

CONTRACT DRAWINGS CONTRACT NO. 2009–5002

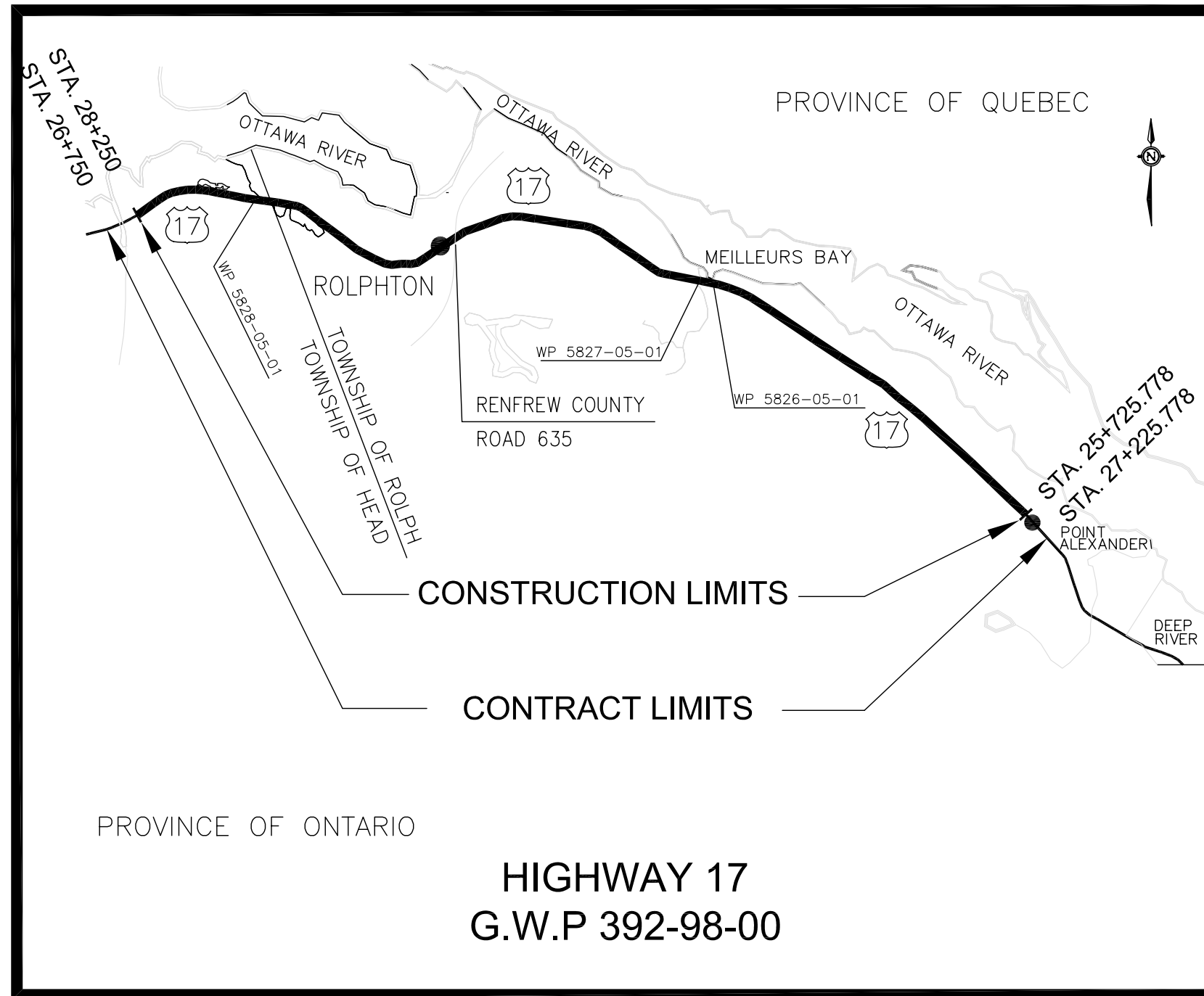
BOOK 1 OF 1

# NORTHEASTERN REGION

Ministry of Transportation



DWGNAME: PH-D-302  
CREATED: 2006/01/06  
MODIFIED: 2006/01/06  
MODTIME: 10:00 AM  
DRAWING NAME: PH-D-302  
CREATED: 2006/01/06  
MODIFIED: 2006/01/06  
MODTIME: 10:00 AM  
MINISTRY OF TRANSPORTATION, ONTARIO



WP No 392-98-00  
5828-05-01  
5827-05-01  
5826-05-01 Contract No 2009-5002

Work of GRADING, DRAINAGE, GRANULAR BASE, HOT MIX PAVING,  
CIR/CIREAM AND STRUCTURE REHABILITATION.

Hwy No 17 District No North Bay

Location From 6.2 km West of Renfrew County Road 635  
Easterly 18.6km Townships of Rolph and Head in County  
of Renfrew

Length 18.6 km.

Reference Plans B-567-17-3, 4, 5, 6, 7, 8, 9 and 10

3-APR-09  
Date

Nasser N. Saad  
Manager, Engineering P. Eng.

Apr 3 '09  
Date

Keith Bryer  
Regional Director P. Eng.

Ministry of Transportation



## INDEX

W.P. No. 392-98-00  
Contract No. 2009-5002

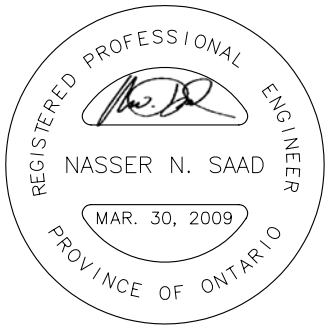
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PR-D-707 88-05  
MINISTRY OF TRANSPORTATION, ONTARIO  
DRAWING NAME: sheet 1-11 cover HWY 17.dwg  
CREATED: Mar 30, 2009 - 3:45pm  
MODIFIED:

TWP  
HWY

HEAD/ROLPH  
17

FROM STATION 28+222.459 HEAD  
TO STATION 10+243.181 ROLPH  
COORDINATE SYSTEM NAD83



METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

H&V CONTROL

SHEET  
2

JMC Transportation Group  
264 Welland Ave., Unit 2  
St. Catharines, ON L2R 2P8



PT	C/L	MONUMENT	Chainage	Distance	Offset	Northing	Easting	Elevation	Description	Curve
5771		BM12	28+222.459		9.514	5116122.240	206975.600	162.013	BOLT IN DRILL BIT IN ROCK AT WEST END OF ROCK CUT	
	PI		28+250.000		0.000	5116144.642	206994.052			
	HOT		28+269.589	19.589	0.000	5116154.950	207010.709			
58		NL			-5.527	5116159.650	207007.800	163.47		
	HOT		28+455.126	185.537	0.000	5116252.604	207168.500			
57		SIB			22.643	5116233.220	207180.450	171.970		
	HOT		28+472.804	17.678	0.000	5116261.892	207183.508			
56		NL			-5.184	5116266.300	207180.780	171.86		
	PI		28+750.000	277.196	0.000	5116407.767	207419.216			
	HOST		28+814.765	64.765	-22.910	5116441.850	207474.288			
54		SIB			0.000	5116461.339	207462.240	181.23		
53		HCM			22.784	5116422.479	207486.261	182.17		
	HOT		28+819.193	4.428	0.000	5116444.180	207478.053			
52		NL			5.328	5116439.659	207480.851	182.04		
5299		BM11	28+923.017		9.29	5116491.120	207571.420	184.448	BOLT IN DRILL BIT IN ROCK	
	HOST		28+947.615	128.422	0.000	5116511.785	207587.291			
50		HCM			-8.188	5116518.750	207582.940	184.04		
	HOT		28+976.084	28.469	0.000	5116526.748	207611.469			
51		NL			4.862	5116522.610	207614.020	184.68		
	TS		29+078.109	102.025	0.000	5116578.896	207695.730			
	SC		29+131.449	53.340	0.000	5116608.101	207744.034			
	HOT		29+163.858	32.409	0.000	5116623.686	207772.265			
49		NL			8.141	5116616.470	207776.070	184.37		
	HOST		29+360.230	196.372	0.000	5116695.320	207954.557			
48		CC			-12.343	5116707.260	207951.430	186.4		
	PI		29+431.353	71.123	0.000	5116766.427	207998.747			S-R-S CURVE
4703		BM10	29+488.189		-9.441	5116728.690	208079.080	184.55		SPIRAL 1
	HOT		29+627.720	196.367	0.000	5116724.233	208219.498			A=215.814 Ls=53.339
47		NL			-6.103	5116730.350	208219.780	182.6		ARC 1
	CS		29+703.042	75.322	0.000	5116717.618	208294.691			R=873.188 Lc=571.593
	HOST		29+746.541	43.499	0.000	5116711.305	208337.515			SPIRAL 2
46		HCM			-10.842	5116721.970	208339.250	183.12		A=215.814 Ls=53.339
	ST		29+756.381	9.84	0.000	5116709.618	208347.426			
4326		BM9	29+956.325		10.154	5116667.380	208542.990	187.913	BOLT IN DRILL BIT IN ROCK	
	HOT		30+013.648	253.213	0.000	5116668.345	208601.193			
41		RIB			-6.272	5116674.470	208602.190	188.05		
	PI		30+100.153	86.505	0.000	5116654.369	208686.541			
	HOT		30+160.360	60.207	0.000	5116644.683	208745.990			
45		RIB			-8.412	5116652.990	208747.320	190.01		
	HOST		30+226.091	65.731	0.000	5116634.049	208810.824			
30		HCM			10.368	5116623.890	208809.170	192.91		
	HOT		30+431.145	205.054	0.000	5116601.212	209013.242			
40		RIB			-6.166	5116607.230	209014.220	188.09		
3949		BM8	30+457.103		11.102	5116586.030	209037.030	188.35		
	HOT		30+571.279	140.134	0.000	5116579.084	209148.631			
29		SIB			-6.687	5116585.660	209149.650	183.49		
3548		BM7	30+675.540		10.095	5116551.900	209252.790	179.38		
	HOT		30+694.198	122.919	0.000	5116558.776	209272.774			
28		SIB			22.811	5116536.330	209269.190	180.05		
	HOT		30+761.051	66.853	0.000	5116548.202	209338.827			
39		RIB			7.035	5116541.290	209337.700	174.92		
	HOT		31+064.695	303.644	0.000	5116499.198	209638.528			
26		RIB			7.827	5116491.542	209637.275	173.19		
	HOT		31+172.317	107.622	0.000	5116482.000	209744.517			
27		SIB			-22.887	5116504.550	209748.190	178.96		
	PI		31+173.612	1.295	0.000	5116481.753	209746.033			
	HOT		10+142.131	132.318	0.000	5116460.463	209876.706			
38		RIB			-10.169	5116470.512	209878.265	174.31		
2860		GMB	10+243.181		-12.77	5116456.302	209978.375	175.92		

N.T.S.



PR-D-70788-05

MINISTRY OF TRANSPORTATION, ONTARIO

Mar 30, 2009 - 3:45pm

sheet 1-11 cover HWY 17.dwg

DRAWING NAME:  
CREATED:

TWP

ROLPH

HWY

17

FROM STATION

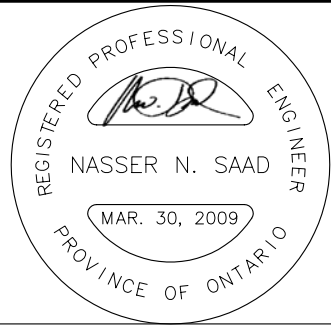
10+244.188

TO STATION

12+701.379

COORDINATE SYSTEM

NAD83



METRIC

DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT

2009-5002

WP

392-98-00

H&V CONTROL

SHEET

3

JMC Transportation Group

264 Welland Ave. Unit 2

St. Catharines, ON L2R 2P8

JMOTG

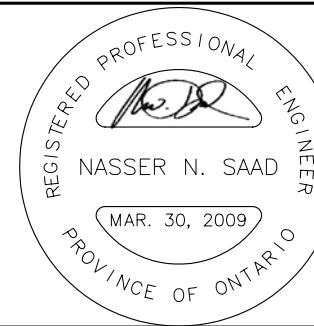
PT	C/L	MONUMENT	Chainage	Distance	Offset	Northing	Easting	Elevation	Description	Curve
	TS		10+244.188	102.057	0.000	5116444.064	209977.358			
	SC		10+305.147	60.959	0.000	5116433.563	210037.403			
	HOST		10+344.306	39.159	0.000	5116425.121	210075.588			
25		HCM			-8.389	5116433.209	210077.629	174.73		
	PI		10+499.740	155.434	0.000	5116402.971	210229.585			S-R-S CURVE
	HOT		10+595.425	95.685	0.000	5116331.078	210307.624			SPIRAL 1
37		NL			-9.918	5116339.629	210312.559	174.46		A=230.715 Ls=60.960
2629		BM6	10+667.525		-20.722	5116308.919	210380.139	175.08		ARC 1
	CS		10+684.660	89.235	0.000	5116282.188	210382.168			R=873.188 Lc=379.513
	ST		10+745.620	60.960	0.000	5116245.089	210430.535			SPIRAL 2
	HOST		10+885.111	139.491	0.000	5116158.888	210540.250			A=230.715 Ls=60.960
24		HCM			-15.178	5116170.846	210549.598	176.82		
	HOT		11+037.888	152.777	0.000	5116064.525	210660.355			
36		RIB			8.023	5116058.216	210655.398	178.23		
2298		BM5	11+179.179		-11.879	5115987.116	210777.958	179.76		
	HOST		11+200.295	162.407	0.000	5115964.164	210788.023			
21		HCM			13.558	5115953.528	210779.684	176.82		
	HOT		11+443.527	243.232	0.000	5115813.884	210979.278			
35		RIB			11.066	5115805.218	210972.484	173.72		
	TS		11+547.729	104.202	0.000	5115749.545	211061.260			
	ST		11+599.752	52.023	0.000	5115718.039	211102.653			
2202		BM4	11+613.988		22.756	5115691.208	211101.424	174.72		
	HOT		11+641.473	41.685	0.000	5115694.462	211137.073			
23		RIB			28.605	5115670.448	211121.794	175.56		
	HOT		11+643.383	1.910	0.000	5115693.442	211138.687			
22		RIB			19.193	5115677.338	211128.504	175.72		
	PI		11+646.894	3.511	0.000	5115688.278	211139.235			S-R-S CURVE
	CS		11+693.445	46.551	0.000	5115668.379	211182.017			SPIRAL 1
	ST		11+745.468	52.023	0.000	5115644.926	211228.457			A=188.378 Ls=52.023
	HOT		11+845.239	99.771	0.000	5115601.316	211318.341			ARC 1
34		RIB			12.751	5115589.852	211312.614	176.6		R=682.125 Lc=93.693
	HOT		11+922.449	77.210	0.000	5115567.677	211387.424			SPIRAL 2
20		SIB			-22.918	5115588.188	211397.404	183.66		A=188.378 Ls=52.023
	HOST		11+992.540	70.091	0.000	5115536.946	211450.665			
19		HCM			15.331	5115523.152	211443.974	174.31		
	HOST		12+018.090	25.550	0.000	5115525.778	211473.648			
18		HCM			6.685	5115519.762	211470.734	175.23		
	PI		12+124.974	106.884	0.000	5115479.060	211569.790			
	HOT		12+252.933	127.959	0.000	5115423.158	211684.819			
33		NL			9.062	5115414.982	211680.924	175.04		
	TS		12+305.896	52.963	0.000	5115399.990	211732.519			
	HOT		12+306.551	0.655	0.000	5115399.703	211733.113			
1451		SIB			-22.919	5115420.332	211742.854	174.56		
	SC		12+366.856	60.305	0.000	5115374.514	211787.893			
1046		BM3	12+409.262		6.973	5115352.857	211825.283	183.51		
	HOT		12+414.422	47.566	0.000	5115357.812	211832.420			
16		NL			7.248	5115350.927	211830.153	183.56		
	HOT		12+482.062	67.640	0.000	5115340.149	211897.950			
17		SIB			19.705	5115321.127	211894.043	188.78		
	PI		12+486.066	4.004	0.000	5115339.643	211901.671			S-R-S CURVE
	HOT		12+573.186	87.120	0.000	5115328.971	211988.075			SPIRAL 1
15		NL			5.563	5115323.647	211987.833	191.49		A=188.378 Ls=60.959
	CS		12+598.805	25.619	0.000	5115328.601	212013.692			ARC 1
	HOST		12+628.370	40.742	0.000	5115329.083	212043.257			R=582.125 Lc=231.949
14		HCM			-23.006	5115352.077	212042.513	192.15		SPIRAL 2
	HOST		12+629.279	0.909	0.000	5115328.994	212044.059			A=188.378 Ls=60.959
13		HCM			22.678	5115306.447	212044.913	192.31		
	ST		12+659.764	30.485	0.000	5115330.419	212074.578			
	HOT		12+701.379	30.607	0.000	5115332.532	212116.182			

N.T.S.

ROLPH

17

FROM STATION	12+782.063
TO STATION	13+420.042
COORDINATE SYSTEM	NAD83



METRIC

DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT	2009-5002	(
WP	392-98-00	

H&amp;V CONTROL

SHEET  
4

**JMC Transportation Group**  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8

[illegible]

N.T.S.

