



APPENDIX Stormwater Study

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Number	Diameter	Inlet Elevation (m)	Outlet Elevation (m)	Flow Direction	RR	Approx Location
1	500	734.76	734.26	West	231	South of Hwy 628
2	400	735.11	734.87	South	231	Driveway N of Hwy 628
3	400	736.44	736.18	South	231	Driveway N of Culvert 2
4	500	743.11	742.74	South	231	Driveway S of Deer Mountain Trail
5	UNK	UNK	UNK	South	231	E side of RR231 at Deer Mountain Trail
6	400	746.3	746.13	South	231	W side of RR231 at Deer Mountain Trail
7	UNK	UNK	UNK	South	231	E side of RR231 at 2nd Driveway N of Deer Mountain Trail
8	400	753.22	752.88	South	231	E side of RR231 at 3rd Driveway N of Deer Mountain Trail
9	400	753.59	753.13	South	231	W side of RR231 at 3rd Driveway N of Deer Mountain Trail
10	400	748.72	748.64	North	231	W side of RR231 at Victory baptist church
11	400	747.61	747.59	North	231	South of N Windsor Estates
12	UNK	UNK	UNK	North	231	At unnamed entre S of Meadow Hawk
13	400	746.54	746.3	North	231	South of Meadow Hawk
14	UNK	UNK	UNK	North	231	W side of RR 231 at Meadow Hawk
15	600	742.87	742.62	North	231	E side of RR 231 at Meadow Hawk
16	400	742.62	742.53	North	231	North of Meadow Hawk
17	UNK	UNK	UNK	North	231	At unnamed entre N of Meadow Hawk
18	500	742.2	740.73	South	231	W side of RR231 at N Executive Estates
19	400	741.76	741.76	South	231	E side N of N Executive Estates
20	400	743.77	743.5	North	231	N of Strathcona Christian Academy Elementary S Entrance
21	400	742.95	742.75	North	231	Strathcona Christian Academy Elementary N Entrance
22	400	742.51	742.22	North	231	N of Strathcona Christian Academy Elementary N Entrance
23	600	734.96	734.54	South	232	Across Hwy 628
24	600	734.53	734.37	South	232	Across Hwy 628
25	600	736.81	736.06	South	232	W side of RR 232 at S Winfield Heights
26	400	741.32	741.12	South	232	N of S Winfield Heights
27	600	745.12	744.84	South	232	W side of RR 232 at N Winfield Heights
28	400	747.77	747.65	South	232	Driveway N of N Winfield Heights
29	500	748.76	748.7	South	232	E side of RR 232 at S Scot Haven / S Graham Heights
30	600	748.62	748.6	South	232	W side of RR 232 at S Scot Haven / S Graham Heights
31	500	746.29	745.96	North	232	E side of RR 232 at N Scot Haven / N Graham Heights
32	500	745.95	745.76	North	232	W side of RR 232 at N Scot Haven / N Graham Heights
33	600	745.9	745.84	East	232	Crosses RR 232 N of N Scot Haven / N Graham Heights
34	400	745.68	745.66	North	232	Driveway N of N Scot Haven / N Graham Heights
35	400	745.26	745.24	South	232	S of W Whitecroft
36	400	744.87	744.74	North	232	W side of RR 232 at SW Whitecroft
37	500	744.65	744.6	North	232	N of SW Whitecroft
38	500	744.15	743.63	North	232	E side of RR 232 at SE Whitecroft
39	400	741.83	741.66	North	232	E side N of SE Whitecroft
40	400	740.39	740.39	North	232	Driveway north of SE Whitecroft
41	600	740.16	740.02	East	232	Crosses RR 232 N of SE Whitecroft
42	400	741.17	741.15	South	232	W side N of SE Whitecroft
43	500	740.66	740.45	North	232	W side of RR 232 at NW Whitecroft
44	900	739.86	739.84	East	232	Crosses RR 232 N of NW Whitecroft
45	400	739.94	739.89	South	232	E side of RR 232 at NE Whitecroft
46	400	740.62	740.62	South	232	S Entrance to Salisbury Green House
47	300	UNK	742.65	South	232	Driveway on W side across from N Salisbury Entrance
48	300	742.73	742.56	South	232	N entrance to Salisbury Green House
49	300	742.42	742.26	North	232	W side of RR 232 at Glenwood Memorial Gardens Entrance
50	600	742.33	741.85	North	232	E side of RR 232 at Estate Dr
51	600	737.12	735.73	East	232	Crosses RR 232 N of Estate Dr
52	300	737.81	737.76	South	232	W side of RR 232 S of Wye Road
53	600	737.4	737.34	South	232	E side of RR 232 S of Wye Road
54	600	735.1	735.03	East	232	Crosses RR 232 at Wye Road
55	400	735.5	735.47	South	232	In Turning Island at RR 232 and Wye Road intersection

