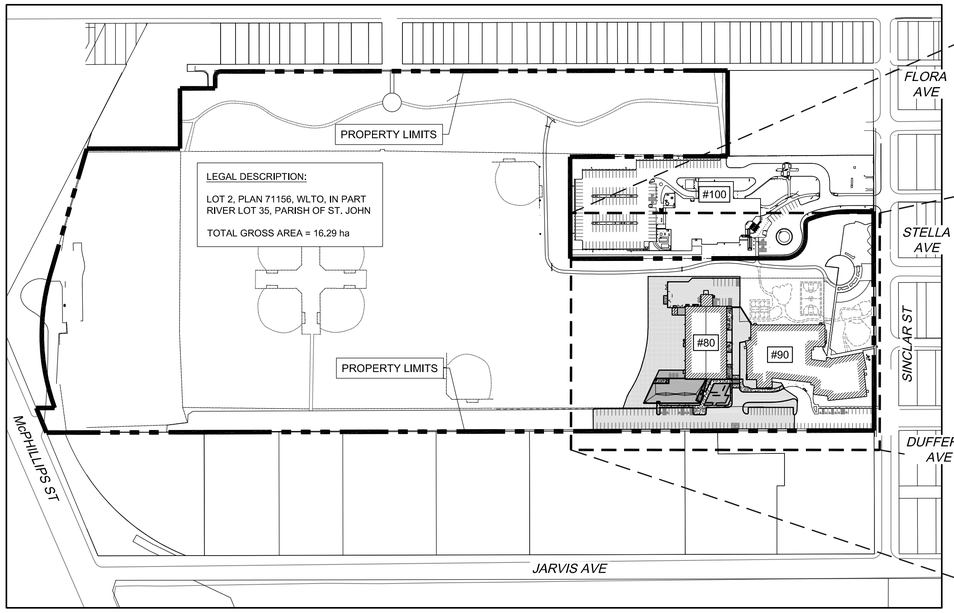
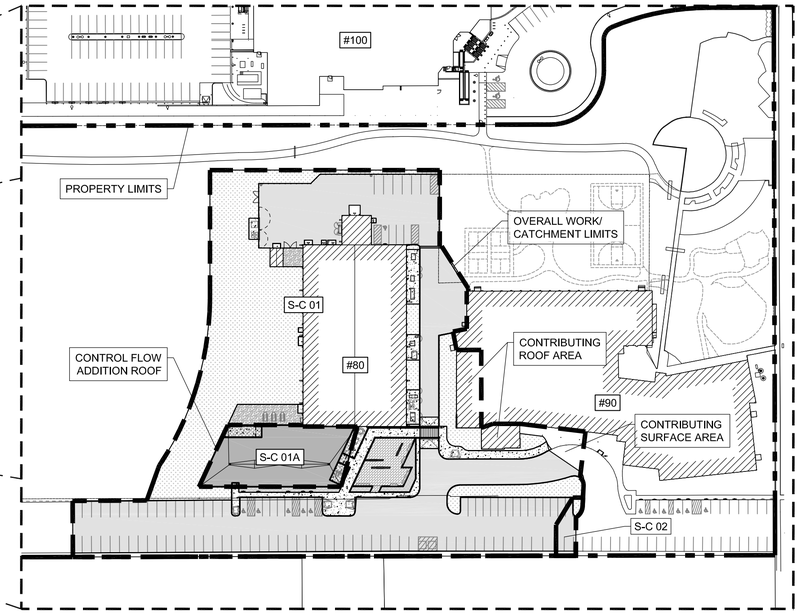
ADDRESS: 80 SINCLAIR STREET PROJECT No: 2020-136 SHEET TITLE: STORMWATER MANAGEMENT PLAN DATE: 2025.01.06 FILE NAME: 2020-136-C1.2.dwg



SITE LOCATION PLAN
SCALE: 1:2500



SUB-CATCHMENT AREA PLAN
SCALE: 1:1000

WASTEWATER FLOW ESTIMATION (BASED ON CITY OF WINNIPEG GUIDELINES)

NON-RESIDENTIAL WASTEWATER GENERATION - OCCUPANCY LOAD

PRE-DEVELOPMENT:
NUMBER OF PEOPLE IN DAY CAMP = 250 (PROVIDED BY ARCH.)
DAILY WASTEWATER GENERATION: 42 L/capita/day (METCALF AND EDDY, INC., 2014)

NUMBER OF PEOPLE IN OFFICE = 50 (PROVIDED BY ARCH.)
DAILY WASTEWATER GENERATION: 38 L/capita/day (METCALF AND EDDY, INC., 2014)

