

NADG

**3777 STRANDHERD DRIVE**  
**BARRHAVEN TOWN CENTRE**  
**PAD C**

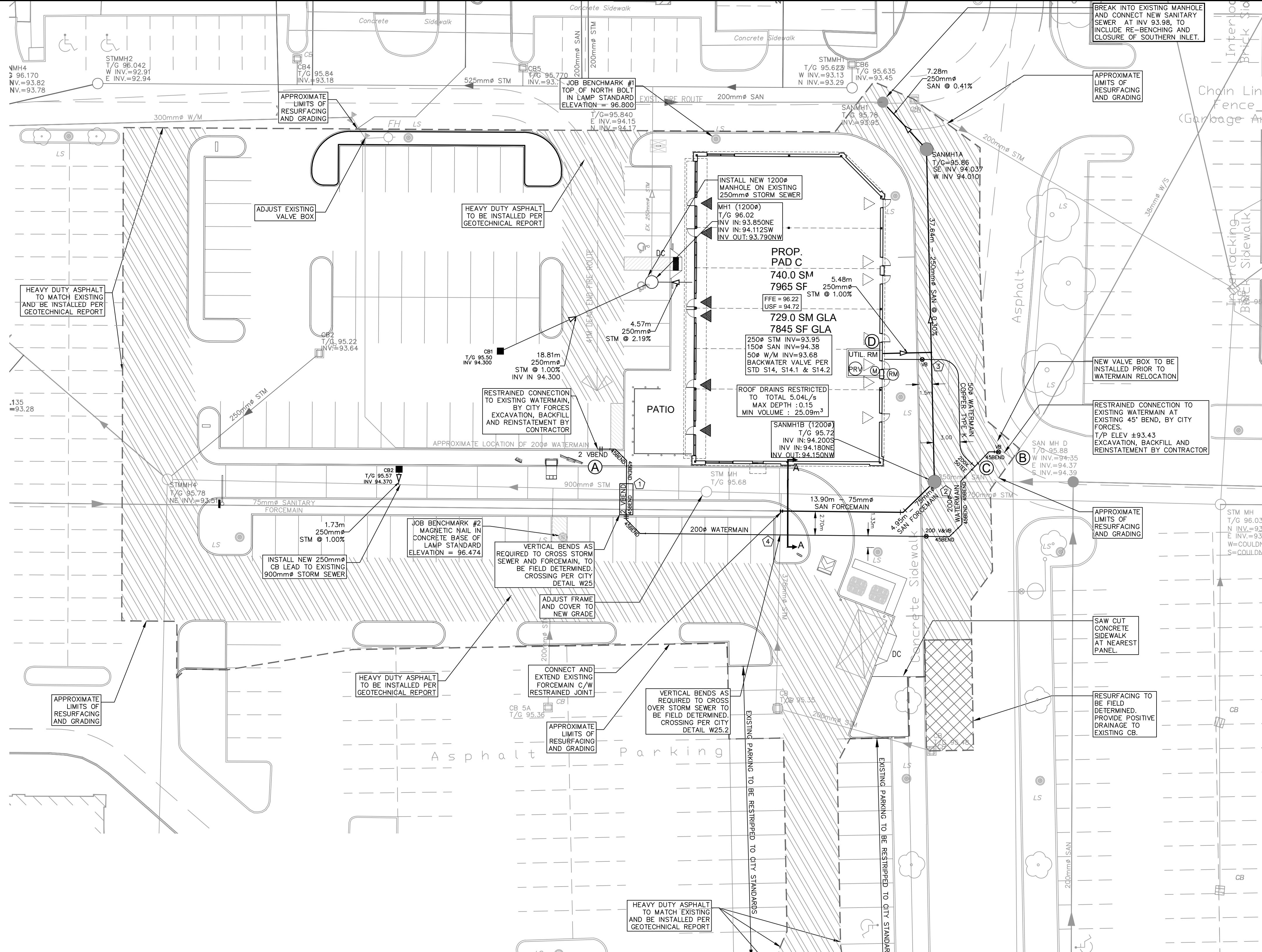
**Servicing and Stormwater Management Design Brief**

April 2026

**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 REGULATIONS.
- 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 ON-SITE 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 STRANDBERD 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. 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 FARHALL MOFFATT & WOODLAND LTD. DRNG. IT/18/04/2014
- 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, BELT AND SPOCKET 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, BELT AND SPOCKET 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 OSPD 701.010, TAPER TOP TYPE COMPLETE WITH 300mm SUMP FOR SEWER LESS THAN 900mm.
  - 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.
- 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 OSPD 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

- 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 PROPER DRAINAGE, 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 HAUL 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 10 000/L/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% SPMD AND EXTEND TO SPRINGLINE OF PIPE. COVER MATERIAL SHALL CONSIST OF OPSS GRANULAR A AND SHALL EXTEND FROM SPRINGLINE TO MINIMUM 300mm ABOVE COVER OF PIPE, AND COMPACTED TO 95% SPMD. SEE GEOTECHNICAL REPORT FOR ADDITIONAL DETAILS.

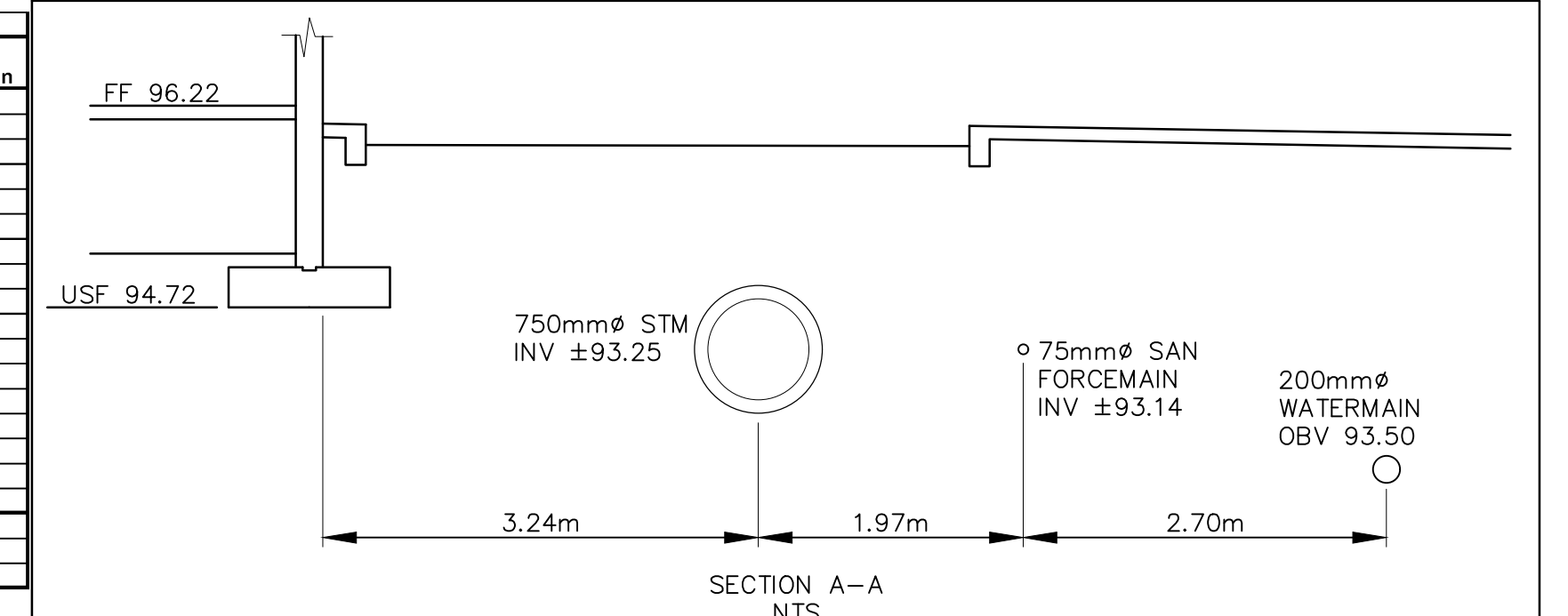


**LEGEND:**

	EXISTING STORM SEWER		BARRIER CURB
	EXISTING SANITARY SEWER		PROPOSED REMOTE WATER METER
	EXISTING WATERMAIN		PROPOSED REMOTE WATER METER
	PROPOSED STORM SEWER		PRESSURE REDUCING VALVE BY OTHERS
	PROPOSED SANITARY SEWER		EXISTING LIGHT POLE
	PROPOSED WATERMAIN		REGULAR ASPHALT TO BE SAW CUT AND REINSTATE WITH STEP JOINT AS PER CITY STANDARDS
	EXISTING SANITARY MANHOLE		HEAVY DUTY ASPHALT TO BE SAW CUT AND REINSTATE WITH STEP JOINT AS PER CITY STANDARDS
	EXISTING HYDRANT C/W BOTTOM OF FLANGE ELEVATION		SILT FENCE AS PER OSPD-219.110
	EXISTING CATCHBASIN		FILTER FABRIC TO BE PLACED BENEATH STRUCTURE FRAME. FILTER FABRIC TO REMAIN IN PLACE UNTIL SITE IS STABILIZED AND VEGETATION IS ESTABLISHED.
	PROPOSED SANITARY MANHOLE		DEPRESSED CURB
	PROPOSED STORM MANHOLE		
	PROPOSED CATCHBASIN MANHOLE		
	PROPOSED HYDRANT C/W BOTTOM OF FLANGE ELEVATION		
	PROPOSED CATCHBASIN		

**WATERMAIN SCHEDULE**

Station	Description	Finished Grade	Top of Watermain	As Built Watermain
A +0+00.00	EXISTING WATERMAIN	95.80	93.30	
A +0+00.25	45° VERTICAL BEND	95.81	93.41	
A +0+00.50	45° VERTICAL BEND	95.82	92.50	
A +0+02.00	45° BEND	95.84	92.50	
A +0+03.81	45° BEND	95.82	92.50	
A +0+10.10	45° VERTICAL BEND	95.99	92.50	
A +0+10.35	45° VERTICAL BEND	95.86	93.46	
A +0+10.47	45° BEND	95.86	93.46	
A +0+12.69	45° BEND	95.84	93.44	
A +0+25.00	45° BEND	95.92	93.52	
A +0+45.11	2000' V&V	95.68	93.28	
A +0+47.73	45° BEND	95.69	93.29	
A +0+49.72	45° BEND	95.72	93.32	
A +0+51.61	45° BEND	95.77	93.37	
C +0+58.90	500' SERVICE TIE TO PAD C	95.80	93.40	
C +0+59.19	45° BEND	95.82	93.42	
B +0+00.30	NEW 2000' V&V - EXISTING WATERMAIN	95.83	93.43	
C +0+00.00	500' SERVICE TIE TO PAD C	95.80	93.40	
C +0+15.97	45° BEND	95.83	93.43	
D +0+20.24	SERVICE PAD C	96.08	93.68	



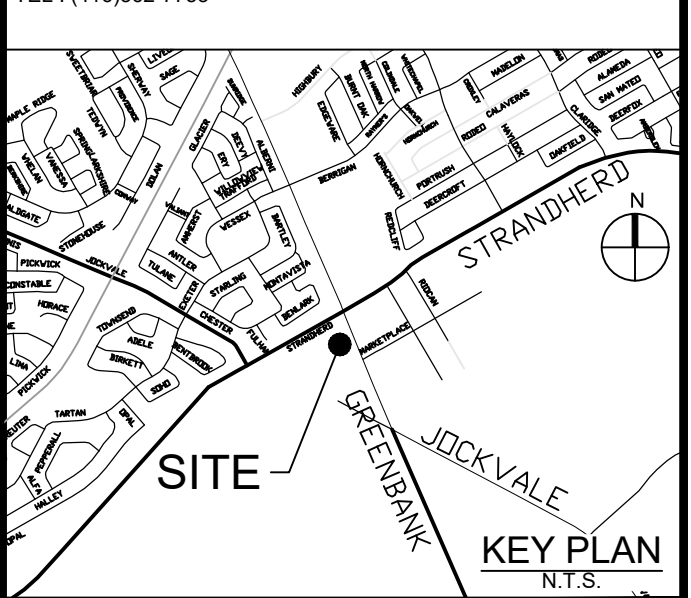
**CROSSING TABLE**

1	2000 W/M 0.50m BELOW 9000 STM	2000 W/M 0.76m BELOW 750 F.M.
2	2000 W/M 0.50m BELOW 7500 STM	2000 W/M 1.47m BELOW 2500 SAN
3	500 W/M 0.58m BELOW 2500 SAN	750 F.M. 0.2m ABOVE 7500 STM
4	2000 W/M (93.62 OBV) OVER 3750 STORM (ELEVATION OF EXISTING STORM TO BE FIELD VERIFIED)	

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)302-7753



No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
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  
Tel 613 225 1311  
www.arcadis.com

Project Title  
**PAD C BARHAVEN TOWN CENTRE**

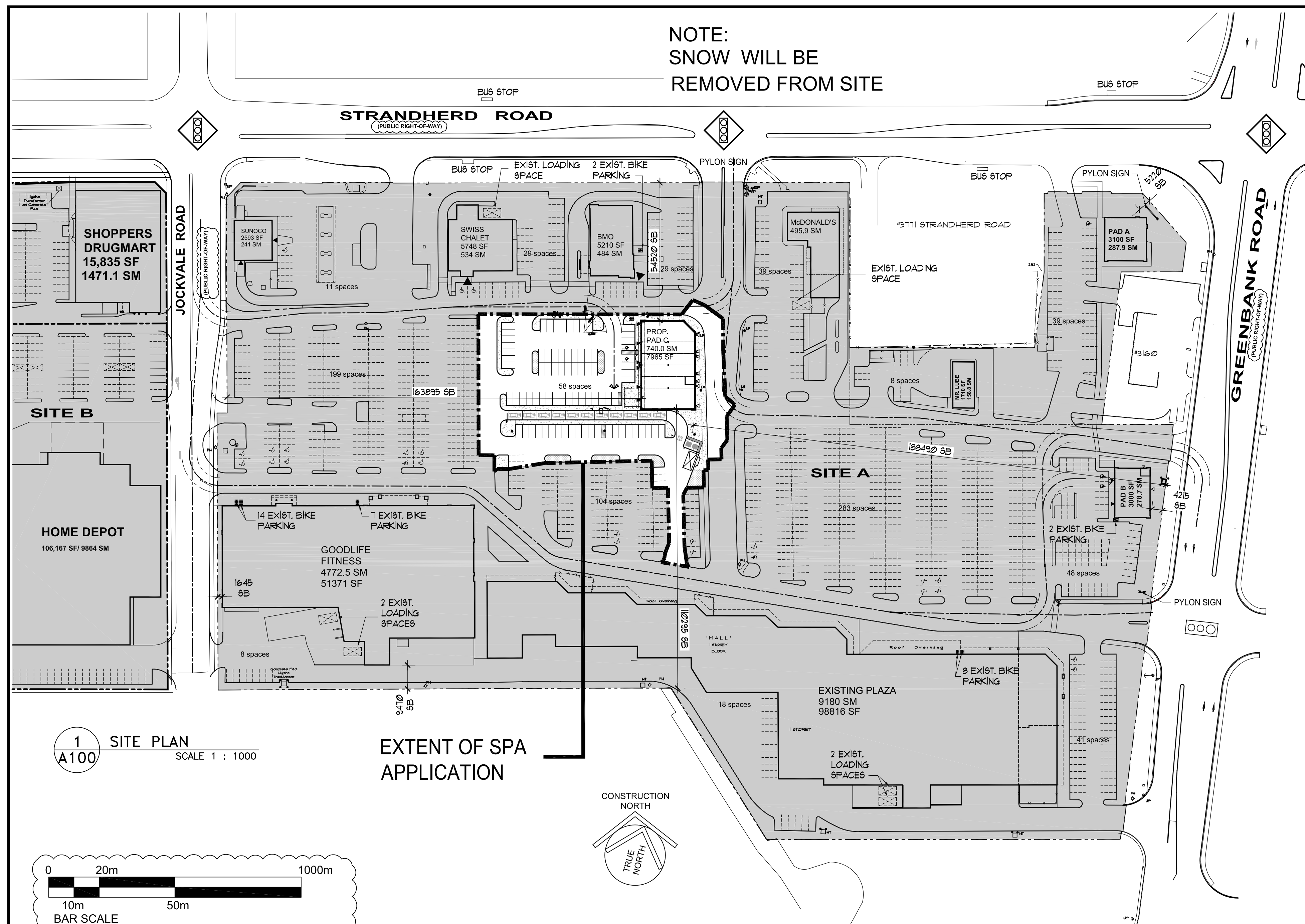
Professional Engineer  
Yannoupolopoulos  
2026/04/02  
PROVINCE OF ONTARIO

Drawing Title  
**SITE SERVICING PLAN**

3777 STRANDBERD DRIVE

Scale	1:250
Design	R.M.
Date	APRIL 2018
Drawn	E.H.
Checked	D.G.Y.
Project No.	116390
Drawing No.	C-001

NOTE:  
SNOW WILL BE  
REMOVED FROM SITE

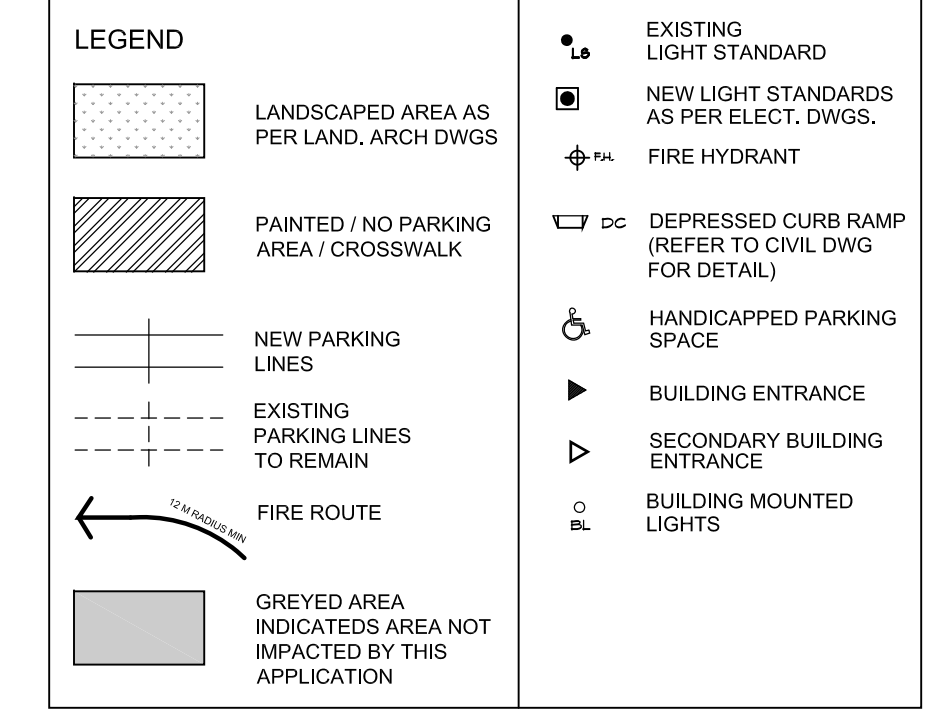


**SITE STATISTIC**

SITE 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	
McDONALD'S	495.9 SM	
GOODLIFE FITNESS	4772.5 SM	
PAD A (HAKIM)	287.9 SM	
MR.LUBE	158.8 SM	
PAD B	278.7 SM	
<b>BUILDING AREA (GLA)</b>	<b>16432.8 SM</b>	<b>176881 SF</b>
<b>PROP BUILDING AREA</b>	<b>BLDG AREA</b>	<b>GLA</b>
PAD C	729.0 SM	7845 SF
<b>BUILDING AREA</b>	<b>17161.8 SM</b>	<b>184726 SF</b>
<b>TOTAL SPACES</b>	<b>914 SPACES</b>	<b>5.33/100SM</b>
		<b>4.95/1000SF</b>

**MC (187H(20)) - ZONE PROVISIONS**

ZONING MECHANISMS	II PROVISIONS	PROVIDED
(a) Minimum lot area	No Minimum	77926 sm
(b) Minimum lot width	No Minimum	±1.370 m
(c) Minimum front yard and corner side yard setback	(i) abutting a lot in a residential zone	3 m
	(ii) abutting the rapid transit corridor	2 m
	(iii) other cases	No Minimum (GREENBANK ROAD) Site: 5.2m Pad C: 188.4m 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
	(ii) abutting the rapid transit corridor	2 m
	(iii) other cases	No Minimum Site: 1.6m Pad C: 183.8m
(e) Minimum rear yard setback	(i) abutting a lot in a residential zone	6 m
	(ii) abutting the rapid transit corridor	2 m
	(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, alleys, parking, loading spaces or outdoor commercial pads, the whole yard must be landscaped	N/A
Exception: max. gross leasable floor area	35,000 sm	17161.8 SM EAST OF JOCKVALE RD. 914 SPACES
Parking	MIN 3.6/100 SM GLA	618 SPACES 914 SPACES
Loading (3.5m x 7.0m)	1500sm - 2499sm gfa	Total: Min. 2 Pad C: 1 Total: 7
Bicycle parking	1500sm gfa	Shopping Centre Pad C: 2 Pad C: 2 Total: 35
Drive Thru Queuing	7 AT THE BOARD 133074	Proposed: 2 (1 Type-A, 1 Type-B) Existing: 31 Total: 33
Accessible Parking Requirements	801-850 = 21 Total 10 Type-A, 11 Type-B	Proposed: 2 (1 Type-A, 1 Type-B) Existing: 31 Total: 33



**SURVEY INFO TAKEN FROM:**  
SURVEYOR'S REAL PROPERTY REPORT - PART 1  
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
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

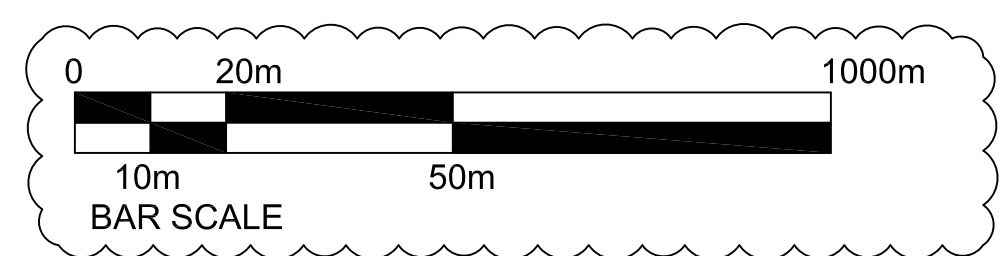
**DRAWING TITLE**  
SITE PLAN, DETAILS

ONTARIO ASSOCIATION OF ARCHITECTS	DRAWN	JL	FOLIO	25078
ALLAN BORENSTEIN LICENCE 7172	CHECKED	AB	DATE	OCT 2025
	SCALE	AS NOTED	DWG. NO.	A100

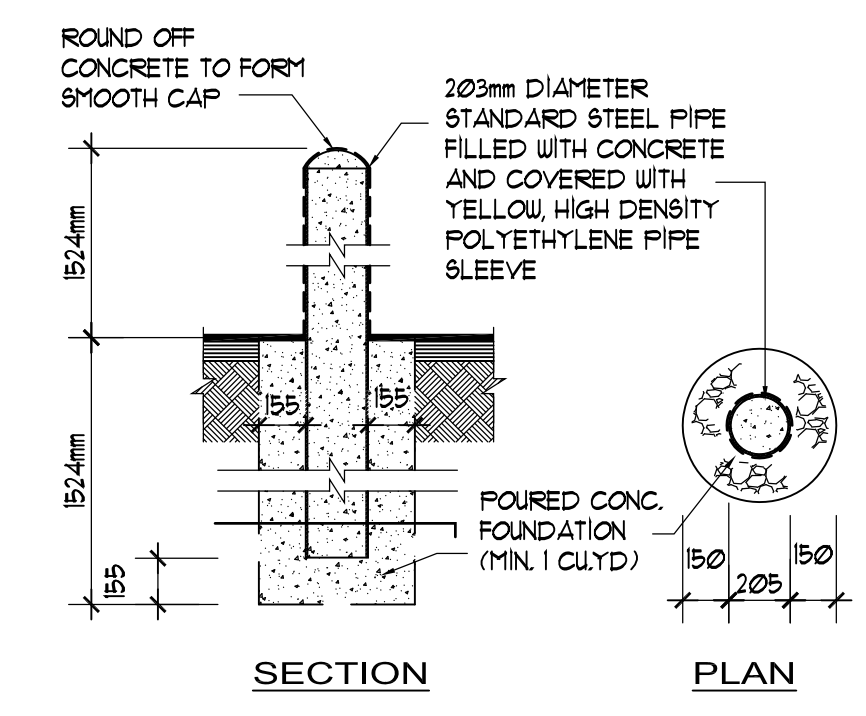
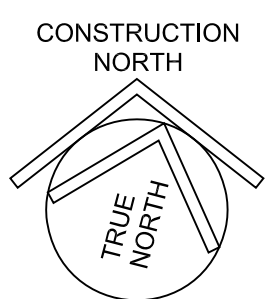
FILE #: D07-12-25-0157  
PLAN #: 19416

