CITY OF OTTAWA

LANSDOWNE PARK EVENT CENTRE
OTTAWA, ON
SERVICING REPORT

AUGUST 07, 2024

LANSDOWNE PARK EVENT CENTRE
OTTAWA, ON

SERVICING STUDY

CITY OF OTTAWA

PROJECT NO.: CA0033920.1056
DATE: AUGUST 07, 2024

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August 07, 2024

City of Ottawa

Attention: Sean Moore

Dear Sir:

Subject: Lansdowne Event Centre Development for Site Plan Control Application

We are pleased to deliver this enclosed servicing report in support of the application for Site Plan Control for the subject institutional development project. 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.
Senior Civil Engineer

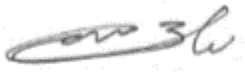
WSP ref.: CA0033920.1056

SIGNATURES

PREPARED BY

Winston Yang, P.Eng., PMP
Senior Project Engineer

August 7th, 2024
Date



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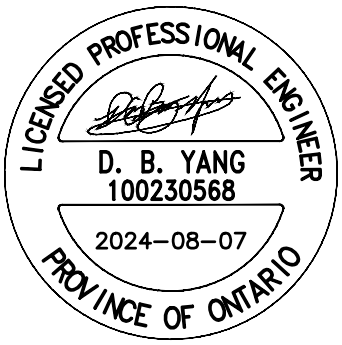


TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

A

- CITY AND NCC COMMENTS
- LANSDOWNE CIVIL DRAWINGS - STANTEC
- CONCEPTUAL ARCHITECTUAL PLAN
- AS-BUILT DRAWINGS
- TOPOGRAPHICAL SURVEY PLAN

B

- FIRE FLOW CALCULATION FOR BUILDINGS
- WATER DEMAND CALCULATION
- FIRE HYDRANT TEST RESULTS
- HYDRANT COVERAGE FIGURE

C

- STORM SEWER DESIGN SHEET
- DWG C07 – STORM DRAINAGE AREA PLAN
- EXISTING STORM SEWER DESIGN SHEET AND DRAINAGE AREA PLAN BY STANTEC
- SANITARY SEWER DESIGN SHEET
- EXISTING SANITARY DESIGN SHEET BY DSEL

- DWG C04 – GRADING PLANS
- DWG C05A/C05B – SERVICING PLANS

D

- DWG C06 – EROSION AND SEDIMENTATION CONTROL PLAN

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) 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 two residential towers and retail space. This report pertains to the overall infrastructure upgrades due to Lansdowne 2.0 redevelopment and specifically to Phase 1, the design of the Event Centre, Great Lawn, and other landscaping modifications. 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 site has been previously developed to convey flow to various catchbasins and/or the existing Great Lawn for retention. The private storm network eventually discharges to a 1050mm storm sewer on O'Connor Street.

Design of a drainage and stormwater management system in this development must be prepared in accordance with the following documents:

- Sewer Design Guidelines, City of Ottawa, October 2012;
- Stormwater Management Planning and Design Manual, Ministry of the Environment, March 2003; and
- Stormwater Management Facility Design Guidelines, City of Ottawa, April 2012

This report was prepared utilizing servicing design criteria obtained from the City of Ottawa and outlines the design for water, sanitary wastewater, and stormwater facilities, including stormwater management.

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:

- On-site stormwater management systems, employing underground storage will be provided to attenuate flow rates leaving the site area to be redeveloped. Existing drainage patterns, previously established controlled flow rates and storm sewers will be maintained.
- The on-site water and sanitary pipes will be re-routed around the proposed Event Centre and previously established conveyance patterns will be maintained.

1.2 DATE AND REVISION NUMBER

This version of the report is the first issue, dated August 7th, 2024.

1.3 LOCATION MAP AND PLAN

The proposed development is located at 1525 Princess Patricia Way, 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

Outstanding comments from the ZBLA stage and updated engineering comments were provided July 26, 2024. These comments are provided in Appendix A.

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.

- Geotechnical Investigation – Proposed Event Centre Lansdowne Park Redevelopment, Report No. PG6655-1, May 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 a new Event Centre building, a modified Great Lawn and south stands and other landscape features.

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. The Sport and Entertainment Group provided an as-built services plan after its completion, contained in Appendix A.

Based on the previous design information by DSEL and Stantec, portable water supply is available within the site, and there should be adequacy fire protection supply. The existing Lansdowne Park has a peak dry weather flow of 42.1 L/s and wet weather flow of 45.3 L/s. The existing storm conveyance system has been designed to convey all storms up to and including a 5-year storm event.

Due to the placement of the Event Centre building and the modification to the Great Lawn area, it is proposed to internally reroute the on-site storm, sanitary and watermain infrastructure around the Event Centre to service the redevelopment. In addition, it is proposed to flatten the Great Lawn and introduce a large new underground chamber that will be interconnected to the existing underground chamber to provide stormwater storage in place of the Great Lawn.

1.9 ENVIRONMENTALLY SIGNIFICANT AREAS, WATERCOURSES AND MUNICIPAL DRAINS

There are no watercourses, municipal drains or environmentally significant areas on the site. 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 1 modifications. The existing and proposed grading are shown on drawing C04 (Grading Plan). Existing grading information is based on a 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 proposed stormwater management system, drainage, soil removal and fills. 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 be re-routed around the Event Centre and connect back into the existing on-site systems just south of the Aberdeen Pavilion. The majority of the site's drainage system will remain unaffected. The drainage areas around the modified Great Lawn will be modified based on the proposed grading and addition of a new underground storage chamber. 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 1 (New Event centre, modified south stands, modified Great Lawn and surrounding landscaped areas). However, the civil design (storm conveyance, stormwater management, sanitary, and water) takes into consideration the ultimate design/demands (i.e. it assumes all 3 phases are complete).

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 400mm and 200mm diameter watermains on Holmwood Avenue and Bank Street.

The existing on site 200mm watermain is proposed to be rerouted around the new addition (Event Centre) since it lays in the new addition's footprint. The Event Centre building's services (2 services will be required since the average day demands are greater than 50 m^3/day) are proposed to connect to the on-site 200mm watermain. The new addition will be protected with a fully supervised and automatic fire protection system sprinkler system. The fire department connection is located near the main entrance of the existing school on the north 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 Event Centre.

2.2 SYSTEM CONSTRAINTS AND BOUNDARY CONDITIONS

A boundary service request was submitted to the City of Ottawa and boundary conditions have been received and summarized below. A fire flow of 150 l/s was estimated for the existing conditions.

Table 2-2 summarizes the existing water demands and boundary conditions under existing conditions.

Table 2-2: Existing Water Demands and Existing Boundary Conditions

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

2.3 CONFIRMATION OF ADEQUATE DOMESTIC SUPPLY AND PRESSURE

Water demands are based on Table 4.2 of the Ottawa Design Guidelines – Water Distribution. A water demand calculation sheet is included in Appendix B, and the total water demands for the 3 phases and the ultimate condition are summarized as shown in Table 2-3. Refer to Appendix B for the existing demands (provided by DSEL).

Table 2-3: Water Demands

Design Parameter	Phase 1* (Event Centre)	Phase 2* (North Stands)	Phase 3 (Retail and Residential)	Existing (Excl. Ex. Civil Centre and Ex. North Stands)**	Ultimate Condition (Proposed + Existing)
Average Day	1.9 l/s	2.8 l/s	5.51 l/s	7.1 l/s	17.31 l/s
Max Day	2.9 l/s	4.2 l/s	13.61 l/s	12.8 l/s	33.51 l/s
Peak Hour	5.2 l/s	7.6 l/s	29.86 l/s	25.2 l/s	67.86 l/s

*Demands as per existing Lansdowne Park Building Service Summary by DSEL (Appendix C).
**Existing demands as per existing Lansdowne Park Building Service Summary by DSEL (Appendix C) less the Phase 1 and Phase 2 demands shown above.

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.

Water pressure at Event Centre connection (at average day) check:

Max. HGL @ Connection – Finished floor elevation = 115.60m-67.30m = 48.3m = 473.54 kPa

Water pressure at Event Centre connection (at peak hour demand) check:

Min. HGL @ Connection – Finished floor elevation = 103.1m-67.30m = 35.80m = 350.99 kPa

Water pressure at Event Centre connection (at max. day + fire demand):

(Max Day + Fire) HGL @ Connection - Finished floor elevation = 106.4m-67.30m = 39.10m = 383.34 kPa

The minimum water pressure inside the building at the connection is determined with the minimum HGL condition, resulting in a pressure of 350.99 kPa which exceed the minimum requirement of 276 kPa per the guidelines.

Based on the on-site hydrant flow test, the residual pressures of both hydrants that will be used to service the Event Centre (Field Entrance and On Field) are 39 psi and 43 psi, 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) and 2471 gpm (155.9 l/s), respectively, which is greater than its 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 non-combustible construction for Towers 1 and 2, fire resistive construction for North Stands and Event Centre and a fully supervised sprinkler system, the following have been determined: Fire flow demand of 7,000 l/min (117.0 l/s) for the proposed residential Tower 1 and 2, fire flow rate of 6,000 l/min (100 l/s) for the North Stands and fire flow demand of 5,000 l/min (83 l/s) for the Event Centre. Copies of the FUS calculation sheets are included in Appendix B.

The existing available fire flow for the nearby private hydrants at 20 psi range from 131.6 l/s to 176.0 l/s. Each proposed building 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.

For the Event Centre, the existing fire hydrants that will be used to meet the required fire flow demand of 5,000 l/min (83 l/s) are located at the Field Entrance and On Field (see hydrant table above). These 2 hydrants are proposed to be slightly shifted to accommodate the new Event Centre footprint and the proposed rerouted servicing. These 2 hydrants can provide up to 95 l/s with a combined total of 190 l/s which is greater than the FUS demand for the Event Centre. Therefore, the watermain system will have adequate capacity to service the new Event Centre.

2.5 CHECK OF HIGH PRESSURE

High pressure is not a concern. The maximum water pressure inside the Event Centre at the connection is determined with the maximum HGL condition, resulting in a pressure of 473.54 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 this building.

2.6 PHASING CONSTRAINTS

No development phasing constraint has been detailed for the site. The ultimate design condition is used for design consideration.

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 Event Centre.

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 is confirmed.

2.10 DESCRIPTION OF PROPOSED WATER DISTRIBUTION NETWORK

The existing on-site network is proposed to be rerouted around the Event Centre and but will connect back onto the existing on-site watermain. New domestic services connecting to the on-site watermain is proposed to connect to the new Event Centre. Two private hydrants will be slightly shifted to accommodate the Event Centre footprint and watermain rerouting. 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.

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 280 L/cap/day
- Average sanitary flow for institutional use 28,000 L/Ha/day
- Commercial/Institutional Peaking Factor 1.5
- Infiltration Allowance (Total) 0.33 L/Ha/s
- Minimum Sewer Slopes – 200 mm diameter 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.

The contributing flows for the north stands, south stands and the Event Centre are based on the DSEL sanitary design sheet and Building Service Summary for Lansdowne Park (also found in Appendix C). The new Event Centre is assumed to provide 5.2 l/s of sanitary flow.

The proposed Lansdowne 2.0 increases the peak dry weather flow from 42.1 l/s to 48.92 l/s. Under wet weather flow condition, the peak discharge is also increased from 45.3 l/s to 53.54 l/s.

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 42.1 l/s while the wet weather peak is 45.3 l/s. The peak discharge from the development assumes that both the retail and stadium will be operating at maximum capacity. The existing sanitary design sheet is 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 include both existing and proposed. Please refer to sanitary sewer design sheet in Appendix C.

3.6 CALCULATIONS FOR NEW SANITARY SEWER

The new sanitary network consists of varying pipe sizes and slopes. 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 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.

3.7 DESCRIPTION OF PROPOSED SEWER NETWORK

The proposed sanitary sewer network on site will consist of a sanitary network of varying sized pipes ranging from 250mm to 375mm and ten 1200mm maintenance holes. The proposed sanitary network function to reroute the existing sanitary network around the Event Centre footprint and eventually connect back into the existing network.

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 EMERGENCY OVERFLOWS FROM SANITARY PUMPING 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). 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. greater than the 5-year return period) runoff is directed to the Rideau Canal through an overflow pipe.

The stormwater management system consists of two subsurface storage tanks, surface storage on the Great Lawn, outlet controls, and quality control structures. The two underground storage tanks provide 600 m^3 in Basin 1 and 2200 m^3 in Basin 2, with 700 m^3 provided in pipe storage (total of 3500 m^3 subsurface storage). A minimum storage volume of 3000 m^3 is also provided on the surface of the Great Lawn.

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.

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, 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 C105A/C105B shows the detailed site sewer network. Drawings C104 provides proposed grading and drainage and includes existing grading information. Drawing C07 provides post-development drainage areas. Site sub-area information is also provided on the storm sewer design sheet attached in Appendix C. An overall grading plan and Servicing plan have also been attached to Appendix C for reference. 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 Stormwater Management Report for the water quantity objective for the site.

4.5 WATER QUALITY CONTROL OBJECTIVE

On-site quality control measures are expected for the proposed development per the previous studies. Stormwater shall be treated to MOE enhanced protection (80% TSS removal of suspended solids). The 80% TSS removal will be provided from the Stormtech chamber via an OGS unit at STMH201. Most of the runoff from the redeveloped area going to the chambers comes from grassed areas, Event Centre roof, and other pedestrian/landscaped areas and thus the runoff is considered clean.

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
  - Landscaped Areas — C = 0.20
  - Asphalt/Concrete — C = 0.90
  - Traditional Roof — C = 0.90
- Pipe Velocities — 0.80 m/s to 6.0 m/s
- Minimum Pipe Size — 250 mm diameter (200 mm CB Leads and service pipes)

4.7 PROPOSED MINOR SYSTEM

Under proposed conditions the majority of the site land use remains as it is under existing conditions, except for the new Event Centre with a green roof. The new event centre requires some rerouting of storm sewers and encroaches on the surface storage previously provided in the Great Lawn. The proposed design involves routing storm sewers south of the new Event Centre and installing subsurface storage beneath the Great Lawn to account for the additional storage required from the change in land use and elimination of storage available on the surface.

The subject site will be serviced by a storm sewer system designed in accordance with the amendment to the storm sewer and stormwater management elements of the Ottawa Design Guidelines. The minor system has been designed to convey the 5-year storm without ponding on the surface. Storm sewer design sheets are included in Appendix C.

The site outlets remain the same as they are in existing conditions. The primary outlet is to O'Connor Street to the north. During large storm events, runoff is directed to the Rideau Canal through an overflow pipe.

The major system will remain similar to how it is in existing conditions. The site is graded toward the Great Lawn where catch basins around the perimeter will intercept overland runoff and direct it to the proposed underground storm chamber under the Great Lawn. Emergency overland flow is directed toward the Rideau Canal during extreme events exceeding the 100-year design storm.

4.8 STORMWATER MANAGEMENT

Refer to the Stormwater Management Report.

4.9 INLET CONTROLS

Refer to the Stormwater Management report.

4.10 ON-SITE DETENTION

Refer to the Stormwater Management report.

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.

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 being raised higher relative to 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

The outstanding comments from the ZBLA stage have been addressed. No comments yet received for the SPA phase. This is the 1st version of the report.

APPENDIX

A

- CITY AND NCC COMMENTS
- LANSDOWNE CIVIL DRAWINGS - STANTEC
- CONCEPTUAL ARCHITECTUAL PLAN
- AS-BUILT DRAWINGS
- TOPOGRAPHICAL SURVEY PLAN

ZBLA/OPA Comments to be Addressed During Site Plan Control Application

1. In addition to the above comment please see the previous comment from the ZBLA/OPA review regarding the underground storm water storage facility.

   Geotechnical comments Section 5.8 states the following "It is understood that an underground stormwater infiltration tank system will be included as part of the proposed development. The tank is expected to be founded on a combination of in-situ, undisturbed silty sand/sandy silt and sandy fill. Based on the above, a bearing resistance value for the proposed structure may be considered to be 120 kPa (SLS) and a factored bearing resistance value at ULS of 180 kPa may be considered for the system and associated infrastructure/structures."

   Please provide rational to how the subsurface soil data was determined. Based on the City guidelines we believe that an additional borehole be performed to determine the bearing capacity for the proposed storage tank.

   The above comment remains outstanding, please revise the report to include information addressing the foundation design of the under-ground storm storage cistern. The geotechnical design should include discussion regarding the elevation of ground water table in relation to the underside of footing of the storage facility and how this may affect the design.

   It is understood that the Great Lawn subsurface profile includes contaminated soil, the geotechnical report should speak to the contamination and any potential mitigation measures that may be required to ensure that migration of the contamination does not enter the underground storage facility.

2. Outstanding comments from ZBLA/OPA

   a. Storm Water Management Modeling:

      Please see comments from City of Ottawa Asset Management Branch regarding the storm water management model reviewed during the ZBLA and OPA. Comments were not addressed at the ZBLA and OPA, it is assumed that comments would be addressed during SPC.

      In summary, the modeling approach appears overly generalized as it lacks detailed consideration of the primary system. Assumptions are made regarding the flow being directed solely into the minor storage system, without sufficient clarity on the management of overland drainage. Potential issues arising from overland drainage remain unaddressed. While the approach is

conservative regarding the minor system's storage and release rates, certain key factors are overlooked.

Of note, external areas draining onto the site, as evidenced by the GIS Stream Builder snapshot provided, are not accounted for. Additionally, the current design indicates flow into the canal during a 5-year storm event, contrary to the presented model. It's worth noting that our authorization allows for controlled releases into the canal up to a specified rate, as outlined in the previous report. Leveraging this authorization could be beneficial.

Further detailed comments are available below. It may be prudent to arrange a meeting with the consultant to articulate these concerns effectively.

Existing model

a) There are IDs for the storm network based on city sources. Please use appropriate storm IDs and info to reflect the existing system. This will give us ease to review model files and documents.

b) Storage node at Great lawn can be defined by a storage curve as opposed to a constant value of 8150. Not sure where does it come from?

c) CB contributions in many areas are missing. Please consider CB captures where appropriate. For example, A3 subcatchment at TD place stadium– there are CBs within it, require assigning all CB captures to the minor system, and then excess runoff will travel to further downstream, similarly for A2, A4 etc.

d) All underground storage areas need to be clearly shown on a map/drawing or in the model. At basin2 node for underground storage, DICB needs to be included. Also confirm the existence of 450 mm dia backflow preventor. I don't see any orifice control at that location as per drawing. Also, not sure how DICB, orifice and underground reservoir are connected to what?

e) Area or catchbasin capture should be assigned at the beginning of the node, otherwise the system will lose its actual contributions, for example OPGG and Great lawn area/TD place stadium areas etc.

f) At J19 node, this is used as a ponding location but no area is being assigned to that.

g) Excess flow to Rideau Canal operating level at El 64.1 during a 5 year is 480 l/s (DSEL) after surcharging on-site, but WSP shows a 0.0 l/s during a 5 year (WSP). Appears to be quite different than previous findings. Please explain.

h) Some external area (from the area in between of Clarey and Holmwood) for overland flow contribution may require including in the model and eventually drains to the Great lawn area as per city streambuilder.

i) Please show the extent of ponding in the Great Lawn area.

j) Major system modelling is kind of unclear. The major systems were modelled by weir, looks like everything is drained to the minor system first before overflowing to the next segment. Should be other way around, yes/no?

k) As per Stantec schematic, 2x900 mm overflow from Basin 2 is connected to Great lawn area. This is not reflected in the existing model.

<u>Proposed New Arena</u>

l) The proposed system for the new arena was not properly modelled as per functional drawing. Also, the drawing info in the Great Lawn area is not clear or labelled to follow the model files.

m) The proposed pipe segment that connects to the existing outlet pipe to Rideau Canal should be included in the model.

n) Basin 1 connecting to J32 was modelled a bit differently though the pre and post remains the same. What's the reason behind it where water comes in and out of Basin1 node in the proposed condition?

o) The existing system (C8, C9, C11, C12) model should be in the proposed model as pipe storage as well unless these are proposed to be retired as per functional drawing. Please confirm

p) Flow releasing to Rideau Canal was controlled by a orifice plate. This is not found in the existing model or in the drawing. Please confirm or show on a drawing for consistency.

q) What size of underground storage facility is required instead of surface storage at Great lawn (basin3 node) if it is for recreational use? Modeling this storage node should be consistent with other underground storage curves. How many CBs are required to immediate capture flows to the proposed underground system to avoid ponding ? Require to include in the model as well.

Additional modeling comments post meeting on Monday 22nd 2024

3. WSP to confirm in the body of the servicing report that external flow from neighboring properties will not spill onto the Lansdowne property during the 100year event and below.
4. The major system needs to be included in the model to confirm flooding on the street.
5. Please provide pipe loss coefficients to the model.
6. My idea is that the **Rideau canal outlet** functions as an emergency flow. If the proposed great lawn storage is popped up by chance for the 100 year storm and above, then you may need an emergency exit. Please confirm the feasibility of decommissioning the Rideau Canal outfall. Note that this has been there for many years.
7. At node 40 linked to Basin2, please check the flow continuity at these locations.
8. Assuming the existing perforated system will be replaced by Great Lawn storage tank, still you may need some catch basins to capture local flows to the tank.

Comments:

9. 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 2-year to the 100-year return period

b. Stormwater shall be treated to MOE "enhanced" standard (80% TSS removal)

c. The "first flush" (i.e. 10mm event) shall be directed to the O'Connor Street sewer for the entire site drainage area.

d. The 600mm pipe to the Rideau Canal may be used as an overflow, with a peak flow of 480 L/s once the water level is above the operating level of the canal (64.08 m).

e. 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.

f. Minor system shall be design for a 5-year level of service with minimal surface ponding.

g. Major system shall provide a 100-year level of service while minimizing outflow to the canal.

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).

l. 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.

10. 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.

11. 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:

    Location of service

    Type of development and the amount of fire flow required (as per FUS).

    Average daily demand: ___ l/s.

    Maximum daily demand: ___l/s.

    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.

12. An MECP Environmental Compliance Approval **[Industrial Sewage Works or Municipal/Private Sewage Works]** will 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

13. Water

    As per ISTB-2021-03, Industrial, commercial, institutional service areas with a basic day demand greater than 50 m^3/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.

14. 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. 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*.

    c. 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*.

15. 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.**

16. 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.

r) Are these extracted values from the model shown in Table 4-3? Please explain. Also, for comparison available storage can be added in the table.

s) Detailed info in the model should be laid on a drawing to follow, for example J30, J31 and so on. Also, show a separate drawing sheet for post development condition only for clarity.

KEY PLAN
N.T.S.

JOB BENCH MARK #5-
TOP OF SOUTHWEST BOLT OF LAMP STANDARD ELEV=65.51

JOB BENCH MARK #2
MAGNETIC NAIL SET IN TOP OF OLD CONCRETE BASE
ELEVATION=65.380

JOB BENCH MARK #3
MAGNETIC NAIL SET IN TOP OF CONCRETE SLAB ELEV=67.553

JOB BENCH MARK #4
TOP CORNER OF CONCRETE WALL ELEVATION=67.617

JOB BENCH MARK #1
MAGNETIC NAIL SET IN TOP OF CONCRETE CANAL WALL
ELEVATION=64.581

CANAL OUTLET
INV=62.58

OPERATING LEVEL OF CANAL DURING 'NAVIGATION SEASON' 64.03m TO 64.08m

CLIENT PARTNERSHIP

Ottawa

OSEG
Ottawa Sports and Entertainment Group

CONSULTANT TEAM

CANNONDESIGN
AN IDEAS BASED PRACTICE

CORUSH SUNDERLAND WRIGHT

DSEL
david schaeffer engineering ltd
SMART SUBDIVISIONS™

GreenbergFarrow

Stantec

PHILLIPS FAREVAAG SMALLENBERG
PLANNING • URBAN DESIGN
LANDSCAPE ARCHITECTURE

REVISIONS

No.	Date	Details	By
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 OSEG	JVG
4	2012-01-26	REVISED AS PER CITY COMMENTS	JVG

1:600 0 6 18 30m

PROJECT

Lansdowne
THE TRANSFORMATION OF LANSDOWNE PARK
LA TRANSFORMATION DU PARC LANSDOWNE

DRAWING TITLE

EXISTING CONDITIONS PLAN

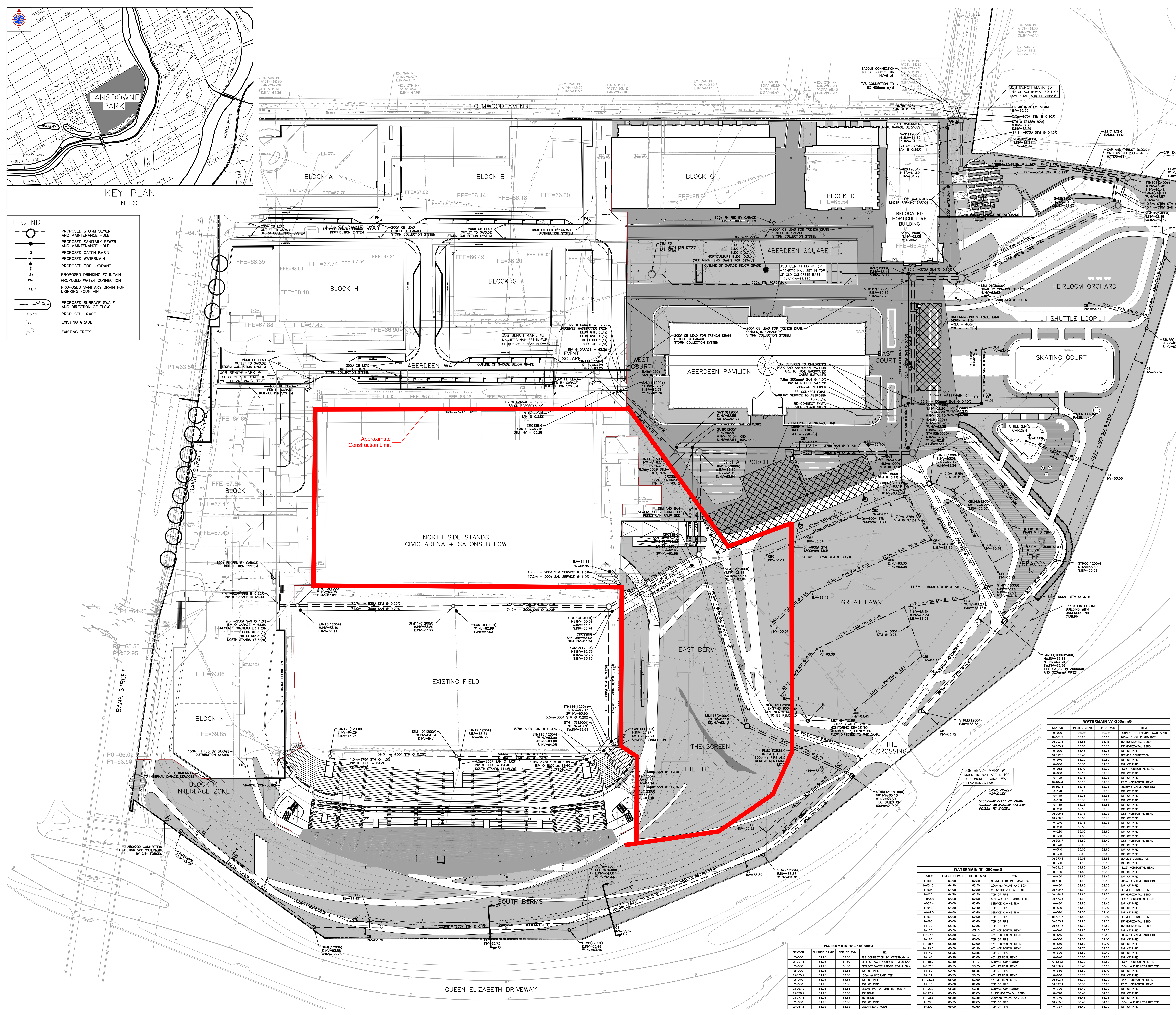
DATE
Oct. 13, 2011

SCALE
1:600

REVISION #
4

DRAWING No.
EX01

V:\01-634\active\1604_00832_Lansdowne Park Competition\design\drawing\160400832 Civil Stantec.dwg Feb06 ,2012 - 3:06pm