AVERAGE DRY WEATHER FLOW (ADWF) = 12400 L/day = 0.14 L/s

HARMON'S PEAKING FACTOR = 4.08

PEAK DRY WEATHER FLOW (PDWF) = 50573 L/day = 0.59 L/s

EXTRANEOUS FLOWS
GROUNDWATER INFILTRATION = 2200 L/ha/day * 1.328 ha = 2922 L/day = 0.03 L/s

MANHOLE INFILTRATION = 12 L/min/MH * 2 MH = 24 L/min = 0.40 L/s

WEEPING TILE FLOW = 4.55 L/min/service connection * 0 = 0 L/min = 0 L/s

PEAK WET WEATHER FLOW (PWWF) = 1.02 L/s

POST-DEVELOPMENT:
NUMBER OF PEOPLE IN DAY CAMP = 250 (PROVIDED BY ARCH.)
DAILY WASTEWATER GENERATION: 42 L/capita/day (METCALF AND EDDY, INC., 2014)

NUMBER OF PEOPLE IN OFFICE & WAREHOUSE = 110 (PROVIDED BY ARCH.)
DAILY WASTEWATER GENERATION: 38 L/capita/day (METCALF AND EDDY, INC., 2014)

AVERAGE DRY WEATHER FLOW (ADWF) = 14680 L/day = 0.17 L/s

HARMON'S PEAKING FACTOR = 4.04

PEAK DRY WEATHER FLOW (PDWF) = 59358 L/day = 0.69 L/s

EXTRANEOUS FLOWS
GROUNDWATER INFILTRATION = 2200 L/ha/day * 1.328 ha = 2922 L/day = 0.03 L/s

MANHOLE INFILTRATION = 12 L/min/MH * 3 MH = 36 L/min = 0.60 L/s

WEEPING TILE FLOW = 4.55 L/min/service connection * 0 = 0 L/min = 0 L/s

PEAK WET WEATHER FLOW (PWWF) = 1.32 L/s

STORMWATER MANAGEMENT CRITERIA

PRE-DEVELOPMENT:
SITE AREA = 1.328 ha
$C_{ALLOWABLE}$ = 0.20 (ASSIGNED BY CITY OF WINNIPEG)
i_{5Y} = 109.5 mm/hr, i_{25Y} = 154.3 mm/hr, T_C = 10 min.
$Q_{5Y\ ALLOWABLE}$ = 0.0808 m³/s (BASED ON RATIONAL METHOD)

POST-DEVELOPMENT
SITE AREA = 1.328 ha
$C_{POST\text{-}DEV.}$ = 0.68 (WEIGHTED RUNOFF COEFFICIENT)
$C_{ALLOWABLE}$ = 0.20 (ASSIGNED BY CITY OF WINNIPEG)
i_{5Y} = 109.5 mm/hr, i_{25Y} = 154.3 mm/hr, T_C = 10 min.
$Q_{5Y\ ALLOWABLE}$ = 0.0808 m³/s (BASED ON RATIONAL METHOD)

SUB-CATCHMENT 01 - COMBINED SURFACE AND ROOF RUNOFF TO INTERNAL LDS
AREA = 1.317 ha (3760 m² PERVIOUS / 9407 m² IMPERVIOUS)
$C_{WEIGHTED}$ = 0.68
Q_{25Y} = 0.3841 m³/s (BASED ON RATIONAL METHOD)
$Q_{RESTRICTED}$ = 0.0721 m³/s (135 mm DIA. ICD AT CBMH01)

SUB-CATCHMENT 01A - BUILDING ADDITION ROOF RUNOFF TO INTERNAL LDS
AREA = 0.089 ha (0 m² PERVIOUS / 886 m² IMPERVIOUS)
$C_{WEIGHTED}$ = 0.90
Q_{25Y} = 0.0342 m³/s (BASED ON RATIONAL METHOD)
$Q_{RESTRICTED}$ = 0.0039 m³/s (ROOF CONTROL, PROVIDED BY MECH.)

SUB-CATCHMENT 02 - SURFACE RUNOFF TO SITE
AREA = 0.011 ha (18 m² PERVIOUS / 92 m² IMPERVIOUS)
$C_{WEIGHTED}$ = 0.78
Q_{25Y} = 0.0037 m³/s (BASED ON RATIONAL METHOD)
$Q_{UN\text{-}RESTRICTED}$ = 0.0037 m³/s

TOTAL RUNOFF FOR ENTIRE SITE
$Q_{25Y\ TOTAL}$ = 0.0721 m³/s + 0.0037 m³/s = 0.0758 m³/s ≤ $Q_{5Y\ ALLOWABLE}$ = 0.0808 m³/s