DRAWINGS REVISED: \_\_\_\_\_ LAST UPDATED: \_\_\_\_\_

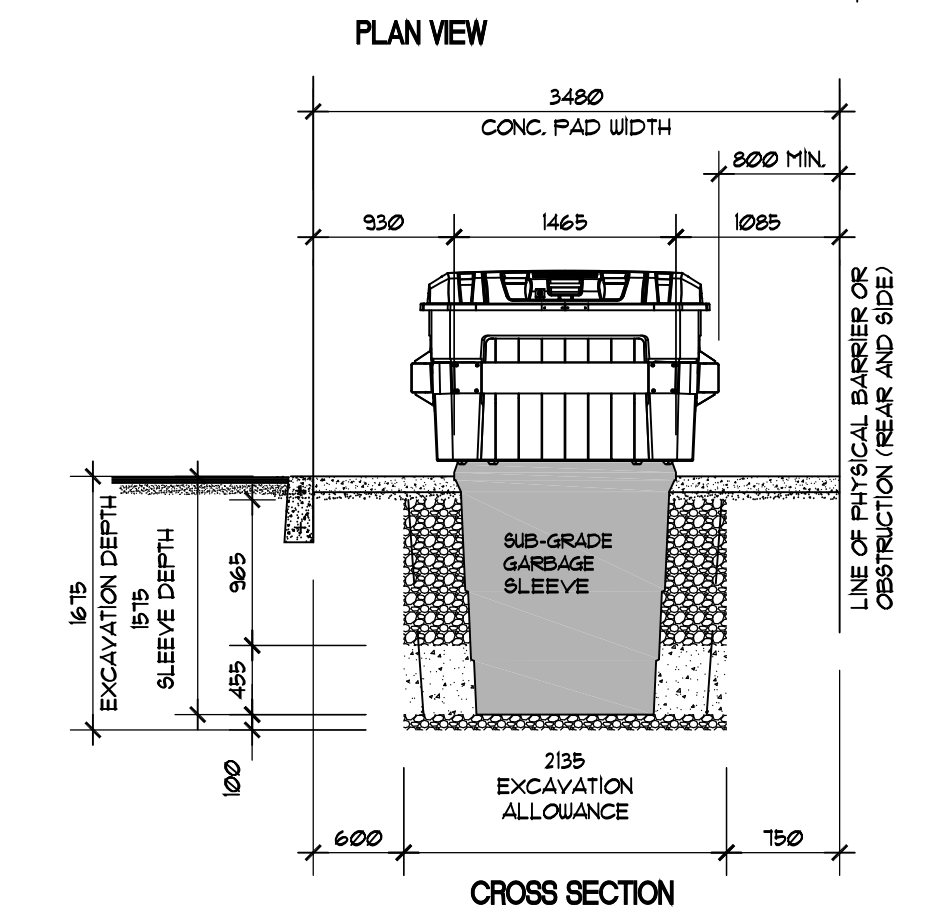
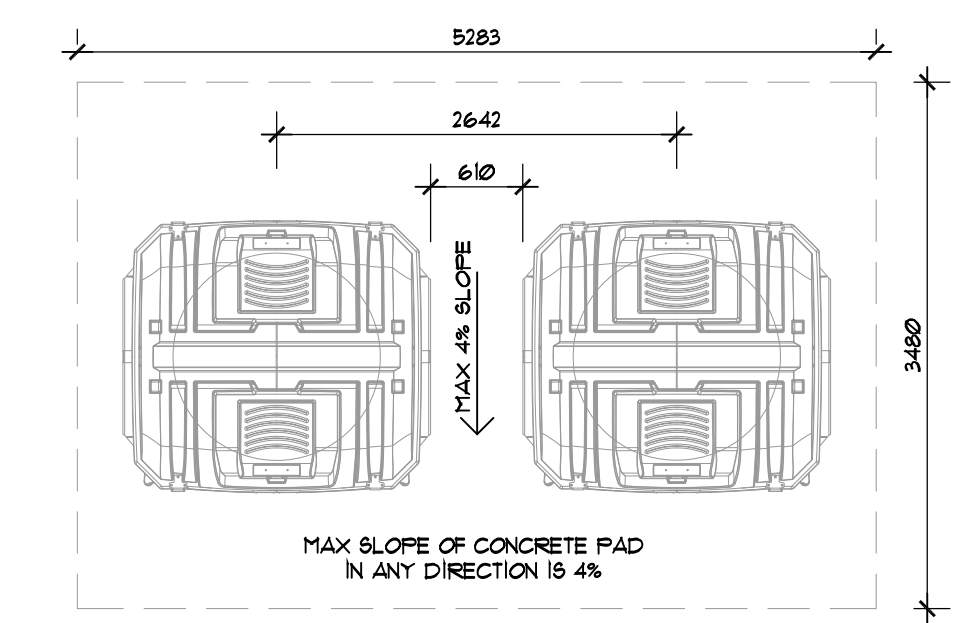
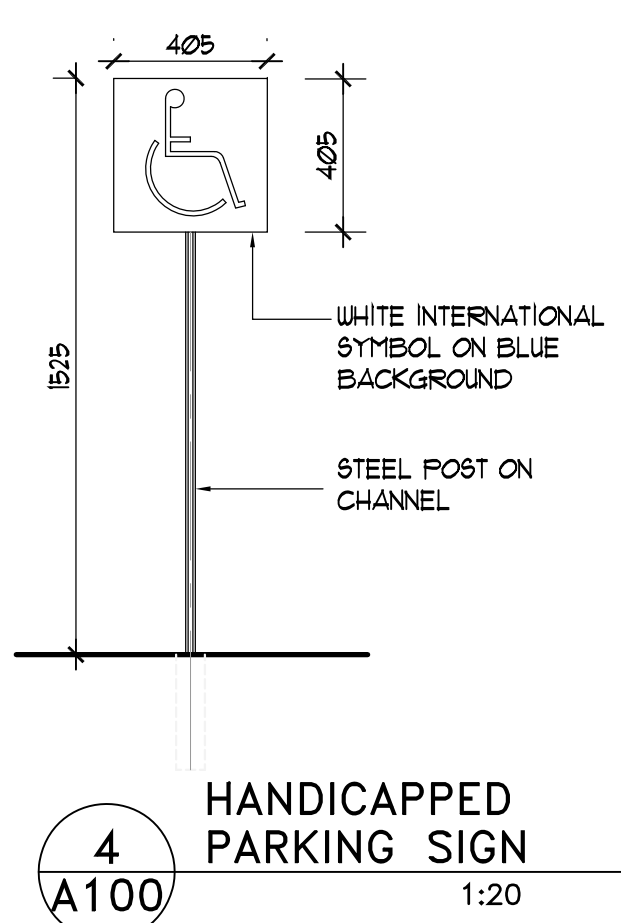
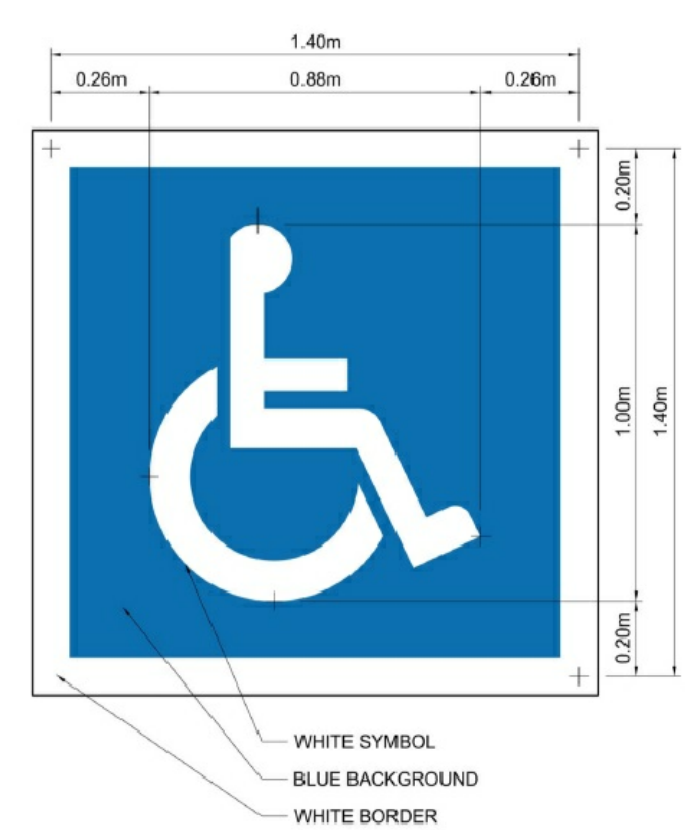
**1 SITE PLAN**  
SCALE 1 : 1000



EXTENT OF SPA APPLICATION



**3 ROAD PAINTING**  
SCALE NTS



**6 SUB-GRADE GARBAGE SYSTEM**  
SCALE 1:50

# BOUNDARY CONDITIONS



## Boundary Conditions For: Barrhaven Town Centre – Pad C

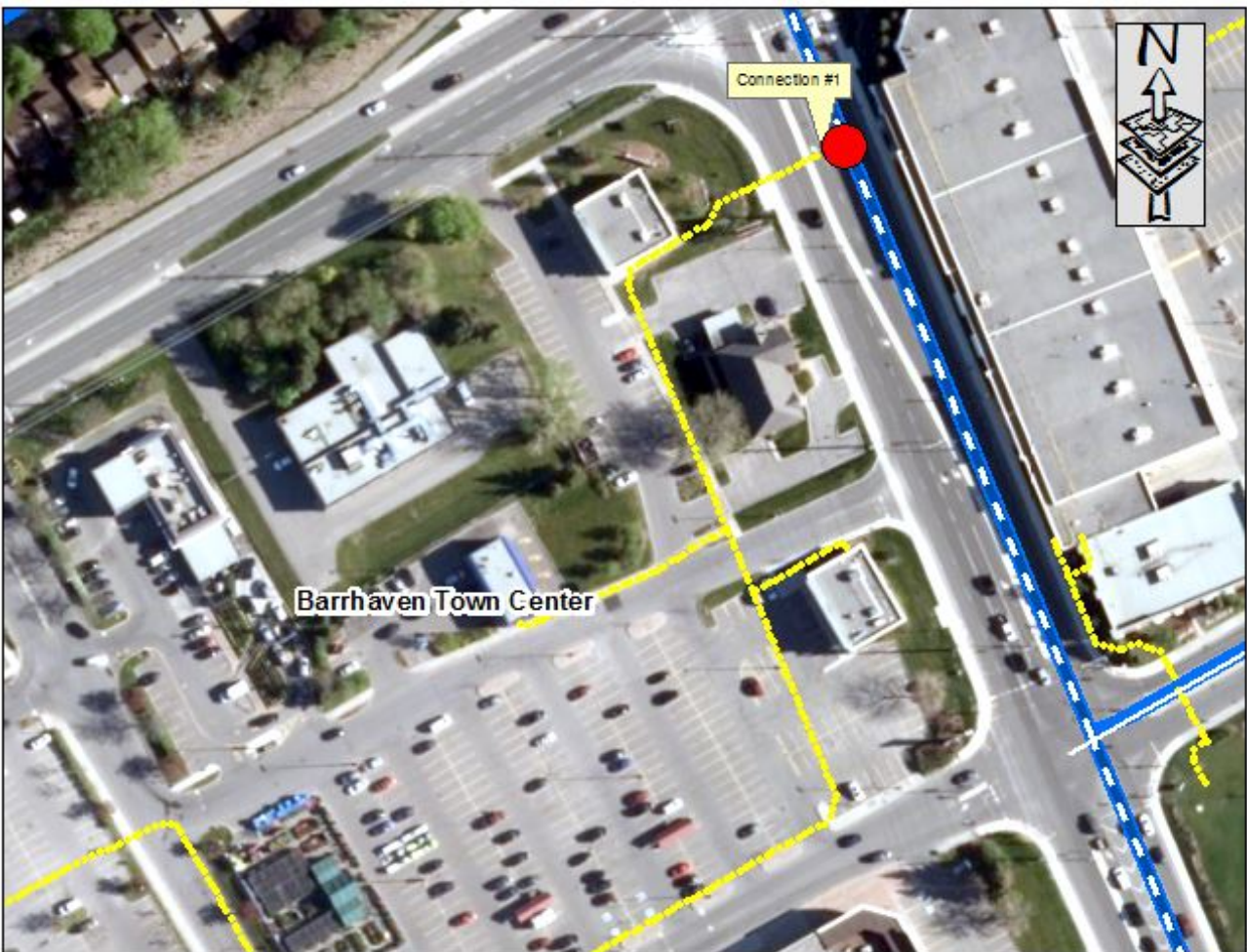
Date of Boundary Conditions: 2018-Oct-01

### 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 <sup>1</sup> (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

<sup>1</sup>Elevation: **98.900 m**

#### Post Configuration

##### Connection #: 1

Demand Scenario	Head (m)	Pressure <sup>1</sup> (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

<sup>1</sup>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:

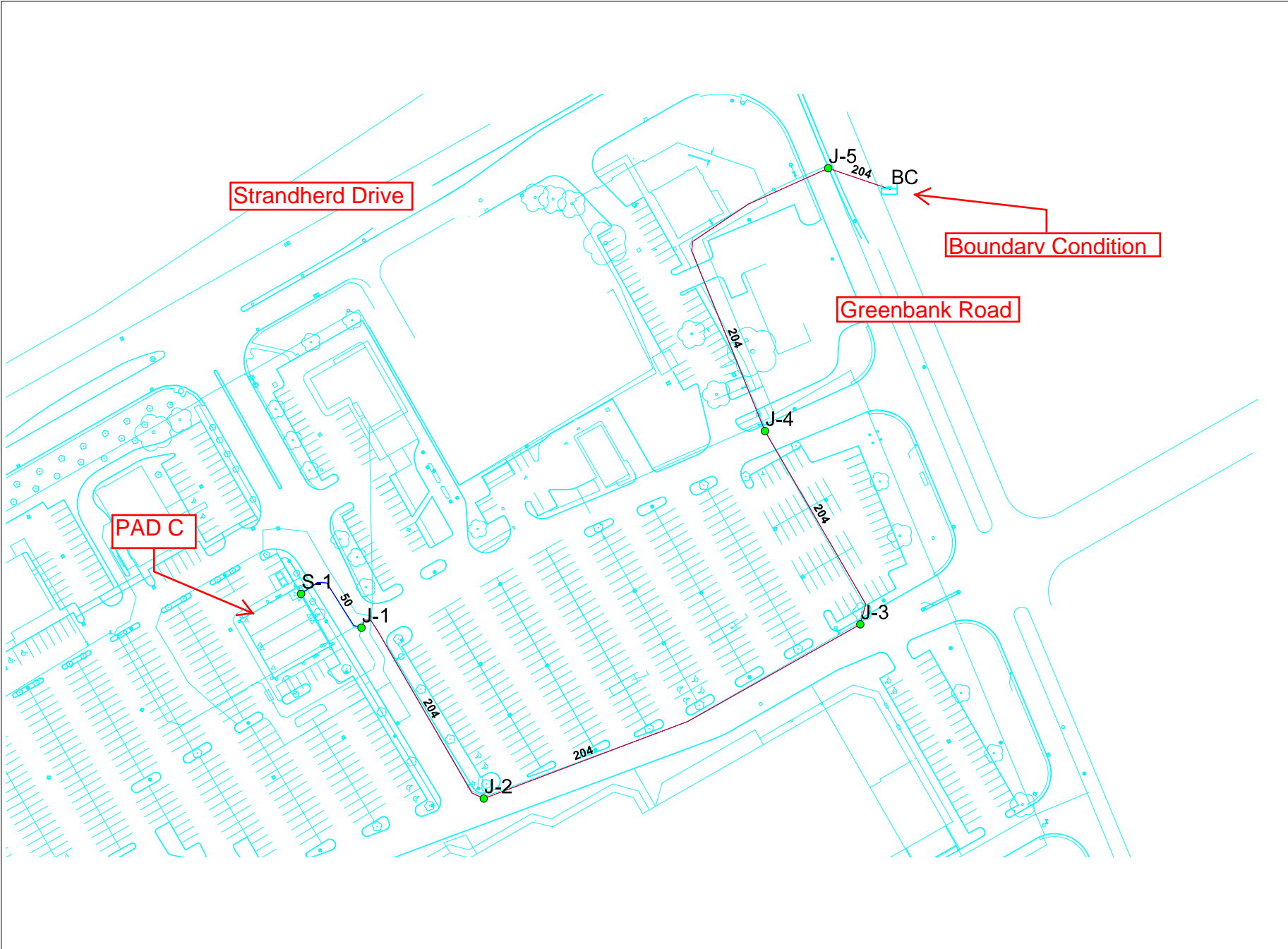
- a) If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
- b) Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/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



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

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

**Pad C Peak Hour HGL 143.7m - Junction Report**

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

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)	Critical 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 | 2025-10-30  
 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 <sup>2</sup> )	INSTIT. (ha)	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	
<u>Site</u>						740			0.02	0.02		0.03	0.03		0.06	0.06	4,000
<u>TOTAL</u>						740				0.02			0.03			0.06	

**ASSUMPTIONS**

<u>POPULATION DENSITY</u>		<u>WATER DEMAND RATES</u>		<u>PEAKING FACTORS</u>		<u>FIRE DEMANDS</u>	
Single Family	3.4 persons/unit	Residential	280 l/cap/day	Maximum Daily		Single Family	10,000 l/min (166.7 l/s)
3 Bedroom Units	2.7 persons/unit			Residential	2.5 x avg. day		
		Commercial Shopping Center	2,500 L/(1000m <sup>2</sup> )/day	Commercial	1.5 x avg. day	Semi Detached &	
2 Bedroom Units	1.8 persons/unit			Maximum Hourly		Townhouse	10,000 l/min (166.7 l/s)
				Residential	2.2 x max. day		
				Commercial	1.8 x max. day	Medium Density	15,000 l/min (250 l/s)



STEP	Contents	Description	Adjustment Factor	Result
1	Building A (1-storey)	1st Floor Area 740	Height 2.8m 1	740 m2
	<b>Total Effective Floor Area</b>	(Storage space exceeding 3m in height, floor area X 3)		<b>740 m2</b>
2	Type of Construction	Type V Wood Frame 1.5	Type II Noncombustible Construction 0.8	
		Type III Ordinary Construction 1.0		
		Type II Noncombustible Construction 0.8		
		Type I Fire Resistive Construction 0.6		
3	<b>Required Fire Flow</b>	RFF = 220C√A, rounded to nearest 1000 L/min		<b>5000 L/min</b>
4	Occupancy and Contents	Noncombustible Contents -25%	Limited Combustible Contents -15%	-750 L/min
		Limited Combustible Contents -15%		
		Combustible Contents 0%		
		Free Burning Contents 15%		
		Rapid Burning Contents 25%		
	<b>Fire Flow</b>			<b>4250 L/min</b>
5	Automatic Sprinkler Protection	Automatic Sprinkler Conforming to NFPA 13 -30%	No 0%	0 L/min
		Standard Water Supply for both the system and Fire Department Hose Lines -10%	No 0%	0 L/min
		Fully Supervised System -10%	No 0%	0 L/min
		<b>Total Sprinkler Adjustment</b>		<b>0 L/min</b>
6	<b>Exposure Adjustment</b>	Based on Table 6 Exposure Adjustment Charges for Subject Building		
	North	Separation (m) 17	With unprotected opening 3%	128 L/min
		Length X Height Factor (m.storeys) 16		
		Construction Type Type I-II		
	South	Separation (m) >30	With unprotected opening 0%	0 L/min
		Length X Height Factor (m.storeys) 18		
		Construction Type Type II		
East	Separation (m) >30	With unprotected opening 0%	0 L/min	
	Length X Height Factor (m.storeys) 6.4			
	Construction Type Type II			
West	Separation (m) >30	With unprotected opening 0%	0 L/min	
	Length X Height Factor (m.storeys) 220			
	Construction Type Type II			
	<b>Total Exposure Adjustment</b>			<b>128 L/min</b>
7	<b>Total Required Fire Flow</b>			<b>4378 L/min</b>
		Rounded to Nearest 1000 L/min		<b>4000 L/min</b>

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 P. 705,742,2297  
 Peterborough, ON E. 705,741,3568  
 Canada K9J 2W2 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				Commercial		Design Flow			Pipe Data			Capacity			Velocity	Comment	
		From	To	Area		Unit	Accum.	Q	Q	Q <sub>b</sub>	Length	Grade	Dia.	Capacity	Percent	Full			Actual
				Unit	Accum.														
1	<b>Forcemain Sewer</b> 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	Q P	0.42 0.00	0.42 0.42	0.02 0.00	0.02 0.02	0.12 0.12	1.29 1.29	1.41 1.41	40.0 3.0	1.00 1.00	0.200 0.200	32.8 32.8	4.3% 4.3%	1.04 1.04	0.52 0.52	Pipe Info from Trow Dwg No. 01 (Site Grading & Services Plan Mar /06) Pipe Info from Trow Dwg No. 01 (Site Grading & Services Plan Mar /06)	
3	Swiss Chalet to PS	U T S P	T S P 101	0.28 0.00 0.00 0.00	0.28 0.28 0.28 0.71	0.05 0.00 0.00 0.00	0.05 0.05 0.05 0.20	0.08 0.08 0.08 0.20	0.40 0.40 0.40 1.69	0.48 0.48 0.48 1.89	17.0 43.8 25.7 67.6	0.47 0.48 0.51 0.200	0.200 0.200 0.200 0.200	22.5 22.7 23.3 31.1	2.1% 2.1% 2.1% 6.1%	0.72 0.72 0.74 0.99	0.29 0.29 0.30 0.59	Pipe Info from Robinson 03032-2 (June /05) Pipe Info from Robinson 03032-2 (June /05) Pipe Info from Robinson 03032-2 (June /05) Pipe Info from Robinson 03032-2 (June /05) 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 N	L L	0.00 0.42	0.00 0.93	0.00 0.00	0.00 0.14	0.00 0.26	0.00 0.12	0.00 0.38	49.0	0.40 0.58	0.200 0.200	20.7 25.0	0.0% 1.5%	0.66 0.80	0.01 0.29	Plugged Main Pipe Info from Trow Dwg No. 01 (Site Grading & Services Plan Mar /06)	
6	Home Depot Pump Station	M L PS	L PS LIFT	3.59 0.00 0.00	3.59 6.88 6.88	0.99 0.00 0.00	0.99 1.72 1.72	1.01 1.93 1.93	0.86 3.11 3.11	1.86 5.04 5.04		0.50 2.03	0.150 0.250	10.8 84.8	17.3% 5.9%	0.61 1.73	0.46	Pipe Info from Trow Dwg No. 01 (Site Grading & Services Plan Mar /06) Pipe Info from Robinson 02056-11 (Jan /04) Lift Station	
7	<b>Gravity Sewer</b> 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	B C	0.39 0.00	0.39 1.07	0.05 0.00	0.05 0.08	0.11 0.30	0.04 0.07	0.15 0.37	69.6 54.8	0.40 0.42	0.200 0.200	20.8 21.2	0.7% 1.7%	0.66 0.68	0.19 0.26	Pipe Info from Wills Dwg 10158Ph1-SS03 (May 11/10) 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	E D	3.31 0.00	3.31 3.31	1.01 0.00	1.01 1.01	0.93 0.93	0.87 0.87	1.80 1.80	90.0 71.0	0.38 0.41	0.200 0.200	20.2 21.0	8.9% 8.6%	0.64 0.67	0.40 0.41	Pipe Info from Robinson Dwg 89112-02 (Apr 4/91) Pipe Info from Robinson Dwg 89112-02 (Apr 4/91)	
11	Mr Lube BMO McDonald's	104 C D D LIFT G I Mc D H J K	C D G G H H H J K	0.00 0.00 1.22 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 1.07 5.60 6.88 12.48 0.00 0.00 12.48 0.00	0.02 0.00 0.00 0.00 0.00 0.05 0.04 0.04 0.00 0.00	0.02 0.10 1.10 1.72 2.82 0.05 0.04 0.04 2.91 2.91	0.00 0.30 1.57 1.93 3.49 0.04 0.04 3.49 3.49	0.01 0.08 0.96 2.17 3.13 0.30 0.30 3.47 3.47	0.01 0.38 2.53 4.10 6.62 0.30 0.30 6.96 6.97	5.0 74.0 22.0 4.10 43.0 34.3 40.0 25.0	2.00 0.39 0.41 0.250 0.250 0.250 0.250 0.40 0.40	0.200 0.250 0.250 0.250 0.250 0.250 0.250 0.250	46.4 37.2 38.0 37.2 52.9 32.1 23.2 37.6 37.6	0.0% 1.0% 6.6% 12.5% 0.9% 0.2% 18.5% 18.5%	1.48 0.76 0.77 1.08 0.65 0.74 0.77 0.77	0.16 0.25 0.44 0.74 0.21 0.13 0.59 0.59	Pipe Info from Wills Dwg 10158Ph1-SS03 (May 11/10) Pipe Info from Robinson Dwg 89112-02 (Apr 4/91) Pipe Info from Robinson Dwg 89112-02 (Apr 4/91) Lift Station Pipe Info from Robinson 03032-2 (June /05) Pipe Info from Robinson 03032-2 (June /05) Service Connection Pipe Info from Robinson Dwg 89112-02 (Apr 4/91) Pipe Info from Robinson Dwg 89112-02 (Apr 4/91)	

-  CATCHMENT AREAS
-  CATCHMENT AREA NO.
-  EXISTING SANITARY GRAVITY
-  EXISTING SANITARY FORCEMAIN
-  PROPOSED SANITARY GRAVITY

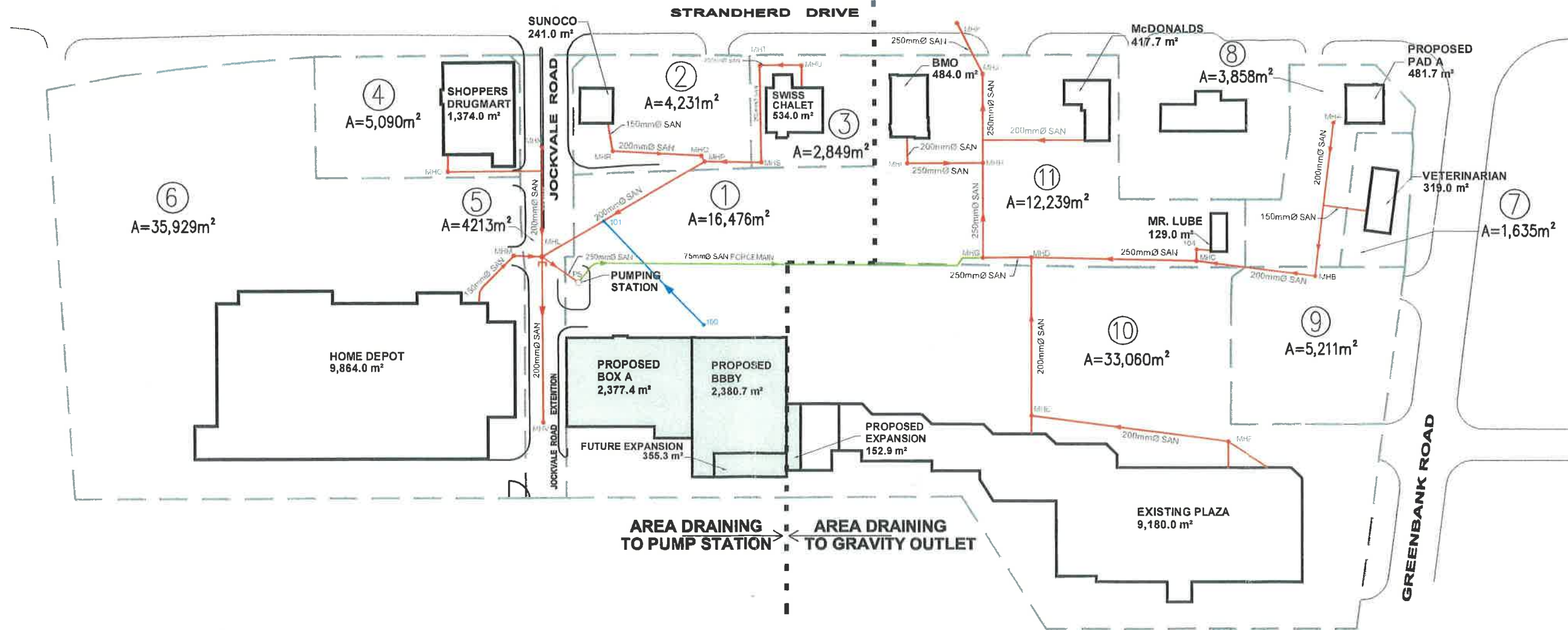


FIGURE 1: SANITARY CATCHMENT AREA PLAN

Sketch No.



