NADG

3777 STRANDHERD DRIVE
BARRHAVEN TOWN CENTRE
PAD C

Servicing and Stormwater Management Design Brief

November 2026

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BARRHAVEN TOWN CENTRE

PAD C

Design Brief
City of Ottawa
Development Application File: D07-12-0106

November 2026

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1 Introduction

This Site Servicing and Stormwater Management Brief outlines the detailed design for extending storm, sanitary, and water services to Building Pad C, a proposed 783 sq. m stand-alone drive-through restaurant building located in the existing Barrhaven Town Centre shopping plaza at the intersection of Strandherd Drive and Greenbank Road. The existing shopping center is bound by Strandherd Drive to the north, undeveloped land to the south, Greenbank Road to the east, and Jockvale Road to the west. Refer to key map below in Figure 1.1.



Figure 1.1 – Key Map

2 Water Supply

The water service for Pad C will be provided through a proposed 50mm diameter Type K copper line connected to the existing 200 mm Ø private watermain network located in the existing parking lot. Fire protection will be provided by existing hydrants located in the parking lot. See Drawing C-001 in **Appendix A** for details.

The area where Pad C is proposed is over a section of the existing watermain. This portion of the watermain will be removed and reconstructed in a new alignment as detailed on Drawing C-001.

A water model of the existing watermain and service connection was previously completed using the H2O MAP version 6.0 program produced by MWH Soft. The model incorporates a boundary condition provided by the City of Ottawa at Greenbank Road, where the existing 200 mm watermain servicing the commercial development connects

to the existing 750 mm feeder main on Greenbank Road. The model includes the existing 200 mm watermain through the existing commercial site to the location where the 50 mm water service is proposed to service the PAD C building. The model incorporates water demands for the proposed building for the basic day, maximum day and peak hour scenarios and a fire demand calculated using the Fire Underwriters Survey (FUS) method. Copies of the boundary condition, water demand calculation, FUS calculation and hydraulic model results are included in **Appendix A**. Since the completion of the original water model, the water demands for the proposed building have increased by a maximum 0.02 L/s, while fire flow requirements have increased from 3,000 L/min to 4,000 L/min. Given the minimal change in demand, the impact on the model's results is considered negligible, and the existing model is considered valid for assessing the adequacy of the watermain.

The boundary conditions provide hydraulic heads for the basic day (maximum HGL), peak hour and maximum day plus fire scenarios for both pre-configuration and post-configuration scenarios. The pre-configuration is the worst scenario, highest maximum HGL and lowest peak hour and maximum day results and is used in the hydraulic analysis.

Under the basic day (maximum HGL) scenario, the pressure of the building (Node S-1 in the hydraulic model) is 633.0 kPa. Pressure reducing control in the building is required for pressures exceeding 552 kPa (80 psi). Under the post-configuration scenario, the basic day pressure will drop to 506.6 kPa. The peak hour pressure at the building is 466.4 kPa which exceeds the requirement of 276 kPa (40 psi).

The fire flow requirement for the building has been determined to be 67 l/s (4,000 l/min) in the FUS calculation included in **Appendix A**. Fire flow has been calculated at the building connection to the existing main, Node J-1 in the hydraulic model, and a fire flow rate of 116.1 l/s is provided in the model which exceeds the requirement of 67 l/s.

3 Sanitary Sewers

The area where Pad C is proposed to be located is adjacent to an existing 250 mmØ sanitary sewer and 75 mmØ forcemain. The proposed building will be serviced by a 150 mmØ service lateral to the realigned sewer as illustrated on Drawing C-001.

The sewer and a portion of the forcemain will be removed and reconstructed as illustrated on Drawing C-001.

Appendix A also contains a copy of the original sanitary sewer design sheet and tributary area plan for the Town Center Site Plan. Pad C is located in tributary Area 11. The original sanitary sewer design sheet included a building expansion area of approximately 897 sq. m. (9655 sq. ft.) Peak flow from the site (including expansion) was 6.97 l/s. The sewer design sheet has been updated to calculate peak flow based on actual/anticipated use for Pad B and C. Pad B was previously approved and is comprised of a Second Cup coffee house plus a 99 sq.m. general retail space. The number of seats in the Second Cup is 46, at a daily volume of 125 l/day/seat (City of Ottawa Sewer Design Guidelines Appendix 4-A) the 99 sq. m. of retail space has been allocated a daily volume of 5 l/sm. Pad C is 783 sq.m of retail space at a daily volume of 5 l/sm. The peak sanitary flow from the site, when including Pad B and C and eliminating the expansion areas is 7.053 l/s. This very minor increase in peak flow which should have no negative impact on downstream sewers. City staff had confirmed previously that an increase up to 7.2 l/s would be acceptable for this site. See the email in **Appendix A**.

4 Storm Sewers and Stormwater Management

In 2004, the owner commenced development of the western portion of the Barrhaven Town Centre site with the construction of the Home Depot pad and followed up in 2005 with the construction of the BMO and Swiss Chalet pads. All three of these pads are serviced by storm sewers, which discharge to the Kennedy-Burnett Stormwater Management Pond. Since the Kennedy-Burnett pond was to provide off-site quantity control for this development, no on-site quantity controls were included for those site plans. Refer to the 2004 Jockvale Road Extension Design Report by Robinson Consulting Inc. This current application proposes to erect a standalone Pad. The Pad will be located within the existing parking lot constructed as part of the BMO/Swiss Chalet site plan.

The stormwater management criteria for the proposed pad was developed in response to City of Ottawa comments from the initial engineering submission. The City has requested that the 100-year release rate from the portion of the site being redeveloped as the new building be restricted to the equivalent of a 5-year storm event. The calculation is based on a time of concentration (Tc) of 20 minutes and a runoff coefficient (C) of 0.5 Accordingly, the maximum allowable release rate for the new building area is calculated as follows:

Tc = 20 minutes
A = 0.078 Ha
C = 0.50
$\mathbf{i_5}$ = 70.25 mm/hr

$\mathbf{Q_{100}}$ = 2.78 x C x i x A = 2.78 x 0.50 x 70.25 x 0.078 = **7.62 l/s**

Based on the aforementioned criteria, the maximum 100-year release rate from the building area is 7.62 l/s.

Inlet control devices are proposed in each roof inlet, similar to the Watts ® roof drain with flow control. With a release rate of 1.26l/s per inlet, the total release rate from the building is **5.04 l/s**.

During a 100-year storm, the maximum retention volume required is 27.12 m^3, see Modified Rational Method Calculation in Appendix A. The proposed building has an estimated rooftop storage volume of 29.33 m^3, based on 50 mm depth of ponding, and 75% usable rooftop area for storage; therefore, there is no overflow during the 100-year event. According to the mechanical engineer, no rooftop scuppers are proposed, as the parapet is set 150mm above the drain grate.

In order to provide a piped outlet for Pad C, a proposed 250mm diameter storm service pipe will be connected to the existing storm sewer. An existing CB will be replaced with MH1, and the catchbasin (CB1) relocated to accommodate the regrading around the proposed storm sewer service. A new catchbasin (CB2) is proposed to collect runoff within the drive-through area south of the building, conveying flows to an existing 900mm diameter storm sewer.

The total surface runoff collected by catchbasins is expected to decrease because of the restriction introduced in the building roof area. Therefore, there is expected to be a net decrease in runoff conveyed to the immediate receiving storm sewer system. The proposed storm servicing layout is shown on Drawing C-001 in **Appendix A**.

5 Grading

The exterior grading for Pad C will generally blend into the existing parking lot grades. The finished floor was established to minimize re-grading of the existing asphalt parking lot and to accommodate the rear exits, which tie into the existing drive aisle curbs and sidewalks. Drawing C-200 in Appendix A illustrates the proposed grades and limits of regrading.

There is no off-site grading proposed for this project.

Paterson Group geotechnical report dated June 20, 2018 provides details on the existing soils within the development. The report provides recommendations which include but are not limited to the following:

- The general permissible grade raise is 2.0 m.
- Fill placed below the foundations to meet OPSS Granular ‘A’ or Granular ‘B’ Type II placed in 300 mm lifts compacted to 98% SPMDD.
- Fill for roads to be suitable native material in 300 mm lifts compared to 95% SPMDD.
- Pavement Structure:

ACCESS LANES AND HEAVY TRUCK PARKING AREAS	CAR PARKING AREAS
40 mm superpave 12.5 mm 50 mm superpave 19 mm 150 mm Granular ‘A’ 400 mm Granular ‘B’ Type II	50 mm HL3 superpave 12.5 mm 150 mm Granular ‘A’ 300 mm Granular ‘B’ Type II

6 Sediment and Erosion Control

To reduce the possibility of sediment loads entering the existing storm sewer system during construction, a continuous row of silt bags will be placed around the perimeter of the construction limits, in addition, existing catchbasins in the vicinity of the proposed construction will have a silt sack placed in the structure. The sediment control measures should be maintained on a regular basis and remain in place until the area is repaved and vegetation is established in the landscape areas. See Drawing C-900 in Appendix A.

7 Recomendations

This servicing and stormwater management design brief has demonstrated the proposed site plan can be serviced by connecting to existing storm, sanitary, and watermain pipes in the existing parking lot of the shopping plaza. The existing services have sufficient capacity to accommodate the proposed expansion. On-site stormwater management is provided by roof top detention to maintain post-development flows less than pre-development flows for both the 5- and 100-year storms. The construction of storm, and sanitary sewers, and watermain for the proposed building can be completed in conformance with the City of Ottawa standards. Adherence to the sediment and erosion control plan during construction will minimize harmful impacts on downstream systems.

Report prepared by:



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Appendix A

Drawing C-001 – Site Servicing

Site Plan

Water Calculations

Original Sanitary Sewer Design Sheet

Original Sanitary Sewer Tributary Area Plan

Updated Sanitary Sewer Design Sheet

Joe Zagorski's E-mail

Figure 1 – Pre-development Conditions

Figure 2 – Post-Development Conditions

Modified Rational Calculation, 100-year

Watts Roof Drain

Drawing C-Rem - Removals

Drawing C-200 – Grading

Drawing C-900 – Sediment and Erosion Control Plan

DRAWING NOTES

1.0 GENERAL

1.1 CONTRACTOR TO VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

1.2 DO NOT SCALE DRAWINGS.

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

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

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

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

1.7 FOR LEGAL SURVEY INFORMATION REFER TO REGISTERED PLAN.

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

1.9 ALL CONCRETE CURBS AND SIDEWALKS TO CONFORM TO O.P.S. AND CONSTRUCTED TO CITY STANDARDS. ALL ONSITE CURBS TO BE BARRIER TYPE.

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

1.11 ALL CONSTRUCTION TRAFFIC TO ACCESS SITE OFF STRANDHERD DRIVE.

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

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

1.14 CONTRACTOR TO SUPPLY SUITABLE FILL MATERIAL WHERE REQUIRED TO ROUGH GRADE THE SITE.

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

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

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

1.18 REFER TO ARCHITECTURAL SITE PLAN FOR PAVEMENT MARKING, PREPARED BY SCOLER LEE AND ASSOC.

1.19 CONTRACTOR TO UNCOVER EXISTING UTILITIES WELL IN ADVANCE OF PIPE LAYING IN ORDER TO CORRECT GRADE CONFLICTS AS REQUIRED, IF REQUIRED.

1.20 JOB BENCHMARKS:
- BM#1 TOP OF NORTH BOLT IN LAMP STANDARD BASE ELEV. 96.800
- BM#2 MAGNETIC NAIL IN CONCRETE BASE OF LAMP STANDARD ELEV. 96.474

BENCH MARKS TAKEN FROM FAIRHALL MOFFATT & WOODLAND LTD. DRWG. TP188X.DWG DATED 2017-04-28.

1.21 BACKWATER VALVE REQUIRED ON BUILDING SERVICES PER CITY STANDARDS (S14, S14.1 & S14.2) REFER TO MECHANICAL.

1.22 REFER TO MECHANICAL FOR ROOF DRAIN LOCATION

2.0 SANITARY

2.1 ALL SANITARY SEWERMAINS TO BE CSA CERTIFIED PVC SDR 35, BELL AND SPIGGOT TYPE. ONLY FACTORY FITTINGS TO BE USED. SEWER TO BE INSTALLED AS PER OSPD 1005.01.

2.2 ALL SANITARY MAINTENANCE HOLES TO BE 1.2m DIAMETER AS PER CITY OF OTTAWA STANDARDS COMPLETE WITH BENCHING, STEPS IF REQUIRED, AND FRAME AND COVER.

2.3 SANITARY MH FRAME AND COVER TO BE CLOSED COVER TYPE, AS PER CITY STANDARD S24.

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

2.5 ANY SANITARY SEWER WITH LESS THAN 1.8m COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD W22, OR AS APPROVED BY THE ENGINEER.

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

3.0 STORM

3.1 ALL STORM SEWER TO BE CSA CERTIFIED PVC SDR 35 OR CONCRETE CLASS 100-D, BELL AND SPIGGOT TYPE. ALL STORM SEWERS TO BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS. ONLY FACTORY FITTINGS TO BE USED.

3.2 ALL STORM MAINTENANCE HOLES TO BE SIZED IN WITH THE PLANS AND AS PER CITY OF OTTAWA STANDARDS COMPLETE WITH BENCHING FOR SEWERS 900mm OR GREATER, STEPS IF REQUIRED, AND FRAME AND COVER.

3.3 STORM MH FRAME AND COVERS TO BE OPEN TYPE, AS PER CITY STANDARD S24. CONTRACTOR TO INSTALL FILTER FABRIC UNDER STORM MH COVER UNTIL SODDING IS COMPLETE.

3.4 STORM MAINTENANCE HOLES TO BE AS PER OPSD 701.010, TAPER TOP TYPE COMPLETE WITH 300mm SUMP FOR SEWER LESS THAN 900mmø.

3.5 ANY STORM SEWER WITH LESS THAN 1.8m COVER REQUIRES THERMAL INSULATION AS PER CITY OF OTTAWA STANDARD W22, OR AS APPROVED BY THE ENGINEER.

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

4.0 WATER

4.1 ALL WATER SERVICES TO BE COPPER OR APPROVED EQUAL WITH MINIMUM COVER OF 2.4 m AND INSTALLED AS PER CITY OF OTTAWA STANDARDS.