PR-D-70788-05

MINISTRY OF TRANSPORTATION, ONTARIO

Mar 30, 2009 - 3:45pm

sheet 1-11 cover HWY 17.dwg

DRAWING NAME:  
CREATED:

TWP

ROLPH

HWY

17

FROM STATION

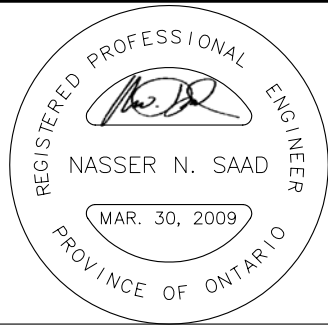
13+419.882

TO STATION

15+246.911

COORDINATE SYSTEM

NAD83



METRIC

DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT

2009-5002

WP

392-98-00

H&V CONTROL

JMC Transportation Group

264 Welland Ave. Unit 2

St. Catharines, ON L2R 2P8

JMOTG

SHEET

5

PT	C/L	MONUMENT	Chainage	Distance	Offset	Northing	Easting	Elevation	Description	Curve
2	HOT		13+419.882			5115604.985	212760.049			
10082		HCM-008900732			-13.883	5115616.471	212752.250	180.063	BRONZE CAP IN ROCK 008900732	
600	HOT		13+472.974	53.092		5115634.810	212803.972			
501		SIB			14.773	5115622.559	212812.228			
500		SIB			-23.512	5115654.309	212790.834			
37923		BM-191	13+693.112		-21.078	5115775.912	212974.252	186.944	TOP OF BOLT IN DRILL BIT	
3	HOT		13+727.734	254.760		5115777.924	213014.736			
10083		HCM-008900733			15.096	5115765.435	213023.216	188.980	SIB WITH BRASS CAP 008900733	
601	HOT		13+822.903	95.169		5115831.386	213093.470			
503		CM			22.659	5115812.628	213106.180			
502		CM			-23.047	5115850.465	213080.542			
4	HOT		13+886.008	63.105		5115866.836	213145.677			
10084		HCP-99030			7.077	5115860.981	213149.652	186.462		
37980		BM-192	13+955.311		24.575	5115885.436	213216.816	187.866	N&W IN ROOT OF 0.3 SPRUCE	
8	TS		14+036.396	150.388		5115951.317	213270.092			
46	HOST		14+068.388	31.992		5115969.289	213296.560			
37953		CM			-22.788	5115988.142	213283.758	187.476		
9	HOST		14+083.399	15.011		5115977.721	213308.978			
10085		HCM-008680101			-19.571	5115993.912	213297.984	187.040	SIB W/BRASS CAP 008680101	
10	SC		14+097.356			5115984.097	213320.917			
602	HOST		14+178.565	95.166		5116031.182	213387.709			
504		CM			41.635	5115996.737	213411.098			
11	PI		14+185.734	7.169		5116035.209	213393.640			S-R-S CURVE
38101		BM-193	14+258.299		-23.891	5116081.081	213454.733	179.071	N&W IN ROOT OF 0.4 PINE	SPIRAL 1
12	CS		14+272.615			5116062.8415	213477.597			A=230.715 Ls=60.959
47	HOST		14+294.757	109.023		5116070.122	213496.921			ARC 1
10086		HCP-99029			8.728	5116061.854	213499.716	177.090		R=873.188 Lc=175.259
603	HOST		14+305.047	10.290		5116073.418	213506.669			SPIRAL 2
506		CM			-23.576	5116095.749	213499.110			A=230.715 Ls=60.959
505		CM			39.968	5116035.560	213519.483			
604	HOST		14+331.375	26.328		5116081.849	213531.611			
507		SIB			-29.014	5116109.336	213522.319			
13	ST		14+333.574	3.696		5116083.033	213535.113			
605	HOT		14+436.511	102.937		5116115.998	213632.629			
508		SIB			-29.024	5116143.493	213623.334			
606	HOT		14+516.987	80.476		5116141.770	213708.866			
509		CM			-22.784	5116163.353	213701.570			
10087		GBM-70U473	14+544.913		-16.861	5116166.686	213729.922	168.214	TABLET 70U473 IN RK OUTCROP QUAD 46077	
15	HOT		14+751.999	235.012		5116217.030	213931.502			
10088		HCP-99028			11.538	5116206.100	213935.197	167.659		
17	TS		14+797.560	45.561		5116231.621	213974.663			
38220		BM-194	14+821.258		36.191	5116204.925	214008.703	165.961	N&W 0.5 SPRUCE	
18	SC		14+858.520			5116250.130	214032.738			
19	PI		14+963.652	166.092		5116284.811	214132.008			S-R-S CURVE
21	HOST		14+970.254	6.602		5116283.945	214138.553			SPIRAL 1
10089		HCM-008680100			-5.444	5116289.341	214139.267	164.669	SIB W/ BRASS CAP 008680100	A=188.378 Ls=60.960
38390		BM-195	15+063.964		-24.501	5116295.939	214234.668	163.845	N&W IN ROOT OF 0.4 MAPLE	ARC 1
22	HOST		15+064.841	94.587		5116271.535	214232.323			R=582.125 Lc=205.400
38226		RIB			-4.750	5116276.243	214232.946	165.566		SPIRAL 2
23	CS		15+063.920			5116271.015	214236.249			A=188.378 Ls=60.960
607	HOST		15+099.305	34.464		5116267.013	214266.488			
510		CM			-23.005	5116289.820	214269.507			
24	ST		15+124.880	30.440		5116263.019	214296.665			
25	HOT		15+227.908	103.028		5116249.502	214398.802			
10090		HCP-99027			-9.832	5116259.249	214400.092	164.686		
608	HOT		15+246.911	19.003		5116247.009	214417.641			
511		CM			22.814	5116224.392	214414.648			

N.T.S.

PR-D-707

88-05

MINISTRY OF TRANSPORTATION, ONTARIO

Mar 30, 2009 - 3:46pm

sheet 1-11 cover HWY 17.dwg

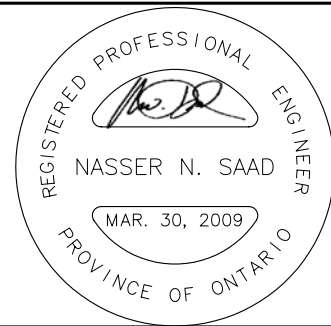
DRAWING NAME:

CREATED:

TWP  
HWY

ROLPH  
17

FROM STATION 15+317.674  
TO STATION 17+114.019  
COORDINATE SYSTEM NAD83



METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

H&V CONTROL

JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8

JMOTG

SHEET  
6

PT	C/L	MONUMENT	Chainage	Distance	Offset	Northing	Easting	Elevation	Description	Curve
26	HOT		15+317.674	70.763		5116237.725	214487.792			
38388		RIB			-7.091	5116244.754	214488.723	165.531		
38391		BM-196	15+328.838		-29.357	5116265.363	214502.712	164.004	N&W IN ROOT OF 0.25 BIRCH	
27	HOT		15+452.123	134.449		5116220.085	214621.079			
10091		HCP-99026			-16.548	5116236.490	214623.250	165.350		
49	HOT		15+473.603	21.480		5116217.267	214642.374			
38392		CM			22.809	5116194.654	214639.381	167.018		
38393		BM-197	15+558.687		-22.796	5116228.703	214729.713	164.421	TOP OF T-BAR	
28	PI		15+647.072	173.469		5116194.507	214814.344			
29	HOT		15+731.522	84.450		5116183.495	214898.072			
10092		HCM-008680099			-15.603	5116198.965	214900.107	164.588	SIB WITH BRASS CAP 008680099	
40451		GBM-93U662	15+761.072		17.226	5116162.563	214925.124	164.522	GROUND ROD UNDER ACCESS COVER 93U662, QUAD 46077	
30	HOT		15+761.760	30.238		5116179.552	214928.052			
38471		CM			23.027	5116156.723	214925.046	164.440		
38440		CM			-22.682	5116202.040	214931.012	163.622		
609	HOT		15+949.905	188.145		5116155.018	215114.590			
512		CM			-22.766	5116177.591	215117.550			
513		CM			22.964	5116132.249	215111.606			
31	HOT		15+981.289	31.384		5116150.926	215145.707			
10093		HCP-99025			-16.037	5116166.826	215147.798	160.981		
38394		BM-198	16+033.442		24.986	5116119.353	215194.157	160.842	RIB IN ROCK	
610	HOT		16+157.410	176.121		5116127.960	215320.324			
514		CM			-22.855	5116150.620	215323.300			
515		SIB			22.871	5116105.284	215317.345			
61	TS		16+212.503	55.093	0.000	5116120.776	215374.946	0.000		
58	HOST		16+215.207	2.704	0.000	5116120.423	215377.627	0.000		
10094		HCP-99024			-10.843	5116131.174	215379.041	154.130		
60	HOST		16+242.476	27.269	0.000	5116116.867	215404.663	0.000		
38561		SIB			22.869	5116094.194	215401.679	154.225		
38572		CM			-22.812	5116139.484	215407.640	152.430		
38571		BM-199	16+255.809		-26.063	5116140.969	215421.280	152.198	N&W IN ROOT OF 0.25 MAPLE	
182	SC		16+273.463			5116112.300	215435.312	0.000		
62	HOST		16+469.494	227.018	0.000	5116087.264	215629.742	0.000		
10095		HCM-008680098			-8.742	5116095.932	215630.882	153.374	SIB W/ BRASS CAP 008680098	
63	HOST		16+502.460	32.966	0.000	5116082.966	215662.427	0.000		
10096		HCP-99023			15.165	5116067.930	215660.449	145.993		
64	HOST		16+539.773	37.313	0.000	5116078.100	215699.421	0.000		
516		SIB			-0.163	5116078.262	215699.442	0.000		
65	PI		16+539.974	0.201	0.000	5116078.074	215699.621	0.000		S-R-S CURVE
181	CS		16+794.020			5115920.574	215914.620	0.000		SPIRAL 1
66	HOST		16+811.978	272.004	0.000	5115917.770	215919.367	0.000		A=266.407 Ls=60.960
10097		HCP-99022			-9.986	5115925.837	215925.252	135.865		ARC 1
38747		BM-201	16+822.434		-22.494	5115929.780	215941.071	135.147	TOP OF T-BAR	R=1164.251 Lc=520.557
67	HOST		16+837.069	25.091	0.000	5115902.983	215939.638	0.000		SPIRAL 2
38748		CM			-22.960	5115921.531	215953.169	135.498		A=266.407 Ls=60.960
180	ST		16+854.980	30.377	0.000	5115885.080	215964.179	0.000		
68	HOT		16+877.563	22.583	0.000	5115871.770	215982.423	0.000		
517		SIB			-22.923	5115890.290	215995.933	0.000		
69	HOT		16+977.057	99.494	0.000	5115813.134	216062.802	0.000		
519		CM			-22.942	5115831.668	216076.324	0.000		
518		SIB			22.755	5115794.752	216049.391	0.000		
70	HOT		17+038.238	61.181	0.000	5115777.078	216112.229	0.000		
10098		HCM-008930610			13.780	5115765.945	216104.108	138.279	CAP CEMENTED IN RK 008930610	
38803		GBM-70U474	17+091.398		-22.340	5115763.796	216168.342	137.834	IRON PIPE WITH BRASS CAP 70U474, QUAD 46077	
71	HOT		17+114.019	75.781	0.000	5115732.416	216173.452	0.000		
38802		CM			-22.996	5115751.009	216186.984	138.106		
520		CM			22.747	5115714.024	216160.066	0.000		

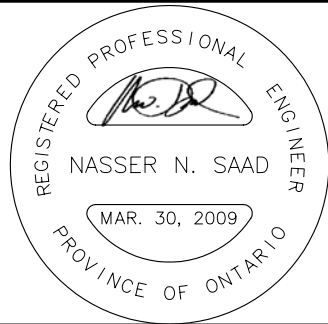
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PR-D-707 88-05  
MINISTRY OF TRANSPORTATION, ONTARIO  
Mar 30, 2009 - 3:46pm  
sheet 1-11 cover HWY 17.dwg  
DRAWING NAME:  
CREATED:  
MODIFIED:

TWP  
HWY

ROLPH  
17

FROM STATION 17+204.775  
TO STATION 19+408.426  
COORDINATE SYSTEM NAD83



METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

H&V CONTROL

SHEET  
7

JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8



PT	C/L	MONUMENT	Chainage	Distance	Offset	Northing	Easting	Elevation	Description	Curve
72	HOT		17+204.775	90.756	0.000	5115678.929	216246.771	0.000		
10099		HCP-99021			-19.100	5115694.360	216258.028	137.367		
39070		BM-202	17+371.041		22.365	5115562.873	216367.914	138.409	TOP OF T-BAR	
73	HOT		17+461.937	257.162	0.000	5115527.372	216454.527	0.000		
10100		HCP-99020			9.440	5115519.746	216448.964	138.209		
74	HOT		17+550.076	88.139	0.000	5115475.428	216525.733	0.000		
39069		CM			22.635	5115457.141	216512.393	137.771		
39078		BM-203	17+634.078		-26.124	5115447.027	216608.993	139.283	N&W IN ROOT OF 0.3 PINE	
75	HOT		17+663.782	113.706	0.000	5115408.415	216617.594	0.000		
10101		HCM-008930611			13.992	5115397.111	216609.348	139.050	SIB WITH BRASS CAP 008930611	
76	HOT		17+732.973	69.191	0.000	5115367.638	216673.493	0.000		
39121		CM			-23.049	5115386.259	216687.077	139.387		
39257		BM-204	17+815.431		-23.044	5115337.658	216753.689	139.416	N&W IN ROOT OF 0.5 PINE	
77	HOT		17+918.171	185.198	0.000	5115258.492	216823.110	0.000		
10102		HCP-99019			-17.510	5115272.638	216833.430	143.974		
179	TS		17+941.584	23.413	0.000	5115244.694	216842.025	0.000		
78	HOST		17+971.151	39.931	0.000	5115227.268	216865.912	0.000		
521		CM			22.722	5115208.910	216852.524	0.000		
522		CM			-23.024	5115245.871	216879.477	0.000		
39164		GBM-93U663	18+000.725		17.020	5115196.089	216879.773	147.307	GROUND ROD UNDER ACCESS COVER 93U663, QUAD 46077	
183	SC		18+004.367			5115208.627	216893.404	0.000		
79		HOST	18+071.990	100.839	0.000	5115167.839	216947.378	0.000		
523		SIB			-32.204	5115193.856	216966.357	0.000		
80		HOST	18+083.755	11.765	0.000	5115160.906	216956.882	0.000		
524		SIB			-42.293	5115195.073	216981.807	0.000		
92	PI		18+105.649	21.894	0.000	5115148.003	216974.570	0.000		S-R-S CURVE
186	CS		18+202.249			5115131.298	217074.491	0.000		SPIRAL 1
39352		BM-205	18+234.619		-19.393	5115144.394	217104.940	149.637	TOP OF BOLT IN DRILL BIT	A=190.000 Ls=62.783
82	HOST		18+239.562	133.913	0.000	5115124.434	217106.393	0.000		ARC 1
525		SIB			-37.430	5115161.280	217112.980	0.000		R=575.000 Lc=197.882
83	ST		18+265.032	25.470	0.000	5115119.128	217136.074	0.000		SPIRAL 2
84	HOT		18+418.884	153.852	0.000	5115092.050	217287.525	0.000		A=190.000 Ls=62.783
526		CM			-60.088	5115151.195	217298.128	0.000		
39389		SIB			30.183	5115062.341	217282.200	148.575		
10103		BM-206	18+436.380		-20.607	5115109.256	217308.375	140.817	HCM-008930612 - CAP CEMENTED IN RK 008930612	
85	HOT		18+436.380	17.496	0.000	5115088.971	217304.748	0.000		
10103		HCM-008930612			-20.607	5115109.256	217308.375	140.817	CAP CEMENTED IN RK 008930612	
86	HOT		18+616.207	179.827	0.000	5115057.322	217481.768	0.000		
10104		HCP-99018			9.995	5115047.483	217480.009	129.432		
87	HOT		18+662.772	46.565	0.000	5115049.126	217527.606	0.000		
527		CM			-23.130	5115071.895	217531.677	0.000		
39588		BM-207	18+708.206		25.920	5115015.615	217567.769	125.013	TOP OF BOLT IN DRILL BIT	
88	HOT		18+893.259	230.487	0.000	5115008.561	217754.496	0.000		
10105		HCM-008930613			19.242	5114989.619	217751.109	117.039	SIB WITH BRASS CAP 008930613	
39706		BM-208	18+945.218		26.071	5114973.753	217801.055	114.516	TOP OF T-BAR	
89	TS		19+172.321	279.062	0.000	5114959.447	218029.201	0.000		
	HOST		19+177.644	5.323	0.000	5114958.509	218034.446			
10106		HCP-99017			-19.736	5114977.937	218037.919	118.383		
103	HOST		19+199.863	22.219	0.000	5114954.600	218056.313	0.000		
39776		CM			22.804	5114932.152	218052.300	117.126		
39771		BM-209	19+202.650		-38.977	5114992.478	218065.917	120.162	N&W IN ROOT OF 0.5 PINE	S-R-S CURVE
104	HOST		19+211.808	11.945	0.000	5114952.497	218068.072	0.000		SPIRAL 1
39772		SIB			-28.166	5114980.224	218073.029	119.903		A=230.000 Ls=62.236
187	SC		19+234.556			5114947.748	218090.323	0.000		ARC 1
105	PI		19+305.514	93.706	0.000	5114936.005	218160.315	0.000		R=850.000 Lc=140.900
188	CS		19+375.456			5114906.639	218224.925	0.000		SPIRAL 2
108	HOST		19+408.426	102.912	0.000	5114894.427	218254.454	0.000		A=230.000 Ls=62.236

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PR-D-707

88-05

MINISTRY OF TRANSPORTATION, ONTARIO

Mar 30, 2009 - 3:46pm

sheet 1-11 cover HWY 17.dwg

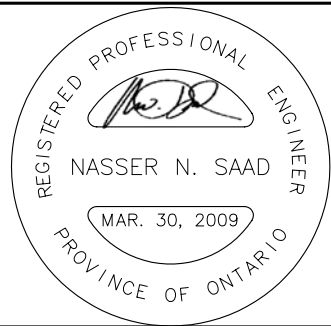
DRAWING NAME:

CREATED:

TWP  
HWY

ROLPH  
17

FROM STATION 19+419.797  
TO STATION 21+535.770  
COORDINATE SYSTEM NAD83



METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

H&V CONTROL

SHEET  
8

JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8

PT	C/L	MONUMENT	Chainage	Distance	Offset	Northing	Easting	Elevation	Description	Curve
530		CM			25.609	5114871.002	218244.108	0.000		
109	HOST		19+419.797	11.371	0.000	5114889.833	218264.856	0.000		
531		CM			25.465	5114866.539	218254.567	0.000		
39827		GBM-70U475	19+428.231		-22.185	5114906.720	218281.534	120.618	IRON PIPE WITH BRASS CAP 70U475, QUAD 46077	
97	ST		19+437.692	18.910	0.000	5114882.193	218282.154	0.000		
96	HOT		19+457.267	19.575	0.000	5114874.284	218300.061	0.000		
10107		HCM-008680096			-20.510	5114893.046	218308.347	120.754	SIB WITH BRASS CAP 008680096	
98	HOT		19+573.677	116.410	0.000	5114827.253	218406.546	0.000		
532		CM			24.062	5114805.243	218396.825	0.000		
39862		BM-210	19+641.110		-25.375	5114823.221	218478.483	120.016	N&W IN ROOT OF 0.3 PINE	
99	HOT		19+650.249	76.572	0.000	5114796.317	218476.591	0.000		
10108		HCP-99016			-13.930	5114809.059	218482.219	118.972		
100	TS		19+716.419	66.170	0.000	5114769.583	218537.121	0.000		
110	HOST		19+744.353	27.934	0.000	5114758.298	218562.673	0.000		
533		CM			-23.245	5114779.561	218572.064	0.000		
189	SC		19+777.379			5114744.308	218592.591	0.000		
111	PI		19+828.432	84.079	0.000	5114724.329	218639.584	0.000		S-R-S CURVE
112	HOST		19+874.660	46.228	0.000	5114698.147	218677.684	0.000		SPIRAL 1
10109		HCM-008930614			-15.417	5114710.853	218686.415	122.178	SIB WITH BRASS CAP 008930614	A=230.715 Ls=60.960
190	CS		19+878.981			5114694.826	218681.264	0.000		ARC 1
113	HOST		19+908.639	33.979	0.000	5114678.903	218705.688	0.000		R=873.188 Lc=101.602
534		SIB	19+908.639		30.390	5114653.856	218688.476	0.000		SPIRAL 2
40050		BM-211	19+924.899		-23.326	5114688.918	218732.299	124.138	N&W IN ROOT OF 0.15 PINE	A=230.715 Ls=60.960
114	ST		19+939.941	31.804	0.000	5114660.890	218731.900	0.000		
115	HOT		20+071.566	131.625	0.000	5114586.344	218840.380	0.000		
535		SIB			-22.845	5114605.167	218853.326	0.000		
40180		CM			22.873	5114567.499	218827.418	128.964		
116	HOT		20+098.309	26.743	0.000	5114571.198	218862.421	0.000		
10110		HCP-990015			-15.644	5114584.092	218871.281	132.406		
40152		BM-212	20+160.933		26.464	5114513.920	218899.045	138.280	N&W IN ROOT OF 0.4 PINE	
117	HOT		20+324.875	226.566	0.000	5114442.882	219049.149	0.000		
10111		HCM-008930615			-15.525	5114455.677	219057.941	146.094	SIB WITH BRASS CAP 008930615	
118	HOT		20+374.400	49.525	0.000	5114414.833	219089.965	0.000		
536		SIB			-22.740	5114433.575	219102.844	0.000		
40313		BM-213	20+414.411		-23.519	5114411.557	219136.261	149.358	N&W IN ROOT OF 0.3 POPLAR	
119	HOT		20+572.022	197.622	0.000	5114302.910	219252.838	0.000		
10112		HCM-008680095			-7.348	5114308.966	219256.999	156.705	SIB WITH BRASS CAP 008680095	
120	HOT		20+648.775	76.753	0.000	5114259.440	219316.095	0.000		
537		CM			-22.681	5114278.138	219328.935	0.000		
538		CM			23.032	5114240.454	219303.057	0.000		
40397		BM-214	20+674.383		31.659	5114218.845	219319.270	159.479	N&W IN ROOT OF 0.4 YELLOW BIRCH	
121	HOT		20+839.959	191.184	0.000	5114151.163	219473.662	0.000		
10113		HCP-99014			-8.388	5114158.076	219478.412	159.899		
122	HOT		20+892.638	52.679	0.000	5114121.328	219517.078	0.000		
539		SIB			-22.575	5114139.934	219529.863	0.000		
40568		BM-215	20+935.243		-20.423	5114114.031	219563.758	159.584	TOP OF T-BAR	
40569		BM-216	21+085.740		31.375	5113986.107	219658.456	162.044	N&W IN ROOT OF 0.2 MAPLE	
123	HOT		21+090.867	198.229	0.000	5114009.061	219680.451	0.000		
10114		HCP-990013			-9.760	5114017.105	219685.979	161.338		
124	HOT		21+116.538	25.671	0.000	5113994.522	219701.608	0.000		
540		RB			-22.563	5114013.118	219714.387	0.000		
40577		GBM-93U664	21+257.358		20.736	5113897.679	219805.923	163.664	GROUND ROD UNDER ACCESS COVER 93U664, QUAD 46077	
125	HOT		21+318.711	202.173	0.000	5113880.021	219868.232	0.000		
10115		HCM-008930616			-18.626	5113895.372	219878.781	163.795	SIB WITH BRASS CAP 008930616	
126	HOT		21+392.517	73.806	0.000	5113838.221	219929.060	0.000		
541		SIB			-23.382	5113857.492	219942.302	0.000		
40744		BM-217	21+535.770		-27.055	5113779.387	220062.446	159.466	N&W IN ROOT OF 1.0 PINE	

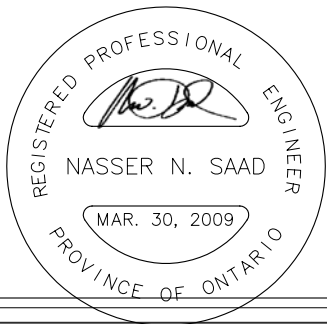
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PR-D-707 88-05  
MINISTRY OF TRANSPORTATION, ONTARIO  
Mar 30, 2009 - 3:46pm  
sheet 1-11 cover HWY 17.dwg  
DRAWING NAME:  
CREATED:

TWP  
HWY

ROLPH  
17

FROM STATION 21+571.099  
TO STATION 23+608.235  
COORDINATE SYSTEM NAD83



METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

H&V CONTROL

JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8  
JMCOTG

SHEET  
9

PT	C/L	MONUMENT	Chainage	Distance	Offset	Northing	Easting	Elevation	Description	Curve
127	HOT		21+571.099	178.582	0.000	5113737.081	220076.241	0.000		
10116		HCP-99012			-10.376	5113745.632	220082.117	160.795		
128	HOT		21+676.899	105.800	0.000	5113677.160	220163.437	0.000		
542		CM			-22.265	5113695.510	220176.047	0.000		
129	BC		21+695.228	18.329	0.000	5113666.780	220178.543	0.000		
40584		BM-218	21+738.490		-28.413	5113665.695	220230.290	155.466	N&W IN ROOT OF 0.3 MAPLE	
130	PI		21+792.403	64.070	0.000	5113611.745	220258.631	0.000		CURVE
131	HOST		21+811.779	19.096	0.000	5113602.140	220275.459	0.000		ARC 1
10117		HCP-99011			21.698	5113583.295	220264.703	157.825		R=2328.501 Lc=194.238
132	HOST		21+878.111	66.332	0.000	5113569.258	220333.068	0.000		
	EC		21+889.466	11.355	0.000	5113563.573	220343.027	0.000		
543		CM			-23.039	5113589.255	220344.508	0.000		
544		CM			22.720	5113549.537	220321.785	0.000		
40583		GBM-70U476	21+914.895		-20.244	5113568.549	220375.147	152.667	TABLET IN RK 70U476, QUAD 46077	
134	HOT		22+048.734	126.163	0.000	5113484.622	220481.349	0.000		
545		SIB			-22.794	5113504.419	220492.648	0.000		
135	HOT		22+080.335	31.601	0.000	5113468.957	220508.794	0.000		
10118		HCM-008680093			-13.257	5113480.471	220515.366	155.664	SIB WITH BRASS CAP 008680093	
40936		BM-219	22+151.186		25.554	5113411.643	220557.660	157.653	N&W IN ROOT OF 0.8 PINE	
136	HOT		22+188.241	107.906	0.000	5113415.467	220602.509	0.000		
547		CM			23.051	5113395.454	220591.070	0.000		
546		CM			-22.681	5113435.158	220613.763	0.000		
137	HOT		22+252.419	64.178	0.000	5113383.653	220658.247	0.000		
41022		SIB			-22.630	5113403.307	220669.465	156.430		
138	HOT		22+278.357	25.938	0.000	5113370.795	220680.773	0.000		
10119		HCP-99010			-13.277	5113382.326	220687.355	158.588		
40997		BM-220	22+386.427		-24.641	5113338.624	220786.845	157.534	N&W IN ROOT OF 0.3 OAK	
139	BC		22+472.934	86.507	0.000	5113274.341	220849.761	0.000		
140	HOST		22+498.697	25.763	0.000	5113261.570	220872.136	0.000		
10120		HCM-008930618			-11.905	5113271.909	220878.037	160.909	SIB WITH BRASS CAP 008930618	
141	HOST		22+656.047	157.350	0.000	5113183.569	221008.792	0.000		
10121		HCP-99009			-1.803	5113185.135	221009.686	159.241	TOP OF BOLT IN DRILL BIT	
41113		BM-221	22+662.541		20.224	5113162.787	221004.406	160.583		
142	PI		22+694.805	38.758	0.000	5113164.357	221042.453	0.000		CURVE
143	HOST		22+702.457	7.652	0.000	5113159.376	221048.263	0.000		ARC 1
548		SIB			32.993	5113134.327	221026.791	0.000		R=2328.501 Lc=442.406
144	EC		22+915.340	212.883	0.000	5113019.961	221210.906	0.000		
145	HOT		22+918.828	3.488	0.000	5113017.690	221213.555	0.000		
549		SIB			-22.975	5113035.130	221228.512	0.000		
550		SIB			22.783	5113000.397	221198.722	0.000	TABLET IN RK 93U665, QUAD 46077	
	ST		22+948.440	29.612	0.000	5112998.591	221235.836	0.000		
10122		GBM-93U665	22+957.716		-16.191	5113004.675	221253.617	167.223		
146	HOT		23+109.370	160.930	0.000	5112893.684	221358.222	0.000		
551		SIB			-22.909	5112911.068	221373.142	0.000		
552		SIB			22.772	5112876.404	221343.390	0.000		
147	HOT		23+146.729	37.359	0.000	5112869.370	221386.586	0.000	CAP CEMENTED IN RK 008680092	
10123		HCM-008680092			-21.588	5112885.761	221400.636	172.996	TOP OF BOLT IN DRILL BIT	
41416		BM-222	23+249.992		13.289	5112792.077	221456.339	174.578		
148	HOT		23+322.806	176.077	0.000	5112754.778	221520.270	0.000		
553		SIB			-22.885	5112772.145	221535.173	0.000		
554		SIB			22.811	5112737.466	221505.416	0.000		
149	HOT		23+468.283	145.477	0.000	5112660.100	221630.723	0.000		
10124		HCP-99008			-6.956	5112665.381	221670.604	0.000		
150	BC		23+520.811	52.528	0.000	5112625.914	221670.604	167.886		
151	PI		23+564.528	43.717	0.000	5112600.142	221700.669	0.000		CURVE
152	HOST		23+568.863	4.335	0.000	5112594.520	221706.979	0.000		ARC 1
555		CM			-23.046	5112611.442	221722.624	0.000		R=2328.501 Lc=87.424
153	EC		23+608.235	39.372	0.000	5112567.785	221735.896	0.000		

N.T.S.

PR-D-707  
88-05

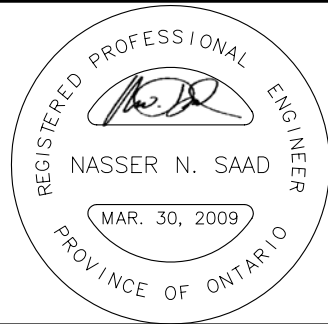
MINISTRY OF TRANSPORTATION, ONTARIO

DRAWING NAME: sheet 1-11 cover HWY 17.dwg  
CREATED: Mar 30, 2009 - 3:45pm  
MODIFIED:

TWP  
HWY

ROLPH  
17

FROM STATION 23+686.997  
TO STATION 25+728.464  
COORDINATE SYSTEM NAD83



METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

H&V CONTROL

JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8

JMOTG

SHEET  
10

PT	C/L	MONUMENT	Chainage	Distance	Offset	Northing	Easting	Elevation	Description	Curve
154	HOT		23+686.997	78.762	0.000	5112514.318	221793.729	0.000		
10125		HCP-99007			-9.083	5112520.987	221799.895	168.629		
155	HOT		23+700.328	13.331	0.000	5112505.268	221803.518	0.000		
41243		SIB			-23.096	5112522.227	221819.197	167.283		
41423		BM-224	23+802.979		-27.969	5112456.119	221897.879	172.234	N&W IN ROOT OF 0.3 POPLAR	
156	HOT		23+868.485	168.157	0.000	5112391.114	221926.991	0.000		
556		SIB			-23.279	5112408.208	221942.794	0.000		
157	HOT		23+919.641	51.156	0.000	5112356.387	221964.554	0.000		
10126		HCM-008930620			-15.006	5112367.405	221974.741	176.859	SIB WITH BRASS CAP 008930620	
41523		BM-225	24+094.456		18.231	5112224.327	222080.541	178.061	TOP OF BOLT IN DRILL BIT	
158	HOT		24+202.679	283.038	0.000	5112164.246	222172.382	0.000		
41588		CM			-16.012	5112176.003	222183.252	178.630		
159	HOT		24+219.307	16.628	0.000	5112152.958	222184.592	0.000		
10127		HCP-99006			15.597	5112141.506	222174.004	179.020		
160	HOT		24+228.792	9.485	0.000	5112146.520	222191.556	0.000		
41589		CM			-20.366	5112161.474	222205.381	178.756		
41623		BM-226	24+341.568		-24.638	5112088.052	222291.090	176.071	N&W IN ROOT OF 0.2 POPLAR	
161	PI		24+544.292	315.500	0.000	5111932.342	222423.221	0.000		
41689		GBM-70U477	24+549.534		22.244	5111912.462	222411.948	175.662	IRON PIPE WITH BRASS CAP 70U477, QUAD 46077	
162	HOT		24+558.497	14.205	0.000	5111922.688	222433.641	0.000		
10128		HCP-99005			-12.646	5111931.965	222442.235	171.649		
163	HOT		24+572.723	14.226	0.000	5111913.020	222444.077	0.000		
564		CM			-23.044	5111929.913	222459.749	0.000		
41690		CM			22.696	5111896.382	222428.641	175.139		
164	HOT		24+707.226	134.503	0.000	5111821.610	222542.743	0.000		
557		SIB			22.761	5111804.913	222527.274	0.000		
165	HOT		24+754.479	47.253	0.000	5111789.496	222577.406	0.000		
10129		HCP-99004			-15.640	5111800.969	222588.036	169.851		
41909		BM-227	24+816.712		22.398	5111730.770	222607.836	167.548	TOP OF T-BAR	
166	HOT		24+834.710	80.231	0.000	5111734.969	222636.262	0.000		
558		SIB			22.871	5111718.191	222620.718	0.000		
167	HOT		24+842.483	7.773	0.000	5111729.686	222641.964	0.000		
565		CM			-22.822	5111746.428	222657.473	0.000		
566		CM			22.876	5111712.904	222626.418	0.000		
168	HOT		24+847.089	4.606	0.000	5111726.556	222645.342	0.000		
560		SIB			-22.831	5111743.304	222660.858	0.000		
169	HOT		24+917.648	70.559	0.000	5111678.603	222697.102	0.000		
559		SIB			22.959	5111661.761	222681.499	0.000		
170	HOT		24+927.729	10.081	0.000	5111671.752	222704.497	0.000		
10130		HCM-008930621			16.566	5111659.600	222693.239	168.058	SIB WITH BRASS CAP 008930621	
171	HOT		25+072.127	144.398	0.000	5111573.617	222810.423	0.000		
567		CM			23.026	5111556.725	222794.774	0.000		
172	HOT		25+087.968	15.841	0.000	5111562.851	222822.043	0.000		
10131		HCP-99003			11.039	5111554.753	222814.541	165.394		
41741		BM-228	25+090.848		-17.742	5111573.909	222836.214	163.384	TOP OF BOLT IN DRILL BIT	
173	HOT		25+263.342	175.374	0.000	5111443.664	222950.692	0.000		
563		SIB			-22.521	5111460.184	222965.997	0.000		
177	PI		25+277.354	14.012	0.000	5111434.141	222960.971	0.000		
174	HOT		25+280.392	3.038	0.000	5111432.072	222963.197	0.000		
10132		HCP-99002			18.389	5111418.602	222950.679	166.345		
175	HOT		25+314.496	34.104	0.000	5111408.858	222988.179	0.000		
562		SIB			-37.543	5111436.359	223013.735	0.000		
176	HOT		25+325.971	11.475	0.000	5111401.046	222996.585	0.000		
561		SIB			38.239	5111373.035	222970.555	0.000		
42408		GBM-93U666	25+470.345		11.076	5111294.654	223094.805	165.640	TABLET IN RK 93U666, QUAD 46077	
178	HOT		25+517.859	191.888	0.000	5111270.424	223137.151	0.000		
10133		HCM-008930622			11.855	5111261.740	223129.081	166.413	CAP CEMENTED IN RK 008930622	
	HOT		25+728.464	210.605		5111127.060	223291.428			
10134		HCP-99001			12.725	5111117.739	223282.766	162.872		

N.T.S.



