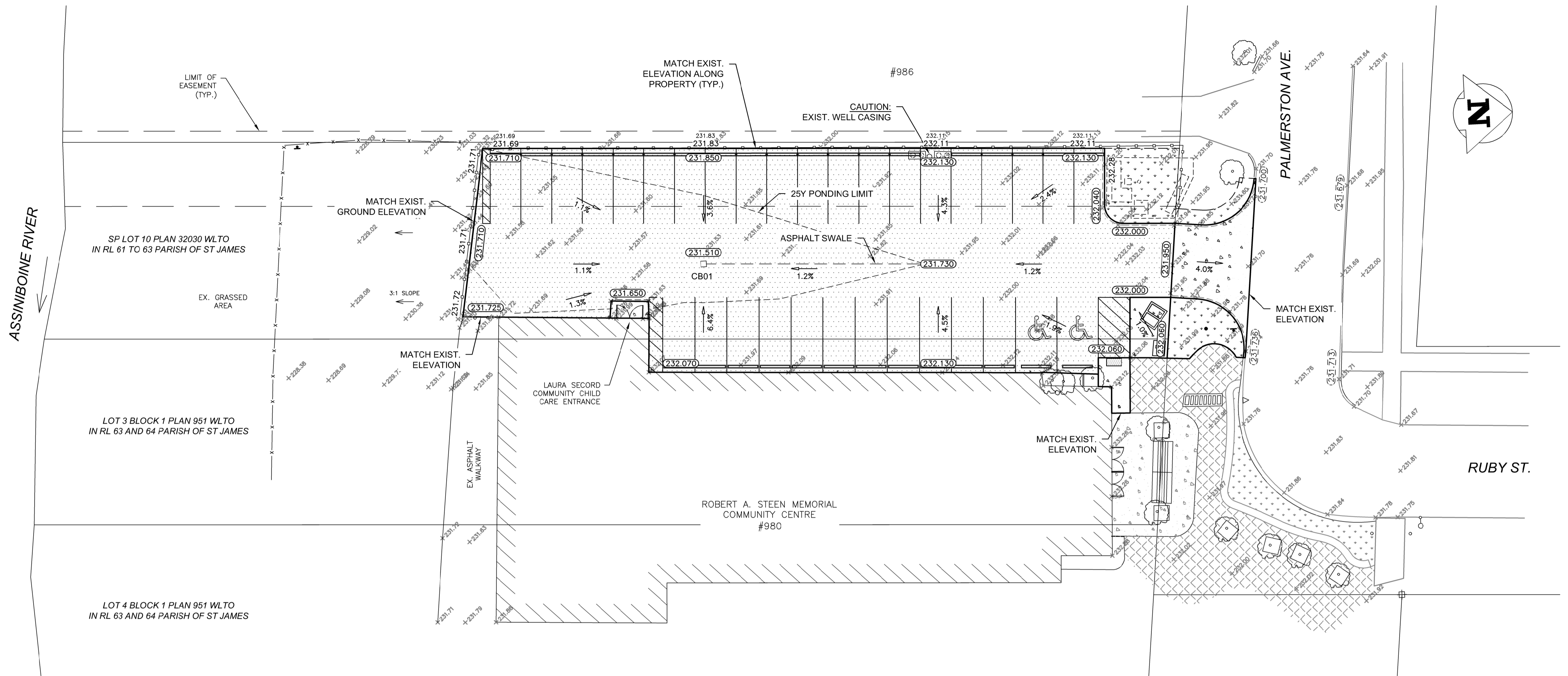


KEY PLAN
N.T.S.