4.2 THRUST BLOCKS TO BE INSTALLED AT ALL BENDS, TEES, AND CAPS ALL AS PER OPSD 1103.01 AND 1103.02.

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

4.4 TRACER WIRE TO BE INSTALLED ALONG THE FULL LENGTH OF WATERMAIN AND ATTACHED TO EACH MAIN STOP AS PER MUNICIPAL STANDARDS.

4.5 ALL COMPONENTS OF THE WATER DISTRIBUTION SYSTEM SHALL BE CATHODICALLY PROTECTED AS PER MUNICIPAL STANDARDS.

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

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

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

4.9 CONNECTION TO EXISTING WATERMAIN TO BE CITY FORCES, EXCAVATION AND BACKFILLING AND REINSTATEMENT BY CONTRACTOR, COST TO BE INCLUDING THE COST FOR THE WATERMAIN INSTALLATION. THIS COST INCLUDES REINSTATEMENT OF ROAD CUTS TO CITY STANDARDS.

4.10 ALL WATERMAIN CROSSING AS PER CITY OF OTTAWA STANDARDS W25 & W25.2

5.0 ROADS

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

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

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

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

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

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

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

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

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

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

5.11 CONTRACTOR TO REINSTATE ANY DISTURBED AREA WITHIN EXISTING ROW OR ADJACENT LANDS TO THE BETTER OF IMPORTED SOD ON 100MM TOPSOIL, OR TO MATCH ORIGINAL CONDITION.

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

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

6.0 SEDIMENT AND EROSION CONTROL

6.1 CONTRACTOR TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES AS IDENTIFIED IN THE EROSION AND SEDIMENT CONTROL PLAN TO THE SATISFACTION OF THE CITY OF OTTAWA, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.) DURING ALL PHASES OF THE SITE PREPARATION AND CONSTRUCTION THE MEASURES ARE TO BE MAINTAINED TO THE SATISFACTION OF THE ENGINEER AND CITY OF OTTAWA IN ACCORDANCE WITH THE BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL. SHOULD ANY ADDITIONAL MEASURES BE REQUIRED TO ADDRESS FIELD CONDITIONS THEY SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER OR THE CITY OF OTTAWA. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.

6.2 ANY GROUND WATER PUMPING IS LIMITED TO 10 000l/d, AND SHALL BE DISCHARGED IN TO AN APPROVED FILTER MECHANISM PRIOR TO RELEASE TO THE ENVIRONMENT.

6.3 SEEPAGE BARRIERS WILL BE CONSTRUCTED IN ANY TEMPORARY DRAINAGE DITCH.

6.4 SILT SACKS OR APPROVED EQUIVALENT, WILL BE PLACED ON NEW OPEN INFRASTRUCTURES SUCH AS MANHOLES AND CATCH BASINS UNTIL STRUCTURES ARE COMMISSIONED AND PUT IN USE.

7.0 GEOTECHNICAL.

7.1 FOR DETAILS OF TEST PITS AND VARIOUS CONSTRUCTION REQUIREMENTS SEE GEOTECHNICAL REPORT, BY PATERSON GROUP DATED JUNE 20, 2018.

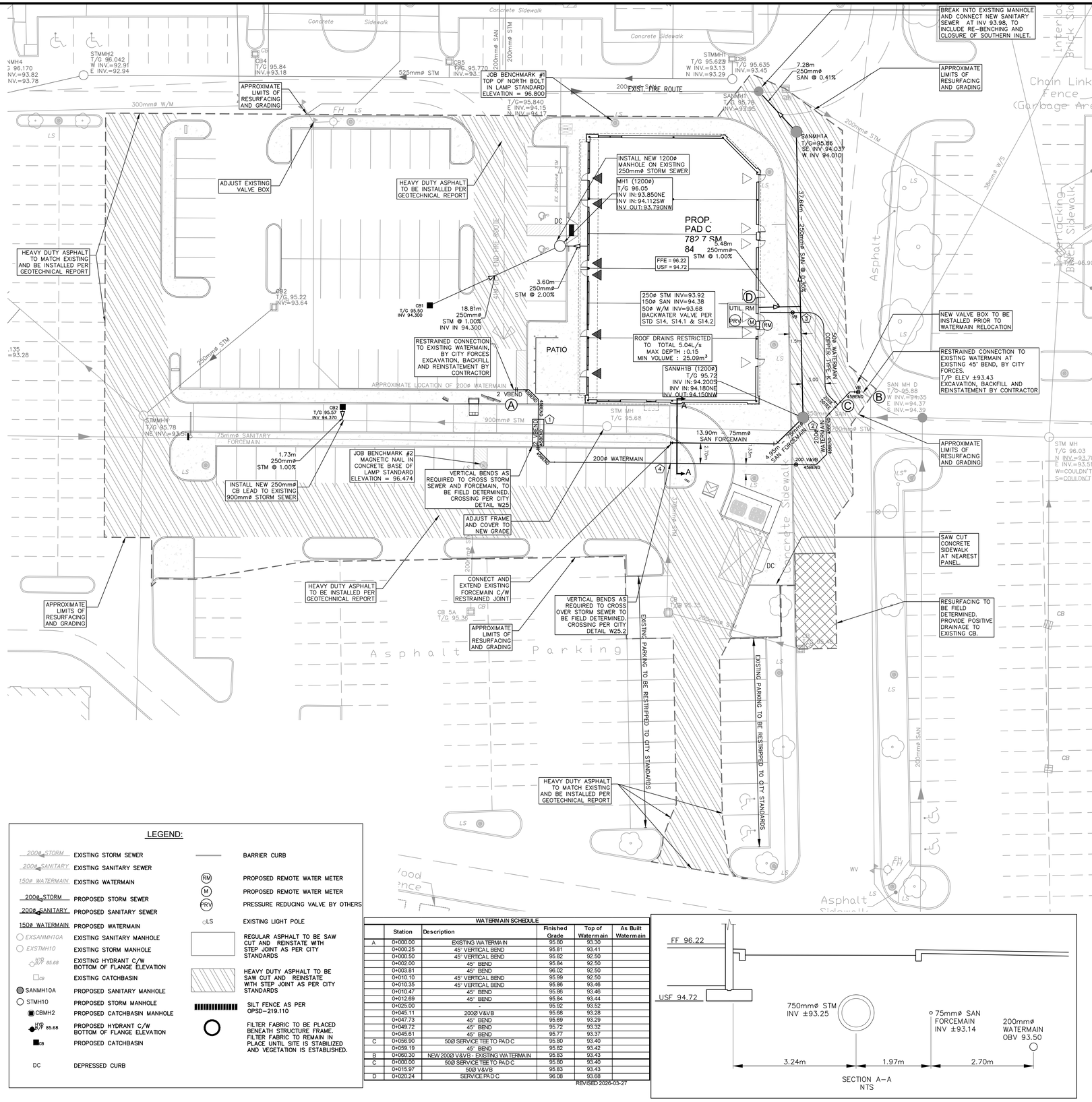
7.2 FILL MATERIAL WITHIN THE PARKING LOT AND BUILDING PAD AREAS, AND SUPPORTING BUILDING FOUNDATIONS SHALL BE COMPACTED TO 98% STANDARD MODIFIED PROCTOR DENSITY AND TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.

7.3 ALL FILL MATERIAL TO BE CERTIFIED AS ACCEPTABLE BY THE GEOTECHNICAL ENGINEER.

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

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

7.6 PIPE BEDDING AND BACKFILL SHALL BE COMPLETED IN ACCORDANCE WITH LATEST CITY OF OTTAWA STANDARD. AT A MINIMUM BEDDING FOR SEWER AND WATERMAIN SHALL BE 150mm OPSS GRANULAR A, COMPACTED TO 95% SPMDD AND EXTEND TO SPRINGLINE OF PIPE. COVER MATERIAL SHALL CONSIST OF OPSS GRANULAR A AND SHALL EXTEND FROM SPRINGLINE TO MINIMUM 300mm ABOVE OBVERT OF PIPE, AND COMPACTED TO 95% SPMDD. SEE GEOTECHNICAL REPORT FOR ADDITIONAL DETAILS.



LEGEND:

- 200ø STORM — EXISTING STORM SEWER
- 200ø SANITARY — EXISTING SANITARY SEWER
- 150ø WATERMAIN — EXISTING WATERMAIN
- 200ø STORM — PROPOSED STORM SEWER
- 200ø SANITARY — PROPOSED SANITARY SEWER
- 150ø WATERMAIN — PROPOSED WATERMAIN
- EXSANMH10A — EXISTING SANITARY MANHOLE
- EXSTMH10 — EXISTING STORM MANHOLE
- HYD 85.68 — EXISTING HYDRANT C/W BOTTOM OF FLANGE ELEVATION
- CB — EXISTING CATCHBASIN
- SANMH10A — PROPOSED SANITARY MANHOLE
- STMH10 — PROPOSED STORM MANHOLE
- CBMH2 — PROPOSED CATCHBASIN MANHOLE
- HYD 85.68 — PROPOSED HYDRANT C/W BOTTOM OF FLANGE ELEVATION
- CB — PROPOSED CATCHBASIN
- DC — DEPRESSED CURB
- BARRIER CURB
- RM — PROPOSED REMOTE WATER METER
- M — PROPOSED REMOTE WATER METER
- PRV — PRESSURE REDUCING VALVE BY OTHERS
- LS — EXISTING LIGHT POLE
- REGULAR ASPHALT TO BE SAW CUT AND REINSTATE WITH STEP JOINT AS PER CITY STANDARDS
- HEAVY DUTY ASPHALT TO BE SAW CUT AND REINSTATE WITH STEP JOINT AS PER CITY STANDARDS
- SILT FENCE AS PER OPSD-219.110
- FILTER FABRIC TO BE PLACED BENEATH STRUCTURE FRAME. FILTER FABRIC TO REMAIN IN PLACE UNTIL SITE IS STABILIZED AND VEGETATION IS ESTABLISHED.

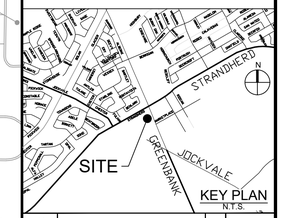
WATERMAIN SCHEDULE

	Station	Description	Finished Grade	Top of Watermain	As Built Watermain
A	0+000.00	EXISTING WATERMAIN	95.80	93.30	
	0+000.25	45° VERTICAL BEND	95.81	93.41	
	0+000.50	45° VERTICAL BEND	95.82	92.50	
	0+002.00	45° BEND	95.84	92.50	
	0+003.81	45° BEND	96.02	92.50	
	0+010.10	45° VERTICAL BEND	95.99	92.50	
	0+010.35	45° VERTICAL BEND	95.86	93.46	
	0+010.47	45° BEND	95.86	93.46	
	0+012.69	45° BEND	95.84	93.44	
	0+025.00	-	95.92	93.52	
	0+045.11	200Ø V&VB	95.68	93.28	
	0+047.73	45° BEND	95.69	93.29	
	0+049.72	45° BEND	95.72	93.32	
	0+045.61	45° BEND	95.77	93.37	
C	0+056.90	50Ø SERVICE TEE TO PAD C	95.80	93.40	
	0+059.19	45° BEND	95.82	93.42	
B	0+060.30	NEW 200Ø V&VB - EXISTING WATERMAIN	95.83	93.43	
C	0+000.00	50Ø SERVICE TEE TO PAD C	95.80	93.40	
	0+015.97	50Ø V&VB	95.83	93.43	
D	0+020.24	SERVICE PAD C	96.08	93.68	

REVISED 2026-03-27

CROSSING TABLE

1	200Ø W/M 0.50m BELOW 900Ø STM 200Ø W/M 0.78m BELOW 750 F.M.
2	200Ø W/M 0.50m BELOW 750Ø STM 200Ø W/M 1.47m BELOW 250Ø SAN 750 F.M. 0.2m ABOVE 750Ø STM
3	50Ø W/M 0.58m BELOW 250Ø SAN
4	200Ø W/M (93.62 OBV) OVER 375Ø STORM (ELEVATION OF EXISTING STORM TO BE FIELD VERIFIED)



No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9	REVISED PER NEW SITE PLAN	DGY	26: 09: 28
8	SPA SUBMISSION #4	DGY	26: 04: 02
7	REVISED PER NEW SITE PLAN	DGY	25: 11: 25
6	SPA SUBMISSION #3	DGY	19: 01: 01
5	REVISED PER CITY COMMENTS	DGY	18: 11: 16
4	SPA SUBMISSION #2	DGY	18: 10: 15
3	ISSUED FOR SPA	DGY	18: 05: 14
2	REVISED PER ARCH COMMENTS	DGY	18: 05: 03
1	ISSUED FOR TEAM COORDINATION	DGY	18: 05: 02

OWNER : STEVE BISHOP
NADG
2851 JOHN ST, SUITE ONE, MARKHAM, ONTARIO, L3R 5R7
TEL: (905)477-9200

APPLICANT : RON RICHARDS
R. G. RICHARDS & ASSOCIATES
1568 BOXWOOD WAY, MISSISSAUGA, ONTARIO, L5E 2X9
TEL: (416)219-5122

ARCHITECT : SCOLER LEE + ASSOCIATES ARCHITECTS INC.
STE 900, 60 ST, CLAIR AVE E, TORONTO, ONTARIO, M4T 1N5
TEL : (416)362-7753

NADG

ARCADIS
333 Preston Street - Suite 500
Ottawa ON K1S 5N4 Canada
tel 613 225 1311
www.arcadis.com

Project Title
PAD C BARHAVEN TOWN CENTRE

LICENSED PROFESSIONAL ENGINEER D. K. Yannoulopoulos 2026/09/28 PROVINCE OF ONTARIO

