

### SWCC RICHMOND SPRAY PAD SITE STORM WATER RUNOFF CALCULATIONS:

RATIONAL FORMULA USED FOR OUTFLOW RATE			
Q = kCiA	k	2.78	
Tc = 0 min	C'allowable	0.6	
$i_5 = 1199/(t+8)^{0.828}$	I5	214.3 mm/hr	
	А	0.391 Ha	
	Qallowable	0.058 m³/s	

ALLOWABLE STORMWATER OUTFLOW			
ALLOWABLE RUNOFF COEFFICENT, CALLOWABLE	0.26		
5 YEAR STORM INTENSITY, is	214.3 mm/hr		
Asite	0.391 Ha		
Qallowable peak outflow	0.05998 m³/s		

POST - DEVELOPMENT STORMWATER RUNOFF			
WEIGHTED RUNOFF COEFFICIENT, C (TABLE 1)	0.18		
25 YEAR STORM INTENSITY, i25	154.4 mm/hr		
Asite	0.391 Ha		
Qgenerated 25-year peak flow	0.1514 m³/s		
USING ISOCHRONE METHOD, TOTAL ON-SITE	63.83 m³		
STORAGE REQUIREMENT	03.03 111		

#### TABLE 1: FULL SITE POST-DEVELOPMENT WEIGHTED RUNOFF COEFFICIENT

SURFACE	Area		С	СхА
BUILDING	12.90 m²	0.001 Ha	0.90	0.001
GRASS	3619.50 m²	0.362 Ha	0.15	0.054
GRAVEL	275.60 m²	0.028 Ha	0.50	0.014
PAVED	0.00 m²	0.000 Ha	0.90	0.00
CATCHMENT TOTAL	3908.00 m²	0.391 Ha	0.18	0.069
WEIGHTED R	UNOFF COEFFICENT		0.18	

#### POST-DEVELOPMENT DESIGN FLOW AND ON-SITE STORAGE CONDITIONS

North of Spray Pad			
Aimpervious	0.001 Ha		
Apervious	0.255 Ha		
USING BERNOULLI EQUATION FOR RESTRIC	TED FLOW		
RESTRICTION INVERT	232.05 m		
HWL FOR 25 YEAR PONDING LIMIT	232.50 m		
INPUT HEAD FOR BERNOULLI	0.425 m		
RESTRICTED OUTFLOW THROUGH LDS USING 185mm CONCRETE PIPE FOR ORFICE	0.0412 m³/s		
STORAGE REQUIREMENT BASED ON RESTRICTED ORFICE OUTFLOW	40.2 m³		
North of Spray Pad STORAGE VOLUME	30.2 m³		

DIRECT RUNOFF (DRO)			
LLOWABLE RUNOFF COEFFICENT, C	0.16		
5 YEAR STORM INTENSITY, i25	154.43 mm/hr		
SITE	0.135 Ha		
GENERATED 25-YEAR DIRECT RUNOFF	0.0172 m³/s		

### TABLE 2: DIRECT RUNOFF POST-DEVELOPMENT WEIGHTED RUNOFF COEFFICIENT

SURFACE	Area		С	CxA
BUILDING	0.0 m²	0.000 Ha	0.90	0.000
GRASS	1306.9 m²	0.131 Ha	0.15	0.020
GRAVEL	39.3 m²	0.004 Ha	0.50	0.002
PAVED	0.0 m²	0.000 Ha	0.90	0.000
CATCHMENT TOTAL	1346.2 m²	0.135 Ha	0.16	0.022
WEIGHTED F	RUNOFF COEFFICENT		0.16	

ALLOWABLE 5-YEAR PRE-DEVELOPMENT FLOW	0.0600 m³/s
DIRECT RUNOFF (DRO)	0.0172 m³/s
RESTRICTED OUTFLOW FROM SITE (SUM OF ORIFICE FLOWS)	0.0412 m³/s
TOTAL 25-YEAR POST DEVELOPMENT FLOWS	0.0584 m³/s
REQUIRED STORAGE BASED ON TOTAL RESTRICTED OUTFLOW	65.5 m³
TOTAL AVAILABLE ON-SITE STORAGE	74.1 m³