**WILLS**

D.M. Wills Associates Limited  
Consulting Engineers

492 Charlotte Street  
P 708-740-2297  
P 708-741-3899  
Carrasco, KSU 2W3 E wills@willsa.com

• PROVEN SOLUTIONS • TRUSTED RESULTS •

dwills.com

Drawn By	L.D.
DESIGNED	D.W.
CHECKED	A.H.
Project No.	08-10158

Scale	Horz 1:2000 Vert N/A
Plot Date	SEPT 13, 2010
Drawing File No.	FIG 1

**From:** Zagorski, Joseph  
**To:** [Demetrius Yannoulopoulos](mailto:Demetrius.Yannoulopoulos)  
**Cc:** [Diduch, Roman](mailto: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](mailto: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  
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email [dyannoulopoulos@IBIGroup.com](mailto:dyannoulopoulos@IBIGroup.com)  
web [www.ibigroup.com](http://www.ibigroup.com)

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Area	LOCATION			SITE AREA		BUILDING AREA		DESIGN FLOW				PROPOSED SEWER					
	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	740.00	27976.00	1.50	2.146	3.49	6.713	34.00	0.67	37.6	250	0.30	80.25%
		1A	EX H	0.00	12.48	0.00	27976.00	1.50	2.146	3.49	6.713	34.00	0.67	7.3	250	0.30	80.25%
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	28877.00	1.50	2.370	3.49	7.050	39.22	0.77	40.0	250	0.40	82.03%
		EX J	EX K	0.00	12.48	0.00	28877.00	1.50	2.370	3.49	7.050	39.22	0.77	25.0	250	0.40	82.03%

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

50000 l/d/Ha

0.28 l/s/Ha

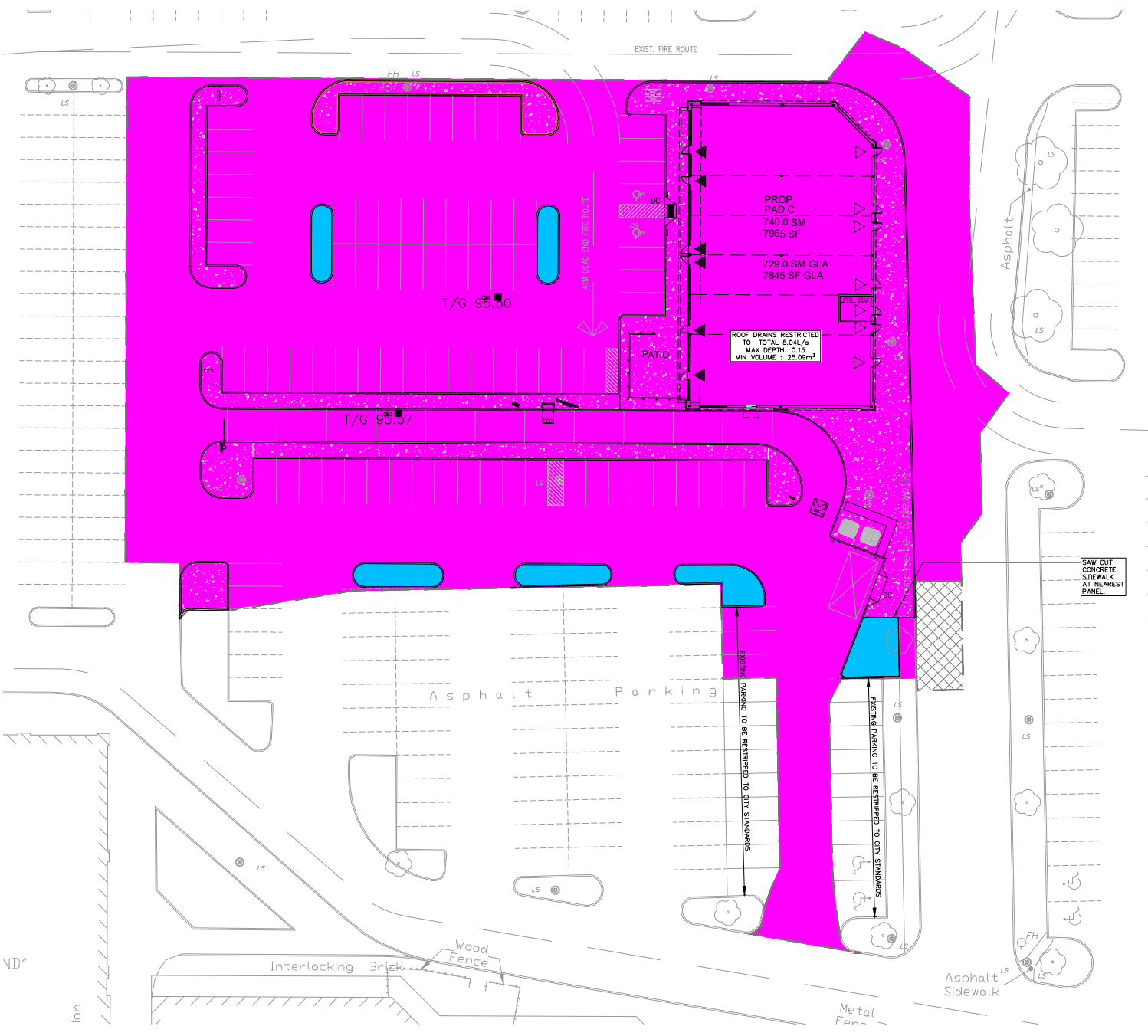
SPECIFY  
 Coeff. of friction (n) =0.013

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 467sm of retail space at 5 l/sm



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



**LEGEND:**

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

$$\begin{aligned}
 &0.604 \text{ Ha} @ 0.90 = 0.544 \\
 &0.016 \text{ Ha} @ 0.20 = 0.003 \\
 \hline
 &\text{TOTAL POST-DEVELOPMENT AC} = 0.547 \\
 &\text{AVG C} = 0.876 \\
 &\text{NON ROOF AREA AVG C} = 0.872
 \end{aligned}$$

Scale

Project Title

Drawing Title

Sheet No.



NTS

BARRHAVEN TOWN CENTRE  
PAD C

STORMWATER MANAGEMENT  
POST-DEVELOPMENT CONDITION (PROPOSED)

FIGURE 2  
APRIL 2026



**STORMWATER MANAGEMENT**

**Formulas and Descriptions**

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

**Maximum Allowable Release Rate**

Restricted Flowrate (based on  $C=0.50$   $T_c=20min$ )

$C = 0.5$   
 $T_c = 20 \text{ min}$   
 $i_{100yr} = 70.25 \text{ mm/hr}$   
 $A_{site} = 0.074 \text{ Ha}$

$Q_{restricted} = 7.23 \text{ L/s}$

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

Drainage Area		PAD C			
Area (Ha)	0.074	Restricted Flow $Q_r$ (L/s) = 5.04			
C =	1.00				
100-Year Ponding					
$T_c$ Variable (min)	$i_{100yr}$ (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	$Q_r$ (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr ( $m^3$ )
30	91.87	18.90	5.04	13.86	24.95
35	82.58	16.99	5.04	11.95	25.09
40	75.15	15.46	5.04	10.42	<b>25.01</b>
45	69.05	14.21	5.04	9.17	24.75
50	63.95	13.16	5.04	8.12	24.35

Storage ( $m^3$ )				
Overflow	Required	Surface	Sub-surface	Balance
0.00	25.01	27.75	0	0.00

overflows to: roof controlled  
 Roof Storage= 75% of roof area, at maximum ponding depth of 150mm

Drainage Area		PAD C			
Area (Ha)	0.074	Restricted Flow $Q_r$ (L/s) = 5.04			
C =	0.90				
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	15.47	5.04	10.43	9.39
17	77.61	14.37	5.04	9.33	9.52
19	72.53	13.43	5.04	8.39	<b>9.56</b>
21	68.13	12.61	5.04	7.57	9.54
23	64.29	11.90	5.04	6.86	9.47

Storage ( $m^3$ )				
Overflow	Required	Surface	Sub-surface	Balance
0.00	9.56	27.75	0	0.00

overflows to: roof controlled

Drainage Area		PAD C			
Area (Ha)	0.074	Restricted Flow $Q_r$ (L/s) = 5.04			
C =	0.90				
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 ( $m^3$ )
15	61.77	11.44	5.04	6.40	5.76
16	59.50	11.02	5.04	5.98	5.74
17	57.42	10.63	5.04	5.59	<b>5.70</b>
18	55.49	10.27	5.04	5.23	5.65
19	53.70	9.94	5.04	4.90	5.59

Storage ( $m^3$ )				
Overflow	Required	Surface	Sub-surface	Balance
0.00	5.70	27.75	0	0.00

overflows to: roof controlled



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.

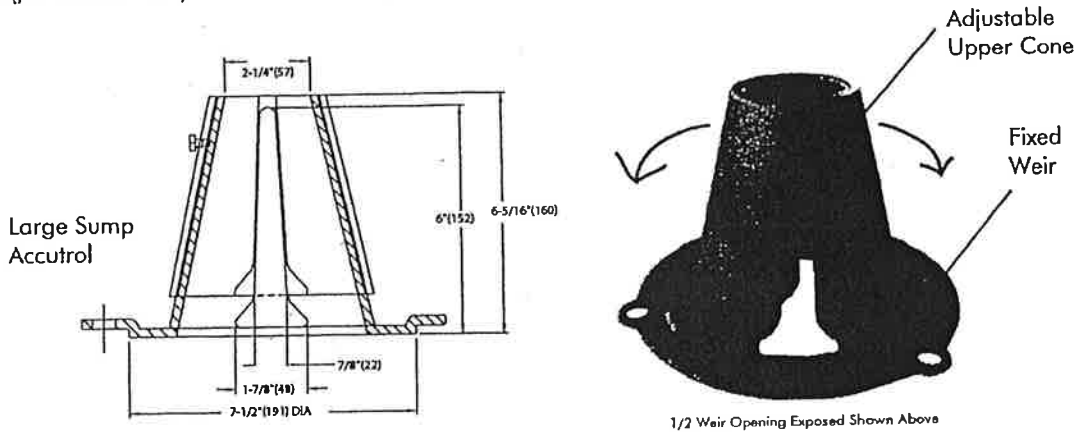


TABLE 1. Adjustable Accutrol Flow Rate Settings

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. \_\_\_\_\_

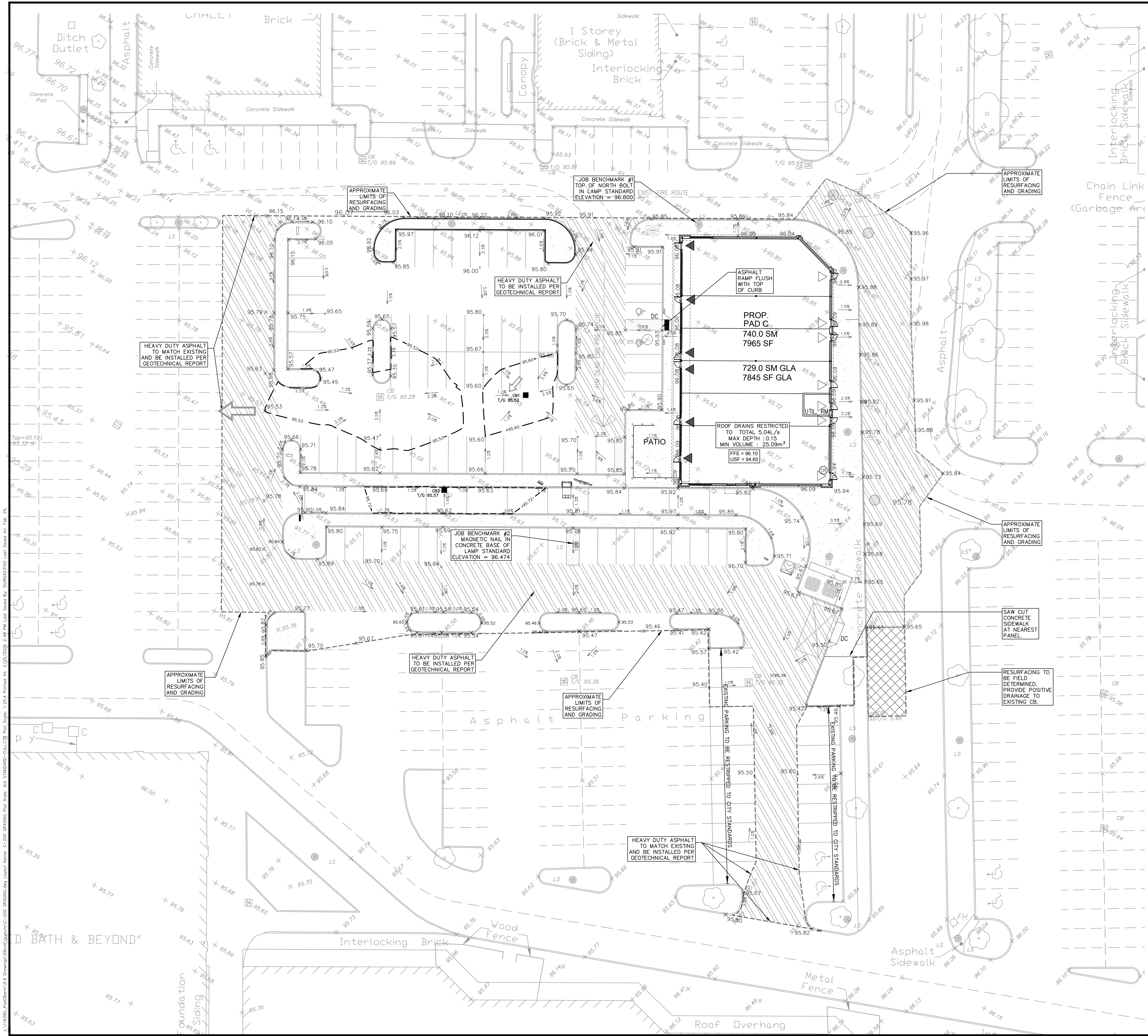
Engineer \_\_\_\_\_ Representative \_\_\_\_\_

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.



CANADA: 5435 North Service Road, Burlington, ON, L7L 5H7 TEL: 905-332-6718 TOLL-FREE: 1-888-208-8927 Website: [www.wattsdrainage.ca](http://www.wattsdrainage.ca)





- LEGEND:**
- +87.12 EXISTING GRADES
  - 87.30<sub>+</sub> PROPOSED GRADES
  - 87.301/C<sub>+</sub> PROPOSED TOP OF CURB
  - AS-BUILT GRADE
  - EXISTING CURBS
  - PROPOSED CURBS
  - DEPRESSED CURB
  - REGULAR PAVEMENT STRUCTURE
  - HEAVY DUTY PAVEMENT STRUCTURE
  - MAJOR/EMERGENCY OVERLAND FLOW ROUTE
  - SURFACE FLOW DIRECTION
  - BUILDING ENTRANCE
  - EXISTING LIGHT POLE
  - RISER

**REGULAR PAVEMENT STRUCTURE**

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

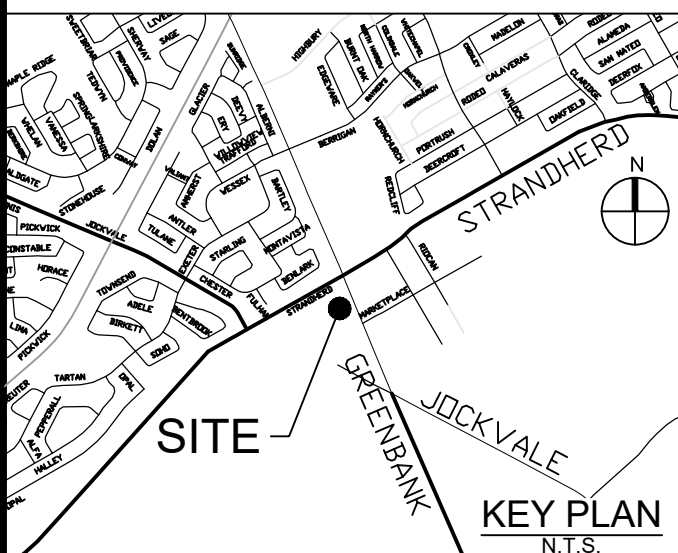
**HEAVY DUTY PAVEMENT STRUCTURE (HEAVY TRUCK PARKING AND ACCESS LANES)**

- 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  
 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

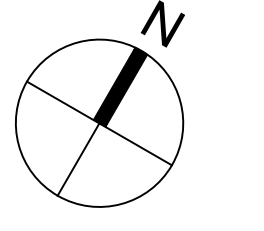
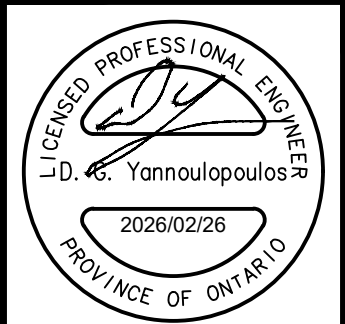


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7	REVISED PER NEW SITE PLAN	DGY	25:11:25
6	SPA SUBMISSION #3	DGY	19:01:01
5	REVISED PER CITY COMMENTS	DGY	18:11:16
4	SPA SUBMISSION #2	DGY	18:10:15
3	ISSUED FOR SPA	DGY	18:05:14
2	REVISED PER ARCH COMMENTS	DGY	18:05:03
1	ISSUED FOR TEAM COORDINATION	DGY	18:05:02



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

Project Title  
**PAD C BARHAVEN TOWN CENTRE**



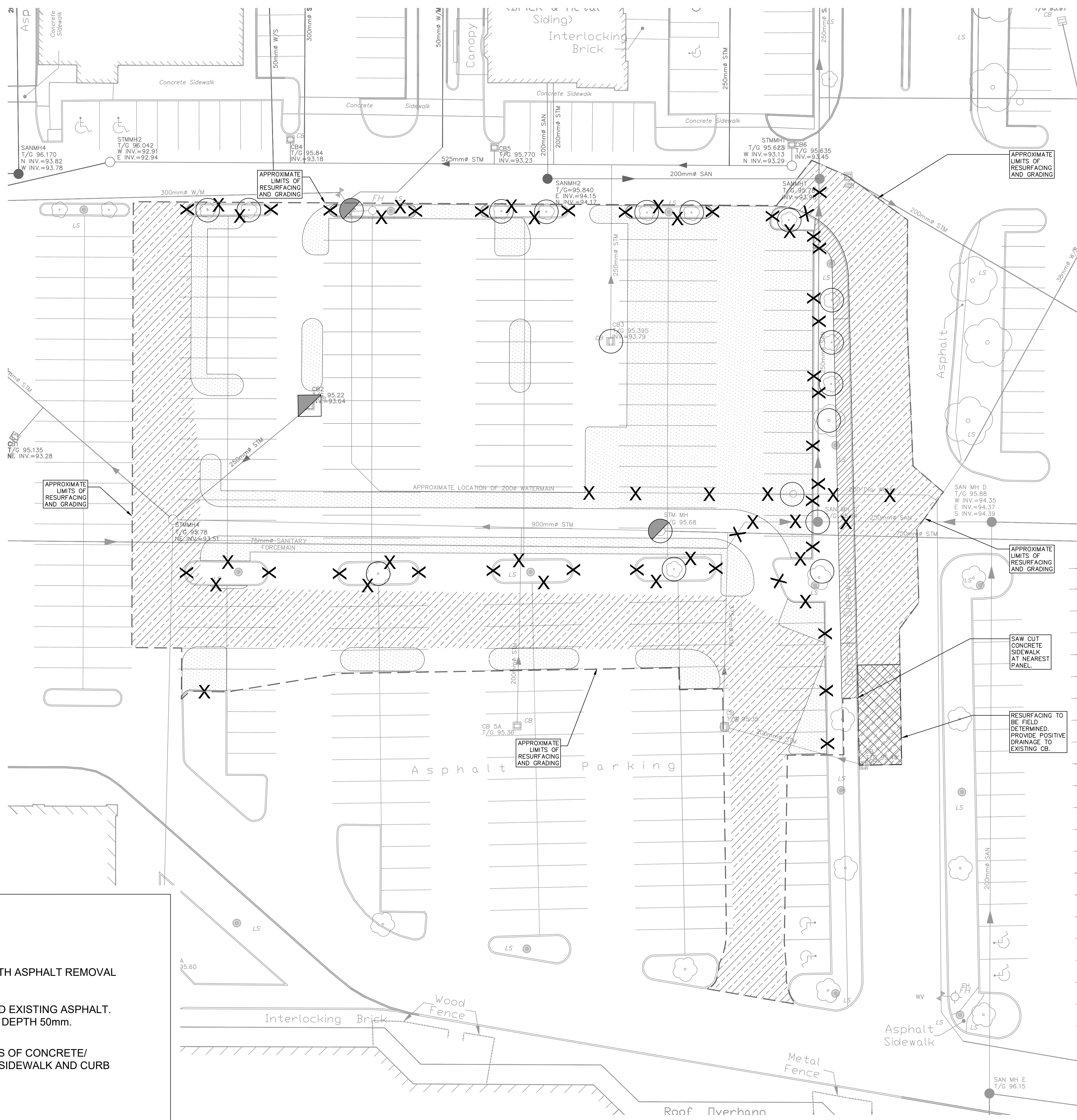
Drawing Title  
**SITE GRADING PLAN**  
**3777 STRANDHERD DRIVE**

Scale  
 1:250

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

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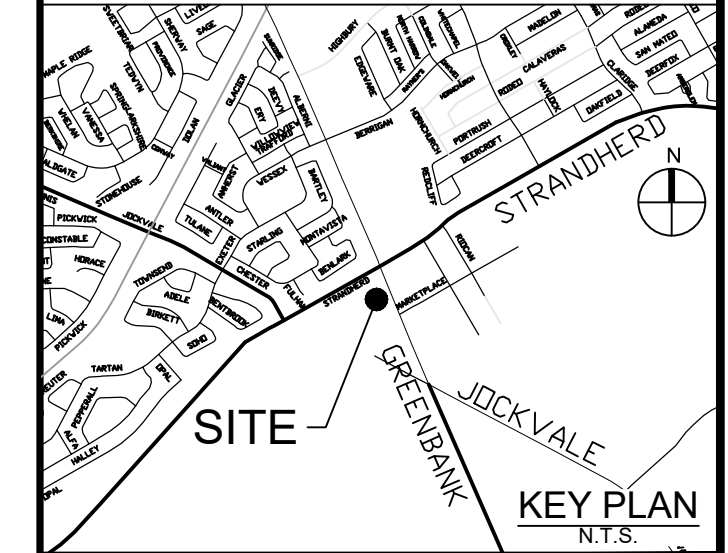


	REMOVAL		FULL DEPTH ASPHALT REMOVAL
	ADJUST MANHOLE, VALVES		DRY GRIND EXISTING ASPHALT. AVERAGE DEPTH 50mm.
	ADJUST CATCH BASIN		REMOVALS OF CONCRETE/ ASPHALT SIDEWALK AND CURB
	ADJUSTMENT BY BELL OR HYDRO APPROVED CONTRACTOR		
	REMOVE OR ABANDON SEWER, WATERMAIN, UTILITY, CURB RETURNS		
	PLUG		

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



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2	SPA SUBMISSION #4	DGY	26:04:02
1	REVISED PER NEW SITE PLAN	DGY	25:11:25
No.	REVISIONS	By	Date

333 Preston Street - Suite 500  
 Ottawa ON K1S 5N4 Canada  
 tel 613 225 1311  
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Project Title  
**PAD C BARHAVEN TOWN CENTRE**