Drawing Title
SITE SERVICING PLAN
3777 STRANDHERD DRIVE

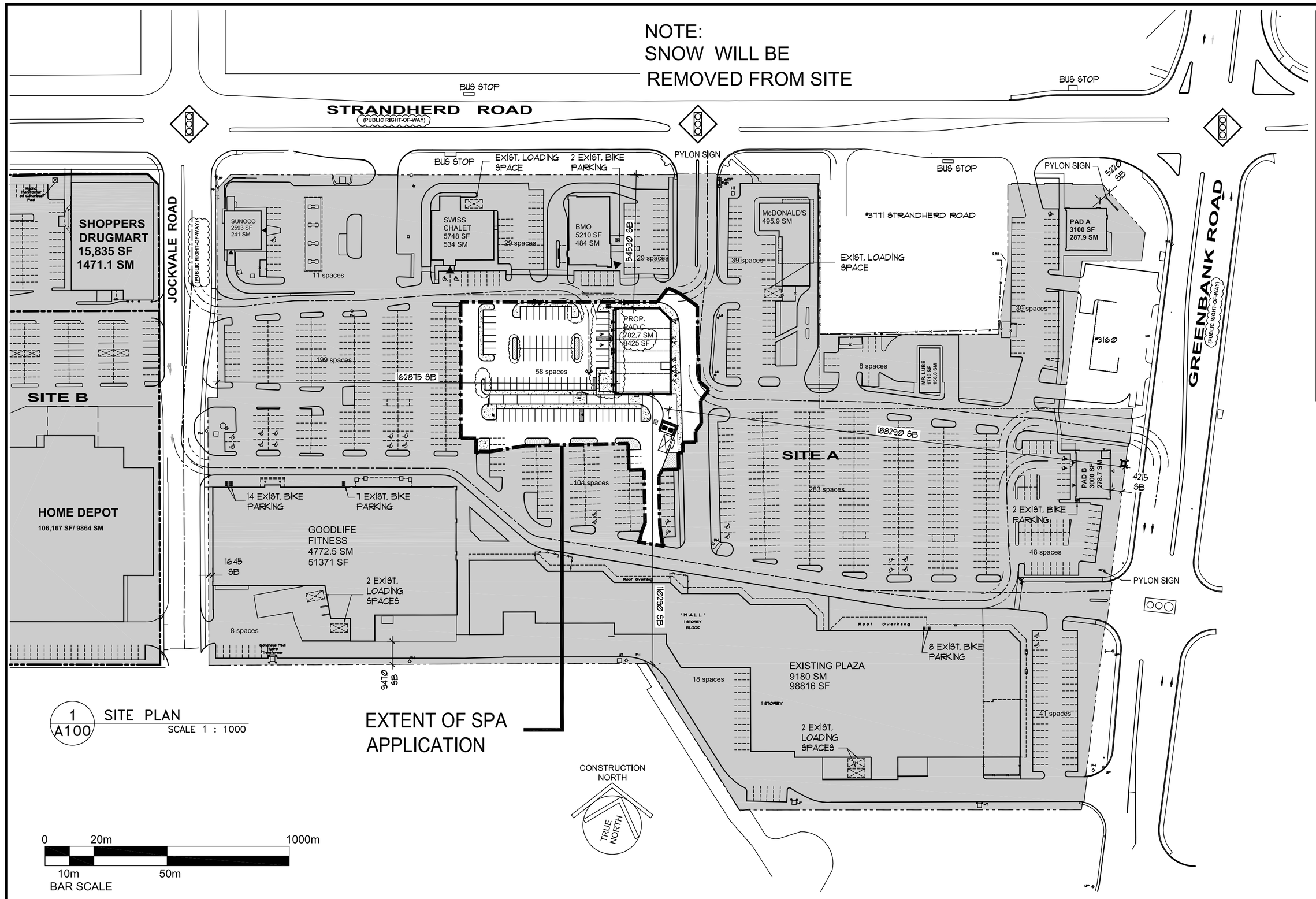
Scale 1:250

Design	Date
R.M.	APRIL 2018
Drawn	Checked
E.H.	D.G.Y.
Project No.	Drawing No.
116390	C-001

D07-12-18-0106

#17717

\\116390_PadBarrh\5.0 Drawings\05b\xrefs\xplan\C-001 SERVICES.dwg Layout Name: C-001 SERVICES Plot Style: AIA STANDARD-FULL.CTB Plot Scale: 1:25.4 Plotted At: 9/28/2026 9:47 AM Last Saved By: SURNASTAS Last Saved At: Sep. 25,



1 / A100 SITE PLAN
SCALE 1 : 1000

EXTENT OF SPA APPLICATION

0 20m 1000m
10m 50m
BAR SCALE

SITE STATISTIC

SITE A AREA	77926.0 SM	±19.26 AC
SITE COVERAGE		22.7%
LOT WIDTH		±200 M

EX. BUILDING AREA	BLDG AREA	GLA
PLAZA	9180.0 SM	
SUNOCO	241.0 SM	
SWISS CHALET	534.0 SM	
BMO	484.0 SM	
MC'DONALDS	495.9 SM	
GOODLIFE FITNESS	4772.5 SM	
PAD A (HAKIM)	287.9 SM	
MR.LUBE	158.8 SM	
PAD B	278.7 SM	
BUILDING AREA (GLA)	16432.8 SM	176881 SF

PROP BUILDING AREA	BLDG AREA	GLA
PAD C	771.7 SM	8305 SF
BUILDING AREA	17204.5 SM	185186 SF

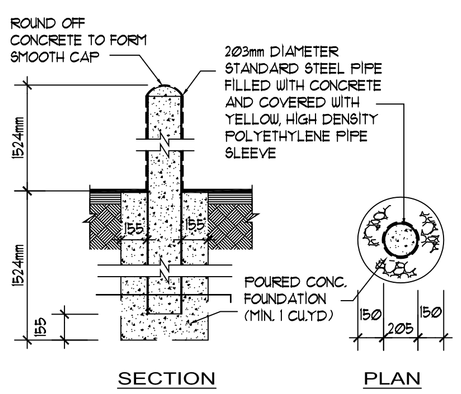
TOTAL SPACES	914 SPACES
	5.31/100SM
	4.94/1000SF

LEGEND

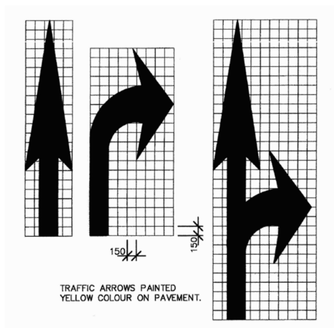
- LANDSCAPED AREA AS PER LAND. ARCH DWGS
- PAINTED / NO PARKING AREA / CROSSWALK
- NEW PARKING LINES
- EXISTING PARKING LINES TO REMAIN
- FIRE ROUTE
- GREYED AREA INDICATEDS AREA NOT IMPACTED BY THIS APPLICATION
- EXISTING LIGHT STANDARD
- NEW LIGHT STANDARDS AS PER ELECT. DWGS.
- FIRE HYDRANT
- DEPRESSED CURB RAMP (REFER TO CIVIL DWG FOR DETAIL)
- HANDICAPPED PARKING SPACE
- BUILDING ENTRANCE
- SECONDARY BUILDING ENTRANCE
- BUILDING MOUNTED LIGHTS

MC [187]H(20) - ZONE PROVISIONS

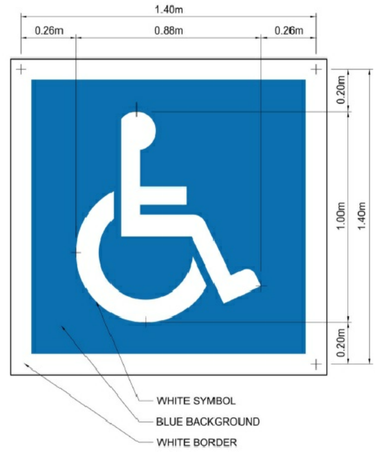
I ZONING MECHANISMS		II PROVISIONS	PROVIDED
(a) Minimum lot area		No Minimum	77926 sm
(b) Minimum lot width		No Minimum	+/- 370 m
(c) Minimum front yard and corner side yard setback	(i) abutting a lot in a residential zone	3 m	n/a
	(ii) abutting the rapid transit corridor	2 m	n/a
	(iii) other cases	No Minimum (GREENBANK ROAD)	Site: 4.2m Pad C: 188.2m
		No Minimum (STRANDHERD ROAD)	Site: 5.2m Pad C: 54.5m
(d) Minimum interior side yard setback (JOCKVALE RD)	(i) abutting a lot in a residential zone	3 m	n/a
	(ii) abutting the rapid transit corridor	2 m	n/a
	(iii) other cases	No Minimum	Site: 1.4m Pad C: 162.6m
(e) Minimum rear yard setback	(i) abutting a lot in a residential zone	6 m	n/a
	(ii) abutting the rapid transit corridor	2 m	n/a
	(iii) other cases	No Minimum	Site: 9.5m Pad C: 110.2m
(f) Maximum floor space index		2.0	0.22
(g) Min. building height	for all uses within 400m of a rapid transit station, other than a gas bar	6.7M	6.7M
(h) Maximum building height		20.0m	6.7M
(i) Minimum width of landscaped area	No minimum, except that where a yard is provided and not used for required driveways, aisles, parking, loading spaces or outdoor commercial patio, the whole yard must be landscaped	N/A	N/A
Exception: max. gross leasable floor area:		35,000 sm	17161.8 SM EAST OF JOCKVALE RD.
Parking	MIN 3.6/100 SM GLA	618 SPACES	914 SPACES
Loading (3.5m x 7.0m)	15000sm - 24999sm gfa Shopping Centre	Total: Min. 2	Pad C: 1 Total: 7
Bicycle parking	1/500sm gfa Shopping Centre	Pad C: 2	Pad C: 2 Total: 35
Drive Thru Queuing		7 AT THE BOARD 11 TOTAL	
Accessible Parking Requirements		901-950 = 21 Total 10 Type-A, 11 Type-B	Proposed: 2 (1 Type-A + 1 Type-B) Existing: 31 Total: 33

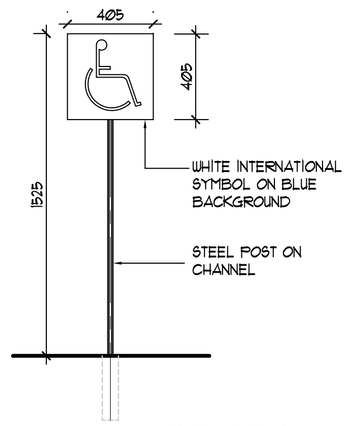


2 / A100 BOLLARD DETAIL
AT LOADING AREA SCALE 1:25

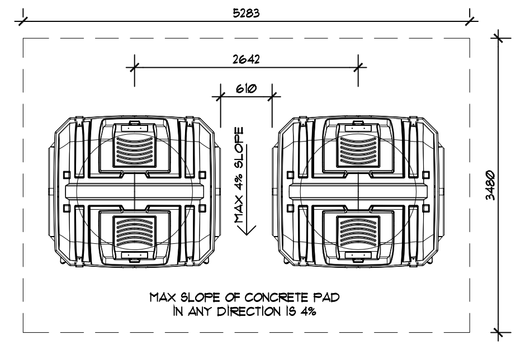


3 / A100 ROAD PAINTING
SCALE NTS

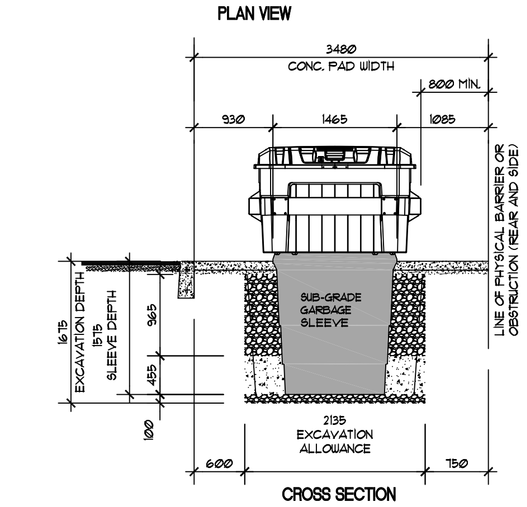




4 / A100 HANDICAPPED PARKING SIGN
1:20



PLAN VIEW



CROSS SECTION

6 / A100 SUB-GRADE GARBAGE SYSTEM
SCALE 1:50

SURVEY INFO TAKEN FROM:
SURVEYOR'S REAL PROPERTY REPORT – PART 1
PLAN OF
PART OF LOT 15
CONCESSION 3 (Rideau Front)
GEOGRAPHIC TOWNSHIP OF NEPEAN
Now CITY OF OTTAWA

PREPARED BY:
FAIRHALL, MOFFATT & WOODLAND LIMITED
ONTARIO LAND SURVEYORS
JUNE 12 2012

NO.	BY	DATE	ISSUED
3	AB	SEP 29,26	SPA
2	AB	JUL 3 26	SPA
1	AB	NOV21,25	SPA

VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOB. DO NOT SCALE PRINTS

PLANS AND SPECIFICATIONS ARE THE PROPERTY OF THE ARCHITECT AND MUST BE RETURNED AT COMPLETION OF THE WORK OR UPON REQUEST

THIS DRAWING MUST NOT BE USED FOR CONSTRUCTION UNLESS APPROVED AT RIGHT

APPROVED:

DATE:

BARRHAVEN TOWN CENTRE INC.

OWNER : STEVE BISHOP
NORTH AMERICAN DEVELOPMENT GROUP.
2851 JOHN ST, SUITE ONE, MARKHAM,
ONT, L3R 5R7 TEL: (905)477-9200

APPLICANT : NOAH EMERSON
NORTH AMERICAN DEVELOPMENT GROUP.
2851 JOHN ST, SUITE ONE, MARKHAM,
ONT, L3R 5R7 TEL: (905)477-9200

CIVIL ENGINEER : RYAN ROBINEAU
ARCADIS
SUITE 500, 333 PRESTON STREET, OTTAWA,
ONT, K1S 5N4 TEL: (905)477-9200

LANDSCAPE ENGINEER : RUDY LEVSTEK
LEVSTEK CONSULTANTS
5871 HUGH CRES., OTTAWA,
ONT, K0A 2W0 TEL: (613)826-0518

SURVEYOR : FAIRHALL MOFFATT & WOODLAND LTD.
100-600 TERRY FOX DRIVE, KANATA,
ONT, K2L 4B6 TEL: (613)591-2580

SCOLER LEE BORENSTEIN + ASSOCIATES
ARCHITECTS INC.