KEY PLAN
N.T.S.
LANSDOWNE PARK
LEGEND
PROPOSED STORM SEWER AND MAINTENANCE HOLE
PROPOSED SANITARY SEWER AND MAINTENANCE HOLE
PROPOSED CATCH BASIN
PROPOSED WATERMAIN
PROPOSED FIRE HYDRANT
PROPOSED DRINKING FOUNTAIN
PROPOSED WATER CONNECTION
PROPOSED SANITARY DRAIN FOR DRINKING FOUNTAIN
PROPOSED SURFACE SWALE AND DIRECTION OF FLOW
PROPOSED GRADE
EXISTING GRADE
EXISTING TREES
HOLMWOOD AVENUE
BLOCK A
BLOCK B
BLOCK C
BLOCK D
BLOCK G
BLOCK H
BLOCK I
BLOCK K
LANSDOWNE WAY
ABERDEEN WAY
ABERDEEN SQUARE
ABERDEEN PAVILION
EVENT SQUARE
WEST COURT
EAST COURT
GREAT PORCH
RELOCATED HORTICULTURE BUILDING
CIVIC GARDENS
HEIRLOOM ORCHARD
NCC LANDS
SHUTTLE LOOP
SKATING COURT
CHILDREN'S GARDEN
THE BEACON
GREAT LAWN
EAST BERM
THE SCREEN
THE HILL
THE CROSSING
SOUTH BERMS
Approximate Construction Limit
NORTH SIDE STANDS
CIVIC ARENA + SALONS BELOW
EXISTING FIELD
BLOCK K INTERFACE ZONE
BANK STREET
QUEEN ELIZABETH DRIVEWAY

WATERMAIN 'A' -200mmØ			
STATION	FINISHED GRADE	TOP OF W/M	ITEM
0+000	65.60	63.20	CONNECT TO EXISTING WATERMAIN
0+001.7	65.60	63.20	200mmø VALVE AND BOX
0+003.5	65.55	63.15	45° HORIZONTAL BEND
0+005.2	65.55	63.15	45° HORIZONTAL BEND
0+020	65.45	63.05	TOP OF PIPE
0+022.5	65.43	63.03	SERVICE CONNECTION
0+040	65.20	62.80	TOP OF PIPE
0+060	65.10	62.70	TOP OF PIPE
0+068	65.10	62.70	11.25° HORIZONTAL BEND
0+080	65.15	62.75	TOP OF PIPE
0+100	65.15	62.75	TOP OF PIPE
0+104.4	65.15	62.75	22.5° HORIZONTAL BEND
0+107.4	65.15	62.75	200mmø VALVE AND BOX
0+120	65.20	62.80	TOP OF PIPE
0+140	65.38	62.98	TOP OF PIPE
0+160	65.35	62.95	TOP OF PIPE
0+180	65.25	62.85	TOP OF PIPE
0+200	65.15	62.75	TOP OF PIPE
0+209.8	65.15	62.75	22.5° HORIZONTAL BEND
0+220.0	65.15	62.75	TOP OF PIPE
0+240	65.15	62.75	TOP OF PIPE
0+260	65.18	62.78	TOP OF PIPE
0+280	65.00	62.60	TOP OF PIPE
0+300	64.80	62.40	TOP OF PIPE
0+308.7	64.80	62.40	22.5° HORIZONTAL BEND
0+320	65.00	62.60	TOP OF PIPE
0+340	65.00	62.60	TOP OF PIPE
0+360	65.00	62.60	TOP OF PIPE
0+373.8	65.08	62.68	SERVICE CONNECTION
0+380	64.90	62.50	TOP OF PIPE
0+392.6	64.80	62.40	11.25° HORIZONTAL BEND
0+400	64.80	62.40	TOP OF PIPE
0+420	64.85	62.45	TOP OF PIPE
0+428.6	64.90	62.50	200mmø VALVE AND BOX
0+460	64.90	62.50	TOP OF PIPE
0+462.3	64.90	62.50	SERVICE CONNECTION
0+468.8	64.90	62.50	45° HORIZONTAL BEND
0+473.4	64.90	62.50	11.25° HORIZONTAL BEND
0+480	64.85	62.45	TOP OF PIPE
0+500	64.50	62.10	TOP OF PIPE
0+520	64.50	62.10	TOP OF PIPE
0+521.7	64.50	62.10	SERVICE CONNECTION
0+535.7	64.90	62.50	45° HORIZONTAL BEND
0+537.3	64.90	62.50	45° HORIZONTAL BEND
0+540	64.90	62.50	TOP OF PIPE
0+546	64.90	62.50	200mmø VALVE AND BOX
0+560	64.50	62.10	TOP OF PIPE
0+580	64.50	62.10	TOP OF PIPE
0+600	64.75	62.35	TOP OF PIPE
0+620	64.80	62.40	TOP OF PIPE
0+640	65.00	62.60	TOP OF PIPE
0+652.1	65.20	62.80	11.25° HORIZONTAL BEND
0+656.2	65.40	63.00	150mmø FIRE HYDRANT TEE
0+660	65.50	63.10	TOP OF PIPE
0+680	65.75	63.35	TOP OF PIPE
0+693.8	66.30	63.90	22.5° HORIZONTAL BEND
0+697.4	66.30	63.90	22.5° HORIZONTAL BEND
0+700	66.40	64.00	TOP OF PIPE
0+720	66.45	64.05	TOP OF PIPE
0+740	66.45	64.05	TOP OF PIPE
0+755.5	66.40	64.00	150mmø FIRE HYDRANT TEE
0+757	66.40	64.00	TOP OF PIPE

WATERMAIN 'B' -200mmØ			
STATION	FINISHED GRADE	TOP OF W/M	ITEM
1+000	64.90	62.50	CONNECT TO WATERMAIN 'A'
1+001.5	64.90	62.50	200mmø VALVE AND BOX
1+005	64.90	62.50	11.25° HORIZONTAL BEND
1+020	64.70	62.30	TOP OF PIPE
1+033.8	65.00	62.60	150mmø FIRE HYDRANT TEE
1+035.4	65.00	62.60	SERVICE CONNECTION
1+040	64.80	62.40	TOP OF PIPE
1+044.5	64.80	62.40	SERVICE CONNECTION
1+060	65.00	62.60	TOP OF PIPE
1+080	65.00	62.60	TOP OF PIPE
1+100	65.25	62.85	TOP OF PIPE
1+105	65.50	63.10	45° HORIZONTAL BEND
1+107.8	65.50	63.10	45° HORIZONTAL BEND
1+120	65.40	63.00	TOP OF PIPE
1+128.4	65.30	62.90	45° HORIZONTAL BEND
1+129.5	65.30	62.90	45° HORIZONTAL BEND
1+140	65.25	62.85	TOP OF PIPE
1+148	65.20	62.80	45° VERTICAL BEND
1+149.7	63.50	61.10	SERVICE CONNECTION
1+152.5	60.75	58.35	45° VERTICAL BEND
1+160	60.75	58.35	TOP OF PIPE
1+169	60.75	58.35	45° VERTICAL BEND
1+173.25	65.00	62.60	45° VERTICAL BEND
1+180	65.00	62.60	TOP OF PIPE
1+196.7	65.25	62.85	SERVICE CONNECTION
1+197.7	65.25	62.85	11.25° HORIZONTAL BEND
1+198.5	65.25	62.85	200mmø VALVE AND BOX
1+200	65.25	62.85	TOP OF PIPE
1+209	65.00	62.60	TOP OF PIPE

WATERMAIN 'C' - 150mmØ			
STATION	FINISHED GRADE	TOP OF W/M	ITEM
2+000	64.98	62.58	TEE CONNECTION TO WATERMAIN A
2+001.5	64.95	61.80	DEFLECT WATER UNDER STM & SAN
2+008	94.95	61.80	DEFLECT WATER UNDER STM & SAN
2+020	64.95	62.55	TOP OF PIPE
2+035.7	64.95	62.55	150mmø HYDRANT TEE
2+040	64.95	62.55	TOP OF PIPE
2+060	64.95	62.55	TOP OF PIPE
2+067.2	64.95	62.55	25mmø TVS FOR DRINKING FOUNTAIN
2+070.7	64.95	62.55	45° BEND
2+077.3	64.95	62.55	45° BEND
2+080	64.95	62.55	TOP OF PIPE
2+081.2	64.95	62.55	MECHANICAL ROOM

GENERAL NOTES

1 ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE ONTARIO OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.

2 ALL WORK AND MATERIALS TO CONFORM WITH CURRENT MINISTRY OF THE ENVIRONMENT & ENERGY OF ONTARIO, CITY OF OTTAWA AND ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS. LOCAL UTILITY STANDARDS AND MINISTRY OF TRANSPORTATION STANDARDS WILL APPLY WHERE REQUIRED.

3 THE CONTRACTOR IS ADVISED THAT WORKS BY OTHERS MAY BE ONGOING DURING THE PERIOD OF THIS CONTRACT. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES AND COORDINATION WITH ALL OTHER CONTRACTORS AND PREVENT CONSTRUCTION CONFLICTS.

4 THE INFORMATION SHOWN FOR EXISTING UTILITIES WAS PROVIDED BY OTHERS. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES DURING CONSTRUCTION. ALL EXISTING UTILITIES MUST BE LOCATED AND VERIFIED BY EACH UTILITY PRIOR TO COMMENCEMENT OF WORK. ANY VARIANCE IS TO BE IMMEDIATELY REPORTED TO THE ENGINEER. LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFIRM UTILITY LOCATIONS AND NOTIFY THE ENGINEER OF POSSIBLE CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT THE CONTRACTORS EXPENSE.

5 ALL CONSTRUCTION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE GEOTECHNICAL REPORT.

6 THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED AND TO BEAR THE COST OF SAME INCLUDING WATER PERMIT AND ASSOCIATED COSTS.

7 ALL DISTURBED AREAS SHALL BE REINSTATED TO EQUAL OR BETTER CONDITION TO THE SATISFACTION THE ENGINEER AND THE CITY. PAVEMENT REINSTATEMENT FOR SERVICE AND UTILITY CUTS SHALL BE IN ACCORDANCE WITH OPSD 509.010 AND OPSS 310.

8 FOR DETAILS RELATING TO STORMWATER MANAGEMENT AND ROOF DRAINAGE, SEE THE STORMWATER MANAGEMENT REPORT PREPARED BY STANTEC CONSULTING LTD. ROOF DRAINAGE TO BE PROVIDED VIA RESTRICTED RELEASE ROOF DRAINS AS DETAILED IN THE REPORT.

9 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 SHOWN ON DRAWING GP-1.

10 THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER 1 (ONE) SET OF AS CONSTRUCTED SITE SERVICING, GRADING, AND SITE ELECTRICAL DWGS.

11 REFER TO RISK MANAGEMENT PLANS FOR CAPPING OF LANDFILL AREAS.

STORM AND SANITARY SEWERS

1 STORM AND SANITARY MANHOLES SHALL BE IN ACCORDANCE WITH OPSD 701.010 TO 701.014. STORM MANHOLES TO HAVE FRAME AND COVER PER OPSD 401.020. CATCH BASIN MANHOLES TO HAVE FRAME AND COVER PER OPSD 400.020. SANITARY MANHOLES TO HAVE FRAME AND COVER AS PER OPSD 401.020 UNLESS LOCATED WITHIN STORM PONDING AREAS THEN WATERTIGHT FRAME AND COVER AS PER OPSD 401.030 IS TO BE USED. SAFETY PLATFORM TO BE INSTALLED IN ALL MANHOLES WHERE DEPTH EXCEEDS 5.0m.

2 ALL CATCH BASINS TO BE PRECAST TO OPSD 705.010 c/w FRAME AND GRATE AS PER OPSD 400.020.

3 SEWER TRENCH SHALL CONSIST OF CLASS 'B' BEDDING PER CITY OF OTTAWA STANDARDS S6 AND S7. COMPACTION SHALL BE A MINIMUM OF 98% STANDARD PROCTOR DENSITY.

4 ALL STORM SEWER PIPES UP TO AND INCLUDING 375mm DIA. SHALL BE PVC SDR-35 OR APPROVED EQUIVALENT. ALL STORM SEWER PIPES 450mm DIA. AND LARGER SHALL BE CONCRETE AND EQUAL TO C.S.A. SPECIFICATIONS A257.2 REINFORCED CLASSES AS SPECIFIED (65-D, 100-D, 140-D,) OR LATEST AMENDMENT UNLESS OTHERWISE SPECIFIED.

5 ALL SANITARY PVC SEWER PIPES SHALL BE SDR-35 EQUAL TO CSA SPECIFICATIONS B182.2-M1990 OR LATEST AMENDMENT UNLESS OTHERWISE NOTED.

6 ALL MANHOLE AND CATCH BASIN EXCAVATIONS TO BE BACKFILLED WITH GRANULAR MATERIAL COMPACTED TO 98% STANDARD PROCTOR DENSITY.

7 STORM MANHOLES SHALL NOT BE BENCHED UNLESS OTHERWISE SPECIFIED. SANITARY MANHOLES SHALL BE BENCHED TO OBVERT. MINIMUM WIDTH OF BENCHING TO BE 230mm OR AS SPECIFIED ON DRAWINGS. GRANULAR 'A' SHALL BE PLACED TO A MIN. THICKNESS OF 300mm AROUND ALL STRUCTURES IN PAVEMENT AREA. MANHOLE DROP STRUCTURES TO BE INSTALLED PER OPSD 1003.01.

8 "MODULOC" OR APPROVED PRE-CAST MANHOLE AND CATCH BASIN ADJUSTERS TO BE USED IN LIEU OF BRICKING. PARGE ADJUSTING UNITS ON THE OUTSIDE ONLY.

9 FOR CONSTRUCTION DETAILS NOT SHOWN ON PLANS, REFERENCE SHALL BE MADE TO THE ONTARIO PROVINCIAL STANDARDS DRAWINGS AND MUNICIPAL STANDARDS.

10 SERVICES TO BUILDINGS TO BE TERMINATED 1.0m FROM THE OUTSIDE FACE OF BUILDING UNLESS OTHERWISE NOTED.

11 ALL SINGLE CATCH BASIN LEADS TO BE 200mmØ PVC. SDR-35 OR APPROVED EQUIVALENT UNLESS OTHERWISE SPECIFIED. CATCH BASIN LEADS TO HAVE MINIMUM GRADE OF 1.0%.

12 ALL CB LEAD INVERTS TO BE 1.5m BELOW FINISHED GRADE UNLESS OTHERWISE SPECIFIED.

13 THE CONTRACTOR IS TO PROVIDE CCTV CAMERA INSPECTIONS OF ALL SANITARY AND STORM SEWERS, INCLUDING PICTORIAL REPORT, ONE (1) CD COPY AND TWO (2) VIDEO TAPES IN A FORMAT SATISFACTORY TO THE ENGINEER. ALL SEWERS ARE TO BE FLUSHED PRIOR TO CAMERA INSPECTION. ASPHALT WEAR COURSE SHALL NOT BE PLACED UNTIL THE VIDEO INSPECTION OF SEWERS & NECESSARY REPAIRS HAVE BEEN CARRIED OUT TO THE SATISFACTION OF THE CONSULTANT.

14 LASER ALIGNMENT CONTROL TO BE UTILIZED ON ALL SEWER INSTALLATIONS.

15 EXISTING MANHOLES TO BE RE-BENCHED WHERE A NEW CONNECTION IS MADE.

16 FROST PROTECTION PER CITY OF OTTAWA STANDARD DRAWING W22 WHERE LESS THAN 1.5m OF COVER.

17 ALL CATCH BASINS AND CATCH BASIN MANHOLES TO HAVE 3.0m LONG SUB-DRAINS HEADING OUT IN 4 DIRECTIONS IN PARKING AREAS AND UNDER SIDEWALKS ADJACENT TO BUILDING. SUBDRAINS TO BE PLACED 300mm BELOW SUBGRADE. THE SUB-DRAIN PIPES SHOULD BE SURROUNDED BY 10mm DIA CLEAR STONE DRAINAGE ZONE OF MIN. 150mm THICKNESS, WHICH SHOULD HAVE NON-WOVEN GEOTEXTILE WRAP-AROUND.

18 CONTRACTOR SHALL PERFORM LEAKAGE TESTING, IN THE PRESENCE OF THE CONSULTANT, FOR SANITARY SEWERS IN ACCORDANCE WITH OPSS 410 AND OPSS 407. A COPY OF THE INSPECTION REPORT SHALL BE SUBMITTED TO THE CONSULTANT FOR REVIEW.

19 STORM SEWER INLET CONTROL DEVICES TO BE INSTALLED AS OUTLINED IN THE ICD SCHEDULE ON THIS DRAWING. ALL INLET CONTROL DEVICES TO BE INSTALLED AT THE DOWNSTREAM MANHOLE OR CATCH BASIN INVERT.

20. MAIN SEWER CONNECTIONS ARE OBVERT TO OBVERT UNLESS DROP STRUCTURE IS TO BE USED.

21. 100mmø PERFORATED SUB-DRAIN AROUND LANDSCAPED TREE ISLANDS TO BE CONNECTED TO STORM SEWER. REFER TO LANDSCAPE PLANS L-1A AND L-2A PREPARED BY LAROCQUE LEVSTEK LANDSCAPE ARCHITECTS.

22. ALL SWALES LESS THAN 0.50% SHALL INCLUDE A 250mmø PERFORATED SUBDRAIN AS PER CITY STANDARD S29.

23. ALL CATCH BASINS SHALL INCLUDE A FLOATABLE TRAP ICD ASSEMBLY. THE ICD SHALL BE EQUAL TO THE PIPE SIZE.

24. ALL SANITARY SEWER MANHOLES SHALL BE PRESSURE RATED. THE MANHOLE SHALL BE TESTED TO INSURE NO LEAKAGE AT A PRESSURE OF 20 Kpa. AND FRAME AND COVER SHALL BE SECURED TO RESIST UPLIFT PRESSURES OF 100 Kpa. OF HEAD.

25. A STORM WATER QUALITY CONTROL STRUCTURE SHALL BE ADDED BY THE OWNER ONCE THE COMBINED SEWER SYSTEM IS SEPARATED.

WATERMAINS

1 WATERMAIN SHALL BE POLYVINYL CHLORIDE (PVC) CLASS 150 DR-18 PIPE MANUFACTURED TO AWWA C900-89 AND CSA CAN3 B137.3-M1986 WITH GASKETED BELL END C/W #14 AWG SOLID COPPER TRACER WIRE.

2 ALL WATERMAINS, WATER SERVICES, CONNECTIONS AND APPURTENANCES AS PER CITY OF OTTAWA STANDARDS. THE CONTRACTOR SHALL CO-ORDINATE AND PAY ALL RELATED COSTS INCLUDING THE COST OF CONNECTION, INSPECTION AND DISINFECTION BY CITY OF OTTAWA PERSONELL. WATERMAIN TRENCH TO BE IN ACCORDANCE WITH CITY OF OTTAWA W17.

3 ALL WATERMAINS SHALL HAVE MIN. COVER OF 2.4m. WATERMAINS ARE TO BE INSTALLED TO THE ELEVATIONS SHOWN ON THE APPROVED SITE SERVICING DRAWING. WHERE SPECIFIC WATERMAIN ELEVATIONS ARE NOT SHOWN ON SERVICING DRAWING, A MINIMUM COVER OF 2.4m FROM PROPOSED GRADES, AS SHOWN ON THE GRADING PLAN, MUST BE MAINTAINED AT ALL TIMES. IN PREGRADE AREAS COVER TO BE FROM PREGRADED ELEVATIONS.

4 ALL WATERMAIN BENDS, JOINTS, TEES AND PLUGS SHALL BE MECHANICALLY RESTRAINED IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS.

5 ALL FIRE HYDRANT INSTALLATIONS SHALL BE PER CITY OF OTTAWA W19. HYDRANTS SHALL BE PAINTED IN ACCORDANCE WITH OTTAWA STANDARDS. CONTRACTOR SHALL ORIENT HYDRANTS AS DIRECTED BY LOCAL FIRE DEPARTMENT.

6 ALL BOTTOM OF HYDRANT FLANGE ELEVATIONS TO BE INSTALLED 0.15m ABOVE PROPOSED FINISHED GRADE AT HYDRANT.

7 BUILDING SERVICE TO BE CAPPED 1.0m OFF THE FACE OF THE BUILDING UNLESS OTHERWISE NOTED AND MUST BE RESTRAINED A MINIMUM OF 12m BACK FROM STUB.

8 WATERMAINS MUST COMPLY WITH MINIMUM HORIZONTAL AND VERTICAL CLEARANCES IN ACCORDANCE WITH LOCAL PROVINCIAL GUIDELINES AND THE APPLICABLE BUILDING AND PLUMBING CODE. WHERE HORIZONTAL SEPARATIONS CANNOT BE ACHIEVED, APPROVAL FROM THE ENGINEER MUST BE OBTAINED AND A MINIMUM 500mm VERTICAL SEPARATION MUST BE MAINTAINED.

9 ALL WATERMAINS SHALL BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH THE CITY OF OTTAWA AND ONTARIO GUIDELINES UNLESS OTHERWISE DIRECTED. PROVISIONS FOR FLUSHING WATER LINE PRIOR TO TESTING, ETC. MUST BE PROVIDED.

10 ALL WATERMAINS SHALL BE BACTERIALOGICALLY TESTED IN ACCORDANCE WITH THE CITY OF OTTAWA AND ONTARIO GUIDELINES. ALL CHLORINATED WATER TO BE DISCHARGED AND PRETREATED TO ACCEPTABLE LEVELS PRIOR TO DISCHARGE. ALL DISCHARGED WATER MUST BE CONTROLLED AND TREATED SO AS NOT TO ADVERSELY EFFECT THE ENVIRONMENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL MUNICIPAL AND/OR PROVINCIAL REQUIREMENTS ARE FOLLOWED.

11 ALL WATERMAIN STUBS SHALL BE TERMINATED WITH A PLUG AND 50mm BLOW OFF UNLESS OTHERWISE NOTED.

12 CATHODIC PROTECTION PER CITY OF OTTAWA W40 AND W42.

13 THE SITE WATER SYSTEM IS TO BE BULK METERED AND FOR COST SHARING PURPOSES INDIVIDUAL WATER CONSUMPTION METERS ARE REQUIRED ON ALL INDIVIDUAL BUILDING CONNECTIONS.

