED TO MEET ALIGNMENT, ENSURE THAT THE AMOUNT OF DEFLECTION USED IS LESS THAN HALF THAT RECOMMENDED BY THE MANUFACTURER.

Table 2 - Recommended Light Duty Asphalt Pavement Structure - Car Only Parking

Tickness (mm)	Material Description
50	Wear Course - HL-3 or Superpave 12.5 Asphaltic Concrete
150	Base - OPSS Granular A Crushed Stone
300	SUBBASE - OPSS Granular B Type II
SUBGRADE - Either ap	proved fill, in-situ, or OPSS Granular B Type I or II material placed on

in-situ soil or fill.

Tickness (mm)	Material Description					
40	Wear Course - Superpave 12.5 Asphaltic Concrete					
50	Binder Course - Superpave 19.0 Asphaltic Concrete					
150	Base - OPSS Granular A Crushed Stone					
300	SUBBASE - OPSS Granular B Type II					

EROSION AND SEDIMENT CONTROL

CONTRACTOR IS RESPONSIBLE FOR ALL INSTALLATION, MONITORING, REPAIR AND REMOVAL OF ALL EROSION AND SEDIMENT CONTROL FEATURES. **

- PRIOR TO START OF CONSTRUCTION: 1.1. INSTALL SILT FENCE IN LOCATION SHOWN.
- INSTALL SILT SACK FILTERS IN ALL THE CATCHBASINS AND MANHOLES TO REMAIN DURING
- CONSTRUCTION WITHIN THE SITE.
- 1.3. INSPECT MEASURES IMMEDIATELY AFTER INSTALLATION.
- 1.4. INSTALL MUD MAT AT CONSTRUCTION ENTRANCES

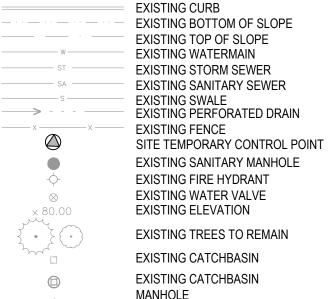
DURING CONSTRUCTION:

- 2.1. MINIMIZE THE EXTENT OF DISTURBED AREAS AND THE DURATION OF EXPOSURE AND IMPACTS
- PERIMETER VEGETATION TO REMAIN IN PLACE UNTIL PERMANENT STORM WATER MANAGEMENT IS IN PLACE. OTHERWISE, IMMEDIATELY INSTALL SILT FENCE WHEN THE EXISTING SITE IS DISTURBED AT THE PERIMETER.
- PROTECT DISTURBED AREAS FROM OVERLAND FLOW BY PROVIDING TEMPORARY SWALES TO THE SATISFACTION OF THE FIELD ENGINEER. TIE-IN TEMPORARY SWALE TO EXISTING CB'S AS
- 2.4. PROVIDE TEMPORARY COVER SUCH AS SEEDING OR MULCHING IF DISTURBED AREA WILL NOT BE REHABILITATED WITHIN 30 DAYS.
- INSPECT SILT FENCES, FILTER FABRIC FILTERS AND CATCH BASIN SUMPS WEEKLY AND WITHIN 24 HOURS AFTER A STORM EVENT. CLEAN AND REPAIR WHEN NECESSARY. DOWNSTREAM STORM INFRASTRUCTURE SHALL BE PROTECTED FROM UNFILTERED RUNOFF
- DURING ON-SITE STORM INFRASTRUCTURE DEMOLITION.

EROSION CONTROL FENCING TO BE ALSO INSTALLED AROUND THE BASE OF ALL STOCKPILES.

- DRAWING TO BE REVIEWED AND REVISED AS REQUIRED DURING CONSTRUCTION.
- 2.9. DO NOT LOCATE TOPSOIL PILES AND EXCAVATION MATERIAL CLOSER THAN 2.5m FROM ANY PAVED SURFACE, OR ONE WHICH IS TO BE PAVED BEFORE THE PILE IS REMOVED. ALL TOPSOIL PILES ARE TO BE SEEDED IF THEY ARE TO REMAIN ON SITE LONG ENOUGH FOR SEEDS TO GROW (LONGER THAN 30 DAYS).
- CONTROL WIND-BLOWN DUST OFF SITE BY SEEDING TOPSOIL PILES AND OTHER AREAS TEMPORARILY (PROVIDE WATERING AS REQUIRED AND TO THE SATISFACTION OF THE ENGINEER).
- 2.11. NO ALTERNATE METHODS OF EROSION PROTECTION SHALL BE PERMITTED UNLESS APPROVED BY THE FIELD ENGINEER.
- 2.12. CITY ROADWAY AND SIDEWALK TO BE CLEANED OF ALL SEDIMENT FROM VEHICULAR TRACKING AS REQUIRED.
- 2.13. DURING WET CONDITIONS, TIRES OF ALL VEHICLES/EQUIPMENT LEAVING THE SITE ARE TO BE SCRAPED.
- ANY MUD/MATERIAL TRACKED ONTO THE ROAD SHALL BE REMOVED IMMEDIATELY BY HAND OR RUBBER TIRE LOADER.
- 2.15. TAKE ALL NECESSARY STEPS TO PREVENT BUILDING MATERIAL, CONSTRUCTION DEBRIS OR WASTE BEING SPILLED OR TRACKED ONTO ABUTTING PROPERTIES OR PUBLIC STREETS DURING CONSTRUCTION AND PROCEED IMMEDIATELY TO CLEAN UP ANY AREAS SO AFFECTED.
- ALL EROSION CONTROL STRUCTURE TO REMAIN IN PLACE UNTIL ALL DISTURBED GROUND 2.16. SURFACES HAVE BEEN STABILIZED EITHER BY PAVING OR RESTORATION OF VEGETATIVE GROUND COVER.
- 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.

EXISTING LEGEND:



EXISTING STORM MANHOLE

REMOVALS LEGEND:

CURB REMOVAL

st — STORM REMOVAL

SA STORM REMOVAL

RET SUB	WATERMAIN REMOVAL RETAINING WALL REMOVAL RETAINING WALL REMOVAL SUB DRAIN REMOVAL
	FULL DEPTH ASPHALT REMOVAL
A 4 4	GREEN AREA/ INTERLOCK AREA REMOVAL CONCRETE SIDEWALK REMOVAL
	GRAVEL ROAD REMOVAL
	RAMP REMOVAL
× ×	CATCH BASIN REMOVAL STORM MANHOLE REMOVAL SANITARY MANHOLE REMOVAL
❈	FIRE HYDRANT REMOVAL
\times \otimes	EXISTING TREES REMOVAL
¥	BOLLAR REMOVAL

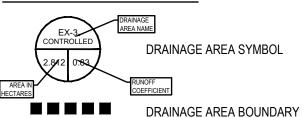
LIGHT STAND REMOVAL

PROPOSED LEGE	ND:
W	EXISTING BOUNDARY NEW WATERMAIN NEW STORM SEWER NEW HDPE SUBDRAIN NEW SANITARY SEWER HIGH POINT 100 YEAR PONDING LIMIT
	NEW STORM CATCH BASIN MANHOLE
0	NEW STORM MANHOLE
	NEW CATCH BASIN/ DITCH INLET
•	NEW SANITARY MANHOLE
⊗	NEW WATERMAIN VALVE
д	NEW WATERMAIN CONNECTION
4	NEW WATERMAIN 45° BEND
	NEW SERVICING CAP
★ 68.79	PROPOSED ELEVATION
1.6%	PROPOSED SURFACE SLOPE
	OVER FLOW DIRECTION
	PROPOSED TRENCH DRAIN
	PROPOSED INTERLOCK
	PROPOSED ASPHALT PAVEMENT
	PROPOSED INSULATION
•	PROPOSED TREES

ESC LEGEND:

LIGHT DUTY SILT FENCE (OPSD 219.110) FILTER CLOTH PROTECTION MUD MAT

DRAINAGE AREA LEGEND







14 DUNCAN ST 4TH FLOOR TORONTO, ON M5H 3G8 (416) 591-8999

ENTUITIVE

135 LAURIER AVE WEST, SUITE 413 OTTAWA, ON K1P 5J2 (343) 308-9274 STRUCTURAL ENGINEER



90 SHEPPARD AVE EAST, SUITE 500 TORONTO, ON M2N 3A (416) 751-2520

530 N. WOOD STREET #C

CHICAGO, IL 60622

(224) 717-1999 FOOD AND BEVERAGE

ELEC, LIGHTING ENGINEER

CIVIL ENGINEER



2011 QUEENSVIEW DR. OTTAWA, ONTARIO K2B 8K2 (613) 829-2800

REVISED AS PER CITY COMMENTS ISSUED FOR COORDINATION
ISSUED FOR 90% DD - CLASS B ESTIMATE

REVISED AS PER CITY COMMENTS
ISSUED FOR SPA **REVISIONS/ISSUES**

CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY OMISSIONS OR DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK DO NOT SCALE THE DRAWINGS



2025-01-15

CHECKED LANSDOWNE EVENT

J.T

2025/01/15

CENTRE

945 & 1015 BANK STREET

DWG. TITLE

NOTES AND DETAILS

DWG. NO.

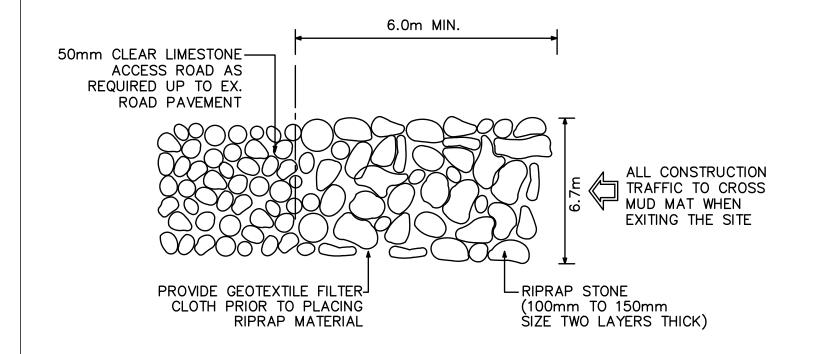
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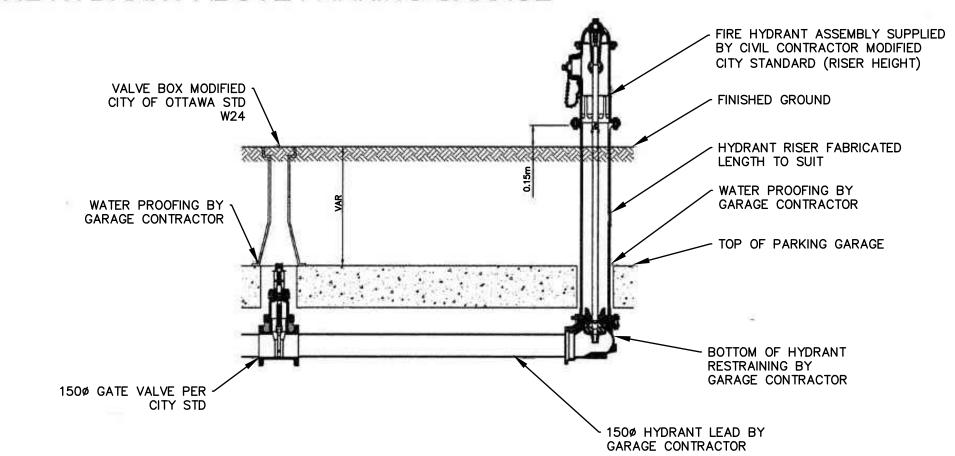
				STORM	STRUCTU	RE TABLE				
STRUCTURE	TOP OF GRATE	STRUC							OUTLET	
		INLET	INLET	INLET	OUTLET	SIZE	OPSD	COVER	DIAMETER	TYPE
CB01	65.00				63.600	600X600mm	OPSD 705.010	S19.1	250	PVC SDR-35
CB02	65.58				64.010	REFER TO	O TRENCH DRAI	N DESIGN	250	PVC SDR-35
CB03	66.28				64.190	REFER TO	O TRENCH DRAI	N DESIGN	250	PVC SDR-35
CB04	66.02				64.220	600X600mm	OPSD 705.010	S19.1	250	PVC SDR-35
CB05	64.91				63.740	REFER TO	O TRENCH DRAI	N DESIGN	250	PVC SDR-35
CB06	64.91				63.760	REFER TO	O TRENCH DRAI	N DESIGN	250	PVC SDR-35
CB07	64.90				63.690	REFER TO	O TRENCH DRAI	N DESIGN	250	PVC SDR-35
CB08	64.90				63.190	REFER TO	O TRENCH DRAI	N DESIGN	250	PVC SDR-35
CB09	65.20				64.070	REFER TO	O TRENCH DRAI	N DESIGN	250	PVC SDR-35
CB10	65.30				63.620	600X600mm	OPSD 705.010	S19.1	250	PVC SDR-35
CB11	65.93				64.000	REFER TO	O TRENCH DRAI	N DESIGN	250	PVC SDR-35
CB12	66.24				63.660	600X600mm	OPSD 705.010	S19.1	250	PVC SDR-35
CB13	65.74				63.680	REFER TO	O TRENCH DRAI	N DESIGN	250	PVC SDR-35
CB14	67.22				64.370	REFER TO	O TRENCH DRAI	N DESIGN	250	PVC SDR-35
CB15	65.15				63.830	600X600mm	OPSD 705.010	S19.1	250	PVC SDR-35
STMH201(OGS)	65.35			63.080	63.060	1800mm DIA.	OPSD 701.010	S24.1	900	PVC SDR-35
STMH202	65.42		63.380	63.150	63.060	1800mm DIA.	OPSD 701.010	S24.1	1050	CONC
STMH203	68.26			63.210	63.190	1800mm DIA.	OPSD 701.010	S24.1	1050	CONC
STMH204	71.50			63.260	63.240	1800mm DIA.	OPSD 701.010	S24.1	1050	CONC
STMH205	66.72		64.070	63.320	63.290	1800mm DIA.	OPSD 701.010	S24.1	1050	CONC
STMH206	67.11			63.370	63.350	1800mm DIA.	OPSD 701.010	S24.1	1050	CONC
STMH207	66.15			63.420	63.390	1800mm DIA.	OPSD 701.010	S24.1	1050	CONC
STMH208	66.39		63.900	63.520	63.440	1800mm DIA.	OPSD 701.010	S24.1	1050	CONC
STMH209	66.41			63.620	63.580	1800mm DIA.	OPSD 701.010	S24.1	900	CONC
CBMH210	64.90		63.520	63.200	63.180	1200mm DIA.	OPSD 701.010	S28.1	600	CONC
STMH211	65.75		63.240	63.220	63.220	1200mm DIA.	OPSD 701.010	S24.1	600	CONC
STMH212	65.37			63.360	63.290	1200mm DIA.	OPSD 701.010	S24.1	600	CONC
STMH213	65.05	63.380	63.380	63.110	63.060	1200mm DIA.	OPSD 701.010	S24.1	250	PVC SDR-35
STMH214	66.14	64.110	63.680	63.600	63.060	1200mm DIA.	OPSD 701.010	S24.1	250	PVC SDR-35
STMH215	66.09	64.110	63.380	63.060	64.110	1200mm DIA.	OPSD 701.010	S24.1	250	PVC SDR-35

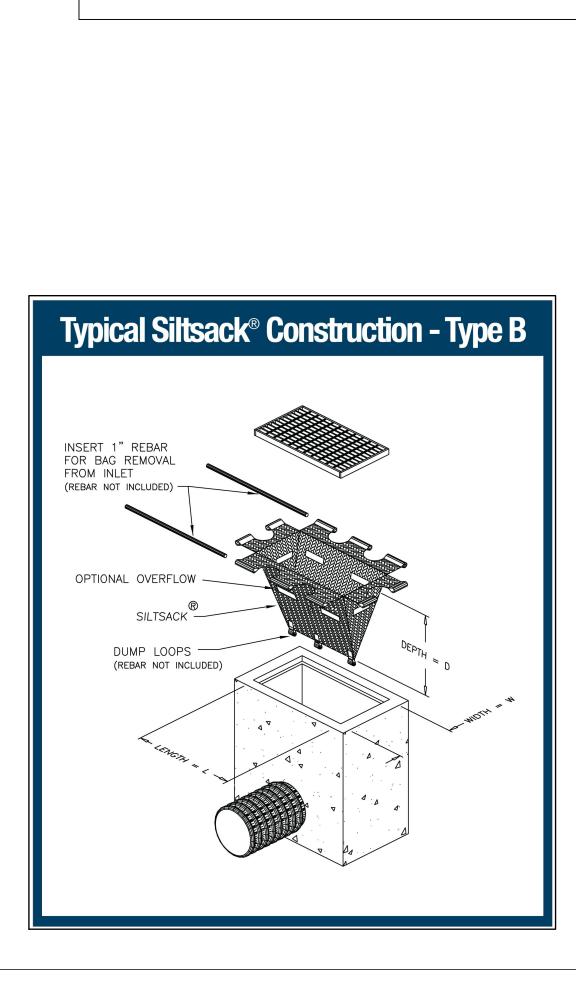
			S	AN STR	UCTURE TA	ABLE		
STRUCTUR	TOP OF		IN	VERT			DESCRIPTION	
E ID	GRATE	INLET	INLET	INLET	OUTLET	SIZE	OPSD	COVER
SAMH201	65.27			62.410	62.380	1200mm DIA.	OPSD-701.010	S24
SAMH202	66.13			62.510	62.480	1200mm DIA.	OPSD-701.010	S24
SAMH202A	67.02		64.510	62.570	62.570	1200mm DIA.	OPSD-701.010	S24
SAMH203	71.50			62.690	62.670	1200mm DIA.	OPSD-701.010	S24
SAMH204	66.65			62.760	62.740	1200mm DIA.	OPSD-701.010	S24
SAMH205	66.90			62.820	62.800	1200mm DIA.	OPSD-701.010	S24
SAMH206	66.93			62.880	62.860	1200mm DIA.	OPSD-701.010	S24
SAMH207	66.43		63.340	62.940	62.920	1200mm DIA.	OPSD-701.010	S24
SAMH208	66.42			63.100	63.040	1200mm DIA.	OPSD-701.010	S24
SAMH208A	66.46		65.840	63.020	63.020	1200mm DIA.	OPSD-701.010	S24
SAMH209	65.67			62.680	62.660	1200mm DIA.	OPSD-701.010	S24
SAMH210	65.36			62.820	62.760	1200mm DIA.	OPSD-701.010	S24



MUD MAT DETAIL - PLAN VIEW

FIRE HYDRANT ABOVE PARKING GARAGE





Γ			Obvert	Invert			Obvert	Invert	
F	1	1050mmø CONC STM	64.373	63.190	0.188	Clearance Above	63.002	62.627	375mmø PVC SAN
-	•	1000111110 00140 01111	01.070	00.100	0.100	Clourarios / 150vc	00.002	02.021	0,01111191 10 0,41
	2	375mmØ PVC SAN	62.729	62.354	0.103	Clearance Under	64.341	62.832	EX. 1350mm Ø CONC STM
	3	375mmø PVC SAN	62.768	62.393	0.083	Clearance Above	62.310	62.110	EX.200mm Ø PVC W/M
	4	375mmø PVC SAN	62.794	62.419	0.164	Clearance Under	63.979	62.958	900mmø CONC STM
	5	EX.200mmøPVC W/M	62.130	61.930	0.825	Clearance Under	63.976	62.955	900mmø CONC STM
	6	375mmø PVC SAN	62.855	62.480	1.289	Clearance Under	64.394	64.144	250mmø PVC STM
	7	375mmø PVC SAN	63.208	62.833	1.272	Clearance Under	64.680	64.480	200mmø PVC W/M
	8	1050mmø CONC STM	64.556	63.373	0.363	Clearance Above	63.010	62.810	200mmø PVC W/M
H	9	375mmø PVC SAN	63.300	62.925	0.605	Clearance Under	64.505	63.905	600mmø PVC STM
		0701111191 10 0741	1 00.000	02.020	0.000	Glodianos Gnasi	0 1.000	00.000	Occining i ve erivi
	10	200mmø PVC W/M	64.060	63.860	0.209	Clearance Above	63.651	63.351	EX.300mm Ø PVC SAN
	11	200mmø PVC W/M	63.570	63.370	0.378	Clearance Under	64.643	63.948	EX.600mmøPVC STM
	12	200mmø PVC W/M	64.060	63.860	0.458	Clearance Above	63.402	63.027	375mmø PVC SAN
	13	200mmø PVC SAN	65.339	65.089	0.500	Clearance Above	64.589	63.568	900mmø CONC STM
	14	250mmø PVC STM	63.976	63.726	0.884	Clearance Above	62.841	62.591	EX.250mm Ø PVC SAN
	15	250mmø PVC STM	64.209	63.959	1.012	Clearance Above	62.947	62.572	EX.375mmøPVC SAN
	16	250mmø PVC STM	63.194	62.944	0.097	Clearance Above	62.847	62.472	EX.375mmøPVC SAN
	17	200mmø PVC W/M	63.960	63.760	0.282	Clearance Above	63.478	63.103	375mmø PVC SAN
	18	600mmø PVC STM	63.987	63.387	0.343	Clearance Above	63.044	62.794	EX.250mm Ø PVC SAN
			I						
	19	600mmø PVC STM	63.850	63.250	0.332	Clearance Above	62.918	62.668	EX.250mmøPVC SAN
	20	375mmø PVC SAN	63.318	62.943	0.542	Clearance Under	64.060	63.860	200mmø PVC W/M
	21	1050mmø CONC STM	64.511	63.328	0.378	Clearance Above	62.950	62.750	200mmø PVC W/M
	22	1050mmø CONC STM	64.463	63.280	2.267	Clearance Under	66.930	66.730	200mmø PVC W/M
	23	375mmØ PVC SAN	63.141	62.766	3.429	Clearance Under	66.770	66.570	200mmø PVC W/M
	24	375mmø PVC SAN	63.141	62.766	1.009	Clearance Under	64.350	64.150	200mmø PVC W/M
	25	900mmø CONC STM	64.537	63.516	0.306	Clearance Above	63.210	63.010	200mmø PVC W/M
	26	900mmø CONC STM	64.591	63.570	0.330	Clearance Above	63.240	63.040	200mmø PVC W/M
	27	200mmø PVC W/M	62.860	62.660	0.349	Clearance Under	63.904	63.209	EX.600mm@CONC STM
	28	200mmø PVC W/M	62.340	62.140	0.310	Clearance Under	62.900	62.650	EX.250mmøPVC SAN
	29	200mmø PVC W/M	64.320	64.120	1.150	Clearance Above	62.970	62.595	EX.375mm Ø PVC SAN
	30	250mmø PVC STM	64.516	64.266	1.290	Clearance Above	62.976	62.601	375mmø PVC SAN
			1 0 1.010	- 1.200	00	5.54141100 / IDOVO	32.070	<u>001</u>	3.3

	WATERMAIN SC	HEDULE			
STATION	DESCRIPTION	FINISHED	TOP OF	cov	
SIATION	DESCRIP HON	GRADE	WATERMAIN	COVI	
	200mm W/M (FROM CONNECT TO	EX.W/M TO E	BUILDING)		
0+000	Connect to EX. W/M	65.00	62.600	2.	
0+018.61	Crossing with 375mm PVC SAN	66.75	64.350	2.	
0+020.82	Crossing with 1050mm CONC STM	66.85	62.950	3.	
0+027.87	Connect to building	67.11	64.710	2.	

MATERNAAINI COUERUUE							
	WATERMAIN SC	HEDULE					
STATION	DESCRIPTION	FINISHED	TOP OF	COVER			
SIATION	DESCRIP HON	GRADE	WATERMAIN	COVER			
	200mm W/M (FROM BU	LDING TO END)				
1+000	Connect to proposed building	66.04	50.040	2 40			
		66.24	63.840	2.40			
1+000.90	200mm VB	66.27	63.870	2.40			
1+004.78	Crossing with 900mm CONC STM	66.41	63.210	3.20			
1+006.27	Crossing with 375mm PVC SAN	64.06	61.660	2.40			
1+006.81	45° Bend	66.48	64.080	2.40			
1+007.85	150X200mm Tee connection	66.49	64.090	2.40			
1+008.90	45° Bend	66.49	64.090	2.40			
1+060.64	200x 200mm TEE Connection	66.48	64.080	2.40			
1+069.54	Crossing with 375mm PVC SAN	66.42	64.020	2.40			
1+072.29	Watermain cap	66.37	63.970	2.40			

WATERMAIN SCHEDULE								
CTATION	DESCRIPTION	FINISHED	TOP OF	COVED				
STATION	DESCRIPTION	GRADE	WATERMAIN	COVER				
200mm W/M (TEE CONNECTION TO BUILDING)								
2+000	200x 200mm TEE Connection	66.48	64.080	2.40				
2+001.98	Crossing with 375mm PVC SAN	66.46	64.060	2.40				
2+003.48	Crossing with 900mm CONC STM	66.44	63.240	3.20				
2+008.86	Connect to proposed building	66.37	63.970	2.40				

WATERMAIN SCHEDULE								
STATION	DESCRIPTION	FINISHED	TOP OF	COVER				
	DESCRIPTION	GRADE	WATERMAIN					
200mm W/M (FROM CONNECT TO EX.W/M TO BUILDING)								
3+000	Connect to EX. W/M	66.18	63.780	2.40				
3+004.31	Crossing with 375mm PVC SAN	67.08	64.680	2.40				
3+006.16	Crossing with 1050mm CONC STM	67.11	63.010	4.10				
3+007.37	200mm VB	67.11	64.710	2.40				
3+008.05	Connect to proposed building	67.12	64.720	2.40				

WATERMAIN SCHEDULE								
STATION	DESCRIPTION	FINISHED	TOP OF	COVER				
	DESCRIPTION	GRADE	WATERMAIN	COVER				
	200mm W/M (FROM CONNECT TO EX.W/M TO BUILDING)							
4+000	Connect to EX. W/M	65.13	62.730	2.40				
4+019.81	Crossing with 375mm PVC SAN	69.17	66.770	2.40				
4+021.66	Crossing with 1050mm CONC STM	69.33	66.930	2.40				
4+026.48	Connect to building	68.23	65.830	2.40				

WATERMAIN SCHEDULE															
STATION DESCRIPTION FINISHED TOP OF COVER															
SIATION	DESCRIPTION	GRADE	WATERMAIN	COVER											
	150mm FIRE HYDRANT (CLOSE TO EVENT CENTER)														
5+000	150x 200mm Tee connection	66.49	64.090	2.40											
5+004.77	45° Bend	66.47	64.070	2.40											
5+010.07	Conncet to Fire Hydrant	66.42	64.020	2.40											

	WATERMAIN SCHEDULE														
STATION	DESCRIPTION	FINISHED	TOP OF	COVER											
SIATION	DESCRIPTION	GRADE	WATERMAIN	COVER											
	150mm FIRE HYDRANT (ON	LANDSCAPE A	REA)												
	Connect to EX.W/M with Tee														
6+000	Connection	66.60	64.200	2.40											
6+010.21	45° Bend	66.79	64.390	2.40											
6+016.90	Conncet to Fire Hydrant	67.00	64.600	2.40											

	WATERMAIN SC	HEDULE		
STATION	DESCRIPTION	FINISHED	TOP OF	COVER
SIATION	DESCRIP HON	GRADE	WATERMAIN	COVER
	200mm W/M (FROM CONNECT	TTO EX.W/M T	O END)	
7+000	Connect to EX. W/M	65.94	63.540	2.40
7+009.51	45° Bend	65.85	63.450	2.40
7+012.50	Crossing with 600mm CONC STM	65.76	62.860	2.90
7+016.18	Crossing with 250mm PVC SAN	65.64	62.340	3.30
7+051.88	45° Bend	65.37	62.970	2.40
7+053.12	22.5° Bend	65.37	62.970	2.40
7+065.36	Watermain cap	65.32	62.920	2.40





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ENTUITIVE

135 LAURIER AVE WEST, SUITE 413 OTTAWA, ON K1P 5J2 (343) 308-9274



(416) 499-8000 MECH, PLUMB, FIRE PROTECTION ENGINEER

STRUCTURAL ENGINEER

FOOD AND BEVERAGE

90 SHEPPARD AVE EAST, SUITE 500 TORONTO, ON M2N 3A

(416) 751-2520 ELEC, LIGHTING ENGINEER

530 N. WOOD STREET #C CHICAGO, IL 60622 (224) 717-1999

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2011 QUEENSVIEW DR. OTTAWA, ONTARIO K2B 8K2 (613) 829-2800 CIVIL ENGINEER

5 REVISED AS PER CITY COMMENTS
4 ISSUED FOR COORDINATION
3 ISSUED FOR 90% DD - CLASS B ESTIMATE
2 REVISED AS PER CITY COMMENTS
1 ISSUED FOR SPA
DESCRIPTION

REVISIONS/ ISSUES

CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY OMISSIONS OR DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK. DO NOT SCALE THE DRAWINGS