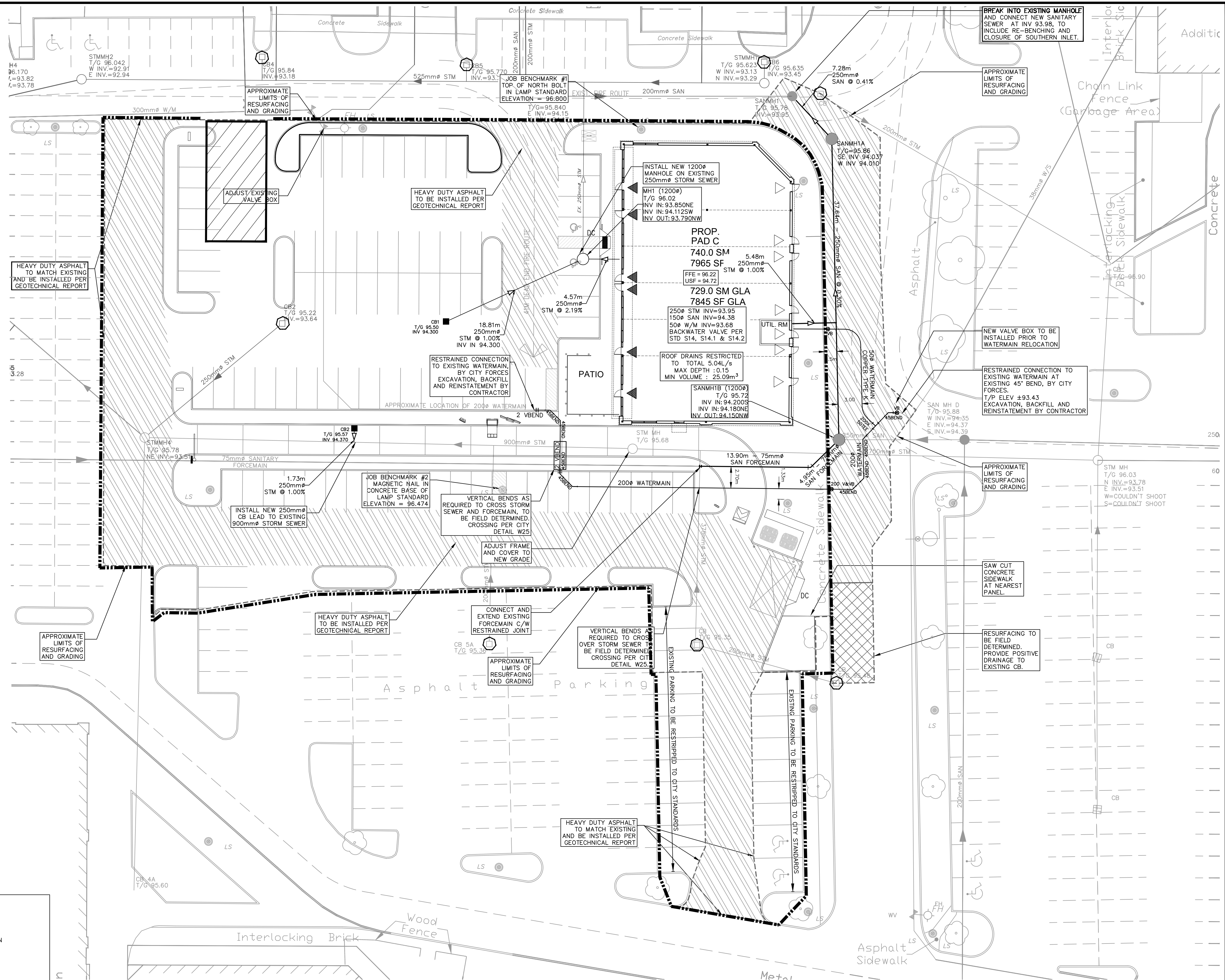
Drawing Title  
**REMOVALS**  
**3777 STRANDHERD DRIVE**

Scale  
 1:250

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

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- NOTES:**
- SILT FENCE TO BE ERRECTED PRIOR TO EARTH WORKS BEING COMMENCED. SILT FENCE TO BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED OR UNTIL START OF SUBSEQUENT PHASE.
  - STRAW BALE SEDIMENT TRAPS TO BE CONSTRUCTED IN EXISTING ROAD SIDE DITCHES. TRAPS TO REMAIN AND BE MAINTAINED UNTIL VEGETATION IS ESTABLISHED.
  - 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.
  - 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.
  - CONTRACTOR TO PROTECT EXISTING CATCHBASINS WITH FILTER CLOTH UNDER THE COVERS TO TRAP SEDIMENTATION. REFER TO IDENTIFIED STRUCTURES.
  - 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.

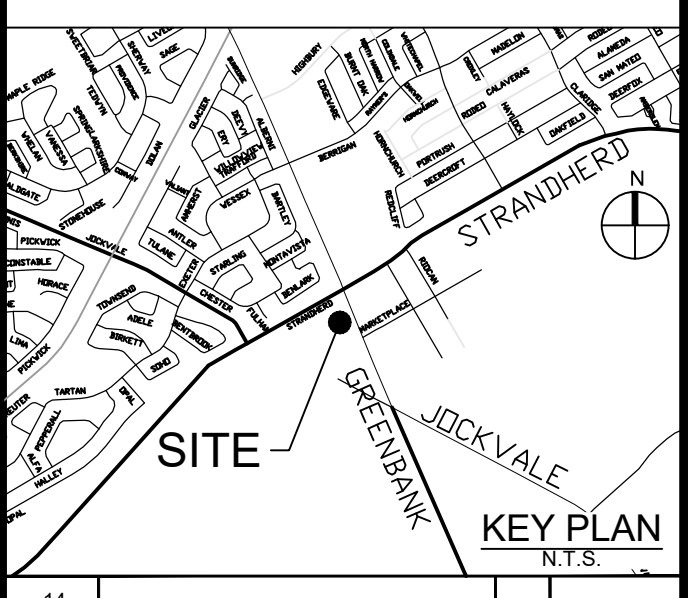


- LEGEND:**
- LIGHT DUTY SILT FENCE AS PER OPSD-219.110
  - SNOW FENCE
  - STRAW BALE CHECK DAM AS PER OPSD-219.180
  - ROCK CHECK DAM AS PER OPSD-219.210
  - SILT SACK PLACED UNDER EXISTING CB COVER
  - TEMPORARY MUD MAT 0.15m THICK 50mm CLEAR STONE ON NON WOVEN FILTER CLOTH

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)302-7753



No.	REVISIONS	By	Date
14			
13			
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8			
7	SPA SUBMISSION #4	DGY	26:04:02
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
3	SPA SUBMISSION #2	DGY	18:10:15
2	ISSUED FOR SPA	DGY	18:05:14
1	ISSUED FOR TEAM COORDINATION	DGY	18:05:02

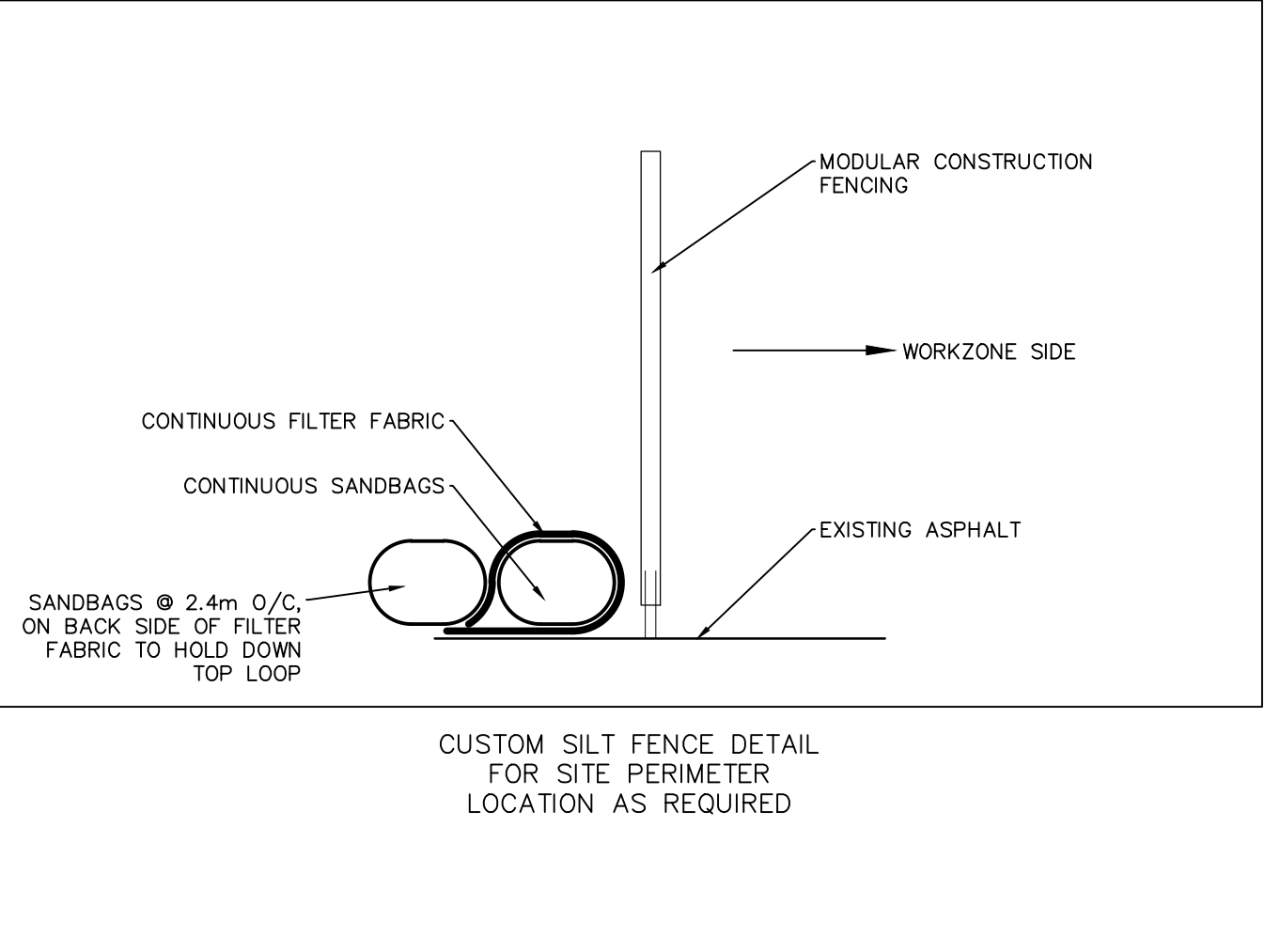
333 Preston Street - Suite 500  
 Ottawa ON K1S 5N4 Canada  
 tel 613 225 1311  
 www.arcadis.com

Project Title  
**PAD C BARHAVEN TOWN CENTRE**

Drawing Title  
**SEDIMENT AND EROSION CONTROL PLAN  
 3777 STRANDHERD DRIVE**

Scale: 1:250

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



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D07-12-18-0106

NADG

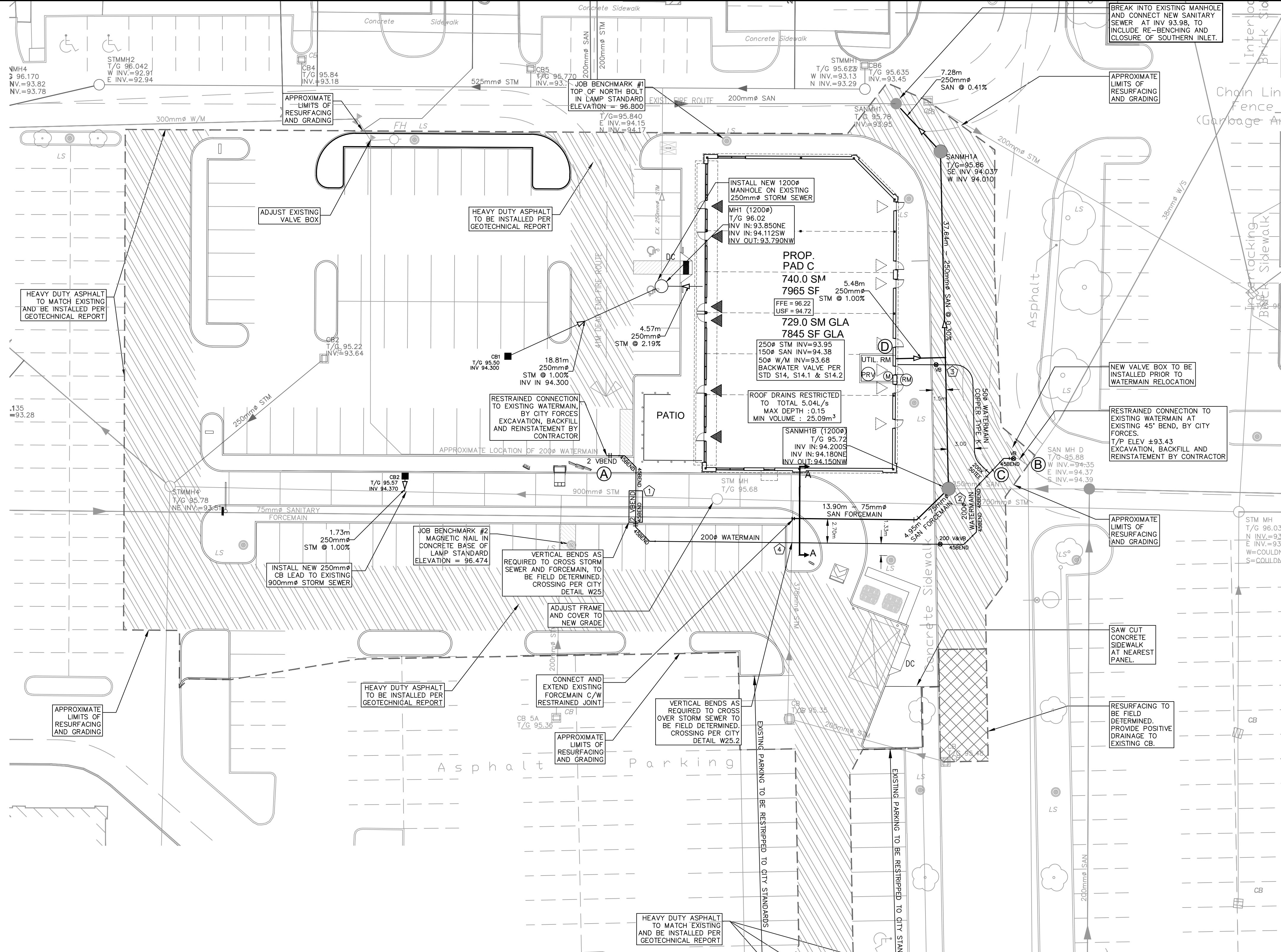
**3777 STRANDHERD DRIVE**  
**BARRHAVEN TOWN CENTRE**  
**PAD C**

**Servicing and Stormwater Management Design Brief**

April 2026

**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 ON-SITE 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 STRANDBER 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. 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 FARHALL MOFFATT & WOODLAND LTD. DRNG. IT/18/04/2014
- 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, BELT AND HOOD 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, BELT AND SPIGOT 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 OSPD 701.010, TAPER TOP TYPE COMPLETE WITH 300mm SUMP FOR SEWER LESS THAN 900mm.
  - 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 CUTS 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 OSPD 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 PROFILES, 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 HAUL 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 10 000/L/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% SPMD AND EXTEND TO SPRINGLINE OF PIPE. COVER MATERIAL SHALL CONSIST OF OPSS GRANULAR A AND SHALL EXTEND FROM SPRINGLINE TO MINIMUM 300mm ABOVE COVER OF PIPE, AND COMPACTED TO 95% SPMD. SEE GEOTECHNICAL REPORT FOR ADDITIONAL DETAILS.

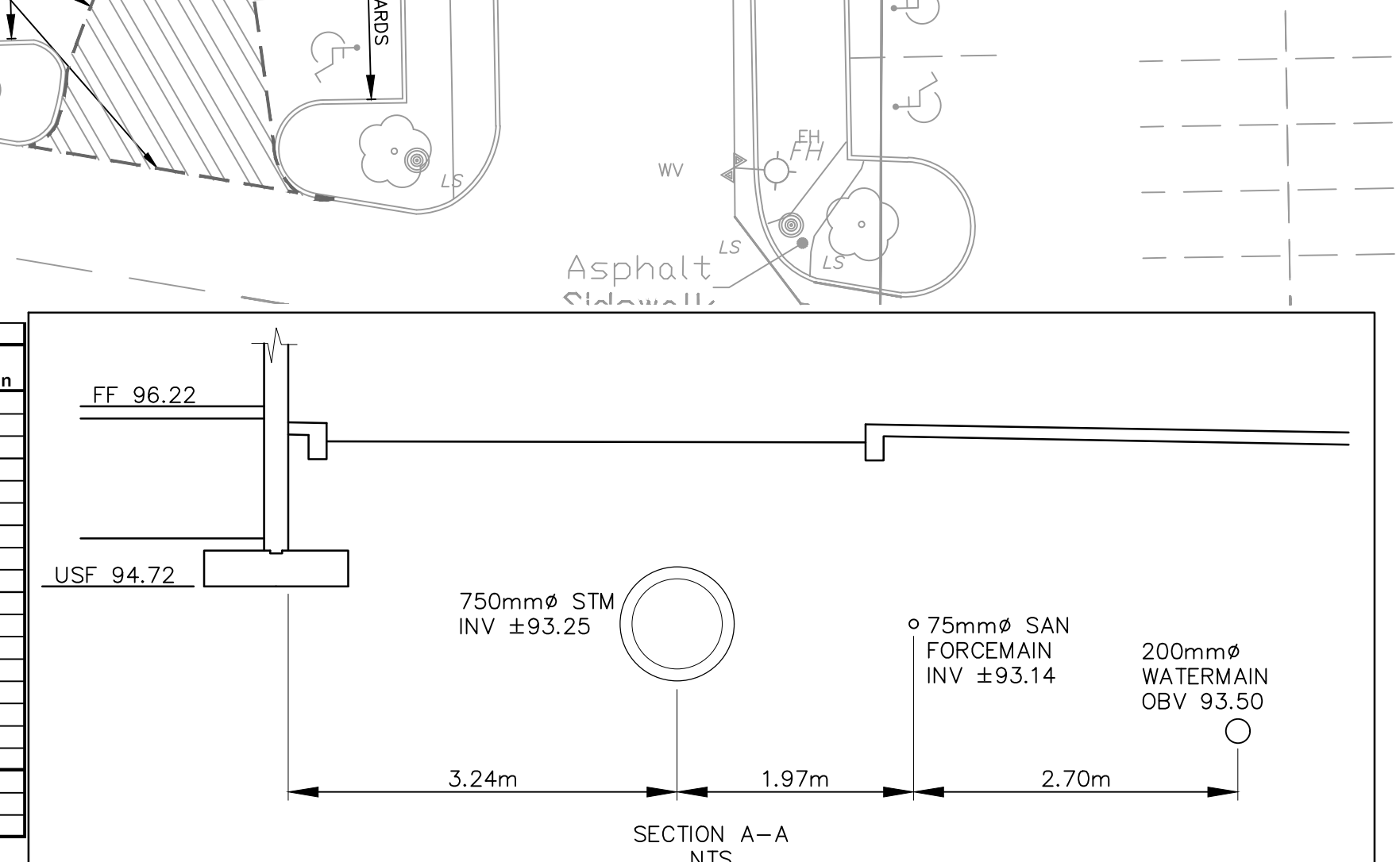


**LEGEND:**

	EXISTING STORM SEWER		BARRIER CURB
	EXISTING SANITARY SEWER		PROPOSED REMOTE WATER METER
	EXISTING WATERMAIN		PROPOSED REMOTE WATER METER
	PROPOSED STORM SEWER		PRESSURE REDUCING VALVE BY OTHERS
	PROPOSED SANITARY SEWER		EXISTING LIGHT POLE
	PROPOSED WATERMAIN		REGULAR ASPHALT TO BE SAW CUT AND REINSTATE WITH STEP JOINT AS PER CITY STANDARDS
	EXISTING SANITARY MANHOLE		HEAVY DUTY ASPHALT TO BE SAW CUT AND REINSTATE WITH STEP JOINT AS PER CITY STANDARDS
	EXISTING STORM MANHOLE		SILT FENCE AS PER OSPD-219.110
	EXISTING HYDRANT C/W BOTTOM OF FLANGE ELEVATION		FILTER FABRIC TO BE PLACED BENEATH STRUCTURE FRAME. FILTER FABRIC TO REMAIN IN PLACE UNTIL SITE IS STABILIZED AND VEGETATION IS ESTABLISHED.
	PROPOSED SANITARY MANHOLE		DEPRESSURE CURB
	PROPOSED STORM MANHOLE		
	PROPOSED CATCHBASIN MANHOLE		
	PROPOSED HYDRANT C/W BOTTOM OF FLANGE ELEVATION		
	PROPOSED CATCHBASIN		

**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	95.82	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	45° BEND	95.92	93.52	
0+045.11	2000' V&V	95.68	93.28	
0+047.73	45° BEND	95.69	93.29	
0+049.72	45° BEND	95.72	93.32	
0+051.61	45° BEND	95.77	93.37	
C 0+058.90	500' SERVICE TIE TO PAD C	95.80	93.40	
0+059.19	45° BEND	95.82	93.42	
B 0+060.30	NEW 2000' V&V - EXISTING WATERMAIN	95.83	93.43	
C 0+000.00	500' SERVICE TIE TO PAD C	95.80	93.40	
0+015.97	45° BEND	95.83	93.43	
D 0+020.24	SERVICE PAD C	96.08	93.68	



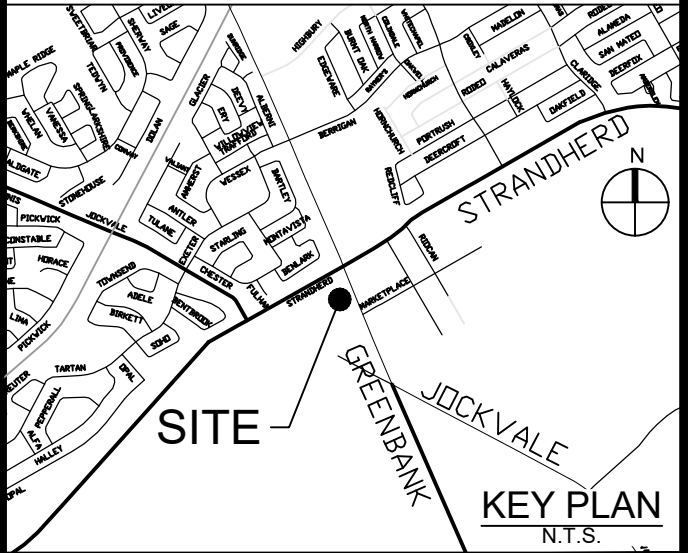
**CROSSING TABLE**

1	2000 W/M 0.50m BELOW 9000 STM	2000 W/M 0.76m BELOW 750 F.M.
2	2000 W/M 0.50m BELOW 7500 STM	2000 W/M 1.47m BELOW 2500 SAN
3	500 W/M 0.58m BELOW 2500 SAN	750 F.M. 0.2m ABOVE 7500 STM
4	2000 W/M (93.62 OBV) OVER 3750 STORM (ELEVATION OF EXISTING STORM TO BE FIELD VERIFIED)	

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)302-7753



No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
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  
Tel 613 225 1311  
www.arcadis.com

**PAD C BARHAVEN TOWN CENTRE**

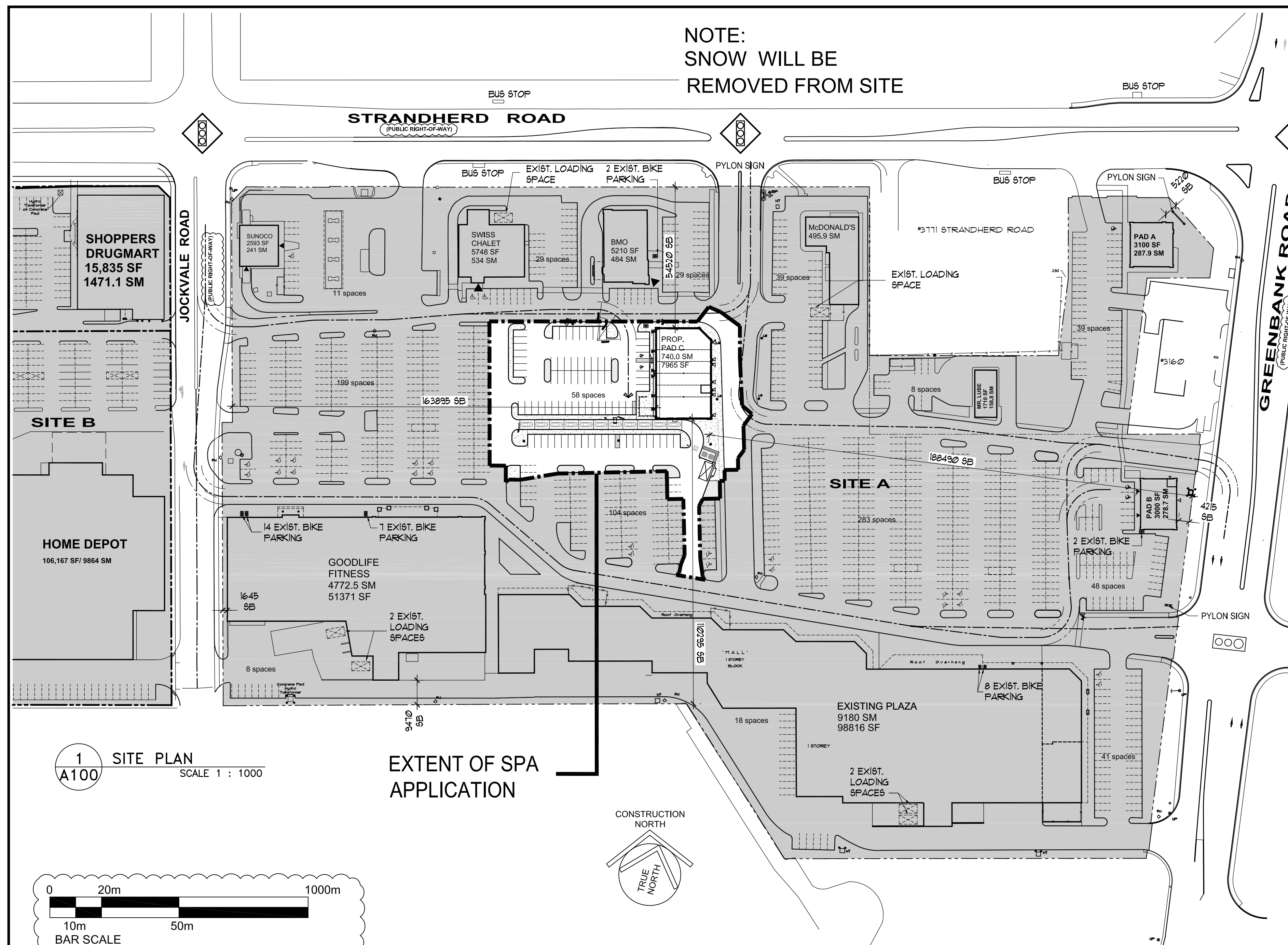
Project Title

**SITE SERVICING PLAN**

3777 STRANDBER DRIVE

Scale	1:250
Design	R.M.
Date	APRIL 2018
Drawn	E.H.
Checked	D.G.Y.
Project No.	116390
Drawing No.	C-001