CLIENT PARTNERSHIP

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CONSULTANT TEAM

CANNONDESIGN
CORUSH SUNDERLAND WRIGHT
DSEL david schaeffer engineering ltd
GreenbergFarrow
Stantec
PHILLIPS FAREVAAG SMALLENBERG PLANNING + URBAN DESIGN LANDSCAPE ARCHITECTURE

REVISIONS

No.	Date	Details	By
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4	2012-01-26	REVISED AS PER CITY COMMENTS	JVG

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PROJECT

Lansdowne
THE TRANSFORMATION OF LANSDOWNE PARK / LA TRANSFORMATION DU PARC LANSDOWNE

DRAWING TITLE

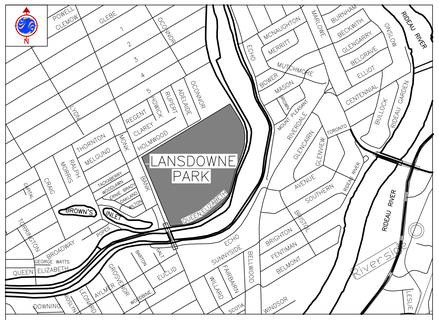
SITE SERVICING PLAN

DATE
Oct. 13, 2011

SCALE
1:600

REVISION #
4

DRAWING No.
C01



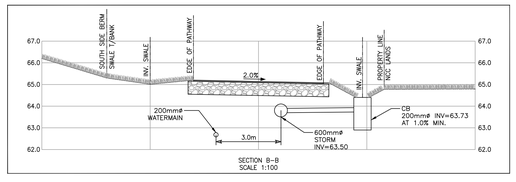
LEGEND

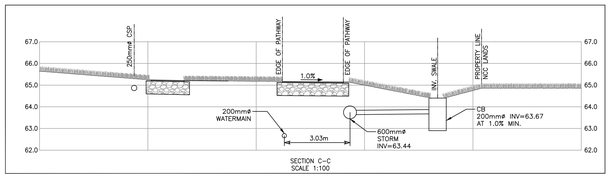
- PROPOSED STORM MAINTENANCE HOLE
- PROPOSED SANITARY MAINTENANCE HOLE
- PROPOSED CATCH BASIN
- 0.5% 65.00 PROPOSED SURFACE SWALE AND DIRECTION OF FLOW
- + 65.81 PROPOSED GRADE
- + 65.81 EX PROPOSED GRADE = EXISTING GRADE
- 65.00 EXISTING GRADE
- EXTENT OF PAH IMPACTED SOIL

HOLMWOOD AVENUE
LANSDOWNE WAY
ABERDEEN AVENUE
BANK STREET
QUEEN ELIZABETH DRIVEWAY
BLOCK A
BLOCK B
BLOCK C
BLOCK D
BLOCK G
BLOCK H
BLOCK J
BLOCK K
BLOCK K INTERFACE ZONE
RELOCATED HORTICULTURE BUILDING
ABERDEEN SQUARE
ABERDEEN PAVILION
WEST COURT
EAST COURT
EVENT SQUARE
HEIRLOOM ORCHARD
SHUTTLE LOOP
SKATING COURT
CHILDREN'S GARDEN
GREAT PORCH
GREAT LAWN
EAST BERM
THE SCREEN
THE HILL
+ 75.5
THE CROSSING
THE BEACON
NCC LANDS
NORTH SIDE STANDS
CIVIC ARENA + SALONS BELOW
EXISTING FIELD
SOUTH BERMS
JOB BENCH MARK #1 TOP OF SOUTHWEST BOLT OF LAMP STANDARD ELEV=65.51
JOB BENCH MARK #2 MAGNETIC NAIL SET IN TOP OF OLD CONCRETE BASE ELEVATION=65.380
JOB BENCH MARK #3 MAGNETIC NAIL SET IN TOP OF CONCRETE SLAB ELEV=67.193
JOB BENCH MARK #4 TOP CORNER OF CONCRETE ELEVATION=67.337
JOB BENCH MARK #5 MAGNETIC NAIL SET IN TOP OF CONCRETE CANAL WALL ELEVATION=64.581
CANAL OUTLET INV=62.58
OPERATING LEVEL OF CANAL DURING "NAVIGATION SEASON" 64.03m TO 64.08m
100 YEAR FLOOD ELEVATION = 64.90m
100 YEAR FLOOD ELEVATION = 64.70m
OUTLINE OF GARAGE BELOW GRADE

SITE GRADING

1 ALL GRANULAR BASE & SUB BASE COURSE MATERIALS SHALL BE COMPACTED TO 100% STANDARD PROCTOR MAX. DRY DENSITY.
2 ALL DISTURBED GRASSED AREAS SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER, WITH SOD ON MIN. 100mm TOPSOIL. THE RELOCATION OF TREES AND SHRUBS SHALL BE SUBJECT TO APPROVAL BY THE PROJECT LANDSCAPE ARCHITECT OR ENGINEER.
3 PAVEMENT CONSTRUCTION AS PER DETAILS ON DRAWING No. C07
4 ALL BARRIER CURBS AND SIDEWALKS TO BE CONSTRUCTED PER CITY OF OTTAWA STANDARD DRAWING SC1 AND SC8 UNLESS OTHERWISE NOTED OR DETAIL PROVIDED.
5 INSPECTIONS: ALL WORK ON THE MUNICIPAL RIGHT OF WAY AND EASEMENTS TO BE INSPECTED BY THE MUNICIPALITY PRIOR TO BACKFILLING. ALL WORK RELATING TO WATERMAINS AND SEWERS TO BE INSPECTED BY THE MUNICIPALITY WHEN REQUIRED.
6 REFER TO ARCHITECTURAL SITE PLAN FOR DIMENSIONS AND SITE DETAILS.
7 CONTRACTOR TO OBTAIN A ROAD OCCUPANCY PERMIT 48 HOURS PRIOR TO COMMENCING ANY WORK WITHIN THE MUNICIPAL ROAD ALLOWANCE IF REQUIRED BY THE MUNICIPALITY.
8 PARKING AREA PONDING DEPTH TO BE 0.30m (MAXIMUM).
9 EMBANKMENTS TO BE SLOPED AT MIN. 3:1, UNLESS OTHERWISE SPECIFIED.
10 ALL PAVEMENT MARKING, LINE PAINTING, DIRECTIONAL LINES/ARROWS ETC. SHALL BE PLACED IN ACCORDANCE WITH THE ARCHITECTURAL SITE PLAN OR THE OWNER'S TRAFFIC ENGINEERING CONSULTANT'S DRAWINGS. LINE PAINTING AND DIRECTIONAL SYMBOLS SHALL BE APPLIED WITH A MINIMUM OF TWO COATS OF ORGANIC SOLVENT BASED PAINT.
11 THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER 1 (ONE) SET OF AS CONSTRUCTED SITE SERVICING, GRADING, AND SITE ELECTRICAL DWGS.
12 SITE SIGNAGE TO BE INSTALLED AS PER ARCHITECTURAL SITE PLAN.
13 ALL NECESSARY CLEARING AND GRUBBING SHALL BE COMPLETED BY THE CONTRACTOR, REVIEW WITH ARCHITECT AND THE CITY OF OTTAWA PRIOR TO TREE CUTTING.
14 SUB-EXCAVATE SOFT AREAS & FILL WITH GRANULAR 'B' COMPACTED IN 0.15m LAYERS.
15 FOR ALL LANDSCAPING FEATURES (ie. TREES, WALKWAYS, PARK DETAILS, NOISE BARRIERS, FENCES etc.) REFER TO LANDSCAPE ARCHITECT PLAN.
16 ROUGH GRADING FOR LANDSCAPED ISLANDS TO BE LEFT 150mm BELOW CURB AND COMPACTED TO 95%.
17 WHERE APPLICABLE THE CONTRACTOR IS TO SUBMIT SHOP DRAWINGS FOR RETAINING WALLS (INCLUDE RAILINGS IF APPLICABLE) TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. SHOP DRAWINGS MUST BE SITE SPECIFIC, SIGNED AND SEALED BY A LICENCED STRUCTURAL ENGINEER. THE CONTRACTOR WILL ALSO BE REQUIRED TO SUPPLY STRUCTURAL AND GEOTECHNICAL CERTIFICATION OF THE AS-CONSTRUCTED RETAINING WALL TO THE ENGINEER PRIOR TO FINAL ACCEPTANCE.
18 ALL SWALES LESS THAN 0.50% SHALL INCLUDE A 250mmø PERFORATED SUBDRAIN AS PER CITY STANDARD S29.





CLIENT PARTNERSHIP

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PROJECT

Lansdowne
THE TRANSFORMATION OF LANSDOWNE PARK
LA TRANSFORMATION DU PARC LANSDOWNE

DRAWING TITLE

GRADING PLAN

DATE	DRAWING No.
Oct. 13, 2011	C02
SCALE 1:600	
REVISION # 4	

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KEY PLAN
N.T.S.

LEGEND

- PROPOSED STORM SEWER AND MAINTENANCE HOLE
- PROPOSED CATCH BASIN
- 65.00 PROPOSED SURFACE SWALE AND DIRECTION OF FLOW
- + 65.81 PROPOSED GRADE
- EXISTING GRADE
- STORM CATCHMENT BOUNDARY AREA
- B / 0.82 STORM CATCHMENT AREA ID / AREA (ha)

HOLMWOOD AVENUE
LANSDOWNE WAY
BANK STREET
QUEEN ELIZABETH DRIVEWAY
RIDEAU RIVER
BLOCK A
BLOCK B
BLOCK C
BLOCK D
BLOCK H
BLOCK G
BLOCK J
BLOCK I
BLOCK K
BLOCK L
ABERDEEN SQUARE
ABERDEEN PAVILION
WEST COURT
EAST COURT
EVENT SQUARE
GREAT PORCH
GREAT LAWN
EAST BERM
SOUTH BERMS
EXISTING FIELD
BLOCK K INTERFACE ZONE
NORTH SIDE STANDS
CIVIC ARENA + SALONS BELOW
RELOCATED HORTICULTURE BUILDING
HEIRLOOM ORCHARD
SHUTTLE LOOP
SKATING COURT
CHILDREN'S GARDEN
THE BEACON
THE CROSSING
THE SCREEN
THE HILL
NCC LANDS
CANAL OUTLET
OPERATING LEVEL OF CANAL DURING "NAVIGATION SEASON" 64.03m TO 64.08m

BLDG A 0.266 / 0.90
BLDG B 0.345 / 0.90
BLDG C 0.315 / 0.90
BLDG D 0.142 / 0.90
BLDG H 0.365 / 0.90
BLDG G1 0.182 / 0.90
BLDG G2 0.039 / 0.90
BLDG J 0.134 / 0.90
BLDG I 0.254 / 0.90
BLDG K 0.164 / 0.90
N.STANDS 1.343 / 0.90
S.STANDS 0.840 / 0.90
A1 1.181 / 0.75
A2 1.555 / 0.75
A3 0.948 / 0.80
A4 0.931 / 0.80
A5 0.254 / 0.75
102 0.432
107AA 0.283
AA 0.36
108 0.34
109A 0.051
109 0.30
109C 0.243
116 0.255
U 0.02
BB 0.87
V 0.14
T 0.11
N 0.07
P 0.18
GG 0.30
O 0.26
L 0.08
M 0.08
K 0.11
G 0.10
F 0.11
FF 0.10
E 0.10
I 0.16
H 0.11
EE 0.32
D 0.52
D1 0.43
A 0.85

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PROJECT

Lansdowne
THE TRANSFORMATION OF LANSDOWNE PARK
LA TRANSFORMATION DU PARC LANSDOWNE

DRAWING TITLE

CATCHMENT AREA PLAN

DATE

SCALE 1:600

REVISION # 4

DRAWING No. C03

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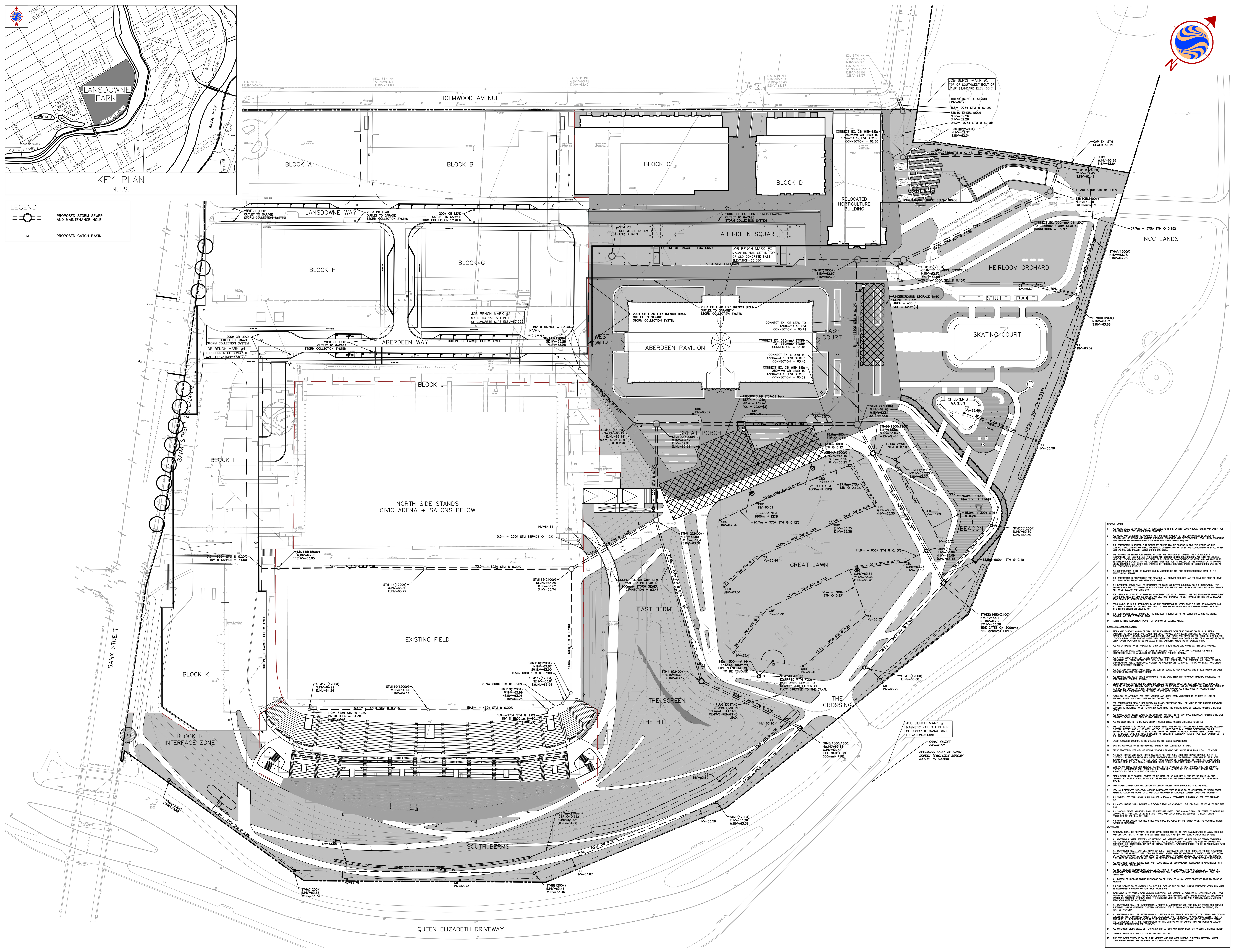

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PROJECT

Lansdowne
THE TRANSFORMATION OF LANSDOWNE PARK
LA TRANSFORMATION DU PARC LANSDOWNE

DRAWING TITLE

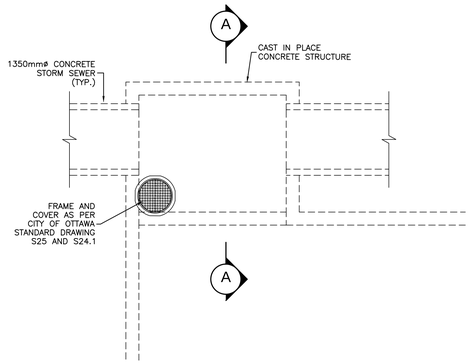
INTERIM STORM SEWER CONNECTION PLAN

DATE Oct. 13, 2011

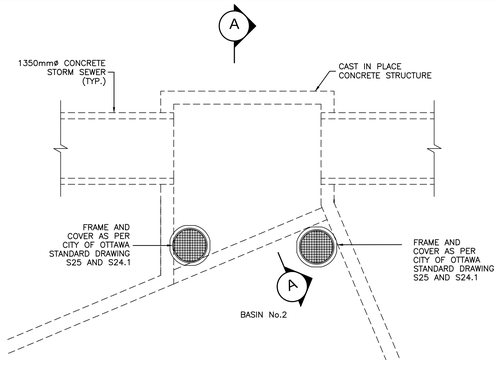
SCALE 1:600

REVISION # 4

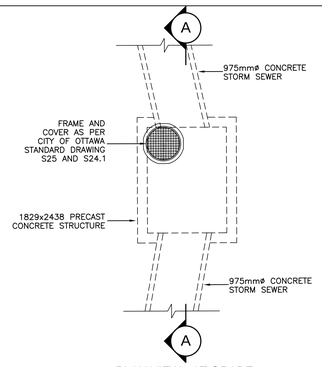
DRAWING No. C04



PLAN VIEW - AT GRADE



PLAN VIEW - AT GRADE



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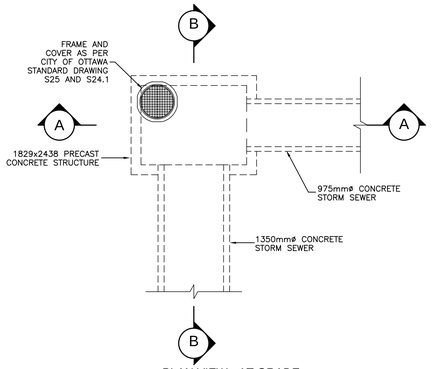
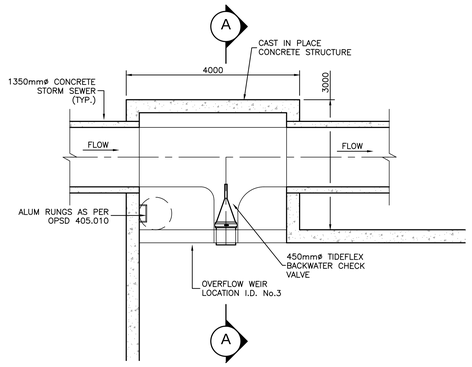
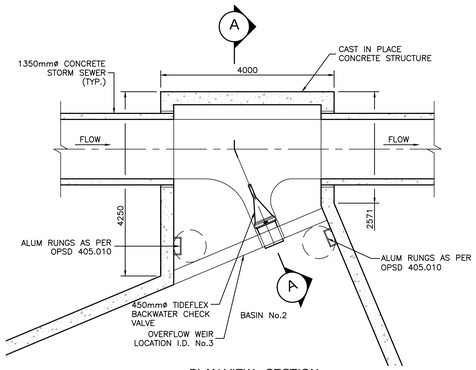


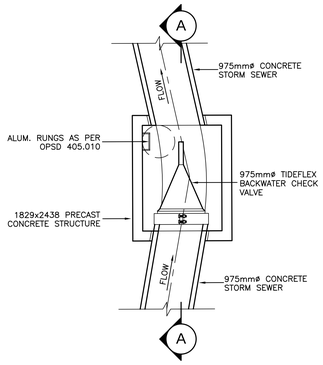
PLAN VIEW - AT GRADE



PLAN VIEW - SECTION



PLAN VIEW - SECTION



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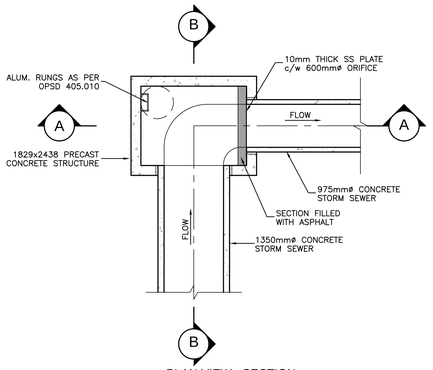
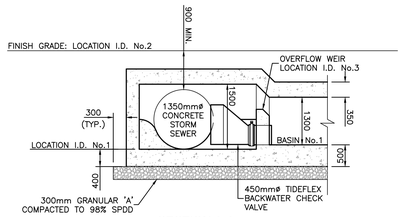


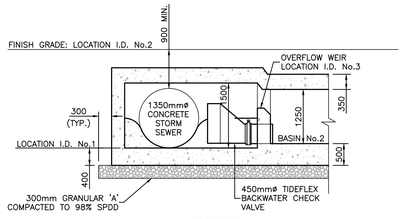
PLAN VIEW - SECTION



SECTION A-A

ELEVATION TABLE–BASIN No.1	
LOCATION I.D. No.	NORTH MANHOLE 1
1	62.71
2	65.04
3	63.65

FLOW CONTROL MANHOLE TO SWM
BASIN No.1 DETAIL
N.T.S.



SECTION A-A

ELEVATION TABLE–BASIN No.2	
LOCATION I.D. No.	WEST MANHOLE 1
1	62.85
2	65.14
3	63.75

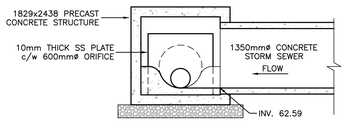
FLOW CONTROL MANHOLE TO SWM
BASIN No.2 DETAIL
N.T.S.

SECTION A-A

FLOW CONTROL MANHOLE No.101
DETAIL

0 500 1500 2500mm

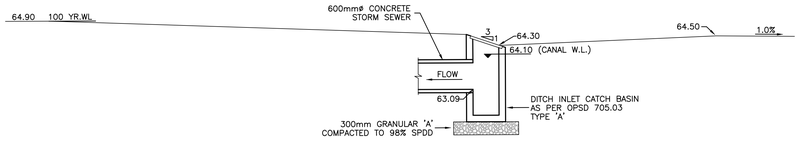
SECTION A-A



SECTION B-B

FLOW CONTROL MANHOLE No.105
DETAIL

0 500 1500 2500mm



CANAL FLOW CONTROL MANHOLE

0 500 1500 2500mm

CLIENT PARTNERSHIP

CONSULTANT TEAM

CANNONDESIGN
AN IDEAS BASED PRACTICE

CORUSH SUNDERLAND WRIGHT

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david schaeffer engineering ltd
SMART SUBDIVISIONS™

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PHILLIPS FAREVAAG SMALLENBERG
PLANNING • URBAN DESIGN
LANDSCAPE ARCHITECTURE

REVISIONS

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

PROJECT

Lansdowne
THE TRANSFORMATION OF LANSDOWNE PARK
LA TRANSFORMATION DU PARC LANSDOWNE

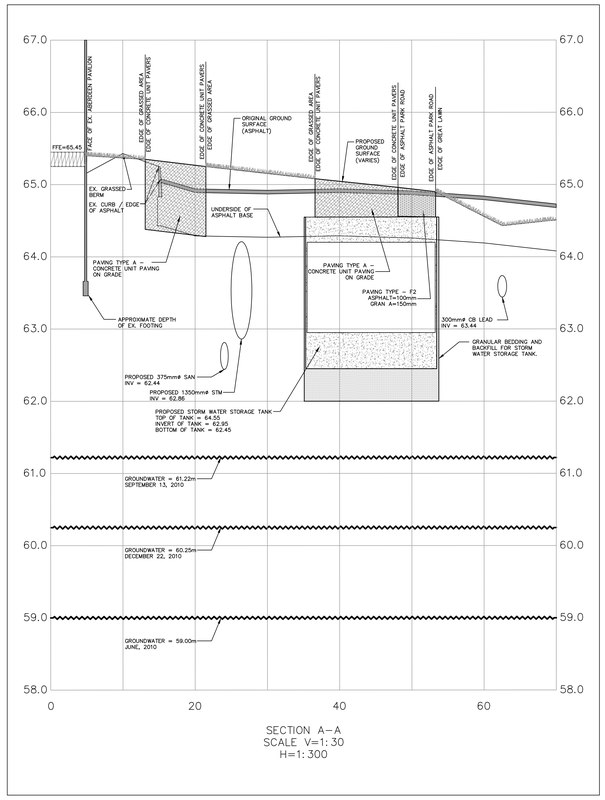
DRAWING TITLE
DETAILS

DATE

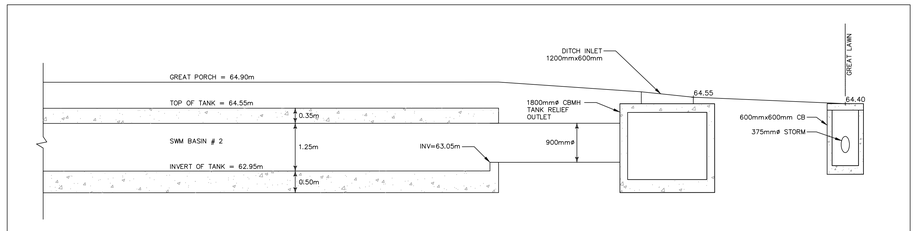
SCALE
AS SHOWN

REVISION #
3

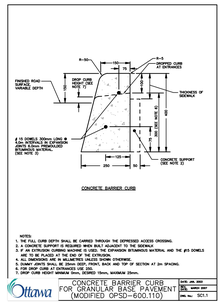
DRAWING No.
C05



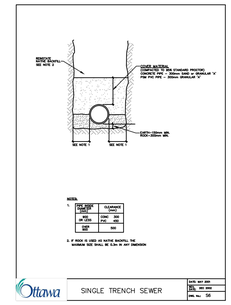
SECTION A–A
SCALE V=1:30
H=1:300

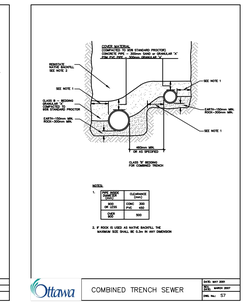


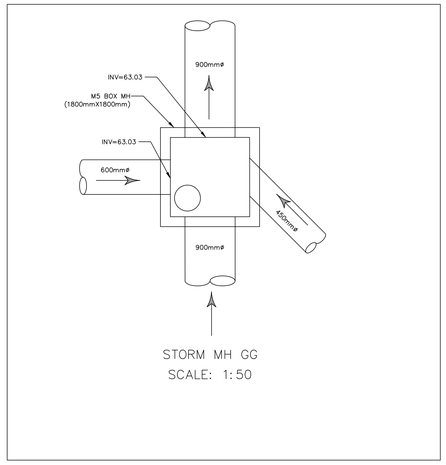
SWM TANK OUTLET RELIEF (TYP.)
N.T.S



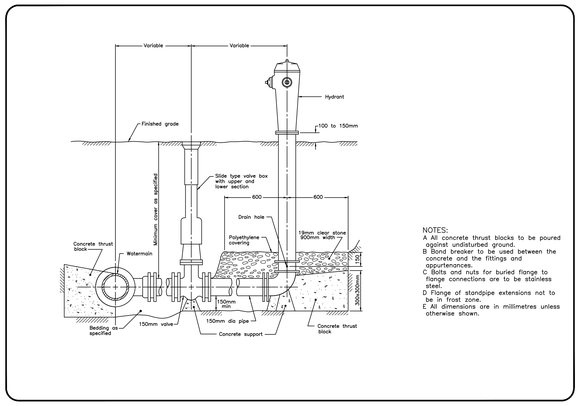
CONCRETE BARRIER CURB FOR GRANULAR BASE PAVEMENT (MODIFIED OPSD-600.110)



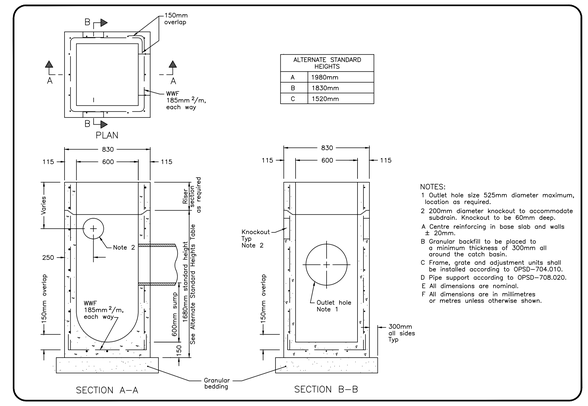




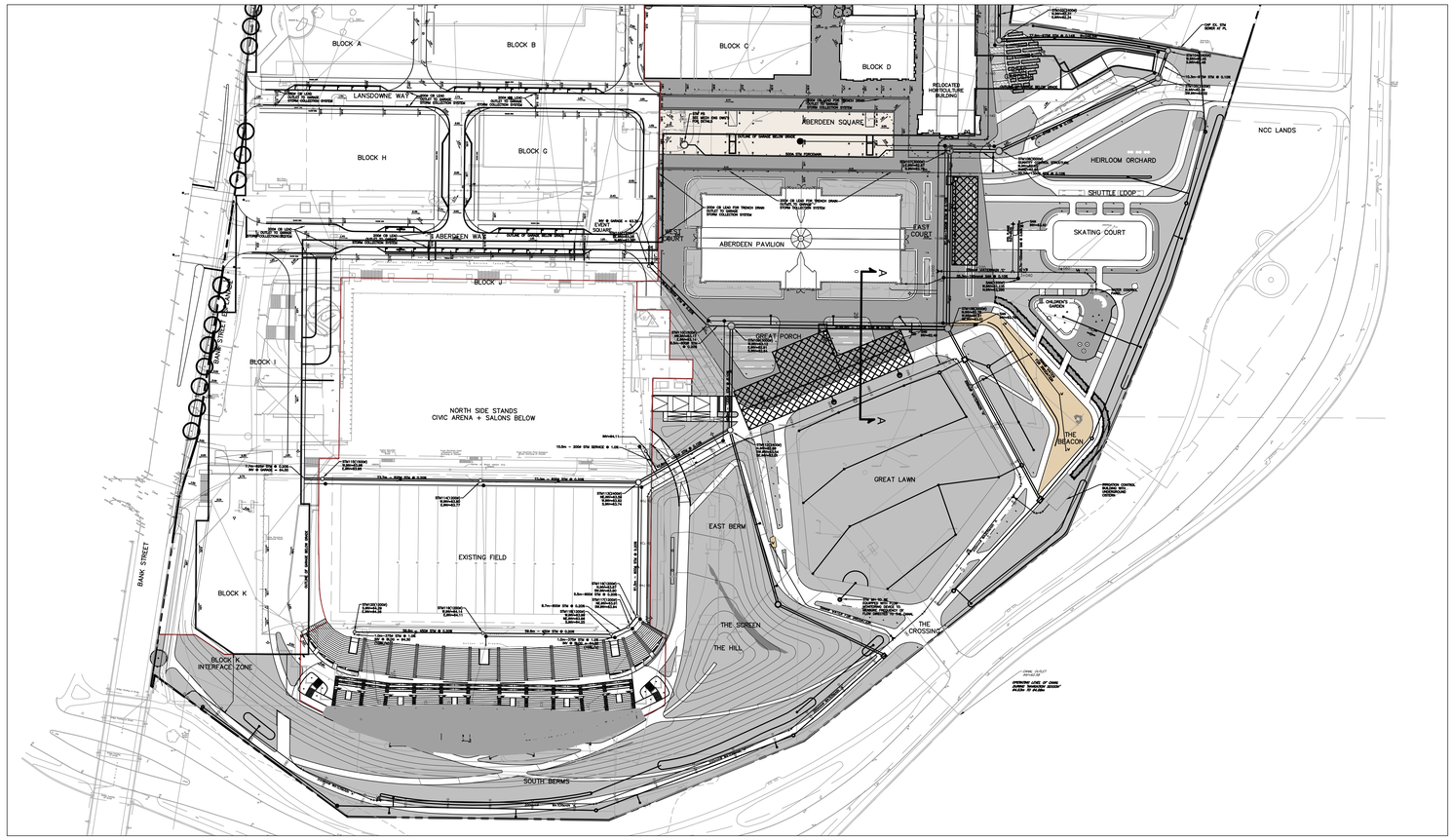
STORM MH GG
SCALE: 1:50



NOTES:
A All concrete thrust blocks to be poured against undisturbed ground.
B Bond breaker to be used between the concrete and the fittings and appurtenances.
C Bolts and nuts for buried flange to flange connections are to be stainless steel.
D Flange of standpipe extensions not to be in frost zone.
E All dimensions are in millimetres unless otherwise shown.