ISOCHRONE METHOD based on calculating impervious runoff based on filling depression storage and pervious runoff based on Horton infiltration equation

PROJECT: R.A. STEEN C.C.
LOCATION: 980 PALMERSTON
DATE: AUG. 11/15

i) impervious area; surface storage capacity		0.10	Total Impervious Area	0.37 acres
Horton Equation			Total Pervious Area	0.00 acres
			Total Area	0.365 acres
			Allowable runoff	0.78 cfs
			Required Site Storage (ft ³)	924 ft ³
			Required Site Storage (m ³)	26 m ³

Allowable offsite runoff (5yr storm)	
Q = cIA	0.785 cfs
Enter "C" Value =	0.500
Enter from 5 year storm	
"I" =	4.300
A =	0.365 In Acres

City of Wpg 25 yr storm				Pervious Flow Calculation				total per. + imp. flow	allowable discharge offsite	net runoff requiring storage	mass sum of storage
Time (min)	25 yr discretized storm (in/hr)	rainfall depth (in)	sum of rainfall depths (in)	impervious runoff (cfs)	net intensity after infiltration (in/hr)	pervious runoff (cfs)	total per. + imp. flow (cfs)				
0	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0
5	0.12	0.01	0.01	0.00	2.16	0.00	0.00	0.00	0.00	0.00	0
10	0.13	0.01	0.02	0.00	1.56	0.00	0.00	0.00	0.00	0.00	0
15	0.15	0.01	0.03	0.00	1.14	0.00	0.00	0.00	0.00	0.00	0
20	0.17	0.01	0.05	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0
25	0.19	0.02	0.06	0.00	0.63	0.00	0.00	0.00	0.00	0.00	0
30	0.21	0.02	0.08	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0
35	0.23	0.02	0.10	0.00	0.38	0.00	0.00	0.00	0.00	0.00	0
40	0.26	0.02	0.12	0.09	0.30	0.00	0.00	0.09	0.09	0.00	0
45	0.29	0.02	0.15	0.11	0.25	0.04	0.00	0.11	0.11	0.00	0
50	0.33	0.03	0.17	0.12	0.21	0.12	0.00	0.12	0.12	0.00	0
55	0.42	0.04	0.21	0.15	0.18	0.24	0.00	0.15	0.15	0.00	0
60	0.53	0.04	0.25	0.19	0.16	0.37	0.00	0.19	0.19	0.00	0
65	0.76	0.06	0.32	0.28	0.15	0.61	0.00	0.28	0.28	0.00	0
70	1.24	0.10	0.42	0.45	0.14	1.10	0.00	0.45	0.45	0.00	0
75	2.96	0.25	0.67	1.08	0.13	2.83	0.00	1.08	0.78	0.30	89
80	7.86	0.66	1.32	2.87	0.13	7.73	0.00	2.87	0.78	2.08	714
85	3.93	0.33	1.65	1.43	0.13	3.80	0.00	1.43	0.78	0.65	909
90	2.29	0.19	1.84	0.84	0.12	2.17	0.00	0.84	0.78	0.05	924
95	1.54	0.13	1.97	0.56	0.12	1.42	0.00	0.56	0.56	0.00	924
100	1.17	0.10	2.07	0.43	0.12	1.05	0.00	0.43	0.43	0.00	924

STORMWATER MANAGEMENT CRITERIA

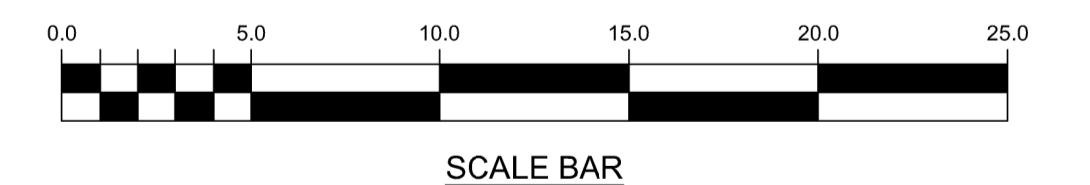
T_c = 10 min.
C_{ALLOWABLE} = 0.50 (ASSIGNED BY CITY OF WINNIPEG)
Q_{BY ALLOWABLE} = 0.02 m³/s
Q_{RESTRICTED} = 0.02 m³/s (USING 100 DIA. FLOW RESTRICTOR INSTALLED AT INLET OF 250 LDS AT CB01, OR APPROVED EQUIVALENT INLET CONTROL DEVICE)