NOTE:  
SNOW WILL BE  
REMOVED FROM SITE

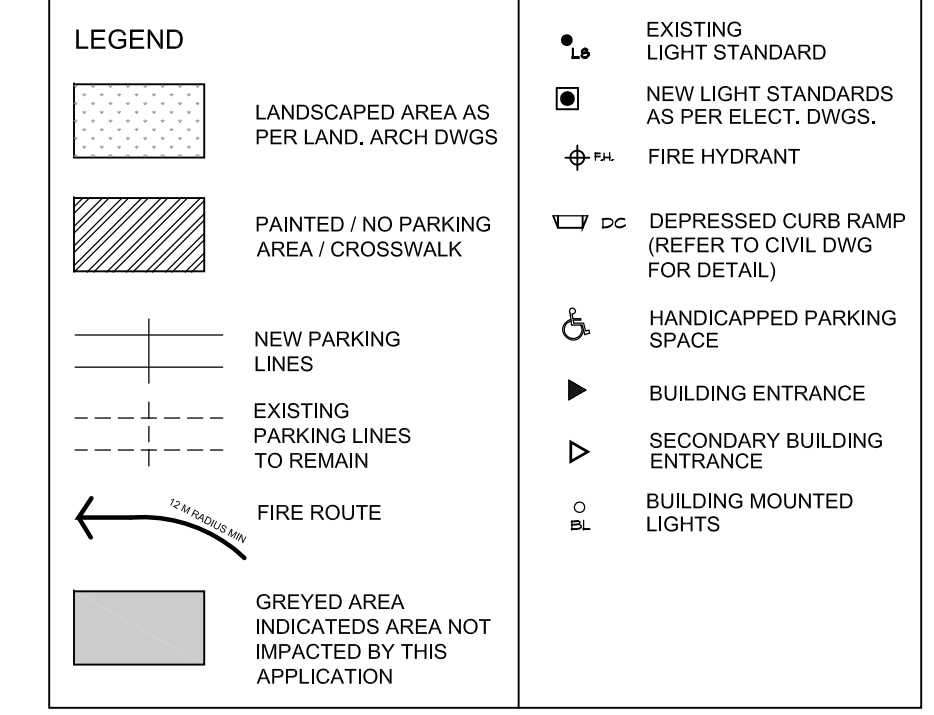


**SITE STATISTIC**

SITE 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	
McDONALD'S	495.9 SM	
GOODLIFE FITNESS	4772.5 SM	
PAD A (HAKIM)	287.9 SM	
MR.LUBE	158.8 SM	
PAD B	278.7 SM	
<b>BUILDING AREA (GLA)</b>	<b>16432.8 SM</b>	<b>176881 SF</b>
<b>PROP BUILDING AREA</b>	<b>BLDG AREA</b>	<b>GLA</b>
PAD C	729.0 SM	7845 SF
<b>BUILDING AREA</b>	<b>17161.8 SM</b>	<b>184726 SF</b>
<b>TOTAL SPACES</b>	<b>914 SPACES</b>	<b>5.33/100SM</b>
		<b>4.95/1000SF</b>

**MC (187H(20)) - ZONE PROVISIONS**

ZONING MECHANISMS	II PROVISIONS	PROVIDED
(a) Minimum lot area	No Minimum	77926 sm
(b) Minimum lot width	No Minimum	±1.370 m
(c) Minimum front yard and corner side yard setback	(i) abutting a lot in a residential zone	3 m
	(ii) abutting the rapid transit corridor	2 m
	(iii) other cases	No Minimum (GREENBANK ROAD) Site: 5.2m Pad C: 188.4m 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
	(ii) abutting the rapid transit corridor	2 m
	(iii) other cases	No Minimum Site: 1.6m Pad C: 183.8m
(e) Minimum rear yard setback	(i) abutting a lot in a residential zone	6 m
	(ii) abutting the rapid transit corridor	2 m
	(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, alleys, parking, loading spaces or outdoor commercial pads, the whole yard must be landscaped	N/A
Exception: max. gross leasable floor area	35,000 sm	17161.8 SM EAST OF JOCKVALE RD. 914 SPACES
Parking	MIN 3.6/100 SM GLA	618 SPACES 914 SPACES
Loading (3.5m x 7.0m)	1500sm - 2499sm gfa	Total: Min. 2 Pad C: 1 Total: 7
Bicycle parking	1500sm gfa	Shopping Centre Pad C: 2 Pad C: 2 Total: 35
Drive Thru Queuing	7 AT THE BOARD 133074	Proposed: 2 (1 Type-A, 1 Type-B) Existing: 31 Total: 33
Accessible Parking Requirements	801-850 = 21 Total 10 Type-A, 11 Type-B	Proposed: 2 (1 Type-A, 1 Type-B) Existing: 31 Total: 33



**SURVEY INFO TAKEN FROM:**  
SURVEYOR'S REAL PROPERTY REPORT - PART 1  
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
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

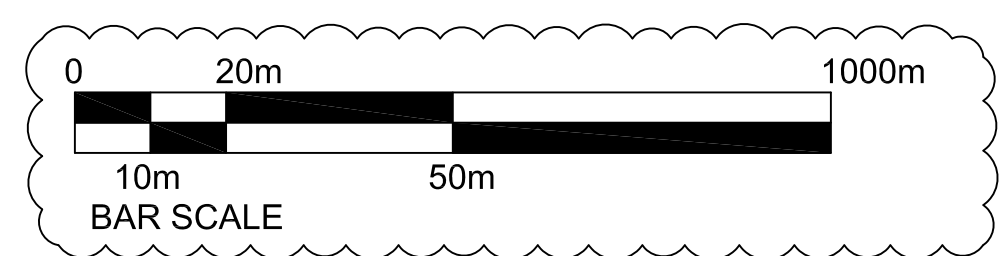
**DRAWING TITLE**  
SITE PLAN, DETAILS

ONTARIO ASSOCIATION OF ARCHITECTS	DRAWN	JL	FOLIO	25078
ALLAN BORENSTEIN	CHECKED	AB	DATE	OCT 2025
LICENCE 7172	DATE		DWG. NO.	A100
	SCALE	AS NOTED		

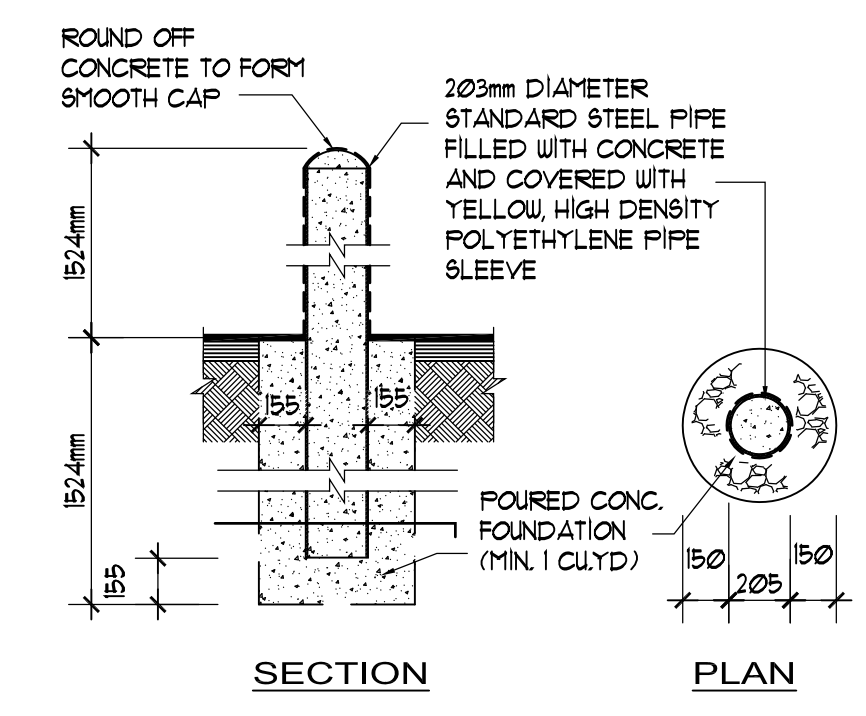
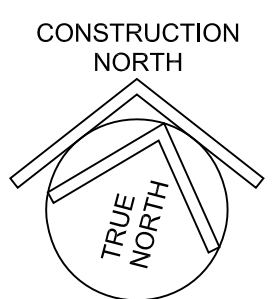
FILE #: D07-12-25-0157  
PLAN #: 19416

DRAWINGS REVISED: \_\_\_\_\_ LAST UPDATED: \_\_\_\_\_

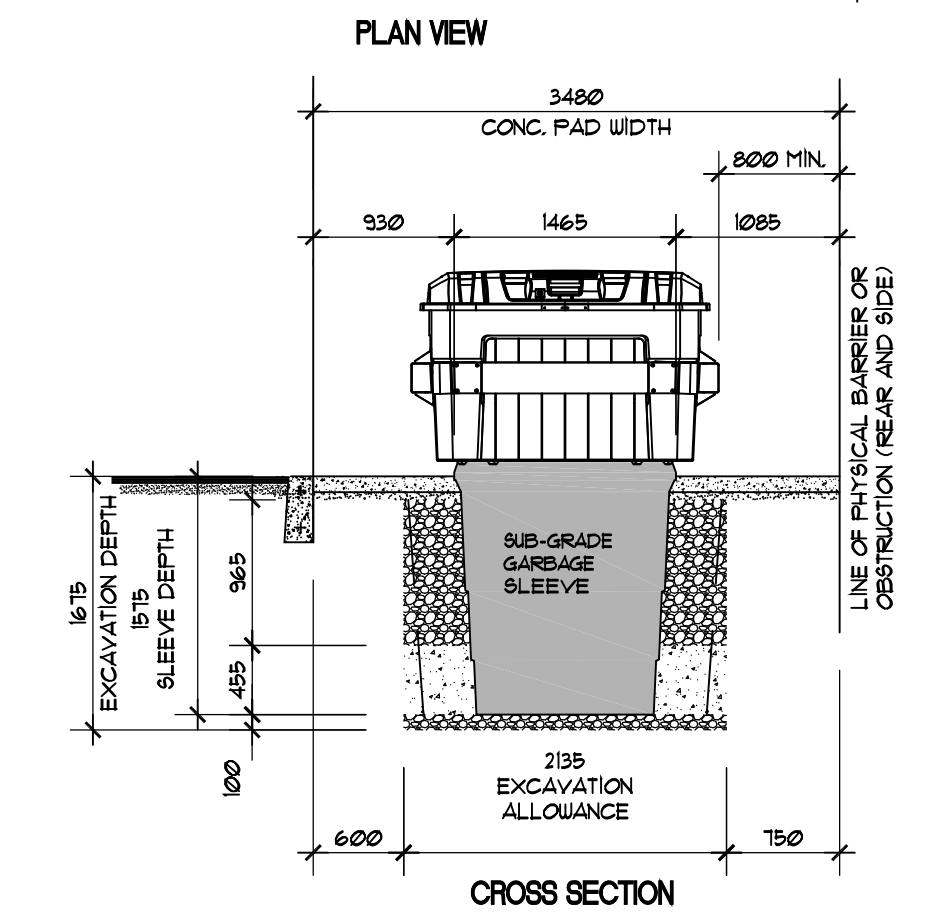
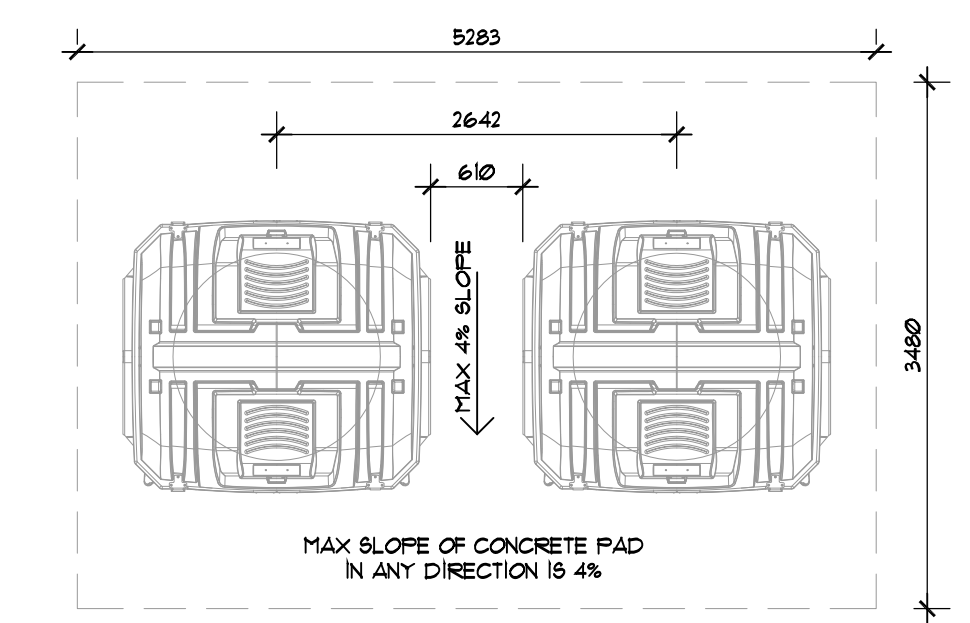
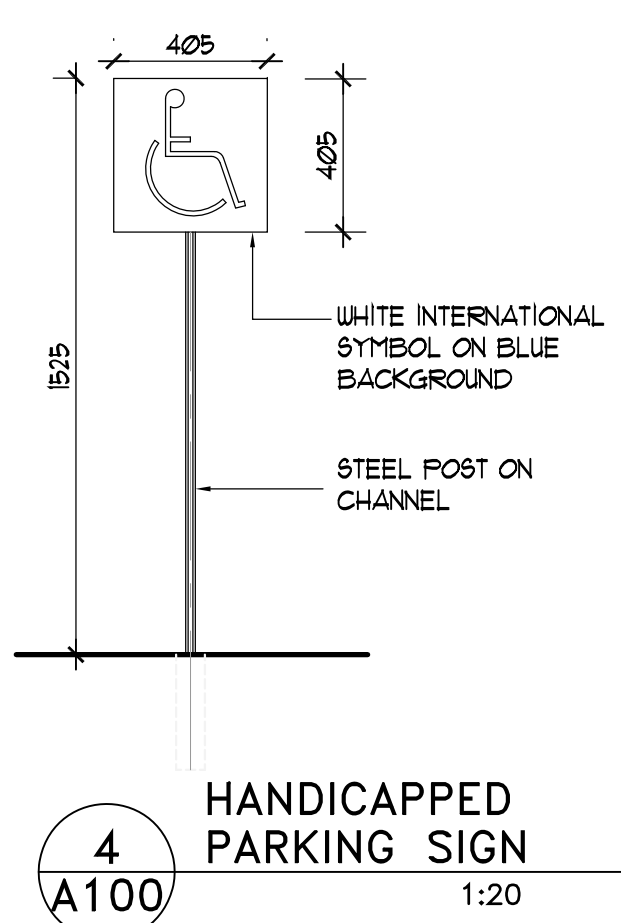
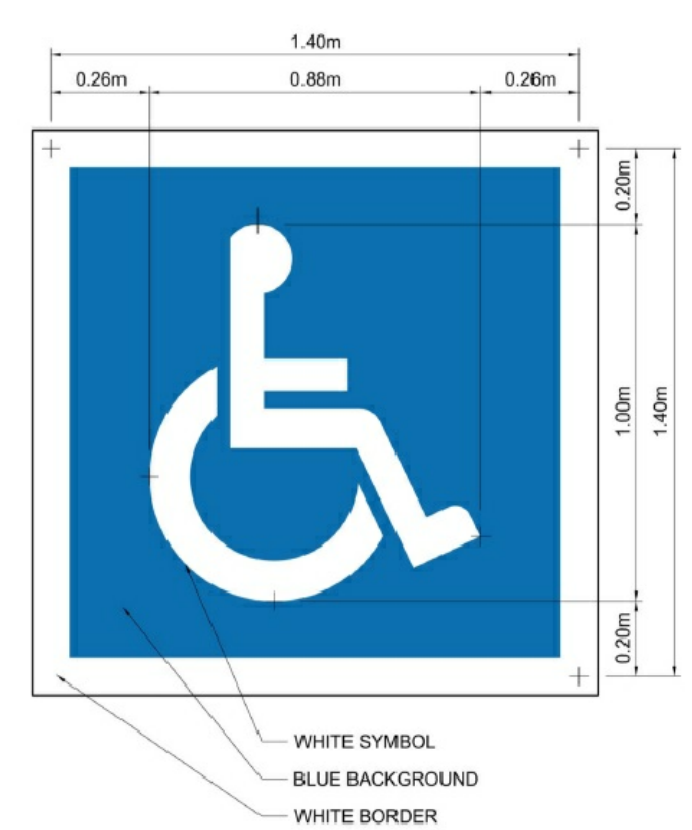
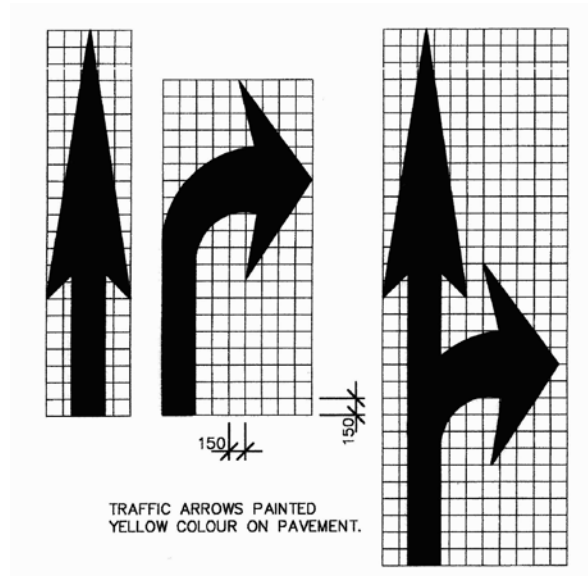
**1 SITE PLAN**  
SCALE 1 : 1000



EXTENT OF SPA APPLICATION



**3 ROAD PAINTING**  
SCALE NTS



# BOUNDARY CONDITIONS



## Boundary Conditions For: Barrhaven Town Centre – Pad C

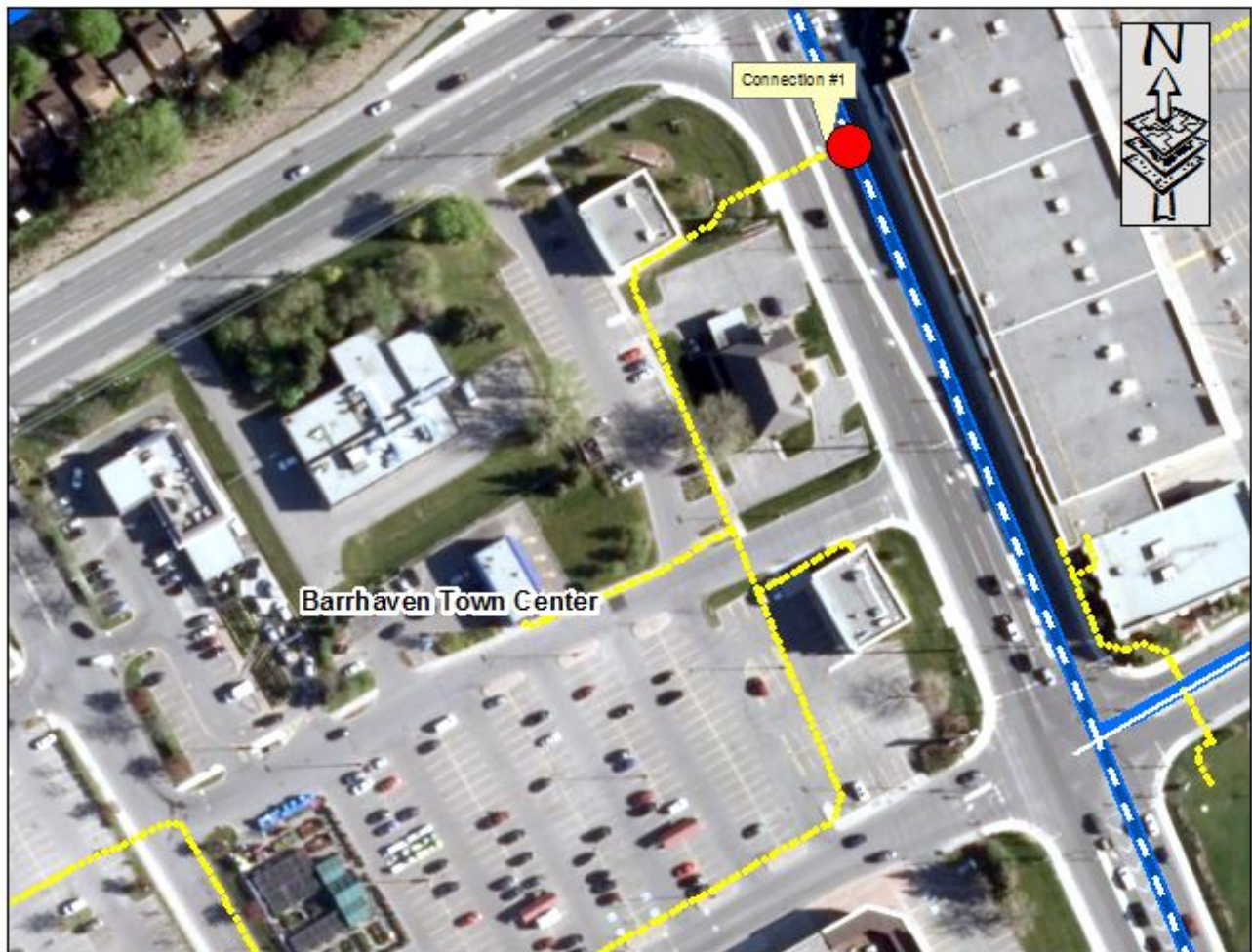
Date of Boundary Conditions: 2018-Oct-01

### 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 <sup>1</sup> (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

<sup>1</sup>Elevation: **98.900 m**

#### Post Configuration

##### Connection #: 1

Demand Scenario	Head (m)	Pressure <sup>1</sup> (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

<sup>1</sup>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:

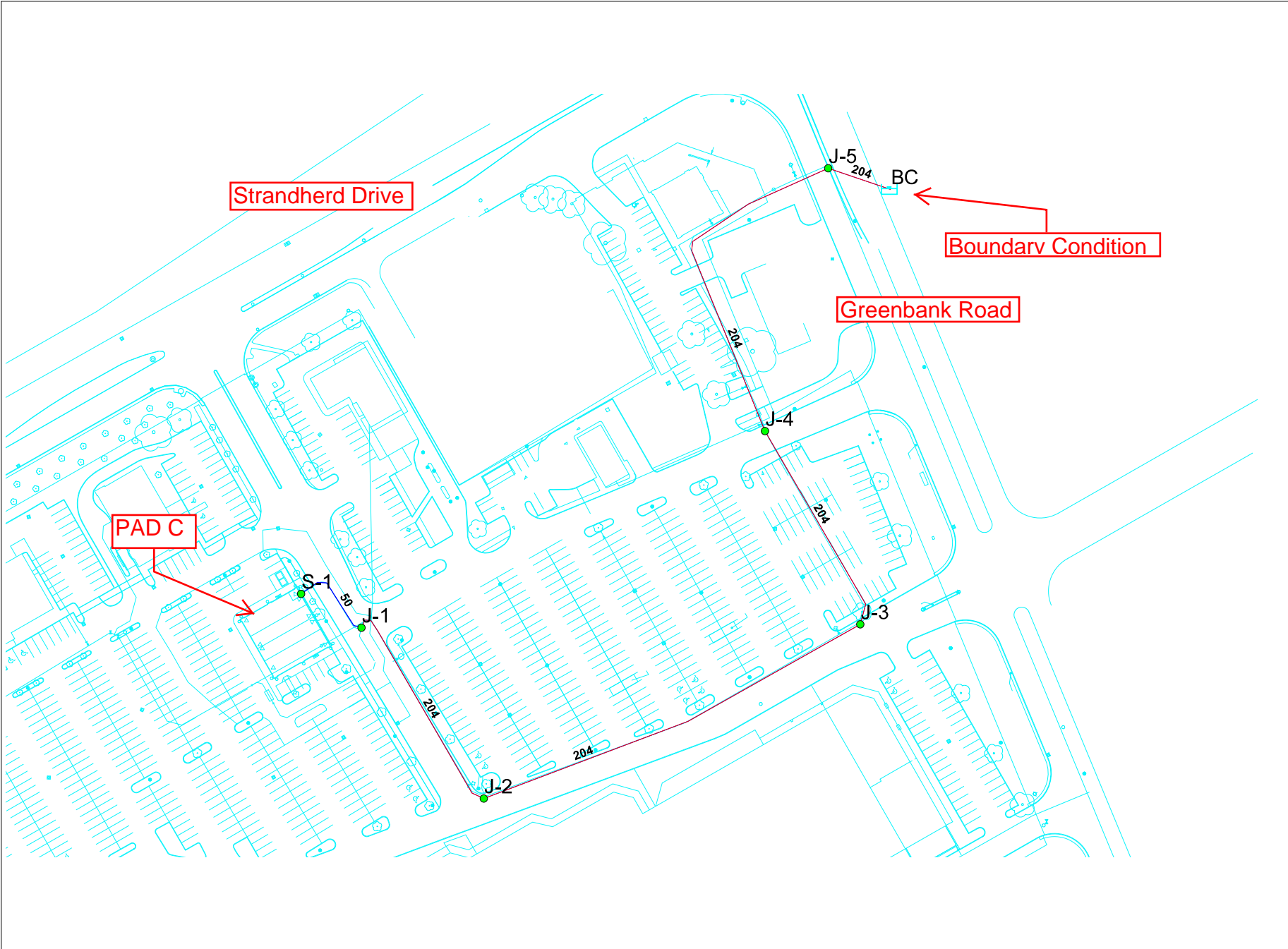
- a) If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
- b) Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/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