NOTES:
1 Outlet hole size 525mm diameter maximum, location as required.
2 200mm diameter knockout to accommodate subdrain. Knockout to be 60mm deep.
A Centre reinforcing in base slab and walls ± 20mm.
B Granular backfill to be placed to a minimum thickness of 300mm all around the catch basin.
C Frame, grate and adjustment units shall be installed according to OPSD-704.010.
D Pipe support according to OPSD-708.020.
E All dimensions are nominal.
F All dimensions are in millimetres or metres unless otherwise shown.



CLIENT PARTNERSHIP

CONSULTANT TEAM

PHILLIPS FAREVAAG SMALLENBERG
PLANNING • URBAN DESIGN
LANDSCAPE ARCHITECTURE

REVISIONS

No.	Date	Details	By
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PROJECT

Lansdowne
THE TRANSFORMATION OF LANSDOWNE PARK
LA TRANSFORMATION DU PARC LANSDOWNE

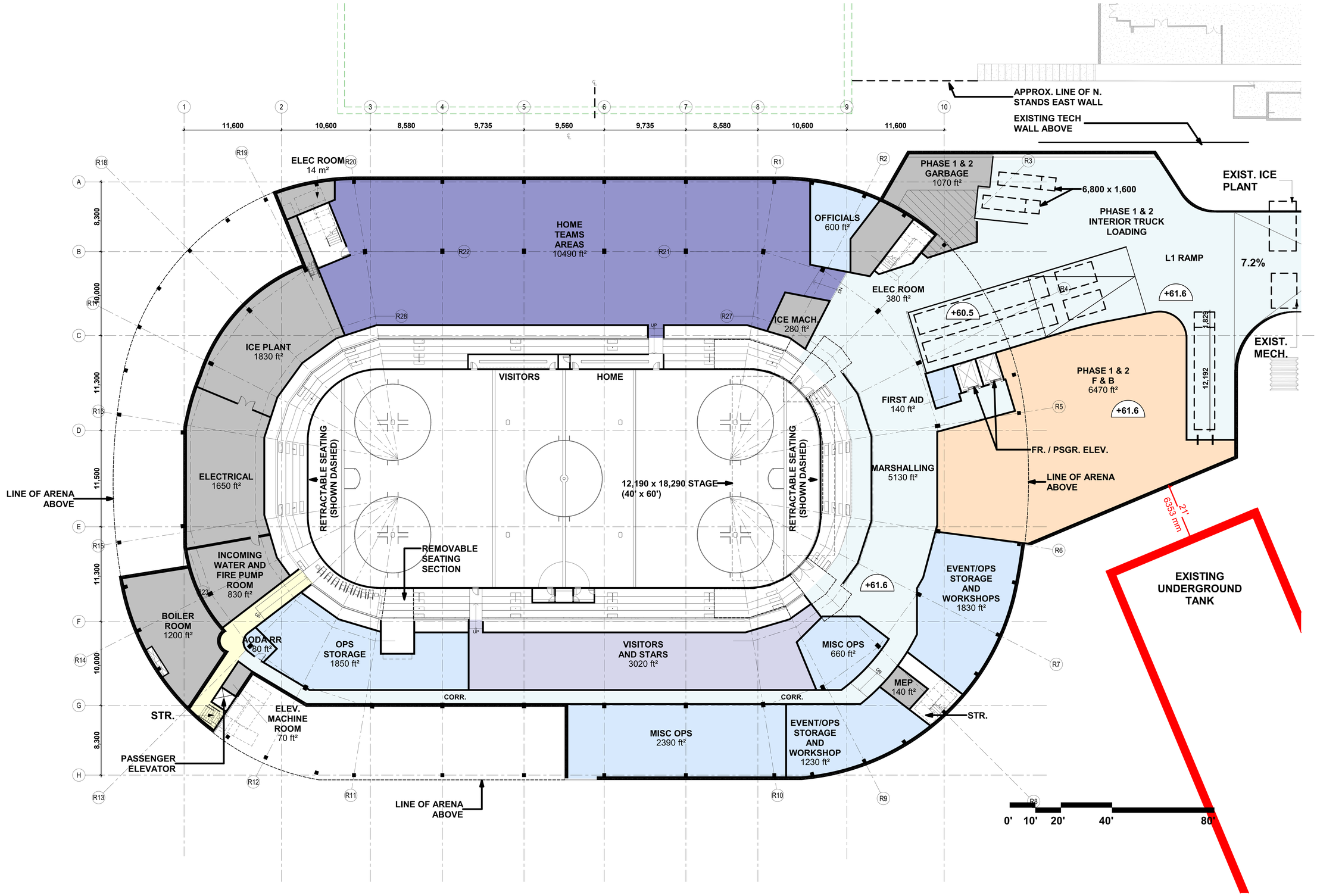
DRAWING TITLE
DETAILS

DATE

SCALE
AS SHOWN

REVISION #
3

DRAWING No.
C06



IN PROGRESS

TOTAL EC BLDG AREAS WILL BE REDUCED TO 160,000sf TO MEET BUDGET. NNS AREAS IN EC PROGRAM & ON THESE PLANS ARE APPROVED TO PROCEED IN THIS EC PHASE. DISTRIBUTION OF FUNCTIONAL SPACES ARE FIXED.

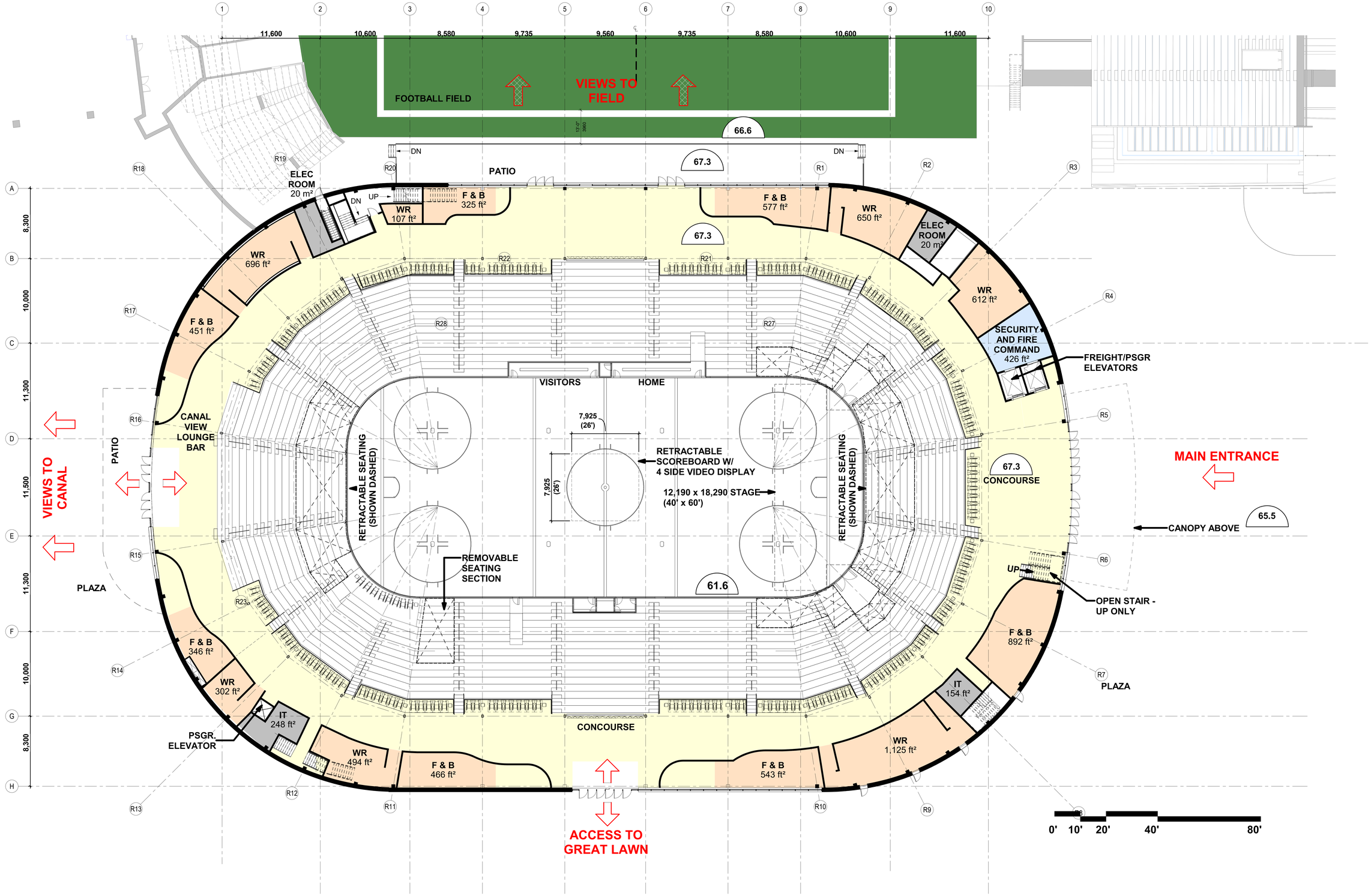
DATE: 2024-07-05

LANSDOWNE EVENT CENTRE
L1 OVERALL PLAN

Schematic Design

BRISBIN BROOK BEYNON ARCHITECTS

DATE PLOTTED: 2024-07-05 6:48:34 PM



IN PROGRESS

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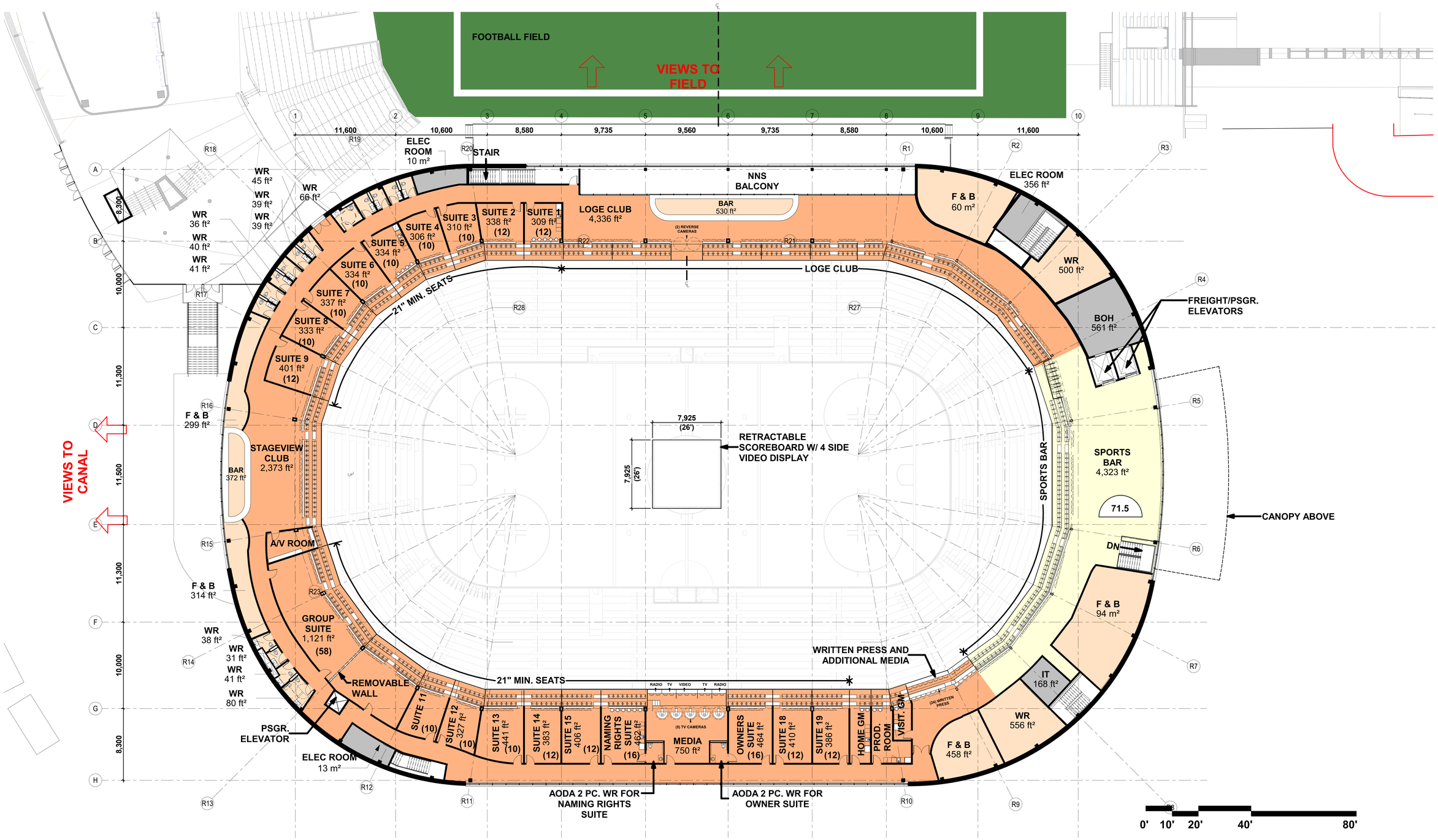
DATE: 2024-07-05

LANSDOWNE EVENT CENTRE
L2 OVERALL PLAN

Schematic Design

BRISBIN BROOK BEYNON ARCHITECTS

DATE PLOTTED: 2024-07-05 6:48:41 PM



IN PROGRESS

TOTAL EC BLDG AREAS WILL BE REDUCED TO 160,000sf TO MEET BUDGET. NNS AREAS IN EC PROGRAM & ON THESE PLANS ARE APPROVED TO PROCEED IN THIS EC PHASE. DISTRIBUTION OF FUNCTIONAL SPACES ARE FIXED.

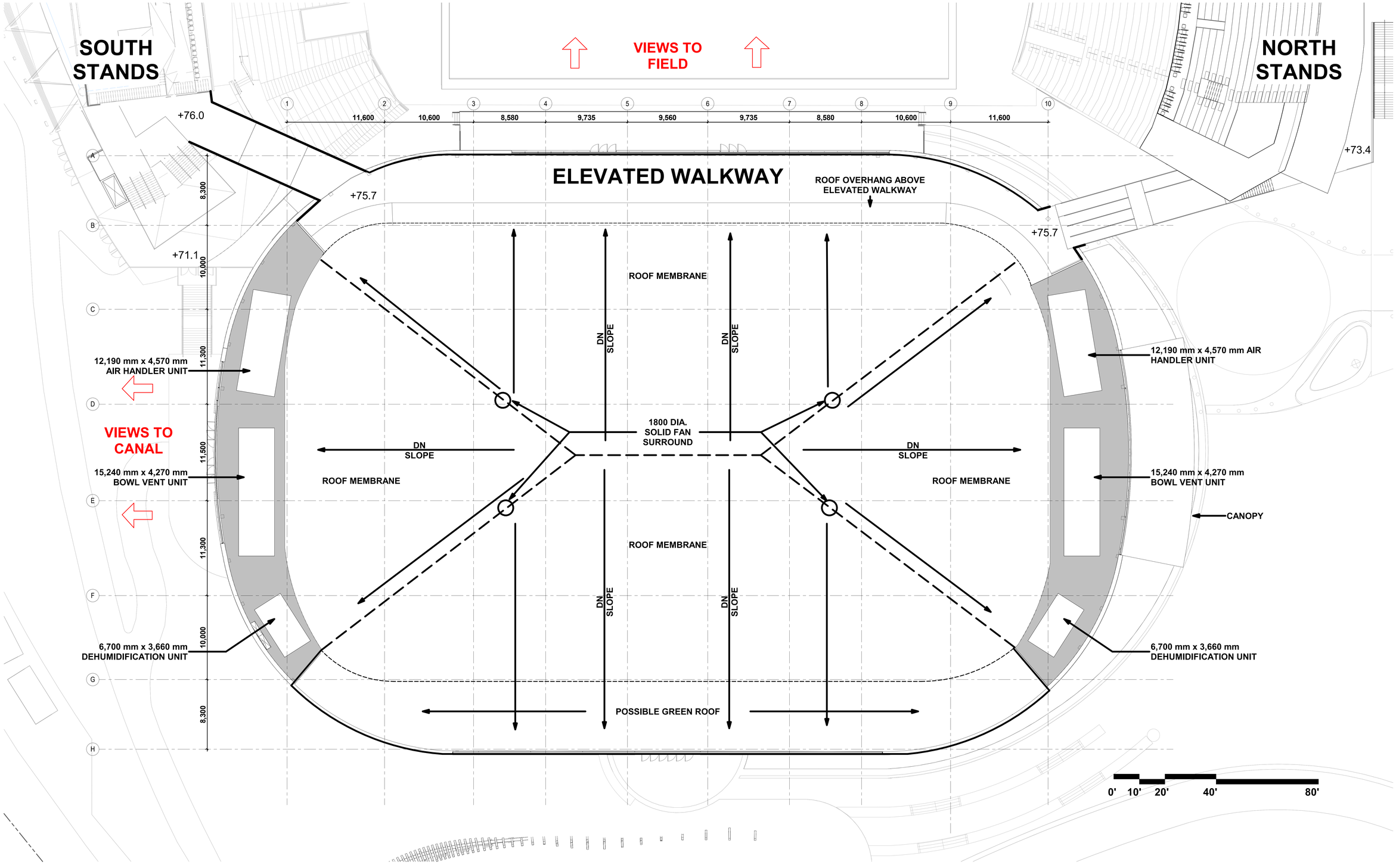
DATE: 2024-07-05

LANSDOWNE EVENT CENTRE
L3 OVERALL PLAN

Schematic Design

BRISBIN BROOK BEYNON ARCHITECTS

DATE PLOTTED: 2024-07-05 6:48:48 PM



IN PROGRESS

TOTAL EC BLDG AREAS WILL BE REDUCED TO 160,000sf TO MEET BUDGET. NNS AREAS IN EC PROGRAM & ON THESE PLANS ARE APPROVED TO PROCEED IN THIS EC PHASE. DISTRIBUTION OF FUNCTIONAL SPACES ARE FIXED.

DATE: 2024-07-05

LANSDOWNE EVENT CENTRE
ROOF PLAN

Schematic Design

BRISBIN BROOK BEYNON ARCHITECTS

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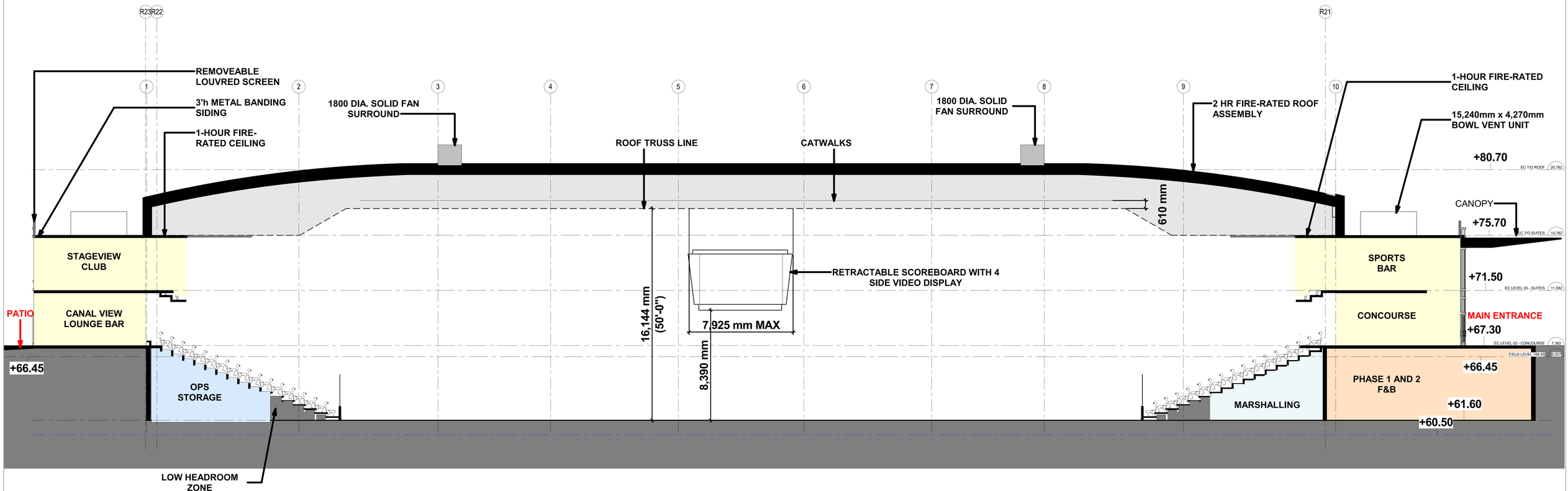

IN PROGRESS

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DATE: 2024-07-05

LANSDOWNE EVENT CENTRE
NORTH-SOUTH SECTION

Schematic Design

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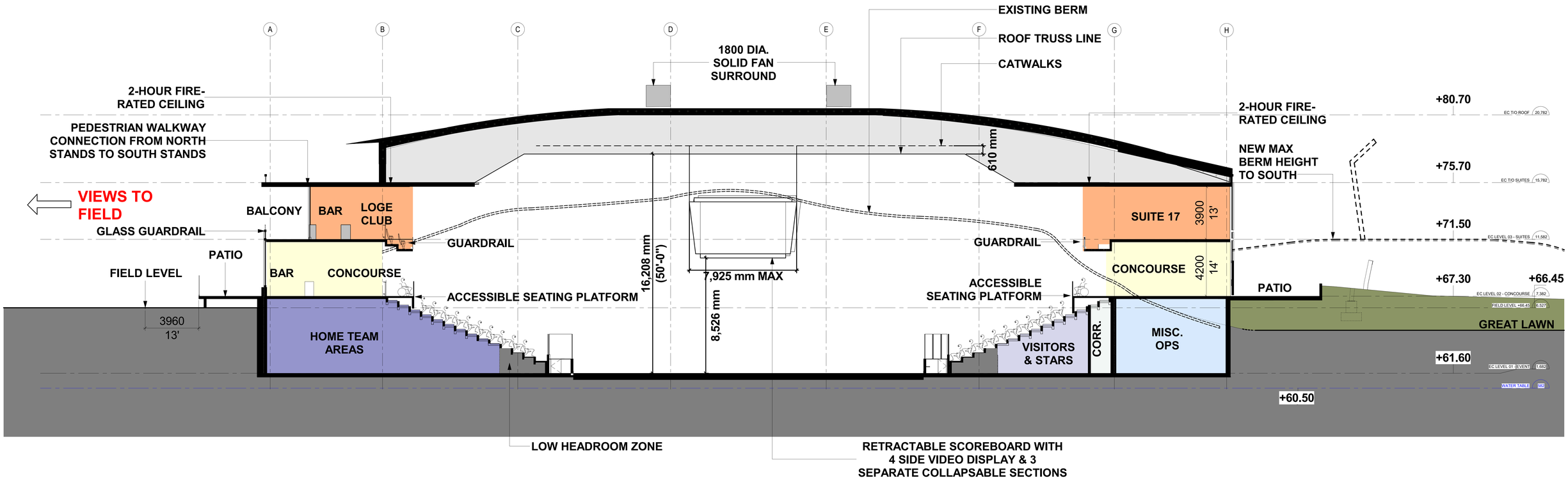
DATE PLOTTED: 2024-07-05 6:48:49 PM



0' 10' 20' 40' 80'

IN PROGRESS

TOTAL EC BLDG AREAS WILL BE REDUCED TO 160,000sf TO MEET BUDGET. NNS AREAS IN EC PROGRAM & ON THESE PLANS ARE APPROVED TO PROCEED IN THIS EC PHASE. DISTRIBUTION OF FUNCTIONAL SPACES ARE FIXED.