J.T 2025/01/15 CHECKED

LANSDOWNE EVENT CENTRE

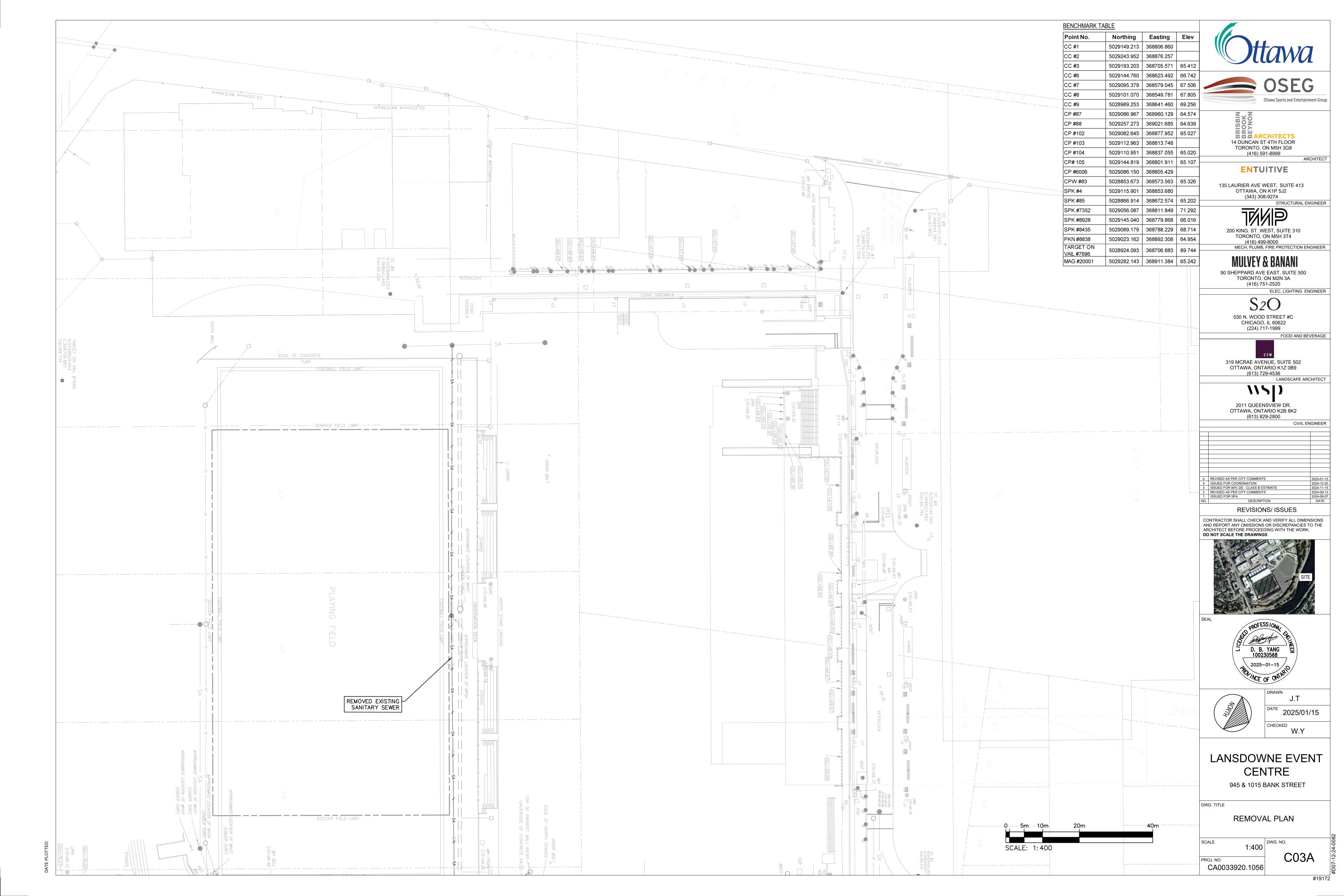
945 & 1015 BANK STREET

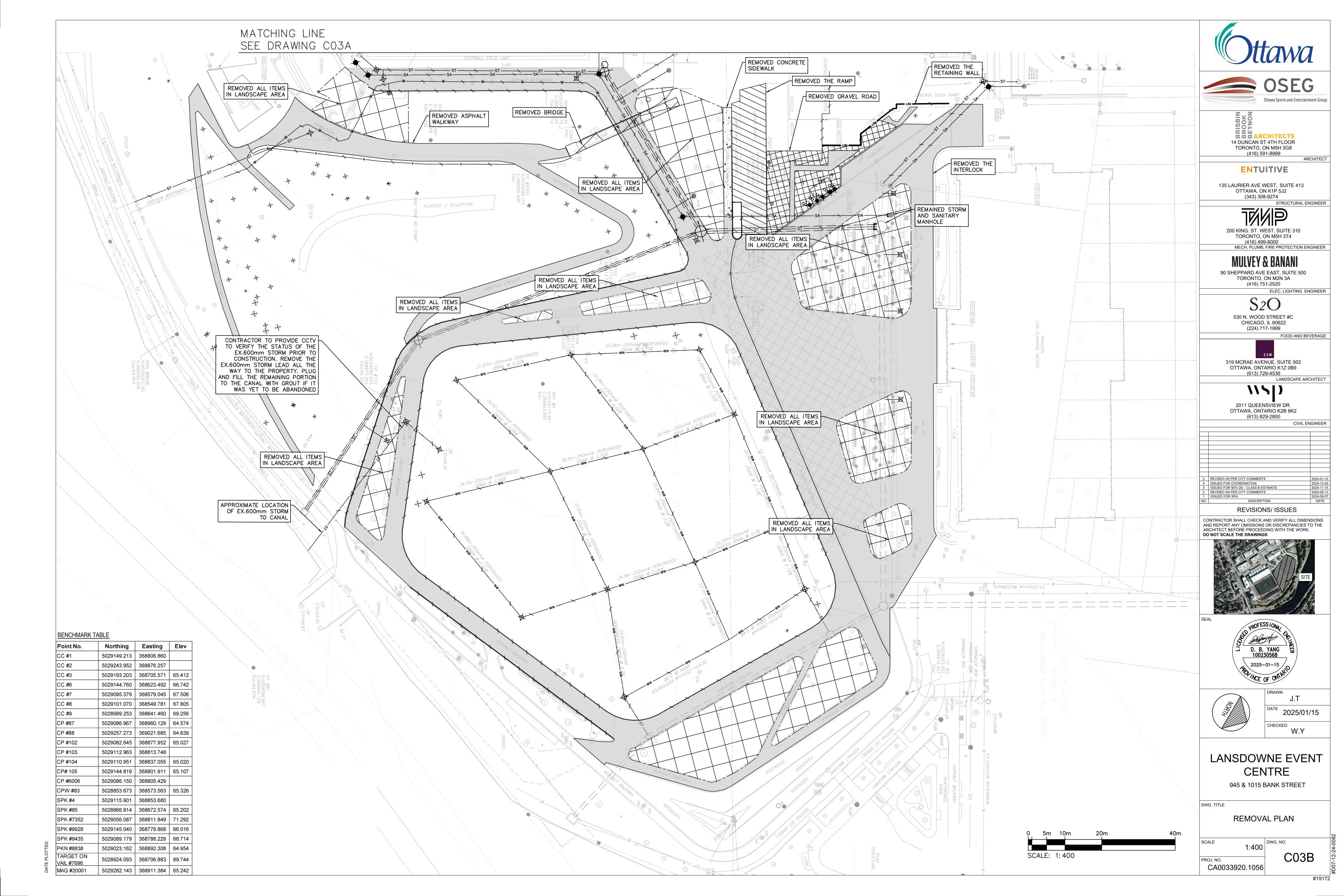
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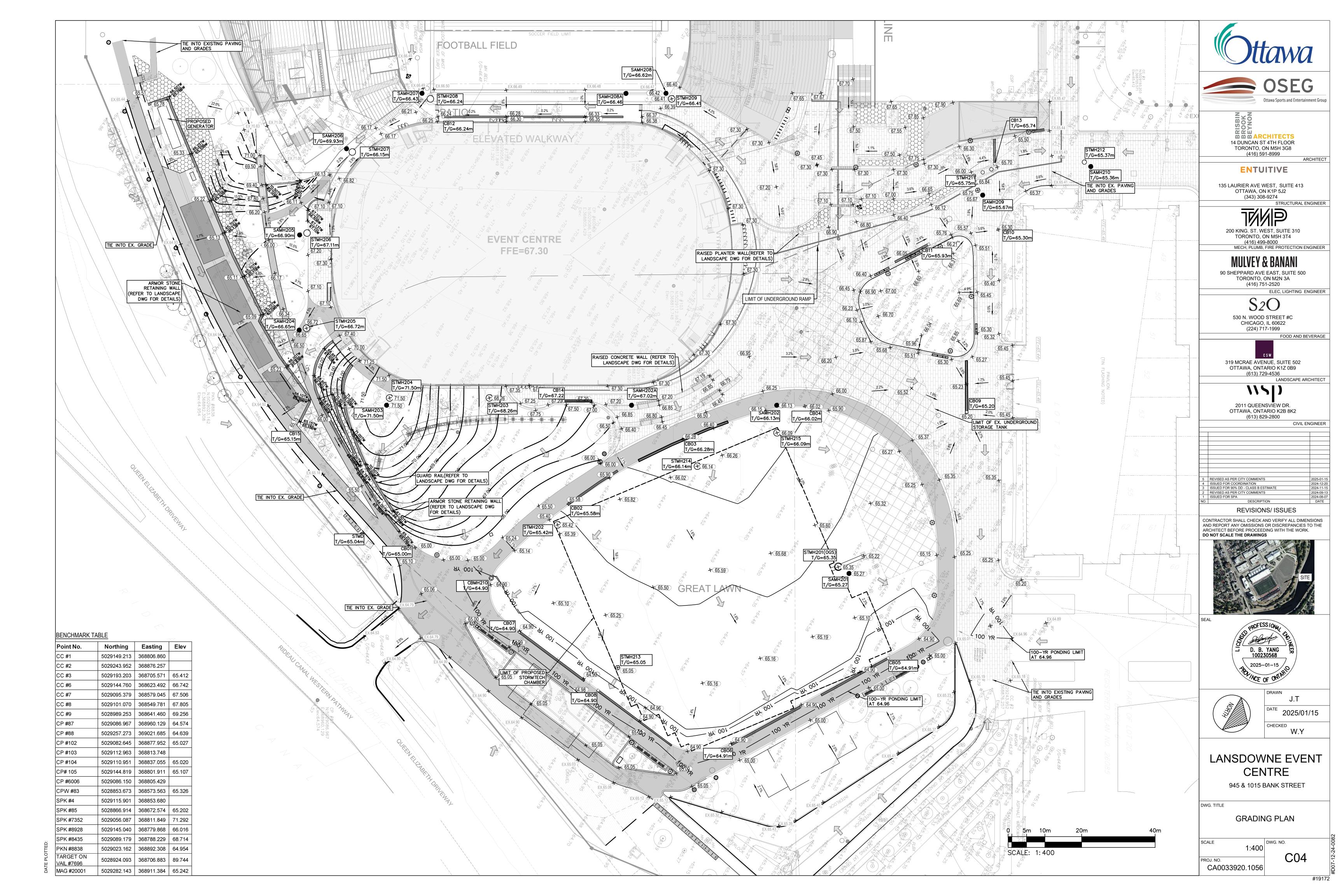
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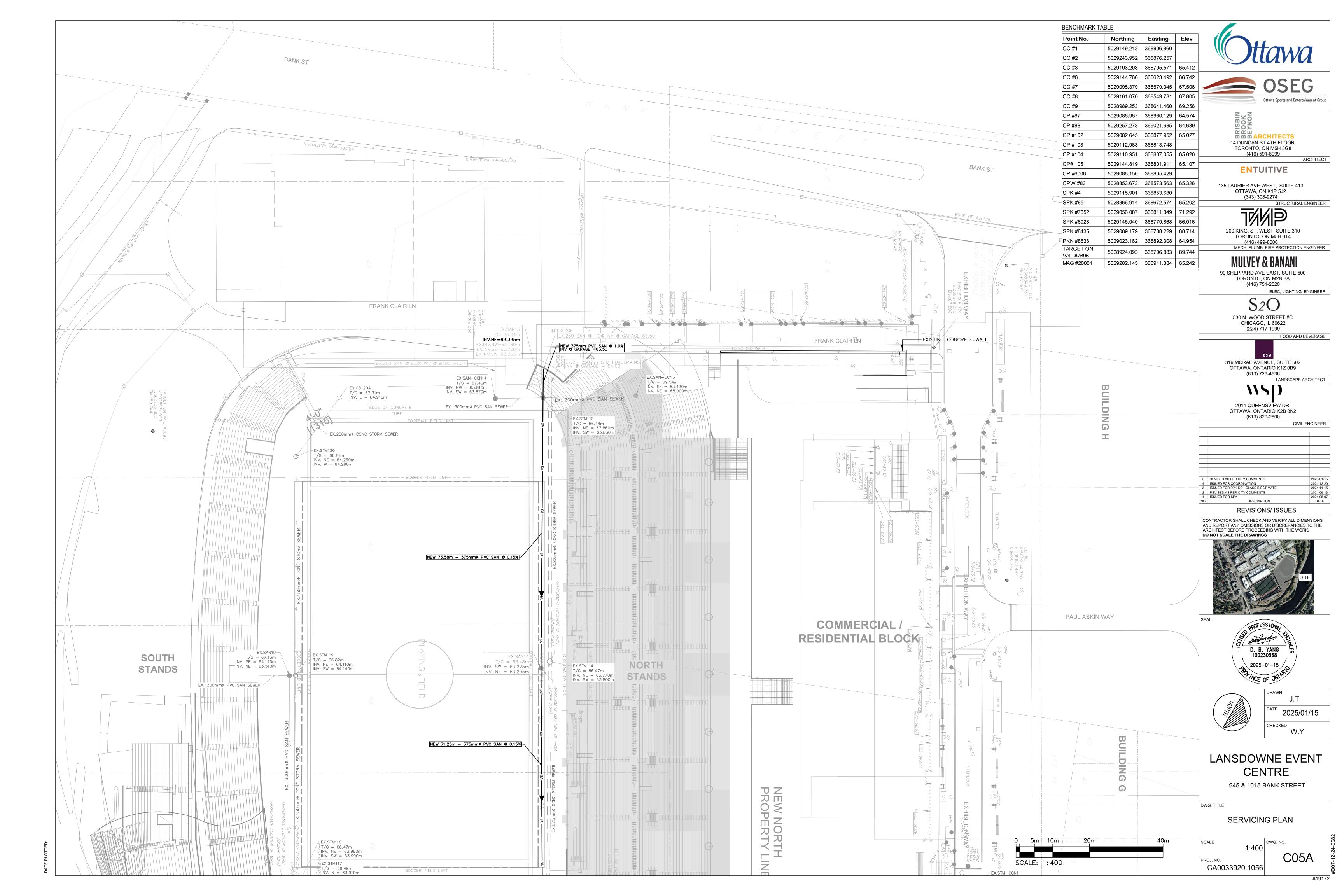
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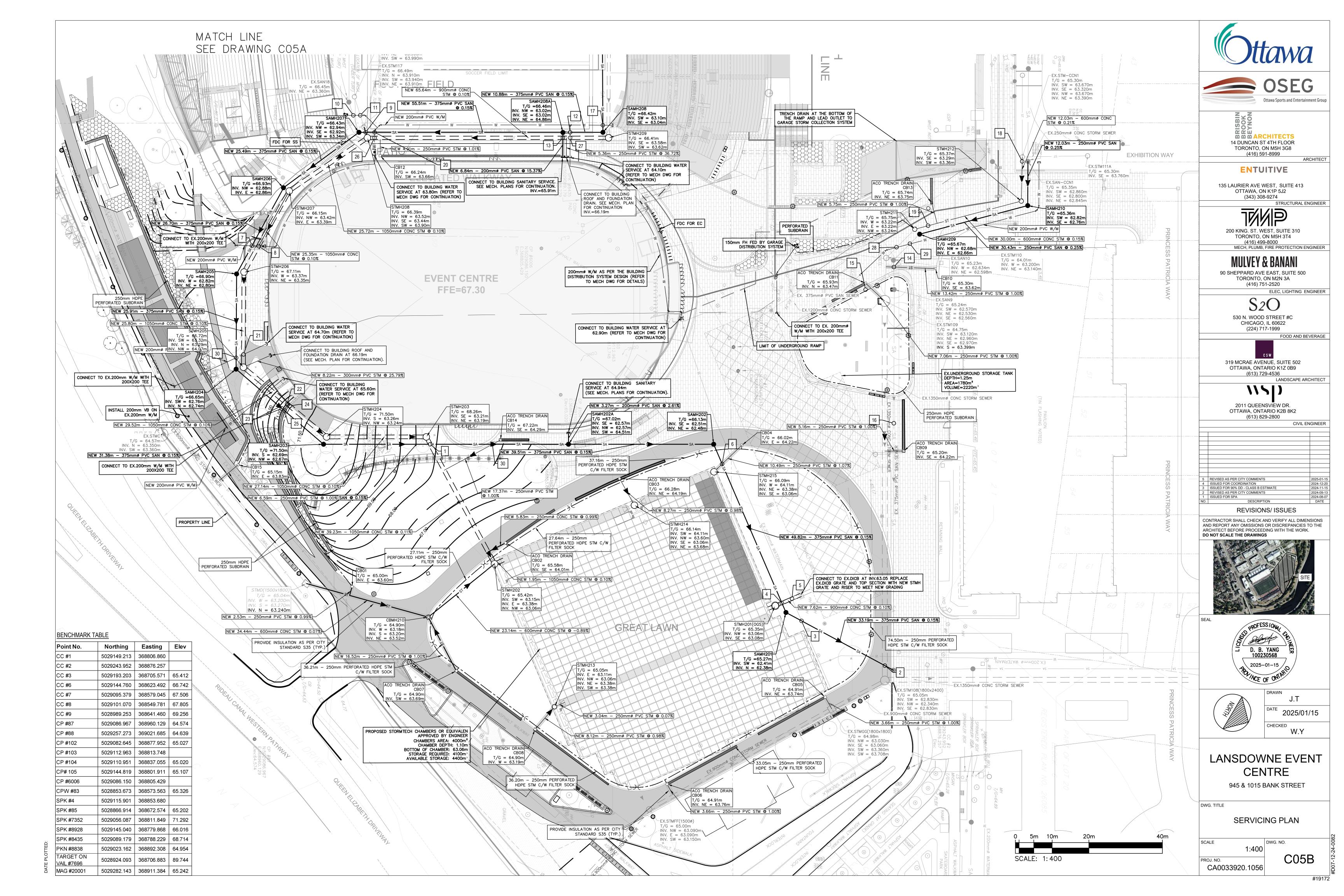
CA0033920.1056

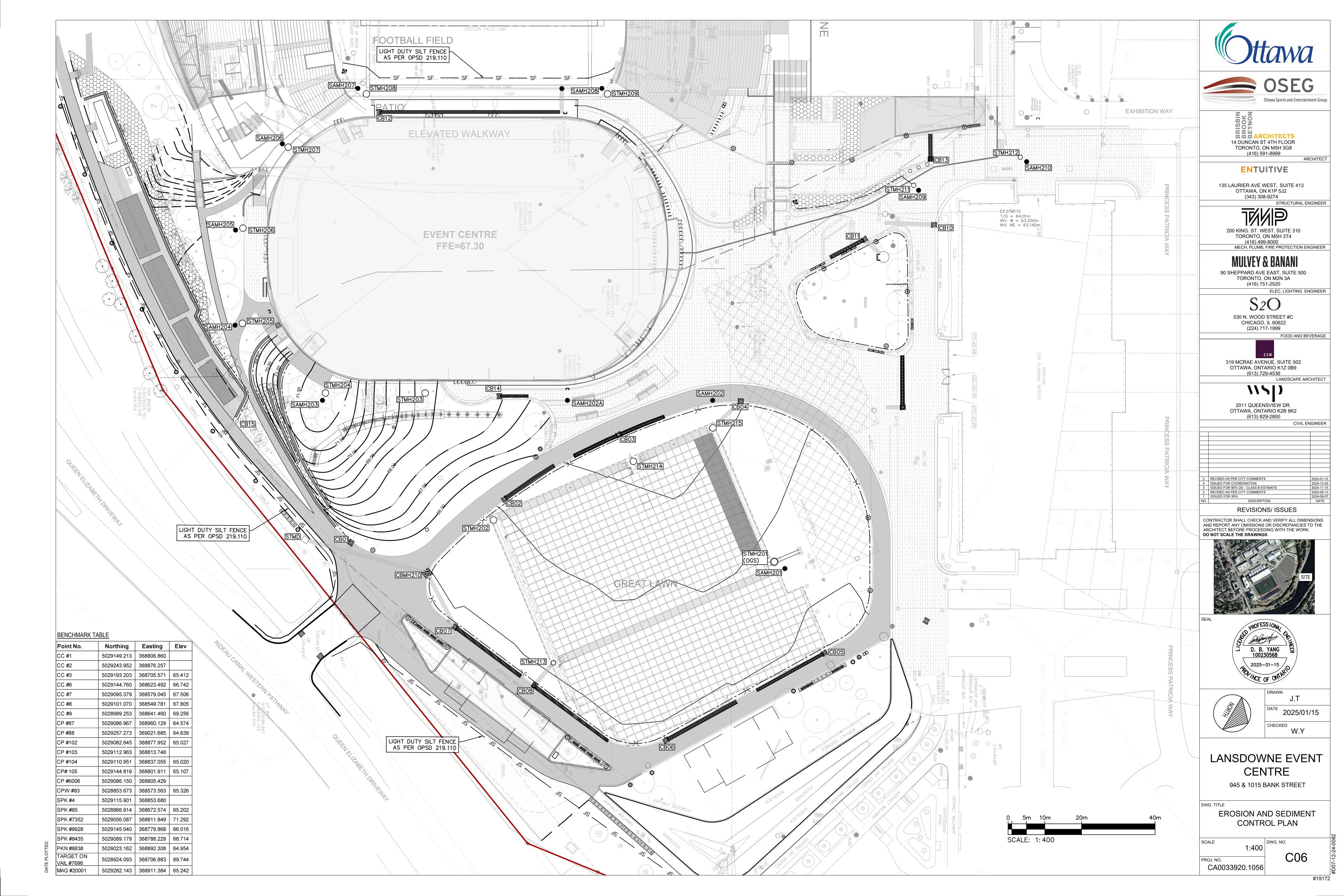


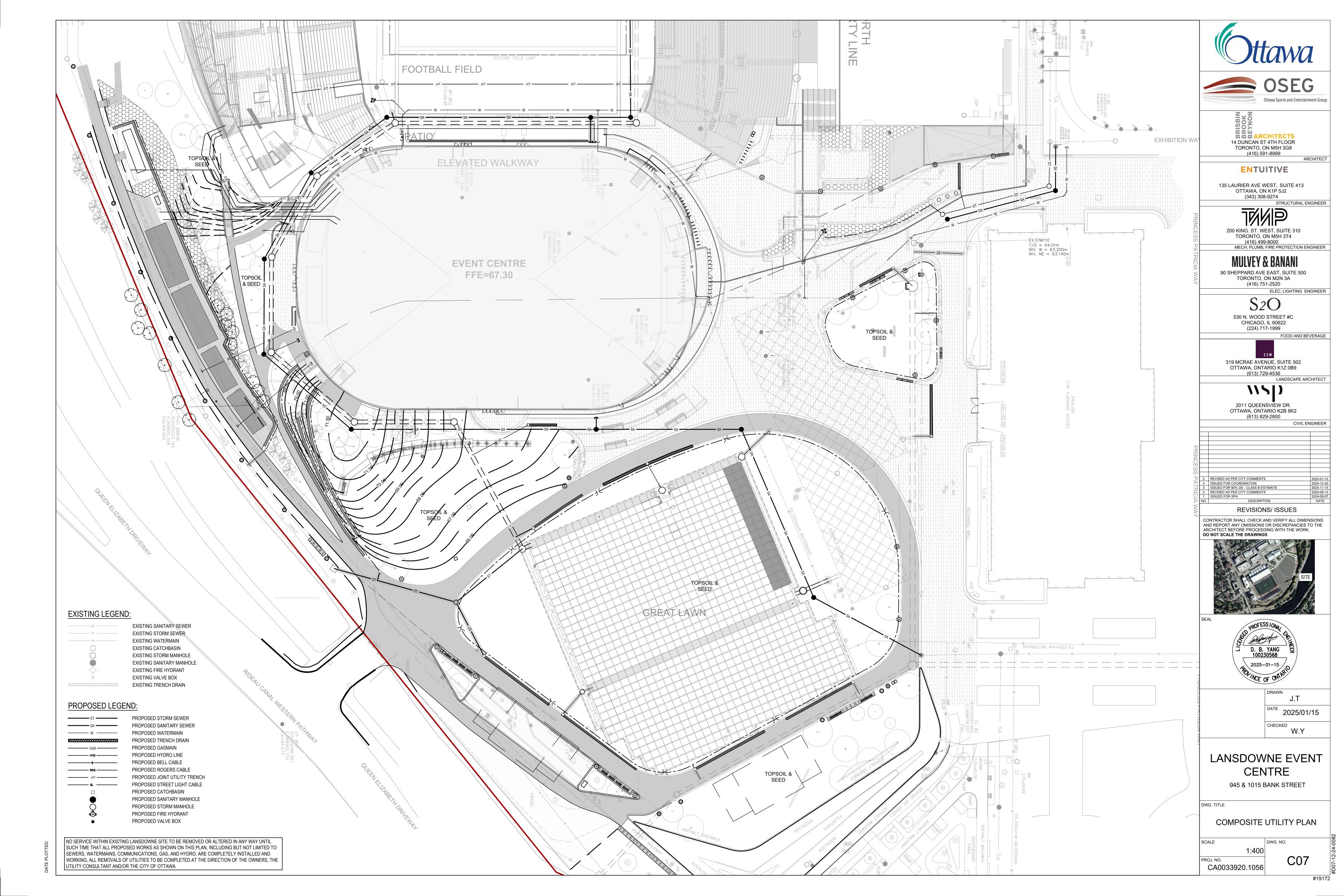


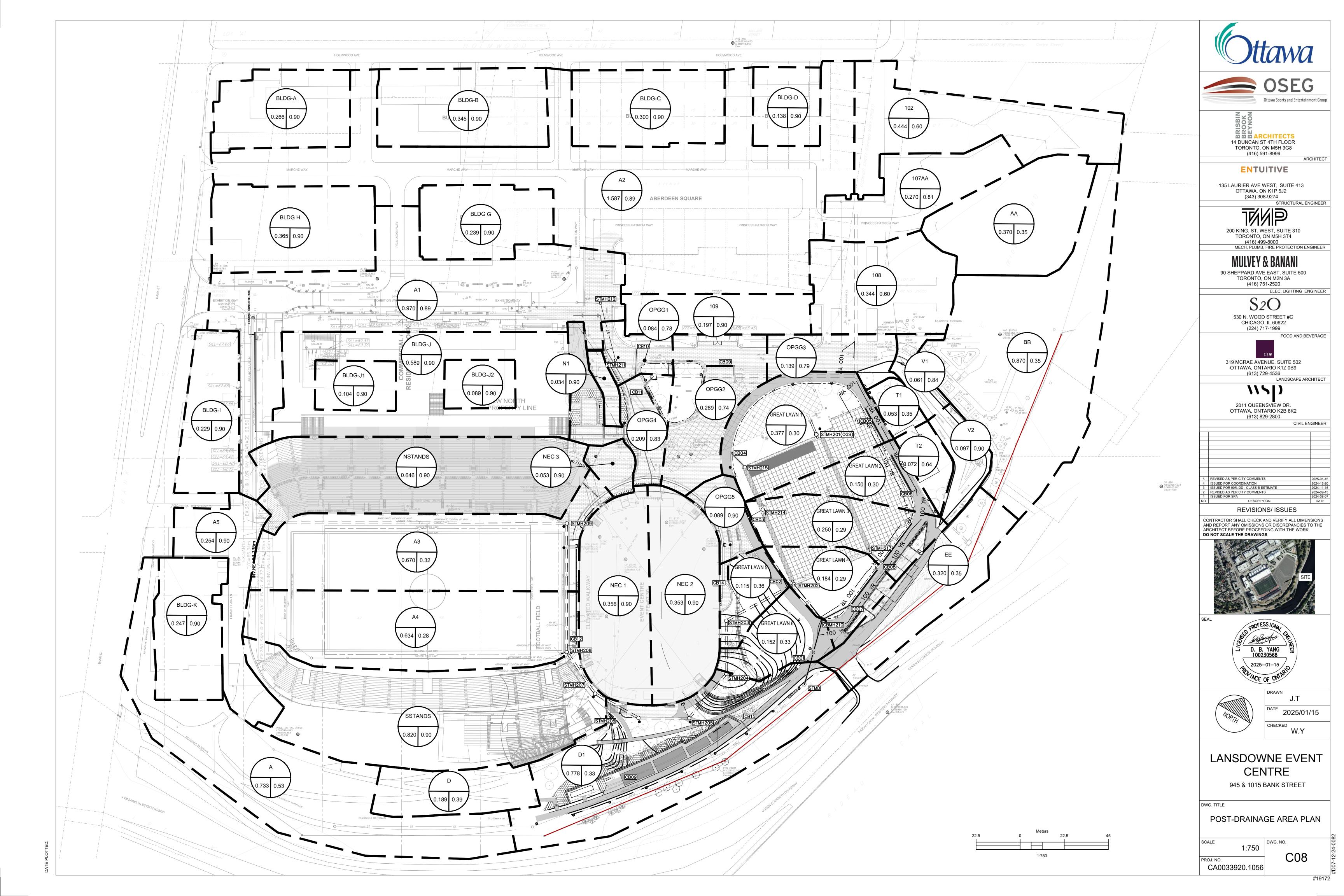


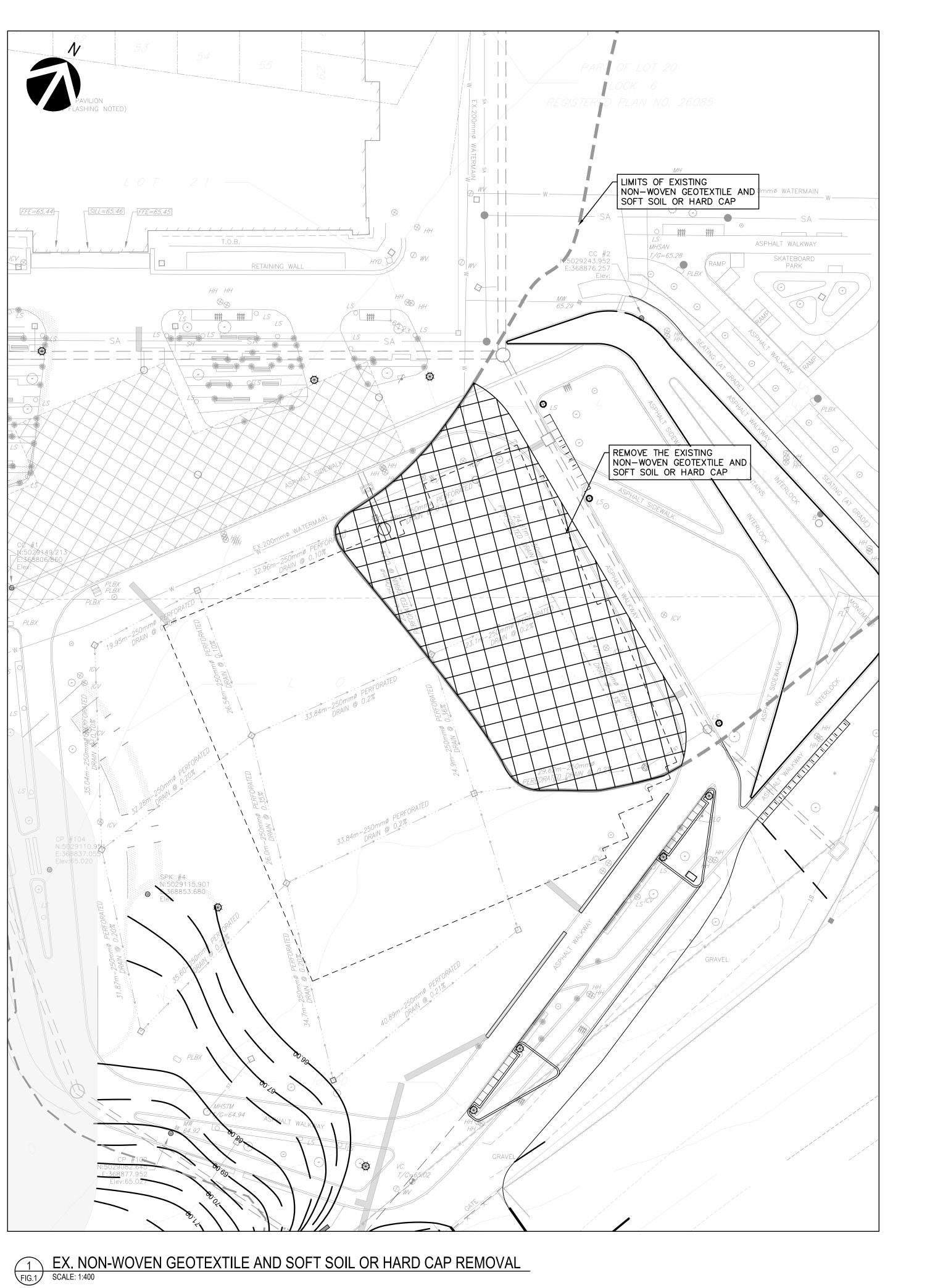


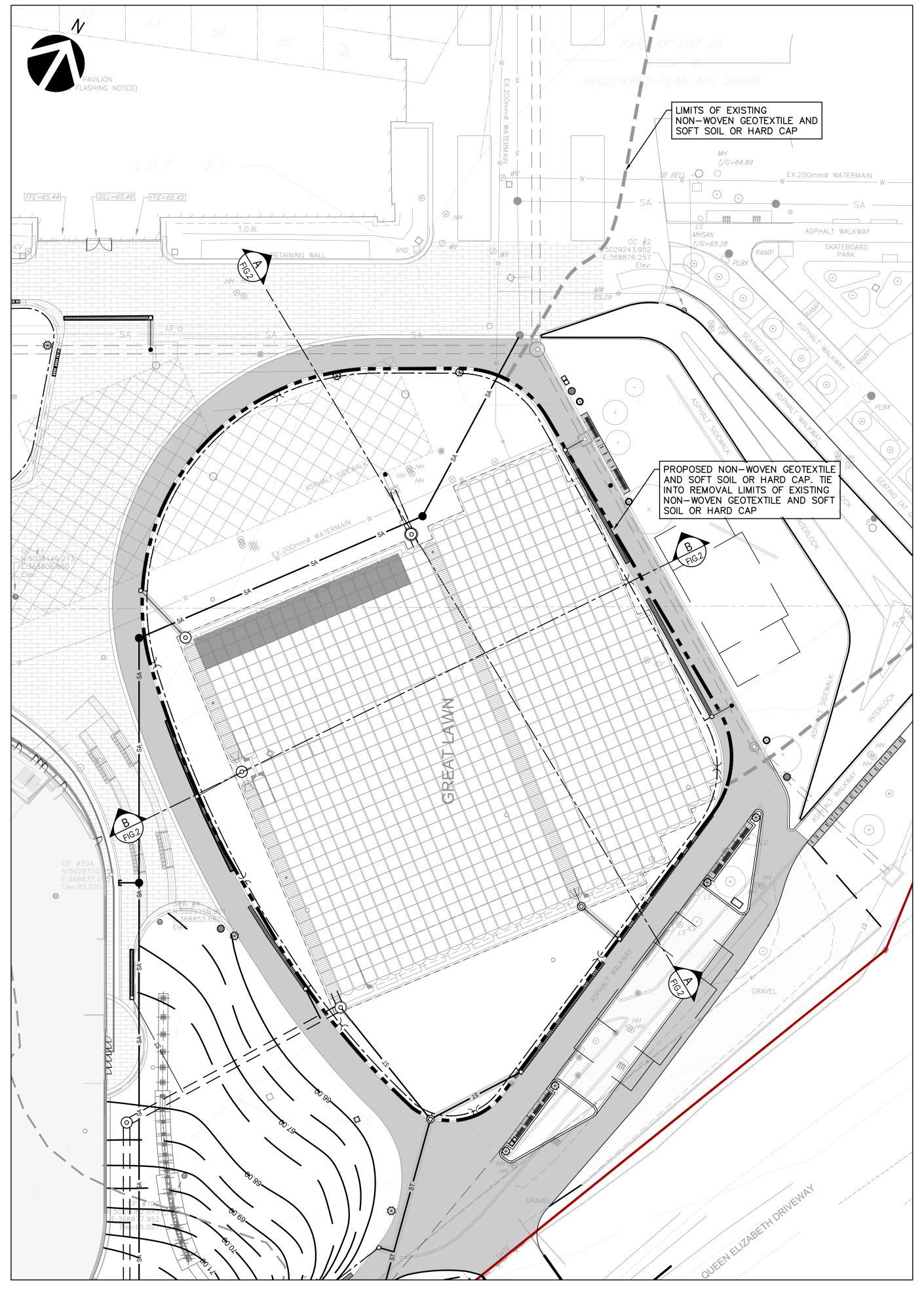


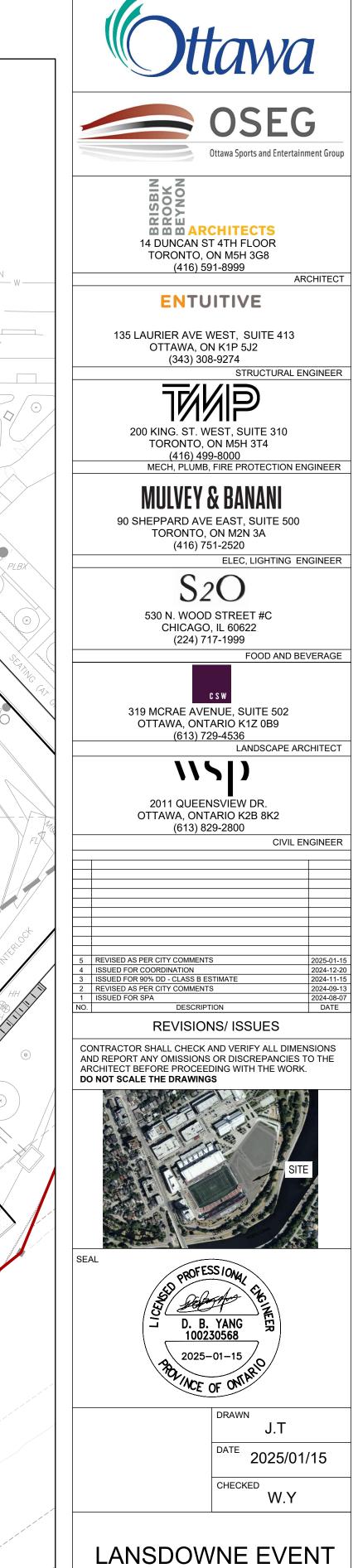












PROPOSED NON-WOVEN GEOTEXTILE AND SOFT SOIL OR HARD CAP
SCALE: 1:400

FI

LAWN AREA PLAN

SCALE

1:400
PROJ. NO.