PONDING STORAGE SUMMARY TABLE

LOCATION	PONDING AREA (m²)	PONDING DEPTH (m)	REQUIRED VOLUME (m³)	AVAILABLE VOLUME (m³)
ROOF				
ADDITION ROOF	580 [1]	0.10 [1]	32 [2]	32 [1][3]
SUB-TOTAL			32	32
SURFACE				
CBMH01	131	0.15		8 [6]
CBMH02	86	0.10		3 [6]
CBMH03	75	0.10		2 [6]
CBMH04	1500	0.50		250 [6]
CB01	127	0.15	394 [5]	8 [6]
CB02	797	0.30		100 [6]
CB03	583	0.30		73 [6]
CB04	623	0.30		62 [6]
SUB-TOTAL			394	506
COMBINED TOTAL			426 [4]	538

[1] PROVIDED BY MECHANICAL

[2] BASED ON ISOCHRONE USING Q_{ROOF} = 0.0039 m³/s AND A_{ROOF} = 0.089 ha

[3] SPILL-OUT AT OVERFLOW SCUPPERS INTO SUB-CATCHMENT 01 (COMMON DOWNSTREAM RESTRICTOR AT CBMH01)

[4] BASED ON ISOCHRONE USING Q_{CBMH01} = 0.0721 m³/s AND $A_{COMBINED\ RESTRICTED}$ = 1.317 ha

[5] REQUIRED COMBINED TOTAL STORAGE - AVAILABLE ROOF STORAGE

[6] SPILL-OUT ELEV. = 232.20m AT WEST WORK LIMITS, MAX. DEPTH OF PONDING IN PAVED AREAS = 0.30m

COMBINED SEWER FLOWS

PRE-DEVELOPMENT:
Q_{WWS} + Q_{LDS} = 1.02 L/s + 80.8 L/s = 81.8 L/s

POST-DEVELOPMENT
Q_{WWS} + Q_{LDS} = 1.32 L/s + 75.8 L/s = 77.1 L/s ≤ $Q_{PRE\text{-}DEVELOPMENT}$ = 81.8 L/s

SURVEY INFORMATION AS SHOWN PROVIDED BY PHILLIPS & STEVENS AND DATED OCTOBER 2021 AND JANUARY 2024.

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMALIZED NUMBERS INDICATE METRES

NOTES:

THESE DRAWINGS SHALL NOT BE SCALED.

THE CONTRACTOR SHALL VISIT THE SITE AND SATISFY ONESELF ALL DIMENSIONS, DATUM, AND DETAILED INFORMATION SHOWN ARE CORRECT.

EXISTING	LEGEND	PROPOSED
150 WM	WATERMAIN	150 WM
250 WWS	WASTEWATER	150 WWS
300 LDS	LAND DRAINAGE SEWER	300 LDS
	HYDRANT ASSEMBLY	
	GATE VALVE	
	CURB STOP	
	MANHOLE	
	CATCH BASIN	
	SURVEY BAR	
	SIGN	
	UTILITY POLE	
	UTILITY PEDESTAL	
	HYDRO	
	GAS	
	COMMUNICATIONS	
	CULVERT	
	SWALE	
	DIRECTION OF FLOW	
#235.38	SURVEY ELEVATION	
235.38	GROUND ELEVATION	235.38
235.400	PAVEMENT ELEVATION	235.400
235.38	DITCH / SWALE ELEVATION	235.38

No.	REVISION/DESCRIPTION	BY	DATE
3	ISSUED FOR CONSTRUCTION	JLT	25.01.06
2	REVISED PER CITY COMMENTS	JLT	24.12.10
1	ISSUED FOR DEVELOPMENT PERMIT	JLT	24.10.30

SEAL

ENGINEERS GEOSCIENTISTS MANITOBA
Certificate of Authorization
Sison Blackburn Consulting Inc.
No. 5581

PROVINCE OF MANITOBA — J.L. TAPLIN — Member 36757 — 25/01/06 — REGISTERED PROFESSIONAL ENGINEER

DRAWN	CHECKED	DESIGNED	APPROVED
JLT	RC	RC/JLT	-

DATE 2025.01.06 | USER APPROVAL -

Winnipeg

THE CITY OF WINNIPEG
ASSETS and PROJECT MANAGEMENT DEPARTMENT
MUNICIPAL ACCOMMODATIONS DIVISION

PROJECT 3-65 GARRY STREET, R3C 4K4

REDEVELOPMENT OF THE OLD EXHIBITION ARENA ISSUED FOR CONSTRUCTION

80 SINCLAIR STREET

SHEET TITLE

STORMWATER MANAGEMENT PLAN

SCALE	PROJECT No:	SHEET No:
AS SHOWN	2020-136	C1.2

DRAWING SHEET SIZE: A1 (841mm x 594mm) PLOT 1:1