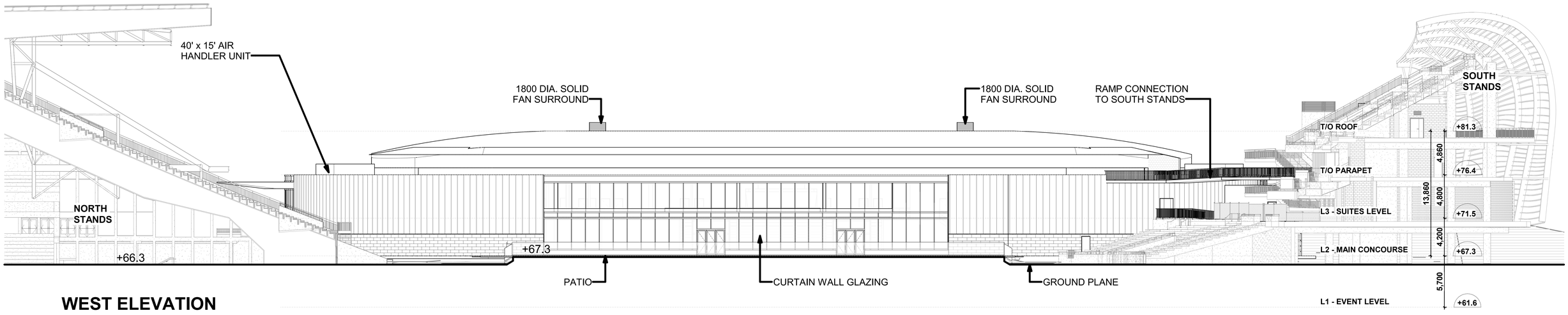
DATE: 2024-07-05

LANSDOWNE EVENT CENTRE
EAST-WEST SECTION

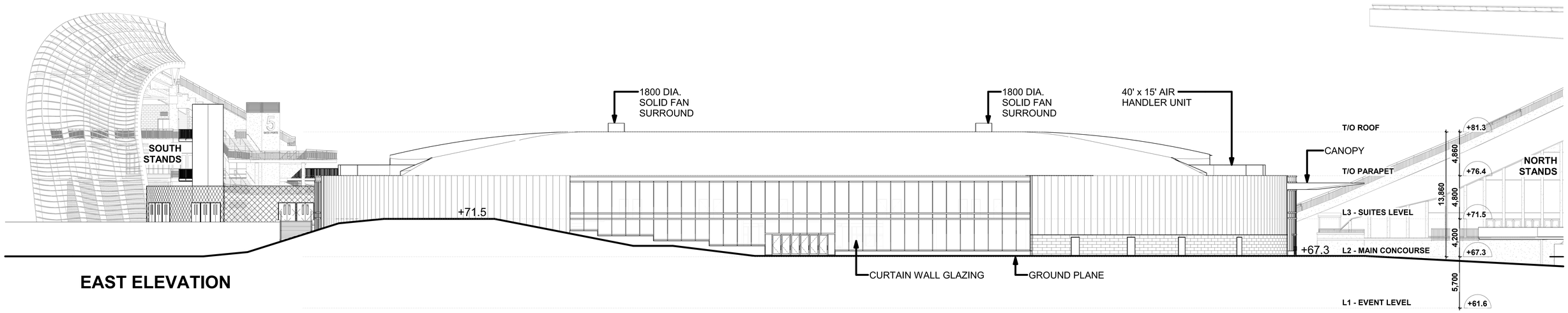
Schematic Design

BRISBIN BROOK BEYNON ARCHITECTS

DATE PLOTTED: 2024-07-05 6:48:49 PM



WEST ELEVATION



EAST ELEVATION

IN PROGRESS

TOTAL EC BLDG AREAS WILL BE REDUCED TO 160,000sf TO MEET BUDGET. NNS AREAS IN EC PROGRAM & ON THESE PLANS ARE APPROVED TO PROCEED IN THIS EC PHASE. DISTRIBUTION OF FUNCTIONAL SPACES ARE FIXED.

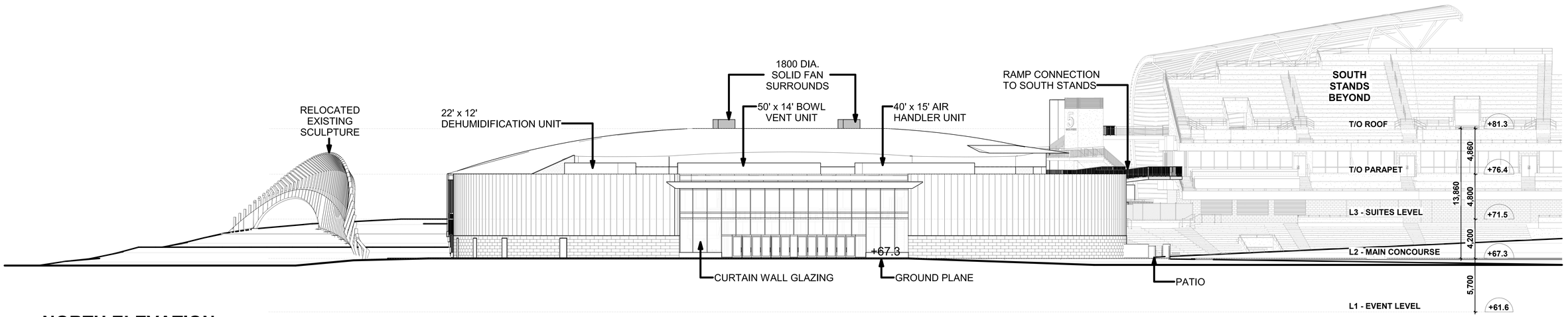
DATE: 2024-07-09

LANSDOWNE EVENT CENTRE
EAST AND WEST ELEVATION

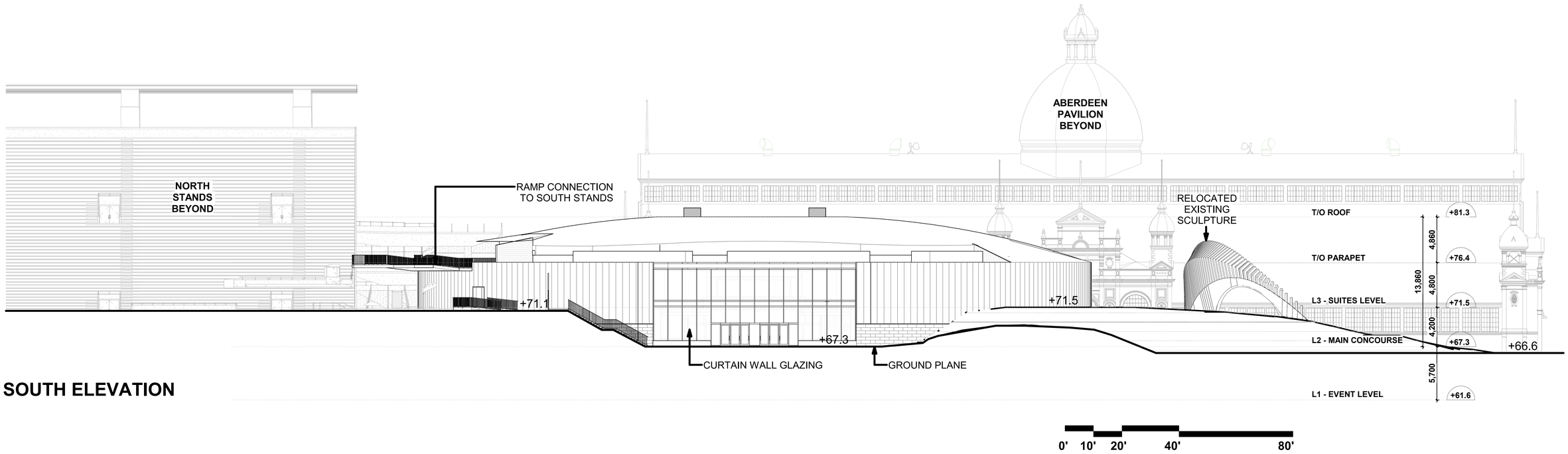
Schematic Design

BRISBIN BROOK BEYNON ARCHITECTS

DATE PLOTTED: 2024-07-09 4:42:01 PM



NORTH ELEVATION



SOUTH ELEVATION

IN PROGRESS

TOTAL EC BLDG AREAS WILL BE REDUCED TO 160,000sf TO MEET BUDGET. NNS AREAS IN EC PROGRAM & ON THESE PLANS ARE APPROVED TO PROCEED IN THIS EC PHASE. DISTRIBUTION OF FUNCTIONAL SPACES ARE FIXED.

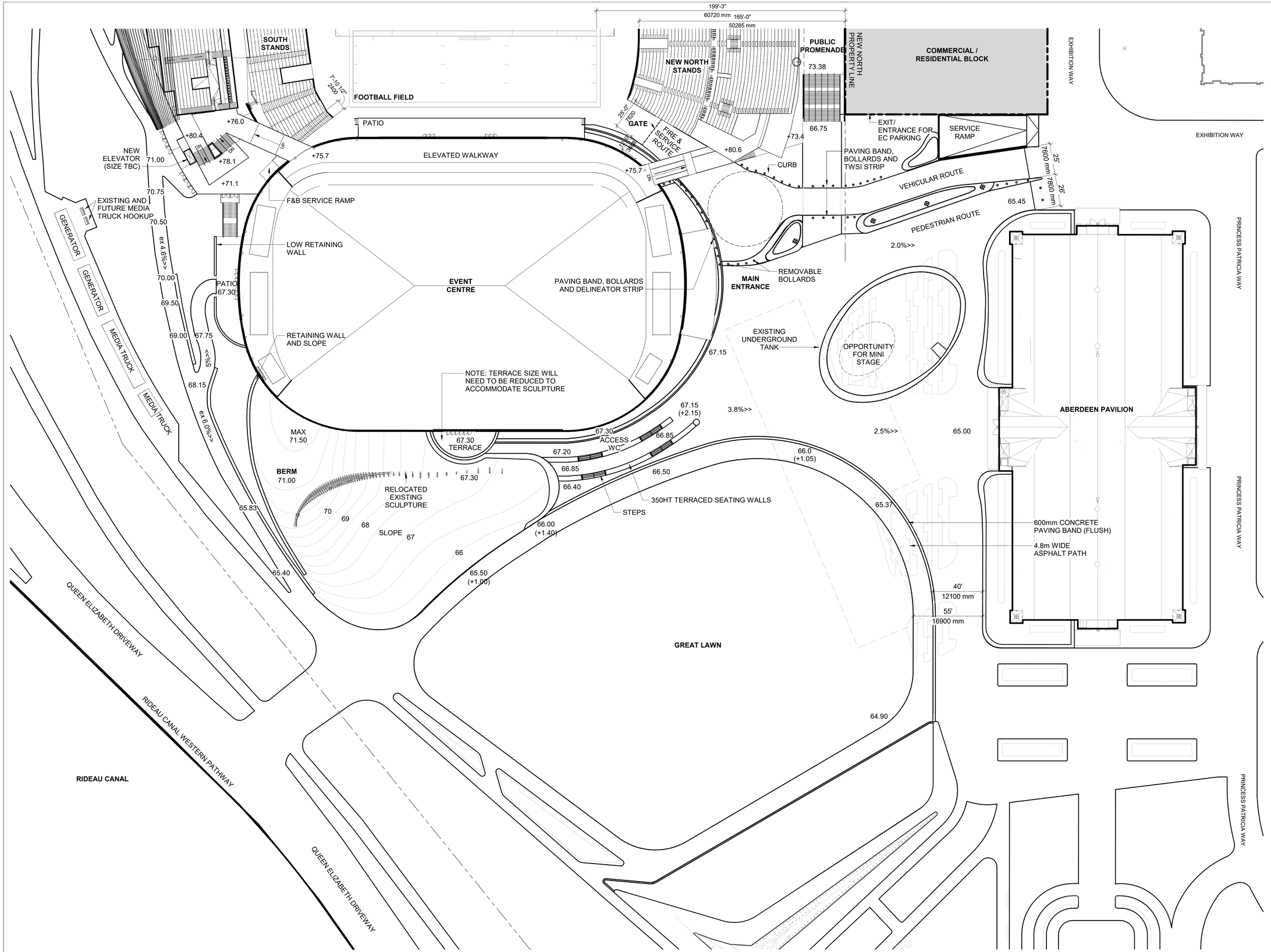
DATE: 2024-07-09

LANSDOWNE EVENT CENTRE
NORTH AND SOUTH ELEVATIONS

Schematic Design

BRISBIN BROOK BEYNON ARCHITECTS

DATE PLOTTED: 2024-07-09 4:42:07 PM



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Ottawa

OSEG
Ottawa Sports and Entertainment Group

BRISBIN BROOK BEYNON ARCHITECTS
14 DUNCAN ST 4TH FLOOR
TORONTO, ON M5H 3G8
(416) 591-8999
ARCHITECT

ENTUITIVE
135 LAURIER AVE WEST, SUITE 413
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STRUCTURAL ENGINEER

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MECH, PLUMB, FIRE PROTECTION ENGINEER

MULVEY & BANANI
90 SHEPPARD AVE EAST, SUITE 500
TORONTO, ON M2N 3A
(416) 751-2520
ELEC, LIGHTING ENGINEER

S2O
530 N. WOOD STREET #C
CHICAGO, IL 60622
(224) 717-1999
FOOD AND BEVERAGE

CSW
319 MCRAE AVENUE, SUITE 502
OTTAWA, ONTARIO K1Z 0B9
(613) 729-4536
LANDSCAPE ARCHITECT

NO.	DESCRIPTION	DATE

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

1 2 3 4

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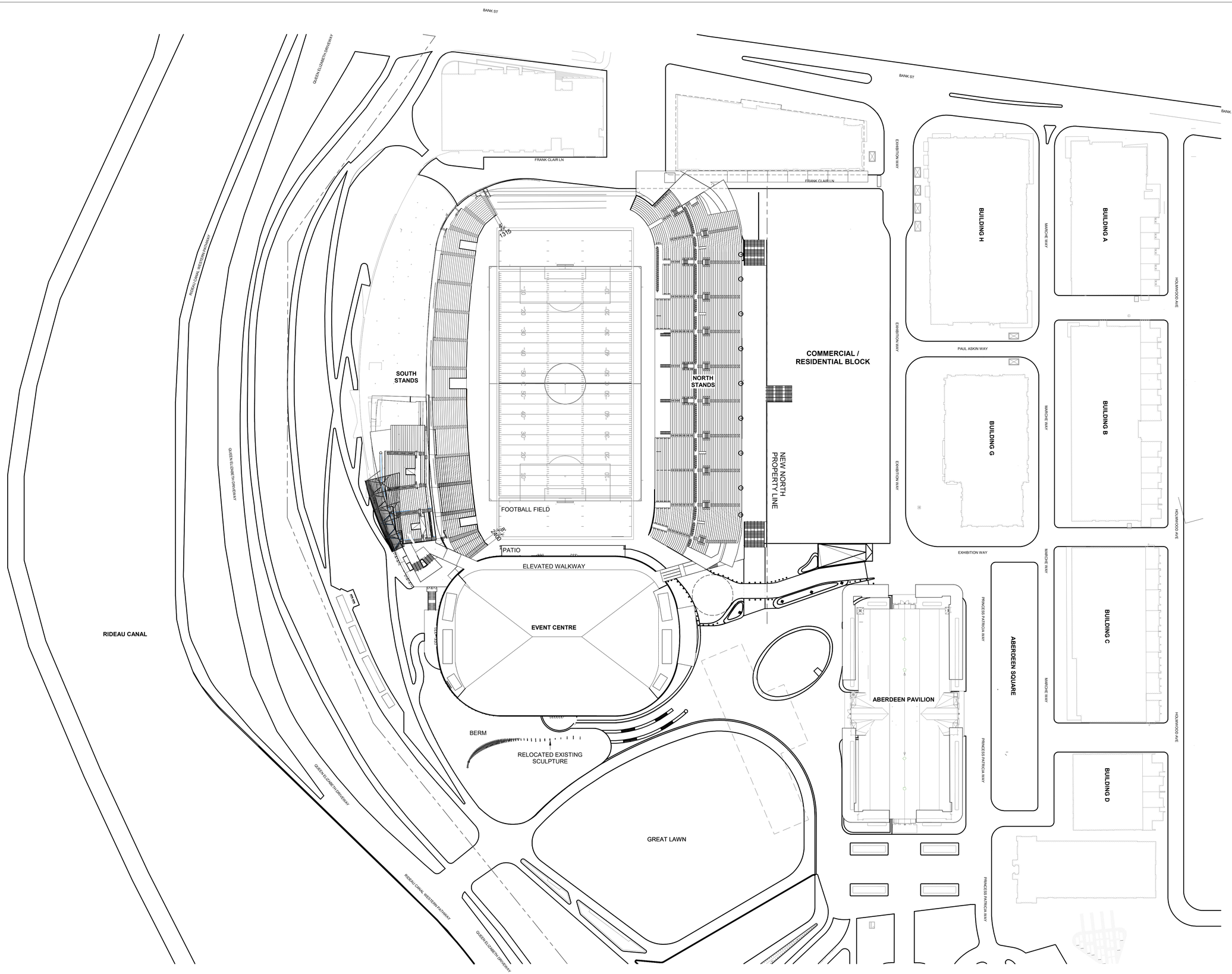
DRAWN	JI
DATE	01/24/24
CHECKED	SJ

LANSDOWNE EVENT CENTRE

DWG. TITLE
OVERALL SITE PLAN DURING CONSTRUCTION

SCALE	1 : 400
PROJ. NO.	2008
DWG. NO.	A1-002



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14 DUNCAN ST 4TH FLOOR
TORONTO, ON M5H 3G8
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319 MCRAE AVENUE, SUITE 502
OTTAWA, ONTARIO K1Z 0B9
(613) 729-4536
LANDSCAPE ARCHITECT

NO.	DESCRIPTION	DATE

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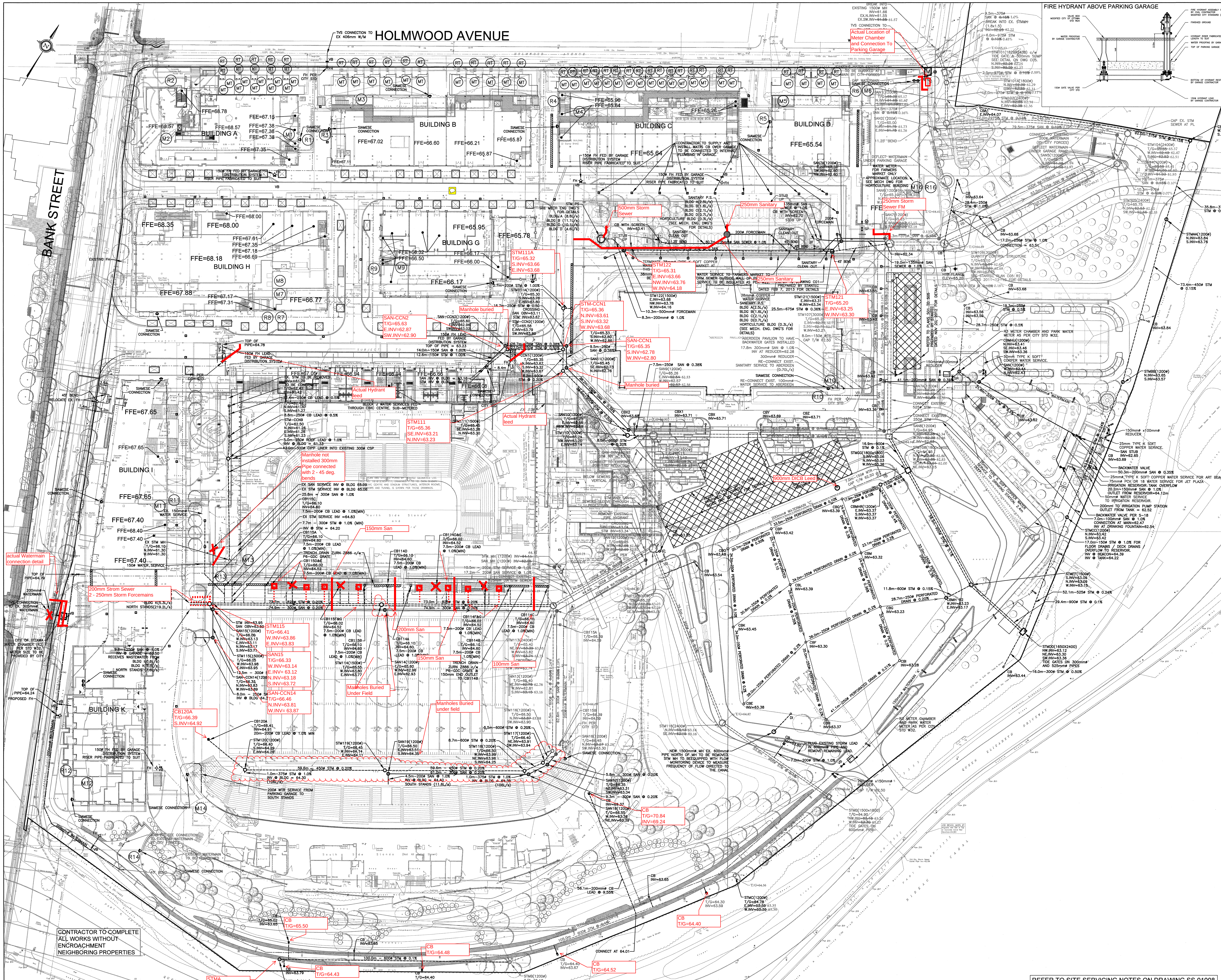
DATE: 01/24/24
CHECKED: SJ

LANSDOWNE EVENT CENTRE

DWG. TITLE
OVERALL SITE PLAN

SCALE: 1 : 750
PROJ. NO.: 2008
DWG. NO.: A1-004



REDEVELOPMENT OF LANSDOWNE PARK

Lansdowne — THE TRANSFORMATION OF LANSDOWNE PARK / LA TRANSFORMATION DU PARC LANSDOWNE

Ottawa

OSEG — Ottawa Sports and Entertainment Group

1015 Bank Street
Ottawa, Ontario
K1S 3W7

DSEL — david schaeffer engineering ltd — SMART SUBDIVISIONS™

120 Iber Road Unit 203
Stittsville, Ontario, K2S 1E9
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Fax. (613) 836-7183
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Stantec

1505 Laperriere Avenue
Ottawa, Ontario, K1Z 7T1
Tel. (613) 722-4420
Fax. (613) 722-2799
www.stantec.com

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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.

Signature: Date:

Seals:

LICENSED PROFESSIONAL ENGINEER — A. D. FOBERT — 100090526 — 2015-02-10 — PROVINCE OF ONTARIO

REGISTERED PROFESSIONAL ENGINEER — J. W. VAN GAAL — PROVINCE OF ONTARIO

GENERAL NOTES

1. 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.
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TOPOGRAPHIC INFORMATION

TOPOGRAPHIC INFORMATION PROVIDED BY FAIRHALL, MOFFATT & WOODLEAND LTD.
PROJ. NO. P19500
DATED 2011-09-27

SITE PLAN INFORMATION

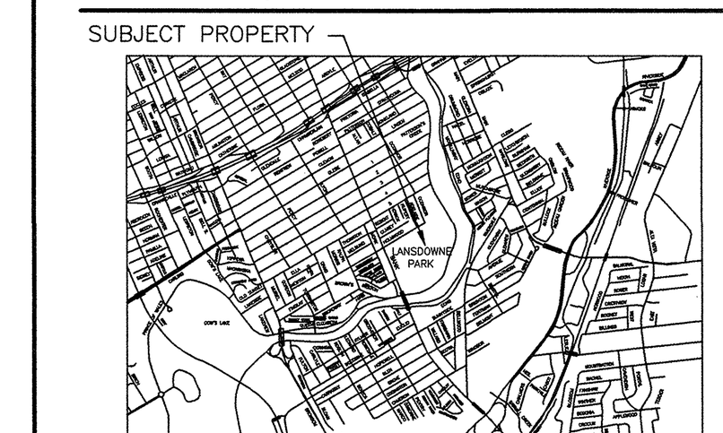
TOPOGRAPHIC INFORMATION PROVIDED BY CORUSH, SUNDERLAND , AND WRIGHT
PROJ. NO. 1766
DATED 2013-06-14

BENCH MARK

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

No.	Description	Date
21	Issued to City	Jan 27/15
20	Issued to City	Sept 04/14
19	Revised Bldg G1 Siamese connection	June 17/14
18	Revised Siamese connections	May 8/14
17	Revised FH Bank Street	Feb 2/14
16	Revised per municipal comments	Dec 10/13
15	Added Meter and Remote Meter locations	Dec 4/13
14	Revised water meter at Bank street, updated per CCN-SS-9r3, CCN-SS-10, CD-SS-3, CD-SS-4	Nov 26/13

SUBJECT PROPERTY



KEY PLAN

Drawing Title:

LANSDOWNE PARK

SITE SERVICING PLAN

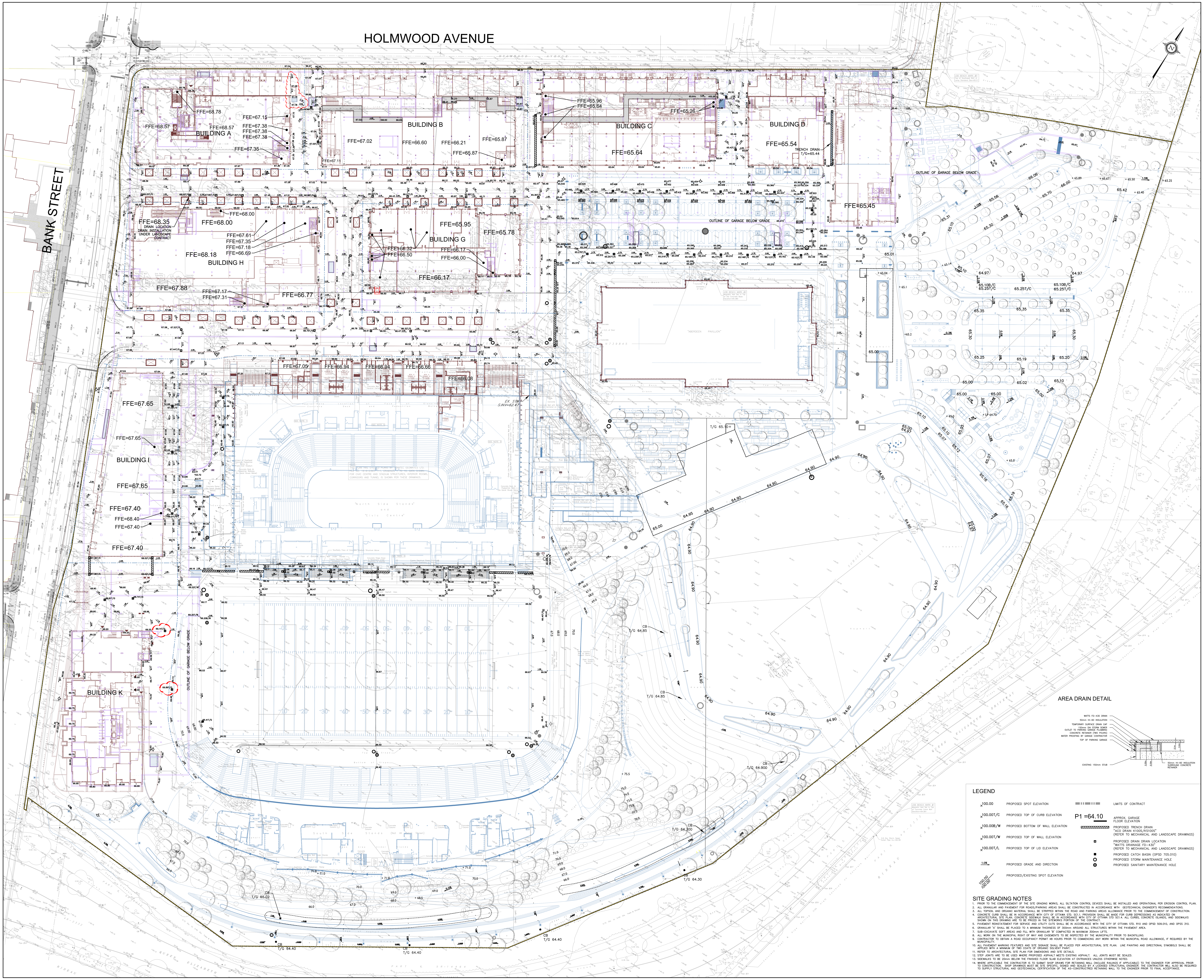
Scale.: 1:500 Date Created: MM/DD/YR

Project No.: 09-378 Checked by: CHK

SS 01003

z:\projects\09-378 lansdowne park\design\c detailed design\c.2 drawings\c.2.1 cad drawings\spa_base\spa_378-2015-01-27_cdf.dwg