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

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

**Pad C Peak Hour HGL 143.7m - Junction Report**

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

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)	Critical 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 | 2025-10-30  
 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 <sup>2</sup> )	INSTIT. (ha)	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	
<u>Site</u>						740			0.02	0.02		0.03	0.03		0.06	0.06	4,000
<u>TOTAL</u>						740				0.02			0.03			0.06	

**ASSUMPTIONS**

<u>POPULATION DENSITY</u>		<u>WATER DEMAND RATES</u>		<u>PEAKING FACTORS</u>		<u>FIRE DEMANDS</u>	
Single Family	3.4 persons/unit	Residential	280 l/cap/day	Maximum Daily		Single Family	10,000 l/min (166.7 l/s)
3 Bedroom Units	2.7 persons/unit			Residential	2.5 x avg. day		
2 Bedroom Units	1.8 persons/unit	Commercial Shopping Center	2,500 L/(1000m <sup>2</sup> )/day	Maximum Hourly	1.5 x avg. day	Semi Detached & Townhouse	10,000 l/min (166.7 l/s)
				Residential	2.2 x max. day		
				Commercial	1.8 x max. day	Medium Density	15,000 l/min (250 l/s)



STEP	Contents	Description	Adjustment Factor	Result
1	<b>Building A</b> (1-storey)	1st Floor Area 740	Height 2.8m 1	740 m2
	<b>Total Effective Floor Area</b>	(Storage space exceeding 3m in height, floor area X 3)		<b>740</b> m2
2	<b>Type of Construction</b>	Type V Wood Frame 1.5	Type II Noncombustible Construction 0.8	
		Type III Ordinary Construction 1.0		
		Type II Noncombustible Construction 0.8		
		Type I Fire Resistive Construction 0.6		
3	<b>Required Fire Flow</b>	RFF = 220C√A, rounded to nearest 1000 L/min		<b>5000</b> L/min
4	<b>Occupancy and Contents</b>	Noncombustible Contents -25%	Limited Combustible Contents -15%	-750 L/min
		Limited Combustible Contents -15%		
		Combustible Contents 0%		
		Free Burning Contents 15%		
		Rapid Burning Contents 25%		
	<b>Fire Flow</b>			<b>4250</b> L/min
5	<b>Automatic Sprinkler Protection</b>	Automatic Sprinkler Conforming to NFPA 13 -30%	No 0%	0 L/min
		Standard Water Supply for both the system and Fire Department Hose Lines -10%	No 0%	0 L/min
		Fully Supervised System -10%	No 0%	0 L/min
		<b>Total Sprinkler Adjustment</b>		<b>0</b> L/min
6	<b>Exposure Adjustment</b>	Based on <b>Table 6</b> Exposure Adjustment Charges for Subject Building		
	<b>North</b>	Separation (m) 17	With unprotected opening 3%	128 L/min
		Length X Height Factor (m.storeys) 16		
		Construction Type Type I-II		
	<b>South</b>	Separation (m) >30	With unprotected opening 0%	0 L/min
		Length X Height Factor (m.storeys) 18		
		Construction Type Type II		
<b>East</b>	Separation (m) >30	With unprotected opening 0%	0 L/min	
	Length X Height Factor (m.storeys) 6.4			
	Construction Type Type II			
<b>West</b>	Separation (m) >30	With unprotected opening 0%	0 L/min	
	Length X Height Factor (m.storeys) 220			
	Construction Type Type II			
	<b>Total Exposure Adjustment</b>			<b>128</b> L/min
7	<b>Total Required Fire Flow</b>			<b>4378</b> L/min
		Rounded to Nearest 1000 L/min		<b>4000</b> 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 P: 705.742.2297  
 Peterborough, ON E: 705.741.3568  
 Canada K9J 2W2 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				Commercial		Design Flow			Pipe Data			Capacity			Velocity	Comment
		From	To	Area		Unit	Accum.	Q	Q	Q <sub>b</sub>	Length	Grade	Dia.	Capacity	Percent	Full		
				Unit	Accum.													
				(ha)	(ha)	(ha)	(ha)	(l/s)	(l/s)	(l/s)	(m)	(%)	(m)	(l/s)	(%)	(m/s)	(m/s)	
<b>Forcemain Sewer</b>																		
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	0.59	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	49.0	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		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
<b>Gravity Sewer</b>																		
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)
		D	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)
		C	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)
		H	I	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)
	BMO	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
	McDonald's	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)

-  CATCHMENT AREAS
-  CATCHMENT AREA NO.
-  EXISTING SANITARY GRAVITY
-  EXISTING SANITARY FORCEMAIN
-  PROPOSED SANITARY GRAVITY

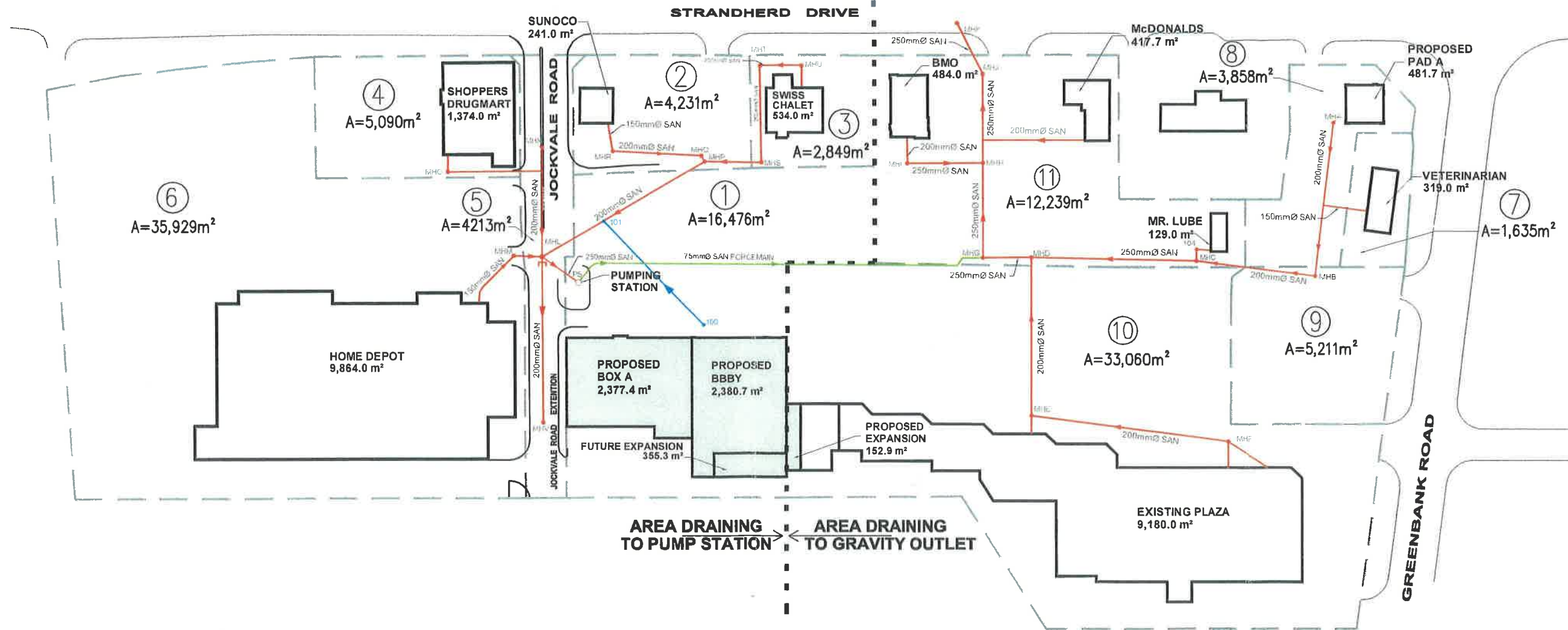


FIGURE 1: SANITARY CATCHMENT AREA PLAN

Sketch No.



**WILLS**

D.M. Wills Associates Limited  
Consulting Engineers

492 Charlotte Street  
P 708-740-2297  
F 708-741-3899  
Carrasco, KSU, ZWG E wills@dwills.com

• PROVEN SOLUTIONS • TRUSTED RESULTS •

dwills.com

Drawn By  
L.D.

DESIGNED  
D.W.

CHECKED  
A.H.

Project No.  
08-10158

Scale  
Horz 1:2000  
Vert N/A

Plot Date  
SEPT 13, 2010

Drawing File No.  
FIG 1

**From:** Zagorski, Joseph  
**To:** [Demetrius Yannoulopoulos](mailto:Demetrius.Yannoulopoulos)  
**Cc:** [Diduch, Roman](mailto: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](mailto: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

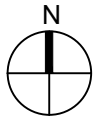
**Demetrius Yannoulopoulos** P.Eng.  
Associate Director

**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](http://www.ibigroup.com)

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J:\116390\_PodCBarrn\5.9 Drawings\59civil\current\116390Figures.dwg Layout Name: Key Map



377 STRANDHERD DRIVE  
BARRHAVEN TOWN CENTRE  
PAD C  
SERVICING AND STORMWATER MANAGEMENT DESIGN BRIEF

# 3777 STRANDHERD DRIVE

## BARRHAVEN TOWN CENTRE

### PAD C

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

November 2026

**Prepared By:**  
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## Version Control

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Pad C – Servicing and Stormwater Management Design Brief

### **Appendix A**

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- Original Sanitary Sewer Tributary Area Plan
- Updated Sanitary Sewer Design Sheet
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**377 STRANDHERD DRIVE  
BARRHAVEN TOWN CENTRE  
PAD C  
SERVICING AND STORMWATER MANAGEMENT DESIGN BRIEF**

# 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 740 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

**377 STRANDHERD DRIVE  
BARRHAVEN TOWN CENTRE  
PAD C  
SERVICING AND STORMWATER MANAGEMENT DESIGN BRIEF**

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 50 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 740 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 7.026 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 ( $T_c$ ) 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:

$$T_c = 20 \text{ minutes}$$

$$A = 0.047 \text{ Ha}$$

$$C = 0.50$$

$$i_5 = 70.25 \text{ mm/hr}$$

$$Q_{100} = 2.78 \times C \times i \times A = 2.78 \times 0.50 \times 70.25 \times 0.074 = \mathbf{7.23 \text{ l/s}}$$

Based on the aforementioned criteria, the maximum 100-year release rate from the building area is 7.23 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 25.09 m<sup>3</sup>, see Modified Rational Method Calculation in Appendix A. The proposed building has an estimated rooftop storage volume of 27.75 m<sup>3</sup>, based on 150 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 Recommendations

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.

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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**

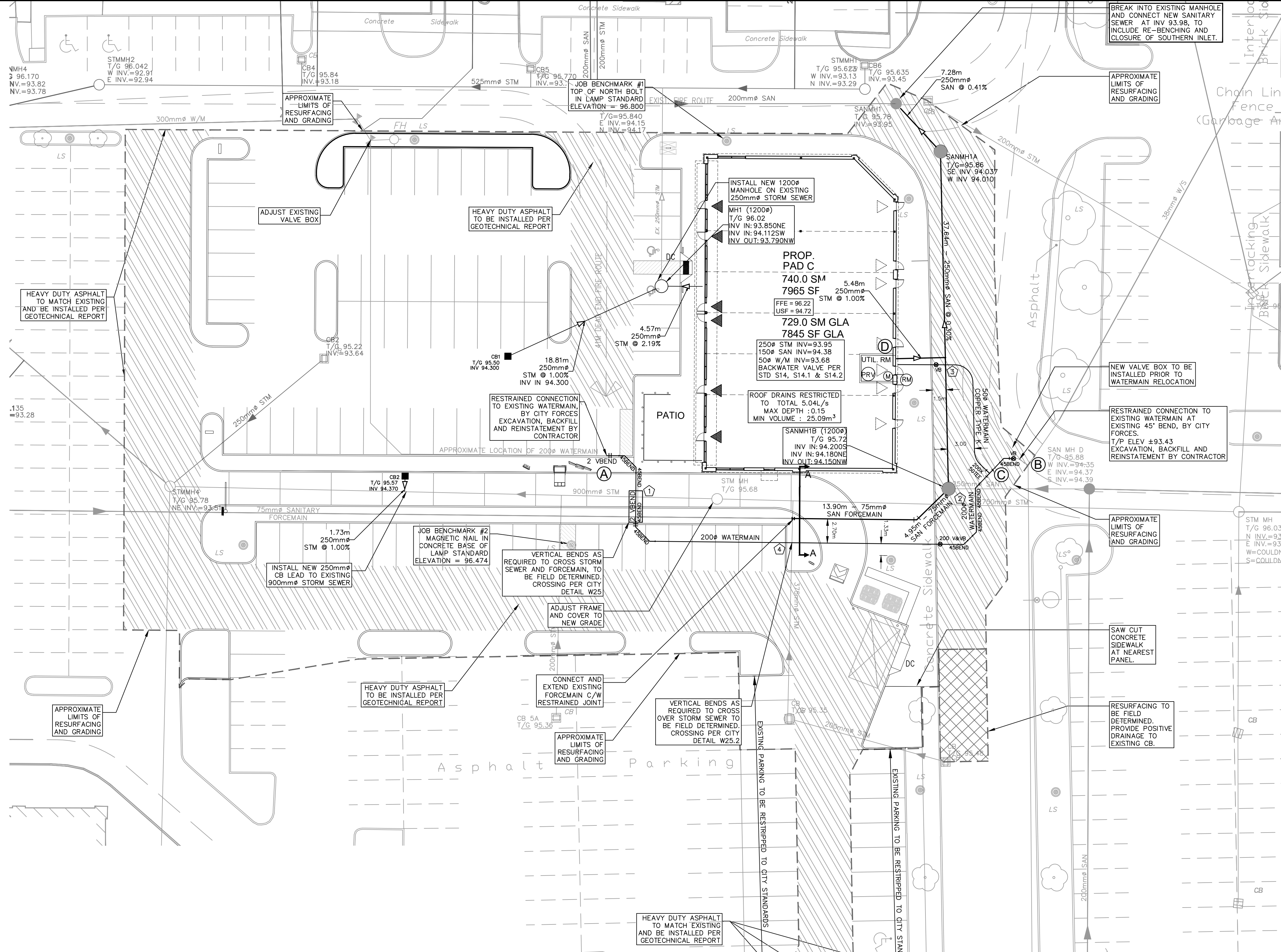
**Drawing C-900 – Sediment and Erosion Control Plan**

**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 REGULATIONS.
- 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 ON-SITE 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 STRANDBERG 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. 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 FARHALL MOFFATT & WOODLAND LTD. DRNG. IT/18/04/2014
- 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, BELT AND HOOD 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, BELT AND SPIGOT 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 OSPD 701.010, TAPER TOP TYPE COMPLETE WITH 300mm SUMP FOR SEWER LESS THAN 900mm.
  - 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 CUTS 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 OSPD 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 PROFILES, 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 HAUL 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 10 000/L/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% SPMD AND EXTEND TO SPRINGLINE OF PIPE. COVER MATERIAL SHALL CONSIST OF OPSS GRANULAR A AND SHALL EXTEND FROM SPRINGLINE TO MINIMUM 300mm ABOVE COVER OF PIPE, AND COMPACTED TO 95% SPMD. SEE GEOTECHNICAL REPORT FOR ADDITIONAL DETAILS.

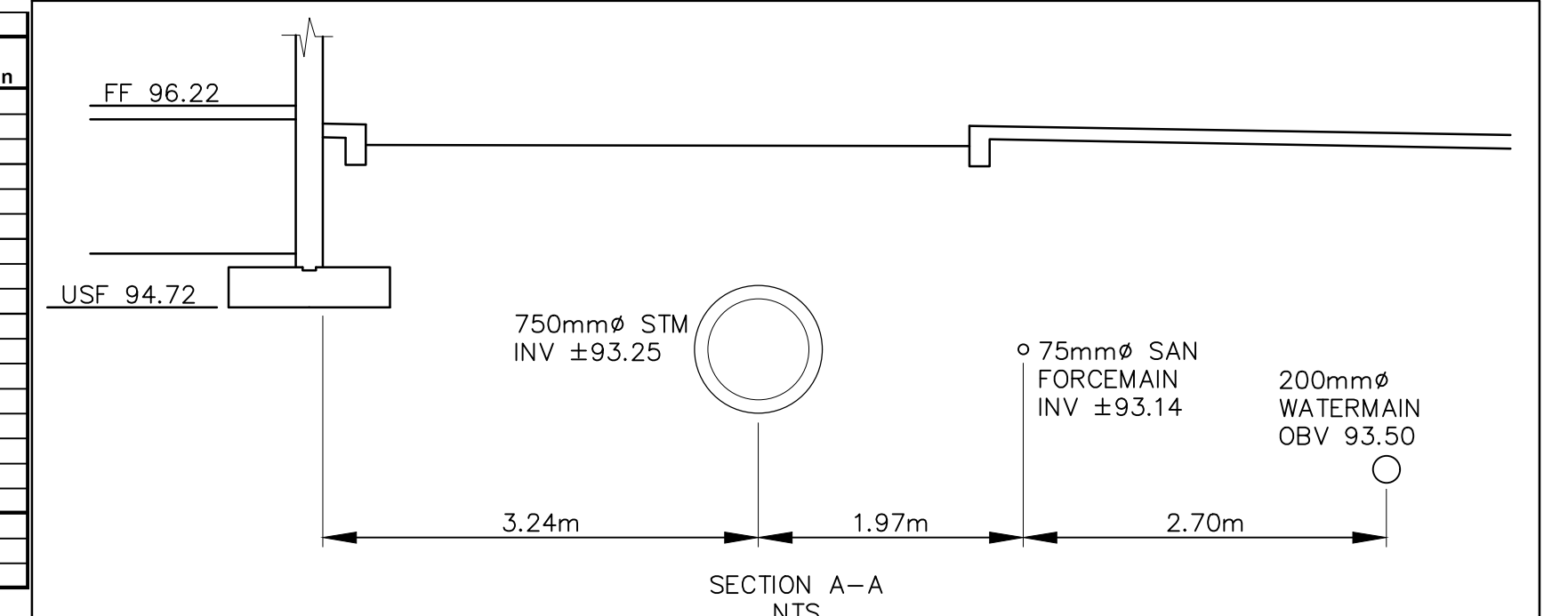


**LEGEND:**

	EXISTING STORM SEWER		BARRIER CURB
	EXISTING SANITARY SEWER		PROPOSED REMOTE WATER METER
	EXISTING WATERMAIN		PROPOSED REMOTE WATER METER
	PROPOSED STORM SEWER		PRESSURE REDUCING VALVE BY OTHERS
	PROPOSED SANITARY SEWER		EXISTING LIGHT POLE
	PROPOSED WATERMAIN		REGULAR ASPHALT TO BE SAW CUT AND REINSTATE WITH STEP JOINT AS PER CITY STANDARDS
	EXISTING SANITARY MANHOLE		HEAVY DUTY ASPHALT TO BE SAW CUT AND REINSTATE WITH STEP JOINT AS PER CITY STANDARDS
	EXISTING STORM MANHOLE		SILT FENCE AS PER OSPD-219.110
	EXISTING HYDRANT C/W BOTTOM OF FLANGE ELEVATION		FILTER FABRIC TO BE PLACED BENEATH STRUCTURE FRAME. FILTER FABRIC TO REMAIN IN PLACE UNTIL SITE IS STABILIZED AND VEGETATION IS ESTABLISHED.
	PROPOSED SANITARY MANHOLE		
	PROPOSED STORM MANHOLE		
	PROPOSED CATCHBASIN MANHOLE		
	PROPOSED HYDRANT C/W BOTTOM OF FLANGE ELEVATION		
	PROPOSED CATCHBASIN		
	DEPRESSED CURB		

**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	95.82	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	45° BEND	95.92	93.52	
0+045.11	2000' V&V	95.68	93.28	
0+047.73	45° BEND	95.69	93.29	
0+049.72	45° BEND	95.72	93.32	
0+049.81	45° BEND	95.77	93.37	
C 0+058.90	500' SERVICE TIE TO PAD C	95.80	93.40	
0+059.19	45° BEND	95.82	93.42	
B 0+060.30	NEW 2000' V&V - EXISTING WATERMAIN	95.83	93.43	
C 0+000.00	500' SERVICE TIE TO PAD C	95.80	93.40	
0+015.97	500' V&V	95.83	93.43	
D 0+020.24	SERVICE PAD C	96.08	93.68	



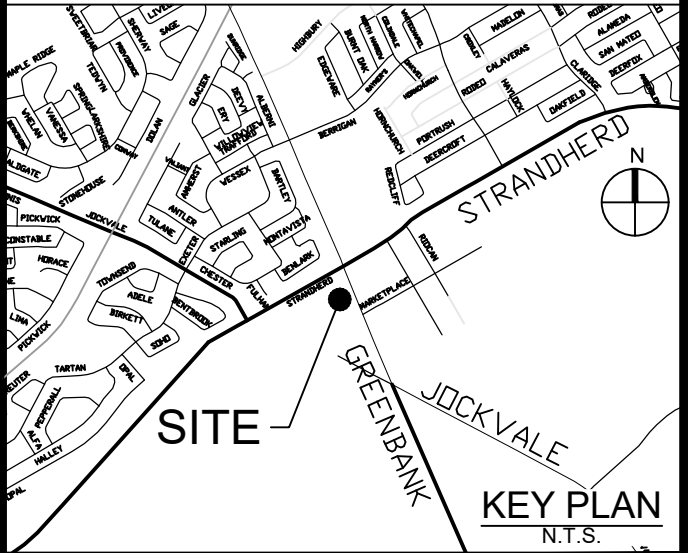
**CROSSING TABLE**

1	2000 W/M 0.50m BELOW 9000 STM
2	2000 W/M 0.76m BELOW 750 FM
3	2000 W/M 0.50m BELOW 7500 STM
4	2000 W/M 1.47m BELOW 2500 SAN
5	750 FM 0.2m ABOVE 7500 STM
6	500 W/M 0.58m BELOW 2500 SAN
7	2000 W/M (93.62 OBV) OVER 3750 STORM (ELEVATION OF EXISTING STORM TO BE FIELD VERIFIED)

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)302-7753



No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
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  
Tel 613 225 1311  
www.arcadis.com