Table B1: Catchment Data (for catchments modelled using the Horton infiltration method)

Future Type	Outlet	Catchment Number	Area (ha)	% Impervious	Future % Impervious	Length (m)	Width (m)	Slope
Rural	1	32	0.4092	32	35	18	227	0.02
Rural	1	33	0.8006	24	28	18	445	0.02
Rural	1	34	0.4625	25	28	18	257	0.02
Rural	1	35	0.4444	24	28	18	247	0.02
Adj	1	40	2.4104	5	5	69	349	0.05
Rural	2	36	0.4072	33	31	15	271	0.02
Rural	2	37	0.8005	26	35	18	445	0.02
Rural	2	38	0.4522	26	46	18	251	0.02
Rural	2	39	0.3382	36	68	11	307	0.02
Adj	2	41	3.5902	8	8	250	144	0.05
Adj	2	42	0.4284	0	0	18	238	0.05
Urban	4	5	0.5	28	50	18	278	0.02
Adj	4	9	0.2378	5	5		12	0.10
Urban	4	10	0.0888	23	32	17	52	0.02
Urban	4	11	0.1481	22	47	18	82	0.02
Rural	4	12	0.3934	32	39	31	127	0.02
Rural	4	13	0.2763	35	54	18	154	0.02
Urban	5	2	0.3531	29	52	17	205	0.02
Adj	5	7	1.0803	0	11		166	0.10
Urban	6	3	0.3305	44	76	17	192	0.02
Urban	6	6	0.3411	48	72	18	190	0.02
Rural	7	45	0.7012	35	39	14	512	0.02
Rural	7	46	0.8455	27	48	17	497	0.02
Adj	7	49	6.5304	11	11	240	272	0.05
Rural	8	47	0.6378	34	37	17	387	0.02
Rural	8	48	0.8643	31	36	17	521	0.02
Rural	9	14	1.5674	27	40	19	825	0.02
Rural	9	15	1.4697	20	18	41	358	0.02
Rural	9	16	1.2058	26	23	27	447	0.02
Urban	10	17	0.5855	29	43	15	404	0.02
Adj	10	29	1.8064	0	1	30	602	0.05
Rural	11	19	1.1304	26	29	17	665	0.02
Rural	11	20	0.7483	29	24	18	416	0.02
Rural	11	21	0.8150	26	26	19	429	0.02
Urban	11	22	0.9342	17	49	24.4	383	0.02
Adj	11	24	0.8148	6	6	11	741	0.02
Adj	11	25	9.3629	25	25	250	375	0.04
Adj	11	26	1.8576	0	0	45	413	0.03
Adj	11	31	3.1528	6	6	145	217	0.04
Urban	12	18	0.6868	55	66	19	371	0.02
Adj	12	28	2.1441	43	46	380	56	0.02
Urban	13	23	0.8226	43	79	20.3	405	0.02
Adj	13	27	0.4227	2	16	30	141	0.09

Adj- Catchment area adjacent to roadway

Table B2: Catchment Data (for catchments modelled using the SCS Curve Number method)

Outlet	Area	Area (ha)	% Impervious	Future % Impervious	Pervious CN	Impervious CN	Hathaway Tc (min)
3	609977	60.998	6.1%	6.1%	59	98	63
3	339364	33.936	9.2%	9.2%	59	98	52
3	354584	35.458	5.5%	5.5%	59	98	41
3	169142	16.914	5.7%	5.7%	59	98	40
3	105156	10.516	3.2%	4.0%	59	98	36
3	77713	7.771	6.2%	6.2%	59	98	25
3	28915	2.892	10.0%	12.8%	60	98	25
3	57859	5.786	8.4%	8.4%	60	98	25
3	93565	9.357	4.8%	4.8%	62	98	29
3	133637	13.364	6.3%	7.1%	60	98	29
2	514814	51.481	6%	6%	59	98	47
1	187381	18.738	6%	6%	59	98	38
8	130202	13.020	6%	6%	59	98	25
8	137452	13.745	2%	2%	59	98	27