ARCHITECT: ALLAN BORENSTEIN
STE 900, 60 ST. CLAIR AVE E TEL: (416)362-7753
TORONTO,ONTARIO M4T 1N5 FAX: (416)362-8519

PROJECT
BARRHAVEN TOWN CENTRE
3777 STRANDHERD DRIVE
NEPEAN, ONTARIO

DRAWING TITLE
SITE PLAN, DETAILS

ONTARIO ASSOCIATION OF ARCHITECTS
ALLAN MICHAEL BORENSTEIN
LICENCE 7172

DRAWN: JL	FOLIO: 25078
CHECKED: AB	
DATE: OCT 2025	DWG. NO. A100
SCALE: AS NOTED	

FILE #: D07-12-25-0157
PLAN #: 19416

DRAWINGS REVISED: LAST UPDATED:

BOUNDARY CONDITIONS

Boundary Conditions For: Barrhaven Town Centre – Pad C

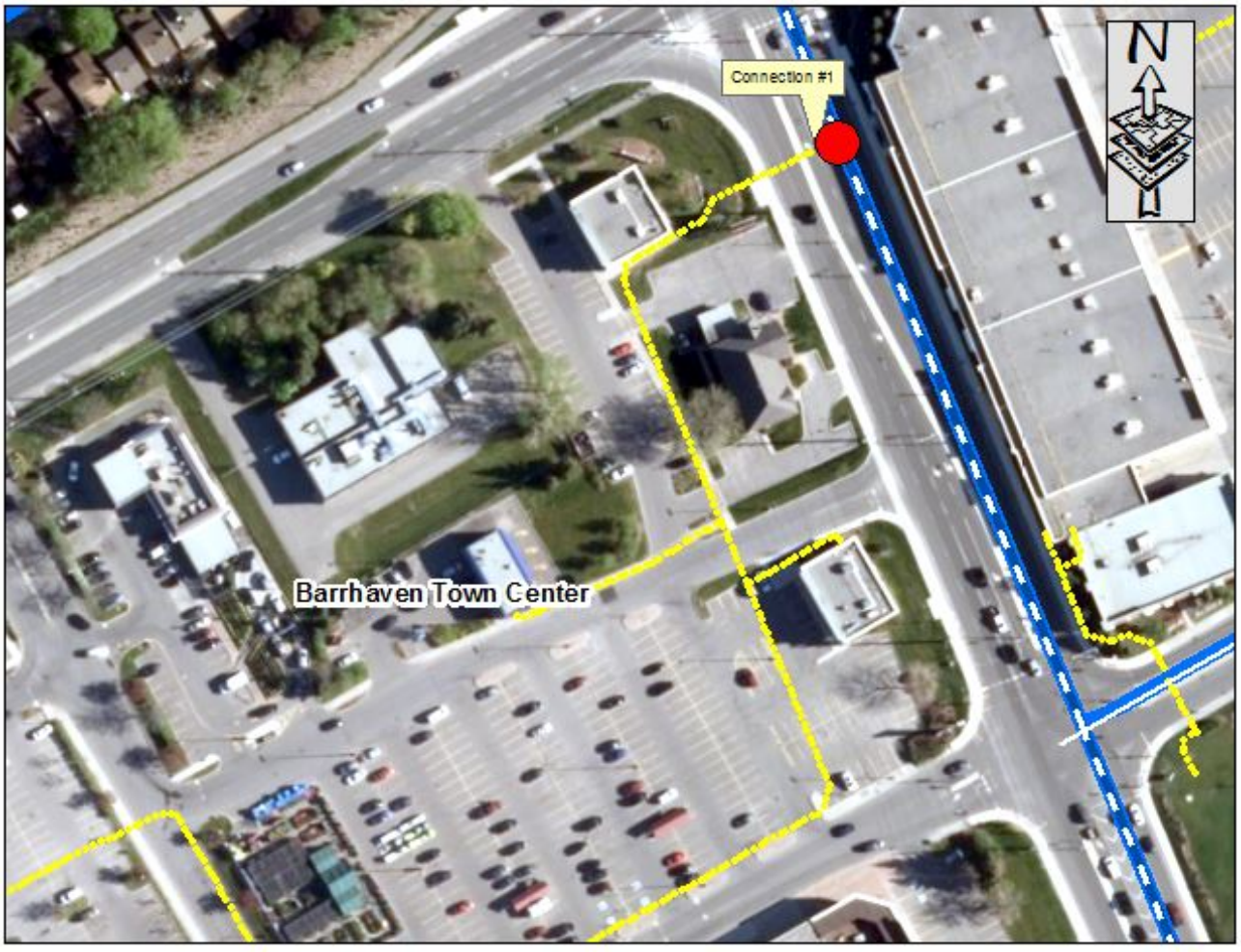
Date of Boundary Conditions: 2018-Oct-01

Provided Information:

Scenario	Demand	
	L/min	L/s
Average Daily Demand	*0.8*	*0.01*
Maximum Daily Demand	*1.2*	*0.02*
Peak Hour	*2.1*	*0.04*
Fire Flow #1 Demand	*3,000*	*50.0*

Number Of Connections: 1

Location:



BOUNDARY CONDITIONS

Results:

Pre-Configuration

Connection #: 1

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	160.7	87.8
Peak Hour	143.7	63.7
Max Day Plus Fire (3,000) L/min	140.0	58.4

[1]Elevaton: **98.900 m**

Post_Configuration

Connection #: 1

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	147.8	69.5
Peak Hour	146.5	67.7
Max Day Plus Fire (3,000) L/min	147.0	68.4

[1]Elevation: **98.900 m**

Notes:

1) As per the Ontario Building Code in areas that may be occupied, the static pressure at any fixture shall not exceed 552 kPa (80 psi.) Pressure control measures to be considered are as follows, in order of preference:

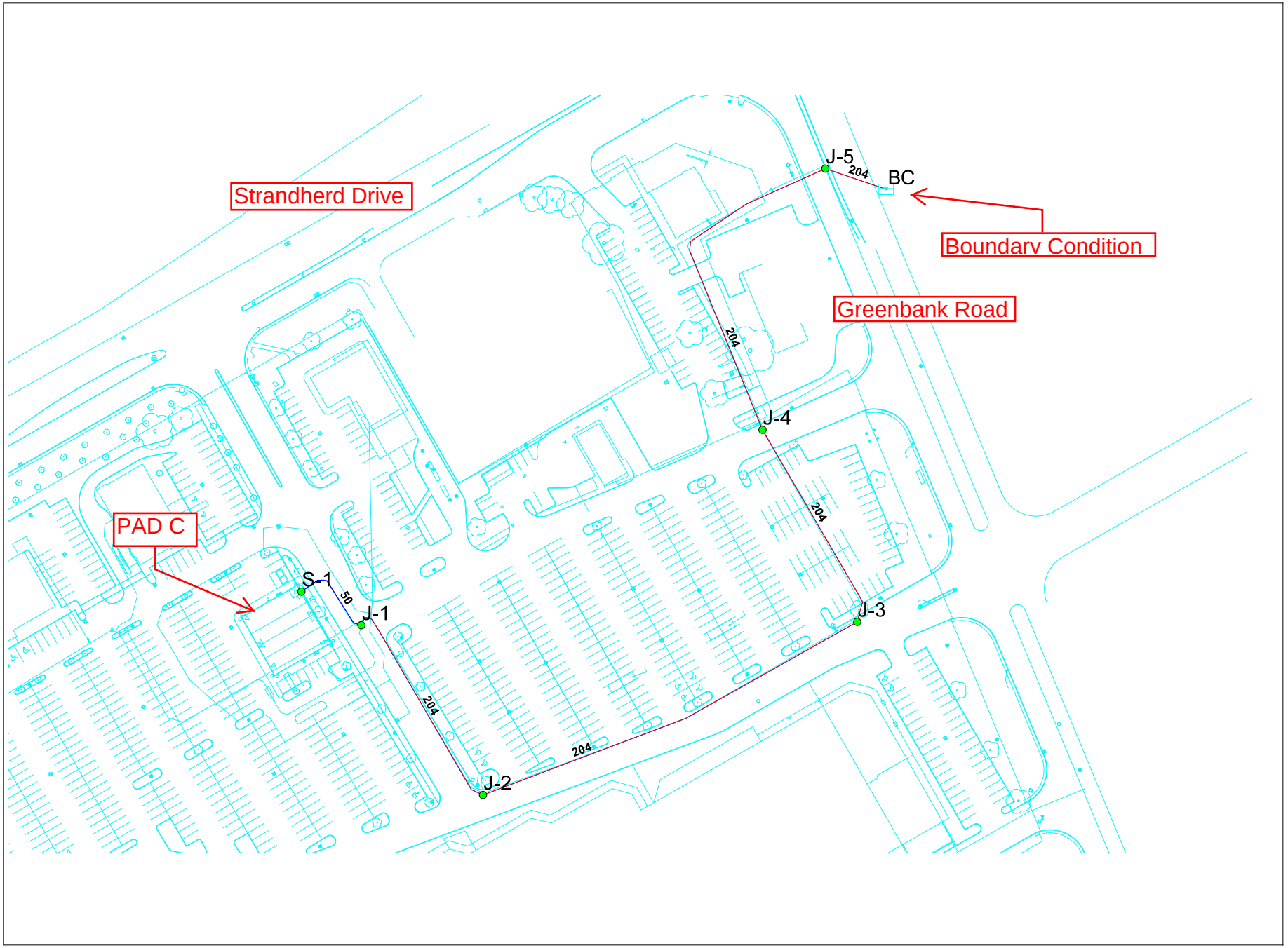
a) If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
b) Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/ building, located downstream of the meter so it is owner maintained.

2) Connection 1 is an existing connection to backbone main on Greenbank. No new connections to backbone main are permitted without prior consultation with City Staff.

Disclaimer

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

PAD C WATER MODEL



Date: Wednesday, November 14, 2018

Pad C - Basic Day (Max HGL) HGL 160.7m - Junction Report

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1		J-1	0.00	95.80	160.70	635.97
2		J-2	0.00	95.70	160.70	636.95
3		J-3	0.00	95.70	160.70	636.95
4		J-4	0.00	96.90	160.70	625.19
5		J-5	0.00	98.90	160.70	605.59
6		S-1	0.01	96.10	160.70	633.03

Pad C Peak Hour HGL 143.7m - Junction Report

		ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)
1		J-1	0.00	95.80	143.70	469.38
2		J-2	0.00	95.70	143.70	470.36
3		J-3	0.00	95.70	143.70	470.36
4		J-4	0.00	96.90	143.70	458.60
5		J-5	0.00	98.90	143.70	439.00
6		S-1	0.04	96.10	143.70	466.43

Pad C - Max Day + Fire HGL 140.0m - Design Fireflows

		ID	Total Demand (L/s)	Critical Node 1 ID	Critical Node 1 Pressure (kPa)	Critical Node 1 Head (m)	Adjusted Fire-Flow (L/s)	Available Flow @Hydrant (L/s)	Critical Node 2 ID	Critical Node 2 Pressure (kPa)	Critcal Node 2 Head (m)	Adjusted Available Flow (L/s)	Design Flow (L/s)
1		J-1	50.00	J-1	371.51	133.71	116.10	116.10	J-1	139.96	110.08	116.10	116.10

ARCADIS PROFESSIONAL SERVICES (CANADA) INC.
500-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
arcadis.com

WATERMAIN DEMAND CALCULATION SHEET
Development Name | Name of Client/Developer
116390.5.7 | Rev #1 | 2026-11-03
Prepared By: RR | Checked By: RM

NODE	RESIDENTIAL				NON-RESIDENTIAL (ICI)			AVERAGE DAILY DEMAND (l/s)			MAXIMUM DAILY DEMAND (l/s)			MAXIMUM HOURLY DEMAND (l/s)			FIRE DEMAND (l/min)
	SINGLE FAMILY UNITS	3 bedroom UNITS	2 bedroom UNITS	POPULATION	INDUST. (ha)	COMM. (m^2)	INSTIT. (ha)	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	
Site						783			0.02	0.02		0.03	0.03		0.06	0.06	4,000
TOTAL						**783**				**0.02**			**0.03**			**0.06**	

ASSUMPTIONS

POPULATION DENSITY

Single Family	3.4 persons/unit
3 Bedroom Units	2.7 persons/unit
2 Bedroom Units	1.8 persons/unit

WATER DEMAND RATES

Residential	280 l/cap/day
Commercial Shopping Center	2,500 L/(1000m2)/day

PEAKING FACTORS

Maximum Daily		
	Residential	2.5 x avg. day
	Commercial	1.5 x avg. day
Maximum Hourly		
	Residential	2.2 x max. day
	Commercial	1.8 x max. day

FIRE DEMANDS

Single Family	10,000 l/min (166.7 l/s)
Semi Detached & Townhouse	10,000 l/min (166.7 l/s)
Medium Density	15,000 l/min (250 l/s)

ARCADIS PROFESSIONAL SERVICES (CANADA) INC.
500-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
arcadis.com

FIRE UNDERWRITERS SURVEY
Barrhaven Town Centre Pad C | NADG
116390-5.2.2 | Rev #1 | 2026-11-03
Prepared By: RR | Checked By: RM

STEP	Contents	Description		Adjustment Factor		Result	
1	**Building A** (1-storey) **Total Effective Floor Area**	1st Floor Area (Storage space exceeding 3m in height, floor area X 3)	782.7	Height 2.8m	1	783 **783**	m2 m2
2	**Type of Construction**	**Type V** Wood Frame **Type III** Ordinary Construction **Type II** Noncombustible Construction **Type I** Fire Resistive Construction	1.5 1.0 0.8 0.6	Type II Noncombustible Construction	0.8		
3	**Required Fire Flow**	RFF = 220C√A, rounded to nearest 1000 L/min				**5000**	L/min
4	**Occupancy and Contents**	Noncombustible Contents Limited Conbustible Contents Combustible Contents Free Burning Contents Rapid Burning Contents	-25% -15% 0% 15% 25%	Limited Conbustible Contents	-15%	-750	L/min
	Fire Flow					**4250**	L/min
5	**Automatic Sprinkler Protection**	Automatic Sprinkler Conforming to NFPA 13 Standard Water Supply for both the system and Fire Department Hose Lines Fully Supervised System	-30% -10% -10%	No No No	0% 0% 0%	0 0 0	L/min L/min L/min
	Total Sprinkler Adjustment					**0**	L/min
6	**Exposure Adjustment**	Based on **Table 6** Exposure Adjustement Charges for Subject Building					
	North	Separation (m) Length X Height Factor (m.storeys) Construction Type	17 16 Type I-II	With unprotected opening	3%	128	L/min
	South	Separation (m) Length X Height Factor (m.storeys) Construction Type	>30 18 Type II	With unprotected opening	0%	0	L/min
	East	Separation (m) Length X Height Factor (m.storeys) Construction Type	>30 6.4 Type II	With unprotected opening	0%	0	L/min
	West	Separation (m) Length X Height Factor (m.storeys) Construction Type	>30 220 Type II	With unprotected opening	0%	0	L/min
	Total Exposure Adjustment					**128**	L/min
7	**Total Required Fire Flow**					**4378**	L/min
		Rounded to Nearest 1000 L/min				**4000**	L/min
						67	L/s

Notes 1. Fire flow calculation are based on Fire Underwriters Survey version 2020.