CA0033920.1056

DWG. NO.

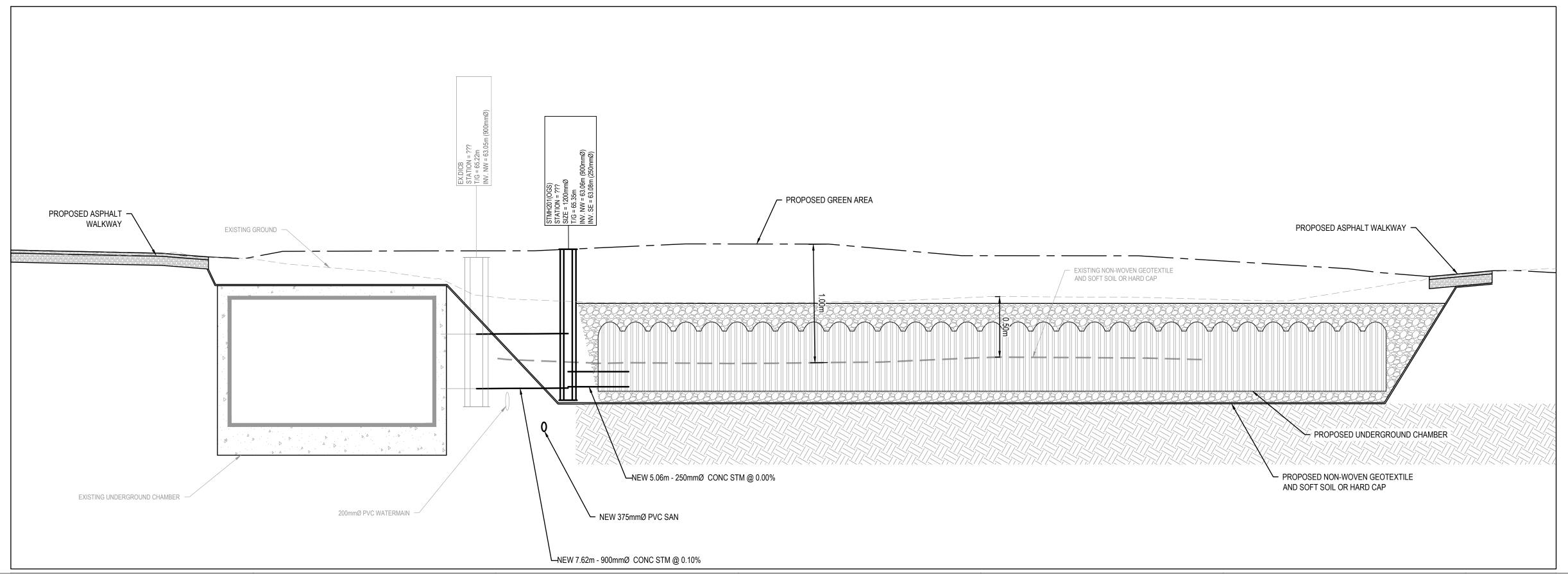
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CENTRE

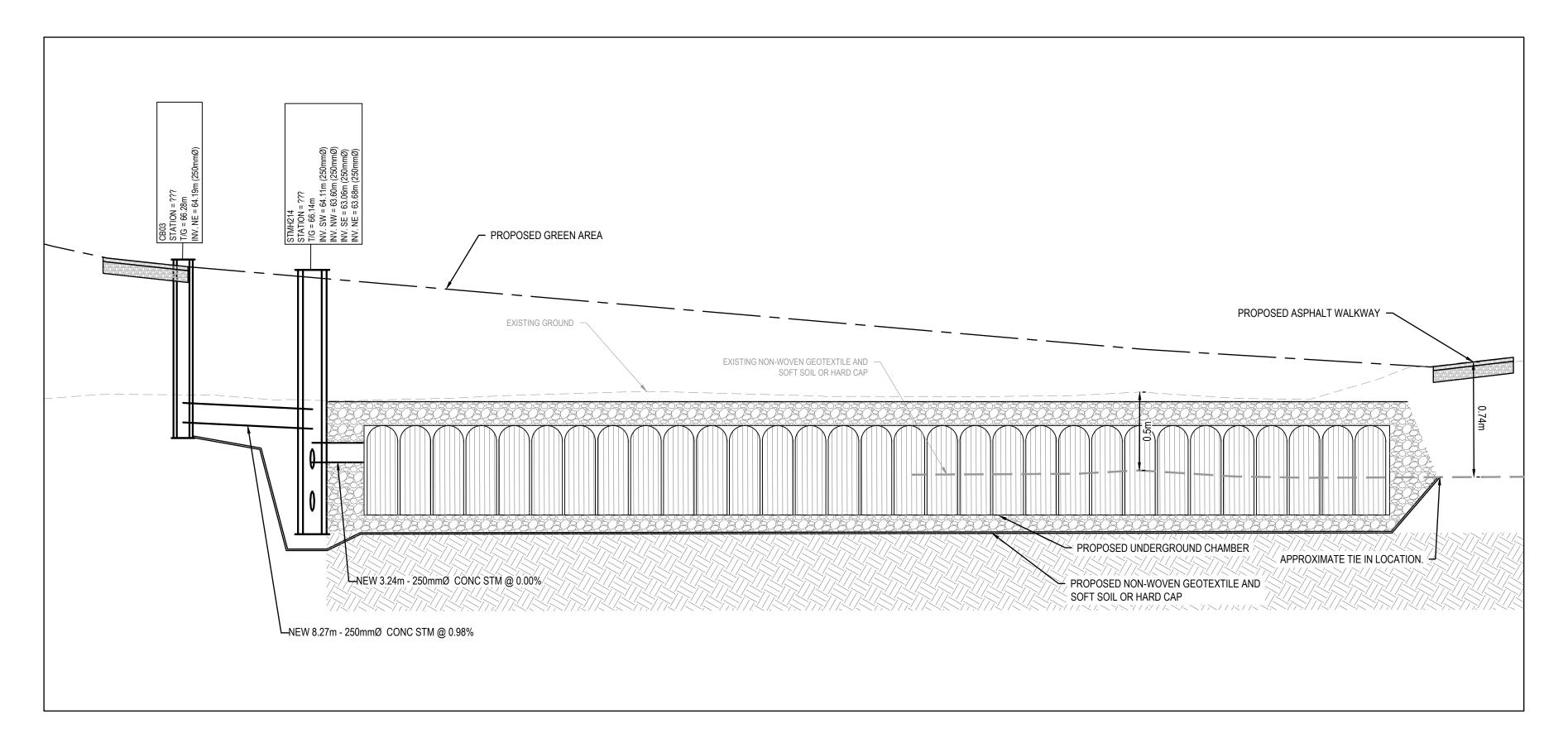
945 & 1015 BANK STREET

LANSDOWNE 2.0 RISK

MANAGEMENT GREAT



A UNDERGROUND CHAMBER CROSS SECTION A FIG.2 SCALE: H 1:200, V 1:40



B UNDERGROUNG CHARMBER CROSS SECTION B SCALE: H 1:200, V 1:40





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LANDSCAPE ARCHITECT

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OTTAWA, ONTARIO K2B 8K2 (613) 829-2800 CIVIL ENGINEER

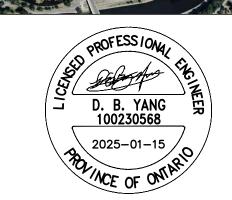
5 REVISED AS PER CITY COMMENTS
4 ISSUED FOR COORDINATION
3 ISSUED FOR 90% DD - CLASS B ESTIMATE
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1 ISSUED FOR SPA
NO. DESCRIPTION

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J.T

DATE 2025/01/15 CHECKED W.Y

LANSDOWNE EVENT CENTRE

945 & 1015 BANK STREET

DWG. TITLE UNDERGROUND CHAMBER **CROSS SECTION**

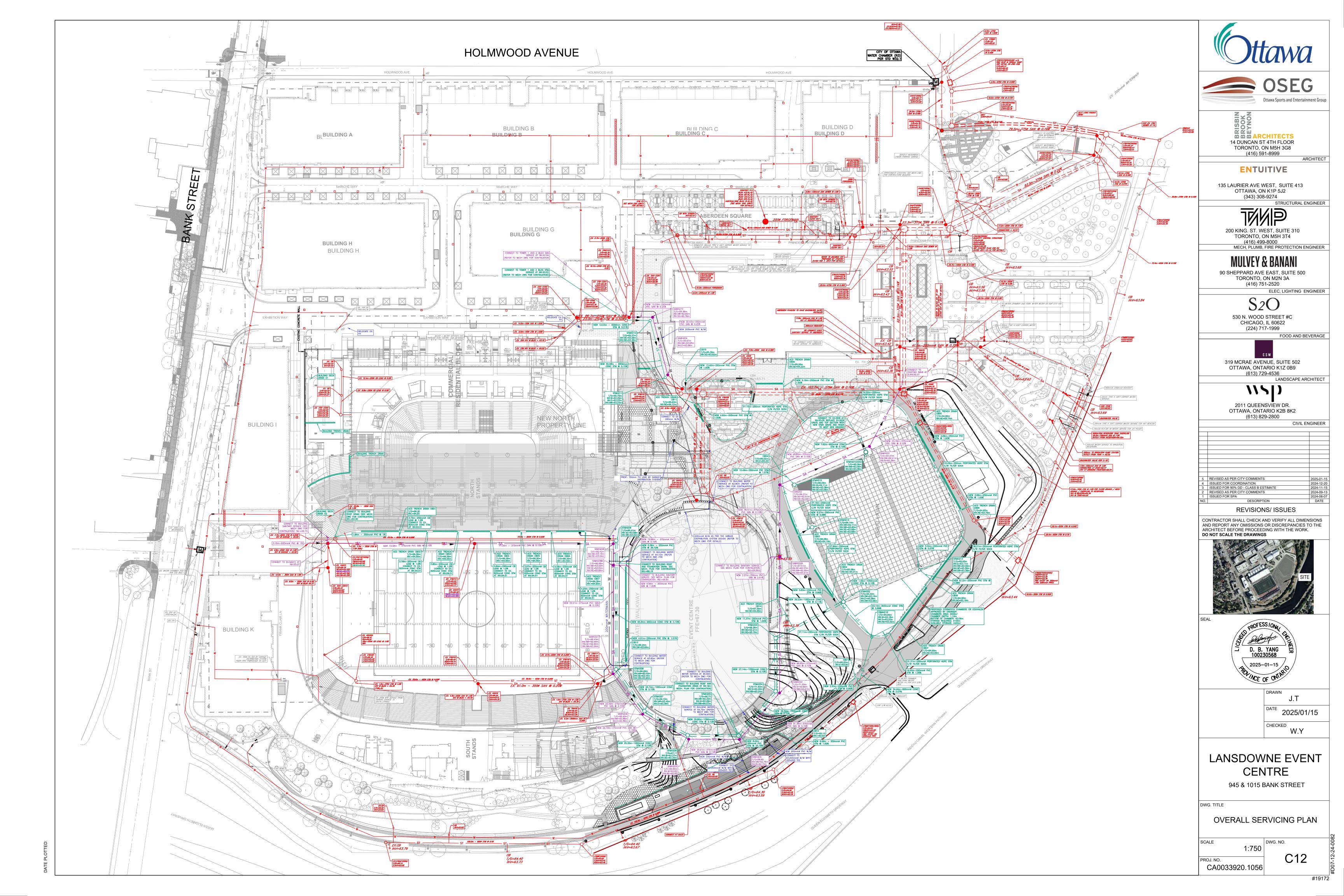
SCALE

PROJ. NO.

1:200

DWG. NO.

FIG.2 CA0033920.1056



APPENDIX

B

- BOUNDARY CONDITIONS AND CORRESPONDENCE
- FIRE FLOW CALCULATION FOR NORTH STANDS
- EXISTING WATER DEMANDS AND FUS
- OSEG CARMA METER REPORT
- HYDRAULIC ANALYSIS
- FIRE HYDRANT TEST RESULTS
- HYDRANT COVERAGE FIGURE

From: Whelan, Amy <amy.whelan@ottawa.ca>

Sent: December 19, 2024 8:43 AM

To: Ali, Zarak

Cc: Moore, Sean; Yang, Winston; Mottalib, Abdul

Subject: RE: Lansdowne Park - Existing Building Water Demands
Attachments: Lansdowne 2.0 Redevelopment REVISED December 2024.pdf

Good morning Ali,

Please find the results of the boundary condition request below:

Not much change in results from last BC that was provided. Fire flow governs. Since FF was the same there's no significant change in the BC.

Information Provided: (Water demands with New Additions)

Average Day= 5.2 L/s Max Day= 13.0 L/s Peak Hour= 28.6 L/s Fire flow (RFF)= 150 L/s

Development type: Commercial - New North Stands and New Event Center (Lansdowne 2.0 Redevelopment excluding Towers 1&2)

The following are boundary conditions, HGL, for hydraulic analysis at 1015 Bank Street, Lansdowne 2.0 Redevelopment (excluding Towers 1 &2), (zone 1W) assumed to be privately connected to the 305 mm watermain on Bank Street, AND the 406 mm watermain on Holmwood Avenue (see attached PDF for location).

Both Connections: Min HGL: 105.7 m

Max HGL: 114.6 m

Max Day + FF (150L/s): 107.8 m (Connection 1-Holmwood Avenue), 106.5 m (Connection

2-Bank Street)

These are for current conditions and are based on computer model simulation.

Disclaimer: The boundary condition information is based on current operation of the city

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.

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From: Whelan, Amy

Sent: December 17, 2024 9:18 AM **To:** Ali, Zarak < <u>Zarak.Ali@wsp.com</u>>

Cc: Moore, Sean <Sean.Moore@ottawa.ca>; Yang, Winston <winston.yang@wsp.com>; Mottalib, Abdul

Abdul.Mottalib@ottawa.ca

Subject: RE: Lansdowne Park - Existing Building Water Demands

Hi Ali,

Thank you for your email. We have sent the request to our water resources group as an urgent request last week. We have not received a response, however we will follow up with the status. I will let you know as soon as possible.

Kind regards,

Amy Whelan, E.I.T

Project Manager, Infrastructure Approvals

Development Review, Central | Examen des projets d'aménagement, Central

Planning, Development and Building Services Department (PDBS) | Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1 613.580.2424 ext./poste 26642, amy.whelan@ottawa.ca

From: Ali, Zarak < Zarak.Ali@wsp.com Sent: December 16, 2024 3:54 PM

To: Whelan, Amy <amy.whelan@ottawa.ca>

Cc: Moore, Sean. Moore@ottawa.ca>; Yang, Winston <winston.yang@wsp.com>; Mottalib, Abdul

<Abdul.Mottalib@ottawa.ca>

Subject: RE: Lansdowne Park - Existing Building Water Demands

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Hi Amy,

I am following up on my request below.

Please note that we will be using the Metered Totals readings from the CARMA Metering report spreadsheet instead of the City Main Totals readings. This is because the Metered Totals reading will allow us to determine the individual demands of each of the buildings. This slightly changes the overall water demands of the site to the following:

NEW: Water Demands (using residential peaking factors and OSEG CARMA Metering Data):

Avg Day Demand = 5.41 L/s

Max Day + Fire Flow Demand = 13.53 + 150 = 163.53 L/s

Peak Hour Demand = 29.77 L/s

Let me know if you have any questions.

Regards,



Zarak Ali

Designer E.I.T Land Development & Municipal Engineering - Ontario

T+ 1 343-227-9179

Zarak.ali@wsp.com

WSP Canada Inc. 2611 Queensview Drive, Suite 300 Ottawa, Ontario K2B 8K2 Canada

wsp.com

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From: Ali, Zarak

Sent: December 11, 2024 12:02 PM

To: Whelan, Amy <amy.whelan@ottawa.ca>

Cc: Moore, Sean <Sean.Moore@ottawa.ca>; Yang, Winston <Winston.Yang@wsp.com>; Mottalib, Abdul

<<u>Abdul.Mottalib@ottawa.ca</u>>

Subject: RE: Lansdowne Park - Existing Building Water Demands

Hi Amy,

Thank you for the confirmation below. We will include the spreadsheet in the appendix and include discussion and assumptions in the body regarding the approach. We will also use the residential peaking factors to be conservative.

We will need to request new boundary conditions as now the water demands are different from boundary request submitted in September 2024. Can you please take of this as soon as possible?

OLD: Sept 5, 2024 Boundary Condition Request:

Avg Day Demand = 12.3 L/s

Max Day + Fire Flow Demand = 20.8 + 150 = 170.8 L/s

Peak Hour Demand = 39.3 L/s

NEW: Water Demands (using residential peaking factors and OSEG CARMA Metering Data):

Avg Day Demand = 5.2 L/s

Max Day + Fire Flow Demand = 13 + 150 = 163 L/s

Peak Hour Demand = 28.6 L/s

Regards,



Zarak Ali

Designer E.I.T Land Development & Municipal Engineering - Ontario

T+ 1 343-227-9179

Zarak.ali@wsp.com

WSP Canada Inc. 2611 Queensview Drive, Suite 300 Ottawa, Ontario K2B 8K2 Canada

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From: Whelan, Amy <amy.whelan@ottawa.ca>

Sent: December 10, 2024 1:29 PM

To: Ali, Zarak <<u>Zarak.Ali@wsp.com</u>>; Mottalib, Abdul <<u>Abdul.Mottalib@ottawa.ca</u>> **Cc:** Moore, Sean <<u>Sean.Moore@ottawa.ca</u>>; Yang, Winston <<u>Winston.Yang@wsp.com</u>>

Subject: RE: Lansdowne Park - Existing Building Water Demands

Hi Winston and Zarak,

The average daily demand of 5.2L/s from the metering data is acceptable, please be sure to include the spread sheet information in the appendix of the report and include a discussion of the approach in the body of the report.

Additionally, we are okay with the assumptions detailed in Winston's email, again please be sure to include discussion of all assumptions in the body of the report.

What peaking factor are you proposing to use for the calculation will the average daily demands from the entire site be multiplied by one peaking factor or will the demands be segregated by each type of use? For simplicity and to remain conservative we would accept that the total site max day demand is calculated with the residential peaking factor. unless it is calculated individually for each use type.

Kind regards,

Amy Whelan, E.I.T

Project Manager, Infrastructure Approvals

Development Review, Central | Examen des projets d'aménagement, Central

Planning, Development and Building Services Department (PDBS) | Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)

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From: Ali, Zarak < Zarak.Ali@wsp.com Sent: December 10, 2024 9:16 AM

To: Whelan, Amy <<u>amy.whelan@ottawa.ca</u>>; Mottalib, Abdul <<u>Abdul.Mottalib@ottawa.ca</u>> **Cc:** Moore, Sean <<u>Sean.Moore@ottawa.ca</u>>; Yang, Winston <<u>winston.yang@wsp.com</u>>

Subject: RE: Lansdowne Park - Existing Building Water Demands

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Hi Amy/Abdul,

Based on the OSEG CARMA Metering City Main Total readings (see attached spreadsheet), I have calculated an average day demand of <u>5.2 L/s</u> over a 12 month span of data for the entire site.

I took the City Main Totals readings from January to October from 2024 data and November/December City Main Totals readings from 2023 data to determine an average 12-month consumption of 13,443,083 L/month or about 5.2 L/s.

Please let us know your thoughts.

Regards,



Zarak Ali

Designer E.I.T Land Development & Municipal Engineering - Ontario

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wsp.com

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From: Yang, Winston < Winston. Yang@wsp.com >

Sent: December 9, 2024 1:33 PM

To: Whelan, Amy <amy.whelan@ottawa.ca>; Mottalib, Abdul <abdul.Mottalib@ottawa.ca>

Cc: Moore, Sean <<u>Sean.Moore@ottawa.ca</u>>; Ali, Zarak <<u>Zarak.Ali@wsp.com</u>>

Subject: RE: Lansdowne Park - Existing Building Water Demands

Hi Amy,

We can update the calculation with the provided overall water meter data without knowing the consumption from each building as long as you are satisfied with the assumption we are going to make. We will assume that the future water demand will be equivalent in value to the existing demand or less.

Then we will just need to plug the number in to the current calculation. If the result shows minimum pressure is achieved, then further computer modeling includes the looping is not required for Phase 1 and 2.

Kindly let me know what's your thought.

Yours truly,



Winston Yang

Lead Engineer – Technical Lead Land Development & Municipal Engineering, Ontario P.Eng., PMP.

T+ 1 613-829-2800 T+ 1 613-690-0538 (Direct) M+ 1 647-628-8108

WSP Canada Inc. 2611 Queensview Drive, Suite 300 Ottawa, Ontario, K2B 8K2 Canada

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From: Whelan, Amy <amy.whelan@ottawa.ca>

Sent: December 9, 2024 12:56 PM

To: Yang, Winston <Winston.Yang@wsp.com>; Mottalib, Abdul <Abdul.Mottalib@ottawa.ca>

Cc: Moore, Sean <Sean.Moore@ottawa.ca>; Ali, Zarak <Zarak.Ali@wsp.com>

Subject: RE: Lansdowne Park - Existing Building Water Demands

Hi Winston,

Thank you for your email, have you received more information about the meter account locations? Sean informed me that two chamber meters relating to four account numbers were identified. Please let me know if you would like me to reach out to Rick Nelson from facilities.

Unfortunately, although we understand that the approach is conservative we cannot accept fire flow calculations that do not meet the minimum pressure requirements under max day + fire flow. Since, the analysis does not meet the minimum pressure requirements with out analyzing the looping we suggest that you wait for the metering data or provide a computer model that includes the looping.

Understanding, that we are operating under tight timelines we could consider that the servicing report will be required to be updated as a condition of approval prior to building permit. The condition would require that you update the calculations with the metering data, if the minimum pressure under max day + fire flow is still not achieved then a hydraulic watermain analysis of the entire site would be required, finally if the hydraulic watermain analysis shows that minimum pressure still can not be achieved then the private infrastructure would need to be upsized accordingly. We would have to work on the exact wording with our legal team.

Kind regards,

Amy Whelan, E.I.T

Project Manager, Infrastructure Approvals

Development Review, Central | Examen des projets d'aménagement, Central

Planning, Development and Building Services Department (PDBS) | Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)

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From: Yang, Winston < Winston. Yang@wsp.com >

Sent: December 06, 2024 4:58 PM

To: Whelan, Amy <amy.whelan@ottawa.ca>; Mottalib, Abdul <abdul.Mottalib@ottawa.ca>

Cc: Moore, Sean < Sean.Moore@ottawa.ca>; Ali, Zarak < Zarak.Ali@wsp.com>

Subject: RE: Lansdowne Park - Existing Building Water Demands

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Hi Amy and Abdul,

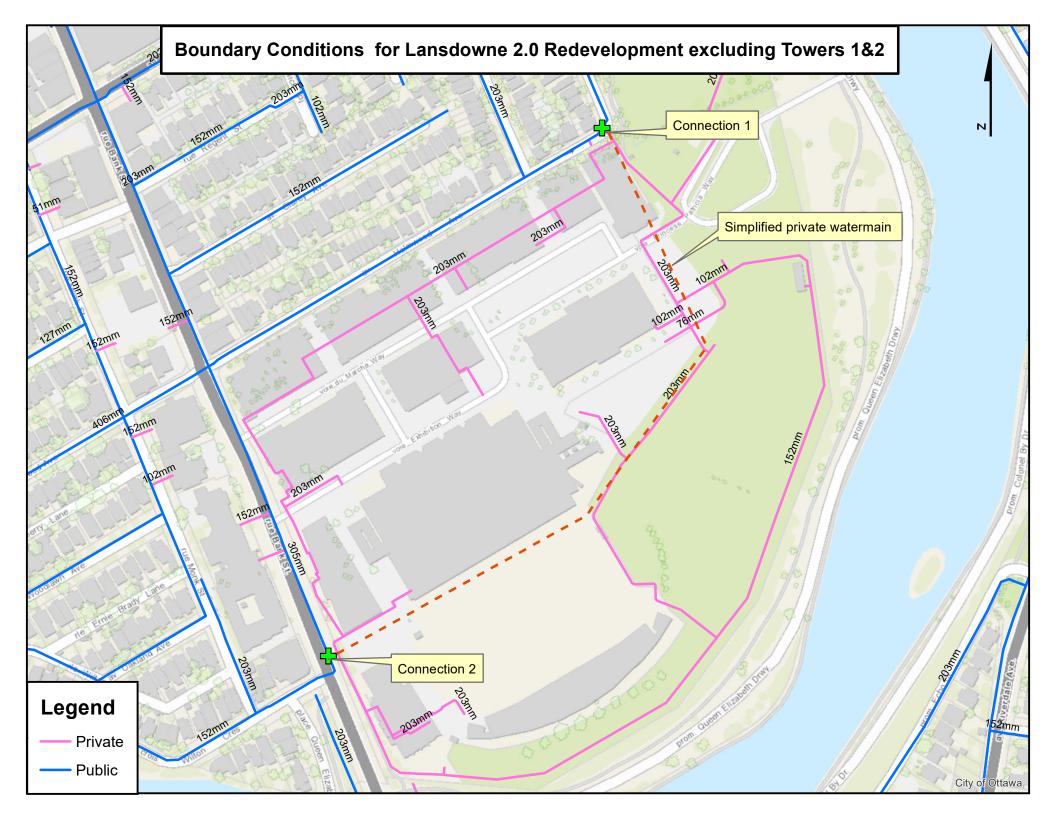
If it takes time to sort out the water meter data and to identify the usage from different buildings, I would suggest to proceed with the below approach.

I have updated the calculation to include the overall demand for the entire Lansdowne site for both fire flow and minimum pressure check. Please see the below results for the updated residual pressure for each scenario.

	EC		1/1	NS
	Max Day+Fire	Peak Hour	Max Day+Fire	Peak Hour
	Flow		Flow	
BC from Bank	<mark>131 kPa < 140</mark>	334 kPa > 276	299 kPa > 140	363 kPa > 276
	<mark>kPa</mark>	<mark>kPa</mark>	<mark>kPa</mark>	<mark>kPa</mark>
BC from Holmwood	158 kPa > 140	337 kPa > 276	<mark>122 kPa < 140</mark>	353 kPa > 276
Ave	<mark>kPa</mark>	<mark>kPa</mark>	<mark>kPa</mark>	<mark>kPa</mark>

There are two feeds from City main to the Lansdowne Site. One at Bank Street near scoreboard and the other at the NE corner of Horticulture at Holmwood Ave. And there is an internal watermain looping system at Lansdowne.

As you can tell from the above results, most of the design pressures exceeds the minimum requirement except the boundary condition from Bank St to EC and boundary condition from Holmwood Ave to NNS. These two scenarios show the resulting pressures drop slightly below the



Fire Flow Design Sheet (FUS) Lansdwone Park Redevelopment City of Ottawa

WSP Project No. CA000286.1662

Date: 22-Sep-23



Proposed North Stands Fire Flow Requirements Based on Fire Underwriters Survey (FUS) 2020

1. An estimate of the Fire Flow required for a given fire area may be estimated by:

F = 220 C \ A

F = required fire flow in litres per minute

C = coefficient related to the type of construction

- 1.5 for Type V Wood Frame Construction
- 0.8 for **Type IV-A** Mass Timber Construction
- 0.9 for Type IV-B Mass Timber Construction
- 1.0 for Type IV-C Mass Timber Construction
- 1.5 for **Type IV-D** Mass Timber Construction
- 1.0 for **Type III** Ordinary Construction
- 0.8 for Type II Noncombustible Construction
- 0.6 for Type I Fire resistive Construction
- A =2-b) The single largest Floor Area plus 25% of each of the two immediately adjoining floors

```
A = 9318.1 \text{ m}^2
C = 0.6
F = 12742.0 \text{ L/min}
```

rounded off to 13,000 L/min (min value of 2000 L/min)

2. The value obtained in 1. may be reduced by as much as 25% for occupancies having a low contents fire hazard.

Non-combustible	-25%
Limited Combustible	-15%
Combustible	0%
Free Burning	15%
Rapid Burning	25%

Separation Charge

Reduction due to low occupancy hazard -25% x 13,000 = 9,750 L/min

3. The value obtained in 2. may be reduced by as much as 50% for buildings equipped with automatic sprinkler protection.

Adequate Sprinkler confirms to NFPA13	-30%
Water supply common for sprinklers & fire hoses	-10%
Fully supervised system	-10%
No Automatic Sprinkler System	0%
Reduction due to Sprinkler System -50% v 9 750	-4 875] /

4. The value obtained in 2. is increased for structures exposed within 45 metres by the fire area under consideration.

	0 to 3 m	25%	
3.1	to 10 m	20%	
10.1	to 20 m	15%	
20.1	to 30 m	10%	
30.1	to 45 m	0%	
Side 1	10	0% north side	(fire resistive wall with residential towers)
Side 2	16	0% east side	(fire resistive wall with Event Centre)
Side 3	85	0% south side	
Side 4	13	15% west side	
		15%	(Total shall not exceed 75%)

Increase due to separation 15% x 9,750 = 1,463 L/min

5. The flow requirement is the value obtained in 2., minus the reduction in 3., plus the addition in 4.

The fire flow requirement is 6,000 L/min (Rounded to nearest 1000 L/min) or 100 L/sec or 1,585 gpm (us) or 1,320 gpm (uk)

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The proposed water supply network is illustration on *Drawing C01003* and the associated hydraulic analysis is located *Appendix B*. *Table 3* summarizes the anticipated Water Demand and Boundary Conditions under proposed conditions.