Table B3: Horton Infiltration Parameters

Parameter	Value
Depression Storage	
Impervious	3.2 mm
Pervious	6.4 mm
Manning's n	
Impervious	0.016
Pervious	0.24
Infiltration	
% Zero Detention	0
Maximum Infiltration Rate	75 mm/hr
Minimum Infiltration Rate	2.5 mm/hr
Decay rate of infiltration	0.00115 /s



PROJECT: Wye Widening 2019 - Estate to CBR Mod
JOB No.: 1187
DATE: December 17, 2018
COMPUTED BY: Brad Crossland
CHECKED BY:

Storm Sewer System Design

		Area						Rainfall							Pipe						
From MH	To MH	Hard Area (ha) C=0.55	Soft Area (ha) C=0.10	Total Area (ha)	C Composite	CA	Total CA	Inlet Time (min)	Time in Pipe (min)	Total Time (min)	Int. (mm/hr)	Uncontrolled Flow (m³/s)	Controlled Flow (m³/s)	Design Flow (m³/s)	Length (m)	Size (mm)	Slope (%)	Capacity (m³/s)	Capacity Used (%)	Full Velocity (m/s)	
Inlet	CBMH1	0.230	0.500	0.730	0.37	0.27	0.269	10.00	0.16	10.16	67.70	0.050		0.050	9.0	300	0.50	0.069	74%	0.97	
CBMH1	CBMH2	0.001	0.000	0.731	0.87	0.00	0.269	10.16	0.35	10.51	67.12	0.050		0.050	20.5	300	0.50	0.069	73%	0.97	
CBMH2	MH2A	0.253	0.055	1.039	0.80	0.25	0.515	10.51	0.45	10.96	65.82	0.094	0.094	23.6	375	0.30	0.096	98%	0.87		
MH2A	CBMH3	0.000	0.000	1.039	0.10	0.00	0.515	10.96	0.30	11.26	64.26	0.092	0.092	17.6	450	0.30	0.155	59%	0.98		
CBMH3	CBMH4	0.136	0.048	1.223	0.73	0.13	0.649	10.96	0.89	11.85	64.26	0.116	0.116	84.4	450	0.78	0.252	46%	1.58		
CBMH4	MH5	0.216	0.208	1.647	0.53	0.23	0.741	11.85	2.39	14.23	61.44	0.127	0.127	147.0	450	0.33	0.164	77%	1.03		
MH5	MH6	0.065	0.079	1.791	0.48	0.07	0.811	14.23	2.21	16.43	55.21	0.124	0.124	144.0	525	0.30	0.236	53%	1.09		
MH6	EX Q218	0.400	0.324	2.515	0.57	0.41	1.223	16.43	1.30	17.73	50.68	0.172	0.172	113.6	525	0.54	0.316	54%	1.46		
MH8	MH7	0.084	0.090	0.174	0.62	0.11	0.108	10.00	2.07	12.07	67.70	0.020		0.020	120.0	300	0.50	0.069	30%	0.97	
MH7	EX Q218	0.209	0.217	0.600	0.52	0.22	0.328	12.07	0.52	12.59	60.79	0.055		0.055	36.0	300	0.72	0.082	67%	1.16	
EX Q218	EX Q144	0.000	0.000	3.115	0.53	0.00	1.551	17.73	0.37	18.10	48.42		0.077	0.286	24.2	600	0.25	0.307	93%	1.09	
EX Q144	EX Q134	0.000	0.000	3.115	0.53	0.00	1.551	18.10	1.09	19.20	47.82	0.205	0.315	0.521	73.9	750	0.20	0.498	105%	1.13	
CBMH9	MH10	0.215	0.219	0.434	0.52	0.23	0.226	10.00	0.71	10.71	67.70	0.043		0.043	59.7	525	0.50	0.304	14%	1.40	
MH10	MH11	0.258	0.247	0.939	0.53	0.27	0.486	10.71	1.72	12.43	65.12	0.090	0.090	129.9	525	0.40	0.272	33%	1.26		
CBMH11-2	MH11	0.000	0.268	0.268	0.10	0.03	0.027	10.00	0.33	10.33	67.70	0.005		0.005	17.5	350	0.35	0.086	6%	0.90	
MH11	EX Q80	0.355	0.071	1.633	0.81	0.34	0.867	10.00	0.34	10.34	67.70	0.163		0.163	33.8	525	0.68	0.355	46%	1.64	
Q80	NOTT.4	0.000	0.000	3.250	0.53	0.00	2.113	10.34	0.10	10.44	66.06	0.390		0.390	18.9	525	2.54	0.685	57%	3.17	
NOTT.4	NOTT.5	0.000	0.000	3.250	0.53	0.00	2.113	10.44	0.18	10.63	66.06	0.388		0.388	18.9	525	0.76	0.375	103%	1.73	
CBMH15		0.648	0.470	1.118	0.59	0.66	0.653	10.00	0.12	10.10	67.70	0.125	0.220	0.345	18.1	450	2.00	0.403	85%	2.54	