REQUIRED TOTAL ON-SITE STORAGE = 26 m³ (USING ISOCHRONE METHOD)
AVAILABLE TOTAL ON-SITE STORAGE = 28 m³ (FOR MAX DEPTH OF PONDING = 0.20m)

GENERAL CONSTRUCTION NOTES:

- ALL CONSTRUCTION AND MATERIALS INCORPORATED IN THE WORK SHALL CONFORM TO THE LATEST EDITION OF THE CITY OF WINNIPEG "STANDARD CONSTRUCTION SPECIFICATIONS", UNLESS NOTED OTHERWISE.
- LOCATIONS OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE, BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE, EXACT LOCATION AND DEPTH OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.
- LOCATIONS OF PROPERTY LIMITS AND EXISTING AND/OR PROPOSED FEATURES RELATIVE TO THESE LIMITS AS SHOWN DO NOT REPRESENT A LEGAL SURVEY. SBC INC. MAKES NO REPRESENTATION OR GUARANTEE THAT THE PROPERTY LIMIT INFORMATION SHOWN IS ACCURATE, AND ACCEPTS NO RESPONSIBILITY FOR ANY DAMAGES SUFFERED BY ANY THIRD PARTY AS A RESULT OF DECISIONS OR ACTIONS BASED ON THIS DRAWING.
- ALL SURFACES AND ANY EXISTING UTILITIES DAMAGED OR DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO ITS ORIGINAL CONDITION OR BETTER, OR REPLACED, AT THE CONTRACTOR'S EXPENSE.

METRIC
WHOLE NUMBERS INDICATE MILLIMETRES
DECIMAL NUMBERS INDICATE METRES



EXISTING	LEGEND	PROPOSED	EXISTING	LEGEND	PROPOSED	EXISTING	LEGEND	PROPOSED
150 WM	WATERMAIN	150 WM	⊕	SURVEY BAR	235.380	GROUND ELEVATION	235.38	LOCATION APPROVED
250 WWS	WASTEWATER	150 WWS	⊕	SIGN	235.38	DITCH ELEVATION	235.38	UNDERGROUND STRUCTURES
300 LDS	LAND DRAINAGE SEWER	300 LDS	⊕	UTILITY POLE	235.400	ROAD ELEVATION	235.400	
⊕	HYDRANT ASSEMBLY	⊕	⊕	UTILITY PEDESTAL		BARRIER CURB		
⊕	GATE VALVE	⊕	⊕	HYDRO		MOUNTABLE CURB		
⊕	CURB STOP	⊕	⊕	GAS		CONCRETE		
⊕	REDUCER	⊕	⊕	MTS		ASPHALT		
⊕	MANHOLE	⊕	⊕	TREE LINE		PAVING STONE		
⊕	CATCH BASIN	⊕	⊕	CULVERT		GRASS		
⊕	TESTHOLE	⊕	⊕	SWALE				
⊕	PROBEHOLE	⊕	⊕	DIRECTION OF FLOW				

LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

C.W.B.M. 37-060	232.259m
S.E. COR. PALMERSTON AVE. & AUBREY ST., TBLT. IN W.	
CONC. WALL OF PUMPING STATION ON E. SIDE OF PROPERTY,	
10.4m S. OF N.W. COR. OF PUMPING STATION & 1.5m BELOW	
TOP OF CONC. WALL.	

SBC
Sison Blackburn Consulting Inc.
www.SBCinc.ca

DESIGNED BY	JLT	CHECKED BY	RC
DRAWN BY	JLT	APPROVED BY	RC
HOR. SCALE:	1:200	RELEASED FOR CONSTRUCTION	
VERT. SCALE:		DATE	

CONSULTANT DRAWING NO.
15112-C03

THE CITY OF WINNIPEG
Winnipeg

**R.A. STEEN MEMORIAL C.C.
PARKING LOT REDEVELOPMENT PROJECT**

GRADING PLAN

SHEET 3 OF 3
CITY DRAWING NO.
280-2017