2. If any vertical opening in the building are unprotected (e.g. interconnected floor spaces, elevators etc.), consider the two largest adjoining floor area plus 50% of all floors immediately above them up to a maximum of eight.

TABLE 1: SANITARY SEWER DESIGN SHEET

Design Criteria		
Min. Velocity	0.60	m/s
Max. Velocity	4.00	m/s
Mannings 'n'	0.013	

WILLS

D.M. Wills Associates Limited
Consulting Engineers

450 Charlotte Street
Peterborough, ON
Canada K9J 2W3

P 705.742.2297
F 705.741.3568
E wills@dmwills.com

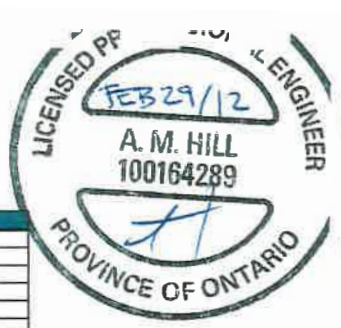
Project Information	
D.M. Wills Project	Barrhaven Town Center
D.M. Wills Project No.	08-10158
Project Location	Barrhaven Town Centre 3777 Strandherd Dr.
Designed by	D. Welch
Checked by	A. Hill
Date	September 22, 2010
Design/As-built	Design

$Q = V \times A$

$V = (1/n) \times R^{2/3} \times S^{1/2}$

Denotes field entered

Denotes field calculated



Area No.	Description	Manholes		Area		Commercial Area		Design Flow			Pipe Data							Comment
		From	To	Unit (ha)	Accum. (ha)	Unit (ha)	Accum. (ha)	Infilt. Q (l/s)	Comm. Q (l/s)	Total Q_D (l/s)	Length (m)	Grade (%)	Dia. (m)	Capacity Q_C (l/s)	Percent Capacity (%)	Velocity Full (m/s)	Velocity Actual (m/s)	
	Forcemain Sewer																	
1	BBBY to Main	100	101	1.65	1.65	0.51	0.51	0.46	0.45	0.91	67.0	0.51	0.150	10.8	8.4%	0.61		Pipe Info from Wills Dwg 10158Ph2-SS03 (Aug 18/10)
2	Sunoco to Swiss Main	R	Q	0.42	0.42	0.02	0.02	0.12	1.29	1.41	40.0	1.00	0.200	32.8	4.3%	1.04	0.52	Pipe Info from Trow Dwg No. 01 (Site Grading & Services Plan Mar /06)
		Q	P	0.00	0.42	0.00	0.02	0.12	1.29	1.41	3.0	1.00	0.200	32.8	4.3%	1.04	0.52	Pipe Info from Trow Dwg No. 01 (Site Grading & Services Plan Mar /06)
3	Swiss Chalet to PS	U	T	0.28	0.28	0.05	0.05	0.08	0.40	0.48	17.0	0.47	0.200	22.5	2.1%	0.72	0.29	Pipe Info from Robinson 03032-2 (June /05)
		T	S	0.00	0.28	0.00	0.05	0.08	0.40	0.48	43.8	0.48	0.200	22.7	2.1%	0.72	0.29	Pipe Info from Robinson 03032-2 (June /05)
		S	P	0.00	0.28	0.00	0.05	0.08	0.40	0.48	25.7	0.51	0.200	23.3	2.1%	0.74	0.30	Pipe Info from Robinson 03032-2 (June /05)
		P	101	0.00	0.71	0.00	0.08	0.20	1.69	1.89	67.6	0.90	0.200	31.1	6.1%	0.99	0.55	Pipe Info from Robinson 03032-2 (June /05)
		101	L	0.00	2.36	0.00	0.59	0.66	1.69	2.35	17.0	0.90	0.200	31.1	7.6%	0.99	0.58	Pipe Info from Robinson 03032-2 (June /05)
4	Shopper's	O	N	0.51	0.51	0.14	0.14	0.14	0.12	0.26		0.40	0.200	20.7	1.3%	0.66	0.23	Assumed Pipe Grade
5	Jockvale Rd	V	L	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.40	0.200	20.7	0.0%	0.66	0.01	Plugged Main
		N	L	0.42	0.93	0.00	0.14	0.26	0.12	0.38	49.0	0.58	0.200	25.0	1.5%	0.80	0.29	Pipe Info from Trow Dwg No. 01 (Site Grading & Services Plan Mar /06)
6	Home Depot	M	L	3.59	3.59	0.99	0.99	1.01	0.86	1.86		0.50	0.150	10.8	17.3%	0.61	0.46	Pipe Info from Trow Dwg No. 01 (Site Grading & Services Plan Mar /06)
	Pump Station	L	PS	0.00	6.88	0.00	1.72	1.93	3.11	5.04	18.7	2.03	0.250	84.8	5.9%	1.73		Pipe Info from Robinson 02056-11 (Jan /04)
		PS	LIFT	0.00	6.88	0.00	1.72	1.93	3.11	5.04								Lift Station
	Gravity Sewer																	
7	Veterinarian	VET	B	0.16	0.16	0.03	0.03	0.05	0.03	0.07								Service Connection
8	Proposed Pad A	A	B	0.39	0.39	0.05	0.05	0.11	0.04	0.15	69.6	0.40	0.200	20.8	0.7%	0.66	0.19	Pipe Info from Wills Dwg 10158Ph1-SS03 (May 11/10)
		B	C	0.00	1.07	0.00	0.08	0.30	0.07	0.37	54.8	0.42	0.200	21.2	1.7%	0.68	0.26	Pipe Info from Wills Dwg 10158Ph1-SS03 (May 11/10)
9	Area 9	Area9	B	0.52	0.52	0.00	0.00	0.15	0.00	0.15								Catchment Area Only
10	Ex. Plaza + Fut. Exp. +8,000sq.ft. Future	F	E	3.31	3.31	1.01	1.01	0.93	0.87	1.80	90.0	0.38	0.200	20.2	8.9%	0.64	0.40	Pipe Info from Robinson Dwg 89112-02 (Apr 4/91)
		E	D	0.00	3.31	0.00	1.01	0.93	0.87	1.80	71.0	0.41	0.200	21.0	8.6%	0.67	0.41	Pipe Info from Robinson Dwg 89112-02 (Apr 4/91)
11	Mr Lube	104	C	0.00	0.00	0.02	0.02	0.00	0.01	0.01	5.0	2.00	0.200	46.4	0.0%	1.48	0.16	Pipe Info from Wills Dwg 10158Ph1-SS03 (May 11/10)
		C	D	0.00	1.07	0.00	0.10	0.30	0.08	0.38	74.0	0.39	0.250	37.2	1.0%	0.76	0.25	Pipe Info from Robinson Dwg 89112-02 (Apr 4/91)
		D	G	1.22	5.60	0.00	1.10	1.57	0.96	2.53	22.0	0.41	0.250	38.0	6.6%	0.77	0.44	Pipe Info from Robinson Dwg 89112-02 (Apr 4/91)
		LIFT	G	0.00	6.88	0.00	1.72	1.93	2.17	4.10								Lift Station
		G	H	0.00	12.48	0.00	2.82	3.49	3.13	6.62	43.0	0.79	0.250	52.9	12.5%	1.08	0.74	Pipe Info from Robinson 03032-2 (June /05)
	BMO	I	H	0.00	0.00	0.05	0.05	0.00	0.30	0.30	34.3	0.29	0.250	32.1	0.9%	0.65	0.21	Pipe Info from Robinson 03032-2 (June /05)
	McDonald's	Mc D	H	0.00	0.00	0.04	0.04	0.00	0.04	0.04		0.50	0.200	23.2	0.2%	0.74	0.13	Service Connection
		H	J	0.00	12.48	0.00	2.91	3.49	3.47	6.96	40.0	0.40	0.250	37.6	18.5%	0.77	0.59	Pipe Info from Robinson Dwg 89112-02 (Apr 4/91)
		J	K	0.00	12.48	0.00	2.91	3.49	3.47	6.97	25.0	0.40	0.250	37.6	18.5%	0.77	0.59	Pipe Info from Robinson Dwg 89112-02 (Apr 4/91)

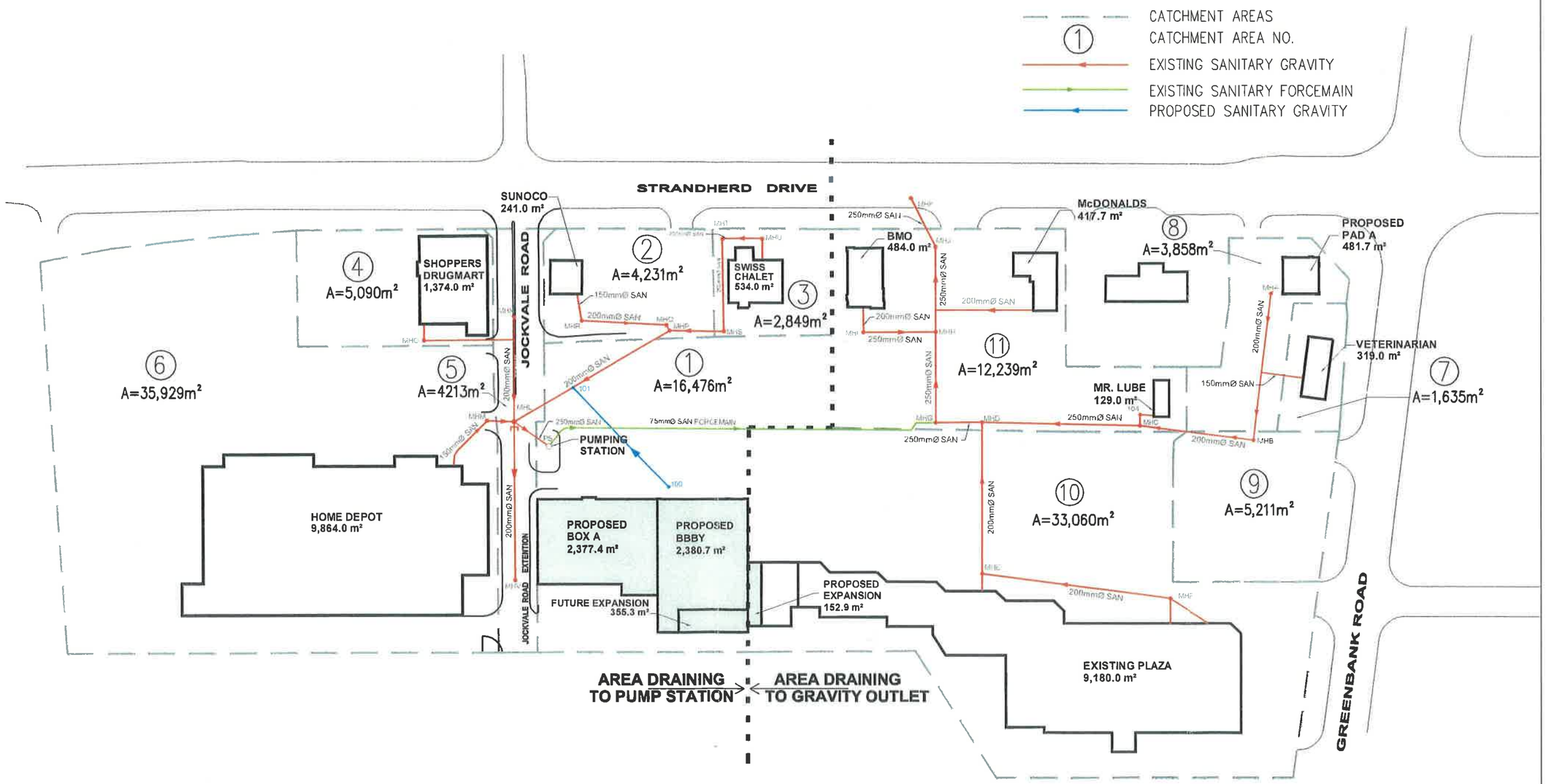


FIGURE 1: SANITARY CATCHMENT AREA PLAN

Sketch No.	WILLS D.M. Wills Associates Limited Consulting Engineers dmwills.com 452 Charlotte Street Peterborough, Ontario Canada K9J 2W3 P 705-742-2297 F 705-741-3958 E wills@dmwills.com • PROVEN SOLUTIONS • TRUSTED RESULTS •	Drawn By L.D.	Scale Horz 1: 2000 Vert N/A
		DESIGNED D.W.	
		CHECKED A.H.	Plot Date SEPT 13, 2010
		Project No. 08-10158	Drawing File No. FIG 1

From: Zagorski, Joseph
To: Demetrius Yannoulopoulos
Cc: Diduch, Roman
Subject: RE: Barrhaven town center
Date: Thursday, April 18, 2013 4:27:24 PM

Hi Demetrius,

I reviewed attached information and 7.2 L/s flow is acceptable. Thx.

M.Joseph Zagorski, P.Eng.
Senior Project Manager
Infrastructure Policy, Policy Development and Urban Design
Planning and Growth Management Department
City of Ottawa, 110 Laurier Avenue West. 4th Floor, Ottawa, ON K1P 1J1
tel: (613) 580-2424, ext. 22611
fax: (613) 580-2578
e-mail: Joseph.Zagorski@ottawa.ca

From: Demetrius Yannoulopoulos [mailto:dyannoulopoulos@IBIGroup.com]
Sent: April 17, 2013 3:29 PM
To: Zagorski, Joseph
Subject: Barrhaven town center

Hi Joseph
See attached emails I sent Roman recently. As discussed we are looking to add a small pad to the existing commercial plaza, the flow from the site would increase from 6.97 to 7 l/s. Also the owner is also looking to fill a vacancy in the site (I thought it was a new Pad) and I had asked Roman if that could be adjusted to 7.2 l/s.
Thx
Demetrius

Demetrius Yannoulopoulos P.Eng.
Associate Director

IBI Group
400-333 Preston Street
Ottawa ON K1S 5N4 Canada

tel 613 225 1311 ext 590
fax 613 225 9868
cell 613 447 0504
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web www.ibigroup.com

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ARCADIS PROFESSIONAL SERVICES (CANADA) INC.
500-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
arcadis.com

Pad B & C SANITARY SEWER DESIGN SHEET

PROJECT : Barrhaven Town Centre Pad C
CITY OF OTTAWA
DEVELOPER : Barrhaven Town Centre Inc.