REDEVELOPMENT OF LANSDOWNE PARK



LEGEND

×100.00	PROPOSED SPOT ELEVATION		LIMITS OF CONTRACT
×100.00T/C	PROPOSED TOP OF CURB ELEVATION	P1 =64.10	APPROX. GARAGE FLOOR ELEVATION
×100.00B/W	PROPOSED BOTTOM OF WALL ELEVATION		PROPOSED TRENCH DRAIN "ACO DRAIN K100S/KS100S" (REFER TO MECHANICAL AND LANDSCAPE DRAWINGS)
×100.00T/W	PROPOSED TOP OF WALL ELEVATION		PROPOSED DRAIN DRAIN LOCATION "WATTS DRAINAGE FD-430" (REFER TO MECHANICAL AND LANDSCAPE DRAWINGS)
×100.00T/L	PROPOSED TOP OF LID ELEVATION		PROPOSED CATCH BASIN (OPSD 705.010)
			PROPOSED STORM MAINTENANCE HOLE
1.0%	PROPOSED GRADE AND DIRECTION		PROPOSED SANITARY MAINTENANCE HOLE
100.00 / 100.00	PROPOSED/EXISTING SPOT ELEVATION		

SITE GRADING NOTES

1. PRIOR TO THE COMMENCEMENT OF THE SITE GRADING WORKS, ALL SILTATION CONTROL DEVICES SHALL BE INSTALLED AND OPERATIONAL PER EROSION CONTROL PLAN.
2. ALL GRANULAR AND PAVEMENT FOR ROADS/PARKING AREAS SHALL BE CONSTRUCTED IN ACCORDANCE WITH GEOTECHNICAL ENGINEER'S RECOMMENDATIONS.
3. ALL TOPSOIL AND ORGANIC MATERIAL SHALL BE STRIPPED WITHIN THE ROAD AND PARKING AREAS ALLOWANCE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
4. CONCRETE CURB SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. SC1.1. PROVISION SHALL BE MADE FOR CURB DEPRESSIONS AS INDICATED ON ARCHITECTURAL SITE PLAN. CONCRETE SIDEWALK SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD SC1.4. ALL CURBS, CONCRETE ISLANDS, AND SIDEWALKS SHOWN ON THIS DRAWING ARE TO BE PRICED IN THE SITEWORKS PORTION OF THE CONTRACT.
5. PAVEMENT REINSTATEMENT FOR SERVICE AND UTILITY CUTS SHALL BE IN ACCORDANCE WITH THE CITY OF OTTAWA STD. R10 AND OPSD 509.010, AND OPSS 310.
6. GRANULAR 'A' SHALL BE PLACED TO A MINIMUM THICKNESS OF 300mm AROUND ALL STRUCTURES WITHIN THE PAVEMENT AREA.
7. SUB-EXCAVATE SOFT AREAS AND FILL WITH GRANULAR 'B' COMPACTED IN MAXIMUM 300mm LIFTS.
8. ALL WORK ON THE MUNICIPAL RIGHT OF WAY AND EASEMENTS TO BE INSPECTED BY THE MUNICIPALITY PRIOR TO BACKFILLING.
9. CONTRACTOR TO OBTAIN A ROAD OCCUPANCY PERMIT 48 HOURS PRIOR TO COMMENCING ANY WORK WITHIN THE MUNICIPAL ROAD ALLOWANCE, IF REQUIRED BY THE MUNICIPALITY.
10. ALL PAVEMENT MARKING FEATURES AND SITE SIGNAGE SHALL BE PLACED PER ARCHITECTURAL SITE PLAN. LINE PAINTING AND DIRECTIONAL SYMOBOLS SHALL BE APPLIED WITH A MINIMUM OF TWO COATS OF ORGANIC SOLVENT PAINT.
11. REFER TO ARCHITECTURAL SITE PLAN FOR DIMENSIONS AND SITE DETAILS.
12. STEP JOINTS ARE TO BE USED WHERE PROPOSED ASPHALT MEETS EXISTING ASPHALT. ALL JOINTS MUST BE SEALED.
13. SIDEWALKS TO BE 20mm BELOW THE FINISHED FLOOR SLAB ELEVATION AT ENTRANCES UNLESS OTHERWISE NOTED.
14. WHERE APPLICABLE THE CONTRACTOR IS TO SUBMIT SHOP DRAWS FOR RETAINING WALL (INCLUDE RAILINGS IF APPLICABLE) TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. SHOP DRAWINGS MUST BE SITE SPECIFIC, SIGNED AND SEALED BY A LICENSED STRUCTURAL ENGINEER. THE CONTRACTOR WILL ALSO BE REQUIRED TO SUPPLY STRUCTURAL AND GEOTECHNICAL CERTIFICATION OF THE AS-CONSTRUCTRED RETAINING WALL TO THE ENGINEER PRIOR TO FINAL ACCEPTANCE.

1015 Bank Street
Ottawa, Ontario
K1S 3W7

david schaeffer engineering ltd
SMART SUBDIVISIONS™
120 Iber Road Unit 203
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Fax. (613) 836-7183
www.DSEL.ca

Stantec
1505 Laperriere Avenue
Ottawa, Ontario, K1Z 7T1
Tel. (613) 722-4420
Fax. (613) 722-2799
www.stantec.com

Drawings are not to be scaled.

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.

Signature: Date:

Seals:

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BENCH MARK

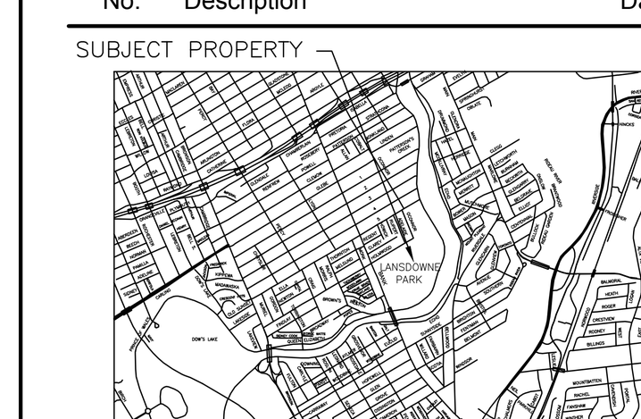
MAGNETIC NAIL SET IN TOP OF CONCRETE WALL OF CANAL LOCATED AT SOUTH EAST SITE ACCESS
ELEV=64.581

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

No.	Description	Date
17	Revised grading at BLDG A per Trinity request	Mar 14/14
16	Added area drain detail	Dec 10/13
15	Add area drains at Building K	Nov 22/13
14	Revised GP per IBI request	Jul 10/13
13	SI-SS-1R2: Modification to Building Locations on Plan	Mar 13/13

SUBJECT PROPERTY



KEY PLAN

Drawing Title:

LANSDOWNE PARK

SITE GRADING PLAN

Scale.: 1:500 Date Created: MM/DD/YR

Project No.: 09-378 Checked by: CHK

SS 01002

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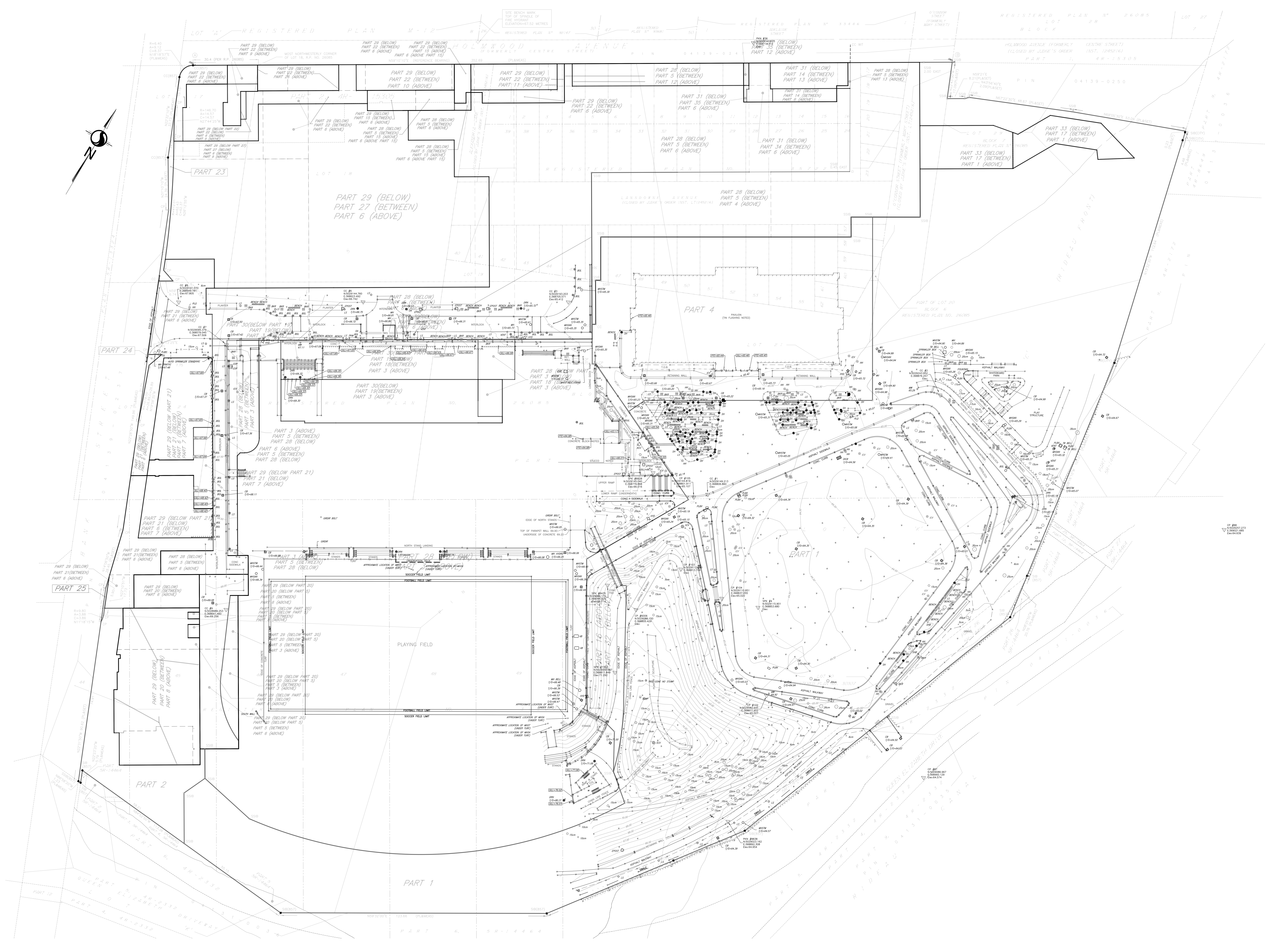

Stantec

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

TOPOGRAPHIC SKETCH OF
LANDSDOWNE PARK
CITY OF OTTAWA

Scale 1:500
10 0 10 20 30 METRES

Stantec Geomatics Ltd.
ONTARIO LAND SURVEYORS

METRIC CONVERSION
DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE 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 VARIOUS SOURCES AND IS NOT BASED ON ACTUAL SURVEY.

LEGEND

■	DENOTES	FOUND MONUMENTS
□	"	SET MONUMENTS
IB	"	IRON BAR
IBø	"	ROUND IRON BAR
SIB	"	STANDARD IRON BAR
SSIB	"	SHORT STANDARD IRON BAR
CC	"	CUT CROSS
CP	"	CONCRETE PIN
WIT	"	WITNESS
PIN	"	PROPERTY IDENTIFICATION NUMBER
M/MEAS	"	MEASURED
PROP	"	PROPORTIONED
OU	"	ORIGIN UNKNOWN
SG	"	STANTEC GEOMATICS LTD.
P1	"	PLAN
ACU	"	AIR CONDITIONING UNIT
AN	"	ANCHOR
AP	"	AIR PUMP
ANT	"	ANTENNA
BH	"	BOREHOLE
BIB	"	HOSE BIB
BKR	"	BIKE RACK
BENCH	"	BENCH
BOL	"	BOLLARD
BOUL	"	BOULDER
CB	"	CATCH BASIN
DICB	"	DOUBLE CB
CBMH	"	CB MANHOLE
DCBMH	"	DOUBLE CB MANHOLE
SICB	"	SIDE INLET CB
CHM	"	CHIMNEY
CO	"	CLEAN OUT
CSV	"	CURB STOP VALVE
DRN	"	DRAIN
EPOST	"	ELECTRICAL OUTLET
FP	"	FLAG POLE
FL	"	FLOOD LIGHT
FTF	"	FUEL TANK FILLER CAP
GC	"	GARBAGE CAN
GFL	"	PIPE FLANGE (GAS)
GFP	"	GAS FUEL PUMP
GP	"	POLE GUYWIRE
GSR	"	GAS SERVICE REGULATOR
GV	"	GAS VALVE
HIC	"	HICKENBOTTOM
HDS	"	HEADSTONE
HLS	"	HYDRO LIGHT STANDARD
HM	"	HYDRO METER
HTN	"	HYDRO TRANSFORMER
HW	"	HAND WELL
HYD	"	FIRE HYDRANT
JBX	"	JUNCTION BOX
LS	"	LIGHT STANDARD
MB	"	MAILBOX
MP	"	MONITORING PIN
MH	"	MAINTENANCE HOLE UNIDENTIFIED
MHB	"	MAINTENANCE HOLE BELL
MHF	"	MAINTENANCE HOLE FIBRE OPTIC
MHH	"	MAINTENANCE HOLE HYDRO
MHSAN	"	MAINTENANCE HOLE SANITARY
MHSTM	"	MAINTENANCE HOLE STORM
MHT	"	MAINTENANCE HOLE TRAFFIC
MW	"	MONITORING WELL
NPB	"	NEWS PAPER BOX
OLS	"	LIGHT STANDARD ORNAMENTAL
OW	"	OBSERVATION WELL
PKM	"	PARKING METER
PLBX	"	PULL BOX
PLQ	"	PLAQUE
PLR	"	PILLAR
PZ	"	PIEZIOMETER
RLC	"	RED LIGHT CAMERA
RWSL	"	RAILWAY SIGNAL LIGHT
RWSS	"	RAILWAY SWITCH STAND
SAT	"	SATELLITE DISH
SCLP	"	SCULPTURE
SCP	"	SUMP/CATCH PIT
SCV	"	SPRINKLER CONTROL VALVE
SH	"	SPRINKLER HEAD
SIA	"	SIAMESE CONNECTION
SN	"	SIGN
SPAN	"	SOLAR PANEL
SPT	"	SEPTIC TANK LID
TBL	"	TABLE
TB BELL	"	TERMINAL BOX - BELL
TB CATV	"	TERMINAL BOX - CABLE
TCB	"	TRAFFIC CONTROL BOX
TPIT	"	TEST PIT
TSL	"	TRAFFIC SIGNAL LIGHT
UMB	"	MARKER BELL UNDERGROUND
UMC	"	MARKER CABLE UNDERGROUND
UMG	"	MARKER GAS UNDERGROUND
UMO	"	MARKER OIL UNDERGROUND
UP	"	UTILITY POLE
VB	"	VALVE BOX
VC	"	VALVE CHAMBER
WV	"	WATER VALVE
	"	TREE STUMP
ICV	"	IRRIGATION CONTROL VALVE
	"	TREE CONIFEROUS (D.B.H. SHOWN)
	"	TREE DECIDUOUS (D.B.H. SHOWN)
—— T ——		UNDERGROUND TELEPHONE
—— P ——		UNDERGROUND HYDRO
—— WTM ——		WATERMAIN
—— G ——		GASMAIN
—— STM ——		STORM SEWER
—— FOTS ——		UNDERGROUND FIBRE OPTIC

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

APPENDIX

B

- FIRE FLOW CALCULATION FOR BUILDINGS
- WATER DEMAND CALCULATION
- FIRE HYDRANT TEST RESULTS
- HYDRANT COVERAGE FIGURE

Fire Flow Design Sheet (FUS)
Lansdwone Park Redevelopment
City of Ottawa
WSP Project No. CA000286.1662
Date: 22-Sep-23

Proposed Tower 1 & 2 with Podium
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: $F = 220\ C\ \sqrt{A}$

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 = 5532.1 m^2
C = 0.8
F = 13090.6 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%

Reduction due to low occupancy hazard -15% x 13,000 = 11,050 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% x 11,050 = -5,525 L/min

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

Separation	Charge
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	32	0%	north side	
Side 2	33	0%	east side	
Side 3	10	0%	south side	(fire resistive wall with North Stands)
Side 4	28	10%	west side	
		10%		(Total shall not exceed 75%)

Increase due to separation 10% x 11,050 = 1,105 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 7,000 L/min (Rounded to nearest 1000 L/min)
or **117 L/sec**
or 1,849 gpm (us)
or 1,540 gpm (uk)

Based on method described in:
"Water Supply for Public Fire Protection - A Guide to Recommended Practice", 2020
by Fire Underwriters Survey

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

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A =2-b) The single largest Floor Area plus 25% of each of the two immediately adjoining floors

A = 9318.1 m^2
C = 0.6
F = 12742.0 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%

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% x 9,750 = -4,875 L/min

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

Separation	Charge
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)

Based on method described in:
"Water Supply for Public Fire Protection - A Guide to Recommended Practice", 2020
by Fire Underwriters Survey

Fire Flow Design Sheet (FUS)
Lansdwone Park Redevelopment
City of Ottawa
WSP Project No. CA000286.1662
Date: 22-Sep-23

Proposed Event Centre
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: $F = 220\ C\ \sqrt{A}$

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 = 7926.3 m^2
C = 0.6
F = 11751.9 L/min

rounded off to 12,000 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%

Reduction due to low occupancy hazard -25% x 12,000 = 9,000 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% x 9,000 = -4,500 L/min

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

Separation	Charge
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	85	0%	north side	
Side 2	100	0%	east side	
Side 3	100	0%	south side	
Side 4	16	0%	west side	(fire resistive wall seperation with North Stands)
		0%		(Total shall not exceed 75%)

Increase due to separation 0% x 9,000 = 0 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 5,000 L/min (Rounded to nearest 1000 L/min)
or **83 L/sec**
or 1,321 gpm (us)
or 1,100 gpm (uk)

Based on method described in:
"Water Supply for Public Fire Protection - A Guide to Recommended Practice", 2020
by Fire Underwriters Survey

Water Demand Calculation Sheet

Project:	**Lansdowne Park Redevelopment Elementary school**	**Date:**	**2023-09-22**
Location:	**1015 Bank St, Ottawa ON K1S 3W7**	**Design:**	**N.N.**
WSP Project No.	**CA0000286.1662**	**Checked:**	**D.B.Y**
		Page:	**1 of 1**

Proposed Buildings	Residential				Non-Residential			Average Daily			Maximum Daily			Maximum Hourly			Fire
	Units			Beds	Industrial	Institutional	Commercial	Demand (l/s)			Demand (l/s)			Demand (l/s)			Demand
	SF	APT	ST		(ha)	(ha)	(ha)	Res.	Non-Res.	Total	Res.	Non-Res.	Total	Res.	Non-Res.	Total	(l/min)
Proposed Podium, Towers 1 and 2		252		1			0.46	1.14	0.15		2.86	0.22		6.29	0.40		10,000
		250		2				1.70		5.51	4.25		13.61	9.36		29.86	
		250		3				2.51			6.28			13.81			

Population Densities

Single Family	3.4 person/unit
Semi-Detached	2.7 person/unit
Duplex	2.3 person/unit
Townhome (Row)	2.7 person/unit
Bachelor Apartment	1.4 person/unit
1 Bedroom Apartment	1.4 person/unit
2 Bedroom Apartment	2.1 person/unit
3 Bedroom Apartment	3.1 person/unit
4 Bedroom Apartment	4.1 person/unit
Avg. Apartment	1.8 person/unit

Average Daily Demand

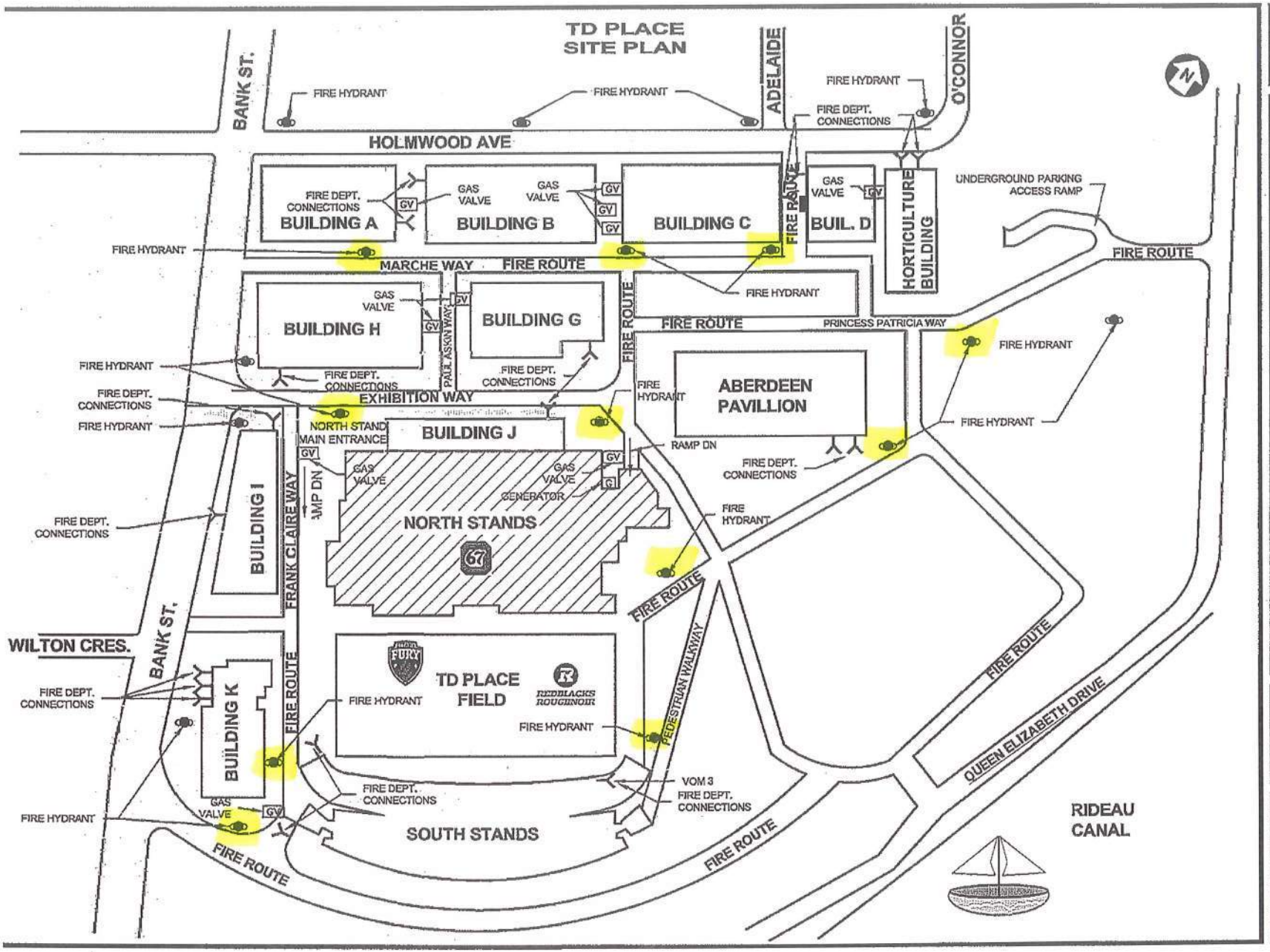
Residential	280 l/cap/day
Industrial	35000 l/ha/day
Institutional	28000 l/ha/day
Commercial	28000 l/ha/day

Maximum Daily Demand

Residential	2.5 x avg. day
Industrial	1.5 x avg. day
Institutional	1.5 x avg. day
Commercial	1.5 x avg. day

Maximum Hourly Demand

Residential	2.2 x max. day
Industrial	1.8 x max. day
Institutional	1.8 x max. day
Commercial	1.8 x max. day



LEGEND.

- FIRE DEPT. CONNECTION
- FIRE HYDRANT
- GV GAS VALVE
- G GENERATOR

FIRE SAFETY PLAN

SITE PLAN

TD PLACE NORTH STANDS
OTTAWA,ONTARIO

NOT TO SCALE

MAY 2014

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.

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

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: **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

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: **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.

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

Remarks: OK

HYDRANTS-R-US Inc.

Hydrants-R-Us Inc.
53 Forest Creek Drive
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613-804-0088
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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

Remarks: OK

HYDRANTS-R-US Inc.

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K2S 1M1
613-804-0088
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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

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: **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 ½ in.**

Gallons Per Minute**: 918**
Gallons Per Minute at 20 PSI: **2471**
Color Code: BLUE

Remarks: OK

HYDRANTS-R-US Inc.