Table 4
Water Demand and Boundary Conditions
Proposed Conditions

Design Parameter	Anticipated Demand ¹ (L/s)	Boundary Condition ² (m H ₂ O / kPa)
Average Daily Demand	11.8	115.6 / 481.7
Max Day + Fire Flow	19.9 + 150 = 169.9	106.4 / 391.4
Peak Hour	38.0	103.1 / 359.0

- 1) Water demand calculation per Water Supply Guidelines. See *Appendix B* for detailed calculations.
- 2) Boundary conditions supplied by the City of Ottawa. Assumed ground elevation *65.50m*. See *Appendix B.*

3.3 Fire Flow Requirements

Section 4.2.11 of the City Design guidelines for water distribution provides guidance for determining the method for estimating Fire Demand. As indicated, the requirements for levels of fire protection on private property are covered in the Ontario Building code. Section 7.2.11 of the OBC addresses the installation of water service pipes and fire service mains. Part 3 of the OBC outlines the requirement for Fire Protection, Occupant Safety, and Accessibility; and sub-section A-3.2.5.7 provides the provisions for fire fighting. Based on trained personnel responding to the emergency, and water supply being delivered through a municipal system, the required minimum provision for water supply shall not be less than 2,700L/min or greater than 9000L/min (OBC Section A.3.2.5.7, Table 2). Therefore, a conservative estimate for the required fire supply is 9000L/min (150L/s). A certified fire protection system specialist shall be employed to design the building fire suppression system(s) and confirm the actual fire flow demand.

City of Ottawa completed fire hydrant testing in **2007**. The testing indicated that water supply is available between **8,610/min** and **11,610L/min** at **140kPa**.

3.4 Water Supply Conclusion

Anticipated water demand under proposed conditions were submitted to the City of Ottawa for establishing boundary conditions considering the existing and proposed zoning.

As demonstrated in **Table 4**, the recommended pressure range is respected during Maximum Day plus Fire Flow as well as Peak Hour demands. A pressure check should be conducted at the completion of construction to determine if pressure control is required.

Less than 20% of previous m	nonth	More than 20%	of previous month											< 1st to 1st	(Jun.14 city	bill)	(Jun.14 cit	y bill) 9th to	9th>											
						January			February			March			April			April			May			June			July			August
Tenant Name	Tenant Number	CARMA Plus	Service Description [Real Meter]	Percantage	End Read D		Rate \$/unit	End Read D		Rate \$/unit	End Read	<u> </u>	Rate \$/unit	End Read D		Rate \$/unit	End Read Date:		Rate \$/unit	End Read Date:		Rate \$/unit	End Read Date		Rate \$/unit	End Read Date:		Rate \$/unit	End Read Date: So	
		Meter Number	,	(%)	Units =	= Litres	\$0.0040	Units =		\$0.0040		= Litres	\$0.0059	Units =	Litres	\$0.0059		= Litres	\$0.0059	Units =		\$0.0059		= Litres	\$0.0056	Units =	= Litres	\$0.0055	Units =	
					Reading	Consumption	Cost	Reading	Consumption	Cost		Consumption	Cost	Reading	Consumption	Cost	Reading	Consumption	Cost	Reading	Consumptio	n Cost	Reading	Consumption	n Cost	Reading	Consumption	n Cost	Reading	Consumption
City-Ottawa-Aberdeen	City-Aber	No Reader	[No Meter] 1" Mdl-70-Badger in Aberdeen SE Fire I	f 100		0	\$0.00	0		\$0.00	33,835,600	0	\$0.00	33,946,800	111,200	\$660.92	34,005,400	58,600	\$348.29	34,120,700	115,300	\$675.68	34,340,000	219,300	\$1,238.27	34,423,400	83,400	\$460.72	34,549,500	126,100
		F240N404	IOTAI	100	10.659.900	0	\$0.00	10.742.100	0	\$0.00	33,835,600	0 01 000	\$0.00 \$483.21	33,946,800	111,200	\$660.92	34,005,400	156.100	\$348.29 \$927.78	34,120,700	115,300	\$675.68	34,340,000	219,300	\$1,238.27 \$850.92	34,423,400	120,000	\$460.72 \$715.94	34,549,500	126,100
City-Ottawa-Horticulture	City-Hort	E249M01	[E249M01] 1.5in T-10 (2.5in pipe) in Horticulture 1 Total	100	10,659,900	66,900 66,900	\$267.60 \$267.60	10,742,100 10,742,100	82,200 82,200	\$328.80 \$328.80	10,824,000 10,824,000	81,900 81,900	\$483.21	10,981,500 10,981,500	157,500	\$936.10 \$936.10	11,021,000	156,100	\$927.78	11,175,200 11,175,200	154,200 154,200	\$903.65 \$903.65	11,325,900 11,325,900	150,700 150,700	\$850.92	11,455,500 11.455.500	129,600 129,600	\$715.94	11,583,100 11,583,100	129,300 129.300
S'. S Bl	C'i Di	E249M02	[E249M02] 3in HPT (3in pipe) in Garage Room P161	1 100	2,262,300	0	\$0.00	2,262,300	0	\$0.00	2,262,300	0	\$0.00	2,262,300	0	\$0.00	2,265,900	3,600	\$21.40	2,289,900	24,000	\$140.65	2,312,200	22,300	\$125.92	2,329,200	17,000	\$93.91	2,343,100	14,000
City-Ottawa-Plaza	City-Plaza		Total		2,262,300	0	\$0.00	2,262,300	0	\$0.00	2,262,300	0	\$0.00	2,262,300	0	\$0.00	2,265,900	3,600	\$21.40	2,289,900	24,000	\$140.65	2,312,200	22,300	\$125.92	2,329,200	17,000	\$93.91	2,343,100	14,000
City-Ottawa-Serv-Bunk-Ice-Rink	City-Serv-Bunk	No Reader	[No Meter] 2in T-10 (4in pipe) in Urban Park East C	100			\$0.00			\$0.00			\$0.00	75,853,408		\$0.00	77,173,615	1,320,207	\$7,846.68	79,047,974	1,874,359	\$10,984.18	80,958,065	1,910,091	\$10,785.26	83,962,772	3,004,707	\$16,598.78	87,270,548	3,307,776
City Ottawa Serv Bank fee hink	City Serv Barik		Total		0	0	\$0.00	0	0	\$0.00	0	0	\$0.00	75,853,408	0	\$0.00	77,173,615	1,320,207	\$7,846.68	79,047,974	1,874,359	\$10,984.18	80,958,065	1,910,091	\$10,785.26	83,962,772	3,004,707	\$16,598.78	87,270,548	3,307,776
I-Office BTB_REIT	Office-I	E921M00	[E252M02] 2in T-10 (4in pipe) in Garage Bldg I Fire	100	51,341,910	461,480	\$1,845.92	51,787,900	445,990	\$1,783.96	53,956,930	2,169,030	\$12,797.28	55,381,630	1,424,700	\$8,467.74	55,960,640	1,260,820	\$7,493.71	58,202,170	2,241,530	\$13,135.89	59,076,210	874,040	\$4,935.23	59,905,600	829,390	\$4,581.76	60,579,730	696,170
		50101100	Total	100	51,341,910	461,480	\$1,845.92	51,787,900	445,990	\$1,783.96	53,956,930	2,169,030	\$12,797.28	55,381,630	1,424,700	\$8,467.74	55,960,640	1,260,820	\$7,493.71	58,202,170	2,241,530	\$13,135.89	59,076,210	874,040	\$4,935.23	59,905,600	829,390	\$4,581.76	60,579,730	696,170
A-Condo Vibe OCSCC 967	Res-A-Condo	E910M00	[E218M08] 2in T-10 (4in pipe) in Garage Bldg A Fire	100	36,090,100	376,800	\$1,507.20	36,416,700	326,600	\$1,306.40	36,771,500	354,800	\$2,093.32	37,087,100	315,600	\$1,875.78	37,190,800	319,700	\$1,900.14	37,650,600	459,800	\$2,694.53	38,103,600	453,000	\$2,557.85	38,560,800	457,200	\$2,525.69	39,018,500	470,900
	Res-K-Condo (needs	E919M00	TOTAL	100	36,090,100 57,869,960	376,800	\$1,507.20 \$360.34	36,416,700 57,943,660	326,600 73,700	\$1,306.40 \$294.80	36,771,500 58,032,960	354,800	\$2,093.32	37,087,100 58,133,160	315,600 100,200	\$1,875.78 \$595.54	58.163.460	319,700	\$1,900.14 \$615.15	37,650,600	459,800 929,927	\$2,694.53 \$5,449.59	38,103,600	453,000	\$2,557.85	38,560,800	457,200	\$2,525.69	39,018,500	470,900 931 432
K-Condo Rideau OCSCC 1003	replacement)	E919W00	[E213M06] Hi-Flo and [E213M07] Low-Flo 3in Nep	100	57,869,960	90,085	\$360.34	57,943,660	73,700	\$294.80	58,032,960	89,300	\$526.87 \$526.87	58,133,160	100,200	\$595.54	58,163,460	103,500	\$615.15	Roll-up submete	929,927	\$5,449.59	Roll-up submet	849,910	\$4,798.98	Roll-up submete	890,594	\$4,919.87	Roll-up submete	931,432
	- Comments	E909M00	[TH-Total] Virtual Meter Total of Townhomes	100	24,998,220	359.130	\$1,436.52	25.335.900	337,680	\$1,350.72	25,704,300	368,400	\$2,173.56	26,091,430	387.130	\$2 300 92	26,203,510	381.140	\$2.265.31	26,589,300	385,790	\$2,260.82	26,954,210	364,910	\$2,060.45	27,294,510	340,300	\$1,879.90	27,625,950	342.860
NorthTH-Condo OCSCC 1010	Res-NTH-Condo	250514100	Total	100	24,998,220	359,130	\$1,436.52	25,335,900	337,680	\$1,350.72	25,704,300	368,400	\$2,173.56	26,091,430	387,130	\$2,300.92	26,203,510	381,140	\$2,265.31	26.589.300	385,790	\$2,260.82	26,954,210	364,910	\$2,060.45	27,294,510	340,300	\$1,879.90	27,625,950	342,860
	Ret-A-Retail (needs	E911M00	[E160M05] 1.5in T-10 (4in pipe) in 1st FI Fire Room	100	4,782,424	60,430	\$241.72	4.837.006	54,582	\$218.33	4,897,436	60,430	\$356.53	4.955.916	58,480	\$347.58	4.973.460	58.480	\$347.58	5,023,529	50,069	\$293.42	5,062,584	39.055	\$220.52	Estimate	50.069	\$276.60	5,117,062	25.154
A-Retail Trinity	electrician)		Total		4,782,424	60,430	\$241.72	4,837,006	54,582	\$218.33	4,897,436	60,430	\$356.53	4,955,916	58,480	\$347.58	4,973,460	58,480	\$347.58	5,023,529	50,069	\$293.42	5,062,584	39,055	\$220.52	Estimate	50,069	\$276.60	5,117,062	25,154
D. Dotail Trinity	Ret-B-Retail	E912M00	[E162M05] 1.5in T-10 (4in pipe) in 1st Fl Fire Room	100	60,659,200	53,700	\$214.80	60,721,400	62,200	\$248.80	60,775,200	53,800	\$317.42	61,063,100	287,900	\$1,711.14	61,172,000	374,400	\$2,225.25	62,010,500	838,500	\$4,913.80	63,302,300	1,291,800	\$7,294.10	64,639,300	1,337,000	\$7,385.93	65,852,300	1,213,000
B-Retail Trinity	Ret-B-Retail		Total		60,659,200	53,700	\$214.80	60,721,400	62,200	\$248.80	60,775,200	53,800	\$317.42	61,063,100	287,900	\$1,711.14	61,172,000	374,400	\$2,225.25	62,010,500	838,500	\$4,913.80	63,302,300	1,291,800	\$7,294.10	64,639,300	1,337,000	\$7,385.93	65,852,300	1,213,000
C-Retail Trinity	Ret-C-Retail	E913M00	[E137M04] 2in T-10 (4in pipe) in 1st Fl Fire Room	100	67,706,100	764,300	\$3,057.20	68,366,200	660,100	\$2,640.40	69,061,200	695,000	\$4,100.50	70,062,800	1,001,600	\$5,953.03	70,326,700	978,300	\$5,814.55	71,206,200	879,500	\$5,154.07	72,012,300	806,100	\$4,551.61	72,942,700	930,400	\$5,139.77	73,804,400	861,700
C-Retail Trinity	net-c-netan		Total		67,706,100	764,300	\$3,057.20	68,366,200	660,100	\$2,640.40	69,061,200	695,000	\$4,100.50	70,062,800	1,001,600	\$5,953.03	70,326,700	978,300	\$5,814.55	71,206,200	879,500	\$5,154.07	72,012,300	806,100	\$4,551.61	72,942,700	930,400	\$5,139.77	73,804,400	861,700
D-Retail Trinity	Ret-D-Retail	E914M00	[E156M05] 1.5in T-10 (4in pipe) in 1st Fl Fire Room	100	30,698,800	493,100	\$1,972.40	31,152,100	453,300	\$1,813.20	31,653,900	501,800	\$2,960.62	32,216,500	562,600	\$3,343.83	32,366,400	536,900	\$3,191.08	32,893,800	527,400	\$3,090.69	33,436,400	542,600	\$3,063.77	33,918,200	481,800	\$2,661.59	34,388,300	470,100
			Total		30,698,800	493,100	\$1,972.40	31,152,100	453,300	\$1,813.20	31,653,900	501,800	\$2,960.62	32,216,500	562,600	\$3,343.83	32,366,400	536,900	\$3,191.08	32,893,800	527,400	\$3,090.69	33,436,400	542,600	\$3,063.77	33,918,200	481,800	\$2,661.59	34,388,300	470,100
C Date II Take II	Dat C Data'l	E915M00	[E139M08] 2in T-10 (4in pipe) in 1st Fl Fire Room	100	108,047,900	1,134,000	\$4,536.00	109,111,300	1,063,400	\$4,253.60	110,316,900	1,205,600	\$7,113.04	111,731,700	1,414,800	\$8,408.90	112,149,500	1,414,300	\$8,405.92	113,564,100	1,414,600	\$8,289.88	114,306,166	742,066	\$4,190.05	115,632,200	1,202,356	\$6,642.12	116,969,600	1,337,400
G-Retail Trinity	Ret-G-Retail	E915M01	[E144M02] 1in Mdl-70-Badger (2in pipe) in Bldg G 1	1 -100	13,066,590 121,114,490	1.134.000	\$0.00	13,066,590 122,177,890	1.063.400	\$0.00	13,066,590	1.205.600	\$0.00 \$7,113.04	13,089,650 124,821,350	- 23,060 1,391,740	-\$137.06 \$8,271.84	13,110,930 125,260,430	1.369.960	-\$263.54 \$8.142.39	13,280,590 126.844.690	- 169,660 1,244,940	-\$994.25 \$7,295.64	13,441,040 127,747,206	-160,450 581,616	-\$905.97 \$3,284.07	13,589,350 102,042,850	-148,310 1.054.046	-\$819.30 \$6,148.80	13,736,410	-147,060 1,190,340
		E916M00	[E155M02] 1st-Flr Tenants 1.5in T-10 and [E154M0	d 100	88,316,100	1,134,000	\$5.081.20	89,426,200	1,110,100	\$4,253.60	90,682,800	1,205,600	\$7,113.04	91,862,000	1,179,200	\$7.008.60	92,218,400	1,369,960	\$6,906.97	93,726,900	1,244,940	\$8,840.16	95,768,300	2 0/1 /00	\$11,526.69	97,749,200	1,980,900	\$10,943.00	98,995,400	1,190,340
H-Retail Trinity	Ret-H-Retail	L910W00	Total	q 100	88,316,100	1,270,300	+-/	89,426,200	, -,	\$4,440.40	90,682,800	1,256,600	\$7,413.94	91,862,000	1,179,200	\$7,008.60	92,218,400	1,162,100		93,726,900	1,508,500		95,768,300	2,041,400	\$11,526.69	97,749,200	1,980,900	· ·		1.246.200
		E917M00	[E133M05] 2in GWF (2in pipe) in Arena Service Lev	100	62,435,770	724,930	\$2,899.72	63,003,860	568.090	\$2,272.36	63,647,950	644,090	\$3,800.13	64,258,810	610,860	\$3,630,66	64,448,130	613.850	\$3,648.43	65.119.700	671,570	\$3,935.56	65,775,610	655.910	\$3,703,57	66,239,990	464.380	\$2,565.35	66,805,040	565.050
J-Retail Trinity	Ret-J-Retail		Total		62,435,770		\$2,899.72	, ,	568,090	\$2,272.36	63,647,950		1 - 7	64,258,810	/	\$3,630.66	64,448,130	613,850	\$3,648.43	65,119,700	671,570	· ,	65,775,610	655,910	\$3,703.57	66,239,990	464,380		66,805,040	565,050
		No Reader	[No Meter] North Stad 4in HPT (4in pipe) in North	100	1,116,161,000	·	\$0.00	1,118,931,000	2,770,000	\$11,080.00	1,125,337,000	6,406,000	\$37,795.40	1,129,092,000	3,755,000	\$22,317.93	1,131,432,000	2,340,000	\$13,907.84	1,134,320,000	2,888,000	\$16,924.35	1,138,119,000	3,799,000	\$21,450.91	1,141,057,000	2,938,000	\$16,230.27	1,146,263,000	5,206,000
Stadium OSEG Stadium	Stad-OSEG	No Reader	[No Meter] South Stad 2in T-10 (4in pipe) in Urban	100	68,059,000		\$0.00	68,096,000	37,000	\$148.00	68,209,000	113,000	\$666.70	68,436,000	227,000	\$1,349.18	68,924,000	488,000	\$2,900.44	69,778,000	854,000	\$5,004.64	71,113,000	1,335,000	\$7,538.03	72,439,000	1,326,000	\$7,325.17	73,729,000	1,290,000
Stadium OSEG Stadium	Stau-OSEG	E917M00	[E133M05] 2in GWF (2in pipe) in Arena Service Lev	-100			\$0.00	63,003,860	-568,090	-\$2,272.36	63,647,950	-644,090	-\$3,800.13	64,258,810	-610,860	-\$3,630.66	64,448,130	-613,850	-\$3,648.43	65,119,700	-671,570	-\$3,935.56	65,775,610	-655,910	-\$3,703.57	66,239,990	-464,380	-\$2,565.35	66,805,040	-565,050
			Total		1,184,220,000	0	\$0.00		2,238,910	1 - /		5,874,910	\$34,661.97		3,371,140	\$20,036.45		2,214,150	\$13,159.85		3,070,430				\$25,285.36		3,799,620	\$20,990.08		5,930,950
		E915M01	[E144M02] 1in Mdl-70-Badger (2in pipe) in Bldg G	1 100	13,066,590	0	\$0.00	13,066,590	0	\$0.00	13,066,590	0	\$0.00	13,089,650	23,060	\$137.06	13,110,930	44,340	\$263.54	13,280,590	169,660	\$994.25	13,441,040	160,450	\$905.97	13,589,350	148,310	\$819.30	13,736,410	147,060
Stadium Public Realm	Stad-PubRealm	E922M00	[E252M06] 1in Dwyer (1.5in pipe) in Garage Bldg I	100	7,846,007	0	\$0.00	7,846,007	0	\$0.00	7,846,007	0	\$0.00	7,855,028	9,022	\$53.62	7,870,822	24,815	\$147.49	7,927,056	56,235	\$329.55	7,983,307	56,251	\$317.62	8,041,859	58,552	\$323.46	8,098,836	58,919
		E923M00	[E213M05] 0.75" Dwyer WMT2-A-C-03 in Garage N	100	1,786,880	0	\$0.00	1,786,880	0	\$0.00	1,786,880	0	\$0.00	1,793,219	6,339	\$37.68	1,807,938	21,058	\$125.16	1,860,305	52,367	\$306.88	1,910,093	49,788	\$281.12	1,962,510	52,417	\$289.57	2,011,183	50,353
City Total			Total		22,699,476	0	\$0.00	22,699,476	0	\$0.00	22,699,476	0	\$0.00 \$483.21	22,737,897	38,421	\$228.36 \$1,597.02	22,789,689	90,213	\$536.18	23,067,951	278,262	\$1,630.68	23,334,439	266,488	\$1,504.72 \$13,000.36	23,593,719	259,280	\$1,432.33		256,332
City Total Office Total			City Total Office Total			66,900 461,480	\$267.60 \$1,845.92		82,200 445,990	\$328.80 \$1,783.96		81,900 2,169,030	\$483.21		268,700 1,424,700	\$1,597.02			\$9,144.15 \$7,493.71		2,167,859 2,241,530			874,040	\$13,000.36		829,390	\$17,869.35 \$4,581.76		3,577,176 696,170
Residential Total			Residential Total			<u> </u>	\$1,845.92		737,980			812,500	\$12,797.28		802,930	\$4,772.23			\$4,780.61		1,775,517			-	\$9,417.28		1,688,094			1,745,192
Retail Total			Retail Total				\$18,003.04		•	\$15,887.09		4,417,320	\$26,062.19		•	\$30,266.68			\$30,276.25		, ,	\$33,523.34			\$33,644.33		, ,	\$34,795.06		5,571,544
Stadium / OSEG Total			Stadium / OSEG Total			0	\$0.00			\$8,955.64		5,874,910				\$20,264.80			\$13,696.03			\$19,624.11			\$26,790.08			\$22,422.41		6,187,282
Metered Total						5,855,154	\$23,420.62			\$29,907.41		13,355,660	\$78,798.39		10,998,271	\$65,368.47		11,002,020			15,254,077				\$87,787.29		16,109,685			17,777,364
City Main Utility Meter1			City Account 1of4 (0270300 - 10077975)					536,809,000			543,564,000	6,755,000	\$28,249.56	550,235,000	6,671,000	\$28,414.09	550,235,000	6,671,000	\$28,414.09	557,764,000	7,529,000		565,059,000	7,295,000	\$31,072.33	572,554,000	7,495,000	\$31,924.33	580,154,000	7,600,000
City Main Utility Meter2			City Account 2of4 (0270300 - 10077976)					121,996,000			124,112,000	2,116,000	\$8,847.67	126,394,000	2,282,000	\$9,716.95	126,394,000	2,282,000	\$9,716.95	128,587,000	2,193,000	\$9,337.81	130,766,000	2,179,000	\$9,278.17	132,934,000	2,168,000	\$9,231.31	135,098,000	2,164,000
City Main Utility Meter3			City Account 3of4 (0270300 - 10077977)					92,829,000			93,425,000	596,000	\$19,693.78	94,117,000	692,000	\$21,390.57	94,117,000	692,000	\$21,390.57	95,866,000	1,749,000	\$32,069.17	97,338,000	1,472,000		98,925,000	1,587,000		100,474,000	1,549,000
City Main Utility Meter4			City Account 4of4 (0270300 - 10077978)					missing bill			286,175,000	missing bill	missing bill	290,772,000	4,597,000	\$25,126.04	290,772,000	4,597,000	. ,	296,471,000	5,699,000	\$27,144.04	300,888,000	4,417,000	\$21,682.72	306,486,000	5,598,000			5,948,000
City Mains Total						0	\$0.00		0	\$0.00		9,467,000	\$56,791.01		14,242,000	\$84,647.65		14,242,000	\$84,647.65		17,170,000	\$100,620.19		15,363,000	\$86,746.59		16,848,000	\$93,072.69		17,261,000
% Difference Submeter to Mains						100.0%			100.0%			29.1%			-29.5%			-29.4%			-12.6%			1.2%			-4.6%			2.9%

Less than 20% of previous mo	onth	More than 20%	of previous month																
							September			October			November			December		Total YTD	Total YTD
Tenant Name	Tenant Number	CARMA Plus	Service Description [Real Meter]	Percantage	Rate \$/unit	End Read Date:		Rate \$/unit	End Read Date:		Rate \$/unit	End Read Date:		Rate \$/unit	End Read Date:		Rate \$/unit		1
		Meter Number	, , , , , , , , , , , , , , , , , , , ,	(%)	\$0.0055		= Litres	\$0.0057	Units =		\$0.0063		= Litres	\$0.0066		Litres	\$0.0065	Litres	\$
					Cost	Reading	Consumption	Cost	Reading	Consumption	Cost	Reading	Consumption	Cost	Reading	Consumption	Cost	Consumption	Cost
City-Ottawa-Aberdeen	City-Aber	No Reader	[No Meter] 1" Mdl-70-Badger in Aberdeen SE Fire F	100	\$692.79	34,663,900	114,400	\$649.65	34,799,500	135,600	\$852.84	35,003,500	204,000	\$1,343.41	35,158,000	154,500	\$1,010.74	1,322,400	\$7,933.32
	5.104 1 1.10 5.1		Total		\$692.79	34,663,900	114,400	\$649.65	34,799,500	135,600	\$852.84	35,003,500	204,000	\$1,343.41		154,500	\$1,010.74	1,322,400	\$7,933.32
City-Ottawa-Horticulture	City-Hort	E249M01	[E249M01] 1.5in T-10 (2.5in pipe) in Horticulture 1	100	\$710.38	11,700,200	117,100	\$664.99	11,803,600	103,400	\$650.32	11,889,300	85,700	\$564.36	12,012,600	123,300	\$806.63	1,537,900	\$8,810.69
	,		Total		\$710.38		117,100	\$664.99		103,400	\$650.32		85,700	\$564.36		123,300	\$806.63	1,537,900	\$8,810.69
City-Ottawa-Plaza	City-Plaza	E249M02	[E249M02] 3in HPT (3in pipe) in Garage Room P161	100	\$76.92	2,355,200	12,100	\$68.71	2,362,700	7,500	\$47.17	2,362,700	0	\$0.00	2,362,700	0	\$0.00	100,500	\$574.67
City Cttawa Haza	City Flaza		Total		\$76.92		12,100	\$68.71		7,500	\$47.17		0	\$0.00		0	\$0.00	100,500	\$574.67
City-Ottawa-Serv-Bunk-Ice-Rink	City-Serv-Bunk	No Reader	[No Meter] 2in T-10 (4in pipe) in Urban Park East C	100	\$18,172.95	89,437,035	2,166,487	\$12,303.01	90,114,773	677,738	\$4,262.54	90,135,137	20,364	\$134.10	90,135,137	0	\$0.00	14,281,729	\$81,087.50
city ottawa serv bank fee fank	City Serv Barik		Total		\$18,172.95	89,437,035	2,166,487	\$12,303.01	90,114,773	677,738	\$4,262.54	90,135,137	20,364	\$134.10		0	\$0.00	14,281,729	\$81,087.50
I-Office BTB_REIT	Office-I	E921M00	[E252M02] 2in T-10 (4in pipe) in Garage Bldg I Fire	100	\$3,824.76	61,326,900	747,170	\$4,243.02	61,876,840	549,940	\$3,458.77	62,389,060	512,220	\$3,373.15	63,045,940	656,880	\$4,297.31	12,869,360	\$74,238.50
1-Office BTB_KETT	Office-i		Total		\$3,824.76		747,170	\$4,243.02		549,940	\$3,458.77		512,220	\$3,373.15		656,880	\$4,297.31	12,869,360	\$74,238.50
A-Condo Vibe OCSCC 967	Res-A-Condo	E910M00	[E218M08] 2in T-10 (4in pipe) in Garage Bldg A Fire	100	\$2,587.13	39,414,400	395,900	\$2,248.23	39,744,400	330,000	\$2,075.49	40,083,300	338,900	\$2,231.78	40,407,200	323,900	\$2,118.95	4,923,100	\$27,722.49
A-colldo vibe ocscc 907	Res-A-Collad		Total		\$2,587.13		395,900	\$2,248.23		330,000	\$2,075.49		338,900	\$2,231.78		323,900	\$2,118.95	4,923,100	\$27,722.49
K-Condo Rideau OCSCC 1003	Res-K-Condo (needs	E919M00	[E213M06] Hi-Flo and [E213M07] Low-Flo 3in Nep	100	\$5,117.29	Roll-up submet	887,086	\$5,037.57	Roll-up submete	870,583	\$5,475.41	Roll-up submete	803,710	\$5,292.71	Roll-up submete	840,330	\$5,497.44	7,460,357	\$43,981.58
K-Collub Kidead Ocscc 1003	replacement)		Total		\$5,117.29	Roll-up submet	887,086	\$5,037.57	Roll-up submete	870,583	\$5,475.41	Roll-up submet	803,710	\$5,292.71	Roll-up submete	840,330	\$5,497.44	7,460,357	\$43,981.58
NorthTIL Condo OCSCC 1010	Doc NTU Condo	E909M00	[TH-Total] Virtual Meter Total of Townhomes	100	\$1,883.68	27,995,380	369,430	\$2,097.91	28,353,920	358,540	\$2,254.99	28,716,020	362,100	\$2,384.56	29,090,990	374,970	\$2,453.05	4,732,380	\$26,802.39
NorthTH-Condo OCSCC 1010	Res-NTH-Condo		Total		\$1,883.68		369,430	\$2,097.91		358,540	\$2,254.99		362,100	\$2,384.56		374,970	\$2,453.05	4,732,380	\$26,802.39
A. Datail Tainite	Ret-A-Retail (needs	E911M00	[E160M05] 1.5in T-10 (4in pipe) in 1st FI Fire Room	100	\$138.20	5,149,300	32,238	\$183.08	5,186,402	37,102	\$233.35	5,220,800	34,398	\$226.52	5,261,700	40,900	\$267.57	601,387	\$3,350.98
A-Retail Trinity	electrician)		Total		\$138.20		32,238	\$183.08		37,102	\$233.35		34,398	\$226.52		40,900	\$267.57	601,387	\$3,350.98
2.2.4.7.4		E912M00	[E162M05] 1.5in T-10 (4in pipe) in 1st FI Fire Room	100	\$6,664.23	66,796,200	943,900	\$5,360.20	67,075,231	279,031	\$1,754.93	67,353,700	278,469	\$1,833.82	67,727,900	374,200	\$2,448.02	7,387,900	\$42,372.45
B-Retail Trinity	Ret-B-Retail		Total		\$6,664.23		943,900	\$5,360.20		279,031	\$1,754.93		278,469	\$1,833.82		374,200	\$2,448.02	7,387,900	\$42,372.45
		E913M00	[E137M04] 2in T-10 (4in pipe) in 1st Fl Fire Room	100	\$4,734.19	74,534,600	730,200	\$4,146.65	75,228,940	694,340	\$4,366.96	75,975,700	746,760	\$4,917.68	76,743,900	768,200	\$5,025.57	10,516,500	\$59,602.17
C-Retail Trinity	Ret-C-Retail		Total		\$4,734.19		730,200	\$4,146.65		694,340	\$4,366.96		746,760	\$4,917.68		768,200	\$5,025.57	10,516,500	\$59,602.17
		E914M00	[E156M05] 1.5in T-10 (4in pipe) in 1st FI Fire Room	100	\$2,582.73	34,860,900	472,600	\$2,683.79	35,332,900	472,000	\$2,968.58	35,831,000	498,100	\$3,280.16	36,353,400	522,400	\$3,417.54	6,534,700	\$37,029.98
D-Retail Trinity	Ret-D-Retail		Total		\$2,582.73		472,600	\$2,683.79		472,000	\$2,968.58		498,100	\$3,280.16		522,400	\$3,417.54	6,534,700	\$37,029.98
		E915M00	[E139M08] 2in T-10 (4in pipe) in 1st Fl Fire Room	100	\$7,347.69	118.405.300	1,435,700	\$8.153.03	119.670.300	1.265.000	\$7,956.05	120,799,000	1.128.700	\$7,432.89	122.073.100	1.274.100	\$8.335.17	16,032,022	\$91,064.33
G-Retail Trinity	Ret-G-Retail	E915M01	[E144M02] 1in Mdl-70-Badger (2in pipe) in Bldg G 1	-100	-\$807.95	13,921,030	-184,620	-\$1,048.42	13,982,850	-61,820	-\$388.81	13,982,850	0	\$0.00	13,982,850	0	\$0.00	-939,320	-\$5,365.29
o netali riility	net d netan	ESISIVIOI	Total	100	\$6,539.74	13,321,030	1,251,080	\$7,104.61	13,302,030	1,203,180	\$7,567.24	13,302,030	1,128,700	\$7,432.89	13,302,030	1,274,100	\$8,335.17	15,092,702	\$86,025.02
		E916M00	[E155M02] 1st-Flr Tenants 1.5in T-10 and [E154M0	100	\$6,846.63	99,992,100	996,700	\$5,660.04	101,073,300	1,081,200	\$6,800.06	102,043,300	970,000	\$6,387.79	103,077,400	1,034,100	\$6,765.08	16,837,300	\$94,620.57
H-Retail Trinity	Ret-H-Retail	L910IVIOO	Total	100	\$6,846.63	33,332,100	996,700	\$5,660.04	101,073,300	1,081,200	\$6,800.06	102,043,300	970,000	\$6,387.79	103,077,400	1,034,100	\$6,765.08	16,837,300	\$94,620.57
		E917M00	[E133M05] 2in GWF (2in pipe) in Arena Service Lev	100	\$3,104.39	67,414,600	609,560	\$3,461.56	67,989,980	575,380	\$3,618.77	68,618,230	628,250	\$4,137.25	69,201,250	583,020	\$3,814.12	7,914,940	\$44,591.87
J-Retail Trinity	Ret-J-Retail	L9171V100	Total	100	\$3,104.39	07,414,000	609,560	\$3,461.56	07,363,360	575,380	\$3,618.77	08,018,230	628,250	\$4,137.25	09,201,230	583,020	\$3,814.12	7,914,940	\$44,591.87
		No Reader	[No Meter] North Stad 4in HPT (4in pipe) in North	100	\$28,601.81	1,150,723,000	4,460,000	\$25,327.38	1,154,021,000	3,298,000	\$20,742.32	1,158,023,000	4,002,000	\$26,354.57	1,161,290,000	3,267,000	\$21,372.72	45,129,000	\$262,105.50
		No Reader	[No Meter] North Stad 4in HPT (4in pipe) in North	100	\$7,087.27	75,353,000	1,624,000	\$9,222.35	75,828,000	475,000	\$2,987.45	75,990,000	162,000	\$1,066.83	76,080,000	90,000	\$588.78	8,021,000	\$45,884.82
Stadium OSEG Stadium	Stad-OSEG	E917M00		-100	-\$3,104.39	67,414,600	-609,560	-\$3,461.56	67,989,980	-575,380	-\$3,618.77	68,618,230	162,000	\$1,066.83	69,201,250	90,000	\$0.00	-5,978,740	-\$33,740.79
		E9171VIOU	[E133M05] 2in GWF (2in pipe) in Arena Service Lev Total	-100	\$32,584.69		5,474,440	\$31,088.16	07,989,980	3,197,620	\$20,111.00	08,018,230	4,164,000	\$0.00	09,201,230	3,357,000	\$21,961.50	47,171,260	\$274,249.53
		E915M01	[E144M02] 1in Mdl-70-Badger (2in pipe) in Bldg G 1	100		12 021 020		-	13,982,850	, ,		13,982,850	4,164,000		13,982,850	3,357,000	\$0.00	939,320	
				100	\$807.95	13,921,030	184,620	\$1,048.42	<u> </u>	61,820	\$388.81		0	\$0.00		0	<u> </u>		\$5,365.29
Stadium Public Realm	Stad-PubRealm	E922M00	[E252M06] 1in Dwyer (1.5in pipe) in Garage Bldg I I	100	\$323.70	8,156,710	57,874	\$328.65	8,181,175	24,465	\$153.87	8,181,176	2	\$0.01	8,181,176	0	\$0.00	346,134	\$1,977.97
		E923M00	[E213M05] 0.75" Dwyer WMT2-A-C-03 in Garage N	100	\$276.64	2,037,986	26,803	\$152.21	2,058,121	20,135	\$126.64	2,058,121	0	\$0.00	2,058,121	•	\$0.00	279,261	\$1,595.90
C' Tabel			Total		\$1,408.29		269,297	\$1,529.28		106,420	\$669.32	·	240.054	\$0.01		0	\$0.00	1,564,715	\$8,939.16
City Total			City Total		\$19,653.03		2,410,087	\$13,686.36		924,238	\$5,812.87		310,064	\$2,041.88		277,800	\$1,817.37	17,242,529	\$98,406.18
Office Total			Office Total		\$3,824.76		747,170	\$4,243.02		549,940	\$3,458.77		512,220	\$3,373.15		656,880	\$4,297.31	12,869,360	\$74,238.50
Residential Total			Residential Total		\$9,588.10		1,652,416	\$9,383.71		1,559,123	\$9,805.89		1,504,710	\$9,909.04		1,539,200	\$10,069.45	17,115,837	\$98,506.46
Retail Total			Retail Total		\$30,610.11		5,036,278	\$28,599.94		4,342,233	\$27,309.89		4,284,677	\$28,216.10		4,596,920	\$30,073.06		\$367,267.06
Stadium / OSEG Total			Stadium / OSEG Total		\$33,992.98		5,743,737	\$32,617.44		3,304,040	\$20,780.31		4,164,002	\$27,421.41		3,357,000	\$21,961.50	48,735,975	\$283,188.69
Metered Total					\$97,668.98		15,589,688	\$88,530.48		10,679,575	\$67,167.74		10,775,672	\$70,961.58		10,427,800	\$68,218.69	160,849,128	
City Main Utility Meter1			City Account 1of4 (0270300 - 10077975)		\$32,371.63	587,548,000	7,394,000	\$31,494.07	594,033,000	6,485,000	\$27,621.73	599,997,000	5,964,000	\$25,402.27	605,971,000	5,974,000	\$25,444.87	75,833,000	\$322,478.14
City Main Utility Meter2			City Account 2of4 (0270300 - 10077976)		\$9,214.27	137,238,000	2,140,000	\$9,112.03	139,362,000	2,124,000	\$9,043.87	141,423,000	2,061,000	\$8,775.49	143,460,000	2,037,000	\$8,673.25	23,746,000	\$100,947.77
City Main Utility Meter3			City Account 3of4 (0270300 - 10077977)		\$25,041.39	101,642,000	1,168,000	\$23,418.33	102,017,000	375,000	\$20,040.15	102,235,000	218,000	\$19,371.33	102,566,000	331,000	\$19,852.71	10,429,000	\$252,184.64
City Main Utility Meter4			City Account 4of4 (0270300 - 10077978)		\$28,204.78	316,745,000	4,311,000	\$21,231.16	318,257,000	1,512,000	\$9,307.42	319,174,000	917,000	\$6,772.72	320,166,000	992,000	\$7,092.22	38,588,000	\$198,400.92
City Mains Total					\$94,832.07		15,013,000	\$85,255.59		10,496,000	\$66,013.17		9,160,000	\$60,321.81		9,334,000	\$61,063.05	148,596,000	\$874,011.47
% Difference Submeter to Mains							3.7%			1.7%			15.0%			10.5%		14.8%	