JOB #: 116390
DATE: 03-Nov-26
DESIGN: DY

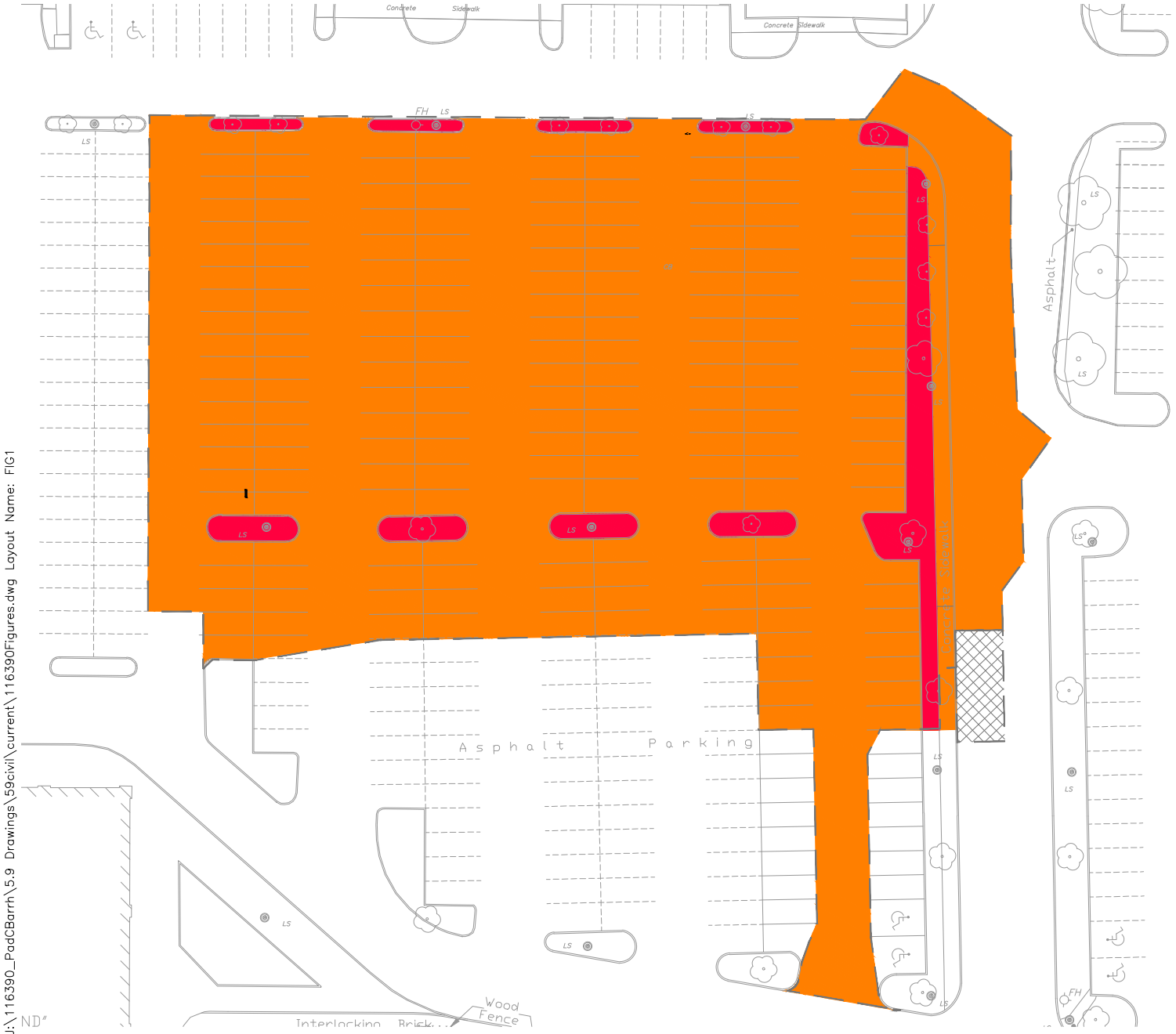
LOCATION				SITE AREA		BUILDING AREA		DESIGN FLOW				PROPOSED SEWER					
Area	DESCRIPTION	FROM MH	TO MH	IND. Area (Ha)	CUMUL. Area (Ha)	BLDG Area (SM)	CUMUL. BLDG Area (SM)	PEAK FACT.	DESIGN FLOW (l/s)	INFILT FLOW (l/s)	PEAK FLOW (l/s)	CAPACITY l/s	VELOCITY (full) m/s	LGTH. (m)	PIPE (mm)	GRADE %	AVAIL. CAP. (%)
	Forcemain sewer																
1	*BBBY tp Main*	*100*	*101*	*1.6476*	*1.648*	*5113.00*	*5113.00*	*1.50*	*0.30*	*0.46*	*0.91*	*11.35*	*0.62*	*67.0*	*150*	*0.51*	*91.97%*
2	*Sunoco to Swiss main*	*R*	*Q*	*0.4231*	*0.423*	*241.00*	*241.00*	*1.50*	*0.86*	*0.12*	*1.41*	*34.21*	*1.06*	*40.0*	*200*	*1.00*	*95.88%*
		Q	*P*	*0*	*0.423*	*0.00*	*241.00*	*1.50*	*0.86*	*0.12*	*1.41*	*34.21*	*1.06*	*3.0*	*200*	*1.00*	*95.88%*
3	*Swiss Chalet to PS*	*U*	*T*	*0.2849*	*0.285*	*534.00*	*534.00*	*1.50*	*0.27*	*0.08*	*0.48*	*23.45*	*0.72*	*17.0*	*200*	*0.47*	*97.95%*
		T	*S*	*0*	*0.285*	*0.00*	*534.00*	*1.50*	*0.27*	*0.08*	*0.48*	*23.71*	*0.73*	*43.8*	*200*	*0.48*	*97.98%*
		S	*P*	*0*	*0.285*	*0.00*	*534.00*	*1.50*	*0.27*	*0.08*	*0.48*	*24.42*	*0.75*	*25.7*	*200*	*0.51*	*98.04%*
		P	*101*	*0*	*0.708*	*0.00*	*775.00*	*1.50*	*1.13*	*0.20*	*1.89*	*32.46*	*1.00*	*67.6*	*200*	*0.90*	*94.18%*
		101	*L*	*0*	*2.356*	*0.00*	*5888.00*	*1.50*	*1.43*	*0.66*	*2.80*	*32.46*	*1.00*	*17.0*	*200*	*0.90*	*91.38%*
4	*Shoppers*	*O*	*N*	*0.509*	*0.509*	*1374.00*	*1374.00*	*1.50*	*0.08*	*0.14*	*0.26*	*21.63*	*0.67*		*200*	*0.40*	*98.79%*
5	*Jockvale Rd*	*V*	*L*	*0*	*0.000*	*0.00*	*0.00*	*1.50*	*0.00*	*0.00*	*0.00*	*21.63*	*0.67*		*200*	*0.40*	*100.00%*
		N	*L*	*0.4213*	*0.930*	*0.00*	*1374.00*	*1.50*	*0.08*	*0.26*	*0.38*	*26.07*	*0.80*	*49.0*	*200*	*0.58*	*98.54%*
6	*Home Depot*	*M*	*L*	*3.5929*	*3.593*	*9864.00*	*9864.00*	*1.50*	*0.57*	*1.01*	*1.87*	*11.24*	*0.62*		*150*	*0.50*	*83.40%*
	Pump Station	*L*	*PS*	*0*	*6.879*	*0.00*	*17126.00*	*1.50*	*2.08*	*1.93*	*5.05*	*88.37*	*1.74*	*18.7*	*250*	*2.03*	*94.29%*
		PS	*LIFT*	*0*	*6.879*	*0.00*	*17126.00*	*1.50*	*2.08*	*1.93*	*5.05*						
	Gravity Sewer																
7	*Veterinarian*	*VET*	*EX A-B*	*0.16*	*0.16*	*319.00*	*319.00*	*1.50*	*0.02*	*0.05*	*0.07*						
8	*Pad A*	*EX A*	*EX B*	*0.39*	*0.55*	*482.00*	*801.00*	*1.50*	*0.05*	*0.15*	*0.22*	*21.63*	*0.67*	*69.6*	*200*	*0.40*	*98.97%*
9	**Pad B**	**Pad B***	**2B**	**0.52**	**0.52**	**0.00**	**0.00**	**1.50**	**0.072**	**0.15**	**0.254**	**22.47**	**1.23**	**7.5**	**150**	**2.00**	**98.87%**
		2B	**EX B**	**0.00**	**0.52**	**0.00**	**0.00**	**1.50**	**0.072**	**0.15**	**0.254**	**27.60**	**0.85**	**29.2**	**200**	**0.65**	**99.08%**
		EX B	*EX C*	*0.00*	*1.07*	*0.00*	*801.00*	*1.50*	*0.12*	*0.30*	*0.478*	*22.18*	*0.68*	*54.8*	*200*	*0.42*	*97.85%*
10	*Ex plaza*	*EX F*	*EX E*	*3.31*	*3.31*	*9180.00*	*9180.00*	*1.50*	*0.53*	*0.93*	*1.723*	*21.08*	*0.65*	*90.0*	*200*	*0.38*	*91.83%*
		EX E	*EX D*	*0.00*	*3.31*	*0.00*	*9180.00*	*1.50*	*0.53*	*0.93*	*1.723*	*21.92*	*0.68*	*71.0*	*200*	*0.41*	*92.14%*
11	*Mr Lube*	*104*	*EX C*	*0.00*	*0.00*	*129.00*	*129.00*	*1.50*	*0.01*	*0.00*	*0.011*	*48.38*	*1.49*	*5.0*	*200*	*2.00*	*99.98%*
		EX C	*EX D*	*0.00*	*1.07*	*0.00*	*930.00*	*1.50*	*0.13*	*0.30*	*0.489*	*38.76*	*0.77*	*74.0*	*250*	*0.39*	*98.74%*
		EX D	**1B**	*1.22*	*5.60*	*0.00*	*10110.00*	*1.50*	*0.66*	*1.57*	*2.554*	*39.73*	*0.78*	*15.6*	*250*	*0.41*	*93.57%*
1 to 6		*EX LIFT*	**1B**	*0.00*	*6.88*	*0.00*	*17126.00*	*1.50*	*1.45*	*1.93*	*4.095*						
11	**Pad C**	**1B**	**1A**	**0.00**	**12.48**	**782.70**	**28018.70**	**1.50**	**2.149**	**3.49**	**6.717**	**34.00**	**0.67**	**37.6**	**250**	**0.30**	**80.24%**
		1A	*EX H*	**0.00**	**12.48**	**0.00**	**28018.70**	**1.50**	**2.149**	**3.49**	**6.717**	**34.00**	**0.67**	**7.3**	**250**	**0.30**	**80.24%**
11	*BMO*	*EX I*	*EX H*	*0.00*	*0.00*	*484.00*	*484.00*	*1.50*	*0.20*	*0.00*	*0.300*	*33.39*	*0.66*	*34.3*	*250*	*0.29*	*99.10%*
11	*McDonalds*	*EX McD*	*EX H*	*0.00*	*0.00*	*417.00*	*417.00*	*1.50*	*0.02*	*0.00*	*0.036*						
		EX H	*EX J*	*0.00*	*12.48*	*0.00*	*28919.70*	*1.50*	*2.373*	*3.49*	*7.053*	*39.22*	*0.77*	*40.0*	*250*	*0.40*	*82.02%*
		EX J	*EX K*	*0.00*	*12.48*	*0.00*	*28919.70*	*1.50*	*2.373*	*3.49*	*7.053*	*39.22*	*0.77*	*25.0*	*250*	*0.40*	*82.02%*

Q = average daily flow (commercial lands) — 50000 l/d/Ha
M = Commercial Peaking Factor = 1.5
I = Unit of peak extraneous flow — 0.28 l/s/Ha
Q(p) = Peak commercial flow (l/s)
Q(i) = Peak extraneous (infiltration) flow (l/s)

SPECIFY
Coeff. of friction (n) =0.013

REV. # :

Except for the bolded sewers information, data contained on this spread sheet was not design by IBI but was obtained from D.M. Willis Assoc Ltd report "Barrhaven Town Centre Inc dated Sept 2010
*** Design flow for Pad B based on 46 seats at 125 l/day/seat, plus 99sm of retail space at 5 l/sm**
**** Design flow for Pad C based on 783sm of retail space at 5 l/sm**



N

LEGEND:

	C = 0.90 (PAVEMENT)	0.583 Ha
	C = 0.20 (GRASSED)	0.035 Ha

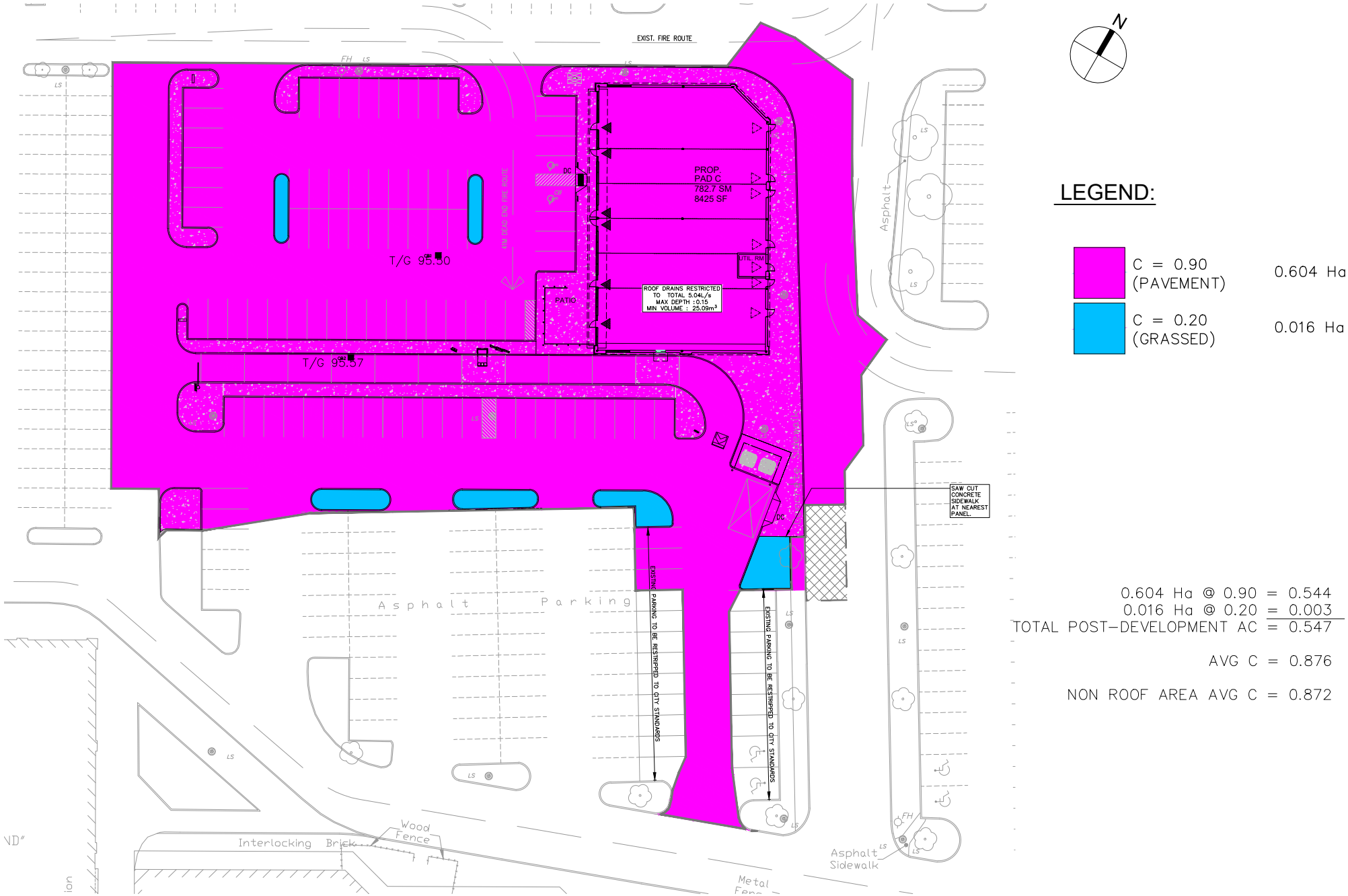
0.583 Ha @ 0.90 = 0.525
0.035 Ha @ 0.20 = 0.007
TOTAL PRE-DEVELOPMENT AC = 0.532

AVG C = 0.853

J:\116390_PadCBarrh\5.9 Drawings\59civil\current\116390Figures.dwg Layout Name: FIG1

Scale	Project Title	Drawing Title	Sheet No.
NTS	BARRHAVEN TOWN CENTRE PAD C	STORMWATER MANAGEMENT PRE-DEVELOPMENT CONDITION (EXISTING)	FIGURE 1 APRIL 2026

ARCADIS



LEGEND:

	C = 0.90 (PAVEMENT)	0.604 Ha
	C = 0.20 (GRASSED)	0.016 Ha

0.604 Ha @ 0.90 = 0.544
0.016 Ha @ 0.20 = 0.003
TOTAL POST-DEVELOPMENT AC = 0.547

AVG C = 0.876

NON ROOF AREA AVG C = 0.872

J:\116390_PadCBarrh\5.9 Drawings\59civil\current\116390Figures.dwg Layout Name: FIG2

Scale	Project Title	Drawing Title	Sheet No.
NTS	BARRHAVEN TOWN CENTRE PAD C	STORMWATER MANAGEMENT POST-DEVELOPMENT CONDITION (PROPOSED)	FIGURE 2 SEPT. 2026

ARCADIS

ARCADIS PROFESSIONAL SERVICES (CANADA) INC.
500-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
arcadis.com

PROJECT:	PAD C
DATE:	2026-11-03
FILE:	116390-5.7
REV #:	1
DESIGNED BY:	RR
CHECKED BY:	RM

STORMWATER MANAGEMENT

Formulas and Descriptions

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

Maximum Allowable Release Rate

Restricted Flowrate (based on C=0.50 Tc=20min)

C =	0.5	
T_c =	20	min
i_{100yr} =	70.25	mm/hr
A_{site} =	0.078	Ha
$Q_{restricted}$ =	7.62	L/s

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

Drainage Area	***PAD C***		
Area (Ha)	0.078		
C =	1.00	Restricted Flow Q_r (L/s)=	5.04

100-Year Ponding

T_c Variable (min)	i_{100yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr (m^3)
25	103.85	22.58	5.04	17.54	26.30
30	91.87	19.97	5.04	14.93	26.88
35	82.58	17.95	5.04	12.91	**27.12**
40	75.15	16.34	5.04	11.30	27.11
45	69.05	15.01	5.04	9.97	26.92

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	27.12	29.33	0	0.00

overflows to: roof controlled

Roof Storage= 75% of roof area, at maximum ponding depth of 50mm

Drainage Area	***PAD C***		
Area (Ha)	0.078		
C =	0.90	Restricted Flow Q_r (L/s)=	5.04

5-Year Ponding

T_c Variable (min)	i_{5yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 5yr (m^3)
15	83.56	16.35	5.04	11.31	10.18
17	77.61	15.18	5.04	10.14	10.35
19	72.53	14.19	5.04	9.15	**10.43**
21	68.13	13.33	5.04	8.29	10.45
23	64.29	12.58	5.04	7.54	10.40

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	10.43	29.33	0	0.00

overflows to: roof controlled

Drainage Area	***PAD C***		
Area (Ha)	0.078		
C =	0.90	Restricted Flow Q_r (L/s)=	5.04

2-Year Ponding

T_c Variable (min)	i_{2yr} (mm/hour)	Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)	Q_r (L/s)	$Q_p - Q_r$ (L/s)	Volume 2yr (m^3)
12	69.89	13.68	5.04	8.64	6.22
13	66.93	13.10	5.04	8.06	6.28
14	64.23	12.57	5.04	7.53	**6.32**
15	61.77	12.09	5.04	7.05	6.34
16	59.50	11.64	5.04	6.60	6.34

Storage (m^3)

Overflow	Required	Surface	Sub-surface	Balance
0.00	6.32	29.33	0	0.00

overflows to: roof controlled

WATTS® DRAINAGE

Adjustable Accutrol Weir

Tag: _____

Adjustable Flow Control for Roof Drains

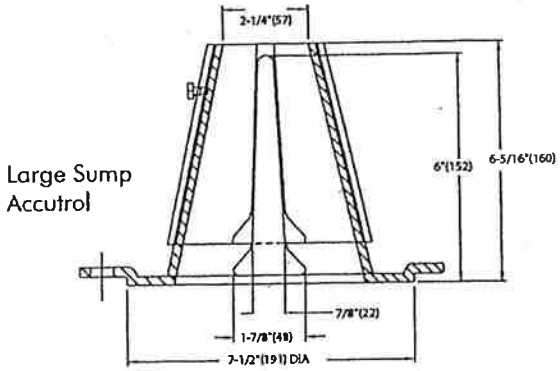
ADJUSTABLE ACCUTROL(for Large Sump Roof Drains only)

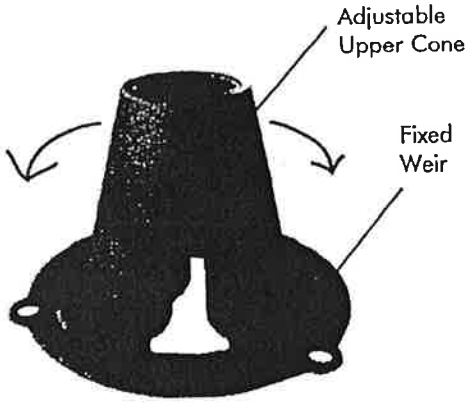
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the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

EXAMPLE:

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

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





1/2 Weir Opening Exposed Shown Above

TABLE 1. Adjustable Accutrol Flow Rate Settings

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

Job Name _____ Contractor _____

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

Engineer _____ Representative _____

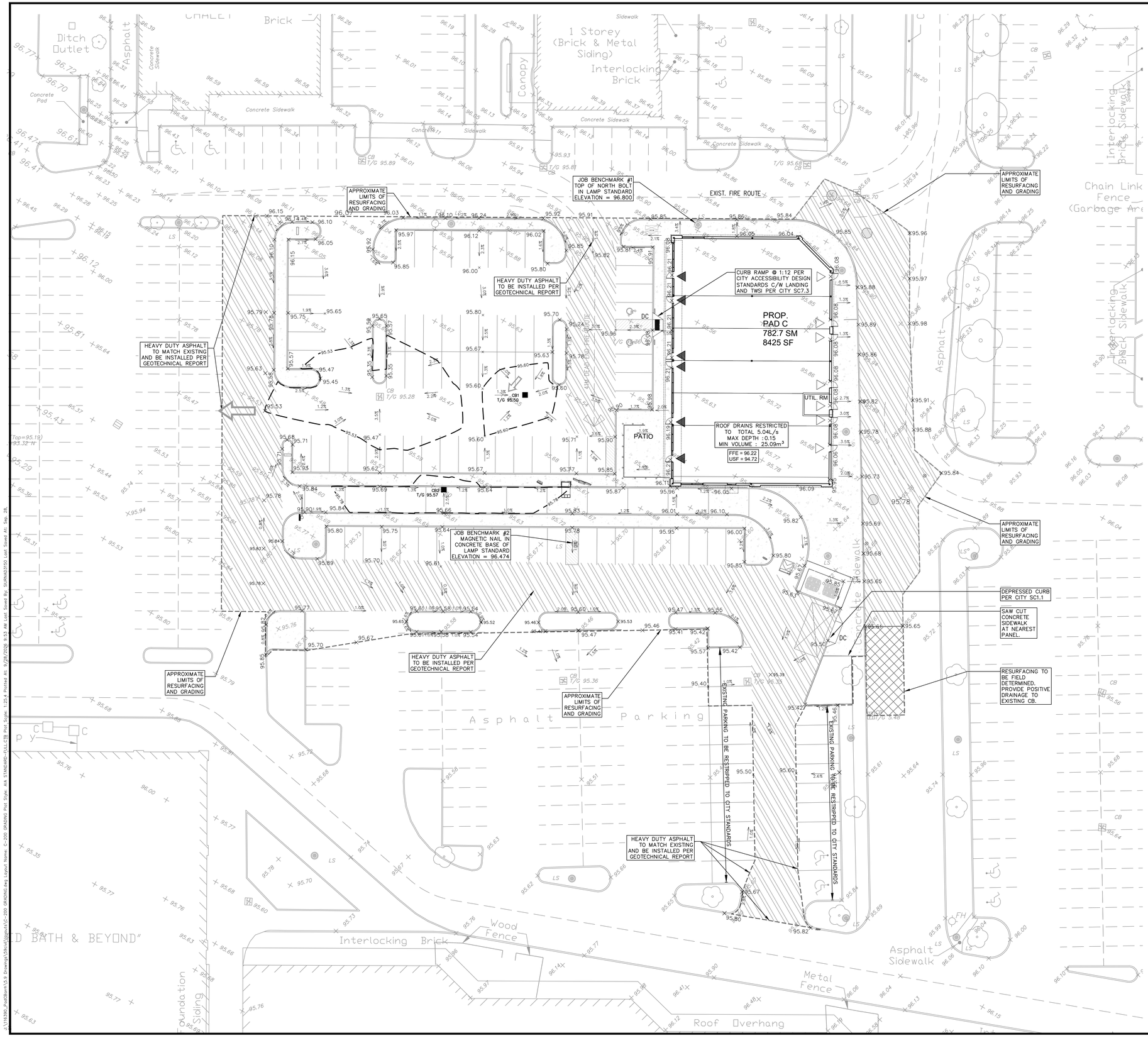
WATTS Drainage reserves the right to modify or change product design or construction without prior notice and without incurring any obligation to make similar changes and modifications to products previously or subsequently sold. See your WATTS Drainage representative for any clarification. Dimensions are subject to manufacturing tolerances.

WATTS DRAINAGE CANADA: 5435 North Service Road, Burlington, ON, L7L 5H7 TEL: 905-332-6718 TOLL-FREE: 1-888-208-8927 Website: www.wattsdrainage.ca

CANADA

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(Dimension) Denotes Millimeters



LEGEND:

- +87.12 EXISTING GRADES
- 87.30x PROPOSED GRADES
- 87.30T/Cx PROPOSED TOP OF CURB
- 97.33 AS-BUILT GRADE
- EXISTING CURBS
- PROPOSED CURBS
- DC DEPRESSED CURB
- REGULAR PAVEMENT STRUCTURE
- HEAVY DUTY PAVEMENT STRUCTURE
- MAJOR/EMERGENCY OVERLAND FLOW ROUTE
- SURFACE FLOW DIRECTION
- BUILDING ENTRANCE
- EXISTING LIGHT POLE
- (R) RISER

REGULAR PAVEMENT STRUCTURE

50mm SUPERPAVE 12.5mm
150mm OPSS GRAN. A
300mm OPSS GRAN. B TYPE II

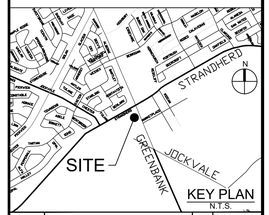
HEAVY DUTY PAVEMENT STRUCTURE (HEAVY TRUCK PARKING AND ACCESS LANES)

40mm SUPERPAVE 12.5mm
50mm SUPERPAVE 19.0mm
150mm OPSS GRAN. A
400mm OPSS GRAN. B TYPE II

OWNER : STEVE BISHOP
NADG
2851 JOHN ST, SUITE ONE, MARKHAM, ONTARIO, L3R 5R7
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APPLICANT : RON RICHARDS
R. G. RICHARDS & ASSOCIATES
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TEL: (416)219-5122

ARCHITECT : SCOLER LEE + ASSOCIATES ARCHITECTS INC.
STE 900, 60 ST, CLAIR AVE E, TORONTO, ONTARIO, M4T 1N5
TEL : (416)362-7753



No.	REVISIONS	By	Date
14			
13			
12			
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10			
9	REVISED PER NEW SITE PLAN	DGY	26:09:28
8	SPA SUBMISSION #4	DGY	26:04:02
7	REVISED PER NEW SITE PLAN	DGY	25:11:25
6	SPA SUBMISSION #3	DGY	19:01:01
5	REVISED PER CITY COMMENTS	DGY	18:11:16
4	SPA SUBMISSION #2	DGY	18:10:15
3	ISSUED FOR SPA	DGY	18:05:14
2	REVISED PER ARCH COMMENTS	DGY	18:05:03
1	ISSUED FOR TEAM COORDINATION	DGY	18:05:02