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53 Forest Creek Drive
K2S 1M1
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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

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: **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

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: **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

Remarks: OK

BUILDING A
BUILDING B
BUILDING C
BUILDING D
BUILDING G
BUILDING H
ABERDEEN SQUARE
HOLMWOOD AVE
MARCHE WAY
PRINCESS PATRICIA WAY
BANK ST
PAUL ASKIN WAY
EXHIBITION WAY
FRANK CLAIR LN
COMMERCIAL / RESIDENTIAL BLOCK
NEW NORTH PROPERTY LINE
NORTH STANDS
SOUTH STANDS
PLAYING FIELD
FOOTBALL FIELD
ELEVATED WALKWAY
EVENT CENTRE
GREAT LAWN
QUEEN ELIZABETH DRIVEWAY
RIDEAU CANAL WESTERN PATHWAY
HYDRANT CONSIDERED TO MEET PROPOSED EVENT CENTRE'S REQUIRED FIRE FLOW
HYDRANT CONSIDERED TO MEET PROPOSED EVENT CENTRE'S REQUIRED FIRE FLOW

LEGEND

- FIRE HYDRANT
- HYDRANT COVERAGE (75m RADIUS)

Meters
22.5 0 22.5 45
1:750

DATE PLOTTED:

Ottawa

OSEG
Ottawa Sports and Entertainment Group

BRISBIN BROOK BEYNON ARCHITECTS
14 DUNCAN ST 4TH FLOOR
TORONTO, ON M5H 3G8
(416) 591-8999
ARCHITECT

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

ТИР
200 KING. ST. WEST, SUITE 310
TORONTO, ON M5H 3T4
(416) 499-8000
MECH, PLUMB, FIRE PROTECTION ENGINEER

MULVEY & BANANI
90 SHEPPARD AVE EAST, SUITE 500
TORONTO, ON M2N 3A
(416) 751-2520
ELEC, LIGHTING ENGINEER

S2O
530 N. WOOD STREET #C
CHICAGO, IL 60622
(224) 717-1999
FOOD AND BEVERAGE

CSW
319 MCRAE AVENUE, SUITE 502
OTTAWA, ONTARIO K1Z 0B9
(613) 729-4536
LANDSCAPE ARCHITECT

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

NO.	DESCRIPTION	DATE

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

SEAL

DRAWN	J.T
DATE	2024/08/07
CHECKED	W.Y

LANSDOWNE EC

DWG. TITLE
HYDRANT COVERAGE SKETCH

SCALE	DWG. NO.
1:750	F01
PROJ. NO.	
CA0033920.1056	

APPENDIX

C

- STORM SEWER DESIGN SHEET
- DWG C07 – STORM DRAINAGE AREA PLAN
- EXISTING STORM SEWER DESIGN SHEET AND DRAINAGE AREA PLAN BY STANTEC
- SANITARY SEWER DESIGN SHEET
- EXISTING SANITARY DESIGN SHEET BY DSEL
- DWG C04 – GRADING PLANS
- DWG C05A/C05B – SERVICING PLANS

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

LOCATION				AREA (Ha)						RATIONAL DESIGN FLOW												PROPSOED SEWER DATA								
BLDG FLOW	AREA ID	FROM	TO	C= 0.20	C= 0.35	C= 0.75	C= 0.80	C= 0.90	C= 1.00	IND 2.78AC	CUM 2.78 AC	INLET (min)	TOTAL (min)	i (2) (mm/hr)	i (5) (mm/hr)	i (100) (mm/hr)	BLDG FLOW (L/s)	2yr PEAK FLOW (L/s)	5yr PEAK FLOW (L/s)	100yr PEAK FLOW (L/s)	ICD FIXED FLOW (L/s)	DESIGN FLOW (L/s)	MODIFIED DESIGN FLOW (L/s)	MATERIAL PIPE	SIZE (mm)	SLOPE (%)	LENGTH (m)	CAPACITY (l/s)	VELOCITY (m/s)	TIME IN PIPE	AVAIL CAP (2yr) (L/s)	AVAIL CAP (2yr) (%)
Lansdowne 2.0																															
+106 l/s	*S. STANDS*	*Ex. STM 120*	*Ex. STM 119*							0.000	0.000	20.00	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	21.63	16.95%
		Ex. STM 119	*Ex. STM 118*							0.000	0.000	21.24	22.48	50.12	67.64	115.46			0.00			0.00	106.00	CONC	*450.0*	*0.20*	*59.60*	127.63	0.80	1.24	21.63	16.95%
+106 l/s		*Ex. STM 118*	*Ex. STM 117*							0.000	0.000	22.48	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	62.87	22.87%
		Ex. STM 117	STMH 208							0.000	0.000	22.63	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	62.87	22.87%
+232.6 l/s	A3, A4, A5, BLDG I, K, N STANDS	*Ex. STM 115*	*Ex. STM 114*	1.118				0.399		1.620	1.620	20.00	21.02	52.03	70.25	119.95			113.80			113.80	346.40	CONC	*825.0*	*0.20*	*73.70*	642.59	1.20	1.02	296.19	46.09%
		Ex. STM 114	STMH 209							0.000	1.620	21.02	22.06	50.44	68.08	116.22			110.29			110.29	342.89	CONC	*825.0*	*0.20*	*74.50*	642.59	1.20	1.03	299.71	46.64%
	Half of NEC Area	STMH 209	STMH 208	0.000				0.486		1.215	2.835	22.06	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	153.26	26.74%
$Q_{bldg\ Tot}$ = 444.6 l/s		STMH 208	STMH 207							0.000	2.835	23.27	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	238.95	27.64%
		STMH 207	STMH 206							0.000	2.835	23.58	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	240.49	27.82%
	A6	STMH 206	STMH 205	0.048				0.025		0.089	2.924	23.97	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	236.79	27.39%
		STMH 205	STMH 204							0.000	2.924	24.61	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	239.89	27.75%
	Half of NEC Area	STMH 204	STMH 203	0.000				0.486		1.215	4.139	25.10	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	168.43	19.48%
	Great Lawn 5	STMH 203	CBMH 202	0.089				0.026		0.115	4.253	25.55	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	164.49	19.03%
	Great Lawn 6, A, D, D1, D2	*Ex. STMD*	CBMH 210	1.237				0.542		2.044	2.044	20.00	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	50.78	26.13%
	Great Lawn 4	CBMH 210	CBMH 202	0.160				0.024		0.149	2.193	20.83	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	44.22	22.75%
$Q_{bldg\ Tot}$ = 444.6 l/s		CBMH 202	CHAMBER / *Ex. Chamber*							0.000	6.446	26.25	26.25	43.75	58.97	100.54			380.15			380.15	824.75	REFER TO STORMTECH DESIGN								
	OPGG5, Great Lawn 3	CHAMBER / *Ex. Chamber*	*Ex. 1350 PIPE*	0.228				0.131		0.455	6.901	26.25	26.25	43.75	58.97	100.54			406.95			406.95	851.55	REFER TO STORMTECH DESIGN								
+23.1 l/s	A1, BLDGS H, G, J, J1, J2	*Ex. STM-CCN1*	NEW STMH 212	0.019				0.938		2.357	2.357	20.00	20.21	52.03	70.25	119.95			165.61			165.61	188.71	CONC	600.0	0.20	12.03	274.87	0.97	0.21	86.16	31.35%
		NEW STMH 212	NEW STMH 211							0.000	2.357	20.21	20.72	51.70	69.80	119.18			164.55			164.55	187.65	CONC	600.0	0.20	30.00	274.87	0.97	0.51	87.22	31.73%
		NEW STMH 211	*Ex. STM 110*							0.000	2.357	20.72	20.91	50.90	68.71	117.29			161.97			161.97	185.07	CONC	600.0	0.20	11.00	274.87	0.97	0.19	89.80	32.67%
	OPGG1, OPGG4	*Ex. STM 110*	*Ex. STM 109*	0.015				0.160		0.409	2.766	20.91	21.11	50.61	68.31	116.62			188.97			188.97	212.07	CONC	*600.0*	*0.20*	*11.70*	274.87	0.97	0.20	62.81	22.85%
$Q_{bldg\ Tot}$ = 467.7 l/s	OPGG2	*Ex. STM 109*	*Ex. STM 108*	0.020				0.251		0.639	10.306	26.25	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	850.90	44.17%
	102, AA, BB, EE	*Ex. STMDD*	*Ex. STMFF*	1.410				0.594		2.270	2.270	21.70	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	421.57	73.57%
	Great Lawn 1 & 2, T1, T2, V1, V2	*Ex. STMFF*	*Ex. STMGG*	0.508				0.295		1.021	3.291	22.27	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	357.10	62.32%
		Ex. STMGG	*Ex. STM 108*							0.000	3.291	23.33	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	363.43	63.42%
$Q_{bldg\ Tot}$ = 467.7 l/s	OPGG3, 108	*Ex. STM 108*	*Ex. STM 107*	0.167				0.316		0.883	14.480	27.49	28.64	42.45	57.20	97.49			828.21			828.21	1295.91	CONC	*1350.0*	*0.10*	*81.40*	1689.54	1.18	1.15	393.63	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		3.908	18.388	28.64	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	164.17	9.72%
		Ex. STM 106	*Ex. STM 105*																			616.00		CONC	*975.0*	*0.10*	*80.20*	709.40	0.95	1.41	93.40	13.17%
		Ex. STM 105	*Ex. STM 104*																			616.00		CONC	*975.0*	*0.10*	*12.10*	709.40	0.95	0.21	93.40	13.17%
Controlled Flow		*Ex. STM 104*	*Ex. STM 103*																			616.00		CONC	*975.0*	*0.10*	*19.20*	709.40	0.95	0.34	93.40	13.17%
		Ex. STM 103	*Ex. STM 102*																			616.00		CONC	*975.0*	*0.10*	*54.20*	709.40	0.95	0.95	93.40	13.17%
		Ex. STM 102	*Ex. STM 101*																			616.00		CONC	*975.0*	*0.10*	*24.20*	709.40	0.95	0.42	93.40	13.17%
		Ex. STM 101	*Ex. STM MH (O'Connnor)*																			616.00		CONC	*975.0*	*0.10*	*5.80*	709.40	0.95	0.10	93.40	13.17%

Definition:
Q=2.78CiA, where:
Q = Peak Flow in Litres per Second (L/s)
A = Area in Hectares (Ha)
i = Rainfall Intensity in millimeters per hour (mm/hr)
i = 732.951/(TC+6.199)^0.810 — 2 Year
i = 1174.184/(TC+6.014)^0.816 — 5 Year
i = 1735.688/(TC+6.014)^0.820 — 100 Year

Notes:
1. Mannings coefficient (n) = 0.013

Time-of-Concentration in the Swale
FAA Equation: t (min) = 3.258 [(1.1 - C) L^0.5 / S^.33]
Where: Longest Watercourse Length, L (m). S (%)

Runoff Coef.C = Impervious

No.	L (m)	S %	Tc (min)
			#DIV/0!

Designed: Z.A.
Checked: D.B.Y.
Dwg. Reference: F2

No.	Revision	Date
1.	City Submission No. 1	2023-05-25
2.	City Submission No. 2	2023-09-22
3.	City Submission No. 3	2024-08-07

File Reference: CA0002045.0622
Date: 2023-09-22
Sheet No: 1 of 1

FOOTBALL FIELD

ELEVATED WALKWAY

EVENT CENTRE

GREAT LAWN

EXHIBITION WAY

PRINCESS PATRICIA WAY

QUEEN ELIZABETH DRIVEWAY

RIDEAU CANAL WESTERN PATHWAY

NEW 25.90m – 375mmø PVC SAN @ 0.15%

NEW 1.46m – 250mmø PVC STM @ 0.96%

NEW 36.06m – 1050mmø CONC STM @ 0.10%

NEW 27.14m – 1050mmø CONC STM @ 0.10%

NEW 4.31m – 250mmø PVC STM @ 1.00%

NEW 30.00m – 600mmø CONC STM @ 0.15%

NEW 34.44m – 600mmø CONC STM @ 0.07%

NEW 3.08m – 250mmø PVC STM @ 0.97%

NEW 8.09m – 250mmø PVC STM @ 0.99%

LIGHT DUTY SILT FENCE AS PER OPSD 219.110

SEE MUD MAT DETAIL C02

SAMH207 STMH208 CB14 SAMH208 STMH209 CB13 SAMH206 STMH207 SAMH205 STMH206 CB09 CB16 SAMH204 STMH205 STMH204 SAMH203 STMH203 SAMH202 CB04 CB03 CB02 STMH202 CB01 STMD CBMH210 STMH201 (OGS) SAMH201 CB07 STMH213 CB08 CB06 CB05 CB15 STMH212 SAMH210 STMH211 SAMH209 CB12 CB11 CB10

0 5m 10m 20m 40m

SCALE: 1: 400

DATE PLOTTED:

Ottawa

OSEG
Ottawa Sports and Entertainment Group

BRISBIN BROOK BEYNON ARCHITECTS
14 DUNCAN ST 4TH FLOOR
TORONTO, ON M5H 3G8
(416) 591-8999
ARCHITECT

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

TMP
200 KING. ST. WEST, SUITE 310
TORONTO, ON M5H 3T4
(416) 499-8000
MECH, PLUMB, FIRE PROTECTION ENGINEER

MULVEY & BANANI
90 SHEPPARD AVE EAST, SUITE 500
TORONTO, ON M2N 3A
(416) 751-2520
ELEC, LIGHTING ENGINEER

S2O
530 N. WOOD STREET #C
CHICAGO, IL 60622
(224) 717-1999
FOOD AND BEVERAGE

CSW
319 MCRAE AVENUE, SUITE 502
OTTAWA, ONTARIO K1Z 0B9
(613) 729-4536
LANDSCAPE ARCHITECT

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

NO.	DESCRIPTION	DATE
1	ISSUED FOR SPA	2024-08-07

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

SEAL

LICENSED PROFESSIONAL ENGINEER
D. B. YANG
100230568
2024-08-07
PROVINCE OF ONTARIO

DRAWN J.T
DATE 2024/08/07
CHECKED W.Y

LANSDOWNE EC

DWG. TITLE
EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:400
DWG. NO. C06
PROJ. NO. CA0033920.1056

														Sewer Data								
Up	Down	BLDG ID	Q_{BLDG}	$Q_{BLDG\ TOT}$	AREA ID	Area	C	Indiv AxC	Acc AxC	T_C	I	Q	Q_{TOT}	DIA	Slope	Length	$A_{hydraulic}$	R	Velocity	Qcap	Time Flow	Q / Q full
			(L/s)	(L/s)		(ha)	(-)			(min)	(mm/hr)	(L/s)	(L/s)	(mm)	(%)	(m)	(m^2)	(m)	(m/s)	(L/s)	(min)	(-)
120	119	S. Stands	106.0	106.0				0.00	0.00	***20.0***	70.3	0.0	106.0	450	0.20	59.6	0.159	0.113	0.80	127.5	1.2	0.83
119	118			106.0				0.00	0.00	21.2	67.6	0.0	106.0	450	0.20	59.6	0.159	0.113	0.80	127.5	1.2	0.83
118	117	S. Stands	106.0	212.0				0.00	0.00	22.5	65.2	0.0	212.0	600	0.20	8.7	0.283	0.150	0.97	274.6	0.1	0.77
117	116			212.0				0.00	0.00	22.6	65.0	0.0	212.0	600	0.20	3.8	0.283	0.150	0.97	274.6	0.1	0.77
116	113			212.0				0.00	0.00	22.7	64.8	0.0	212.0	600	0.20	62.4	0.283	0.150	0.97	274.6	1.1	0.77
										23.8												
115	114	I, K, N.STANDS	232.6	232.6	A3, A4, A5	2.133	0.80	1.71	1.71	***20.0***	70.3	333.0	565.6	825	0.20	73.7	0.535	0.206	1.20	641.9	1.0	0.88
114	113			232.6				0.00	1.71	21.0	68.1	322.7	555.4	825	0.20	73.0	0.535	0.206	1.20	641.9	1.0	0.87
										22.0												
113	112			444.6				0.00	1.71	23.8	62.9	298.4	743.0	1050	0.10	47.8	0.866	0.263	1.00	863.5	0.8	0.86
										24.6												
A	B			0.0		0.870	0.35	0.30	0.30	***15.0***	83.6	70.7	70.7	600	0.10	100.0	0.283	0.150	0.69	194.2	2.4	0.36
B	C			0.0		0.430	0.35	0.15	0.46	17.4	76.5	96.6	96.6	600	0.10	100.0	0.283	0.150	0.69	194.2	2.4	0.50
C	D			0.0				0.00	0.46	19.9	70.6	89.2	89.2	600	0.10	57.0	0.283	0.150	0.69	194.2	1.4	0.46
D	D1			0.0		0.520	0.35	0.18	0.64	21.2	67.6	119.7	119.7	900	0.10	55.8	0.636	0.225	0.90	572.5	1.0	0.21
D1	112			0.0		0.340	0.35	0.12	0.76	22.3	65.6	137.8	137.8	900	0.10	85.0	0.636	0.225	0.90	572.5	1.6	0.24
										23.8												
112	109			444.6				0.00	2.46	24.6	61.6	421.4	866.0	1200	0.10	46.8	1.131	0.300	1.09	1232.9	0.7	0.70
										25.3												
111	110	H, G1, G2, J	23.1	23.1	A1	1.181	0.75	0.89	0.89	***20.0***	70.3	172.8	196.0	600	0.20	39.6	0.283	0.150	0.97	274.6	0.7	0.71
110	109			23.1				0.00	0.89	20.7	68.8	169.3	192.4	600	0.20	8.5	0.283	0.150	0.97	274.6	0.1	0.70
										20.8												
109	108			467.8				0.00	3.35	25.3	60.5	562.3	1030.0	1350	0.10	99.8	1.431	0.338	1.18	1687.8	1.4	0.61
										26.7												
CB1A	AA			0.0		0.430	0.60	0.26	0.26	***15.0***	83.6	59.9	59.9	375	0.15	114.0	0.110	0.094	0.61	67.9	3.1	0.88
AA	BB			0.0		0.360	0.35	0.13	0.38	18.1	74.7	79.7	79.7	450	0.12	35.0	0.159	0.113	0.62	98.8	0.9	0.81
BB	CC			0.0		0.870	0.35	0.30	0.69	19.0	72.5	138.6	138.6	525	0.24	120.0	0.216	0.131	0.97	210.7	2.1	0.66
CC	DD			0.0				0.00	0.69	21.1	68.0	130.0	130.0	525	0.24	38.0	0.216	0.131	0.97	210.7	0.7	0.62
										21.7												
EE	DD			0.0		0.320	0.35	0.11	0.11	***15.0***	83.6	26.0	26.0	300	0.40	59.0	0.071	0.075	0.87	61.2	1.1	0.43
										16.1												
DD	FF			0.0				0.00	0.80	***21.7***	66.7	148.2	148.2	900	0.10	31.0	0.636	0.225	0.90	572.5	0.6	0.26
										22.3												
H	G			0.0		0.270	0.35	0.09	0.09	***15.0***	83.6	21.9	21.9	300	0.20	66.0	0.071	0.075	0.61	43.2	1.8	0.51
G	J			0.0		0.310	0.35	0.11	0.20	16.8	78.2	44.1	44.1	375	0.15	30.0	0.110	0.094	0.61	67.9	0.8	0.65
J	FF			0.0		0.100	0.35	0.04	0.24	17.6	76.0	50.2	50.2	600	0.15	12.0	0.283	0.150	0.84	237.8	0.2	0.21
										17.8												
FF	GG			0.0				0.00	1.04	***22.3***	65.6	189.1	189.1	900	0.10	57.0	0.636	0.225	0.90	572.5	1.1	0.33
										23.4												
K	M			0.0		0.270	0.35	0.09	0.09	***15.0***	83.6	21.9	21.9	300	0.20	65.0	0.071	0.075	0.61	43.2	1.8	0.51
M	R			0.0		0.070	0.35	0.02	0.12	16.8	78.2	25.9	25.9	300	0.20	47.0	0.071	0.075	0.61	43.2	1.3	0.60
										18.1												

														Sewer Data								
Up	Down	BLDG ID	Q_{BLDG}	$Q_{BLDG\ TOT}$	AREA ID	Area	C	Indiv AxC	Acc AxC	T_C	I	Q	Q_{TOT}	DIA	Slope	Length	$A_{hydraulic}$	R	Velocity	Qcap	Time Flow	Q / Q full
			(L/s)	(L/s)		(ha)	(-)			(min)	(mm/hr)	(L/s)	(L/s)	(mm)	(%)	(m)	(m^2)	(m)	(m/s)	(L/s)	(min)	(-)
O	P			0.0		0.280	0.60	0.17	0.17	***15.0***	83.6	39.0	39.0	375	0.12	21.0	0.110	0.094	0.55	60.7	0.6	0.64
P	Q			0.0		0.180	0.60	0.11	0.28	15.6	81.6	62.5	62.5	375	0.10	34.0	0.110	0.094	0.50	55.4	1.1	1.13
Q	R			0.0		0.300	0.60	0.18	0.46	16.8	78.3	99.1	99.1	375	0.12	18.0	0.110	0.094	0.55	60.7	0.5	1.63
R	GG			0.0				0.00	0.58	17.3	76.8	122.6	122.6	600	0.10	13.0	0.283	0.150	0.69	194.2	0.3	0.63
										17.6												
S	U			0.0		0.130	0.60	0.08	0.08	***15.0***	83.6	18.1	18.1	450	0.20	30.0	0.159	0.113	0.80	127.5	0.6	0.14
U	GG			0.0		0.140	0.60	0.08	0.16	15.6	81.6	36.7	36.7	525	0.10	17.0	0.216	0.131	0.63	136.0	0.5	0.27
										16.1												
GG	108			0.0				0.00	1.78	***17.6***	75.9	374.5	374.5	900	0.10	22.0	0.636	0.225	0.90	572.5	0.4	0.65
										18.0												
108	107			0.0		0.340	0.60	0.20	5.33	***26.7***	58.3	863.2	863.2	1350	0.10	81.4	1.431	0.338	1.18	1687.8	1.2	0.51
107	106	A, B, C, D	34.4	502.2	A2	1.555	0.75	1.17	6.49	27.8	56.7	1023.0	1525.1	1350	0.10	20.7	1.431	0.338	1.18	1687.8	0.3	0.90
										28.1												
CONTROLLED FLOW																						
106	105		616.0	616.0				0.00	0.00	27.8	56.7	0.0	616.0	975	0.10	80.2	0.747	0.244	0.95	708.7	1.4	0.87
105	104			616.0				0.00	0.00	29.2	54.9	0.0	616.0	975	0.10	12.1	0.747	0.244	0.95	708.7	0.2	0.87
104	103			616.0				0.00	0.00	29.5	54.6	0.0	616.0	975	0.10	19.2	0.747	0.244	0.95	708.7	0.3	0.87
103	102			616.0				0.00	0.00	29.8	54.2	0.0	616.0	975	0.10	54.2	0.747	0.244	0.95	708.7	1.0	0.87
102	101			616.0				0.00	0.00	30.7	53.0	0.0	616.0	975	0.10	24.2	0.747	0.244	0.95	708.7	0.4	0.87
101	EX			616.0				0.00	0.00	31.2	52.5	0.0	616.0	975	0.10	5.8	0.747	0.244	0.95	708.7	0.1	0.87
										31.3												

KEY PLAN
N.T.S.

LEGEND

- PROPOSED STORM SEWER AND MAINTENANCE HOLE
- PROPOSED CATCH BASIN
- 65.00 PROPOSED SURFACE SWALE AND DIRECTION OF FLOW
- + 65.81 PROPOSED GRADE
- EXISTING GRADE
- STORM CATCHMENT BOUNDARY AREA
- B / 0.82 STORM CATCHMENT AREA ID / AREA (ha)

HOLMWOOD AVENUE
LANSDOWNE WAY
BANK STREET
QUEEN ELIZABETH DRIVEWAY
RIDEAU RIVER
BLOCK A
BLOCK B
BLOCK C
BLOCK D
BLOCK H
BLOCK G
BLOCK J
BLOCK I
BLOCK K
BLOCK L
ABERDEEN SQUARE
ABERDEEN PAVILION
WEST COURT
EAST COURT
EVENT SQUARE
GREAT PORCH
GREAT LAWN
EAST BERM
SOUTH BERMS
EXISTING FIELD
BLOCK K INTERFACE ZONE
NORTH SIDE STANDS
CIVIC ARENA + SALONS BELOW
RELOCATED HORTICULTURE BUILDING
HEIRLOOM ORCHARD
SHUTTLE LOOP
SKATING COURT
CHILDREN'S GARDEN
THE BEACON
THE CROSSING
THE SCREEN
THE HILL
NCC LANDS
CANAL OUTLET
OPERATING LEVEL OF CANAL DURING "NAVIGATION SEASON" 64.03m TO 64.08m

BLDG A 0.266 / 0.90
BLDG B 0.345 / 0.90
BLDG C 0.315 / 0.90
BLDG D 0.142 / 0.90
BLDG H 0.365 / 0.90
BLDG G1 0.182 / 0.90
BLDG G2 0.039 / 0.90
BLDG J 0.134 / 0.90
BLDG I 0.254 / 0.90
BLDG K 0.164 / 0.90
N.STANDS 1.343 / 0.90
S.STANDS 0.840 / 0.90
A1 1.181 / 0.75
A2 1.555 / 0.75
A3 0.948 / 0.80
A4 0.931 / 0.80
A5 0.254 / 0.75
102 0.432
107AA 0.283
AA 0.36
108 0.34
109A 0.051
109 0.30
109C 0.243
116 0.255
U 0.02
BB 0.87
V 0.14
T 0.11
N 0.07
P 0.18
GG 0.30
O 0.26
L 0.08
M 0.08
K 0.11
G 0.10
F 0.11
FF 0.10
E 0.10
I 0.16
H 0.11
EE 0.32
D 0.52
D1 0.43
A 0.85

CLIENT PARTNERSHIP

Ottawa
OSEG
Ottawa Sports and Entertainment Group

CONSULTANT TEAM

CANNONDESIGN
AN IDEAS BASED PRACTICE

CORUSH SUNDERLAND WRIGHT

DSEL
david schaeffer engineering ltd
SMART SUBDIVISIONS

GreenbergFarrow

Stantec

PHILLIPS FAREVAAG SMALLENBERG
PLANNING • URBAN DESIGN
LANDSCAPE ARCHITECTURE

REVISIONS

No.	Date	Details	By
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

1:600 0 6 18 30m

PROJECT

Lansdowne
THE TRANSFORMATION OF LANSDOWNE PARK
LA TRANSFORMATION DU PARC LANSDOWNE

DRAWING TITLE

CATCHMENT AREA PLAN

DATE

SCALE 1:600

REVISION # 4

DRAWING No. C03

V:\01-634\active\1604_00832_Lansdowne Park Competition\design\drawing\160400832 Civil Stantec.dwg Feb06 ,2012 - 3:16pm