DRAWING NAME: sheet 1-11 cover HWY 17.dwg  
CREATED: Mar 30, 2009 - 3:46pm

MINISTRY OF TRANSPORTATION, ONTARIO

PR-D-707 88-05

METRIC  
DIMENSIONS ARE IN METRES  
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CONT 2009-5002  
WP 392-98-00

CURVE DATA CHART

JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8

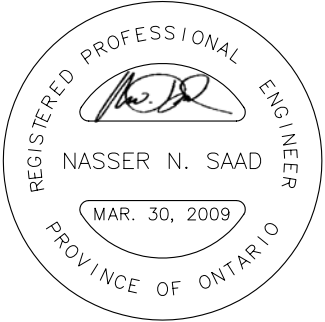


SHEET  
11

CURVE DATA CHART - HIGHWAY 17										
TOWNSHIP	CURVE	P.I. LOCATION	TANGENT-SPIRAL	SPIRAL-CURVE	CURVE-SPIRAL	SPIRAL-TANGENT	RADIUS (m)	"A" (m)	S (%)	W (m)
HEAD	1	STA. 29+431.353	STA. 29+078.109	STA. 29+131.449	STA. 29+703.042	STA. 29+756.381	873.188	215.814	4.95	0.75
ROLPHTON	2	STA. 10+499.740	STA. 10+244.187	STA. 10+305.147	STA. 10+684.660	STA. 10+745.620	873.188	230.715	4.95	0.75
	3	STA. 11+646.894	STA. 11+547.729	STA. 11+599.752	STA. 11+693.445	STA. 11+745.468	682.125	188.378	5.36	0.75
	4	STA. 12+486.066	STA. 12+305.896	STA. 12+366.856	STA. 12+598.805	STA. 12+659.764	582.125	188.378	5.77	0.75
	5	STA. 12+964.138	STA. 12+836.520	STA. 12+874.495	STA. 13+048.284	STA. 13+086.259	388.084	121.398	6.00	1.00
	6	STA. 14+185.734	STA. 14+036.396	STA. 14+097.356	STA. 14+272.615	STA. 14+333.574	873.188	230.715	4.95	0.75
	7	STA. 14+963.652	STA. 14+797.560	STA. 14+858.520	STA. 15+063.920	STA. 15+124.880	582.125	188.378	5.77	0.75
	8	STA. 16+539.974	STA. 16+212.503	STA. 16+273.463	STA. 16+794.020	STA. 16+854.980	1164.251	266.407	6.00	0.75
	9	STA. 18+105.649	STA. 17+941.584	STA. 18+004.367	STA. 18+202.249	STA. 18+265.032	575.000	190.000	5.80	0.75
	10	STA. 19+305.514	STA. 19+172.321	STA. 19+234.556	STA. 19+375.456	STA. 19+437.692	850.000	230.000	5.00	0.75
	11	STA. 19+828.432	STA. 19+716.419	STA. 19+777.379	STA. 19+878.981	STA. 19+939.941	873.188	230.715	4.95	0.75
	12	STA. 21+792.403		STA. 21+695.228	STA. 21+889.466		2328.501		2.53	0.50
	13	STA. 22+694.805		STA. 22+472.934	STA. 22+915.340		2328.501		2.53	0.50
	14	STA. 23+564.528		STA. 23+520.811	STA. 23+608.235		2328.501		2.53	0.50

"A"= Spiral Parameter  
S(%)= Superelevation

NOTE: Curve Widening width to be divided evenly to both sides of the roadway as per OPSD 213.010



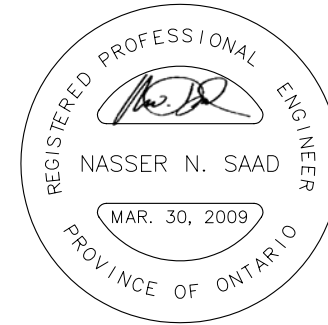
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NOTES:

1. FOR CLOSE CUT CLEARING LOCATIONS, REFER TO SHEET 24-26.
2. FOR CATCH BASIN LOCATIONS, REFER TO SHEET 24-26.

METRIC

DIMENSIONS ARE IN METRES  
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UNLESS OTHERWISE SHOWN



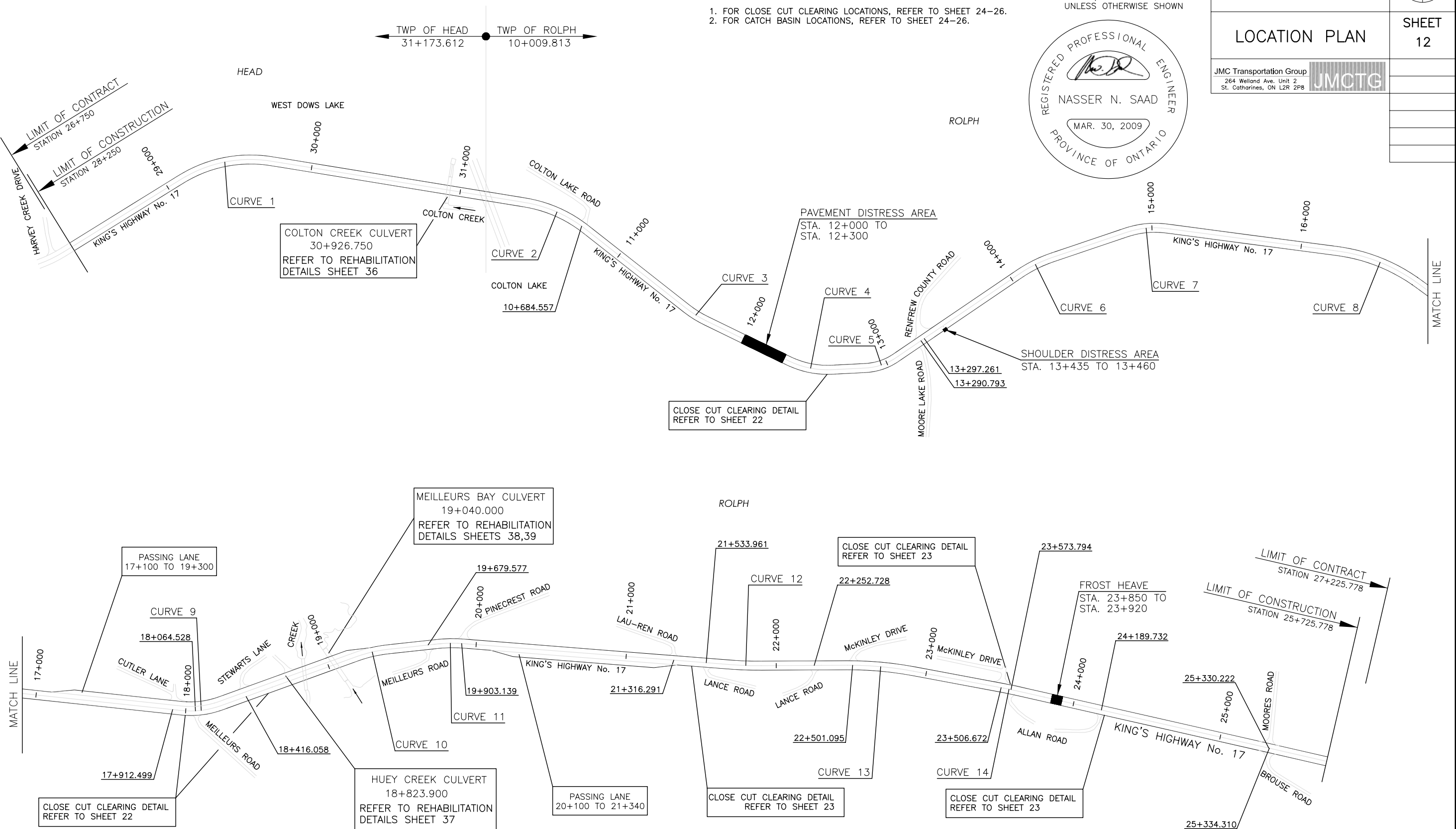
CONT 2009-5002  
WP 392-98-00

LOCATION PLAN

JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8



SHEET  
12



MINISTRY OF TRANSPORTATION, ONTARIO  
PF-D-707 88-05  
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TYPICAL SECTIONS TO BE READ IN CONJUNCTION WITH OPSD 200 SERIES

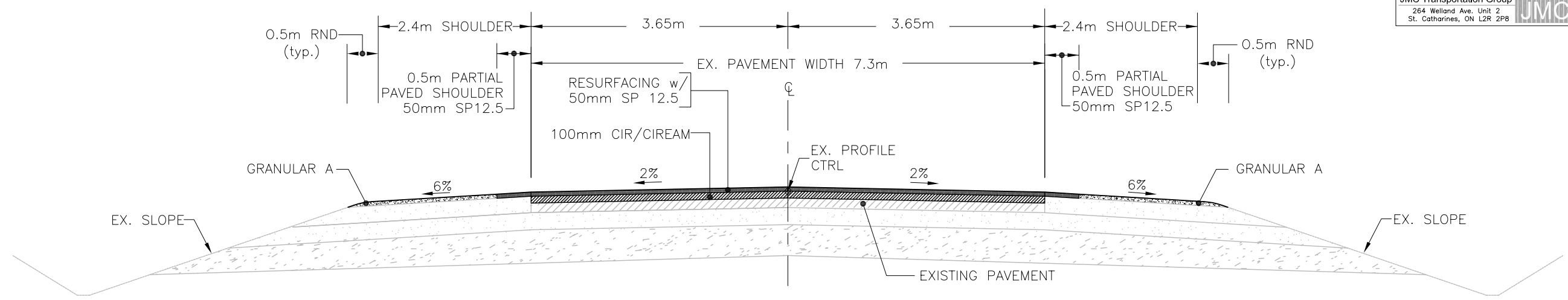
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AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

CONT 2009-5002  
WP 392-98-00

TYPICAL SECTIONS

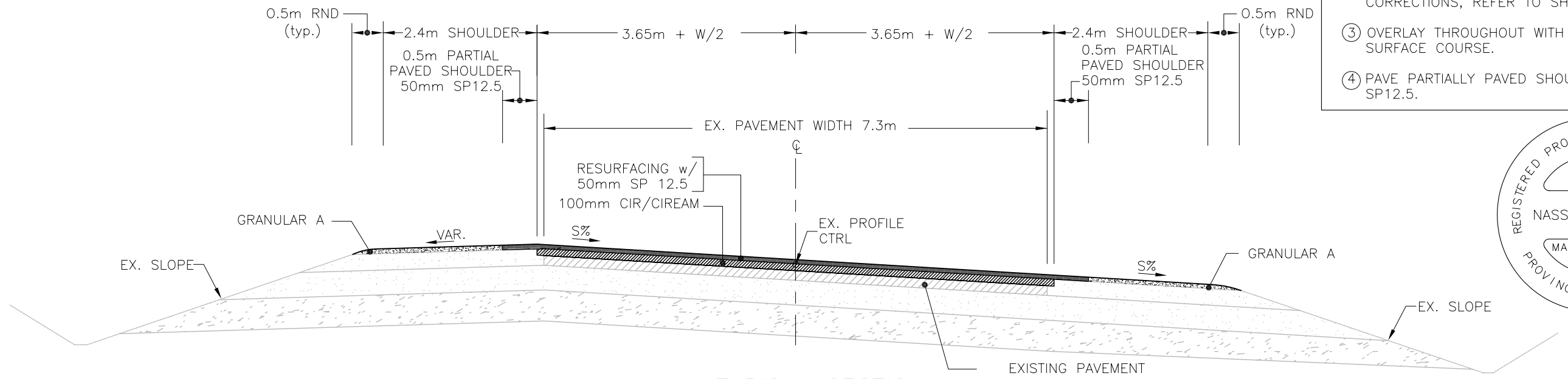
JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8  
JMCTG

SHEET 13



TYPICAL SECTION  
PAVEMENT RESURFACING  
TANGENT SECTION (2-LANE HIGHWAY)

- NOTES:
- ① CIR/CIREAM FULL PAVEMENT WIDTH.
  - ② PADDING FOR CROSSFALL/SUPERELEVATION CORRECTIONS, REFER TO SHEET 20.
  - ③ OVERLAY THROUGHOUT WITH 50mm SP12.5 SURFACE COURSE.
  - ④ PAVE PARTIALLY PAVED SHOULDERS WITH 50mm SP12.5.



TYPICAL SECTION  
PAVEMENT RESURFACING  
SUPERELEVATION SECTION (2-LANE HIGHWAY)

- NOTES:
- 1. REFER TO SHEET #18 FOR FULLY PAVED SHOULDER LOCATION AND CONSTRUCTION DETAIL.
  - 2. REFER TO SHEET #11 FOR W/2 AND SUPERELEVATION.

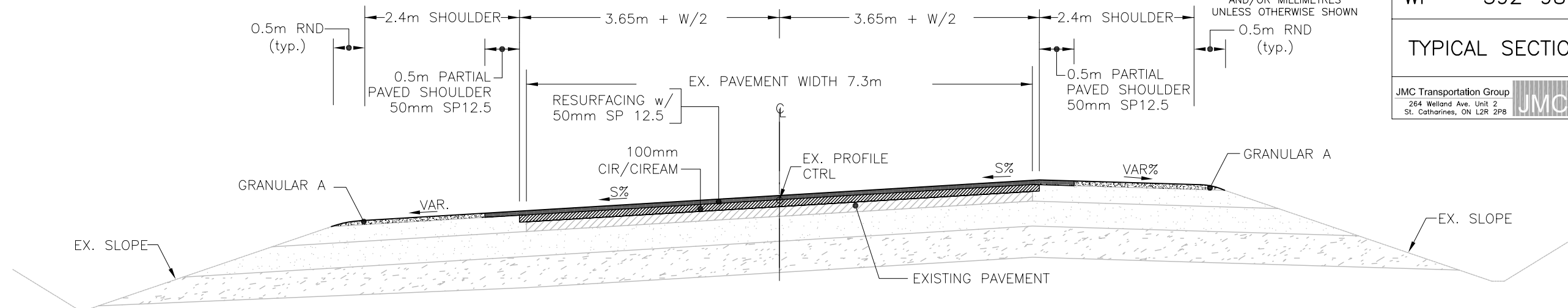
SUPERELEVATION RATES (%)													
PAVEMENT	+6	+5	+4	+3	+2	+1	0	-1	-2	-3	-4	-5	-6
SHOULDER	-2	-2	-2	-3	-3	-3	-4	-5	-6	-6	-6	-6	-6

STATION LOCATION RANGE	
STA. 29+078.11 TO STA. 29+756.38	
STA. 10+244.19 TO STA. 10+745.62	
STA. 14+036.40 TO STA. 14+333.57	
STA. 14+797.56 TO STA. 15+124.88	

STATION LOCATION RANGE	
STA. 16+212.50 TO STA. 16+854.98	
STA. 19+300.00 TO STA. 19+437.69	
STA. 19+716.42 TO STA. 19+939.94	
STA. 22+472.93 TO STA. 22+915.34	



N.T.S.



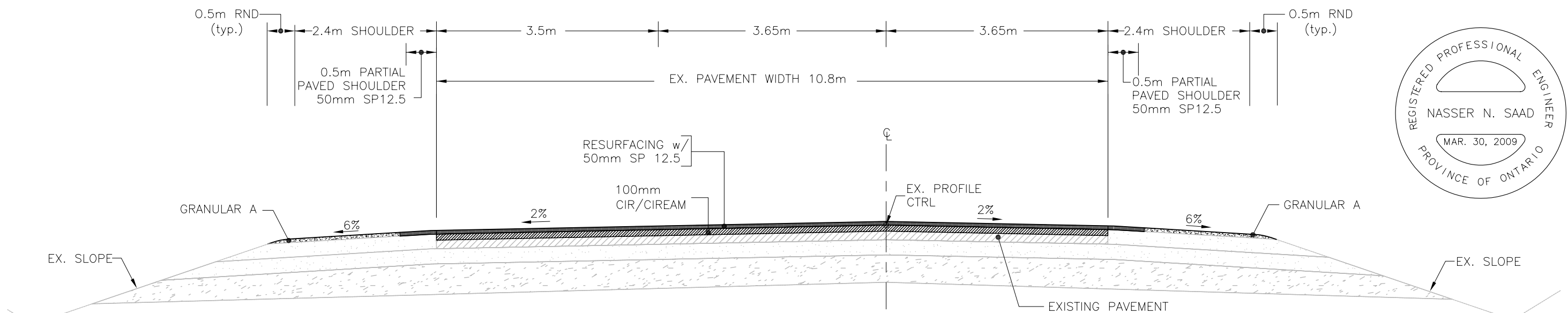
TYPICAL SECTION  
PAVEMENT RESURFACING  
SUPERELEVATION SECTION (2-LANE HIGHWAY)

SUPERELEVATION RATES (%)													
PAVEMENT	+6	+5	+4	+3	+2	+1	0	-1	-2	-3	-4	-5	-6
SHOULDER	-2	-2	-2	-3	-3	-3	-4	-5	-6	-6	-6	-6	-6

STATION LOCATION RANGE
STA. 11+547.73 TO STA. 11+745.47
STA. 12+305.90 TO STA. 12+659.76
STA. 12+836.52 TO STA. 13+086.26
STA. 21+695.23 TO STA. 21+889.47

NOTES:

- ① CIR/CIREAM FULL PAVEMENT WIDTH.
- ② PADDING FOR CROSSFALL/SUPERELEVATION CORRECTIONS, REFER TO SHEET 20.
- ③ OVERLAY THROUGHOUT WITH 50mm SP12.5 SURFACE COURSE.
- ④ PAVE PARTIALLY PAVED SHOULDERS WITH 50mm SP12.5.

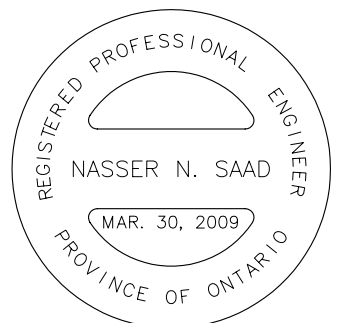


TYPICAL SECTION  
PAVEMENT RESURFACING  
TANGENT SECTION (3-LANE HIGHWAY)

STATION LOCATION RANGE
STA. 17+100.00 TO STA. 17+941.58
STA. 18+265.03 TO STA. 19+172.32

NOTES:

1. REFER TO SHEET #18 FOR FULLY PAVED SHOULDER LOCATION AND CONSTRUCTION DETAIL.
2. REFER TO SHEET #11 FOR W/2 AND SUPERELEVATION.



TYPICAL SECTIONS TO BE READ IN CONJUNCTION WITH OPSD 200 SERIES

METRIC

DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

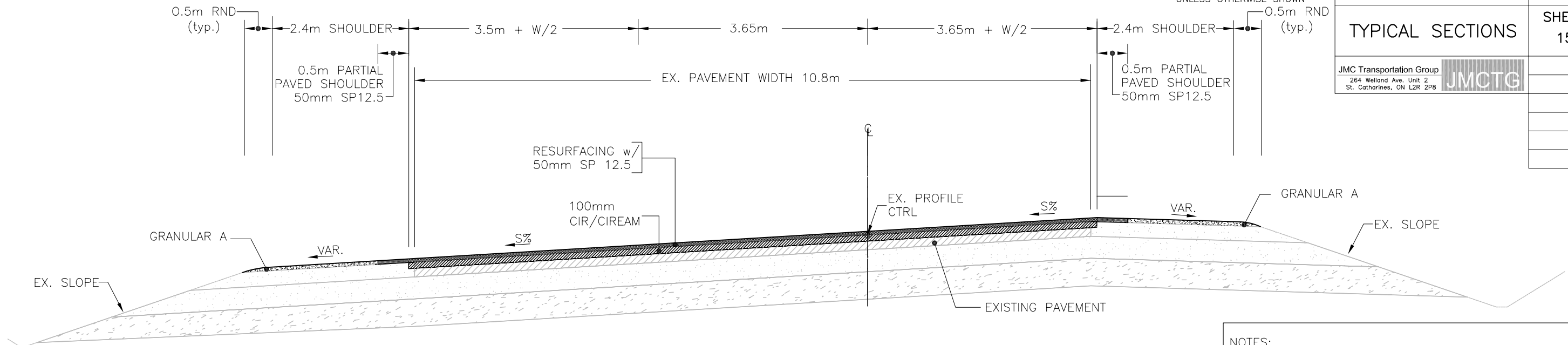
CONT 2009-5002  
WP 392-98-00

TYPICAL SECTIONS

JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8

JMCTG

SHEET  
15



TYPICAL SECTION  
PAVEMENT RESURFACING  
SUPERELEVATION SECTION (3-LANE HIGHWAY)

SUPERELEVATION RATES (%)

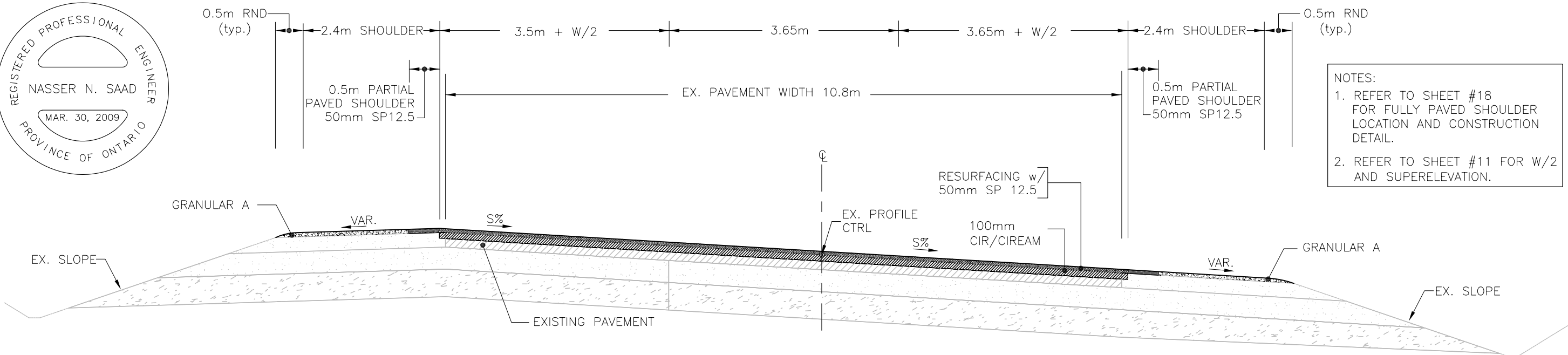
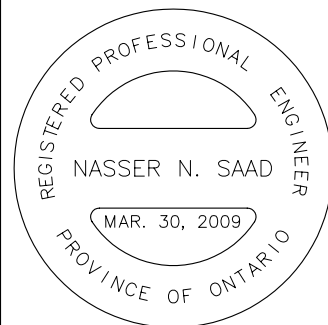
PAVEMENT	+6	+5	+4	+3	+2	+1	0	-1	-2	-3	-4	-5	-6
SHOULDER	-2	-2	-2	-3	-3	-3	-4	-5	-6	-6	-6	-6	-6

STATION LOCATION RANGE

STA. 17+941.58 TO STA. 18+256.03

NOTES:

- ① CIR/CIREAM FULL PAVEMENT WIDTH.
- ② PADDING FOR CROSSFALL/SUPERELEVATION CORRECTIONS, REFER TO SHEET 20.
- ③ OVERLAY THROUGHOUT WITH 50mm SP12.5 SURFACE COURSE.
- ④ PAVE PARTIALLY PAVED SHOULDERS WITH 50mm SP12.5.