#### **GENERAL NOTES:**

- 1. ALL WORK AND MATERIALS TO BE IN ACCORDANCE WITH THE LATEST REVISION OF THE CITY OF WINNIPEG STANDARD CONSTRUCTION SPECIFICATIONS UNLESS OTHERWISE SPECIFIED.
- THE INFORMATION SHOWN FOR EXISTING UTILITIES IS THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT GIVEN UTILITIES ARE EXACT. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES DURING CONSTRUCTION. ALL EXISTING UTILITIES MUST BE LOCATED AND VERIFIED PRIOR TO COMMENCEMENT OF WORK. LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFIRM UTILITY LOCATIONS AND NOTIFY THE ENGINEER OF POSSIBLE CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT THE CONTRACTORS EXPENSE.
- 3. ALL ROADWAY DIMENSIONS SHOWN ARE TO BACK OF CURB.
- ADD 200.00 TO ABBREVIATED ELEVATIONS TO OBTAIN GEODETIC ELEVATION.
- ALL SURFACES TO BE MAINTAINED OR RESTORED TO PREVIOUS CONDITION OR BETTER.
- BOULEVARD RESTORATION TO BE SOD UNLESS OTHERWISE NOTED. FOR TREES, SHRUBS, MULCH, GRASS AND SEEDING - REFER TO LANDSCAPE DRAWINGS.
- FOR CURBING, STAIRS, RAMPS, AND WALKS REFER TO LANDSCAPE DRAWINGS. TOPOGRAPHIC SURVEY COMPLETED BY STEVENS SURVEYS. DATED DECEMBER 17<sup>TH</sup>, 2024. FILE NUMBER 24/292 24-292 SITE.DWG.
- 10. THE PROTECTION OF EXISTING SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. REFER TO SPECIFICATION SECTION 02 41 18 - DECONSTRUCTION OF STRUCTURES FOR REQUIREMENTS. ABANDONMENT OF EXISTING SERVICES SHALL ADHERE TO THE CITY OF WINNIPEG STANDARD CONSTRUCTION SPECIFICATIONS.
- 11. ALL EXISTING SURFACE AND UNDERGROUND STRUCTURES WITHIN THE LIMIT OF CONSTRUCTION TO BE LOCATED/CONFIRMED BY CONTRACTOR AND REMOVED, DEMOLISHED, OR ABANDONED AS PER CITY OF WINNIPEG STANDARD CONSTRUCTION SPECIFICATIONS TO ACCOMMODATE NEW

## TRENCHING AND BACKFILLING:

- ALL LDS, WM AND WWS TRENCH BACKFILL TO BE CLASS 2 UNLESS OTHERWISE NOTED..
- BACKFILL WITHIN BOULEVARD AREAS TO BE CLASS 4 BACKFILL.
- ALL BACKFILL MATERIAL TO BE COMPACTED TO 98% STANDARD PROCTOR DENSITY. 4. LDS, WM AND WWS MAY BE CONSTRUCTED BY TRENCHLESS METHODS.

## WATERMAIN:

- 1. WATERMAIN SHALL BE POLYVINYL CHLORIDE (PVC) CLASS 150 PIPE (DR18) MANUFACTURED TO AWWA C-900 WITH GASKET BELL END.
- ALL WATERMAIN SHALL BE INSTALLED TO A MINIMUM DEPTH OF 2.7m TO CROWN OF PIPE.
- WATER SERVICES TO THE BUILDINGS TO BE PLUGGED 1.0m OFF THE FACE OF THE BUILDING.
- WATERMAINS MUST HAVE A MINIMUM VERTICAL CLEARANCE OF 0.3m OVER, AND 0.5m UNDER SEWER AND ALL OTHER UTILITIES WHEN CROSSING. SERVICE CONNECTIONS TO BUILDINGS TO HAVE ALL JOINTS RESTRAINED FROM THE PLUG BACK.
- ALL WATERMAINS SHALL BE BACTERIOLOGICALLY TESTED. ALL CHLORINATED WATER TO BE DISCHARGED AND PRETREATED TO ACCEPTABLE LEVELS PRIOR TO DISCHARGE. ALL DISCHARGED WATER MUST BE CONTROLLED AND TREATED SO AS TO NOT ADVERSELY EFFECT THE

ENVIRONMENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL MUNICIPAL

AND/OR PROVINCIAL REQUIREMENTS ARE FOLLOWED. 7. ACTUAL SERVICE LOCATIONS TO SPRAY PAD TO BE COORDINATED WITH GENERAL CONTRACTOR.