NADG

ARCADIS
333 Preston Street - Suite 500
Ottawa ON K1S 5N4 Canada
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Project Title
PAD C BARHAVEN TOWN CENTRE

LICENSED PROFESSIONAL ENGINEER
D. G. Yannoulopoulos
2026/09/28
PROVINCE OF ONTARIO

Drawing Title
SITE GRADING PLAN
3777 STRANDHERD DRIVE

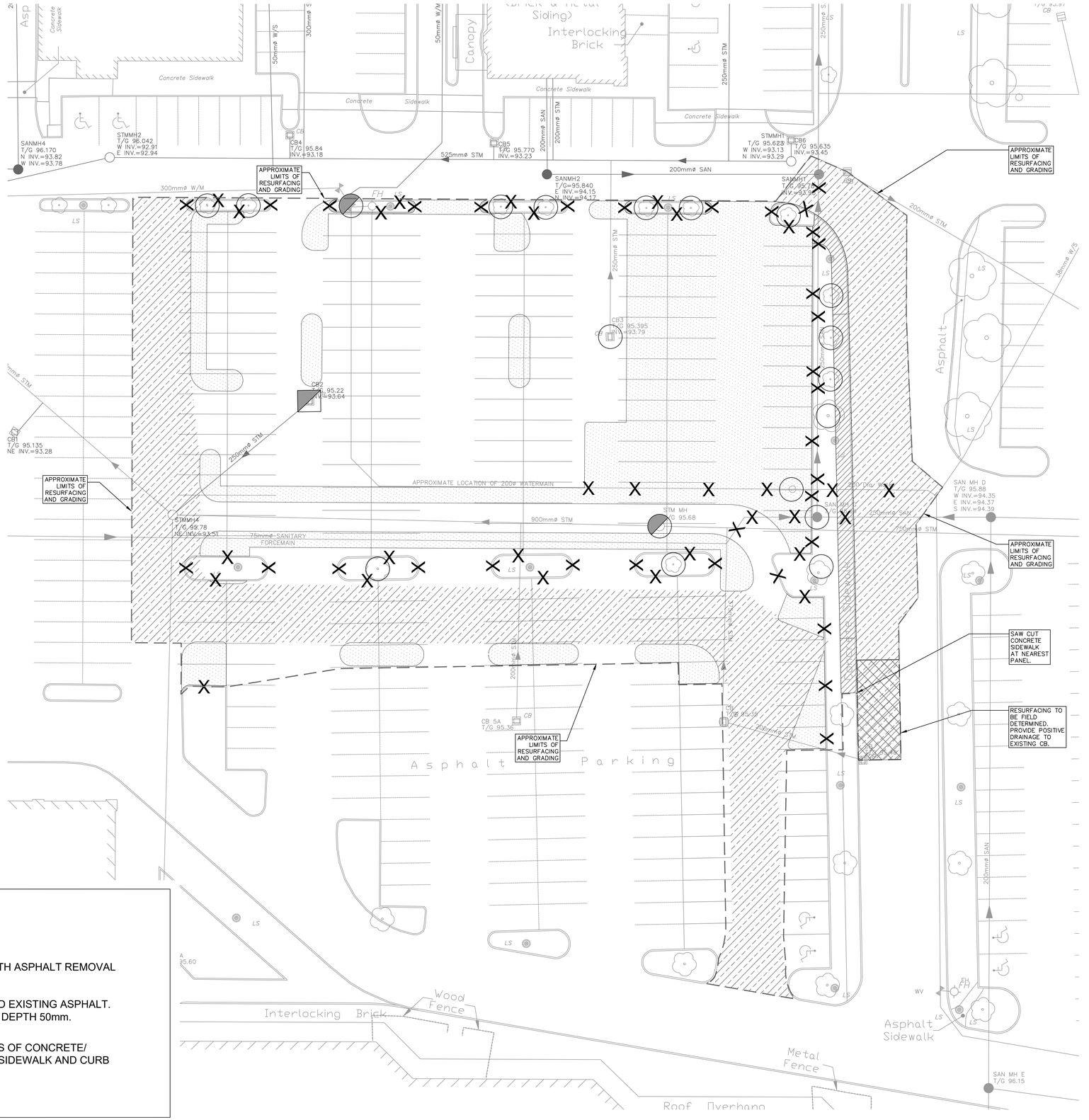
Scale
1:250

Design	Date
R.M.	APRIL 2018
Drawn	Checked
E.H.	D.G.Y.
Project No.	Drawing No.
116390	C-200

D07-12-18-0106

#17717

X:\116390_PadBarm\5.0 Drawings\5b\cad\dgn\C-200 GRADING.dwg Layout Name: C-200 GRADING.dwg Plot Style: AIA STANDARD-FULL.CTB Plot Scale: 1:25.4 Plotted At: 9/28/2026 9:53 AM Last Saved By: SUBNA03150 Last Saved At: Sep. 28,



REMOVAL

ADJUST MANHOLE, VALVES

ADJUST CATCH BASIN

ADJUSTMENT BY BELL OR HYDRO APPROVED CONTRACTOR

REMOVE OR ABANDON SEWER, WATERMAIN, UTILITY, CURB RETURNS

PLUG

FULL DEPTH ASPHALT REMOVAL

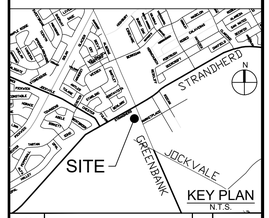
DRY GRIND EXISTING ASPHALT. AVERAGE DEPTH 50mm.

REMOVALS OF CONCRETE/ ASPHALT SIDEWALK AND CURB

OWNER : STEVE BISHOP
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2851 JOHN ST, SUITE ONE, MARKHAM, ONTARIO, L3R 5R7
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No.	REVISIONS	By	Date
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3	REVISED PER NEW SITE PLAN	DGY	26:09:28
2	SPA SUBMISSION #4	DGY	26:04:02
1	REVISED PER NEW SITE PLAN	DGY	25:11:25

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Project Title

PAD C BARHAVEN TOWN CENTRE

LICENSED PROFESSIONAL ENGINEER
D. G. Yannoulopoulos
2026/09/28
PROVINCE OF ONTARIO

Drawing Title

REMOVALS

3777 STRANDHERD DRIVE

Scale: 1:250

Design	Date
R.M.	APRIL 2018
Drawn: E.H.	Checked: D.G.Y.
Project No.: 116390	Drawing No.: C-REM

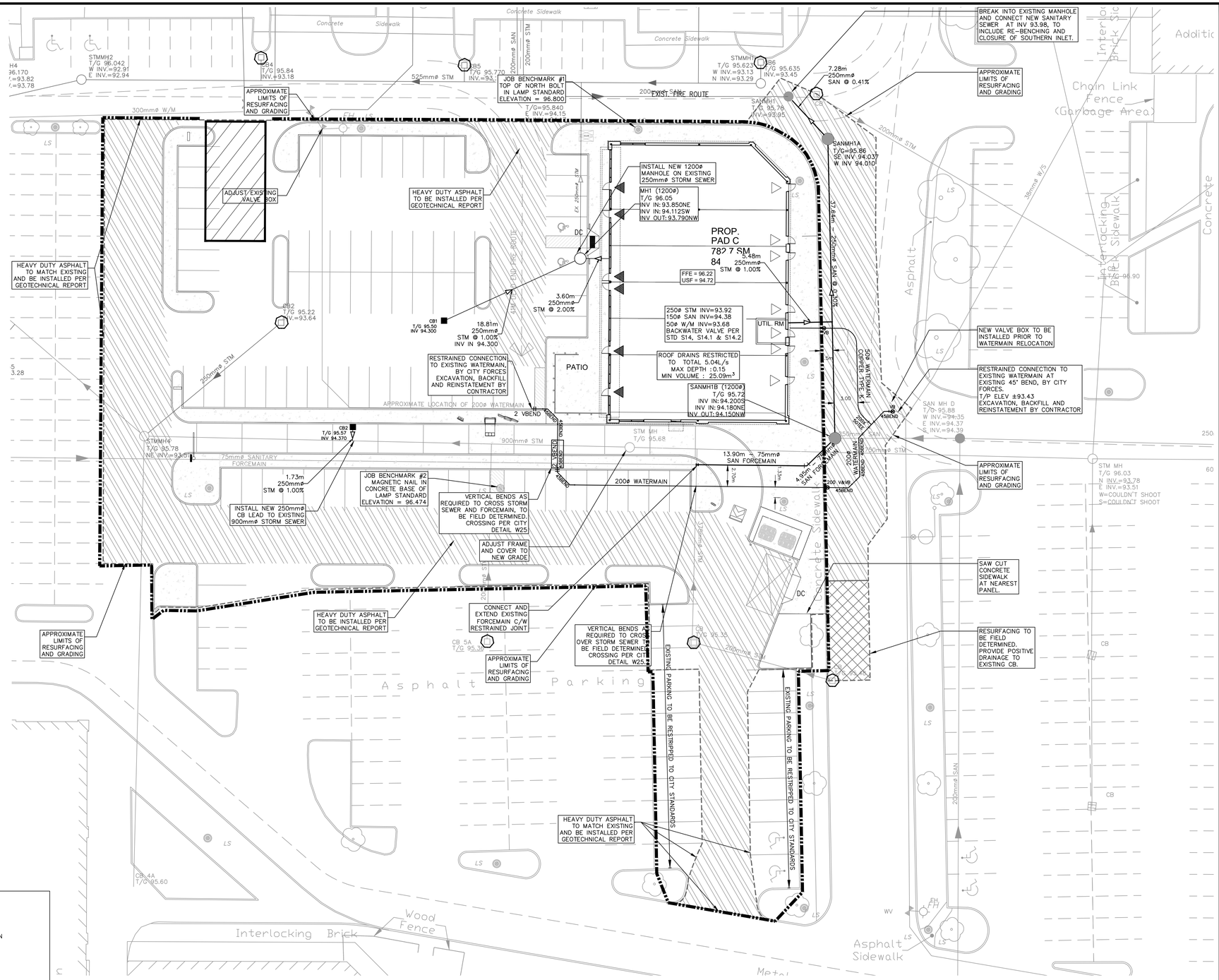
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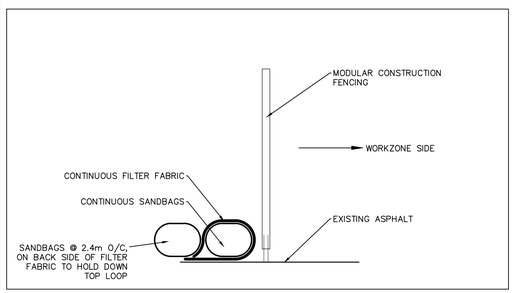
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NOTES:

1. SILT FENCE TO BE ERECTED PRIOR TO EARTH WORKS BEING COMMENCED. SILT FENCE TO BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED OR UNTIL START OF SUBSEQUENT PHASE.
2. STRAW BALE SEDIMENT TRAPS TO BE CONSTRUCTED IN EXISTING ROAD SIDE DITCHES. TRAPS TO REMAIN AND BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED.
3. GEOTEXTILE FABRIC TO BE PLACED UNDER COVER OF ALL CATCHBASINS. GEOTEXTILE FABRIC IN STREET CB'S TO REMAIN UNTIL BASE COURSE ASPHALT IS LAID. GEOTEXTILE FABRIC IN RYCB'S TO REMAIN UNTIL VEGETATION IS ESTABLISHED. ALL CATCHBASINS TO BE REGULARLY INSPECTED AND CLEANED, AS NECESSARY, UNTIL SOD AND CURBS ARE CONSTRUCTED.
4. CONTRACTOR TO PROVIDE DETAILS ON LOCATION(S) AND DESIGN OF DEWATERING TRAP(S) PRIOR TO COMMENCING WORK. CONTRACTOR ALSO RESPONSIBLE FOR MAINTAINING TRAP(S) AND ADJUSTING SIZE(S) IF DEEMED REQUIRED BY THE ENGINEER DURING CONSTRUCTION.
5. CONTRACTOR TO PROTECT EXISTING CATCHBASINS WITH FILTER CLOTH UNDER THE COVERS TO TRAP SEDIMENTATION. REFER TO IDENTIFIED STRUCTURES.
6. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES, TO PROVIDE FOR PROTECTION OF THE AREA DRAINAGE SYSTEM AND THE RECEIVING WATERCOURSE DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.





CUSTOM SILT FENCE DETAIL
FOR SITE PERIMETER
LOCATION AS REQUIRED

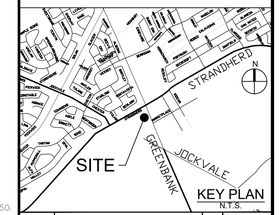
LEGEND :

- LIGHT DUTY SILT FENCE AS PER OPSD-219.110
- SNOW FENCE
- STRAW BALE CHECK DAM AS PER OPSD-219.180
- ROCK CHECK DAM AS PER OPSD-219.210
- SILT SACK PLACED UNDER EXISTING CB COVER
- TEMPORARY MUD MAT 0.15m THICK 50mm CLEAR STONE ON NON WOVEN FILTER CLOTH (7.5 x 15.0)

OWNER : STEVE BISHOP
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TEL: (905)477-9200

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6	REVISED PER NEW SITE PLAN	DGY	25: 11: 25
5	SPA SUBMISSION #3	DGY	19: 01: 01
4	REVISED PER CITY COMMENTS	DGY	18: 11: 16
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2	ISSUED FOR SPA	DGY	18: 05: 14
1	ISSUED FOR TEAM COORDINATION	DGY	18: 05: 02

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Project Title
PAD C BARHAVEN TOWN CENTRE

LICENSED PROFESSIONAL ENGINEER
D. G. Yannoulopoulos
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PROVINCE OF ONTARIO

Drawing Title
SEDIMENT AND EROSION CONTROL PLAN
3777 STRANDHERD DRIVE

Scale
1:250

Design	Date
R.M.	APRIL 2018
Drawn	Checked
E.H.	D.G.Y.
Project No.	Drawing No.
116390	C-900

D07-12-18-0106

#17717

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