TYPICAL SECTION  
PAVEMENT RESURFACING  
SUPERELEVATION SECTION (3-LANE HIGHWAY)

STATION LOCATION RANGE

STA. 19+172.32 TO STA. 19+300

NOTES:

1. REFER TO SHEET #18 FOR FULLY PAVED SHOULDER LOCATION AND CONSTRUCTION DETAIL.
2. REFER TO SHEET #11 FOR W/2 AND SUPERELEVATION.

N.T.S.

TYPICAL SECTIONS TO BE READ IN CONJUNCTION WITH OPSD 200 SERIES

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

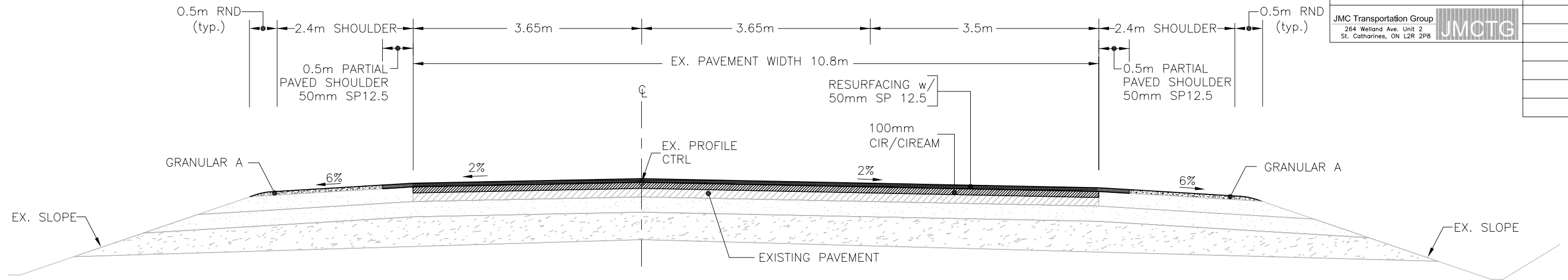
CONT 2009-5002  
WP 392-98-00

TYPICAL SECTIONS

SHEET  
16

JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8

JMCTG



NOTES:

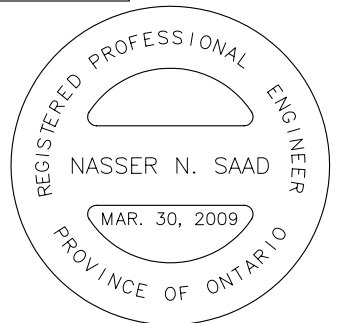
- ① CIR/CIREAM FULL PAVEMENT WIDTH.
- ② PADDING FOR CROSSFALL/SUPERELEVATION CORRECTIONS, REFER TO SHEET 20.
- ③ OVERLAY THROUGHOUT WITH 50mm SP12.5 SURFACE COURSE.
- ④ PAVE PARTIALLY PAVED SHOULDERS WITH 50mm SP12.5.

TYPICAL SECTION  
PAVEMENT RESURFACING  
TANGENT SECTION (3-LANE HIGHWAY)

STATION LOCATION RANGE
STA. 20+100.00 TO STA. 21+340.00

NOTE:

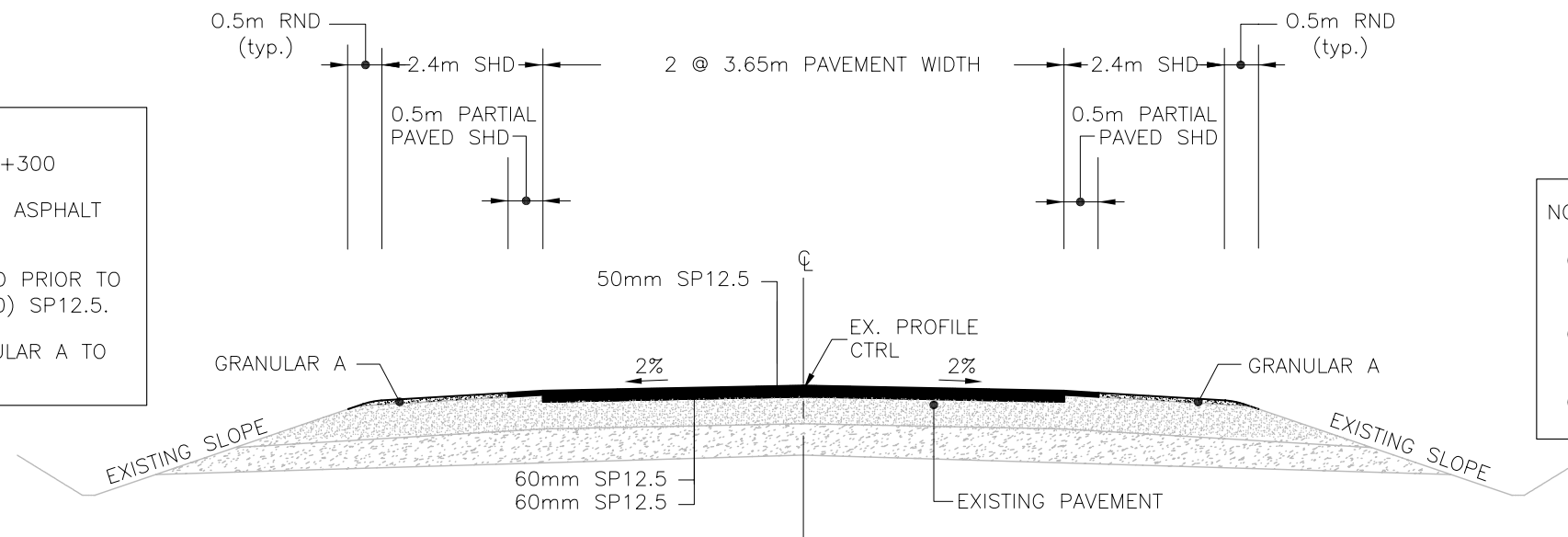
REFER TO SHEET #18  
FOR FULLY PAVED SHOULDER  
LOCATION AND CONSTRUCTION  
DETAIL.



NOTES:

- FROM STA. 12+000 TO STA. 12+300

- ① FULL DEPTH REMOVE THE EXISTING ASPHALT PAVEMENT.
- ② CONSTRUCT EXISTING ROADWAY BED PRIOR TO RESURFACING WITH 120mm (60+60) SP12.5.
- ③ CONSTRUCT SHOULDER WITH GRANULAR A TO MATCH THE TOP OF BINDER.



NOTES:

- ① CIR/CIREAM FULL PAVEMENT WIDTH EXCEPT FROM STA. 12+000 TO STA. 12+300.
- ② OVERLAY THROUGHOUT WITH 50mm SP12.5 SURFACE COURSE.
- ③ PAVE PPS/FPS SHOULDER WITH 50mm SP12.5.

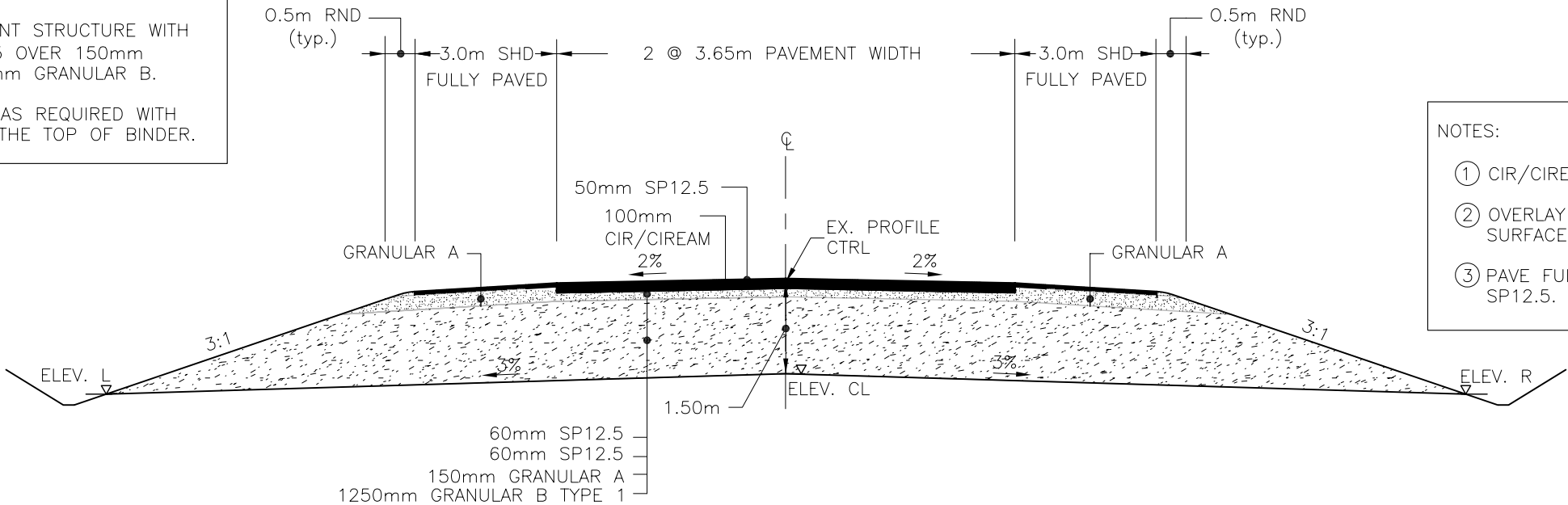
PAVEMENT DISTRESS AREA LOCATION  
STA. 12+000 TO STA. 12+300

N.T.S.

NOTES:  
- FROM STA.23+850 TO STA.23+920

- ① EXCAVATE FULL WIDTH (AS PER OPSD 205.06 FROST HEAVE TREATMENT) FROM STA. 23+824 TO STA. 25+946.
- ② AFTER EXCAVATION, BACK FILL WITH GRANULAR B TYPE 1 TO BOTTOM OF BASE ELEVATION.
- ③ CONSTRUCT THE PAVEMENT STRUCTURE WITH 120mm (60+60) SP12.5 OVER 150mm GRANULAR A AND 1230mm GRANULAR B.
- ④ CONSTRUCT SHOULDERS AS REQUIRED WITH GRANULAR A TO MATCH THE TOP OF BINDER.

TYPICAL SECTION TO BE READ IN CONJUNCTION WITH OPSD 205.060



FROST HEAVE LOCATION  
STA. 23+850 TO STA. 23+920  
(FULL DEPTH EXCAVATION)

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

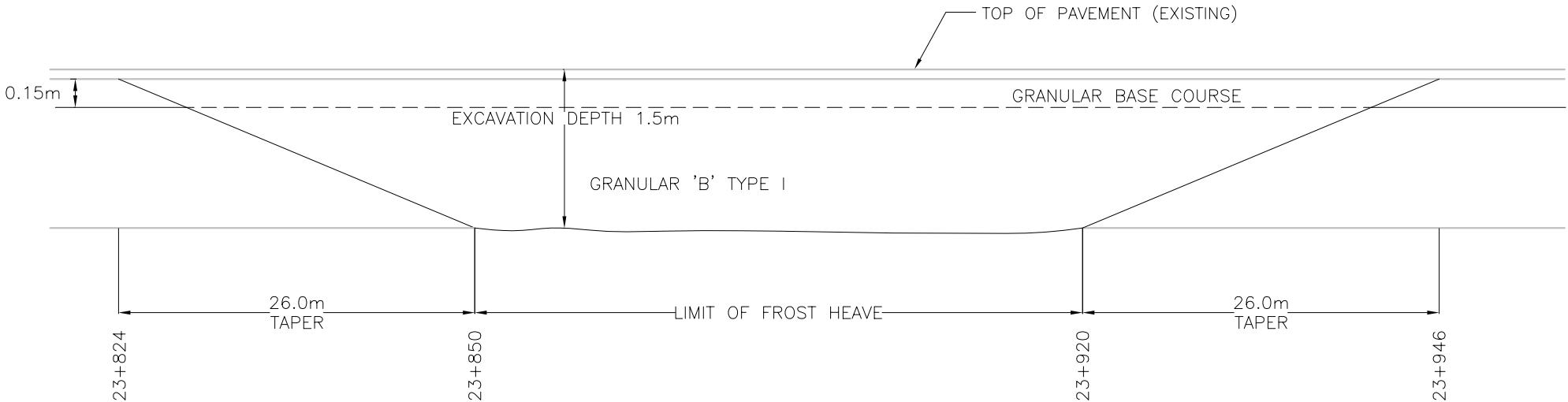
TYPICAL SECTIONS

SHEET  
17

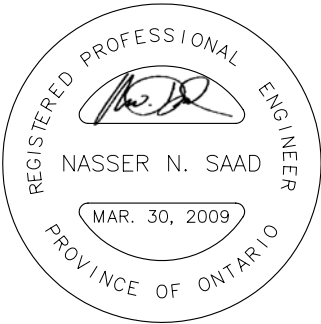
JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8  
JMCTG

- NOTES:
- ① CIR/CIREAM FULL PAVEMENT WIDTH.
  - ② OVERLAY THROUGHOUT WITH 50mm SP12.5 SURFACE COURSE.
  - ③ PAVE FULLY PAVED SHOULDER WITH 50mm SP12.5.