Less than 20% of previous mo	onth	More than 20%	% of previous month	1																										
						January			February			March			April	_		May			June			July		Aug	ıst		September	
Tenant Name	Tenant Number	CARMA Plus	Service Description [Real Meter]	Percantage	End Read D	ate: Feb.4	Rate \$/unit	End Rea	d Date: Mar.5	Rate \$/unit	End Read I	Date:Apr.4	Rate \$/unit	End Read	Date: May3	Rate \$/unit	End Read	Date: Jun.2	Rate \$/unit	End Read D	ate: Jul.2	Rate \$/unit	End Read Date:	ug.1 Rate	\$/unit End	Read Date: Aug.31	Rate \$/u			Rate \$/unit
Telland Hamile	101141111111111111111111111111111111111	Meter Number	Service Description (near meter)	(%)	Units =	Litres	\$0.0067		ts = Litres	\$0.0064	Units =		\$0.0067		= Litres	\$0.0064	Units :		\$0.0058	Units =	Litres	\$0.0053	Units = Litre	5 5	\$0.0055	Units = Litres	\$0.0		= Litres	\$0.0060
					Reading	Consumption	Cost	Reading	Consumption	Cost	Reading	Consumption	Cost	Reading	Consumption	Cost	Reading	Consumption	n Cost	Reading	Consumption		Reading Cor	sumption		Reading Consun	ption Co		Consumption	Cost
City-Ottawa-Aberdeen	City-Aber	No Reader	[No Meter] 1" Mdl-70-Badger in Aberdeen SE Fire Room	100	35,196,700	38,700	\$258.09	35,328,400	131,700	\$848.58	35,408,100	79,700	\$531.56	35,492,000	83,900	\$538.47	35,746,400	254,400	\$1,480.11	35,920,900	174,500	\$925.27	,013,000	7, 00	\$543.06	6,121,000 101,4	700	2.33	123,400	\$735.37
		F2.40N404	IOTAI	100	42.076.400	38,700	\$258.09	42.462.200	131,700	\$848.58	42 224 000	79,700	\$531.56	12 210 000	83,900	\$538.47	35,746,400	254,400	\$1,480.11	35,920,900	174,500	7525.27	,019,600	9): 00	\$543.06	6,121,000 101,4	00 \$592	2.55 36,244,400	123,400	\$735.37
City-Ottawa-Horticulture	City-Hort	E249M01	[E249M01] 1.5in T-10 (2.5in pipe) in Horticulture 1st Fl Mechanical Room	100	12,076,400	63,800 63,800	\$425.48 \$425.48	12,163,300	86,900 86,900	\$559.92 \$559.92	12,234,800	71,500 71,500	\$476.87 \$476.87	12,319,000	84,200	\$540.40 \$540.40	12,445,800	126,800	\$737.73 \$737.73	12,593,400	147,600 147.600		,694,200	,	\$554.61 12	2,783,200 89,0	00 \$520 00 \$520	0.09 12,886,800	103,600 103.600	\$617.37 \$617.37
		E249M02	IOIdi	100	2.362.700	03,800	\$425.48	2.362.700	0 0 86,900	\$559.92	2.362.700	71,500	\$476.87	2.364.000	84,200	\$8.34	2,379,300	15 200	\$/37.73	2.393.500	147,600		405.500	70,000	955 + :01	. 89,0 2,414,400 8,9 0	5520 5520	3.03	103,600	\$77.47
City-Ottawa-Plaza	City-Plaza	E249IVIU2	[E249M02] 3in HPT (3in pipe) in Garage Room P161	100	2,302,700	0	\$0.00	2,302,700	0	\$0.00	2,302,700	0	\$0.00	2,364,000	1,300	\$8.34	2,379,300	15,300	\$89.02	2,393,300	14,200	\$75.29	.03,500	2.000	\$66.03	2,414,400 8,9 0	75-		13,000	\$77.47
		No Reader	[No Meter] 2in T-10 (4in pipe) in Urban Park East Court Manhole	100	00 135 137	0	\$0.00	90 153 671	18.534	\$119.42	90 153 702	21	\$0.00	01 228 877	1,300	\$6.900.47	95 280 237	4 051 360	\$23,571.00	98 478 137	3 197 900	\$16.956.62	1 001 615 5	_,000	30.390.80 10	16 566 599 2 564	Ψ32		1 461 298	\$8,708.18
City-Ottawa-Serv-Bunk-Ice-Rink	City-Serv-Bunk	No Neader	Total	100	90,133,137	0	\$0.00	90,133,071	18.534	\$119.42	90,133,702	31	\$0.21	91,228,877	1,075,175	\$6,900.47	95,280,237	4,051,360	\$23,571.00	98.478.137	3 197 900	· · · · · · · · · · · · · · · · · · ·	1,001,615 5	, 20) 170 yo	10,000.00	06.566.599 2.564	984 \$14.98		1,401,298	\$8,708.18
		E921M00	[E252M02] 2in T-10 (4in pipe) in Garage Bldg I Fire Room P119	100	63.530.010	484.070	\$3,228,25	64.041.010	511.000	\$3,292.52	64.620.120	579.110	\$3,862,36	65.293.274	673,154	\$4,320,30	66,067,715	774,441	\$4,505.74	66.867.910	800.195	\$4.242.97 6	.595.080		10,030.00	8.240.480 645.4	Ψ= :,50	71.54 68.881.310	640,830	\$3,818.84
I-Office BTB_REIT	Office-I	ESZTIVIOO	Total	100	03,330,010		\$3,228.25	04,041,010	511,000	\$3,292.52	04,020,120	579,110	ψο)ου <u>Σ</u> .ου	03,233,274	673,154	ψ 1,620.50	00,007,713	,	\$4,505.74	00,007,510		\$4.242.97	,555,000	-7,±70 Ÿ	4 000 97	. 645.4	ψ3,77	1.51 00,001,510	640,830	\$3,818.84
		E910M00	[E218M08] 2in T-10 (4in pipe) in Garage Bldg A Fire Room P144B	100	40.746.400	339.200	\$2,262.12	41.087.900	341,500	\$2,200,38	41.422.700	334.800	\$2,232,94	41,725,500	302.800	\$1,943.37	42,181,100	455,600	\$2,650,70	42.689.300	508,200	+ 1/= 1=101		,	2.965.64 43	3.675.700 447.4	,	-	452,500	\$2,696.54
A-Condo Vibe OCSCC 967	Res-A-Condo		Total			339.200	\$2,262.12	,	341.500	\$2,200.38	,,	334.800	\$2,232,94		302,800	\$1.943.37	,	455.600	\$2,650.70		508.200	\$2,694.69	,	39.000 \$	2.965.64	. 447.4	7-/	4.48	452,500	\$2,696.54
		E919M00	[E213M07] 3in Nep (3in pipe) in Garage Bldg K Water Room P119	100	Roll-up submeter	885.620	\$5,906.18	3.404.787.000	790.000	\$5.090.20	3.405.591.000	804.000	\$5,362,25	3.406.519.000	813.000	7 = /0 10101	3,407,523,000	1.004.000	\$5,841.32	3,408,694,000	1.171.000	\$6,209.14 3.40	9.867.000 1.	73.000 \$0	6.453.98 3.41	11.027.000 1.160	, , -	78.72 3,412,125,000	1,098,000	\$6,543.21
K-Condo Rideau OCSCC 1003	Res-K-Condo		Total		Roll-up submete	885,620	\$5,906.18	•	790,000	\$5,090.20	•	804,000	\$5,362.25	•	813,000	\$5,217.83		1,004,000	\$5,841.32		, ,	\$6,209.14	1,	.73,000 \$0	6,453.98	1,160	000 \$6,77	, , ,	1,098,000	
		E909M00	[TH-Total] Virtual Meter Total of Townhomes	100	29,459,430	368,440	\$2,457.12	29,805,130	345,700	\$2,227.45	30,181,810	376,680	\$2,512.26	30,547,860	366,050	\$2,349.31	30,926,520	378,660	\$2,203.06	31,344,780	418,260	. ,		34,430 \$2	2,115.18 32	2,112,640 383,4	30 \$2,24	10.66 32,489,690	377,050	\$2,246.92
NorthTH-Condo OCSCC 1010	Res-NTH-Condo		Total			368,440	\$2,457.12		345,700	\$2,227.45		376,680	\$2,512.26		366,050	\$2,349.31		378,660	\$2,203.06		418,260	\$2,217.79	. 3	34,430 \$2	2,115.18	. 383,4	30 \$2,24	10.66	377,050	
		E911M00	[E160M05] 1.5in T-10 (4in pipe) in 1st Fl Fire Room	100	5,296,700	35,000	\$233.41	5,326,700	30,000	\$193.30	5,350,100	23,400	\$156.07	5,375,700	25,600	\$164.30	5,418,100	42,400	\$246.69	5,500,700	82,600	\$437.98	526,700	6,000	\$143.05 5	5,552,600 25,9	00 \$151	1.35 5,579,400	26,800	\$159.71
A-Retail Trinity	Ret-A-Retail		Total			35,000	\$233.41		30,000	\$193.30		23,400	\$156.07		25,600	\$164.30		42,400	\$246.69		82,600	\$437.98	· ·	6,000	\$143.05	. 25,9	00 \$151	1.35	26,800	\$159.71
D. D. J. Cl. T. C. Cl.	Data B. Bataill	E912M00	[E162M05] 1.5in T-10 (4in pipe) in 1st Fl Fire Room	100	68,022,400	294,500	\$1,964.01	68,316,700	294,300	\$1,896.26	68,593,900	277,200	\$1,848.78	68,937,000	343,100	\$2,202.01	69,918,800	981,800	\$5,712.16	71,398,400	1,479,600	\$7,845.47 7	,126,900 1,	28,500 \$9	9,510.40 74	4,649,900 1,523	000 \$8,89	99.99 75,859,400	1,209,500	\$7,207.67
B-Retail Trinity	Ret-B-Retail		Total			294,500	\$1,964.01		294,300	\$1,896.26		277,200	\$1,848.78		343,100	\$2,202.01		981,800	\$5,712.16		1,479,600	\$7,845.47	. 1,	28,500 \$9	9,510.40	. 1,523	000 \$8,89	99.99	1,209,500	\$7,207.67
C Part of Training	Data C Data d	E913M00	[E137M04] 2in T-10 (4in pipe) in 1st Fl Fire Room	100	77,351,300	607,400	\$4,050.74	78,091,500	740,200	\$4,769.33	78,774,500	683,000	\$4,555.25	79,359,200	584,700	\$3,752.60	80,059,000	699,800	\$4,071.47	80,988,900	929,900	\$4,930.72 8	,018,200 1,	29,300 \$	5,663.33 83	3,059,100 1,040	900 \$6,08	32.73 83,785,500	726,400	\$4,328.77
C-Retail Trinity	Ret-C-Retail		Total			607,400	\$4,050.74		740,200	\$4,769.33		683,000	\$4,555.25		584,700	\$3,752.60		699,800	\$4,071.47		929,900	\$4,930.72	. 1,	29,300 \$!	5,663.33	. 1,040	900 \$6,08	32.73 .	726,400	\$4,328.77
D. Dotoil Trinit.	Ret-D-Retail	E914M00	[E156M05] 1.5in T-10 (4in pipe) in 1st Fl Fire Room	100	36,833,000	479,600	\$3,198.44	37,336,100	503,100	\$3,241.62	37,785,600	449,500	\$2,997.93	38,268,900	483,300	\$3,101.82	38,797,100	528,200	\$3,073.09	39,316,600	519,500	\$2,754.61 3	,765,100	18,500 \$2	2,467.70 40	0,215,400 450,3	00 \$2,63	31.43 40,658,400	443,000	\$2,639.93
D-Retail Trinity	Ret-D-Retail		Total			479,600	\$3,198.44		503,100	\$3,241.62		449,500	\$2,997.93		483,300	\$3,101.82		528,200	\$3,073.09		519,500	\$2,754.61	. 4	48,500 \$2	2,467.70	. 450,3	00 \$2,63	31.43 .	443,000	\$2,639.93
		E915M00	[E139M08] 2in T-10 (4in pipe) in 1st Fl Fire Room	100	123,106,400	1,033,300	\$6,891.06	124,171,200	1,064,800	\$6,860.82	125,256,000	1,084,800	\$7,235.04	126,360,200	1,104,200	\$7,086.75	127,702,200	1,342,000	\$7,807.82	129,204,200	1,502,000	\$7,964.24 13	0,582,100 1,	\$77,900 \$	7,581.36 13	31,951,600 1,369	500 \$8,00	133,307,400	1,355,800	\$8,079.50
G-Retail Trinity	Ret-G-Retail	E915M01	[E144M02] 1in Mdl-70-Badger (2in pipe) in Bldg G 1st Fl Fire Room f.f. E139M08	-100	13,982,850	0	\$0.00	13,982,850	0	\$0.00	13,982,850	0	\$0.00	14,011,540	0	\$0.00	14,106,800	0	\$0.00	14,312,200	0	\$0.00 1	,492,460	0	\$0.00	4,694,830 0	\$0.	00 14,900,720	0	\$0.00
			Total			1,033,300	\$6,891.06		1,064,800	\$6,860.82		1,084,800	\$7,235.04		1,104,200	\$7,086.75		1,342,000	\$7,807.82		1,502,000	\$7,964.24	. 1,	\$77,900 \$	7,581.36	. 1,369	500 \$8,00)2.98 .	1,355,800	\$8,079.50
H-Retail Trinity	Ret-H-Retail	E916M00	[E155M02] 1st-Flr_Tenants 1.5in T-10 and [E154M01] 2nd-Flr_WholeFoods (4in	n 100	104,173,200	1,095,800	\$7,307.87	105,215,900	1,042,700	\$6,718.42	106,172,300	956,400	\$6,378.68	107,054,100	881,800	\$5,659.39	108,028,700	974,600	\$5,670.27	109,038,500	1,009,800	\$5,354.39 11	0,052,800 1,)14,300 \$!	5,580.79 11	11,013,500 960,7	00 \$5,61	111,967,100	953,600	\$5,682.70
Tr Recail Trilley	Net II Netali		Total			1,095,800	\$7,307.87		1,042,700	\$6,718.42		956,400	\$6,378.68		881,800	\$5,659.39		974,600	\$5,670.27		1,009,800	\$5,354.39	. 1,)14,300 \$!	5,580.79	. 960,7	00 \$5,61		953,600	\$5,682.70
J-Retail Trinity	Ret-J-Retail	E917M00	[E133M05] 2in GWF (2in pipe) in Arena Service Level Boiler Room	100	69,853,340	652,090	\$4,348.78	70,504,520	651,180	\$4,195.74	71,129,660	625,140	\$4,169.35	71,755,560	625,900	\$4,017.02	72,375,960	620,400	\$3,609.52	72,967,730	591,770	Ψο/Ξο::ΘΞ :	,,-	71,190 \$3	3,142.75 74	4,119,040 580,3	7-/	90.06 74,984,230	865,190	\$5,155.85
3 netali miir,	net 3 netali		Total			,	\$4,348.78		651,180	\$4,195.74		625,140	\$4,169.35		625,900	. ,		•	\$3,609.52		591,770	\$3,137.81	. 5	71,190 \$3	•	. 580,2			865,190	\$5,155.85
		No Reader	[No Meter] North Stad 4in HPT (4in pipe) in North Side SE Room	100	1,165,096,000	3,806,000	\$25,382.14	1,169,148,000	4,052,000	\$26,108.22	1,173,250,000	4,102,000	\$27,358.17	1,177,900,000	4,650,000	\$29,843.68	1,181,723,000	3,823,000	\$22,242.39	1,184,955,000	3,232,000	\$17,137.43 1,1	37,932,000 2,	,	1,19 1,19 1,19	.91,252,000 3,320	000 \$19,40		4,016,000	\$23,932.19
Stadium OSEG Stadium	Stad-OSEG	No Reader	[No Meter] South Stad 2in T-10 (4in pipe) in Urban Park East Court Manhole	100	76,135,000	55,000	\$366.79	76,213,000	78,000	\$502.58	76,386,000	173,000	\$1,153.82	77,194,000	808,000	\$5,185.74	79,202,000	2,008,000	\$11,682.64	81,279,000	2,077,000	\$11,013.13	,607,000 2,	\$2 <mark>8,000 \$1</mark>	12,808.92	5,141,000 1,534	\$8,96	86,541,000	1,400,000	\$8,342.89
		E917M00	[E133M05] 2in GWF (2in pipe) in Arena Service Level Boiler Room	-100	69,853,340	0	\$0.00	70,504,520	0	\$0.00	71,129,660	0	\$0.00	71,755,560	0	\$0.00	72,375,960	0	\$0.00	72,967,730	0	\$0.00 7	,538,920	0	\$0.00	4,119,040 0	\$0.	74,984,230	0	\$0.00
			Total			3,861,000	7-0/10101		4,130,000	\$26,610.80		4,275,000	\$28,511.99		5,458,000	1 /		5,831,000	1 /		5,309,000	Ψ=0/=00:00	• • •	γ_		276,393,000 4,854			3)410,000	ψ σ = j = : σ : σ :
		E915M01	[E144M02] 1in Mdl-70-Badger (2in pipe) in Bldg G 1st Fl Fire Room f.f. E139M08		13,982,850	0	\$0.00	13,982,850	0	\$0.00	13,982,850	0	\$0.00	14,011,540	28,690	\$184.13	14,106,800	95,260	\$554.23	14,312,200	205,400	Ψ1,003.12 I	, ,	30,260		4,694,830 202,3	· ·	11,300,720	205,890	\$1,226.94
Stadium Public Realm	Stad-PubRealm	E922M00	[E252M06] 1in Dwyer (1.5in pipe) in Garage Bldg I Fire Room P119	100	8,181,176	0	\$0.00	8,181,176	0	\$0.00	8,181,176	0	\$0.00	8,210,489	29,313	\$188.13	8,278,222	67,733	\$394.07	8,312,690	34,468	\$102.70 C	362,584	,,,,,,		8,428,863 66,2	79 \$387	7.32 0,404,300	55,725	\$332.07
		E923M00	[E213M05] 0.75" Dwyer WMT2-A-C-03 in Garage Near RB player entrance vent	s 100	2,058,121	0	\$0.00 \$0.00	2,058,121	0	\$0.00	2,058,121	0	\$0.00	2,074,981	16,860	\$108.21	2,126,060	51,079 214 071	\$297.18	2,177,589	51,529		,	· ·		2,277,866 49,5		, ,	39,333	\$234.39
City Tatal			10tal			102.500	\$683.57		227.424	\$0.00		454.224	\$0.00		1,244,575	\$480.47		214,071	\$1,245.48		291,397	\$1,545.11		, ,	1,545.69	. 318,3	Ψ=/00		300,947	
City Total Office Total			City Total Office Total				\$583.57		237,134 511.000	\$1,527.92		- / -	\$1,008.63		673,154	' '			\$25,877.85 \$4,505.74			\$18,739.82 \$4,242.97		27,170 \$4		645,4	284 \$16,15 00 \$3,77		1,701,298	\$3,818.84
Residential Total			Residential Total				\$3,228.23		1,477,200	\$3,292.32		1.515.480	' '		1.481.850	' '			\$4,505.74			\$11,121.62		96,430 \$1		1.990			1,927,550	
Retail Total			Residential Total			,,	\$10,623.42		<u> </u>	\$9,518.03		4,099,440	1 -7 -		, - ,	\$9,510.51		, ,	\$10,695.08			\$32,425.22		. 95,690 \$3	<u>'</u>	_/555	420 \$34,77		5,580,290	
Stadium / OSEG Total			Stadium / OSEG Total				\$25,748.94		4,130,000	\$27,873.49		4,275,000			5,532,863	' '		, ,	\$35,170.50			\$29,695.67		85,927 \$3	,		153 \$30,22		5,716,947	
Metered Total			Julian Ju				\$68,280.50		10,681,614	\$68,824.77		10,620,261			12,981,042				\$106,440.17			\$96,225.31		340,195 \$1:		16,523				\$92,766.53
City Main Utility Meter1	Bank - 50mm Low Flow		City Account 1of4 (0270300 - 10077975)		611,806,000	5.835.000	\$24.852.73	617.838.000	6.032.000	\$25.691.95	623 795 000	5.957.000	\$25.428.99	630,370,000	6.576.000	\$28,667.37	637.961.000	7.590.000	\$33,088.41	646.265.000	8.304.000	, ,			•	5.189.000 2.611			, ,	\$11,624.13
City Main Utility Meter2	Holmwood - 50mm Low Flow		City Account 2014 (0270300 - 10077976)		145,514,000	2,054,000	\$8.745.67	147.567.000	2.053.000	\$8,741.41	149.614.000	2.047.000	\$8.735.39	151,719,000	2.105.000	\$9.173.81	153.853.000	2,134,000	\$9,300.25	155,981,000	2,128,000	700/2020	270,000	Ψ=	,	50,156,000 2,081	, -	,,	2.080.000	\$9,064.81
City Main Utility Meter3	Bank - 200mm High Flow		City Account 2014 (0270300 - 10077977)		102,809,000	243,000	\$19,477.83	103,186,000	377.000	\$20,048.67	103,429,000	243.000	\$19,679.39	104,076,000	647.000	\$23,259.06	105,335,000	1,259,000	\$25,927.38	108,299,000	2.964.000	<u>'</u> ''	<i>,</i> ,	· ·	<i>'</i>	13,857,000 2,252	000 \$30,25	, ,	1,878,000	\$28,626.22
City Main Utility Meter4	Holmwood - 200mm High Flow	,	City Account 4of4 (0270300 - 10077978)		320,876,000	710,000	\$5,890.90	322,170,000	1.294.000		322,886,000	716.000	\$5,934.70	324,939,000	2.053.000	\$11,942.96	330,020,000	5,081,000	\$25,145.04	341,477,000	11.457.000		, , , ,		,	52,902,000 8,842	000 \$41,54		· · · · · · · · · · · · · · · · · · ·	\$37,963.44
City Mains Total						•	\$58,967.13	,== =,==	9,756,000	\$62,860.77		8,963,000	\$59,778.47	,,	11,381,000	\$73,043.20		16,064,000			24,853,000	\$131,781.12	, ,		13,128.96	15,786				\$87,278.60
% Difference Submeter to Mains						13.6%			8.7%			15.6%			12.3%			12.2%			-37.0%			1.1%		4.5			5.9%	
The state of the s									0.7,0						,,,			,			3					1.5			0.070	