- Notes:
- Minimum velocity is 0.60 m/s, maximum velocity is 3.0 m/s.
 - Design velocity is the partial flow velocity for the design flow based on the pipe design (diameter, slope, etc.).
 - At manholes the pipe elevations have been matched. Also, a minimum drop in inverts at manholes of 30 mm for straight runs, and 60 mm for deflections has been used.
 - Maximum manhole spacing of 150 m.
 - Runoff coefficient of 0.10 has been used for soft areas (grass, landscaped areas, etc.) and 0.95 for hard areas (asphalt, concrete, etc.).
 - Pipe network sizing based on maximizing system storage capacity to mitigate roadway ponding during 1:100 year storm event.
 - Upstream flow from existing system calculated as 0.238 m³/s input as a controlled flow at Q144 based on system time of concentration.
- Existing

Storm Sewer System Design

IDF Curve Parameters
a 335.29
b 1.545
c 0.654

Pipe Roughness Coef. n = 0.013
Return Period = 5 Year

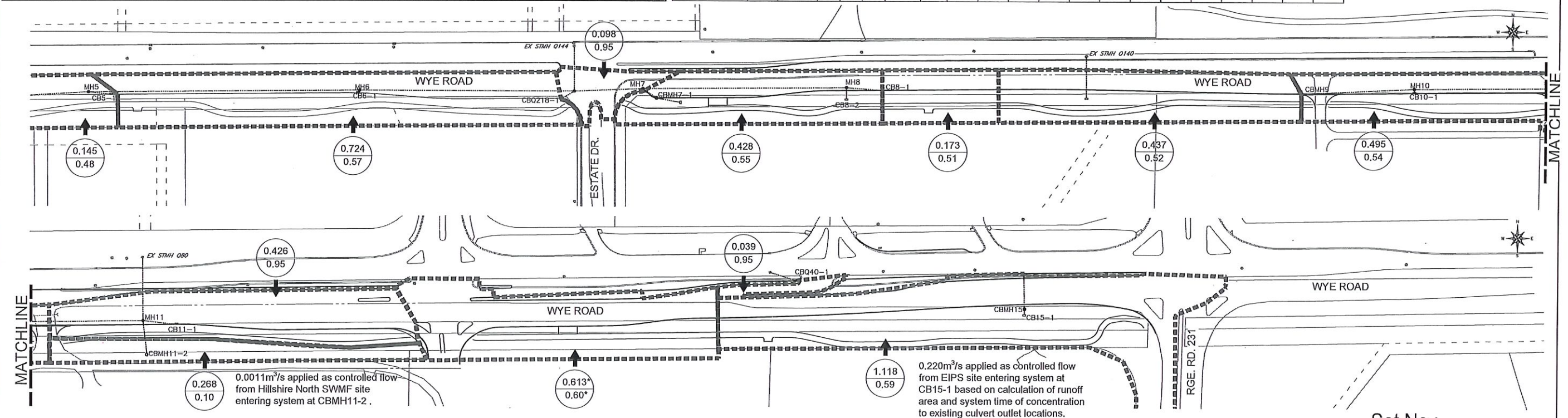


5307 - 47 Street NW, Edmonton, Alberta, T6B 1T4
Tel: 780-440-4411 Fax: 780-440-2505

PROJECT: Wye Road Widening - Estate to CBR
JOB NO.: 1187B
DATE: March 19, 2019
UPDATED:

TABLE 2: 5 YEAR STORM CATCHBASIN DESIGN SHEET

Location	CB or CBMH	To MH	Flow By or Bag	CB Dia. (mm)	Design Storm	DESIGN FLOW CALCULATIONS							CATCHBASIN CAPTURE ANALYSIS							
						Runoff Area (C=0.95) (ha)	C (Weighted Average)	C/A	I (mm/hr)	Design Flow (m³/s)	Carry Over from Upst CBs (m³/s)	Total Flow to CB (m³/s)	Total Flow in CB LEAD (m³/s)	Cover Type	Inlet Area (cm²)	Factor Used (%)	Actual Ponding (m)	Maximum Allowable Ponding (m)	Frame or Cover Capacity (m³)	
ESTATE	CB7-2	CBMH7-1	S	600	5 yr	0.0055	0.0245	0.32	0.03	67.70	0.006	0.000	0.009	0.006	6B	1043	50	2	150	0.054
	CBMH7-1	MH7	S	1200	5 yr	0.0000	0.1710	0.95	0.16	67.70	0.031	0.000	0.031	0.031	4A	1228	65	21	150	0.082
	CB8-1	MH8	F	600	5 yr	0.0032	0.0004	0.54	0.09	67.70	0.018	0.000	0.018	0.018	4A	1228	65	7	50	0.047
	CB8-2	MH9	S	600	5 yr	0.0090	0.0068	0.28	0.04	67.70	0.007	0.000	0.007	0.007	6B	1043	50	2	150	0.054
EX DITCH INLET	Q140-1	Q140	S	600	5 yr	0.1123	0.0184	0.22	0.03	67.70	0.005	0.000	0.005	0.005	6B	1043	50	2	150	0.054
STEPHENSON / KURYLO	CBMH9	MH10	F	1200	5 yr	0.1315	0.1169	0.81	0.19	67.70	0.036	0.000	0.036	0.036	4A	1228	65	29	50	0.047
	CB10-1	MH10	S	600	5 yr	0.1700	0.1006	0.54	0.19	67.70	0.035	0.000	0.035	0.035	FS1	3009	65	5	150	0.201
	CBMH11-1	MH11	S	1200	5 yr	0.2000	0.0019	0.38	0.07	67.70	0.014	0.000	0.014	0.014	6B	1043	50	10	150	0.024
	CB11-2	MH11	S	600	5 yr	0.0720	0.3540	0.81	0.34	67.70	0.065	0.000	0.065	0.065	4A	1228	65	93	150	0.082
TRM HORTONS	Q40-1	Q40	F	600	5 yr	0.0000	0.0399	0.95	0.04	67.70	0.007	0.000	0.007	0.007	4A	1228	65	1	50	0.047
CBR	CB15-1	CBMH15	S	600	5 yr	0.4760		0.58	0.28	67.70	0.053	0.000	0.053	0.053	6B	1043	50	145	150	0.054
	CBMH15	Q28	S	1200	5 yr	0.1870	0.4759	0.73	0.47	67.70	0.088	0.000	0.088	0.088	FS1	3009	65	29	150	0.201



LEGEND/NOTES:

* DENOTES WYE ROAD RUNOFF AREA BEING SERVICED BY ADJACENT DEVELOPMENT OFF-SITE STORM

#	DATE	BY	ENG	SUBJECT
3	19/02/05	BAC	BAC	ISSUED FOR TENDER
2	18/12/19	BAC	BAC	CIRCULATION-ESTATE TO CBR MOD
1	18/02/21	BAC	BAC	ISSUED FOR APPROVAL
0	17/12/15	BAC	BAC	ISSUED FOR SECOND SUBMISSION

REVISIONS

RESPONSIBLE MEMBER

PERMIT TO PRACTICE
AL-TERRA ENGINEERING LTD.
Signature: *Don de la Haye*
Date: *Feb. 22, 2018*
PERMIT NUMBER: P 2104
The Association of Professional Engineers,
Geologists and Geophysicists of Alberta

DATUM: NAD83
PROJECTION: TM
SCALE FACTOR: 1.0
COORDINATES: 31M114
SCALE (m): Horiz: 1:1000 Vert: N/A
PROJECT LOCATION: E:\Strathcona County\1187 - Wye Road 2018\04-Design\05 - Working Drawings
SURVEY BY: SURVEYBY
DESIGN BY: B CROSSLAND
APPROVED BY: D LEITHHEAD
DRAWING/PROJECT No.: 1187-222

WYE ROAD WIDENING 2016-
BRENTWOOD BLVD. TO
CLOVERBAR RD.

CATCHBASIN CATCHMENT
AREAS

1/4 SEC. TWP. RGE. W.4 MER.

STRATHCONA
COUNTY

TRANSPORTATION PLANNING & ENGINEERING
2001 SHERWOOD DRIVE SHERWOOD PARK, ALBERTA, T8A 3J7