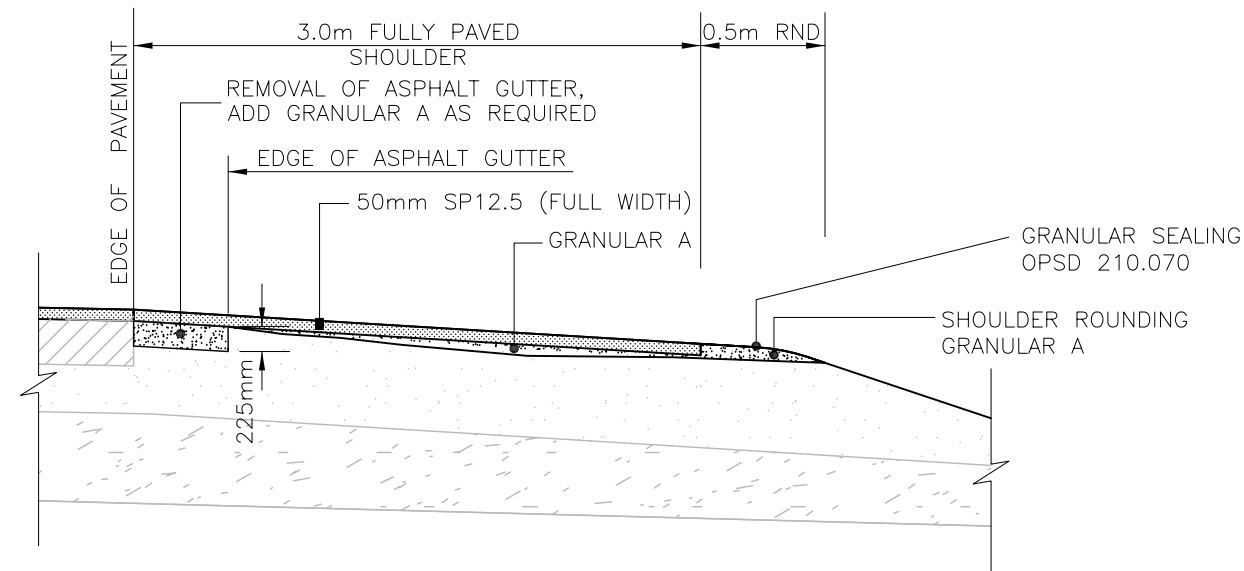
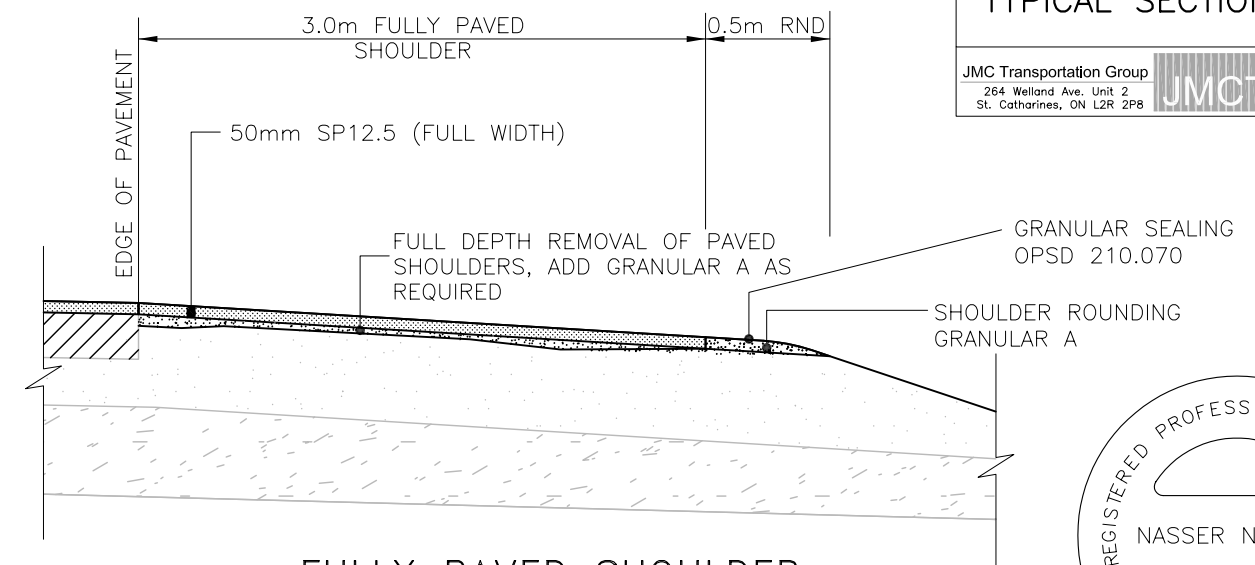
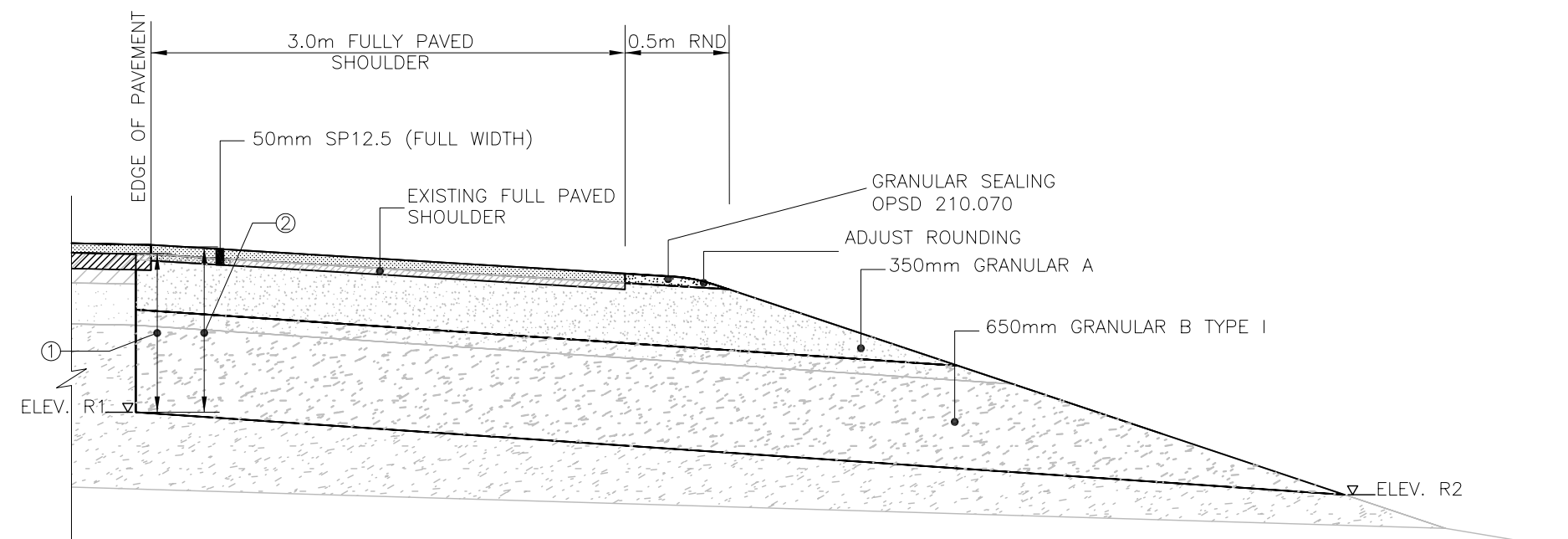
TOWNSHIP	STATION	OFFSET		BOTTOM OF SUBGRADE		
		L	R	ELEV. L	ELEV. R	ELEV.CL
ROLPH	23+850	11.3	11.3	173.177	173.177	173.515
	23+920	11.3	11.3	175.196	175.196	175.536



LONGITUDINAL SECTION  
EXCAVATION DETAIL



N.T.S.

FULLY PAVED SHOULDER  
AT EXISTING ASPHALT GUTTER LOCATIONSFULLY PAVED SHOULDER  
AT OTHER LOCATIONSSHOULDER REPAIR AREA  
STA. 13+435 TO STA. 13+460 RT

## NOTES:

STA. 13+435 TO STA. 13+460

- ① EXCAVATE EXISTING FULLY PAVED SHOULDER TO A DEPTH OF 1.0m.
- ② AFTER EXCAVATION CONSTRUCT WITH 50mm SP12.5 FULL WIDTH, OVER 350mm GRANULAR A OVER 650mm GRANULAR B TYPE I.

TOWNSHIP	STATION	SIDE	OFFSET		BOTTOM OF SUBGRADE	
			R1	R2	ELEV. R1	ELEV. R2
ROLPH	13+435	RT.	3.65	15.60	178.908	178.549
	13+460		3.65	15.60	179.009	178.650

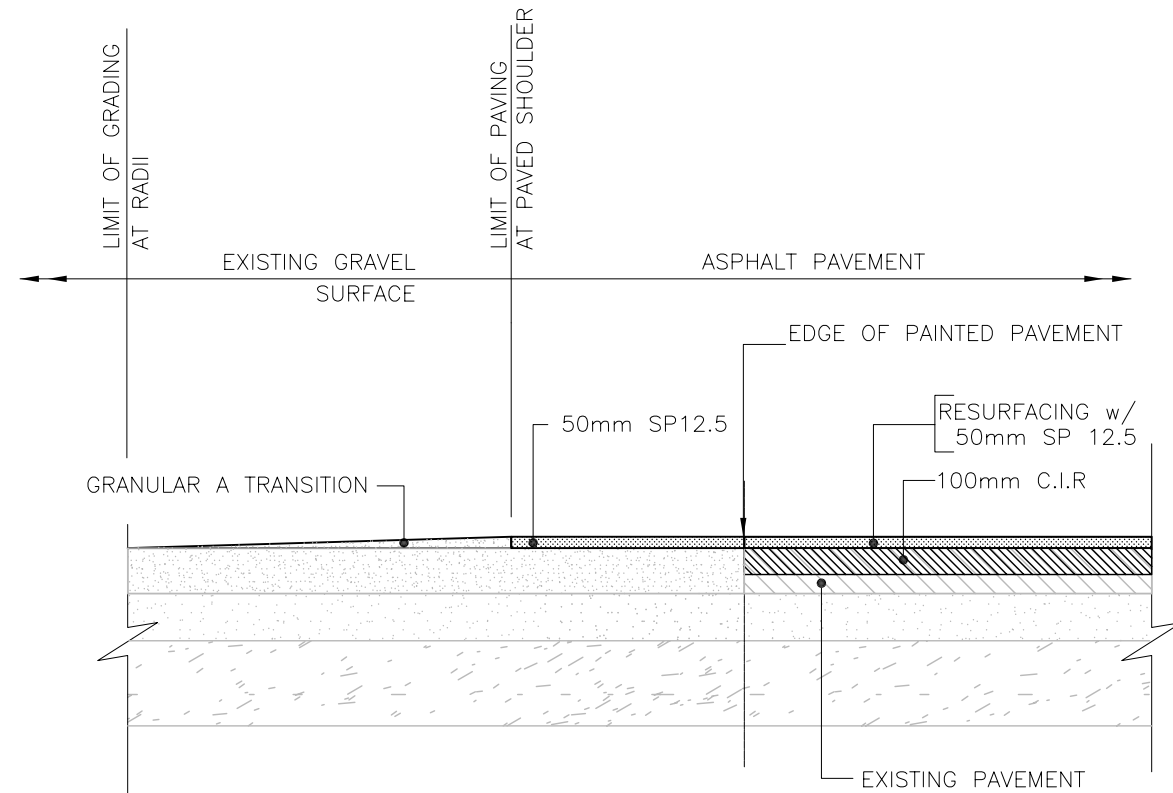
FULLY PAVED SHOULDER TABLE

TOWNSHIP	STATION	LENGTH (M)	LT/RT
HEAD	STA. 30+400 TO STA. 30+800	400	LT/RT
ROLPH	STA. 12+190 TO STA. 12+580	340	LT
	STA. 12+661 TO STA. 13+786	1125	RT
	STA. 13+300 TO STA. 13+675	159	LT
	STA. 14+160 TO STA. 14+480	320	RT
	STA. 16+100 TO STA. 16+196	96	RT
	STA. 16+100 TO STA. 16+700	600	LT
	STA. 16+196 TO STA. 16+654	458	RT
	STA. 16+654 TO STA. 16+700	46	RT
	STA. 17+912 TO STA. 18+770	858	LT
	STA. 18+275 TO STA. 18+975	700	RT
	STA. 19+870 TO STA. 19+899	29	LT
	STA. 19+900 TO STA. 19+967	67	RT
	STA. 19+910 TO STA. 19+967	57	LT
	STA. 19+967 TO STA. 20+610	643	LT/RT
	STA. 25+540 TO STA. 25+580	40	LT/RT
	STA. 23+850 TO STA. 23+925	75	LT/RT

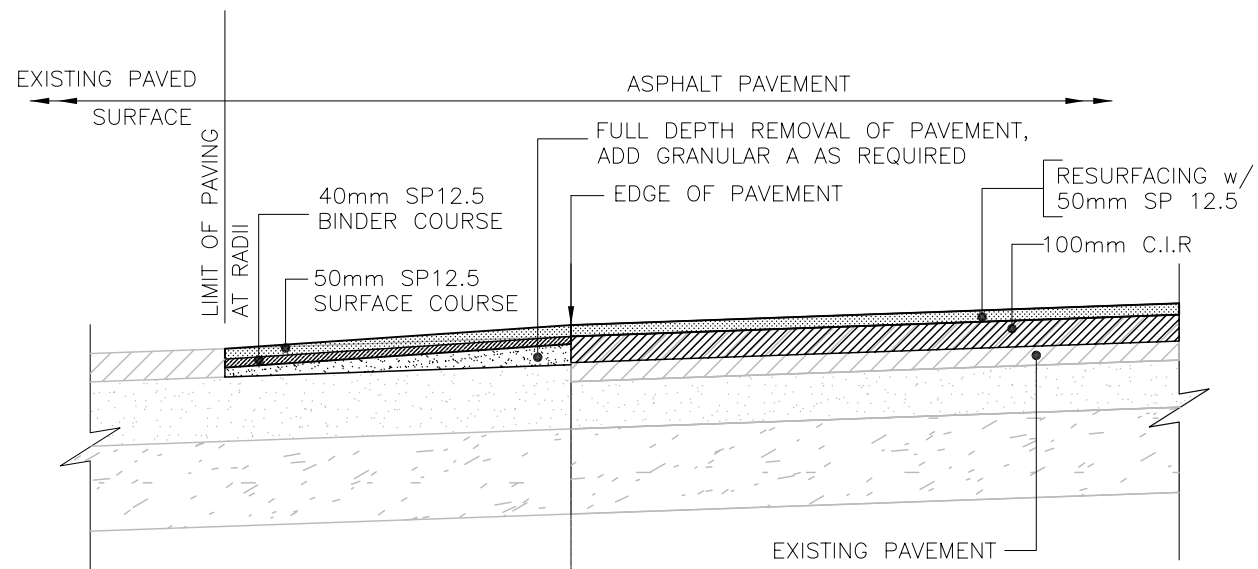
NOTE:

TRANSITION BETWEEN FULLY PAVED SHOULDERS AND  
PARTIALLY PAVED SHOULDER IS 8:1.





TRANSITION DETAIL  
ASPHALT PAVEMENT TO GRAVEL SURFACE  
AT SIDE ROAD, COMMERCIAL AND  
PRIVATE ENTRANCES



TRANSITION DETAIL  
ASPHALT PAVEMENT TO ASPHALT SURFACE  
AT SIDE ROAD AND COMMERCIAL ENTRANCE

**METRIC**

DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

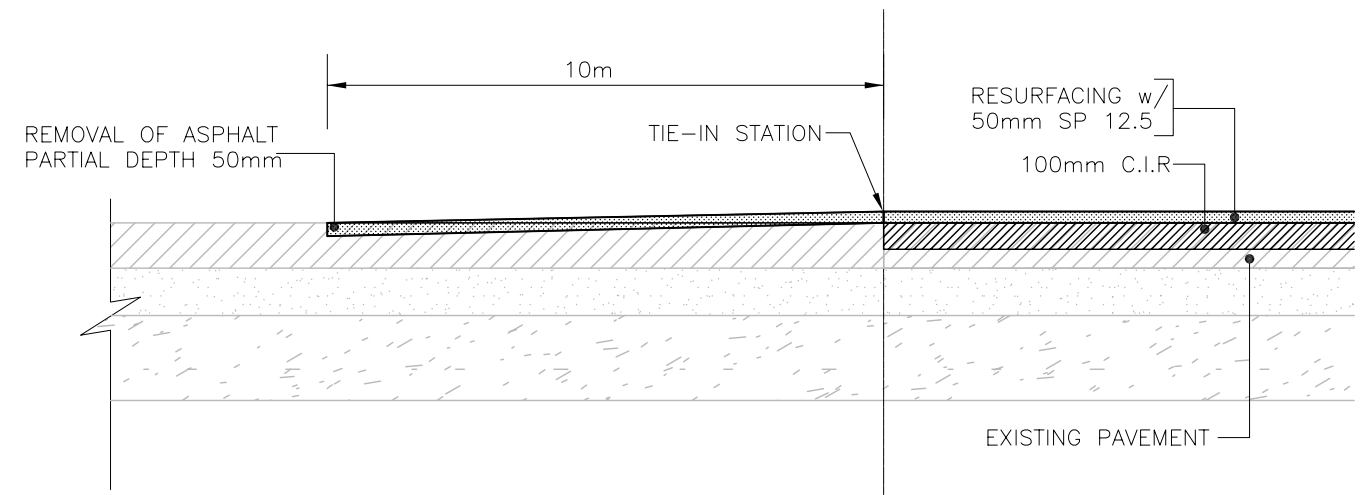
**DETAILS**  
TRANSITION DETAILS

**SHEET**  
**19**

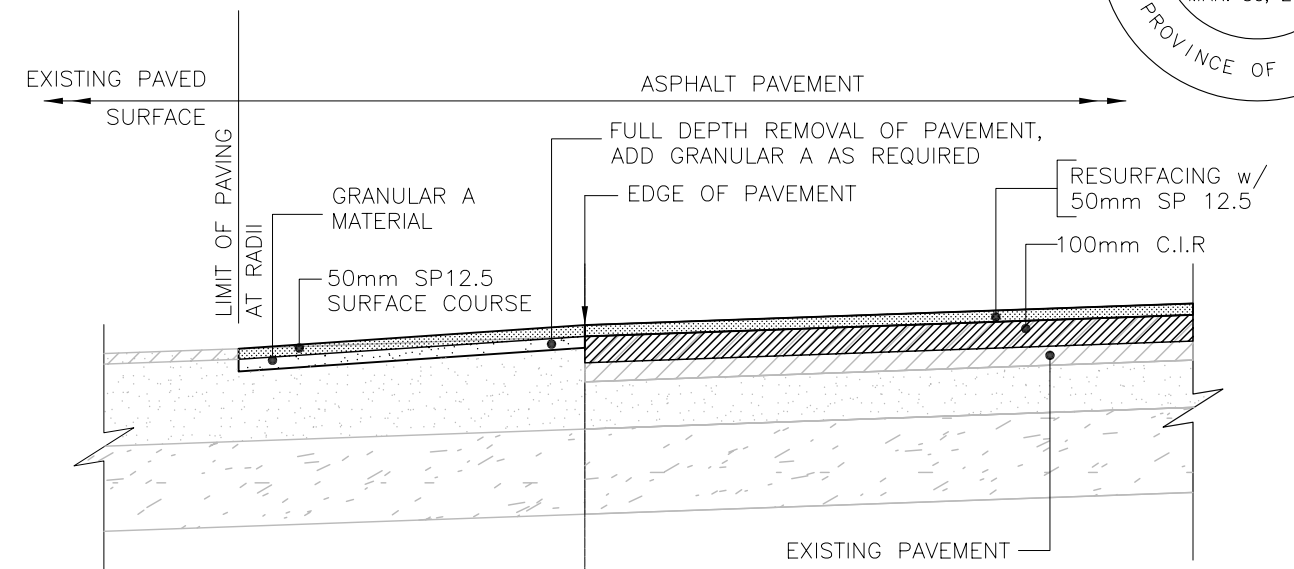
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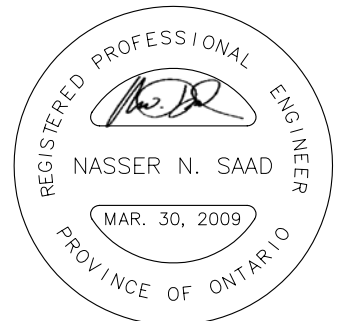
NOTE:  
REFER TO SHEET 35-37 FOR PAVING/GRADING DETAILS.



TRANSITION TREATMENT DETAIL  
HIGHWAY 17  
WEST TIE-IN STA. 28+250  
EAST TIE-IN STA. 25+725.778



TRANSITION DETAIL  
ASPHALT PAVEMENT TO ASPHALT SURFACE  
AT PRIVATE ENTRANCE



N.T.S.