Less than 20% of previous mo	onth	More than 20%	of previous month	1										
						October			November			December		Total YTD
Towart Name	Towart Niverbox	CARMA Plus	Service Description [Real Meter]	Percantage	End Read Date:	Oct.30	Rate \$/unit	End Read Date: (Nov.1	Rate \$/unit	End Read Date:	Dec.1	Rate \$/unit	TOTAL FID
Tenant Name	Tenant Number	Meter Number	Service Description [Real Meter]	(%)	Units	= Litres	\$0.0063	Units	= Litres	#DIV/0!	Units	= Litres	#DIV/0!	Litres
					Reading	Consumption	Cost	Reading	Consumption	Cost	Reading	Consumption	Cost	Consumption
City-Ottawa-Aberdeen	City-Aber	No Reader	[No Meter] 1" Mdl-70-Badger in Aberdeen SE Fire Room	100	36,398,000	153,600	\$970.22		-36,398,000	#DIV/0!		0	#DIV/0!	-35,158,000
City-Ottawa-Aberdeen	City-Abei		Total		36,398,000	153,600	\$970.22	0	-36,398,000	#DIV/0!	0	0	#DIV/0!	-35,158,000
City-Ottawa-Horticulture	City-Hort	E249M01	[E249M01] 1.5in T-10 (2.5in pipe) in Horticulture 1st Fl Mechanical Room	100	12,962,800	76,000	\$480.06			#DIV/0!			#DIV/0!	950,200
City-Ottawa-Horticulture	City-Hort		Total			76,000	\$480.06			#DIV/0!			#DIV/0!	950,200
City-Ottawa-Plaza	City-Plaza	E249M02	[E249M02] 3in HPT (3in pipe) in Garage Room P161	100	2,434,400	7,000	\$44.22			#DIV/0!			#DIV/0!	71,700
City-Ottawa-Fiaza	City-Flaza		Total			7,000	\$44.22			#DIV/0!			#DIV/0!	71,700
City-Ottawa-Serv-Bunk-Ice-Rink	City-Serv-Bunk	No Reader	[No Meter] 2in T-10 (4in pipe) in Urban Park East Court Manhole	100	108,986,140	958,243	\$6,052.80		-108,986,140	#DIV/0!		0	#DIV/0!	-90,135,137
City-Ottawa-Serv-Burik-ice-Kirik	City-Serv-Bullk		Total		108,986,140	958,243	\$6,052.80	0	-108,986,140	#DIV/0!	0	0	#DIV/0!	-90,135,137
I-Office BTB REIT	Office-I	E921M00	[E252M02] 2in T-10 (4in pipe) in Garage Bldg I Fire Room P119	100	69,402,180	520,870	\$3,290.11			#DIV/0!			#DIV/0!	6,356,240
T Office BTB_REIT	Office 1		Total			520,870	\$3,290.11			#DIV/0!			#DIV/0!	6,356,240
A-Condo Vibe OCSCC 967	Res-A-Condo	E910M00	[E218M08] 2in T-10 (4in pipe) in Garage Bldg A Fire Room P144B	100	44,504,700	376,500	\$2,378.19			#DIV/0!			#DIV/0!	4,097,500
71 condo vise oesce so7	nes // condo		Total			376,500	\$2,378.19			#DIV/0!			#DIV/0!	4,097,500
K-Condo Rideau OCSCC 1003	Res-K-Condo	E919M00	[E213M07] 3in Nep (3in pipe) in Garage Bldg K Water Room P119	100	3,412,936,000	811,000	\$5,122.73			#DIV/0!			#DIV/0!	9,709,620
23.140 Macad 36366 1003	Nes it condo		Total			811,000	\$5,122.73			#DIV/0!			#DIV/0!	9,709,620
NorthTH-Condo OCSCC 1010	Res-NTH-Condo	E909M00	[TH-Total] Virtual Meter Total of Townhomes	100	32,873,440	383,750	\$2,423.98			#DIV/0!			#DIV/0!	3,782,450
North Condo Gesec 1919	Nes IIII condo		Total	_		383,750	\$2,423.98			#DIV/0!			#DIV/0!	3,782,450
A-Retail Trinity	Ret-A-Retail	E911M00	[E160M05] 1.5in T-10 (4in pipe) in 1st Fl Fire Room	100	5,604,800	25,400	\$160.44			#DIV/0!			#DIV/0!	343,100
7 Netali Timity	net / netuii		Total			25,400	\$160.44			#DIV/0!			#DIV/0!	343,100
B-Retail Trinity	Ret-B-Retail	E912M00	[E162M05] 1.5in T-10 (4in pipe) in 1st Fl Fire Room	100	76,497,500	638,100	\$4,030.60			#DIV/0!			#DIV/0!	8,769,600
2 netali miley	net 5 netali		Total			638,100	\$4,030.60			#DIV/0!			#DIV/0!	8,769,600
C-Retail Trinity	Ret-C-Retail	E913M00	[E137M04] 2in T-10 (4in pipe) in 1st Fl Fire Room	100	84,418,000	632,500	\$3,995.23			#DIV/0!			#DIV/0!	7,674,100
			Total	Ī		632,500	\$3,995.23			#DIV/0!			#DIV/0!	7,674,100
D-Retail Trinity	Ret-D-Retail	E914M00	[E156M05] 1.5in T-10 (4in pipe) in 1st Fl Fire Room	100	41,064,300	405,900	\$2,563.89			#DIV/0!			#DIV/0!	4,710,900
			Total	Ī		405,900	\$2,563.89			#DIV/0!			#DIV/0!	4,710,900
		E915M00	[E139M08] 2in T-10 (4in pipe) in 1st Fl Fire Room	100	134,554,000	1,246,600	\$7,874.23			#DIV/0!			#DIV/0!	12,480,900
G-Retail Trinity	Ret-G-Retail	E915M01	[E144M02] 1in Mdl-70-Badger (2in pipe) in Bldg G 1st Fl Fire Room f.f. E139M08	-100	15,005,280	0	\$0.00			#DIV/0!			#DIV/0!	0
			Total	ĭ		1,246,600	\$7,874.23			#DIV/0!			#DIV/0!	12,480,900
H-Retail Trinity	Ret-H-Retail	E916M00	[E155M02] 1st-Flr_Tenants 1.5in T-10 and [E154M01] 2nd-Flr_WholeFoods (4in	100	112,984,800	1,017,700	\$6,428.37			#DIV/0!			#DIV/0!	9,907,400
			Total	T		1,017,700	\$6,428.37			#DIV/0!			#DIV/0!	9,907,400
J-Retail Trinity	Ret-J-Retail	E917M00	[E133M05] 2in GWF (2in pipe) in Arena Service Level Boiler Room	100	75,901,250	917,020	\$5,792.42			#DIV/0!			#DIV/0!	6,700,000
	22.1		Total	T		917,020	\$5,792.42			#DIV/0!			#DIV/0!	6,700,000
		No Reader	[No Meter] North Stad 4in HPT (4in pipe) in North Side SE Room	100	1,199,390,000	4,122,000	\$26,036.88		-1,199,390,000	#DIV/0!		0	#DIV/0!	-1,161,290,000
Stadium OSEG Stadium	Stad-OSEG	No Reader	[No Meter] South Stad 2in T-10 (4in pipe) in Urban Park East Court Manhole	100	87,678,000	1,137,000	\$7,181.93		-87,678,000	#DIV/0!		0	#DIV/0!	-76,080,000
		E917M00	[E133M05] 2in GWF (2in pipe) in Arena Service Level Boiler Room	-100	75,901,250	0	\$0.00	0	0	#DIV/0!	0	0	#DIV/0!	0
			Total		1,287,068,000	5,259,000	\$33,218.82	0	-1,287,068,000	#DIV/0!	0	0	#DIV/0!	-1,237,370,000
		E915M01	[E144M02] 1in Mdl-70-Badger (2in pipe) in Bldg G 1st Fl Fire Room f.f. E139M08		15,005,280	104,560	\$660.46			#DIV/0!			#DIV/0!	1,022,430
Stadium Public Realm	Stad-PubRealm	E922M00	[E252M06] 1in Dwyer (1.5in pipe) in Garage Bldg I Fire Room P119	100	8,507,538	22,950	\$144.96			#DIV/0!			#DIV/0!	326,362
		E923M00	[E213M05] 0.75" Dwyer WMT2-A-C-03 in Garage Near RB player entrance vent s	100	2,317,202	4	\$0.02			#DIV/0!			#DIV/0!	259,081
			Total			127,514	\$805.45			#DIV/0!			#DIV/0!	1,607,873
City Total			City Total			1,194,843	\$7,547.30		-145,384,140	#DIV/0!		0	#DIV/0!	-124,271,237
Office Total			Office Total			520,870	\$3,290.11		0	#DIV/0!		0	#DIV/0!	6,356,240
Residential Total			Residential Total			1,571,250	\$9,924.90		0	#DIV/0!		0	#DIV/0!	17,589,570
Retail Total			Retail Total			4,883,220	\$30,845.18		4 207 202 222	#DIV/0!		0	#DIV/0!	50,586,000
Stadium / OSEG Total			Stadium / OSEG Total			5,386,514	\$34,024.26		-1,287,068,000	#DIV/0!		0	#DIV/0!	-1,235,762,123
Metered Total	Park 50 : 51		01. A		40 740 555	13,556,697	\$85,631.76		-1,432,452,140			0	#VALUE!	-1,285,501,554
City Main Utility Meter1	Bank - 50mm Low Flow		City Account 10f4 (0270300 - 10077975)		10,510,000	2,654,000	\$11,567.45			\$0.00		1		50,804,000
City Main Utility Meter2	Holmwood - 50mm Low Flow		City Account 2of4 (0270300 - 10077976)		164,397,000	2,161,000	\$9,417.97			\$0.00		1		20,937,000
City Main Utility Meter3	Bank - 200mm High Flow		City Account 3of4 (0270300 - 10077977)		116,950,000	1,215,000	\$25,735.54			\$0.00				14,384,000
City Main Utility Meter4	Holmwood - 200mm High Flow		City Account 4of4 (0270300 - 10077978)	<u> </u>	376,864,000	5,941,000	\$28,894.64			\$0.00			¢0.00	56,698,000
City Mains Total						11,971,000	\$75,615.60		400.000	\$0.00		1	\$0.00	142,823,000
% Difference Submeter to Mains						11.7%			100.0%					13.3%

\$/unit	Total YTD Litres
\$/unit EDIV/0! Cost EDIV/0! EDIV/0! EDIV/0!	Litres Consumption -35,158,000 -35,158,000 950,200 950,200
#DIV/0! #DIV/0! #DIV/0! #DIV/0! #DIV/0!	71,700 71,700 -90,135,137 -90,135,137 6,356,240
#DIV/0! #DIV/0! #DIV/0! #DIV/0!	6,356,240 4,097,500 4,097,500 9,709,620 9,709,620
#DIV/0! #DIV/0! #DIV/0! #DIV/0! #DIV/0!	3,782,450 3,782,450 343,100 343,100 8,769,600
#DIV/0! #DIV/0! #DIV/0!	8,769,600 7,674,100 7,674,100 4,710,900 4,710,900
#DIV/0! #DIV/0! #DIV/0! #DIV/0! #DIV/0!	12,480,900 0 12,480,900 9,907,400 9,907,400 6,700,000
#DIV/0! #DIV/0! #DIV/0! #DIV/0! #DIV/0! #DIV/0!	6,700,000 -1,161,290,000 -76,080,000 0 -1,237,370,000
DIV/0! DIV/0! DIV/0!	1,022,430 326,362 259,081 1,607,873 -124,271,237
PDIV/0! PDIV/0! PDIV/0! PDIV/0! PDIV/0! VALUE!	6,356,240 17,589,570 50,586,000 -1,235,762,127 -1,285,501,554 50,804,000
\$0.00	20,937,000 14,384,000 56,698,000 142,823,000 13.3%

Boundary Condition 1

Table B1 - 200mm Fire Service Pipe Sizing



WATERMAIN SIZING CALCULATIONS				COMMENTS
Average Day Flow:				
Project Area	Ha			
ADF _{BLDG} =	467,424 L/d	=	5.41 L/s	As per City of Ottawa Water Distribution Guidelines and Existing Consumption Data from Lansdowne 1.0
ADF _{TOTAL} =	467,424 L/d	=	5.41 L/s	Sum of ADF
Maximum Day Flow:				
Maximum Day Factor =	2.50			
MDF _{BLDG} =	1,168,128 L/d	=	13.52 L/s	As per City of Ottawa Water Distribution Guidelines and Existing Consumption Data from Lansdowne 1.0
MDF _{TOTAL} =	1,168,128 L/d	=	13.52 L/s	Sum of MDF
Peak Hour Flow: Peak Hour Factor =	2.20			
PHF _{BLDG} =	2,568,672 L/d	=	29.73 L/s	As per City of Ottawa Water Distribution Guidelines and Existing Consumption Data from Lansdowne 1.0
PHF _{TOTAL} =	2,568,672 L/d	=	29.7 L/s	Sum of PHF
Fire Flow =	100 L/s			The FUS (2020) calculated Fire Flow
Max Day + Fire Flow > Peak Hour Flow =	114 L/s	>	29.7 L/s	Max Day + Fire Flow for sizing calculations - Note: No upgrade to existing network Required
Maximum Pressure = Minimum Pressure = Minimum Pressure under Fire Flow = Existing Static Pressure = Existing Residual Pressure =	552 kPa 276 kPa 140 kPa 481 kPa 415 kPa			As per City of Ottawa Water Distribution Guidelines As per City of Ottawa Water Distribution Guidelines As per City of Ottawa Water Distribution Guidelines Boundary Condition provided by City at Holmwood Ave Boundary Condition provided by City at Holmwood Ave
Hazen-Williams Equation Parameters				Dearnally Container provided by only actionimized two
Design Flow =	114 L/s			MDF + Fire Flow from above
Length =	360 m			Measured (length from the Holmwood Watermain to Building Connection)
C =	110			As per City of Ottawa Water Distribution Guidelines
Inside Diameter of Watermain =	204 mm			Assuming a PVC DR18 Watermain is used.
Solve for Friction Headloss =	26.06 m			Calculated using Hazen Williams Equation
Static Head =	<u>0.50</u> m			Estimated elevation difference (from boundary connection to building)
Total Headloss =	26.56 m	=	261 kPa	
Residual Pressure for Site =	154 kPa	>	140 kPa	Existing Residual pressure minus total headloss

The residual pressure for the proposed building is calculated by subtracting the total headloss from the residual pressure measured on the connection on Holmwood Ave from City Boundary Condition. The residual pressure for the site is above the minimum pressure for the given pipe size.

To present a conservative scenario, the above calculations assume that the service connection must supply 100% of the building fire sprinkler demand and that the watermain would not be looped or interconnected.

Designed By:	Project:
	Lansdowne Park 2.0 Redevelopment - New
Ding Bang Yang, P.Eng.	North Stand
Checked By:	Location:
	1015 Bank Street
Ding Bang Yang, P.Eng.	Ottawa, ON
Project Number:	Dwg. Reference:
CA0033920.1056	

Table B2 - 200mm Domestic Service Pipe Sizing



WATERMAIN SIZING CALCULATIONS			COMMENTS		
Average Day Flow:					
Project Area	На				
ADE _	467 404 L/d	=	5.41 L	∟/s	As per City of Ottawa Water Distribution Guidelines and Existing
$ADF_{BLDG} =$	467,424 L/d				Consumption Data from Lansdowne 1.0
ADF _{TOTAL} =	467,424 L/d	=	5.41 L	L/s	Sum of ADF
Maximum Day Flow:					
Maximum Day Factor =	2.50				
MDE _	4 460 400 1 /4	=	13.52 l	L/s	As per City of Ottawa Water Distribution Guidelines and Existing
$MDF_{BLDG} =$	1,168,128 L/d				Consumption Data from Lansdowne 1.0
MDF _{TOTAL} =	1,168,128 L/d	=	13.52 l	L/s	Sum of MDF
Peak Hour Flow:					
Peak Hour Factor =	2.20				
					As you City of Ottown Water Distribution Cylindelines and Eviction
PHF _{BLDG} =	2,568,672 L/d	=	29.73 l	_/s	As per City of Ottawa Water Distribution Guidelines and Existing Consumption Data from Lansdowne 1.0
I I I BLDG —	2,000,072 L/a				Consumption Data from Lansdowne 1.0
PHF _{TOTAL} =	2,568,672 L/d	=	29.7 L	∟/s	Sum of PHF
TOTAL	,,-				
Maximum Pressure =	552 kPa				As per City of Ottawa Water Distribution Guidelines
Minimum Pressure =	276 kPa				As per City of Ottawa Water Distribution Guidelines
Minimum Pressure under Fire Flow =	140 kPa				As per City of Ottawa Water Distribution Guidelines
Existing Static Pressure =	481 kPa				Boundary Condition provided by City at Holmwood Ave
Existing Residual Pressure =	394 kPa				Boundary Condition provided by City at Holmwood Ave
Horon Williams Equation Decemptors					
Hazen-Williams Equation Parameters	20.7.1/2				Francisco Deale Haur Flaur
Design Flow =	29.7 L/s				From above - Peak Hour Flow
Length =	360 m				Measured (length from the Holmwood Watermain to Building Connection)
C =	110				As per City of Ottawa Water Distribution Guidelines
Inside Diameter of Watermain =	204 mm				Assuming a PVC DR18 Watermain is used.
Solve for Friction Headloss =	2.18 m				Calculated using Hazen Williams Equation
Static Head =	0.50 m				Estimated elevation difference (from boundary connection to building)
Total Headloss =	2.68 m	_	26	kPa	Louinated Sievation difference (from boundary confidention to building)
10tai 116aul055 =	2.00 111	=	20	кrа	
Residual Pressure for Site =	368 kPa	>	276	kPa	Existing Residual pressure minus total headloss
			-		<u> </u>

The residual pressure for the proposed building is calculated by subtracting the total headloss from the residual pressure measured on the connection on Holmwood Ave from City Boundary Condition. The residual pressure for the site is above the minimum pressure for the given pipe size.

To present a conservative scenario, the above calculations assume that the service connection must supply 100% of the building Peak Hour Flow and that the watermain would not be looped or interconnected.

Designed By:	Project:
	Lansdowne Park 2.0 Redevelopment - New
Ding Bang Yang, P.Eng.	North Stand
Checked By:	Location:
	1015 Bank Street
Ding Bang Yang, P.Eng.	Ottawa, ON
Project Number:	Dwg. Reference:
CA0033920.1056	

Table B3 - 200mm Fire Service Pipe Sizing



WATERMAIN SIZING CALCULATIONS					COMMENTS
Average Day Flow:					
Project Area	Ha				
ADF _{BLDG} =	467,424 L/d	=	5.41	L/s	As per City of Ottawa Water Distribution Guidelines and Existing Consumption Data from Lansdowne 1.0
ADI BLDG -	407,424 L/U				Consumption Data from Lansdowne 1.0
ADF _{TOTAL} =	467,424 L/d	=	5.41	L/s	Sum of ADF
Maximum Day Flaur					
Maximum Day Flow:	0.50				
Maximum Day Factor =	2.50				
MDF _{BLDG} =	1,168,128 L/d	=	13.52	L/s	As per City of Ottawa Water Distribution Guidelines and Existing Consumption Data from Lansdowne 1.0
MDF _{TOTAL} =	1,168,128 L/d	=	13.52	L/s	Sum of MDF
Peak Hour Flow:					
Peak Hour Factor =	2.20				
			00.70	1.7-	As per City of Ottawa Water Distribution Guidelines and Existing
PHF _{BLDG} =	2,568,672 L/d	=	29.73	L/S	Consumption Data from Lansdowne 1.0
PHF _{TOTAL} =	2,568,672 L/d	=	29.7	L/s	Sum of PHF
Fire Flow =	100.0 L/s				The FUS (2020) calculated Fire Flow
		_	29.73	I /e	Max Day + Fire Flow for sizing calculations - Note: No upgrade to existing
Max Day + Fire Flow > Peak Hour Flow =	113.5 L/s		20.70		network Required
Maying up Dragoura	550 kDa				As a second to a final of Ottoma North and Distribution Conidations
Maximum Pressure = Minimum Pressure =	552 kPa				As per City of Ottawa Water Distribution Guidelines
	276 kPa 140 kPa				As per City of Ottawa Water Distribution Guidelines
Minimum Pressure under Fire Flow =	466 kPa				As per City of Ottawa Water Distribution Guidelines
Existing Static Pressure =					Boundary Condition provided by City at Bank Street
Existing Residual Pressure =	386 kPa				Boundary Condition provided by City at Bank Street
Hazen-Williams Equation Parameters					
Design Flow =	113.5 L/s				MDF + Fire Flow from above
Length =	125 m				Measured (length from the Bank Watermain to Building Connection)
C =	110				As per City of Ottawa Water Distribution Guidelines
Inside Diameter of Watermain =	204 mm				Assuming a PVC DR18 Watermain is used.
Solve for Friction Headloss =	9.05 m				Calculated using Hazen Williams Equation
Static Head =	<u>0.50</u> m				Estimated elevation difference (from boundary connection to building)
Total Headloss =	9.55 m	=	94	kPa	
Desidual Processes for Cita	000 kDo		1.10	I₂D÷	Eviating Desidual procesure rejects total handless
Residual Pressure for Site =	292 kPa	>	140	kPa	Existing Residual pressure minus total headloss

The residual pressure for the proposed building is calculated by subtracting the total headloss from the residual pressure measured on the connection on Bank Street from City Boundary Condition. The residual pressure for the site is above the minimum pressure for the given pipe size.

To present a conservative scenario, the above calculations assume that the service connection must supply 100% of the building fire sprinkler demand and that the watermain would not be looped or interconnected.

Designed By:	Project:
	Lansdowne Park 2.0 Redevelopment - New
Ding Bang Yang, P.Eng.	North Stand
Checked By:	Location:
	1015 Bank Street
Ding Bang Yang, P.Eng.	Ottawa, ON
Project Number:	Dwg. Reference:
CA0033920.1056	

Table B4 - 200mm Domestic Service Pipe Sizing

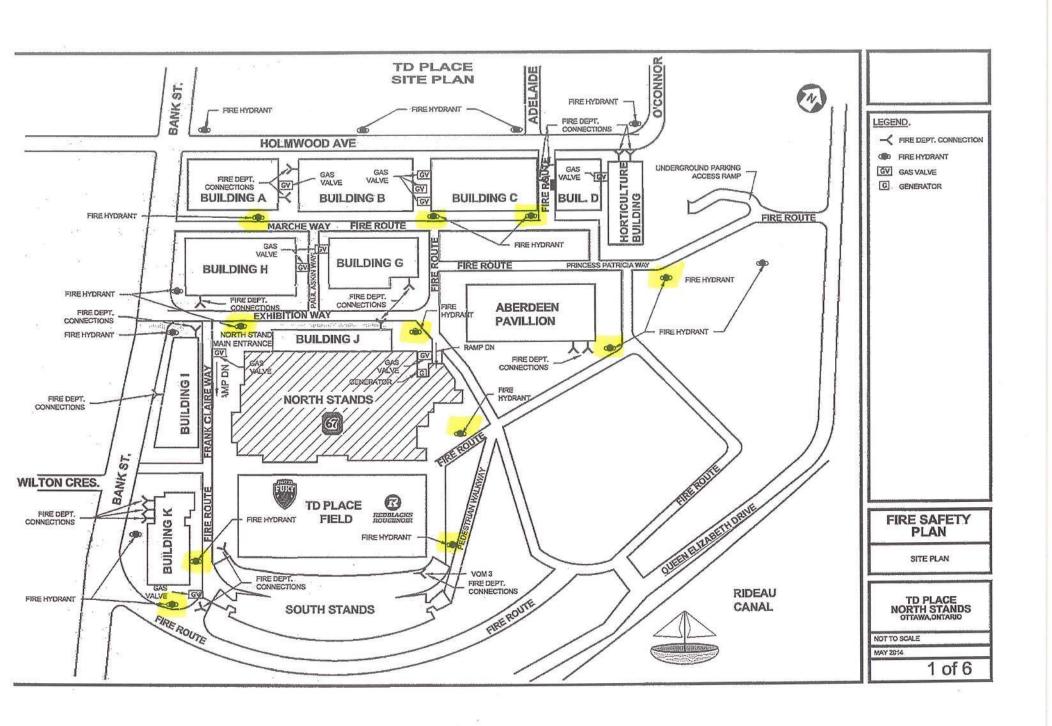


WATERMAIN SIZING CALCULATIONS			COMMENTS		
Average Day Flow:					
Project Area	На				
		_	5.41	I /c	As per City of Ottawa Water Distribution Guidelines and Existing
$ADF_{BLDG} =$	467,424 L/d	=	3.41	L/S	Consumption Data from Lansdowne 1.0
ADF _{TOTAL} =	467,424 L/d	=	5.41	L/s	Sum of ADF
Maximum Day Flow:					
Maximum Day Flow: Maximum Day Factor =	2.50				
Maximum Day Factor =	2.50				
					As per City of Ottawa Water Distribution Guidelines and Existing
$MDF_{BLDG} =$	1,168,128 L/d	=	13.52	L/s	Consumption Data from Lansdowne 1.0
blbo	,,				Consumption Bata from Editodowno 1.0
$MDF_{TOTAL} =$	1,168,128 L/d	=	13.52	L/s	Sum of MDF
Peak Hour Flow:					
Peak Hour Factor =	2.20				
DUE _	0 560 670 1 /d	=	29.73	L/s	As per City of Ottawa Water Distribution Guidelines and Existing
PHF _{BLDG} =	2,568,672 L/d				Consumption Data from Lansdowne 1.0
DUE _	2,568,672 L/d		29.7	I /o	Sum of PHF
PHF _{TOTAL} =	2,500,072 L/U	=	29.1	L/5	Sull of Phr
Maximum Pressure =	552 kPa				As per City of Ottawa Water Distribution Guidelines
Minimum Pressure =	276 kPa				As per City of Ottawa Water Distribution Guidelines
Minimum Pressure under Fire Flow =	140 kPa				As per City of Ottawa Water Distribution Guidelines
Existing Static Pressure =	466 kPa				Boundary Condition provided by City at Bank Street
Existing Residual Pressure =	378 kPa				Boundary Condition provided by City at Bank Street
Ü					
Hazen-Williams Equation Parameters					
Design Flow =	29.7 L/s				From above - Peak Hour Flow
Length =	100 m				Measured (length from the Bank Watermain to Building Connection)
C =	110				As per City of Ottawa Water Distribution Guidelines
Inside Diameter of Watermain =	204 mm				Assuming a PVC DR18 Watermain is used.
Solve for Friction Headloss =	0.76 m				Calculated using Hazen Williams Equation
Static Head =	0.50 m				Estimated elevation difference (from boundary connection to building)
Total Headloss =	1.26 m	=	12	kPa	, , , , , , , , , , , , , , , , , , , ,
	-				
Residual Pressure for Site =	365 kPa	>	276	kPa	Existing Residual pressure minus total headloss

The residual pressure for the proposed building is calculated by subtracting the total headloss from the residual pressure measured on the connection on Bank Street from City Boundary Condition. The residual pressure for the site is above the minimum pressure for the given pipe size.

To present a conservative scenario, the above calculations assume that the service connection must supply 100% of the building Peak Hour Flow and that the watermain would not be looped or interconnected.

Designed By:	Project:
	Lansdowne Park 2.0 Redevelopment - New
Ding Bang Yang, P.Eng.	North Stand
Checked By:	Location:
	1015 Bank Street
Ding Bang Yang, P.Eng.	Ottawa, ON
Project Number:	Dwg. Reference:
CA0033920.1056	



HYDRANTS-R-US Inc.

Hydrants-R-Us Inc. 53 Forest Creek Drive K2S 1M1 613-804-0088 dalton@hydrantsrus.com Sept 20th 2022

HYDRANT INSPECTION REPORT

OWNEr: Ottawa Sports and Entertainment Group (TD PLACE)

Hydrant Location: Apartment Facing Field Hydrant Type: DARLING

Paint: Paint to code

Stem: **OK**O-Rings: **OK**Top Nut: **OK**Valve Seat: **OK**

Condition of Water: Normal

Isolation Valve: **OK**Flow test: **Complete**

Caps:**OK**

Residual Hydrant Static Pressure: **68 PSI**Residual Hydrant Flowing Pressure: **62 PSI**Flowing Hydrant Pitot Pressure: **39 PSI**

Number of Ports Flowed: 1

Nozzle Size: 2 ½ in.

Gallons Per Minute: 875

Gallons Per Minute at 20 PSI: 2689

Color Code: BLUE

Remarks: OK

HYDRANTS-R-US Inc.

Hydrants-R-Us Inc. 53 Forest Creek Drive K2S 1M1 613-804-0088 dalton@hydrantsrus.com Sept 20th 2022

HYDRANT INSPECTION REPORT

OWNEr: Ottawa Sports and Entertainment Group (TD PLACE)

Hydrant Location: Back Entrance Hydrant Type: McAvity

Paint: Paint to code

Stem: **OK**O-Rings: **OK**Top Nut: **OK**Valve Seat: **OK**

Condition of Water: Normal

Isolation Valve: **OK**Flow test: **Complete**

Caps:**OK**

Residual Hydrant Static Pressure: **70 PSI**Residual Hydrant Flowing Pressure: **62 PSI**Flowing Hydrant Pitot Pressure: **44 PSI**

Number of Ports Flowed: 1

Nozzle Size: 2 ½ in.

Gallons Per Minute: 929

Gallons Per Minute at 20 PSI: 2499

Color Code: BLUE

Remarks: OK

Hydrants-R-Us Inc. 53 Forest Creek Drive K2S 1M1 613-804-0088 dalton@hydrantsrus.com Sept 20th 2022

HYDRANT INSPECTION REPORT

OWNEr: Ottawa Sports and Entertainment Group (TD PLACE)

Hydrant Location: Behind Apartment (Bank St)

Hydrant Type: DARLING

Paint: Paint to code

Stem: **OK**O-Rings: **OK**Top Nut: **OK**Valve Seat: **OK**

Condition of Water: Normal

Isolation Valve: **OK**Flow test: **Complete**

Caps:**OK**

Residual Hydrant Static Pressure: **70 PSI**Residual Hydrant Flowing Pressure:**61 PSI**Flowing Hydrant Pitot Pressure: **41 PSI**

Number of Ports Flowed: 1

Nozzle Size: 2 ½ in.

Gallons Per Minute: 897

Gallons Per Minute at 20 PSI: 2264

Color Code: BLUE

Hydrants-R-Us Inc. 53 Forest Creek Drive K2S 1M1 613-804-0088 dalton@hydrantsrus.com Sept 20th 2022

HYDRANT INSPECTION REPORT

OWNEr: Ottawa Sports and Entertainment Group (TD PLACE)

Hydrant Location: Behind Apartment (Parkway) Hydrant Type: DARLING

Paint: Paint to code

Stem: **OK**O-Rings: **OK**Top Nut: **OK**Valve Seat: **OK**

Condition of Water: Normal

Isolation Valve: **OK**Flow test: **Complete**

Caps:**OK**

Residual Hydrant Static Pressure: **70 PSI**Residual Hydrant Flowing Pressure: **62 PSI**Flowing Hydrant Pitot Pressure: **38 PSI**

Number of Ports Flowed: 1

Nozzle Size: 2 ½ in.

Gallons Per Minute: 863

Gallons Per Minute at 20 PSI: 2323

Color Code: BLUE

Hydrants-R-Us Inc. 53 Forest Creek Drive K2S 1M1 613-804-0088 dalton@hydrantsrus.com Sept 20th 2022

HYDRANT INSPECTION REPORT

OWNEr: Ottawa Sports and Entertainment Group (TD PLACE)

Hydrant Location: Box Office Hydrant Type: McAvity

Paint: **OK**Stem: **OK**O-Rings: **OK**Top Nut: **OK**Valve Seat: **OK**

Condition of Water: **Normal** Isolation Valve: **Buried** Flow test: **Complete**

Caps:**OK**

Residual Hydrant Static Pressure: **68 PSI**Residual Hydrant Flowing Pressure: **62 PSI**Flowing Hydrant Pitot Pressure: **42 PSI**

Number of Ports Flowed: 1

Nozzle Size: 2 ½ in.

Gallons Per Minute: 908

Gallons Per Minute at 20 PSI: 2790

Color Code: BLUE

Remarks: OK

Isolation valve-could not locate

Hydrants-R-Us Inc. 53 Forest Creek Drive K2S 1M1 613-804-0088 dalton@hydrantsrus.com Sept 20th 2022

HYDRANT INSPECTION REPORT

OWNEr: Ottawa Sports and Entertainment Group (TD PLACE)

Hydrant Location: Cattle Castle Hydrant Type: McAvity

Paint: Paint to code

Stem: **OK**O-Rings: **OK**Top Nut: **OK**Valve Seat: **OK**

Condition of Water: Normal

Isolation Valve: **OK**Flow test: **Complete**

Caps:**OK**

Residual Hydrant Static Pressure: **70 PSI**Residual Hydrant Flowing Pressure: **62 PSI**Flowing Hydrant Pitot Pressure: **38 PSI**

Number of Ports Flowed: 1

Nozzle Size: 2 ½ in.

Gallons Per Minute: 863

Gallons Per Minute at 20 PSI: 2323

Color Code: BLUE

Hydrants-R-Us Inc. 53 Forest Creek Drive K2S 1M1 613-804-0088 dalton@hydrantsrus.com Sept 20th 2022

HYDRANT INSPECTION REPORT

OWNEr: Ottawa Sports and Entertainment Group (TD PLACE)

Hydrant Location: Cineplex Hydrant Type: DARLING

Paint: **OK**Stem: **OK**O-Rings: **OK**Top Nut: **OK**Valve Seat: **OK**

Condition of Water: Normal

Isolation Valve: **OK**Flow test: **Complete**

Caps:**OK**

Residual Hydrant Static Pressure: **66 PSI**Residual Hydrant Flowing Pressure: **61 PSI**Flowing Hydrant Pitot Pressure: **38 PSI**

Number of Ports Flowed: 1

Nozzle Size: 2 ½ in.

Gallons Per Minute: 86

Gallons Per Minute at 20 PSI: 2739

Color Code: BLUE

Hydrants-R-Us Inc. 53 Forest Creek Drive K2S 1M1 613-804-0088 dalton@hydrantsrus.com Sept 20th 2022

HYDRANT INSPECTION REPORT

OWNEr: Ottawa Sports and Entertainment Group (TD PLACE)

Hydrant Location: Field Entrance

Hydrant Type: McAvity

Paint: Paint to code

Stem: **OK**O-Rings: **OK**Top Nut: **OK**Valve Seat: **OK**

Condition of Water: Normal

Isolation Valve: Partially Paved over

Flow test: Complete

Caps:**OK**

Residual Hydrant Static Pressure: **70 PSI**Residual Hydrant Flowing Pressure:**60 PSI**Flowing Hydrant Pitot Pressure: **39 PSI**

Number of Ports Flowed: 1

Nozzle Size: 2 ½ in.