### LAND DRAINAGE AND SANITARY SEWERS:

- ALL WASTEWATER SEWER PIPE SHALL BE PVC SDR-35.
- SERVICES TO THE BUILDINGS SHALL BE COORDINATED WITH GENERAL CONTRACTOR AND ARE TO BE TERMINATED 1.0m FROM THE OUTSIDE FACE OF BUILDING UNLESS OTHERWISE NOTED.
- STORM SEWER SHALL BE CONCRETE C76 CLASS 4 OR PVC.
- 4. LAND DRAINAGE AND WASTEWATER PIPE BEDDING TO BE TYPE B.
- ALL MANHOLE AND CATCHBASIN EXCAVATIONS TO BE BACKFILLED WITH APPROVED GRANULAR MATERIAL COMPACTED TO 98% SPMDD.
- CBS AND CBMHS SHALL HAVE GRATED OPENINGS (AP-006 OR AP-008 AS REQUIRED). MANHOLES SHALL BE AP-005.
- ALL CATCHBASINS AND MANHOLES TO BE PRECAST.
- SEWERS INCLUDING PICTORIAL REPORT, TWO (2) VIDEO TAPES AND COPY IN A FORMAT TO THE
- SATISFACTION OF THE ENGINEER. ALL SEWERS ARE TO BE FLUSHED PRIOR TO CAMERA

THE CONTRACTOR IS TO PROVIDE CCTV CAMERA INSPECTIONS OF ALL SANITARY AND STORM

- 9. ALL CATCH BASINS (CB) TO BE ADS DRAIN BASIN (PART #2818AG) OR APPROVED EQUIVALENT PRODUCT C/W GRATE (PART #1899CGS).
- 10. DRAIN 01 & 02 TO DRAIN EFFLUENT FROM POOL DISCHARGE. EXACT BASINS AND COVERS TO BE SPECIFIED BY PROPONENT DESIGN.

# **METRIC**

WHOLE NUMBERS INDICATE MILLIMETRES

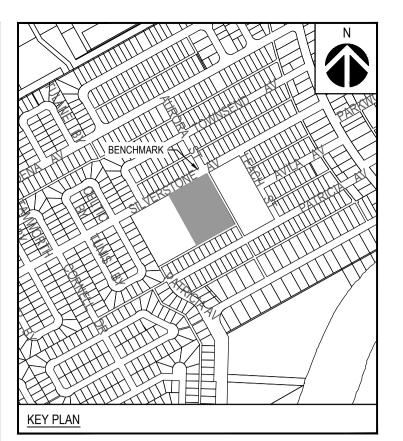


## ISSUED FOR REVIEW

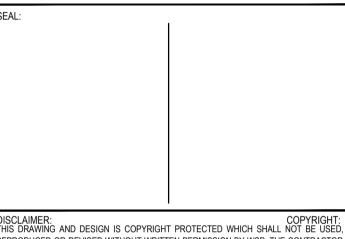
INTERSECTION OF SILVERSTONE AVE & AURORA ST

TEMPORARY BENCHMARK (T.B.M.) ELEVATION = 233.07 2 TOP NUT OF HYDRANT LOCATED AT THE

EXISTING	LEGEND-PLAN	PROPOSED
<u>150 WM</u>	WATER MAIN	150 WM
300 LDS	LAND DRAINAGE SEWER	300 LDS
250 WWS	WASTE WATER SEWER	250 WWS
G	GAS	
РО	POWER OVERHEAD HYDRO	
	CURB AND GUTTER	
	EDGE OF PAVEMENT	
	CULVERT	
	PROPERTY LINE	
	WOODEN FENCE	
	FLOW DIRECTION	
_	SWALE FLOW DIRECTION	
#	SURVEY BAR	
HP	HYDRO POLE	
<b>○</b>	LIGHT POLE	
$\leftarrow$	GUY WIRE	
0	MANHOLE	•
	CATCH BASIN	
$\otimes$	GATE VALVE	8
С	PLUG	С
3	CURB STOP	<b>₹</b>
<b>\$</b>	HYDRANT	
	CATCHMENT BOUNDARY	
	TOPSOIL AND SEED	+ + + +
	CONCRETE	



REVISION: 0 | 2025/08/19 | ISSUED FOR TENDER DATE DESCRIPTION



REPRODUCED OR REVISED WITHOUT WRITTEN PERMISSION BY WSP. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND UTILITY LOCATIONS AND REPORT ALI ERRORS AND OMISSIONS PRIOR TO COMMENCING WORK.

1:300		2025/07/14
DESIGNED BY: ALM		
ASSISTED BY:		IF THIS BAR IS NOT 25mm LONG, ADJUST
DRAWN BY: ALM		YOUR PLOTTING SCALE
MODIFIED BY:		
APPROVED BY:		2511111
DISCIPLINE:	CIVIL	

WSP Canada Inc.

1600 Buffalo Place, Winnipeg, Manitoba R3T 6B8

T 204-477-6650 | www.wsp.com

PROJECT NUMBER: CA0051966.1097



CLIENT REF. #: --

SWCC RICHMOND SPRAY PAD

SITE SERVICING AND STORMWATER MANAGEMENT

DRAWING NUMBER:

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