REFER TO TYPICAL SECTIONS FOR CROSS FALL

METRIC

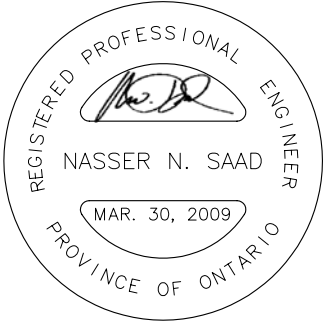
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UNLESS OTHERWISE SHOWN

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PADDING DETAILS

SHEET  
20

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264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8



FROM STATION	TO STATION	PADDING (tonne)
28+595.00	28+685.00	11.3
29+125.00	29+175.00	9.8
29+175.00	29+225.00	12.0
29+225.00	29+295.00	28.3
29+295.00	29+325.00	18.5
30+640.00	30+660.00	18.5
31+100.00	31+125.00	13.9
10+250.00	10+300.00	9.8
10+300.00	10+350.00	10.8
10+350.00	10+400.00	13.0
10+400.00	10+450.00	19.0
10+450.00	10+500.00	15.1
10+500.00	10+550.00	9.4
10+550.00	10+600.00	12.2
10+600.00	10+650.00	16.6
10+650.00	10+700.00	17.8
10+700.00	10+750.00	14.9
10+750.00	10+775.00	25.4
11+095.00	11+135.00	7.4
11+595.00	11+600.00	4.6
11+675.00	11+691.00	13.4
11+700.00	11+720.00	15.4
12+050.00	12+075.00	10.3
12+250.00	12+275.00	11.0
12+325.00	12+350.00	19.2
12+375.00	12+400.00	18.0
12+400.00	12+450.00	11.0
12+450.00	12+500.00	11.0
12+500.00	12+600.00	31.9
12+600.00	12+650.00	13.2
12+850.00	12+925.00	44.2
12+925.00	12+975.00	33.1
12+975.00	13+025.00	33.4
13+025.00	13+075.00	30.0
13+075.00	13+086.00	14.4
13+225.00	13+240.00	8.4
13+240.00	13+247.24	2.6
13+247.24	13+250.00	0.5
13+250.00	13+260.00	2.9
13+260.00	13+262.89	1.0

FROM STATION	TO STATION	PADDING (tonne)
13+275.00	13+277.24	0.2
13+277.24	13+300.86	4.3
13+300.86	13+325.00	27.6
13+325.00	13+330.86	10.6
13+330.86	13+350.00	11.8
13+450.00	13+475.00	50.9
13+530.00	13+550.00	35.5
13+650.00	13+775.00	34.6
14+075.00	14+100.00	19.4
14+100.00	14+150.00	25.9
14+150.00	14+200.00	33.6
14+200.00	14+250.00	28.6
14+250.00	14+300.00	27.1
14+300.00	14+325.00	21.4
14+775.00	14+800.00	10.1
14+825.00	14+850.00	14.2
14+850.00	14+900.00	14.6
14+900.00	14+950.00	25.7
14+950.00	15+000.00	26.6
15+000.00	15+050.00	18.5
15+050.00	15+100.00	20.6
15+100.00	15+150.00	11.5
15+800.00	15+850.00	10.1
16+210.00	16+250.00	31.7
16+250.00	16+350.00	31.7
16+350.00	16+400.00	15.6
16+400.00	16+450.00	29.5
16+450.00	16+500.00	23.3
16+500.00	16+550.00	23.5
16+550.00	16+600.00	25.9
16+600.00	16+650.00	27.1
16+650.00	16+700.00	29.5
16+700.00	16+750.00	28.8
16+750.00	16+800.00	30.2
16+800.00	16+850.00	22.6
17+150.00	17+175.00	6.2
17+925.00	17+960.24	62.6
17+960.24	18+000.00	34.3
18+000.00	18+004.37	2.6
18+004.37	18+015.39	5.8

FROM STATION	TO STATION	PADDING (tonne)
18+015.39	18+025.00	5.8
18+025.00	18+035.00	7.2
18+035.00	18+050.00	10.6
18+050.00	18+060.00	6.7
18+060.00	18+100.00	24.5
18+100.00	18+125.00	13.2
18+125.00	18+200.00	32.6
18+200.00	18+250.00	18.2
18+275.00	18+300.00	43.0
18+430.00	18+435.00	5.0
19+175.00	19+200.00	17.8
19+225.00	19+250.00	13.7
19+250.00	19+300.00	22.8
19+300.00	19+350.00	25.9
19+350.00	19+425.00	44.6
19+425.00	19+467.97	14.9
19+500.00	19+525.00	9.4
19+525.00	19+575.00	6.2
19+575.00	19+650.00	6.0
19+650.00	19+775.00	42.5
19+775.00	19+800.00	16.3
19+800.00	19+850.00	39.1
19+850.00	19+925.00	39.4
19+940.00	19+950.00	4.8
19+950.00	19+975.00	8.6
20+050.00	20+100.00	14.9
20+625.00	20+675.00	9.8
20+775.00	20+800.00	10.3
20+925.00	20+975.00	19.4
21+000.00	21+025.00	25.9
21+100.00	21+150.00	13.9
21+400.00	21+425.00	2.4
21+425.00	21+455.00	12.7
21+455.00	21+475.00	7.4
21+625.00	21+675.00	31.2
21+695.00	21+715.00	24.0
21+725.00	21+775.00	23.8
21+775.00	21+825.00	21.6
21+825.00	21+875.00	19.7
21+875.00	21+900.00	12.7

FROM STATION	TO STATION	PADDING (tonne)
22+000.00	22+050.00	18.5
22+200.00	22+225.00	2.9
22+350.00	22+375.00	2.9
22+450.00	22+475.00	18.2
22+475.00	22+525.00	22.3
22+525.00	22+575.00	20.4
22+575.00	22+625.00	17.3
22+625.00	22+670.00	14.2
22+670.00	22+720.00	15.4
22+720.00	22+750.00	11.0
22+750.00	22+800.00	19.7
22+800.00	22+850.00	18.7
22+850.00	22+900.00	19.0
22+900.00	22+950.00	16.3
23+030.00	23+100.00	86.4
23+100.00	23+125.00	65.0
23+375.00	23+400.00	20.6
23+400.00	23+475.00	14.4
23+475.00	23+500.00	1.4
23+520.81	23+525.00	0.7
23+525.00	23+550.00	5.8
23+550.00	23+560.00	2.6
23+560.00	23+600.00	7.4
24+110.00	24+125.00	1.7
24+125.00	24+150.00	8.6
24+150.00	24+163.00	5.0
24+163.00	24+170.00	1.2
24+425.00	24+450.00	10.3
24+525.00	24+550.00	10.1
24+650.00	24+675.00	10.6
24+800.00	24+875.00	4.3
24+925.00	25+075.00	17.0
25+050.00	25+100.00	3.8
25+100.00	25+200.00	15.6
25+200.00	25+350.00	30.0
25+350.00	25+425.00	12.0
25+570.00	25+600.00	4.6
25+600.00	25+620.00	4.6

METRIC

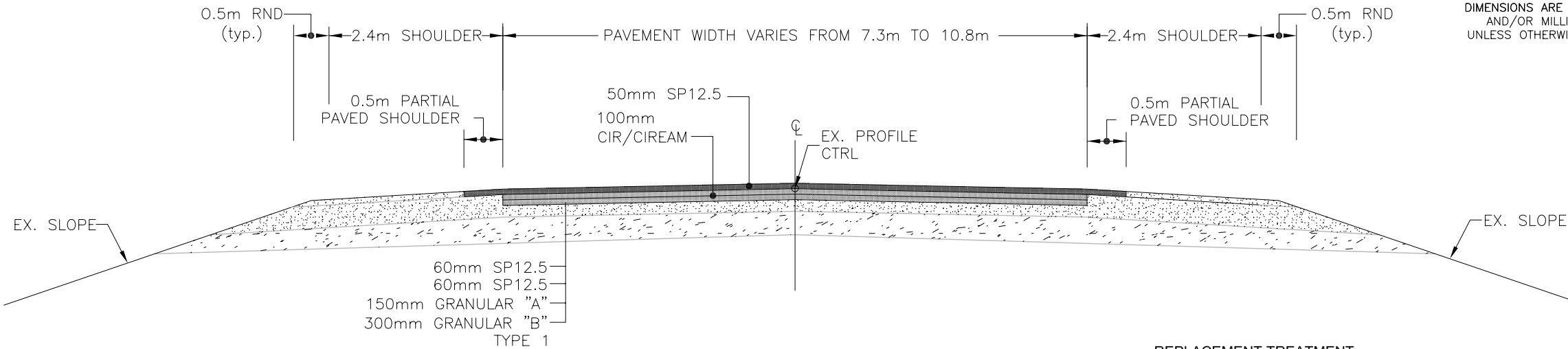
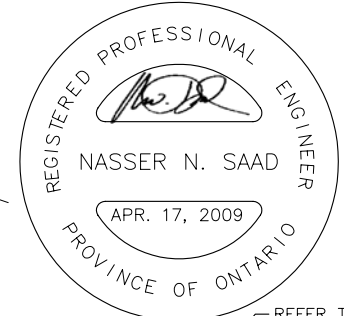
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CONT 2009-5002  
GWP 392-98-00

TRENCH REINSTATEMENT  
AND DITCH CLEANOUT

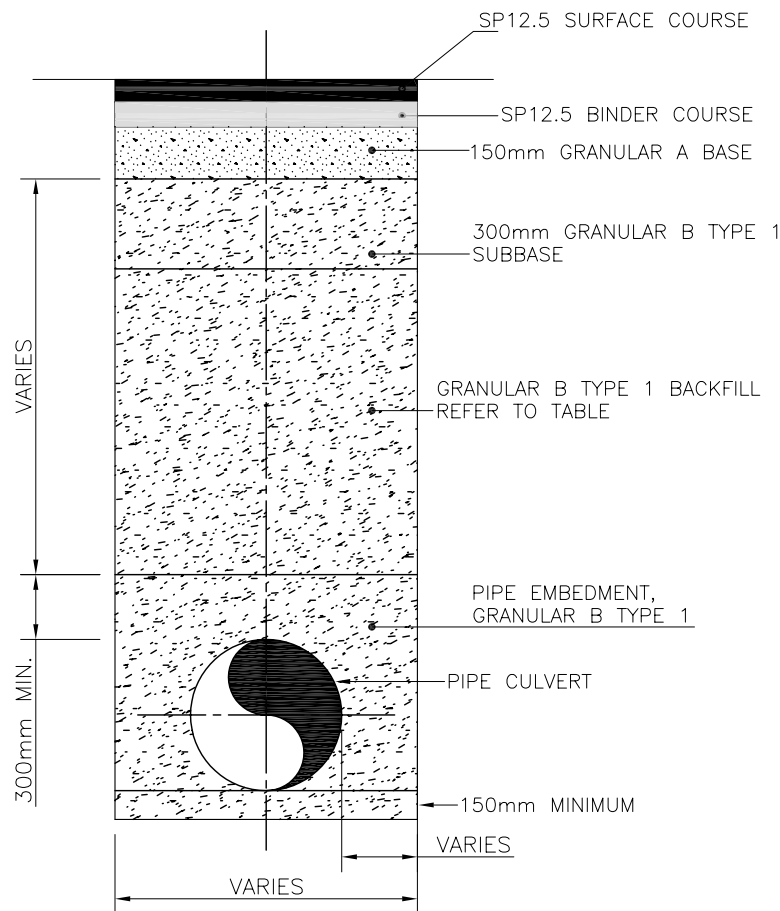
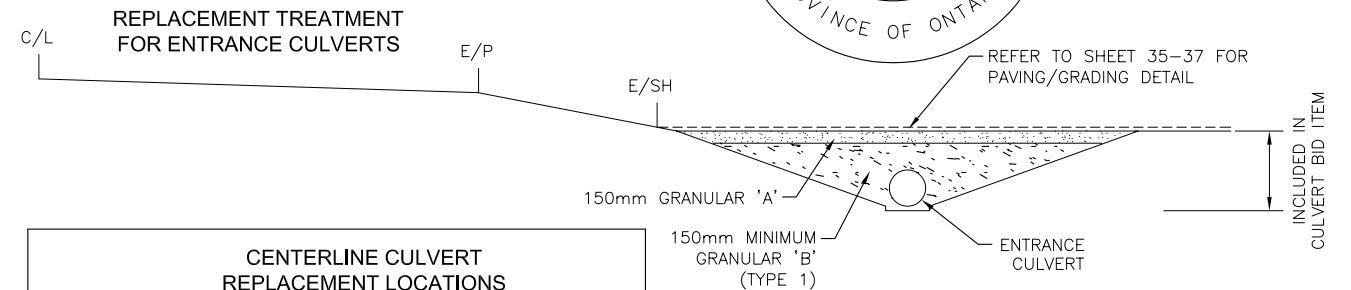
SHEET  
21

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St. Catharines, ON L2R 2P8

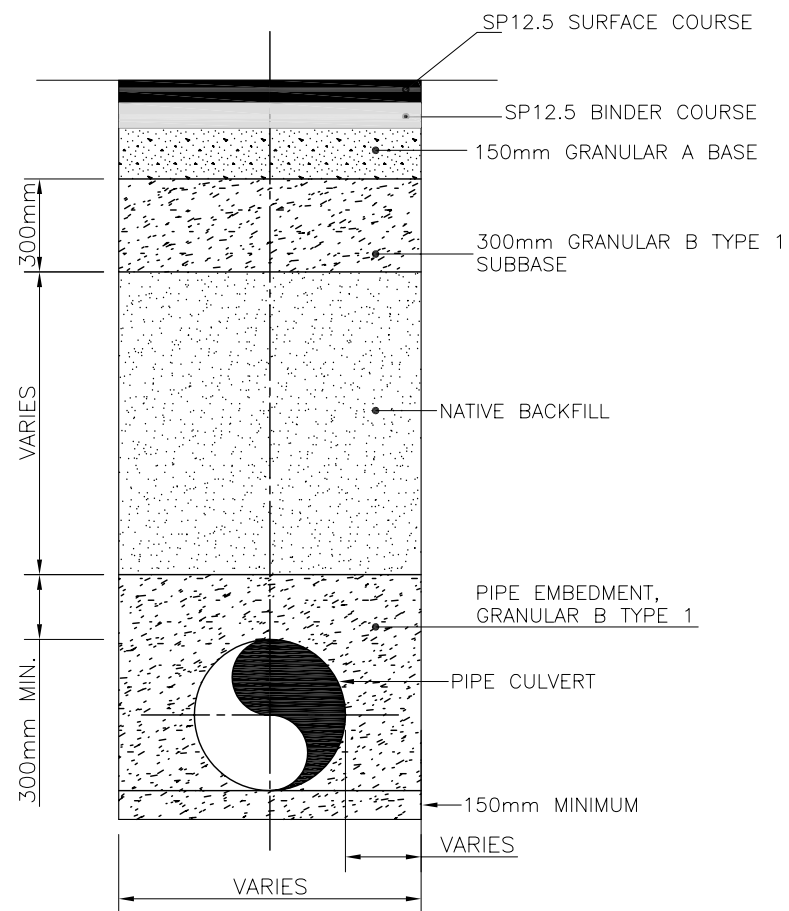


TO BE READ IN CONJUNCTION WITH OPSD  
800 SERIES

### TYPICAL SECTION PAVEMENT REINSTATEMENT CULVERT REPLACEMENT



### TRENCH REINSTATEMENT FOR CENTRELINE CULVERTS AND SIDE ROAD CULVERTS TYPE A



### TRENCH REINSTATEMENT FOR CENTRELINE CULVERTS AND SIDE ROAD CULVERTS TYPE B

CENTERLINE CULVERT REPLACEMENT LOCATIONS			
TOWNSHIP	STATION	GRANULAR B - TYPE 1 BACKFILL DEPTH (mm)	TRENCH REINSTATEMENT
ROLPH	10+330	300	TYPE B
	11+344	300	TYPE B
	12+224	600	TYPE A
	12+632	300	TYPE B
	15+105	300	TYPE B
	16+383	300	TYPE B
	16+719	300	TYPE B
	16+934	300	TYPE B
	19+508	300	TYPE B
	20+044	300	TYPE B
	21+027	300	TYPE B
	21+960	300	TYPE B
	22+047	300	TYPE B
	22+623	300	TYPE B
	22+776	300	TYPE B
	23+599	300	TYPE B
	25+187	300	TYPE B

#### NOTES:

- ① CARRY OUT CULVERT REPLACEMENTS.
- ② REINSTATE THE PAVEMENT STRUCTURE WITH 120mm (60+60) SP12.5 OVER 150mm GRANULAR A AND VARIOUS DEPTH OF GRANULAR B (REFER TO TABLE).
- ③ CONSTRUCT SHOULDER WITH GRANULAR A TO MATCH THE TOP OF BINDER.

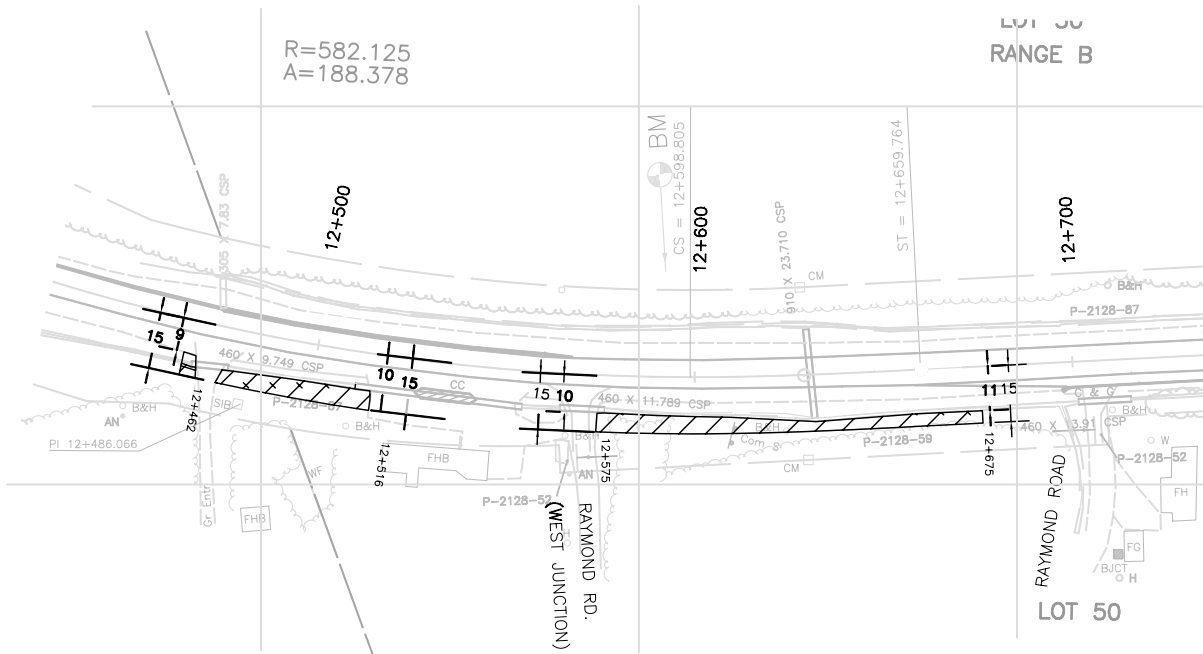
#### NOTES:

- ① CIR/CIREAM FULL PAVEMENT WIDTH AT ALL CULVERT LOCATIONS EXCEPT CULVERT LOCATION STA. 12+224.
- ② OVERLAY THROUGHOUT WITH 50mm SP12.5 SURFACE COURSE.
- ③ PAVE PARTIALLY PAVED SHOULDER WITH 50mm SP12.5.