Gallons Per Minute: 875

Gallons Per Minute at 20 PSI: 2086

Color Code: BLUE

Hydrants-R-Us Inc. 53 Forest Creek Drive K2S 1M1 613-804-0088 dalton@hydrantsrus.com Sept 20th 2022

HYDRANT INSPECTION REPORT

OWNEr: Ottawa Sports and Entertainment Group (TD PLACE)

Hydrant Location: On Field Hydrant Type: McAvity

Paint: **OK**Stem: **OK**O-Rings: **OK**Top Nut: **OK**Valve Seat: **OK**

Condition of Water: Normal

Isolation Valve: **OK**Flow test: **Complete**

Caps:**OK**

Residual Hydrant Static Pressure: **70 PSI**Residual Hydrant Flowing Pressure: **62 PSI**Flowing Hydrant Pitot Pressure: **43 PSI**

Number of Ports Flowed: 1

Nozzle Size: 2 1/2 in.

Gallons Per Minute: 918

Gallons Per Minute at 20 PSI: 2471

Color Code: BLUE

Hydrants-R-Us Inc. 53 Forest Creek Drive K2S 1M1 613-804-0088 dalton@hydrantsrus.com Sept 20th 2022

HYDRANT INSPECTION REPORT

OWNEr: Ottawa Sports and Entertainment Group (TD PLACE)

Hydrant Location: Goodlife Hydrant Type: Darling

Paint: **OK**Stem: **OK**O-Rings: **OK**Top Nut: **OK**Valve Seat: **OK**

Condition of Water: Normal

Isolation Valve: **OK**Flow test: **Complete**

Caps:**OK**

Residual Hydrant Static Pressure: **67 PSI**Residual Hydrant Flowing Pressure: **60 PSI**Flowing Hydrant Pitot Pressure: **37 PSI**

Number of Ports Flowed: 1

Nozzle Size: 2 ½ in.

Gallons Per Minute: 852

Gallons Per Minute at 20 PSI: 2382

Color Code: BLUE

Hydrants-R-Us Inc. 53 Forest Creek Drive K2S 1M1 613-804-0088 dalton@hydrantsrus.com Sept 20th 2022

HYDRANT INSPECTION REPORT

OWNEr: Ottawa Sports and Entertainment Group (TD PLACE)

Hydrant Location: Milestones Hydrant Type: DARLING

Paint: **OK**Stem: **OK**O-Rings: **OK**Top Nut: **OK**Valve Seat: **OK**

Condition of Water: Normal

Isolation Valve: **OK**Flow test: **Complete**

Caps:**OK**

Residual Hydrant Static Pressure: **67 PSI**Residual Hydrant Flowing Pressure: **62 PSI**Flowing Hydrant Pitot Pressure: **34 PSI**

Number of Ports Flowed: 1

Nozzle Size: 2 ½ in.

Gallons Per Minute: 817

Gallons Per Minute at 20 PSI: 2739

Color Code: BLUE

Hydrants-R-Us Inc. 53 Forest Creek Drive K2S 1M1 613-804-0088 dalton@hydrantsrus.com Sept 20th 2022

HYDRANT INSPECTION REPORT

OWNEr: Ottawa Sports and Entertainment Group (TD PLACE)

Hydrant Location: Sporting Life Hydrant Type: DARLING

Paint: **OK**Stem: **OK**O-Rings: **OK**Top Nut: **OK**Valve Seat: **OK**

Condition of Water: Normal

Isolation Valve: Partially Paved Over

Flow test: Complete

Caps:**OK**

Residual Hydrant Static Pressure: **65 PSI**Residual Hydrant Flowing Pressure: **58 PSI**Flowing Hydrant Pitot Pressure: **41 PSI**

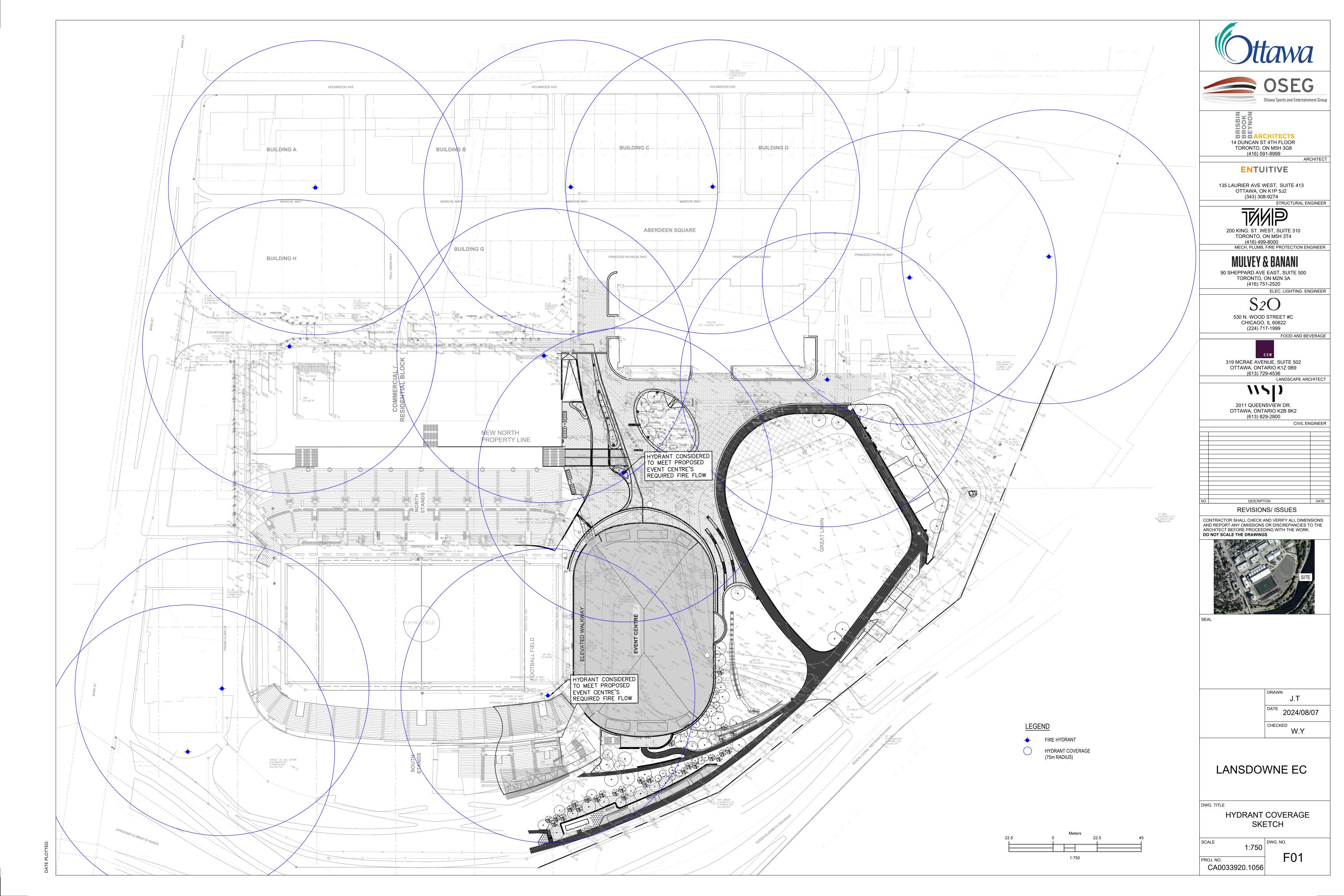
Number of Ports Flowed: 1

Nozzle Size: 2 ½ in.

Gallons Per Minute: 897

Gallons Per Minute at 20 PSI: 2450

Color Code: BLUE



APPENDIX

C

- STORM SEWER DESIGN SHEET
- DWG C06 STORM DRAINAGE AREA PLAN
- EXISTING STORM SEWER DESIGN SHEET AND DRAINAGE AREA PLAN BY WSP
- EXISTING SANITARY DESIGN SHEET BY WSP AND DSEL
- DWG C03 GRADING PLAN
- DWG C04 SERVICING PLAN

STORM SEWER DESIGN SHEET LANSDOWNE 2.0 REDEVELOPMENT CITY OF OTTAWA Project: CA0033920.1056 Date: December, 2024

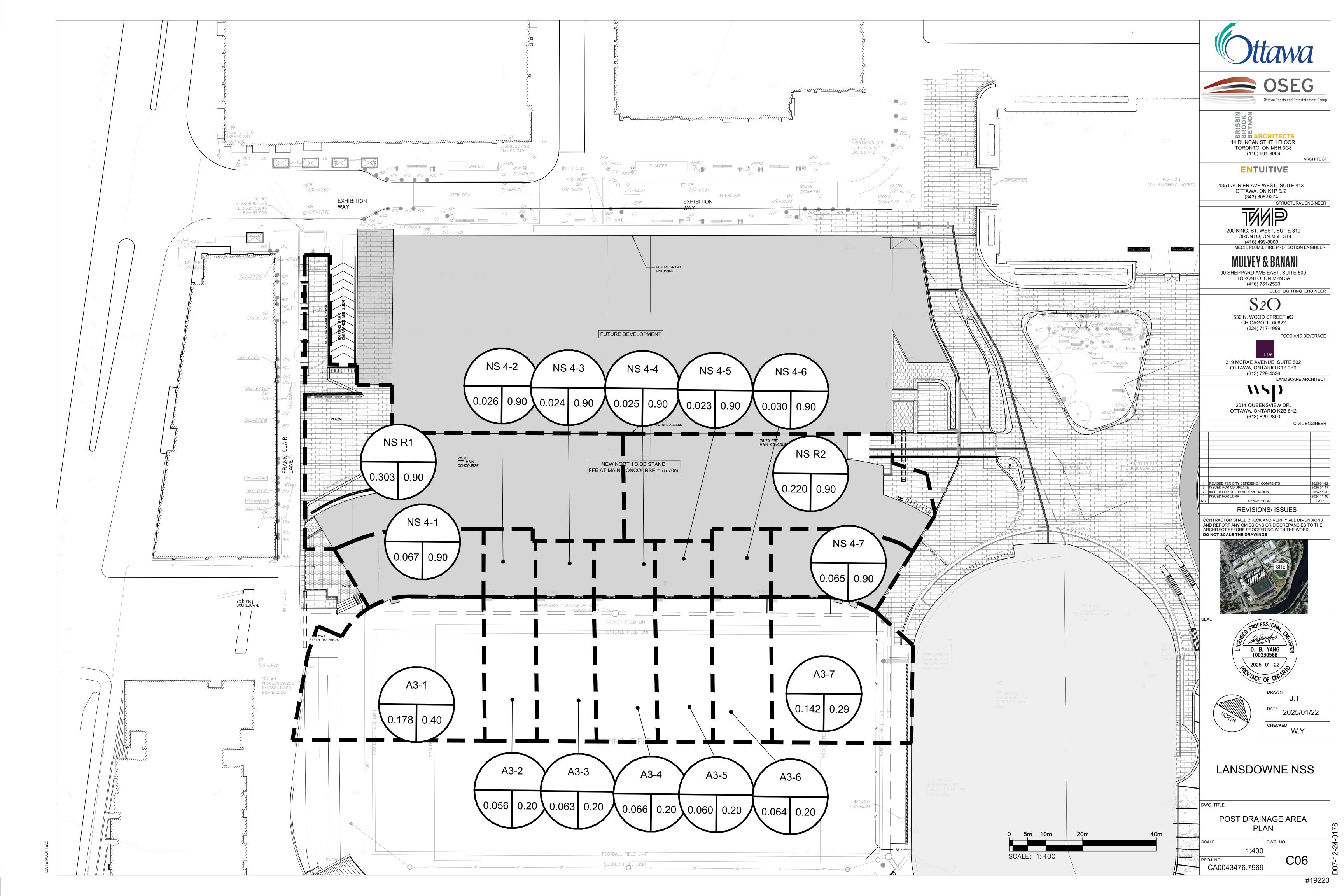


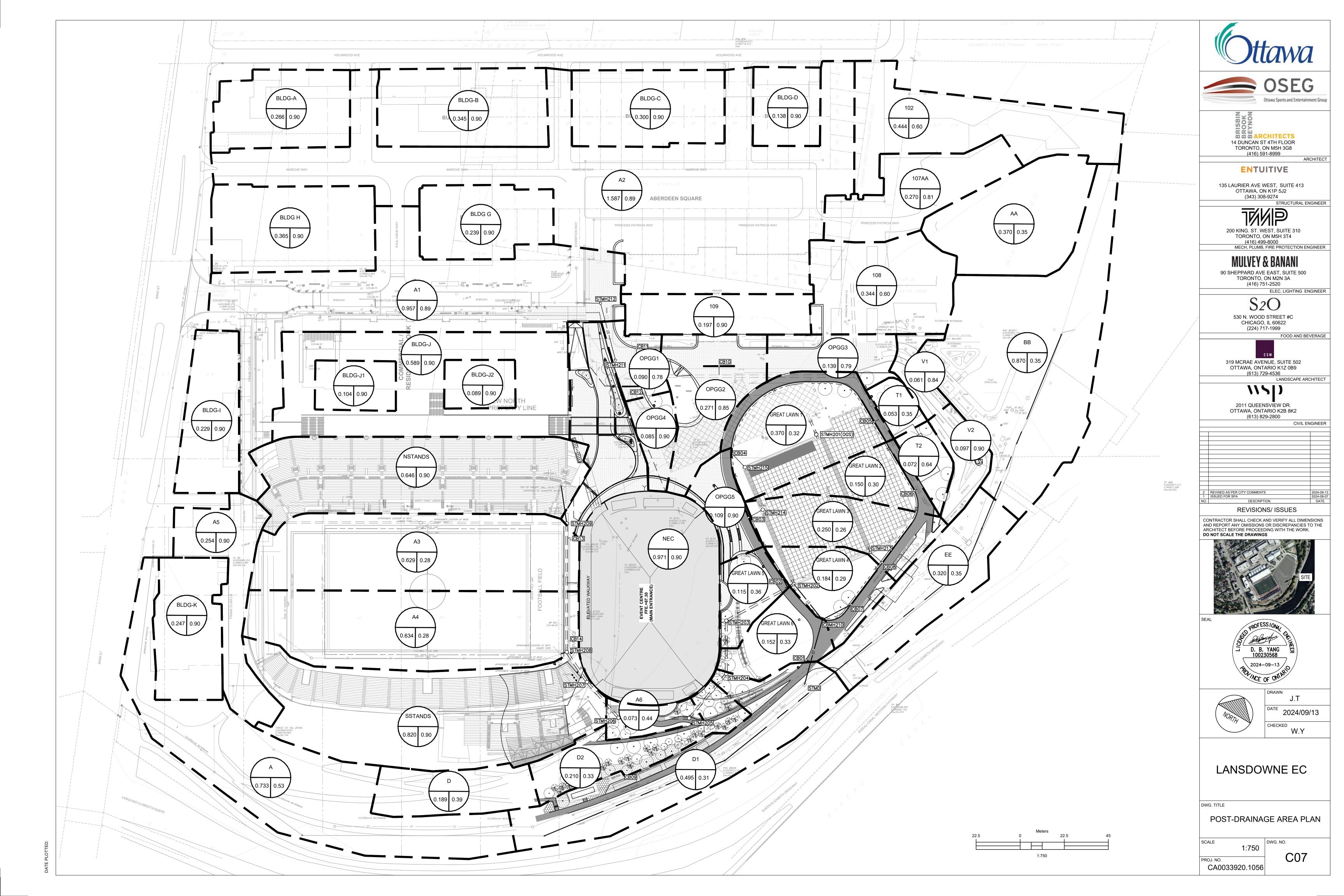
		LOCATION				AREA (H	la)								RATIONAL	DESIGN FLOW						PROP	SOED SEWE	R DATA		
BLDG FLOW	AREA ID	FROM	то	C= 0.20	C= 0.35		C= C= 0.80 0.90		IND 2.78AC				i (2) (mm/hr)	i (5) (mm/hr)	i (100) (mm/hr)			100yr PEAK ICD FIXED DESIGN FLOW (L/s) FLOW (L/s) FLOW (L/s)				SLOPE LENGTH (%) (m)				
								+	-																	
											,	Lanso	lowne 2.0 -	New North S	ide Stands			<u> </u>								•
	NS R1	Roof	Ex. 825mm CONC. STM	0.000			0.303		0.758	0.758	10.0	0 10.02	76.81	104.19	178.56		78.99	78.99		PVC	350.0	1.00 1.84	146.01	1.52	0.02	67.02 45.90
	NS R2	Roof	Ex. 825mm CONC. STM	0.000			0.220		0.550	0.550	10.0	0 10.03	76.81	104.19	178.56		57.35	57.35		PVC	350.0	1.00 2.78	146.01	1.52	0.03	88.66 60.72
	NS 4-1, A3-1	Bldg, Field	Ex. 825mm CONC. STM	0.126			0.119	1	0.368	0.368	10.0	0 10.05	76.81	104.19	178.56		38.32	38.32		PVC	250.0	1.00 3.75	59.53	1.21	0.05	21.21 35.62
	NS 4-2, A3-2	Bldg, Field	Ex. 825mm CONC. STM	0.056			0.026	_	0.096		10.0		76.81	104.19	178.56		10.02	10.02				1.00 3.76	32.83	1.04	0.06	
	NS 4-3, A3-3	· · · · · · · · · · · · · · · · · · ·					0.024		0.095			0 10.06	76.81	104.19	178.56		9.91	9.91				1.00 3.80	32.83	1.04	0.06	
	NS 4-4, A3-4 Bldg, Field <i>Ex. 825mm CONC Ex. 825mm CONC</i>						0.025		0.099			0 10.06	76.81	104.19	178.56		10.34	10.34			200.0		32.83	1.04		22.49 68.50
	NS 4-5, A3-5	Bldg, Field	Ex. 825mm CONC. STM	0.060			0.023		0.091	0.091	10.0	0 10.06	76.81	104.19	178.56		9.47	9.47		PVC	200.0	1.00 3.97	32.83	1.04	0.06	
	NS 4-6, A3-6	Bldg, Field	Ex. 825mm CONC. STM	0.064			0.030		0.111	0.111	10.0	0 10.06	76.81	104.19	178.56		11.53	11.53		PVC	200.0	1.00 4.06	32.83	1.04	0.06	21.30 64.89
	NS 4-7, A3-7	Bldg, Field	Ex. 825mm CONC. STM	0.123			0.084		0.279	0.279	10.0	0 10.06	76.81	104.19	178.56		29.02	29.02		PVC	250.0	1.00 4.20	59.53	1.21	0.06	30.50 51.24
Definition:				Notes:											Designed:	<u> </u>		No.	Re	evision					Da	e
Q=2.78CiA, where:				1. Mannin	ngs coeffic	ient (n) =	0.013	Time-of-0	Concentrati	ion in the	Swale				"			1.	City Subn	mission No. 1					2024-1	.2-19
Q = Peak Flow in Li	tres per Second (L/s)					. ,		FAA Equa	ation: t (mi	n) = 3.258	[(1.1 - C)	L^0.5 / S^.33							·							
A = Area in Hectare	s (Ha)							Where:	_ongest Wa	atercourse l	Length, L	(m). S (%)			Checked:	D.B.Y.										
	in millimeters per hour (mn	n/hr)									off Coef.C		Impervious													
i = 732.951/(TC+			2 Year						No.	L (m)	S %	Tc (min)													
i = 1174.184/(TC	•		5 Year										_		Dwg. Referen	ce: C05										
i = 1735.688/(TC	C+6.014)^0.820		100 Year															File Reference				Date:			Shee	
																		CA0043476.796	9		20:	24-12-19			1 o	1

STORM SEWER DESIGN SHEET LANSDOWNE 2.0 REDEVELOPMENT CITY OF OTTAWA Project: CA0033920.1056 Date: August, 2024



		LOCATION				AREA (Ha)									DATIONAL	DESIGN FLOW						SOED SEWER	P DATA			
BLDG FLOW	AREA ID	FROM	то	C=	C=	C= C=	C=	C=	IND	CUM	INLE	TOTAI	i (2)	i (5)	i (100)		5yr PEAK	100yr PEAK ICD FIXED DESIGN	MODIFIED	MATERIAL	. SIZE SLOPE LENGTH	CAPACITY		TIME	AVAIL C	AP (2yr)
BLDG FLOW	AREAID	FROM	10	0.20	0.35	0.75 0.80	0.90	1.00	2.78AC	2.78 AC	C (mi	n) (min)	(mm/hr)	(mm/hr)	(mm/hr)	FLOW (L/s) FLOW (L/s)	FLOW (L/s)	FLOW (L/s) FLOW (L/s) FLOW (L/s	DESIGN FLOW (L/s) PIPE	(mm) (%) (m)	(I/s)	(m/s)	IN PIPE	(L/s)	(%)
														+								+				
				1									Lans	downe 2.0												
+106 l/s	S. STANDS	Ex. STM 120	Ex. STM 119						0.000	0.000	20.0	00 21.24	52.03	70.25	119.95		0.00	0.00	106.00	CONC	450.0 0.20 59.60	127.63	0.80	1.24 2	21.63	16.95%
.400 1/2		Ex. STM 119	Ex. STM 118						0.000	0.000				67.64	115.46		0.00	0.00	106.00	CONC	450.0 0.20 59.60		0.80	1.24 2		16.95%
+106 l/s		Ex. STM 118	Ex. STM 117						0.000	0.000	22.2	18 22.63	48.36	65.24	111.33		0.00	0.00	212.00	CONC	600.0 0.20 8.70	274.87	0.97	0.15 6	52.87	22.87%
		Ex. STM 117	STMH 208						0.000	0.000	22.6	3 22.68	48.16	64.97	110.85		0.00	0.00	212.00	CONC	600.0 0.20 3.00	274.87	0.97	0.05 6	62.87	22.87%
	A3, A4, A5, BLDG I, K,																									
+232.6 l/s	N STANDS	Ex. STM 115 Ex. STM 114	Ex. STM 114 STMH 209	1.118			0.399		1.620 0.000	1.620		00 21.02 02 22.06		70.25 68.08	119.95 116.22		113.80 110.29	113.80 110.29	346.40 342.89	CONC	825.0 0.20 73.70 825.0 0.20 74.50			1.02 29 1.03 29	296.19	
	Half of NEC Area	STMH 209	STMH 208	0.000			0.486		1.215	2.835	22.0	06 23.27	48.94	66.04	112.69		187.19	187.19	419.79	CONC	900.0 0.10 65.64	573.05	0.90	1.22 1	53.26	26.74%
$Q_{bldg\ Tot} = 444.6$																										
I/s		STMH 208	STMH 207						0.000	2.835	23.2	27 23.58	47.30	63.80	108.84		180.85	180.85	625.45	CONC	1050.0 0.10 18.55	864.40	1.00	0.31 23	:38.95	27.64%
		STMH 207	STMH 206						0.000	2.835	23.5	58 23.97	46.90	63.26	107.91		179.31	179.31	623.91	CONC	1050.0 0.10 23.14	864.40	1.00	0.39 24	240.49	27.82%
	A6	STMH 206	STMH 205	0.048			0.025		0.080	2 924	23.0	97 24.61	46.41	62.59	106.77		183.01	183.01	627.61	CONC	1050.0 0.10 38.05	864.40	1.00	0.64 23	236 79	27 30%
	Au			0.040			0.023																			
		STMH 205	STMH 204						0.000	2.924	24.6	31 25.10	45.64	61.53	104.94		179.92	179.92	624.52	CONC	1050.0 0.10 29.50	864.40	1.00	0.49 23	239.89	27.75%
	Half of NEC Area	STMH 204	STMH 203	0.000			0.486		1.215	4.139	25.1	0 25.55	45.05	60.74	103.58		251.38	251.38	695.98	CONC	1050.0 0.10 27.14	864.40	1.00	0.45	68.43	19.48%
	Great Lawn 5	STMH 203	CBMH 202	0.089			0.026		0.115	4.253	25.5	55 26.25	44.53	60.03	102.36		255.31	255.31	699.91	CONC	1050.0 0.10 41.65	864.40	1.00	0.70 10	164.49	19.03%
		· · · · · · · · · · · · · · · · · · ·		0.000			0.020					20.20		00.00	.02.00		200.01			00.10		00.1.10				1010070
	Great Lawn 6, A, D, D1, D2	Ex. STMD	CBMH 210	1.237			0.542		2.044	2.044	20.0	00 20.83	52.03	70.25	119.95		143.58	143.58		CONC	600.0 0.10 34.40	194.36	0.69	0.83 5	50.78	26.13%
	Great Lawn 4	CBMH 210	CBMH 202	0.160			0.024		0.149	2.193	20.8	33 21.37	50.73	68.47	116.88		150.15	150.15		CONC	600.0 0.10 22.20	194.36	0.69	0.54 4	14.22	22.75%
Q _{bldg Tot} = 444.6																										
I/s		CBMH 202	CHAMBER / Ex. Chamber						0.000	6.446	26.2	25 26.25	43.75	58.97	100.54		380.15	380.15	824.75		REFER TO	O STORMTEC	CH DESIGN			
	ODOOF Orest Laws 0	OLIAMBED / For Observation	E 4050 BIRE	0.000			2.424		0.455	0.004	00.6		40.75	50.07	100.51		400.05	400.05	054.55		DESERT.	0.07001475				
	OPGG5, Great Lawn 3	CHAMBER / Ex. Chamber	Ex. 1350 PIPE	0.228			0.131		0.455	6.901	26.2	25 26.25	43.75	58.97	100.54		406.95	406.95	851.55		REFER II	O STORMTEC	TH DESIGN			
	A1, BLDGS H, G, J, J1, J2	Fy STM COM	NEW STMH 212	0.019			0.020		0.057	2.257	20.0	20.24	52.02	70.05	110.05		165.61	405.04	188.71	CONC	600.0 0.20 42.02	074.07	0.07	0.24	06.46	24.250/
+23.1 l/s	JZ	Ex. STM-CCN1 NEW STMH 212	NEW STMH 212	0.019			0.938		2.357 0.000	2.357 2.357		00 20.21 21 20.72		70.25 69.80	119.95 119.18		165.61 164.55	165.61 164.55	187.65	CONC	600.0 0.20 12.03 600.0 0.20 30.00	274.87 274.87		0.21 8 0.51 8		31.35% 31.73%
	OPGG1, OPGG4	NEW STMH 211 Ex. STM 110	Ex. STM 110 Ex. STM 109	0.015			0.160		0.000 0.409	2.357		72 20.91 91 21.11	_	68.71 68.31	117.29 116.62		161.97 188.97	161.97 188.97	185.07 212.07	CONC	600.0 0.20 11.00 600.0 0.20 11.70	274.87 274.87		0.19 8 0.20 6		32.67% 22.85%
Q _{bldg Tot} = 467.7	0FGG1, 0FGG4	Ex. STM TTU	Ex. STW 109	0.015			0.160		0.409	2.700	20.8	21.11	50.61	00.31	110.02		100.97	100.97	212.07	CONC	600.0 0.20 11.70	214.01	0.97	0.20	32.01	22.00%
l/s	OPGG2	Ex. STM 109	Ex. STM 108	0.020			0.251		0.639	10.306	3 26.2	25 27.49	43.75	58.97	100.54		607.77	607.77	1075.47	CONC	1350.0 0.13 99.80	1926.37	1.34	1.24 8	550.90	44.17%
	102, AA, BB, EE	Ex. STMDD	Ex. STMFF	1.410			0.594		2.270	2.270	21.7	70 22.27	49.45	66.73	113.88		151.48	151.48		CONC	900.0 0.10 31.00	573.05	0.90	0.57 42	121.57	73.57%
	Great Lawn 1 & 2, T1,																									
	T2, V1, V2	Ex. STMFF	Ex. STMGG	0.508			0.295		1.021	3.291	22.2	27 23.33	48.64	65.62	111.98		215.95	215.95		CONC	900.0 0.10 57.00	573.05	0.90	1.06 3	357.10	62.32%
		Ex. STMGG	Ex. STM 108						0.000	3 201	23.3	33 23.74	47.23	63.70	108.67		209.61	209.61		CONC	900.0 0.10 22.00	573.05	0.90	0.41 30	363.43	63.42%
		Ex. GTWIGG	Ex. STW 100						0.000	3.291	20.0	23.74	47.25	03.70	100.07		209.01	203.01		CONC	900.0 0.10 22.00	373.03	0.90	0.41 3	03.43	03.42 /0
$Q_{\text{bldg Tot}} = 467.7$	ODCC2 409	Ev. STM 100	Ev. 87M 107	0.167			0.316		0.002	14 490	37 /	10 20 64	42.45	F7 20	97.49		020.24	929.24	1205.01	CONC	1250 0 0 10 91 40	1690 54	1 10	1 15	202.62	22 200/
l/s	OPGG3, 108	Ex. STM 108	Ex. STM 107	0.10/			0.310		0.883	14.480	21.2	19 28.64	42.45	57.20	97.49		828.21	828.21	1295.91	CONC	1350.0 0.10 81.40	1009.54	1.18	1.15 39	33.03	23.30%
+34.4 l/s, Qbldg Tot = 502.1 l/s	A2, BLDGS A, B, C, D	Ex. STM 107	Ex. STM 106	0.032			1.555		3 008	18 389	3 28 6	64 28.93	41.31	55.65	94.82		1023.27	1023.27	1525.37	CONC	1350.0 0.10 20.70	1689 54	1.18	0.29 10	164 17	9 72%
.51 = 552.1 1/3	7.2, DEDOO A, D, O, D			0.002			1.000		0.000	10.000	20.0	20.93	71.31	33.03	37.02		1020.21		1020.01							
	-	Ex. STM 106 Ex. STM 105	Ex. STM 105 Ex. STM 104							1				1				616.00 616.00	-	CONC	975.0 0.10 80.20 975.0 0.10 12.10			1.41 9 0.21 9		13.17%
Cont	rolled Flow	Ex. STM 104	Ex. STM 103															616.00		CONC	975.0 0.10 19.20	709.40	0.95	0.34 9	93.40	13.17%
Cont		Ex. STM 103 Ex. STM 102	Ex. STM 102 Ex. STM 101							1				1				616.00 616.00	1	CONC	975.0 0.10 54.20 975.0 0.10 24.20			0.95 9 0.42 9		13.17% 13.17%
		Ex. STM 101	Ex. STM MH (O'Connnor)															616.00		CONC	975.0 0.10 24.20	709.40		0.42 9		13.17%
Definition:				Notes:						<u> </u>					Designed:	Z.A.		No.		Revision				Date	e	
Q=2.78CiA, where:					ngs coefficier	nt (n) = 0.013	I	Time-of-Co					-			··		1.	City St	ubmission No.				2023-05)5-25	
Q = Peak Flow in L A = Area in Hectare	itres per Second (L/s)									-	- '	L^0.5 / S^.33 . (m). S (%)	-		Checked:	D.B.Y.		2. 3.		ubmission No.				2023-09		
i = Rainfall Intensity	n millimeters per hour (m	nm/hr)							· ·	Runc	off Coef.	C =	Impervious			2.5.1.			5.t.y 5.t.		-					
i = 732.951/(TC- i = 1174.184/(TC			2 Year 5 Year						No.	L (m)	S %	Tc (mi) #DIV/0			Dwg. Referer	ce: F2		 								
i = 1735.688/(To	•		100 Year							1	1	#510/0	·		Jang. Kelelel	12		File Reference:			Date:			Sheet I		
																		CA0002045.0622			2023-09-22			1 of 1	1	





SANITARY SEWER DESIGN SHEET Lansdowne Redevelopment 2.0 Ottawa, ON Project: CA0000286.1662 Date: September 2023