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

LOCATION				RESIDENTIAL AREA AND POPULATION												OTHER				RETAIL		OFFICE		I+C+I	INFILTRATION				PIPE					
LOCATION	FROM M.H.	TO M.H.	SANITARY DRAINAGE AREA ID	INDV AREA (ha)	ACCU AREA (ha)	NUMBER OF UNITS						POPULATION		PEAK FACT.	PEAK FLOW (l/s)	GROSS AREA (ha)	DEVEL. AREA (ha)	PEAK FLOW (l/s)	ACCU. PEAK FLOW (l/s)	INDIV AREA (ha)	ACCU. AREA (ha)	INDIV AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	INDIV AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	LENGTH (m)	DIA. (mm)	SLOPE (%)	CAP. (FULL) (l/s)	VEL. (FULL) (m/s)	AVAIL. CAP. (%)
						SINGLES	SEMIS	AVG TOWNS.	AVG APT.	2-BED APT.	3-BED APT.	INDIV POP.	ACCU POP.																				
EXISTING DEVELOPMENT																																
South Stands		*Ex.19*										0	0	3.80	0.00			11.60	11.60								11.60	0.000	0.00	0.00	**11.60**	*4.50*	*200*	*1.00*	32.80	1.04	**64.63%**
	Ex.19	*Ex.18*										0	0	3.80	0.00				11.60								11.60	0.000	0.00	0.00	**11.60**	*9.30*	*300*	*0.20*	43.25	0.61	**73.18%**
	Ex.18	*Ex.17*										0	0	3.80	0.00				11.60								11.60	0.000	0.00	0.00	**11.60**	*9.30*	*300*	*0.20*	43.25	0.61	**73.18%**
	Ex.17	*Ex.16*										0	0	3.80	0.00				11.60								11.60	0.000	0.00	0.00	**11.60**	*5.80*	*300*	*0.20*	43.25	0.61	**73.18%**
	Ex.16	*Ex.13*										0	0	3.80	0.00				11.60								11.60	0.000	0.00	0.00	**11.60**	*62.60*	*300*	*0.20*	43.25	0.61	**73.18%**
Bldg K, I, N Stands		*Ex.15*							190			342	342	3.44	3.82			7.60	7.60	0.25	0.25	0.84	0.84	7.95	0.000	0.00	0.00	**11.77**	*9.80*	*250*	*1.00*	59.47	1.21	**80.21%**
	Ex.15	*Ex.14*										0	342	3.44	3.82				7.60		0.25		0.84	7.95	0.000	0.00	0.00	**11.77**	*74.90*	*300*	*0.20*	43.25	0.61	**72.79%**
	Ex.14	*Ex.13*										0	342	3.44	3.82				7.60		0.25		0.84	7.95	0.000	0.00	0.00	**11.77**	*74.90*	*300*	*0.20*	43.25	0.61	**72.79%**
	Ex.13	*Ex.12*										0	342	3.44	3.82				19.20		0.25		0.84	19.55	0.000	0.00	0.00	**23.37**	*44.40*	*300*	*0.20*	43.25	0.61	**45.96%**
	Ex.12	*Ex.9*										0	342	3.44	3.82				19.20		0.25		0.84	19.55	0.000	0.00	0.00	**23.37**	*56.60*	*300*	*0.20*	43.25	0.61	**45.96%**
Bldg G1, G2, H, J		*Ex.11*										0	0	3.80	0.00				0.00	1.59	1.59			0.51	0.000	0.00	0.00	**0.51**	*8.40*	*250*	*0.38*	36.66	0.75	**98.60%**
Salon, Civic Centre		*Ex.11*										0	0	3.80	0.00			5.20	5.20		0.00			5.20	0.000	0.00	0.00	**5.20**	*30.80*	*250*	*0.38*	36.66	0.75	**85.81%**
	Ex.11	*Ex.10*										0	0	3.80	0.00				5.20		1.59			5.71	0.000	0.00	0.00	**5.71**	*38.20*	*250*	*0.38*	36.66	0.75	**84.41%**
	Ex.10	*Ex.9*										0	0	3.80	0.00				5.20		1.59			5.71	0.000	0.00	0.00	**5.71**	*7.50*	*250*	*0.38*	36.66	0.75	**84.41%**
	Ex.9	*Ex.8*										0	342	3.44	3.82				24.40		1.84		0.84	25.27	0.000	0.00	0.00	**29.08**	*84.00*	*375*	*0.15*	67.91	0.61	**57.17%**
Aberdeen Pavilion	*Ex.8*	*Ex.7*										0	342	3.44	3.82				24.40	0.41	2.25		0.84	25.40	0.000	0.00	0.00	**29.21**	*23.30*	*375*	*0.15*	67.91	0.61	**56.98%**
Bldg A, B, C, D, Horticulture	*Ex.7*	*Ex.6*						40	50			198	540	3.37	5.89				24.40	2.25	4.50		0.84	26.13	0.000	0.00	0.00	**32.02**	*23.30*	*375*	*0.15*	67.91	0.61	**52.85%**
	Ex.6	*Ex.5*										0	540	3.37	5.89				24.40		4.50		0.84	26.13	0.000	0.00	0.00	**32.02**	*83.50*	*375*	*0.15*	67.91	0.61	**52.85%**
	Ex.5	*Ex.4*										0	540	3.37	5.89				24.40		4.50		0.84	26.13	0.000	0.00	0.00	**32.02**	*10.10*	*375*	*0.15*	67.91	0.61	**52.85%**
	Ex.4	*Ex.3*										0	540	3.37	5.89				24.40		4.50		0.84	26.13	0.000	0.00	0.00	**32.02**	*17.50*	*375*	*0.15*	67.91	0.61	**52.85%**
	Ex.3	*Ex.2*										0	540	3.37	5.89				24.40		4.50		0.84	26.13	0.000	0.00	0.00	**32.02**	*60.00*	*375*	*0.15*	67.91	0.61	**52.85%**
	Ex.2	*Ex.1*										0	540	3.37	5.89				24.40		4.50		0.84	26.13	0.000	0.00	0.00	**32.02**	*24.70*	*375*	*0.15*	67.91	0.61	**52.85%**
	Ex.1	*EX*										0	540	3.37	5.89				24.40		4.50		0.84	26.13	0.000	0.00	0.00	**32.02**	*9.70*	*375*	*0.15*	67.91	0.61	**52.85%**

DESIGN PARAMETERS

RESIDENTIAL AVG. DAILY FLOW =	280	l/cap/day
COMMERCIAL AVG. DAILY FLOW =	28,000	l/ha/day
	0.324	l/ha/s
INSTITUTIONAL AVG. DAILY FLOW =	28,000	l/ha/day
	0.324	l/ha/s
LIGHT INDUSTRIAL FLOW =	35,000	l/ha/day
	0.405	l/ha/s
HEAVY INDUSTRIAL FLOW =	55,000	l/ha/day
	0.637	l/ha/s

COMMERCIAL PEAK FACTOR =	1.5	(WHEN AREA > 20%)
	1.0	(WHEN AREA < 20%)
INSTITUTIONAL PEAK FACTOR =	1.5	(WHEN AREA > 20%)
	1.0	(WHEN AREA < 20%)
RESIDENTIAL CORRECTION FACTOR, K =	0.80	
MANNING N =	0.013	
PEAK EXTRANEOUS FLOW, I (l/s/ha) =	0.33	

PEAK POPULATION FLOW, (l/s) =	P*q*M/86400
PEAK EXTRANEOUS FLOW, (l/s) =	I*Ac
RESIDENTIAL PEAKING FACTOR, M =	1+(14/(4+P^0.5))*K
Ac = CUMULATIVE AREA (ha)	
P = POPULATION (THOUSANDS)	
SEWER CAPACITY, Qcap (l/s) =	1/N S^(1/2) R^(2/3) Ac
(MANNING'S EQUATION)	

UNIT TYPE	PERSONS/UNIT
SINGLES	3.4
SEMI-DETACHED	2.7
TOWNHOMES	2.7
WALK UP TOWNS	1.8
2-BED APT. UNIT	2.1
3-BED APT. UNIT	3.1

DESIGNED:	O.B.Y
CHECKED:	O.B.Y
PROJECT:	Lansdowne Redevelopment 2.0
LOCATION:	Ottawa, Ontario
PAGE NO:	1 of 2

NO.	REVISION	DATE
1.	City Submission No.1	2023-05-25
2.	City Submission No.2	2023-09-22
3.	City Submission No.3	2024-08-07

FILE & DWG. REFERENCE:

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

LOCATION				RESIDENTIAL AREA AND POPULATION												OTHER				RETAIL		OFFICE		I+C+I	INFILTRATION				PIPE					
LOCATION	FROM M.H.	TO M.H.	SANITARY DRAINAGE AREA ID	INDV AREA (ha)	ACCU AREA (ha)	NUMBER OF UNITS						POPULATION		PEAK FACT.	PEAK FLOW (l/s)	GROSS AREA (ha)	DEVEL. AREA (ha)	PEAK FLOW (l/s)	ACCU. PEAK FLOW (l/s)	INDIV AREA (ha)	ACCU. AREA (ha)	INDIV AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	INDIV AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	TOTAL FLOW (l/s)	LENGTH (m)	DIA. (mm)	SLOPE (%)	CAP. (FULL) (l/s)	VEL. (FULL) (m/s)	AVAIL. CAP. (%)
						SINGLES	SEMIS	AVG TOWNS	AVG APT.	2-BED APT.	3-BED APT.	INDIV POP.	ACCU POP.																				
POST DEVELOPMENT																																	
BLDG I, K, North Stands		*Ex.15*							190			342	342	3.44	3.82			7.60	7.60	0.25	0.25	0.84	0.84	7.95	0.000	0.00	0.00	**11.77**						
	Ex.15	*Ex.14*										0	342	3.44	3.82				7.60		0.25		0.84	7.95	0.000	0.00	0.00	**11.77**	73.58	375	0.15	67.91	0.61	**82.67%**
	Ex.14	SAMH 208										0	342	3.44	3.82				7.60		0.25		0.84	7.95	0.000	0.00	0.00	**11.77**	71.25	375	0.15	67.91	0.61	**82.67%**
	SAMH 208	SAMH 207										0	342	3.44	3.82				7.60		0.25		0.84	7.95	0.000	0.00	0.00	**11.77**	66.41	375	0.15	67.91	0.61	**82.67%**
South Stands	*Ex.18*	SAMH 207										0	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										0	342	3.44	3.82				19.20		0.25		0.84	19.55	0.000	0.00	0.00	**23.37**	17.37	375	0.14	65.60	0.59	**64.38%**
	SAMH 206	SAMH 205										0	342	3.44	3.82				19.20		0.25		0.84	19.55	0.000	0.00	0.00	**23.37**	25.49	375	0.15	67.91	0.61	**65.59%**
	SAMH 205	SAMH 204										0	342	3.44	3.82				19.20		0.25		0.84	19.55	0.000	0.00	0.00	**23.37**	37.48	375	0.16	70.13	0.63	**66.68%**
	SAMH 204	SAMH 203										0	342	3.44	3.82				19.20		0.25		0.84	19.55	0.000	0.00	0.00	**23.37**	31.38	375	0.15	67.91	0.61	**65.59%**
New Event Centre	Bldg	375 Pipe										0	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%**
	SAMH 203	SAMH 202										0	342	3.44	3.82				24.40		0.25		0.84	24.75	0.000	0.00	0.00	**28.57**	106.17	375	0.15	67.91	0.61	**57.93%**
	SAMH 202	SAMH 201										0	342	3.44	3.82				24.40		0.25		0.84	24.75	0.000	0.00	0.00	**28.57**	49.82	375	0.15	67.91	0.61	**57.93%**
	SAMH 201	*Ex.8*										0	342	3.44	3.82				24.40		0.25		0.84	24.75	0.000	0.00	0.00	**28.57**	33.19	375	0.15	67.91	0.61	**57.93%**
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										0	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*										0	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*										0	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	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*										0	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*										0	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%**

DESIGN PARAMETERS

RESIDENTIAL AVG. DAILY FLOW =	280	l/cap/day	COMMERCIAL PEAK FACTOR =	1.5	(WHEN AREA > 20%)	PEAK POPULATION FLOW, (l/s) =	P*q*M/86400	UNIT TYPE	PERSONS/UNIT
COMMERCIAL AVG. DAILY FLOW =	28,000	l/ha/day		1.0	(WHEN AREA < 20%)	PEAK EXTRANEOUS FLOW, (l/s) =	I*Ac	SINGLES	3.4
	0.324	l/ha/s				RESIDENTIAL PEAKING FACTOR, M =	1+(14/(4+P^0.5))*K	SEMI-DETACHED	2.7
INSTITUTIONAL AVG. DAILY FLOW =	28,000	l/ha/day	INSTITUTIONAL PEAK FACTOR =	1.5	(WHEN AREA > 20%)	Ac = CUMULATIVE AREA (ha)		TOWNHOMES	2.7
	0.324	l/ha/s		1.0	(WHEN AREA < 20%)	P = POPULATION (THOUSANDS)		WALK UP TOWNS	1.8
LIGHT INDUSTRIAL FLOW =	35,000	l/ha/day						2-BED APT. UNIT	2.1
	0.405	l/ha/s	RESIDENTIAL CORRECTION FACTOR, K =	0.80		SEWER CAPACITY, Qcap (l/s) =	1/N S^(1/2) R^(2/3) Ac	3-BED APT. UNIT	3.1
HEAVY INDUSTRIAL FLOW =	55,000	l/ha/day	MANNING N =	0.013		(MANNING'S EQUATION)			
	0.637	l/ha/s	PEAK EXTRANEOUS FLOW, I (l/s/ha) =	0.33					

DESIGNED:	
D.B.Y	
CHECKED:	
D.B.Y	
PROJECT:	
Lansdowne Redevelopment 2.0	
LOCATION:	
Ottawa, Ontario	
PAGE NO:	
2 of 2	

NO.	REVISION	DATE
1.	City Submission No.1	2023-05-25
2.	City Submission No.2	2023-09-22
3.	City Submission No.3	2024-08-07

FILE & DWG. REFERENCE:

Building	Retail (m^2)	Residential # towns	Residential # apts	Office (m^2)	Estimated WTR / SAN / STM per Mechancal Eng. WTR (L/s)	FIRE (L/s)	SAN (L/s)	STM (L/s)	Estimated Per City of Ottawa Design Guidelines WTR AVG (L/s)	MAX. DAY (L/s)	PEAK HR (L/s)	FIRE (L/s)	SAN (L/s)	STM (L/s)	Notes
A	4,129	7	50		16.7		5.4	8.3	0.6	1.3	2.7	150	2.5	8.6	Mech Eng values provided by LKM 2011-11-29 (Includes retail and residential)
B	5,401	15			6.9		5.7	8.6	0.3	0.6	1.3	150	1.6	11.1	Mech Eng values provided by LKM 2011-11-29 (Includes retail and residential)
C	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	4.6	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)
H	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)
I	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 - Novemeber 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 x 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/m^2/d, Max Day = Avg Day x 1.5, Peak Hour = Avg Day x 2.7

Residential:

Townhouse Avg Day = 2.7p/unit x 350m^3/d, Max Day = Avg Day x 2.5, Peak Hour = Avg Day x 5.5

Apartement Avg Day = 1.8p/unit x 350m^3/d, Max Day = Avg Day x 2.5, Peak Hour = Avg Day x 5.5

Office: Average Day 75L/9.3m^2/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

Wastewater

Retail: Average Day 5L/m^2/d x 24hour day / 12hour operation, Peak = Average Day x 1.5

Residential:

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

Apartment Avg Day = 1.8p/unit x 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**

DESIGN PARAMETERS

Avg. Daily Flow Res.	350	L/p/d	Peak Fact Res. Per Harmons: Min = 2.0, Max =4.0		Infiltration / Inflow	0.28	L/s/ha
Avg. Daily Flow Retail	5	$L/m^2/d$	Peak Fact. Retail	1.5	Min. Pipe Velocity	0.60	m/s full flowing
Avg. Office Flow	75	$L/9.3m^2/d$	Peak Fact. Office	1.5	Max. Pipe Velocity	3.00	m/s full flowing
					Mannings N	0.013	

Location			Residential Area and Population								Retail		Office		Other			Infiltration				Pipe Data							
Area ID	Up	Down	Area			Pop.	Cumulative		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}	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
	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	14			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
	14	13				0.0	0.000	342.0	4.00	5.5		2,505		8,361		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
	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
	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
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
	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
	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	0.62
	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

FOOTBALL FIELD

ELEVATED WALKWAY

EVENT CENTRE

GREAT LAWN

NEW NORTH PROPERTY LINE

EXHIBITION WAY

QUEEN ELIZABETH DRIVEWAY

RIDEAU CANAL WESTERN PATHWAY

QUEEN ELIZABETH DRIVE

RIDEAU CANAL

PROPOSED STORMTECH CHAMBER OR EQUIVALENT APPROVED BY ENGINEER
CHAMBER AREA: 4000m²
CHAMBER DEPTH: 1.10m
BOTTOM OF CHAMBER: 63.06m
STORAGE REQUIRED: 4100m³
AVAILABLE STORAGE: 4400m³

SCALE: 1: 400

0 5m 10m 20m 40m

DATE PLOTTED:

Ottawa

OSEG
Ottawa Sports and Entertainment Group

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LANDSCAPE ARCHITECT

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

NO.	DESCRIPTION	DATE
1	ISSUED FOR SPA	2024-08-07

REVISIONS/ ISSUES

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

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LICENCED PROFESSIONAL ENGINEER
D. B. YANG
100230568
2024-08-07
PROVINCE OF ONTARIO

HUNTON

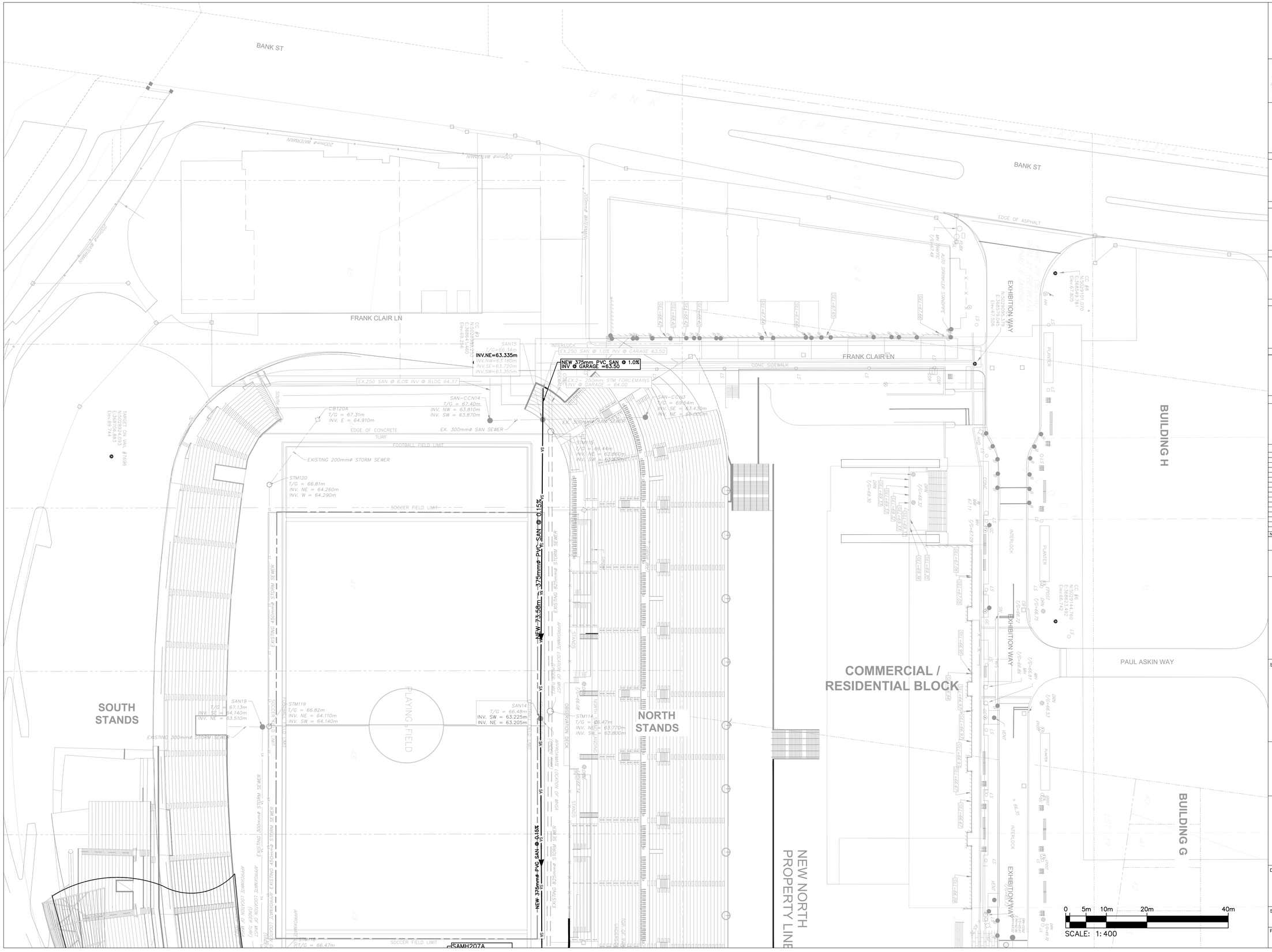
DRAWN	J.T
DATE	2024/08/07
CHECKED	W.Y

LANSDOWNE EC

DWG. TITLE

GRADING PLAN

SCALE	1:400
DWG. NO.	C04
PROJ. NO.	CA0033920.1056



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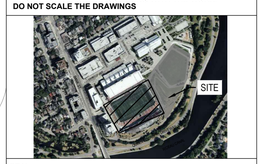

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LICENSED PROFESSIONAL ENGINEER
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100230568
2024-08-07
PROVINCE OF ONTARIO

HUSON

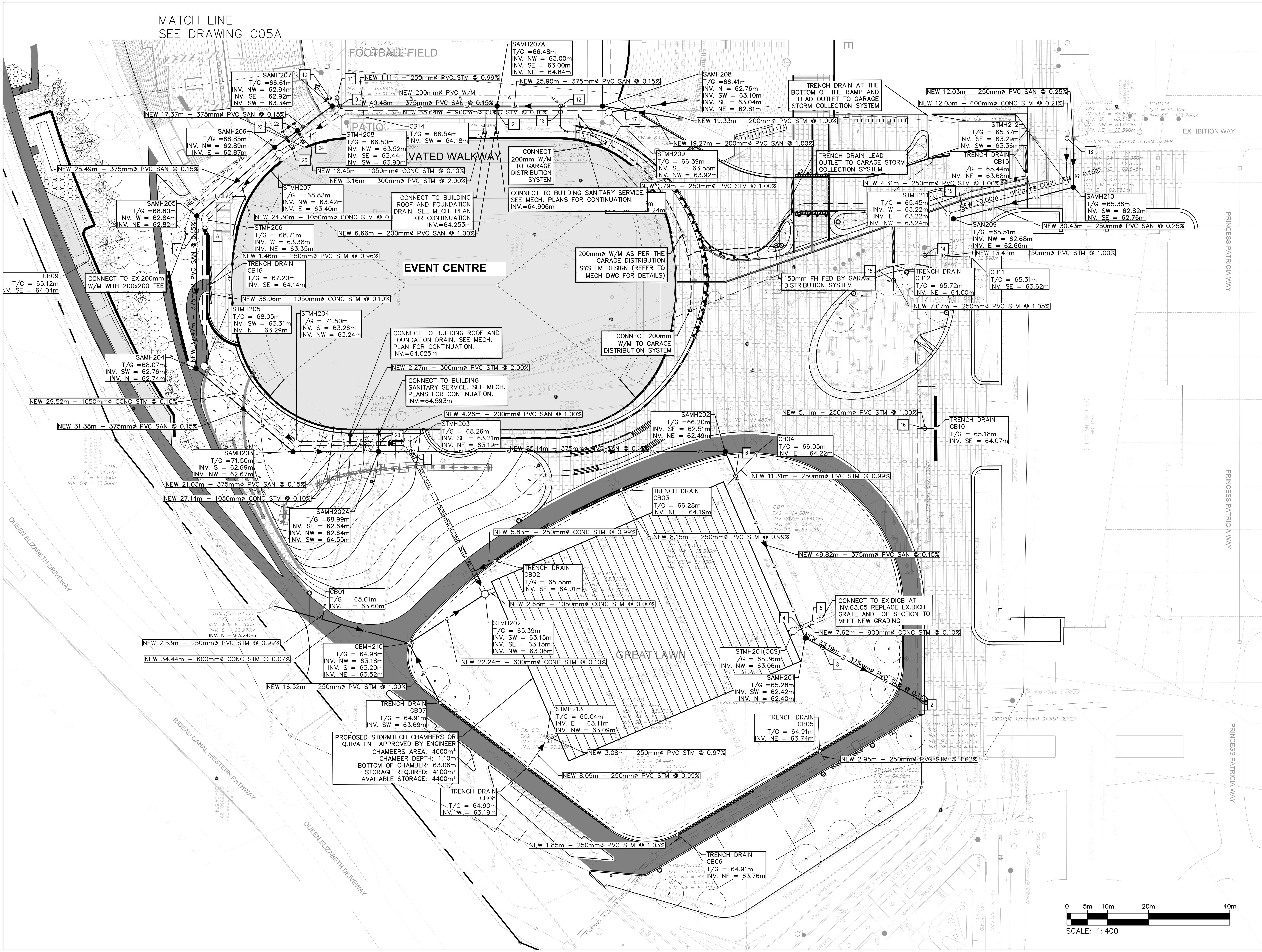
DRAWN	J.T
DATE	2024/08/07
CHECKED	W.Y

LANSDOWNE EC

DWG. TITLE

SERVICING PLAN

SCALE	1:400
PROJ. NO.	CA0033920.1056
DWG. NO.	C05A



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100230568
2024-08-07
PROVINCE OF ONTARIO

DRAWN J.T
DATE 2024/08/07
CHECKED W.Y

LANSDOWNE EC

DWG. TITLE
SERVICING PLAN

SCALE 1:400
DWG. NO. C05B
PROJ. NO. CA0033920.1056

APPENDIX

D

- DWG C06 – EROSION AND SEDIMENTATION CONTROL PLAN

FOOTBALL FIELD

ELEVATED WALKWAY

EVENT CENTRE

GREAT LAWN

EXHIBITION WAY

PRINCESS PATRICIA WAY

QUEEN ELIZABETH DRIVEWAY

RIDEAU CANAL WESTERN PATHWAY

NEW 25.90m – 375mmø PVC SAN @ 0.15%

NEW 1.46m – 250mmø PVC STM @ 0.96%

NEW 36.06m – 1050mmø CONC STM @ 0.10%

NEW 27.14m – 1050mmø CONC STM @ 0.10%

NEW 4.31m – 250mmø PVC STM @ 1.00%

NEW 30.00m – 600mmø CONC STM @ 0.15%

NEW 34.44m – 600mmø CONC STM @ 0.07%

NEW 3.08m – 250mmø PVC STM @ 0.97%

NEW 8.09m – 250mmø PVC STM @ 0.99%

LIGHT DUTY SILT FENCE AS PER OPSD 219.110

SEE MUD MAT DETAIL C02

SAMH207 STMH208 CB14 SAMH208 STMH209 CB13 SAMH206 STMH207 SAMH205 STMH206 CB09 CB16 SAMH204 STMH205 STMH204 SAMH203 STMH203 SAMH202 CB04 CB03 CB02 STMH202 CB01 STMD CBMH210 STMH201 (OGS) SAMH201 CB07 STMH213 CB08 CB06 CB05 CB15 STMH212 SAMH210 STMH211 SAMH209 CB12 CB11 CB10

0 5m 10m 20m 40m

SCALE: 1: 400

DATE PLOTTED:

Ottawa

OSEG
Ottawa Sports and Entertainment Group

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NO.	DESCRIPTION	DATE
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100230568
2024-08-07
PROVINCE OF ONTARIO

DRAWN J.T
DATE 2024/08/07
CHECKED W.Y

LANSDOWNE EC

DWG. TITLE
EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:400
DWG. NO. C06
PROJ. NO. CA0033920.1056

APPENDIX

E

- SUBMISSION CHECK LIST

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).
- ☒ 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 septic fields on adjacent lands) and mitigation required to address potential impacts.
- ☐ Proposed phasing of the development, if applicable.

☒ 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

- ☒ Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal 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