**PAD C BARHAVEN TOWN CENTRE**

Project Title

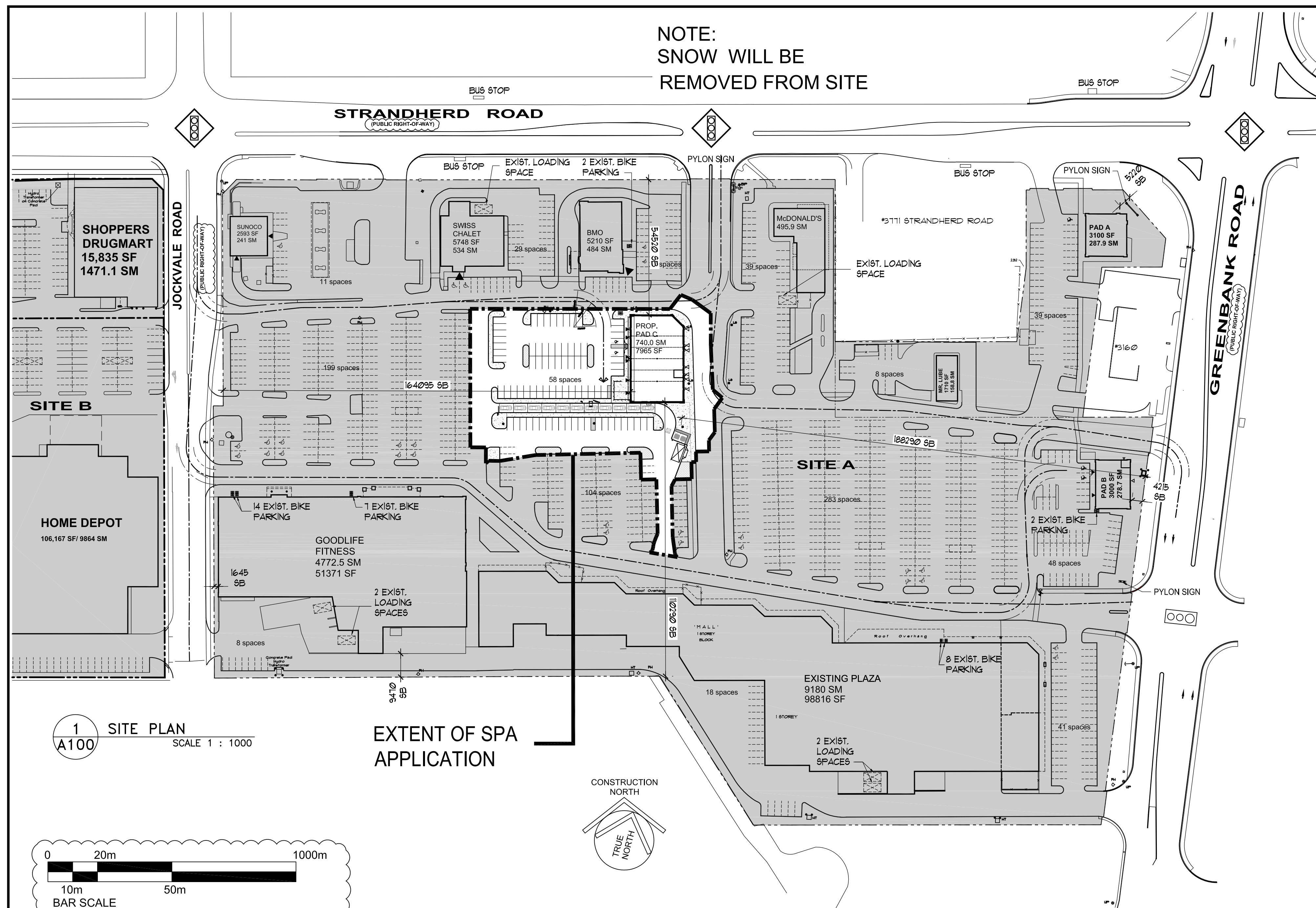
**SITE SERVICING PLAN**

3777 STRANDHERD DRIVE

Scale: 1:250

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

NOTE:  
SNOW WILL BE  
REMOVED FROM SITE

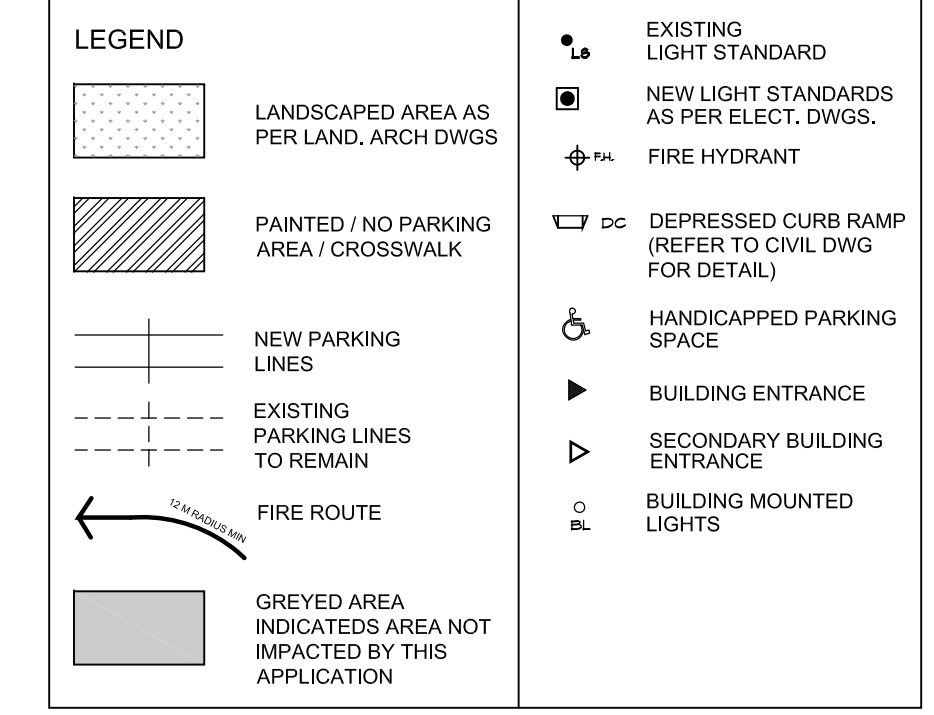


**SITE STATISTIC**

SITE 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	
McDONALD'S	495.9 SM	
GOODLIFE FITNESS	4772.5 SM	
PAD A (HAKIM)	287.9 SM	
MR.LUBE	158.8 SM	
PAD B	278.7 SM	
<b>BUILDING AREA (GLA)</b>	<b>16432.8 SM</b>	<b>176881 SF</b>
<b>PROP BUILDING AREA</b>	<b>BLDG AREA</b>	<b>GLA</b>
PAD C	729.0 SM	7845 SF
<b>BUILDING AREA</b>	<b>17161.8 SM</b>	<b>184726 SF</b>
<b>TOTAL SPACES</b>	<b>914 SPACES</b>	<b>5.33/100SM</b>
		<b>4.95/1000SF</b>

**MC (187H(20)) - ZONE PROVISIONS**

ZONING MECHANISMS	II PROVISIONS	PROVIDED
(a) Minimum lot area	No Minimum	77926 sm
(b) Minimum lot width	No Minimum	±1.370 m
(c) Minimum front yard and corner side yard setback	(i) abutting a lot in a residential zone	3 m
	(ii) abutting the rapid transit corridor	2 m
	(iii) other cases	No Minimum (GREENBANK ROAD) Site: 5.2m 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
	(ii) abutting the rapid transit corridor	2 m
	(iii) other cases	No Minimum Site: 1.6m Pad C: 164.0m
(e) Minimum rear yard setback	(i) abutting a lot in a residential zone	6 m
	(ii) abutting the rapid transit corridor	2 m
	(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, alleys, parking, loading spaces or outdoor commercial paths, the whole yard must be landscaped	N/A
Exception: max. gross leasable floor area	35,000 sm	17161.8 SM EAST OF JOCKVALE RD. 914 SPACES
Parking	MIN 3.6/100 SM GLA	618 SPACES 914 SPACES
Loading (3.5m x 7.0m)	1500sm - 2499sm gfa	Total: Min. 2 Pad C: 1 Total: 7
Bicycle parking	1500sm gfa	Pad C: 2 Pad C: 2 Total: 35
Drive Thru Queuing	7 AT THE BOARD 133074	7 AT THE BOARD 133074
Accessible Parking Requirements	801-850 = 21 Total (1 Type-A, 11 Type-B)	Proposed: 2 (1 Type-A, 1 Type-B) Existing: 31 Total: 33



**SURVEY INFO TAKEN FROM:**  
SURVEYOR'S REAL PROPERTY REPORT - PART 1  
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

1	AB	NOV21,25	SPA
NO.	BY	DATE	ISSUED
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

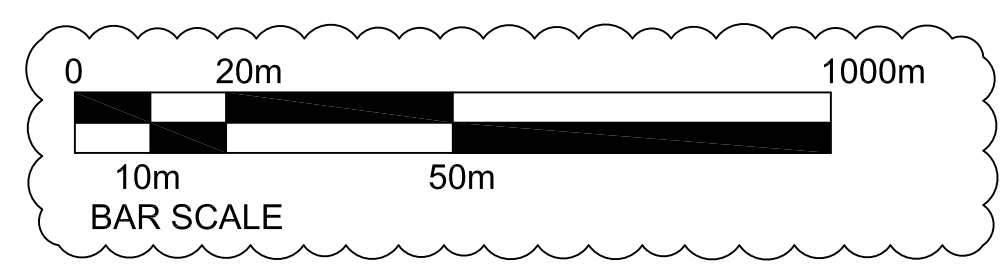
**DRAWING TITLE**  
SITE PLAN, DETAILS

ONTARIO ASSOCIATION OF ARCHITECTS	DRAWN JL	FOLIO 25078
ALLAN MICHAEL BORENSTEIN LICENCE 7172	CHECKED AB	DWG. NO. A100
	DATE OCT 2025	SCALE AS NOTED

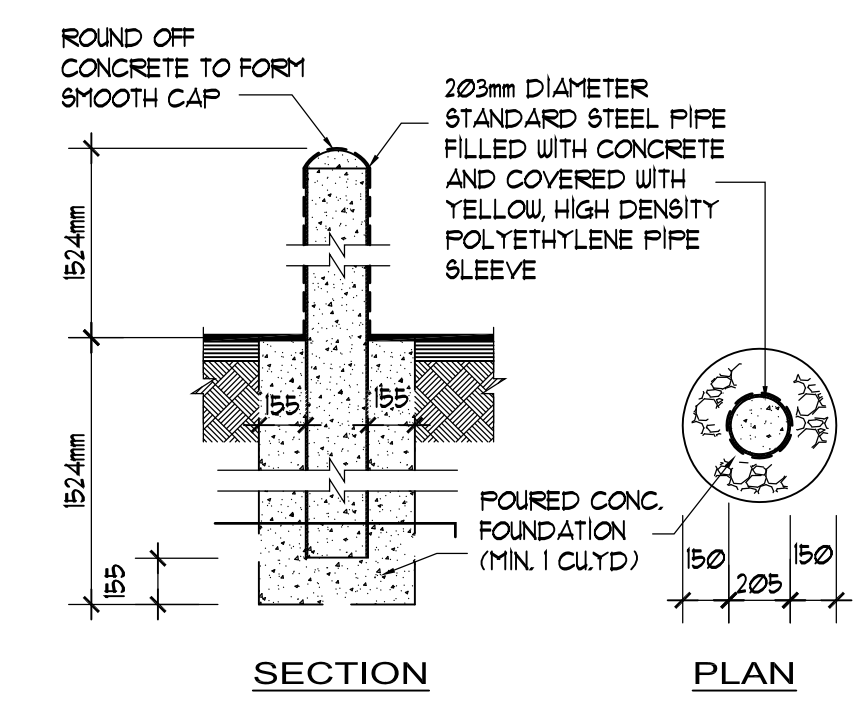
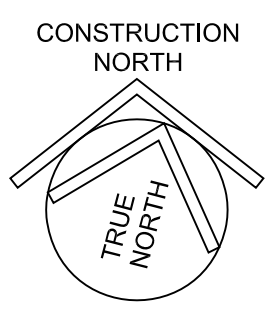
FILE #: D07-12-25-0157  
PLAN #: 19416

DRAWINGS REVISED: LAST UPDATED:

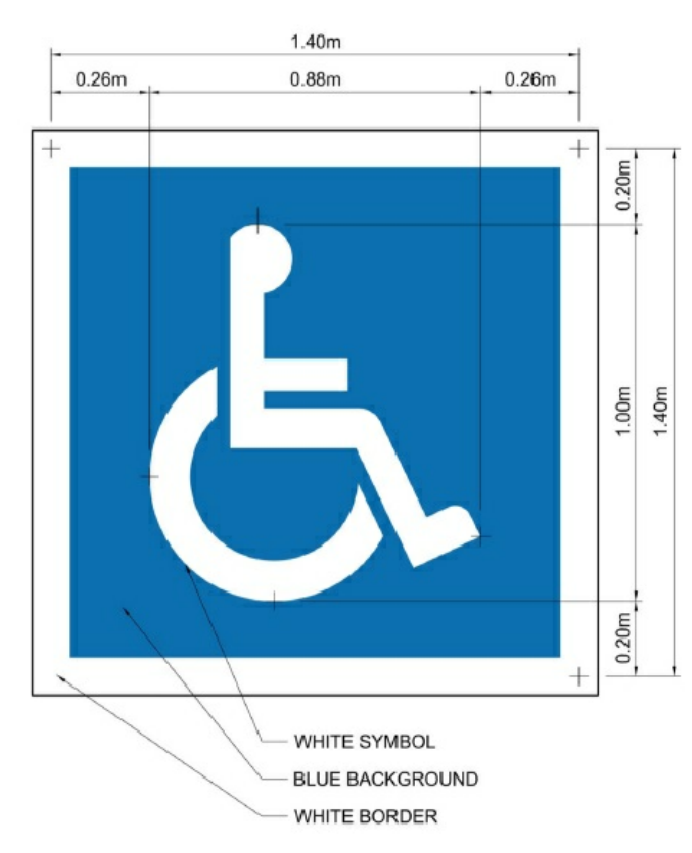
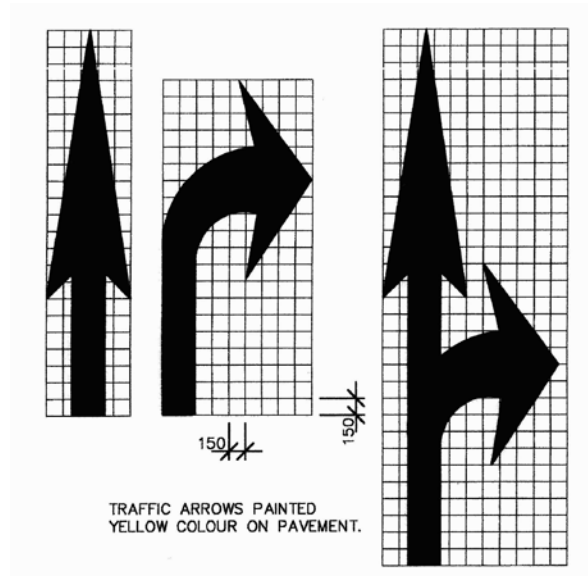
1 SITE PLAN SCALE 1 : 1000



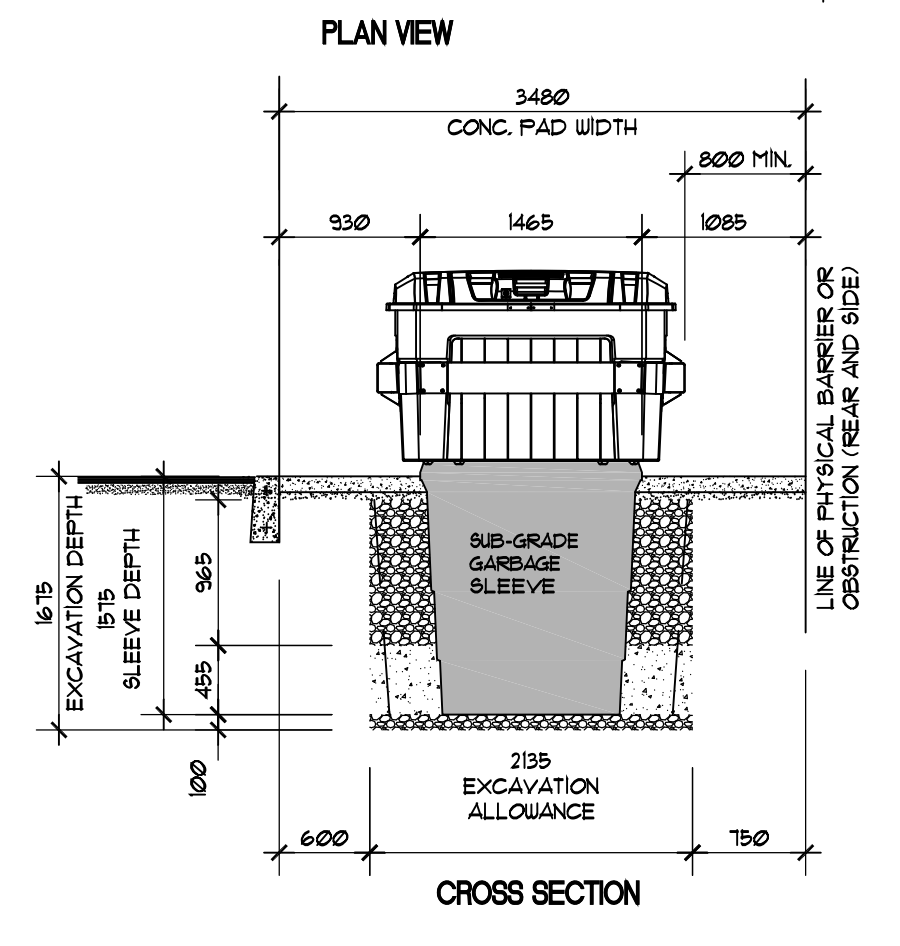
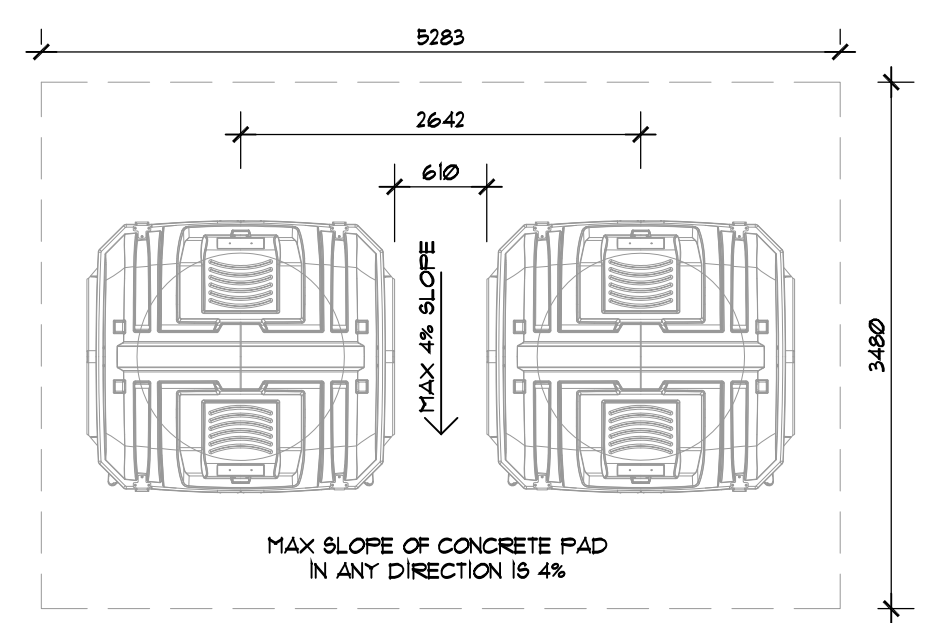
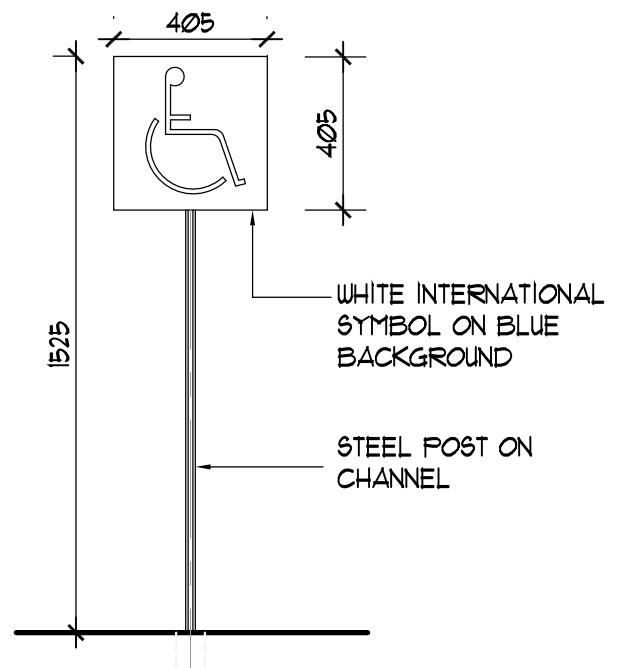
EXTENT OF SPA APPLICATION



3 ROAD PAINTING SCALE NTS



4 HANDICAPPED PARKING SIGN SCALE 1:20



6 SUB-GRADE GARBAGE SYSTEM SCALE 1:50

# BOUNDARY CONDITIONS



## Boundary Conditions For: Barrhaven Town Centre – Pad C

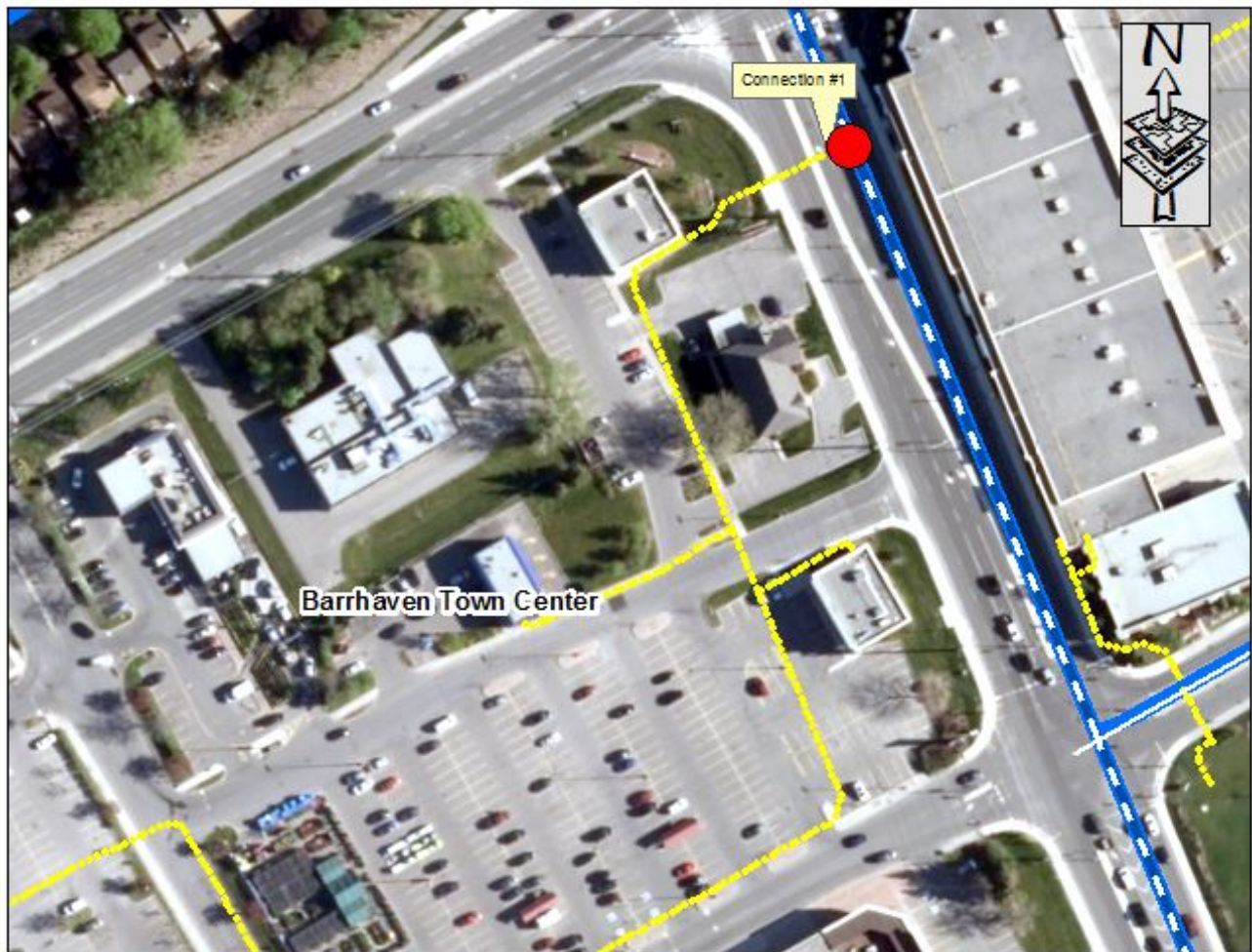
Date of Boundary Conditions: 2018-Oct-01

### 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 <sup>1</sup> (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

<sup>1</sup>Elevation: **98.900 m**

#### Post Configuration

##### Connection #: 1

Demand Scenario	Head (m)	Pressure <sup>1</sup> (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

<sup>1</sup>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:

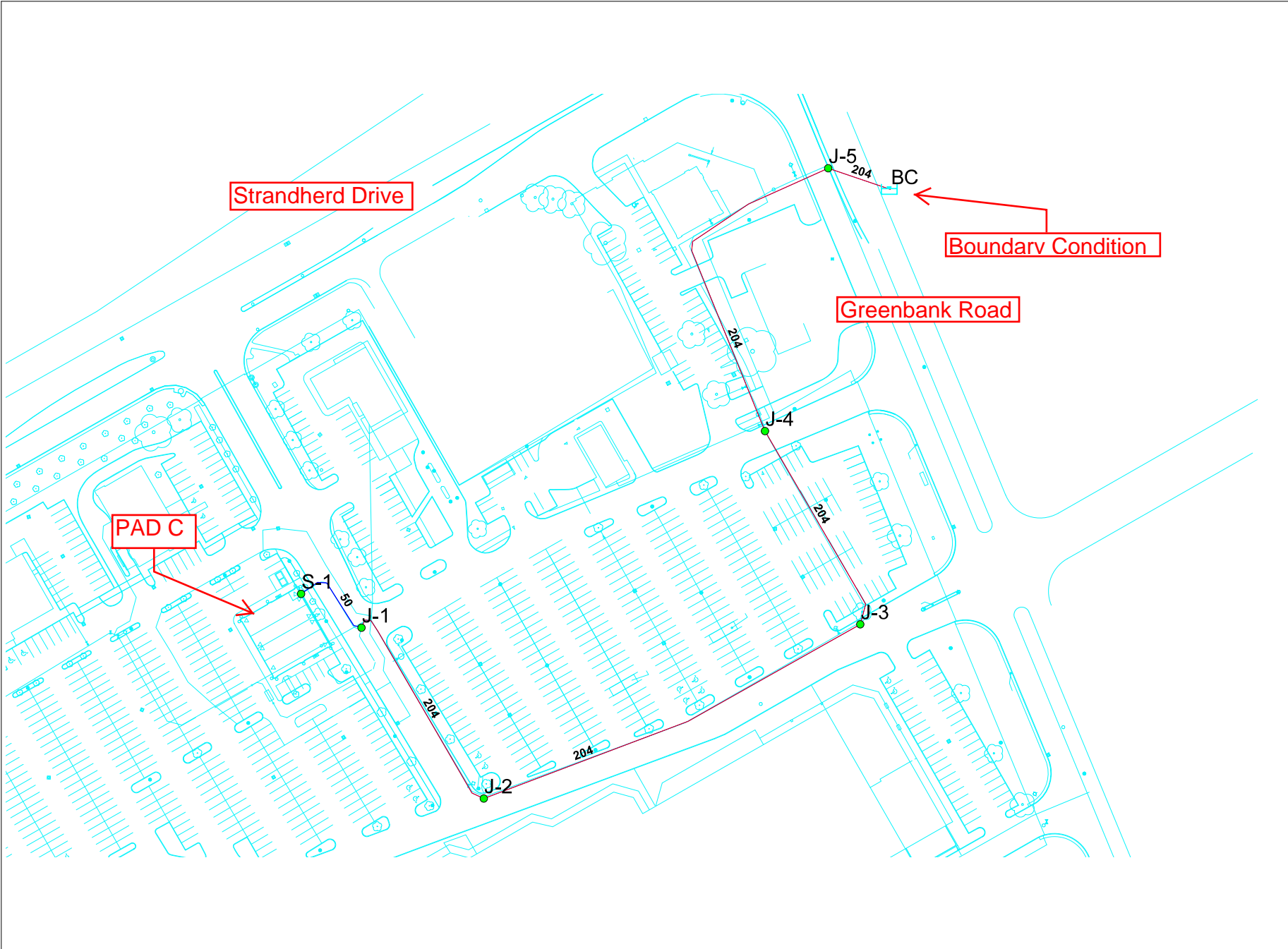
- a) If possible, systems to be designed to residual pressures of 345 to 552 kPa (50 to 80 psi) in all occupied areas outside of the public right-of-way without special pressure control equipment.
- b) Pressure reducing valves to be installed immediately downstream of the isolation valve in the home/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