	LOCATION							RESID	DENTIAL AREA AI	ND POPUL	ATION						OTHER		RETA	VIL.	OFF	ICE	I+C+I		NFILTRATIO	N		1		PIPE		- 1	
LOCATION	FROM	то	SANITARY	INDV	ACCU			NUMBER	OF UNITS		POPL	LATION		PEAK	GROSS	DEVEL.	PEAK	ACCU. PEAK	INDIV	ACCU.	INDIV	ACCU.	PEAK	INDIV	ACCU.	INFILT.	TOTAL	LENGTH	DIA.	SLOPE	CAP.	VEL.	AVAIL.
LOCATION	M.H.	M.H.	DRAINAGE AREA ID	AREA	AREA		1			2-BED	INDIV	ACCU	PEAK FACT.	FLOW	AREA	AREA	FLOW	FLOW		AREA	AREA	AREA	FLOW	AREA	AREA	FLOW	FLOW	LENGIN	DIM.	SLOPE		(FULL)	CAP.
				(ha)	(ha)	SINGLES	SEMIS	AVG TOWNS	AVG APT.	APT. 3-I	BED APT. POP.	POP.	PACI.	(l/s)	(ha)	(ha)	(l/s)	(l/s)	(ha)	(ha)	(ha)	(ha)	(l/s)	(ha)	(ha)	(l/s)	(l/s)	(m)	(mm)	(%)		(m/s)	(%)
													POST	DEVELOP	MENT																		
BLDG I, K, North Stands		Ex.15							190		342			3.82			7.60		0.25	0.25	0.84		7.95	0.000									
	Ex.15	Ex.14									(342		3.82				7.60		0.25		0.84	7.95	0.000								0.61	82.67
	Ex.14 SAMH 208	SAMH 208 SAMH 207										342 342		3.82				7.60 7.60		0.25		0.84	7.95 7.95	0.000								0.61	82.67 ⁴ 82.67 ⁴
	SAMPI 206	SAMH 207									,	342	3.44	3.02				7.00		0.25		0.84	7.90	0.000	0.00	0.00	11.7	00.41	3/5	0.15	67.91	0.61	82.67
South Stands	Ex.18	SAMH 207									(0	3.80	0.00			11.60	11.60		0.00		0.00	11.60	0.000	0.00	0.00	11.60	9.20	300	0.20	43.25	0.61	73.18
	SAMH 207	SAMH 206									(342		3.82				19.20		0.25		0.84	19.55	0.000				17.37	_	_		0.59	64.38
	SAMH 206	SAMH 205										342	3.44	3.82				19.20		0.25		0.84	19.55	0.000				25.49				0.61	65.59
	SAMH 205 SAMH 204	SAMH 204 SAMH 203										342 342	3.44	3.82				19.20 19.20		0.25		0.84	19.55 19.55	0.000				37.48				0.63	66.68°
	4111.2.04	J/4111 1 200						 			,	342	U.44	0.02		t		15.20		V-20		0.04	10.00	0.000	0.00	5.00	23.3	07.30	575	0.70	07.01	0.01	00.03
New Event Centre	Bldg	375 Pipe									(0	3.80	0.00			5.20	5.20		0.00		0.00	5.20	0.000	0.00	0.00	5.20	5.40	200	1.00	32.80	1.04	84.15
							1										1	ļ								ļ	1	1		⊥			
	SAMH 203	SAMH 202					-		-			342		3.82		ļ	1	24.40	1	0.25		0.84	24.75	0.000			28.57	106.17				0.61	57.935
	SAMH 202 SAMH 201	SAMH 201 Ex.8						1				342 342	3.44	3.82	-			24.40 24.40		0.25		0.84	24.75 24.75	0.000				49.82				0.61	57.93°
	Greni i Zoi	LLU									`	042	0.44	0.02				24.40		0.20		0.04	24.10	0.000	0.00	0.00	20.0	00.10	070	0.10	07.51	0.01	
Tower 1 & 2, BLDG G1, G2, H, J	Ex. SAN-CCN1	SAMH 210							252	250	250 1754	1754	3.10	17.64				0.00	2.33	2.33	0.08	0.08	0.78	0.000	0.00	0.00	18.42	12.03	250	0.25	29.73	0.61	38.07%
	SAMH 210	SAMH 209										1754	3.10	17.64				0.00		2.33		0.08	0.78	0.000	0.00	0.00	18.42	30.43	250	0.25	29.73	0.61	38.07%
	SAMH 209	Ex. 10										1754	3.10	17.64				0.00		2.33		0.08	0.78	0.000	0.00	0.00	18.42	10.07	250	0.38	36.66	0.75	49.76%
	Ex. 10	Ex.9									(1754	3.10	17.64				0.00		2.33		0.08	0.78	0.000	0.00	0.00	18.42	8.00	250	0.35	35.18	0.72	47.66%
	Ex. CAP	Ex.9										0	3.80	0.00				0.00		0.00		0.00	0.00	0.000	0.00	0.00	0.00	20.20	375	0.14	65.60	0.59	100.00%
	Ex.9	Ex.8									(1754	3.10	17.64				0.00		2.33		0.08	0.78	0.000	0.00	0.00	18.42	103.59	375	0.16	70.13	0.63	73.74%
Aberdeen Pavilion	Ex.8	Ex.7									(2096	3.06	20.75				24.40	0.41	2.99		0.92	25.66	0.000	0.00	0.00	46.42	23.30	375	0.15	67.91	0.61	31.64%
																														_			
Bldg A, B, C, D, Horticulture	Ex.7	Ex.6						40	50		198	2294	3.03	22.53				24.40	2.25	5.24		0.92	26.39	14.000	14.00	4.62	53.54	23.30	375	0.15	67.91	0.61	21.15
																															\sqcup		
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																												1					
								DESIG	ON PARAMETERS	s							•																
																									DESIGNED	:		NO.		REVISION			ATE
RESIDENTIAL AVG.		280	l/cap/day			COMMERC	IAL PEAK F	ACTOR =			/HEN AREA > 20%)			PULATION F			P*q*M/86	400		NIT TYPE		PERSON	S/UNIT		D.B.Y			1.		Submissio			3-05-25
COMMERCIAL AVG.	. DAILY FLOW =	28,000 0.324	l/ha/day l/ha/s							1.0 (W	/HEN AREA < 20%)			TRANEOUS I			I*Ac 1+(14/(4+P*	0.5))*K		NGLES EMI-DETACI	HED	3.4 2.7			CHECKED: D.B.Y			2. 3.		Submissio Submissio			3-09-22 4-08-07
INSTITUTIONAL AVG.	DAILY FLOW =	28,000	l/ha/day			INSTITUTIO	NAL PEAK F	FACTOR =		1.5 (W	/HEN AREA > 20%)			ULATIVE AR		m -	· el iniland.	0.0jj N		WNHOME		2.7			PROJECT:			1	Oity C	- Juliable	A. 140.5	2024	50-01
		0.324	l/ha/s								/HEN AREA < 20%)			LATION (TH		6)				ALK UP TO		1.8				Redevelopme	ent 2.0	1					
LIGHT INDU:	LIGHT INDUSTRIAL FLOW = 35,000 l/ha/day																		2-6	BED APT. U	JNIT	2.1						1					
		0.405	l/ha/s					CTION FACTOR		0.80				APACITY, Q			1/N S^(1/	2) R^(2/3) Ac	3-6	BED APT. U	JNIT	3.1			LOCATION:			1					
HEAVY INDU:	STRIAL FLOW =	55,000 0.637	l/ha/day			MANNING N		10W 10W**		0.013			(MANNIN	S'S EQUATIO	ON)										Ottawa, Ont PAGE NO:	lario		FILE & DW	C DEELCO	ENCE.			
		0.037	l/ha/s			reak EXII	WHEUUS F	LOW, I (l/s/ha)	-	0.33		1													2 of 2			FILE & DW	o. KEFERI	:noE:			
												1							l						2012								

					=								<u> </u>		
					Estimated W	TIR / SAN / S	STM per Mecha	incal Eng.			Per City of Ott	awa Design	Guidelines		
			_				1			WTR					<u>.</u>
Building	Retail	Residentia	al	Office	WTR	FIRE	SAN	STM	AVG	MAX. DAY	PEAK HR	FIRE	SAN	STM	Notes
	(m²)	# towns #	apts	(m^2)	(L/s)	(L/s)	(L/s)	(L/s)	(L/s)	(L/s)	(L/s)	(L/s)	(L/s)	(L/s)	
Α	4,129	7	50		16.7		5.4	8.3	0.6	1.3	2.7	150	2.5		Mech Eng values provided by LKM 2011-11-29 (Includes retail and residential)
В	5,401	15			6.9		5.7	8.6	0.3	0.6	1.3	150	1.6		Mech Eng values provided by LKM 2011-11-29 (Includes retail and residential)
С	9,262	11			13.9		5.4	19.6	0.4	0.7	1.4	150	2.1	10.1	Mech Eng values provided by LKM 2011-11-29 (Includes retail and residential)
D	2,131	7			6.3		3.8	5.2	0.1	0.3	0.6	150	0.7		Mech Eng values provided by LKM 2011-11-29 (Includes retail and residential)
G1	3,507				6.3		5.4	5.5	0.1	0.2	0.3	150	0.6	5.8	Mech Eng values provided by LKM 2011-11-29 (Includes retail)
G2	399				5.0		2.6	2.4	0.0	0.0	0.0	150	0.1	1.3	Mech Eng values provided by LKM 2011-11-29 (Includes retail)
Н	7,294				9.5		500FU	9.5	0.2	0.3	0.6	150	1.3	11.7	Mech Eng values provided by LKM 2011-11-29 (Includes retail)
Į	2,505			8,361					0.9	1.3	2.3	150	1.6	8.1	
J	1,220								0.0	0.1	0.1	150	0.2	4.3	
J - Salon	3,425								0.1	0.1	0.3	150	0.6	N/A	Roof covered in North Stands flow.
K			190						1.4	3.5	7.6	150	5.5	5.3	
North Stands									2.8	4.2	7.6	150	7.6	219.2	No City standard for estimating flow from stadium / civic centre. Used monitored data
South Stands					25.2	31.5	11.6	211	2.8	4.2	7.5	150	11.6	212.0	No City standard for estimating flow from stadium / civic centre. Used monitored data
Civil Centre									1.9	2.9	5.2	150	5.2	N/A	No City standard for estimating flow from stadium / civic centre. Used monitored data
Aberdeen	4,098								0.1	0.2	0.3	150	0.7	N/A	Peaked Roof, storm runoff included in surface drainage.
Horticulture	1,591								0.0	0.1	0.1	150	0.3	N/A	Peaked Roof, storm runoff included in surface drainage.
Total	44,962	40	240	8,361	89.9	31.5	39.8	270.1	11.8	19.9	38.0		42.1	502.2	

Notes

- 1) Retail floor areas for buildings A, B, C, D, G1, G2, H, I, J, J Salon provided by Perkins Eastman November 18, 2011. Above table uses total GFA.
- 2) Residential for Buildings A, B, C, D, and K component extracted from RFO Addendum 3 October 20, 2011 as follows:

Parcel A1 = Residential Tower above Bldg A. 240units (280units max less townhomes) proportionate between Bldg A and K. Therefore, 240units x 66,000/316,000 = 50units.

Parcel A2 = Townhomes abutting buildings A, B, C, D. Assuming 1,225sq.ft townhomes = 40units. Divided between buildings per ground floor area shown on Perkins Eastman November 19, 2011 merchandising plan.

Bldg A = $3,426/19,104 \times 40 = 7$ units

Bldg B = 7,188/19,104 = 15 units

Bldg C = 5,096/19,104 = 11 units

Bldg D = 3.394/19.104 = 7units

Parcel B = Office tower above Building I, 90,000sq.ft.

Parcel C = Building K 240units (280units max less townhomes) proportionate between Bldg A and K. Therefore, 240units x 250,000/316,000 = 190units.

- 3) Mech. Eng. Servcing for Bldgs A, B, C, D, G1, G2, H provided by LKM, dated July 19, 2011. Revised Storm and Sanitary flow per November 29, 2011 email.
- 4) City of Ottawa rates were estimated accordingly

Water Supply

Retail: Average Day 2.5L/m²/d, Max Day = Avg Day x 1.5, Peak Hour = Avg Day x 2.7

Residential:

Townhouse Avg Day = 2.7p/unit x 350m³/d, Max Day = Avg Day x 2.5, Peak Hour = Avg Day x 5.5

Apartement Avg Day = 1.8p/unit x 350m³/d, Max Day = Avg Day x 2.5, Peak Hour = Avg Day x 5.5

Office: Average Day 75L/9.3m²/d, Max Day = Avg Day x 1.5, Peak Hour = Avg Day x 2.7

North and South Stands: City of Ottawa completed Flow Monitoring in 2005. A peak dry weather flow for a capacity game was recorded to be 15.1L/s.

Report titled "Lansdowne Park - 2005, Combined Sewer Flow Monitoring Report," G.A. Clark & Associates Limited, Proj. No: 200524

Interpolated Average Day, Max Day and, Peak Hour accordingly: Peak Hour = 15.1L/s, Max Day = Peak Hour / 1.8, Average Day = Peak Hour / 2.7

North and South stands flow proportioned by number of seating: North Stands = 14,542 South Stands = 14,284, as decribed in Lansdowne Park information material.

Civil Centre: Flow monitoring completed in 2005 indicated a peak a 4L/s. However, this recorded flow did not account for wastewater directed to Holmwood.

Civil Centre Flow estimated based on Stadium monitored flow and seating: 9,836 / 28,826 x 15.1 = 5.2L/s

Interpolated Average Day, Max Day and, Peak Hour accordingly: Peak Hour = 5.2L/s, Max Day = Peak Hour / 1.8, Average Day = Peak Hour / 2.7

<u>Wastewater</u>

Retail: Average Day 5L/m²/d x 24hour day / 12hour operation, Peak = Average Day x 1.5

Residential:

Townhouse Avg Day = $2.7p/unit \times 350m^3/d$, Peak = Avg Day x 3.95

Apartment Avg Day = $1.8p/unit \times 350m^3/d$, Peak = Avg Day x 3.95

Office: Average Day $75L/9.3m^2/d$, Peak = Avg Day x 1.5

North and South Stands: City of Ottawa completed Flow Monitoring in 2005. A peak dry weather flow for a capacity game was recorded to be 15.1L/s.

Report titled "Lansdowne Park - 2005, Combined Sewer Flow Monitoring Report," G.A. Clark & Associates Limited, Proj. No: 200524

Peak flow interpreted as peak monitored flow (15.1L/s)

North stands flow proportioned by number of seating: North Stands = 14,542 South Stands = 14,284, as decribed in Lansdowne Park information material.

Civil Centre: Flow monitoring completed in 2005 indicated a peak a 4L/s. However, this recorded flow did not account for wastewater directed to Holmwood.

Civil Centre Flow estimated based on Stadium monitored flow and seating: 9,836 / 28.826 x 15.1 = 5.2L/s

South Stands - Mechanical Consultant provided estimated peak Wastewater Flow Rate (Smith and Anderson (2011-12-02) servicing sketch) Storm

See Separate Analysis - Estimated per City of Ottawa IDF curves and Control Flow roof drains where appropriate

North and South Stands assumed to have roof drains sized to accommodate 5-year storm only. To be confirmed by DSEL through modeling.

PROJECT: Lansdowne Park Re-Development LOCATION: City of Ottawa FILE REF: 10-378

DATE: 19-Dec-11

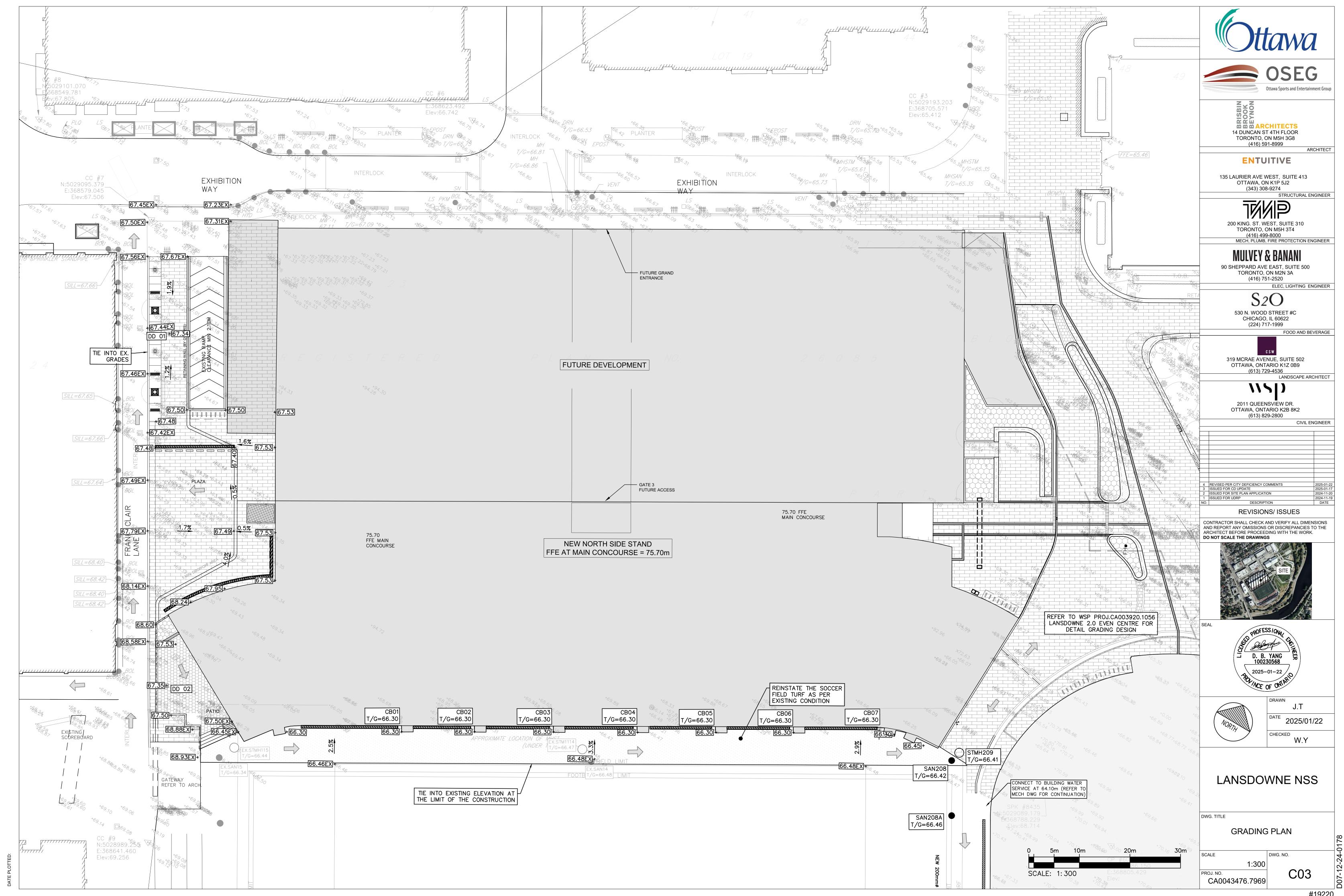
Peak Fact Res. Per Harmons: Min = 2.0, Max =4.0 Avg. Daily Flow Res. 350 L/p/d

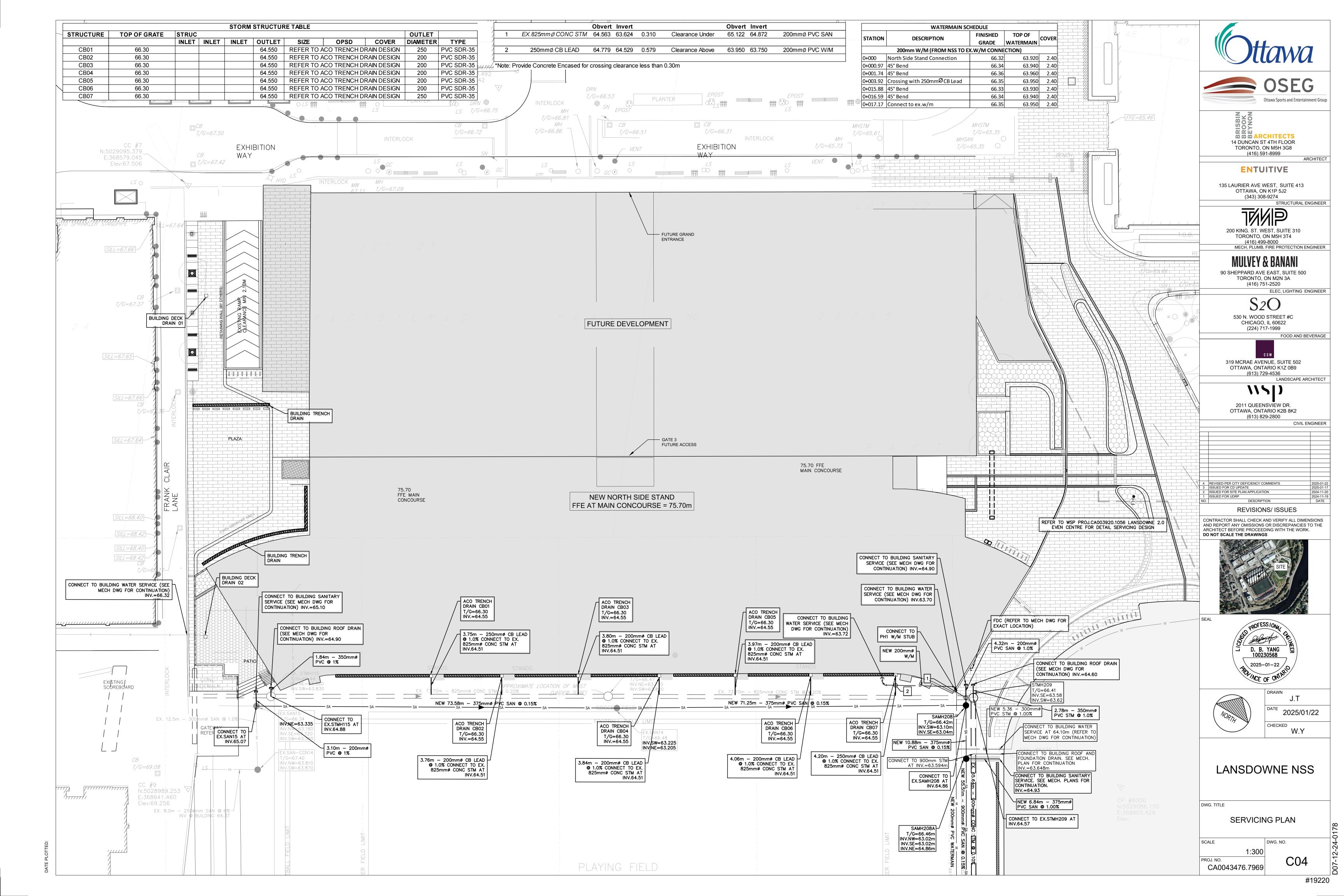
Avg. Daily Flow Retail 5 L/m²/d 75 L/9.3m²/d Avg. Office Flow

DESIGN PARAMETERS

Peak Fact. Retail 1.5 Peak Fact. Office 1.5 Infiltration / Inflow 0.28 L/s/ha Min. Pipe Velocity 0.60 m/s full flowing Max. Pipe Velocity 3.00 m/s full flowing Mannings N 0.013

Location					Residen	tial Area	and Pop	ulation			Re	tail	Of	fice	Ot	her			Infiltration						Pipe	Data			
Area ID	Up	Down	Area			Pop.	Cumu	lative	Peak.	Q _{res}	Area	Accu.	Incr.	Accu.	Area	Accu.	Q _{C+I+I}	Total	Accu.	Infiltration	Total	DIA	Slope	Length	A _{hydraulic}	R	Velocity	Q _{cap} C	Q / Q full
							Area	Pop.	Fact.			Area	Area	Area		Area		Area	Area	Flow	Flow				•				
			(ha)	Town's	Apt's		(ha)	•	(-)	(L/s)	(m ²)	(m ²)	(m ²)	(m ²)	(L/s)	(L/s)	(L/s)	(ha)	(ha)	(L/s)	(L/s)	(mm)	(%)	(m)	(m ²)	(m)	(m/s)	(L/s)	(-)
South Stands	19	18				0.0	0.000	0.0	4.00	0.0		-		-	11.6	11.6	11.6	0.000	0.000	0.000	11.6	300	0.20	61.0	0.071	0.075	0.61	43.2	0.27
	18	17				0.0	0.000	0.0	4.00	0.0		-		-		11.6	11.6	0.000	0.000	0.000	11.6	300	0.20	9.3	0.071	0.075	0.61	43.2	0.27
	17	16				0.0	0.000	0.0	4.00	0.0		-		-		11.6	11.6	0.000	0.000	0.000	11.6	300	0.20	5.8	0.071	0.075	0.61	43.2	0.27 0.27
	16	13				0.0	0.000	0.0	4.00	0.0		-		-		11.6	11.6	0.000	0.000	0.000	11.6	300	0.20	62.6	0.071	0.075	0.61	43.2	0.27
BLDG K. I. N.Stands	15	1/1			190	342.0	0.000	342.0	4.00	5.5	2,505	2,505	8,361	8,361	7.6	7.6	9.2	0.000	0.000	0.000	14.8	300	0.20	74.9	0.071	0.075	0.61	43.2	0.34
BEDGIN, I, N.Stands	14				130	0.0	0.000	342.0	4.00	5.5		2,505	0,001	8,361	7.0	7.6	9.2	0.000	0.000	0.000	14.8	300	0.20	74.9	0.071	0.075	0.61	43.2	0.34
	17	10				0.0	0.000	J42.0	4.00	5.5		2,303		0,001		7.0	3.2	0.000	0.000	0.000	14.0	300	0.20	74.5	0.071	0.073	0.01	40.2	0.04
	13	12				0.0	0.000	342.0	4.00	5.5		2,505		8,361		19.2	20.8	0.000	0.000	0.000	26.4	300	0.20	44.4	0.071	0.075	0.61	43.2	0.61
	12	9				0.0	0.000	342.0	4.00	5.5		2,505		8,361		19.2	20.8	0.000	0.000	0.000	26.4	300	0.20	56.6	0.071	0.075	0.61	43.2	0.61
BLDG G1, G2, H, J, Salon, Civic Cen	11	10				0.0	0.000	0.0	4.00	0.0	15,845	15,845		-	5.2	5.2	8.0	0.000	0.000	0.000	8.0	250	0.38	38.2	0.049	0.063	0.75	36.7	0.22
, , , , , , , , , , , , , , , , , ,	10	9				0.0	0.000	0.0	4.00	0.0	,	15,845		-		5.2	8.0	0.000	0.000	0.000	8.0	250	0.38	7.5	0.049	0.063	0.75	36.7	0.22
												,						0.000								0.000			
	9	8				0.0	0.000	342.0	4.00	5.5		18,350		8,361		24.4	28.8	0.000	0.000	0.000	34.3	375	0.15	84.0	0.110	0.094	0.61	67.9	0.51
Aberdeen Pavilion	8	7				0.0	0.000	342.0	4.00	5.5	4,098	22,448		8,361		24.4	29.5	0.000	0.000	0.000	35.0	375	0.15	23.3	0.110	0.094	0.61	67.9	0.52 0.62
BLDG A, B, C, D, Horticulture	7	5		40	50	198.0	0.000	540.0	3.96	8.7	22,514	44,962		8,361		24.4	33.4	0.000	0.000	0.000	42.0	375	0.15	83.5	0.110	0.094	0.61	67.9	0.62
	5	4				0.0	0.000	540.0	3.96	8.7		44,962		8,361		24.4	33.4	0.000	0.000	0.000	42.0	375	0.15	10.1	0.110	0.094	0.61	67.9	0.62 0.62
	4	3				0.0	0.000	540.0	3.96	8.7		44,962		8,361		24.4	33.4	0.000	0.000	0.000	42.0	375	0.15	17.5	0.110	0.094	0.61	67.9	0.62
	3	2				0.0	0.000	540.0	3.96	8.7		44,962		8,361		24.4	33.4	0.000	0.000	0.000	42.0	375	0.15	60.0	0.110	0.094	0.61	67.9	0.62 0.62
	2	1				0.0	0.000	540.0	3.96	8.7		44,962		8,361		24.4	33.4	0.000	0.000	0.000	42.0	375	0.15	24.7	0.110	0.094	0.61	67.9	
	1	EX				0.0	0.000	540.0	3.96	8.7		44,962		8,361		24.4	33.4	0.000	0.000	0.000	42.0	375	0.15	9.7	0.110	0.094	0.61	67.9	0.62





APPENDIX

D

 DWG C05 – EROSION AND SEDIMENTATION CONTROL PLAN





Servicing study guidelines for development applications

4. Development Servicing Study Checklist

The following section describes the checklist of the required content of servicing studies. It is expected that the proponent will address each one of the following items for the study to be deemed complete and ready for review by City of Ottawa Infrastructure Approvals staff.

The level of required detail in the Servicing Study will increase depending on the type of application. For example, for Official Plan amendments and re-zoning applications, the main issues will be to determine the capacity requirements for the proposed change in land use and confirm this against the existing capacity constraint, and to define the solutions, phasing of works and the financing of works to address the capacity constraint. For subdivisions and site plans, the above will be required with additional detailed information supporting the servicing within the development boundary.

4.1 General Content

Executive Summary (for larger reports only).

Proposed phasing of the development, if applicable.

Date and revision number of the report.
Location map and plan showing municipal address, boundary, and layout of proposed development.
Plan showing the site and location of all existing services.
Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere.
Summary of Pre-consultation Meetings with City and other approval agencies.
Reference and confirm conformance to higher level studies and reports (Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defendable design criteria.
Statement of objectives and servicing criteria.
Identification of existing and proposed infrastructure available in the immediate area.
Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development (Reference can be made to the Natural Heritage Studies, if available).
Concept level master grading plan to confirm existing and proposed grades in the development. This is required to confirm the feasibility of proposed stormwater management and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths.
Identification of potential impacts of proposed piped services on private services (such as wells and sentic fields on adjacent lands) and mitigation required to address potential impacts

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Reference to geotechnical studies and recommendations concerning servicing.
All preliminary and formal site plan submissions should have the following information: • Metric scale
North arrow (including construction North)
∘ Key plan
Name and contact information of applicant and property owner
Property limits including bearings and dimensions
∘ Existing and proposed structures and parking areas
∘ Easements, road widening and rights-of-way
∘ Adjacent street names
4.2 Development Servicing Report: Water
Confirm consistency with Master Servicing Study, if available
Availability of public infrastructure to service proposed development
Identification of system constraints
Identify boundary conditions
Confirmation of adequate domestic supply and pressure
Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow at locations throughout the development.
Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves.
Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design
Address reliability requirements such as appropriate location of shut-off valves
Check on the necessity of a pressure zone boundary modification.
Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range





Description of the proposed water distribution network, including locations of proposed connections to the existing system, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions.
Description of off-site required feedermains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation.
Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines.
Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference.
4.3 Development Servicing Report: Wastewater
Summary of proposed design criteria (Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure).
Confirm consistency with Master Servicing Study and/or justifications for deviations.
Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and condition of sewers.
Description of existing sanitary sewer available for discharge of wastewater from proposed development.
Verify available capacity in downstream sanitary sewer and/or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable)
Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix 'C') format.
Description of proposed sewer network including sewers, pumping stations, and forcemains.
Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality).
Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development.
Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity.
Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding.
Special considerations such as contamination, corrosive environment etc.





4.4 Development Servicing Report: Stormwater Checklist

drain, right-of-way, watercourse, or private property)
Analysis of available capacity in existing public infrastructure.
A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern.
Water quantity control objective (e.g. controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects.
Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements.
Description of the stormwater management concept with facility locations and descriptions with references and supporting information.
Set-back from private sewage disposal systems.
Watercourse and hazard lands setbacks.
Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed.
Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists.
Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).
Identification of watercourses within the proposed development and how watercourses will be protected or, if necessary, altered by the proposed development with applicable approvals.
Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions.
Any proposed diversion of drainage catchment areas from one outlet to another.
Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities.
If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100 year return period storm event.
Identification of potential impacts to receiving watercourses
Identification of municipal drains and related approval requirements.
Descriptions of how the conveyance and storage capacity will be achieved for the development.
100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading.





Inclusion of hydraulic analysis including hydraulic grade line elevations.
Description of approach to erosion and sediment control during construction for the protection of receiving watercourse or drainage corridors.
Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplain elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current conditions.
Identification of fill constraints related to floodplain and geotechnical investigation.
4.5 Approval and Permit Requirements: Checklist
The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:
Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not the approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act.
Application for Certificate of Approval (CofA) under the Ontario Water Resources Act.
Changes to Municipal Drains.
Other permits (National Capital Commission, Parks Canada, Public Works and Government Services Canada, Ministry of Transportation etc.)
4.6 Conclusion Checklist
Clearly stated conclusions and recommendations
Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.
All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario

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