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

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

**Pad C Peak Hour HGL 143.7m - Junction Report**

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

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)	Critical 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 | 2025-10-30  
 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 <sup>2</sup> )	INSTIT. (ha)	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	
<u>Site</u>						740			0.02	0.02		0.03	0.03		0.06	0.06	4,000
<u>TOTAL</u>						740				0.02			0.03			0.06	

**ASSUMPTIONS**

<u>POPULATION DENSITY</u>		<u>WATER DEMAND RATES</u>		<u>PEAKING FACTORS</u>		<u>FIRE DEMANDS</u>	
Single Family	3.4 persons/unit	Residential	280 l/cap/day	Maximum Daily		Single Family	10,000 l/min (166.7 l/s)
3 Bedroom Units	2.7 persons/unit			Residential	2.5 x avg. day		
		Commercial Shopping Center	2,500 L/(1000m <sup>2</sup> )/day	Commercial	1.5 x avg. day	Semi Detached &	
2 Bedroom Units	1.8 persons/unit			Maximum Hourly		Townhouse	10,000 l/min (166.7 l/s)
				Residential	2.2 x max. day		
				Commercial	1.8 x max. day	Medium Density	15,000 l/min (250 l/s)



STEP	Contents	Description	Adjustment Factor	Result
1	Building A (1-storey)	1st Floor Area 740	Height 2.8m 1	740 m2
	<b>Total Effective Floor Area</b>	(Storage space exceeding 3m in height, floor area X 3)		<b>740</b> m2
2	<b>Type of Construction</b>	Type V Wood Frame 1.5	Type II Noncombustible Construction 0.8	
		Type III Ordinary Construction 1.0		
		Type II Noncombustible Construction 0.8		
		Type I Fire Resistive Construction 0.6		
3	<b>Required Fire Flow</b>	RFF = 220C√A, rounded to nearest 1000 L/min		<b>5000</b> L/min
4	<b>Occupancy and Contents</b>	Noncombustible Contents -25%	Limited Combustible Contents -15%	
		Limited Combustible Contents -15%		
		Combustible Contents 0%		
		Free Burning Contents 15%		
		Rapid Burning Contents 25%		
	<b>Fire Flow</b>			<b>4250</b> L/min
5	<b>Automatic Sprinkler Protection</b>	Automatic Sprinkler Conforming to NFPA 13 -30%	No 0%	0 L/min
		Standard Water Supply for both the system and Fire Department Hose Lines -10%	No 0%	0 L/min
		Fully Supervised System -10%	No 0%	0 L/min
		<b>Total Sprinkler Adjustment</b>		<b>0</b> L/min
6	<b>Exposure Adjustment</b>	Based on Table 6 Exposure Adjustment Charges for Subject Building		
	<b>North</b>	Separation (m) 17	With unprotected opening 3%	128 L/min
		Length X Height Factor (m.storeys) 16		
		Construction Type Type I-II		
	<b>South</b>	Separation (m) >30	With unprotected opening 0%	0 L/min
		Length X Height Factor (m.storeys) 18		
		Construction Type Type II		
<b>East</b>	Separation (m) >30	With unprotected opening 0%	0 L/min	
	Length X Height Factor (m.storeys) 6.4			
	Construction Type Type II			
<b>West</b>	Separation (m) >30	With unprotected opening 0%	0 L/min	
	Length X Height Factor (m.storeys) 220			
	Construction Type Type II			
	<b>Total Exposure Adjustment</b>			<b>128</b> L/min
7	<b>Total Required Fire Flow</b>			<b>4378</b> L/min
		Rounded to Nearest 1000 L/min		<b>4000</b> 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 P. 705,742,2297  
 Peterborough, ON E. 705,741,3568  
 Canada K9J 2W2 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				Commercial		Design Flow			Pipe Data			Capacity			Velocity	Comment
		From	To	Area		Unit	Accum.	Q	Q	Q <sub>b</sub>	Length	Grade	Dia.	Capacity	Percent	Full		
				Unit	Accum.													
(ha)	(ha)	(ha)	(ha)	(l/s)	(l/s)	(l/s)	(m)	(%)	(m)	(l/s)	(%)	(m/s)	(m/s)					
1	<b>Forcemain Sewer</b> 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	Q P	0.42 0.00	0.42 0.42	0.02 0.00	0.02 0.02	0.12 0.12	1.29 1.29	1.41 1.41	40.0 3.0	1.00 1.00	0.200 0.200	32.8 32.8	4.3% 4.3%	1.04 1.04	0.52 0.52	Pipe Info from Trow Dwg No. 01 (Site Grading & Services Plan Mar /06) Pipe Info from Trow Dwg No. 01 (Site Grading & Services Plan Mar /06)
3	Swiss Chalet to PS	U T S P	T S P 101	0.28 0.00 0.00 0.00	0.28 0.28 0.28 0.71	0.05 0.00 0.00 0.00	0.05 0.05 0.05 0.20	0.08 0.08 0.08 0.20	0.40 0.40 0.40 1.69	0.48 0.48 0.48 1.89	17.0 43.8 25.7 67.6	0.47 0.48 0.51 0.90	0.200 0.200 0.200 0.200	22.5 22.7 23.3 31.1	2.1% 2.1% 2.1% 6.1%	0.72 0.72 0.74 0.99	0.29 0.29 0.30 0.59	Pipe Info from Robinson 03032-2 (June /05) Pipe Info from Robinson 03032-2 (June /05) Pipe Info from Robinson 03032-2 (June /05) Pipe Info from Robinson 03032-2 (June /05) 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 N	L L	0.00 0.42	0.00 0.93	0.00 0.00	0.00 0.14	0.00 0.26	0.00 0.12	0.00 0.38	49.0	0.40 0.58	0.200 0.200	20.7 25.0	0.0% 1.5%	0.66 0.80	0.01 0.29	Plugged Main Pipe Info from Trow Dwg No. 01 (Site Grading & Services Plan Mar /06)
6	Home Depot Pump Station	M L PS	L PS LIFT	3.59 0.00 0.00	3.59 6.88 6.88	0.99 0.00 0.00	0.99 1.72 1.72	1.01 1.93 1.93	0.86 3.11 3.11	1.86 5.04 5.04		0.50 2.03	0.150 0.250	10.8 84.8	17.3% 5.9%	0.61 1.73	0.46	Pipe Info from Trow Dwg No. 01 (Site Grading & Services Plan Mar /06) Pipe Info from Robinson 02056-11 (Jan /04) Lift Station
<b>Gravity Sewer</b>																		
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	B C	0.39 0.00	0.39 1.07	0.05 0.00	0.05 0.08	0.11 0.30	0.04 0.07	0.15 0.37	69.6 54.8	0.40 0.42	0.200 0.200	20.8 21.2	0.7% 1.7%	0.66 0.68	0.19 0.26	Pipe Info from Wills Dwg 10158Ph1-SS03 (May 11/10) 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	E D	3.31 0.00	3.31 3.31	1.01 0.00	1.01 1.01	0.93 0.93	0.87 0.87	1.80 1.80	90.0 71.0	0.38 0.41	0.200 0.200	20.2 21.0	8.9% 8.6%	0.64 0.67	0.40 0.41	Pipe Info from Robinson Dwg 89112-02 (Apr 4/91) Pipe Info from Robinson Dwg 89112-02 (Apr 4/91)
11	Mr Lube  BMO McDonald's	104 C D C LIFT G I Mc D H J K	C D G G H H H J K	0.00 0.00 1.22 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 1.07 5.60 6.88 12.48 0.00 0.00 12.48 0.00	0.02 0.00 0.00 0.00 0.00 0.05 0.04 0.00 0.00	0.02 0.10 1.10 1.72 2.82 0.05 0.04 2.91 3.49	0.00 0.30 0.96 2.17 3.13 0.04 0.04 3.49 3.47	0.01 0.08 0.38 4.10 3.13 0.04 0.04 6.96 3.47	0.01 0.38 2.53 4.10 6.62 0.30 0.30 6.96 6.97	5.0 74.0 22.0 4.10 43.0 34.3 40.0 25.0	2.00 0.39 0.41 0.250 0.250 0.250 0.250 0.250	46.4 37.2 38.0 52.9 32.1 23.2 37.6 37.6	0.0% 1.0% 6.6% 12.5% 0.9% 0.2% 18.5% 18.5%	1.48 0.76 0.77 1.08 0.65 0.74 0.77 0.77	0.16 0.25 0.44 0.74 0.21 0.13 0.59 0.59	Pipe Info from Wills Dwg 10158Ph1-SS03 (May 11/10) Pipe Info from Robinson Dwg 89112-02 (Apr 4/91) Pipe Info from Robinson Dwg 89112-02 (Apr 4/91) Lift Station Pipe Info from Robinson 03032-2 (June /05) Pipe Info from Robinson 03032-2 (June /05) Service Connection Pipe Info from Robinson Dwg 89112-02 (Apr 4/91) Pipe Info from Robinson Dwg 89112-02 (Apr 4/91)	

-  CATCHMENT AREAS
-  CATCHMENT AREA NO.
-  EXISTING SANITARY GRAVITY
-  EXISTING SANITARY FORCEMAIN
-  PROPOSED SANITARY GRAVITY

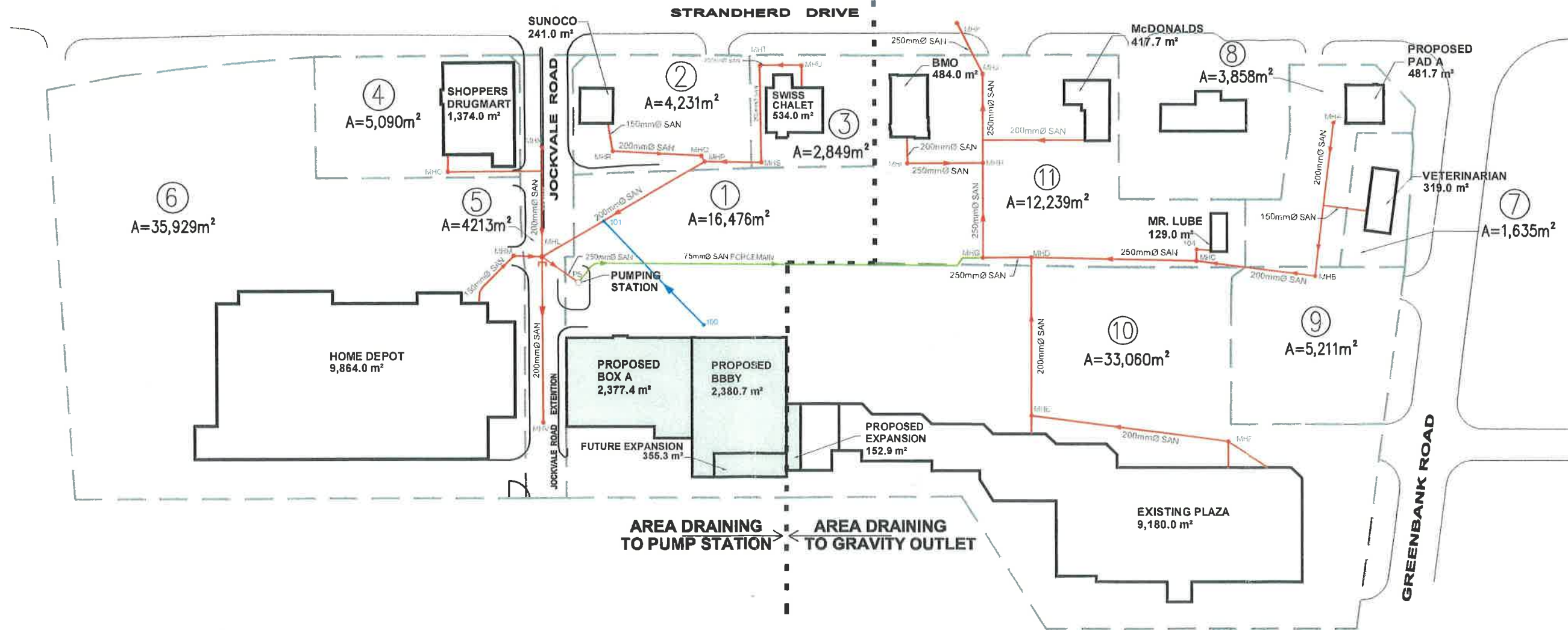


FIGURE 1: SANITARY CATCHMENT AREA PLAN

Sketch No.



**WILLS**

D.M. Wills Associates Limited  
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Drawn By  
L.D.

DESIGNED  
D.W.

CHECKED  
A.H.

Project No.  
08-10158

Scale  
Horz 1:2000  
Vert N/A

Plot Date  
SEPT 13, 2010

Drawing File No.  
FIG 1

**From:** Zagorski, Joseph  
**To:** [Demetrius Yannoulopoulos](mailto:Demetrius.Yannoulopoulos)  
**Cc:** [Diduch, Roman](mailto: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  
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e-mail: [Joseph.Zagorski@ottawa.ca](mailto: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**  
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Area	LOCATION			SITE AREA		BUILDING AREA		DESIGN FLOW				PROPOSED SEWER					
	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	740.00	27976.00	1.50	2.146	3.49	6.713	34.00	0.67	37.6	250	0.30	80.25%
		1A	EX H	0.00	12.48	0.00	27976.00	1.50	2.146	3.49	6.713	34.00	0.67	7.3	250	0.30	80.25%
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	28877.00	1.50	2.370	3.49	7.050	39.22	0.77	40.0	250	0.40	82.03%
		EX J	EX K	0.00	12.48	0.00	28877.00	1.50	2.370	3.49	7.050	39.22	0.77	25.0	250	0.40	82.03%

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

50000 l/d/Ha

0.28 l/s/Ha

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 467sm of retail space at 5 l/sm







**STORMWATER MANAGEMENT**

**Formulas and Descriptions**

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

**Maximum Allowable Release Rate**

Restricted Flowrate (based on  $C=0.50$   $T_c=20min$ )

$C = 0.5$   
 $T_c = 20 \text{ min}$   
 $i_{100yr} = 70.25 \text{ mm/hr}$   
 $A_{site} = 0.074 \text{ Ha}$

$Q_{restricted} = 7.23 \text{ L/s}$

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

Drainage Area		PAD C			
Area (Ha)	0.074	Restricted Flow $Q_r$ (L/s) = 5.04			
C =	1.00				
100-Year Ponding					
$T_c$ Variable (min)	$i_{100yr}$ (mm/hour)	Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)	$Q_r$ (L/s)	$Q_p - Q_r$ (L/s)	Volume 100yr ( $m^3$ )
30	91.87	18.90	5.04	13.86	24.95
35	82.58	16.99	5.04	11.95	25.09
40	75.15	15.46	5.04	10.42	<b>25.01</b>
45	69.05	14.21	5.04	9.17	24.75
50	63.95	13.16	5.04	8.12	24.35

Storage ( $m^3$ )				
Overflow	Required	Surface	Sub-surface	Balance
0.00	25.01	27.75	0	0.00

overflows to: roof controlled  
 Roof Storage= 75% of roof area, at maximum ponding depth of 150mm

Drainage Area		PAD C			
Area (Ha)	0.074	Restricted Flow $Q_r$ (L/s) = 5.04			
C =	0.90				
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	15.47	5.04	10.43	9.39
17	77.61	14.37	5.04	9.33	9.52
19	72.53	13.43	5.04	8.39	<b>9.56</b>
21	68.13	12.61	5.04	7.57	9.54
23	64.29	11.90	5.04	6.86	9.47

Storage ( $m^3$ )				
Overflow	Required	Surface	Sub-surface	Balance
0.00	9.56	27.75	0	0.00

overflows to: roof controlled

Drainage Area		PAD C			
Area (Ha)	0.074	Restricted Flow $Q_r$ (L/s) = 5.04			
C =	0.90				
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 ( $m^3$ )
15	61.77	11.44	5.04	6.40	5.76
16	59.50	11.02	5.04	5.98	5.74
17	57.42	10.63	5.04	5.59	<b>5.70</b>
18	55.49	10.27	5.04	5.23	5.65
19	53.70	9.94	5.04	4.90	5.59

Storage ( $m^3$ )				
Overflow	Required	Surface	Sub-surface	Balance
0.00	5.70	27.75	0	0.00

overflows to: roof controlled



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.

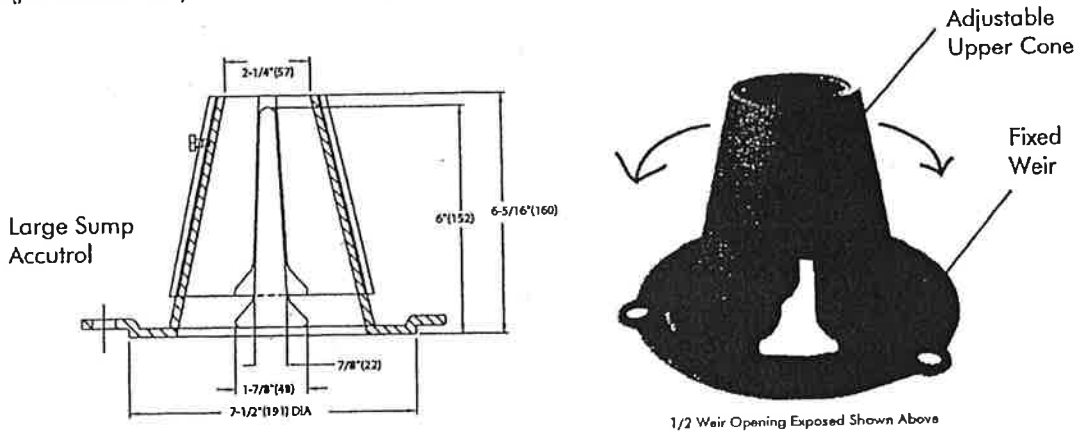


TABLE 1. Adjustable Accutrol Flow Rate Settings

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. \_\_\_\_\_

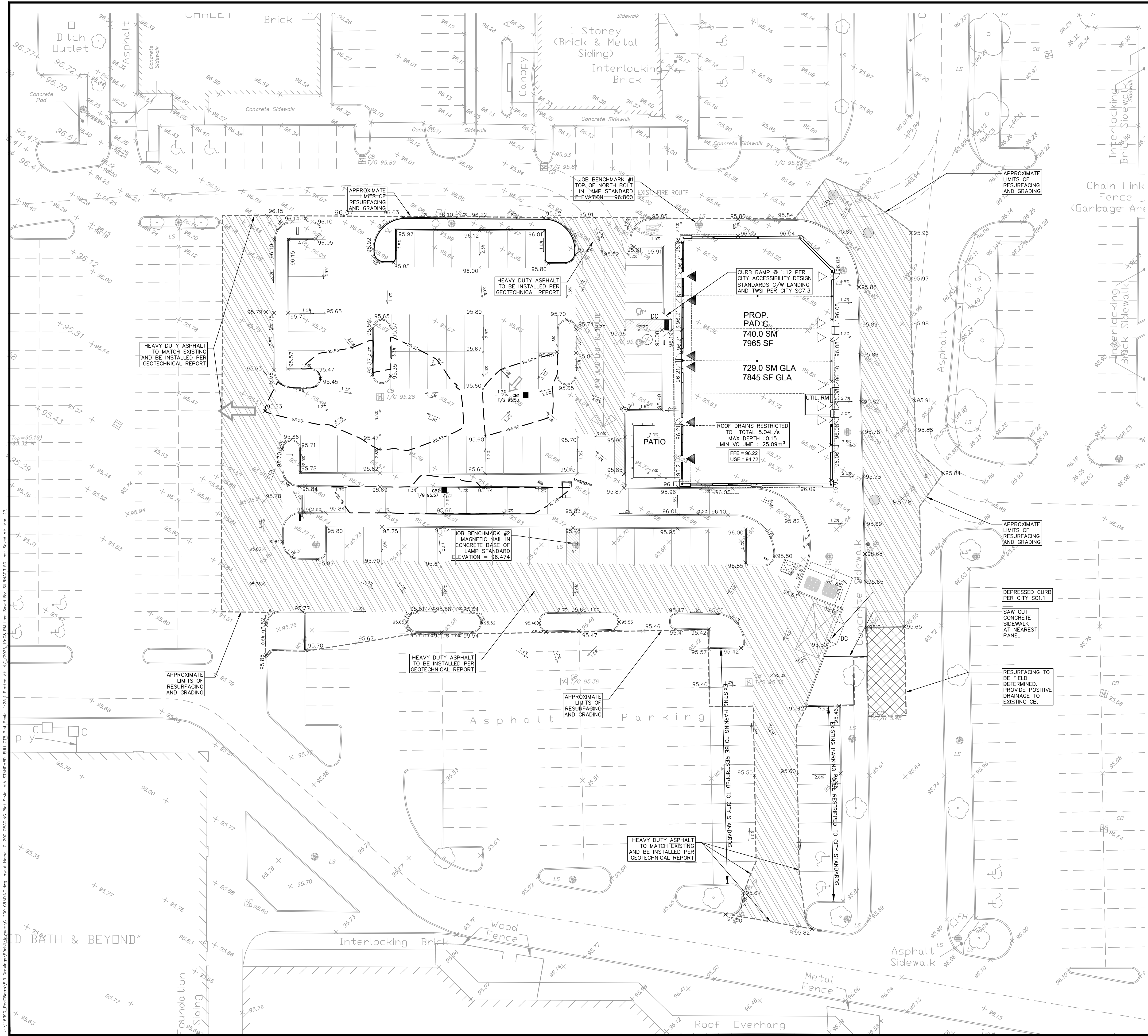
Engineer \_\_\_\_\_ Representative \_\_\_\_\_

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.



CANADA: 5435 North Service Road, Burlington, ON, L7L 5H7 TEL: 905-332-6718 TOLL-FREE: 1-888-208-8927 Website: [www.wattsdrainage.ca](http://www.wattsdrainage.ca)





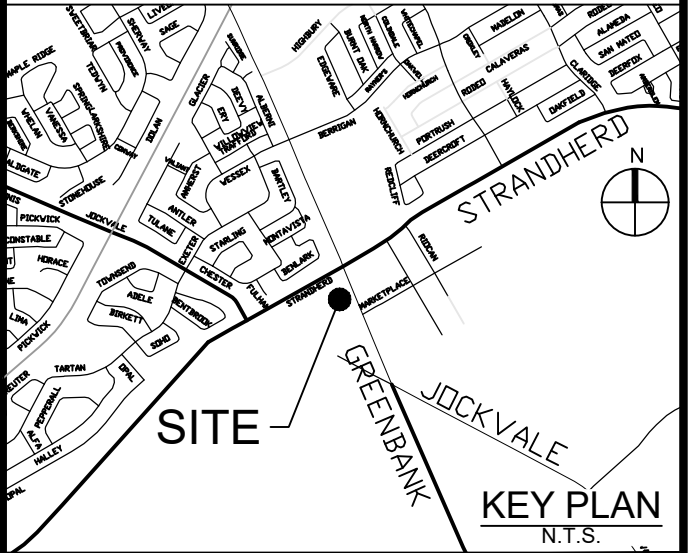
- LEGEND:**
- +87.12 EXISTING GRADES
  - +87.30<sub>+</sub> PROPOSED GRADES
  - 87.301/C<sub>+</sub> PROPOSED TOP OF CURB
  - 97.33 AS-BUILT GRADE
  - EXISTING CURBS
  - PROPOSED CURBS
  - bc DEPRESSED CURB
  - REGULAR PAVEMENT STRUCTURE
  - ▨ HEAVY DUTY PAVEMENT STRUCTURE
  - MAJOR/EMERGENCY OVERLAND FLOW ROUTE
  - SURFACE FLOW DIRECTION
  - △ BUILDING ENTRANCE
  - EXISTING LIGHT POLE
  - ⊕ 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  
 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



No.	REVISIONS	By	Date
14			
13			
12			
11			
10			
9			
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**

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 tel 613 225 1311  
 www.arcadis.com

Project Title  
**PAD C BARHAVEN TOWN CENTRE**

Professional Engineer  
 D. Yannouloupoulos  
 2026/04/02  
 PROVINCE OF ONTARIO

Drawing Title  
**SITE GRADING PLAN**  
**3777 STRANDHERD DRIVE**

Scale  
 1:250

Design  
 R.M. Date  
 APRIL 2018

Drawn  
 E.H. Checked  
 D.G.Y.

Project No.  
 116390 Drawing No.  
 C-200

J:\116390\_PadC\Berm\3.9 Drawings\Plan\3777-Strandherd-Grading-Plan.dwg Plot: 1:250 & Printed At: 4/7/2026 10:08 PM Last Saved By: SURHAD21050 Last Saved At: Mar 27, 2026 11:03:00 AM

D07-12-18-0106