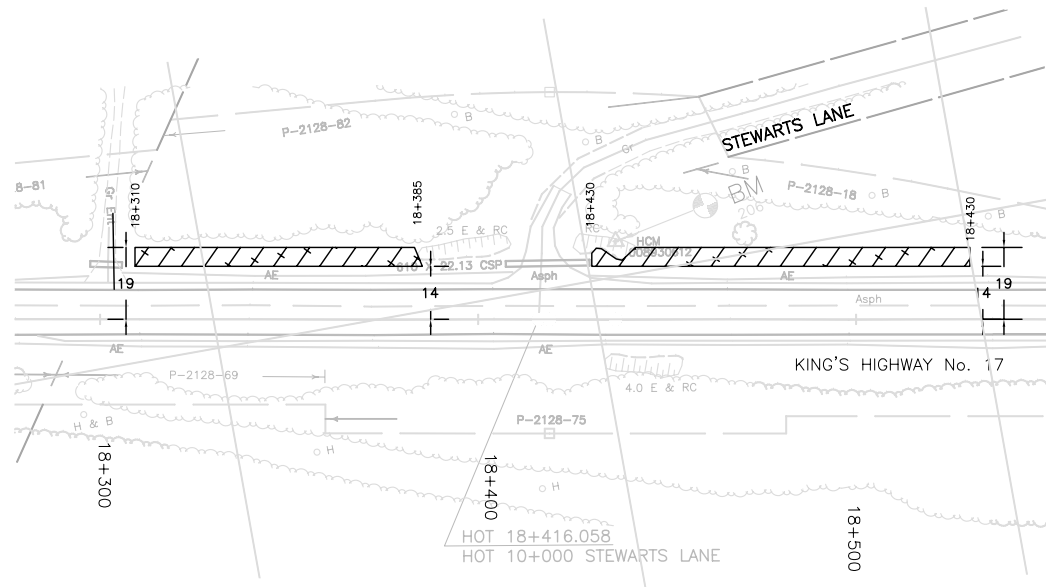
SIDE ROAD CULVERT REPLACEMENT LOCATIONS				
TOWNSHIP	SIDE ROAD NAME	STATION	GRANULAR B - TYPE 1 DEPTH (mm)	TRENCH REINSTATEMENT
ROLPH	RAYMOND RD. (W)	12+570 RT	300	TYPE B
	RAYMOND RD. (E)	12+705 RT	300	TYPE B
	MEILLEURS RD.	18+065 RT	300	TYPE B
	PINECREST RD.	19+903 LT	300	TYPE B
	ALLAN RD.	23+574 RT	300	TYPE B

ENTRANCE CULVERT REPLACEMENT LOCATIONS	
TOWNSHIP	STATION
ROLPH	23+845 Rt.
	23+890 Rt.
	23+930 Rt.

N.T.S.



STATION 12+462 TO STATION 12+516 RT.  
STATION 12+575 TO STATION 12+675 RT.

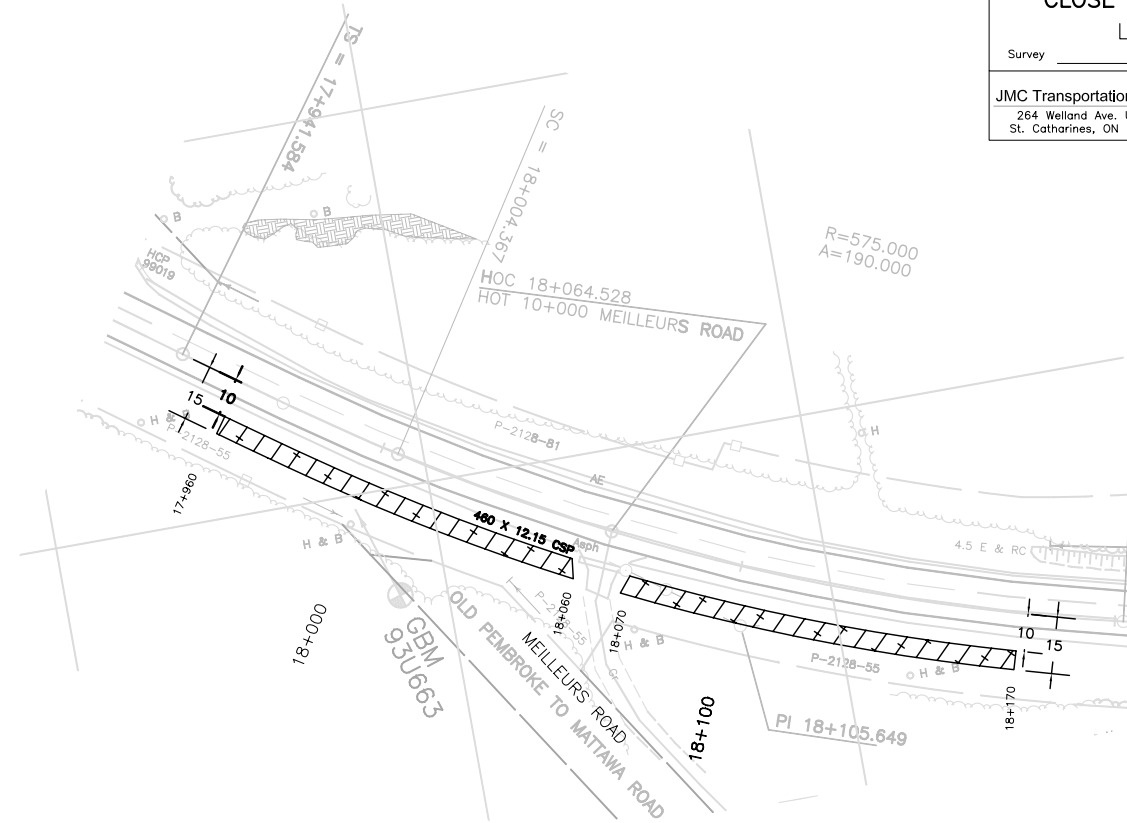


STATION 18+310 TO STATION 18+385 LT.  
STATION 18+430 TO STATION 18+530 LT.

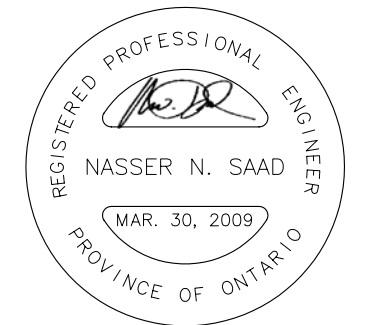
**METRIC**  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

PLATE No	
CONT	2009-5002
WP	392-98-00
CLOSE CUT CLEARING LOCATIONS	
Survey	Revised
JMC Transportation Group 264 Welland Ave. Unit 2 St. Catharines, ON L2R 2P8	
JMCTG	

**SHEET**  
22



STATION 17+960 TO STATION 18+060 RT.  
STATION 18+070 TO STATION 18+170 RT.

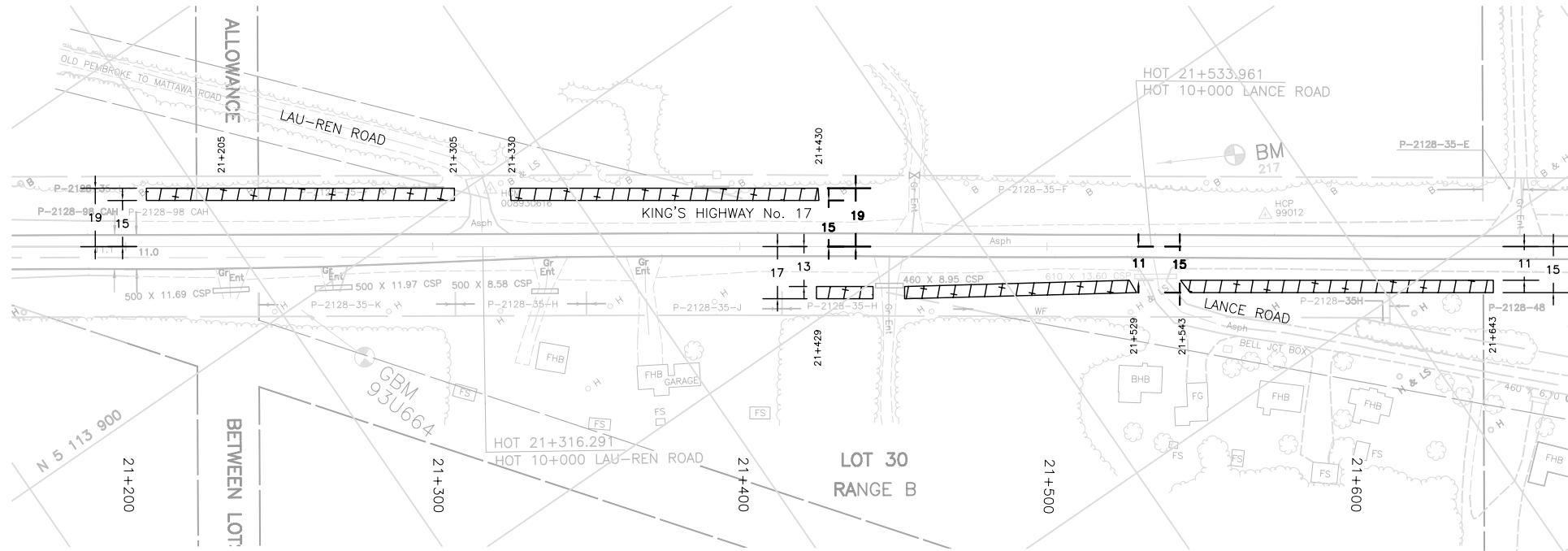


LEGEND:

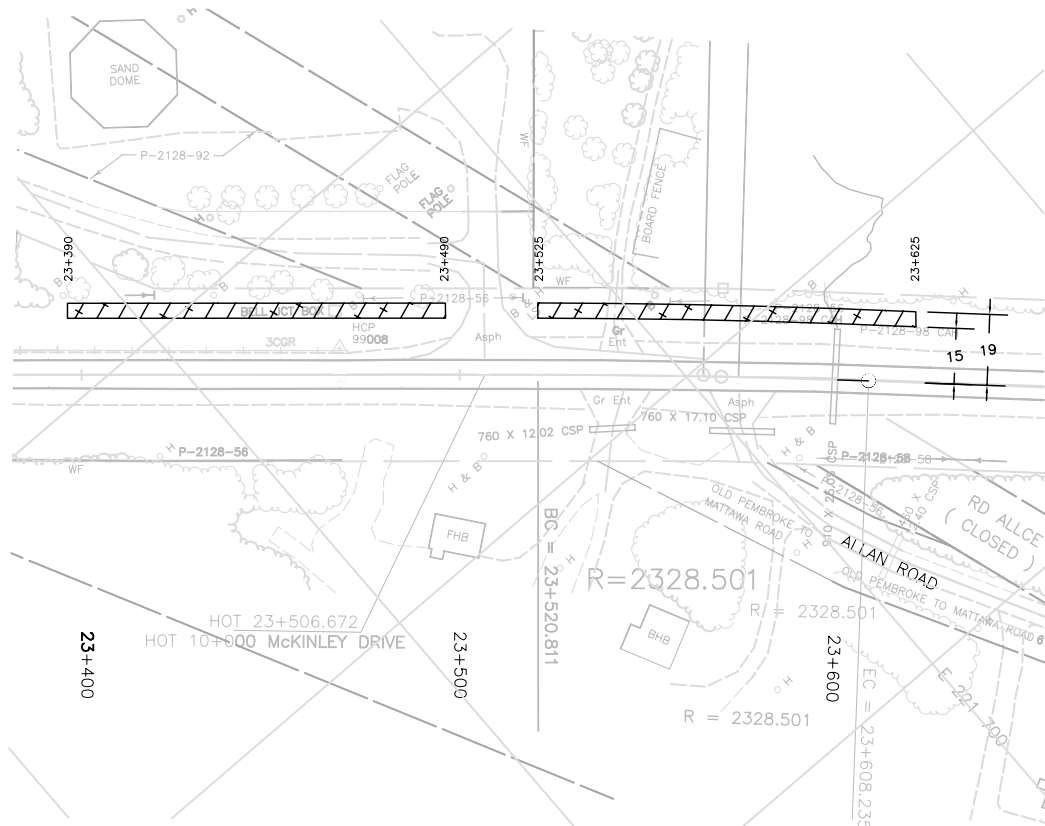


DENOTES CLOSE CUT  
CLEARING

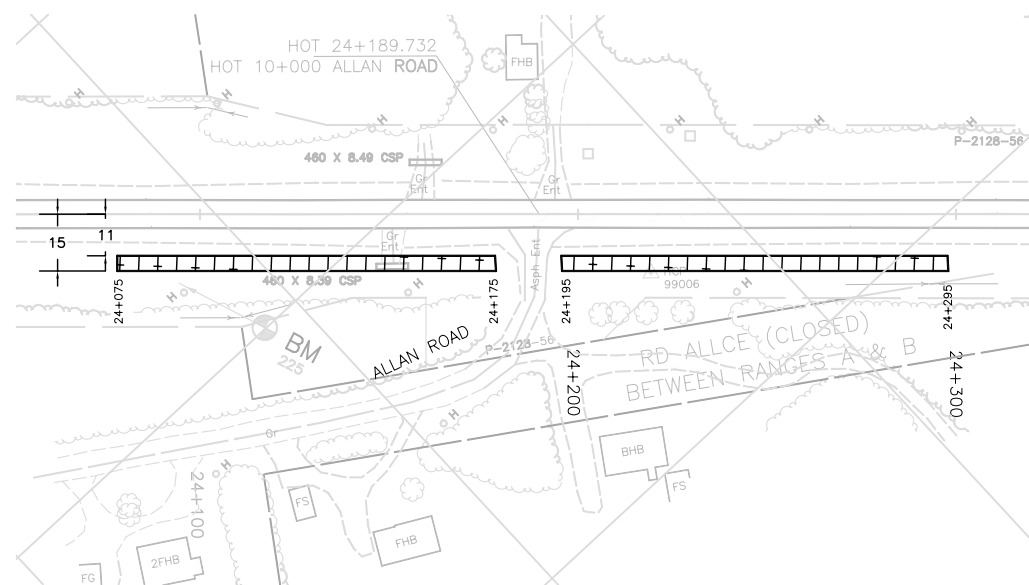
SCALE  
10m 0 20m  
Horizontal



STATION 21+205 TO STATION 21+305 LT.  
STATION 21+330 TO STATION 21+430 LT.  
STATION 21+429 TO STATION 21+529 RT.  
STATION 21+543 TO STATION 21+643 RT.

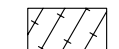


STATION 23+390 TO STATION 23+490 LT.  
STATION 23+525 TO STATION 23+625 LT.



STATION 24+075 TO STATION 24+175 RT.  
STATION 24+195 TO STATION 24+295 RT.

LEGEND:



DENOTES CLOSE CUT  
CLEARING

SCALE  
10m 0 20m  
Horizontal

METRIC

DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

PLATE No

CONT 2009-5002  
WP 392-98-00

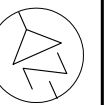
CLOSE CUT CLEARING  
LOCATIONS

Survey Revised

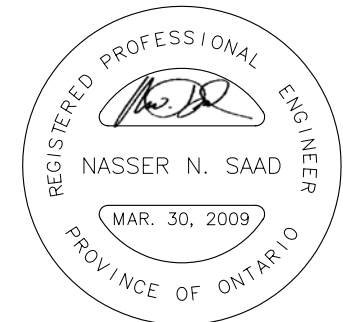
JMC Transportation Group

264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8

JMCTG



SHEET  
23



CONCRETE CURB AND GUTTER

LOCATION TOWNSHIP	STATION	LT/RT	AREA (SQ.M)	LENGTH (M)	EXISTING
ROLPH	STA. 12+526.20 TO STA. 12+538.43	RT	22.6		ISLAND
	STA. 12+716.80 TO STA. 12+721.50	RT		5.0 RADII	CONCRETE CURB&G
	STA. 12+721.50 TO STA. 12+861.80	RT		140.00	CONCRETE CURB&G
	STA. 12+861.80 TO STA. 12+874.00	RT		13.6 RADII	RADII-ENT. CONC. CURB
	STA. 12+883.42 TO STA. 12+908.29	RT	46.8		ISLAND
	STA. 12+925.30 TO STA. 12+953.72	RT	54		ISLAND
	STA. 12+952.40 TO STA. 12+975.80	LT		40 RADII	RADII-ENT. CONC. CURB
	STA. 12+991.20 TO STA. 13+022.40	LT		45 RADII	RADII-ENT. CONC. CURB
	STA. 12+959.50 TO STA. 13+021.20	RT		61.70	CONCRETE CURB&G

ISLAND ELEVATION		
STATION	OFFSET (m)	ELEVATION (m)
12+526.2	4.525	190.055
	6.725	190.019
12+538.4	4.525	190.551
	6.725	190.515
12+883.42	7.150	197.735
	9.350	197.699
12+908.29	7.150	197.931
	9.350	197.895
12+925.30	7.150	197.943
	9.350	197.907
12+953.72	7.150	197.742
	9.350	197.706

CURB AND GUTTER ELEVATION		
STATION	OFFSET (m)	ELEVATION (m)
12+716.80	7.950	194.081
12+721.50	6.650	194.249
12+861.80	6.900	197.188
12+874.00	12.150	197.504
12+959.50	11.350	197.583
12+967.3	7.150	197.547
12+994.00	7.150	196.970
13+021.20	7.150	196.104
12+952.40	4.650	197.310
12+975.8	27.850	196.479
12+991.20	29.750	196.093
13+022.40	4.650	195.611

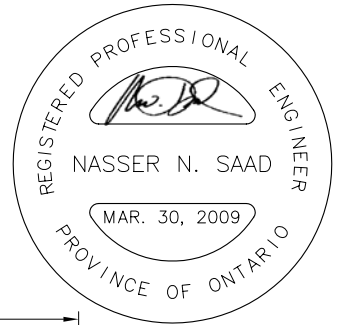
METRIC

DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

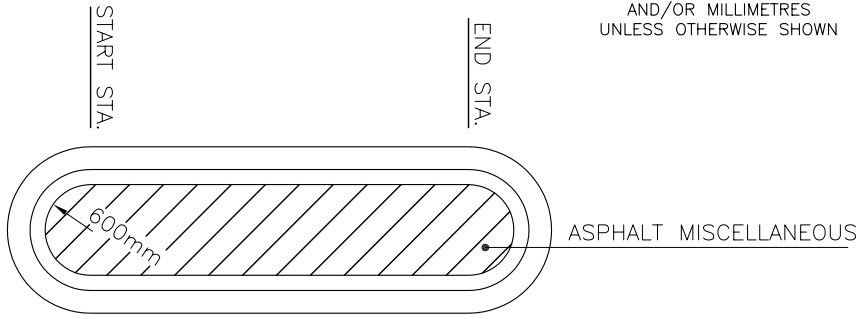
PLATE No  
CONT 2009-5002  
WP 392-98-00

DETAILS  
CONCRETE CURB AND GUTTER  
CATCH BASIN  
Survey \_\_\_\_\_ Revised \_\_\_\_\_

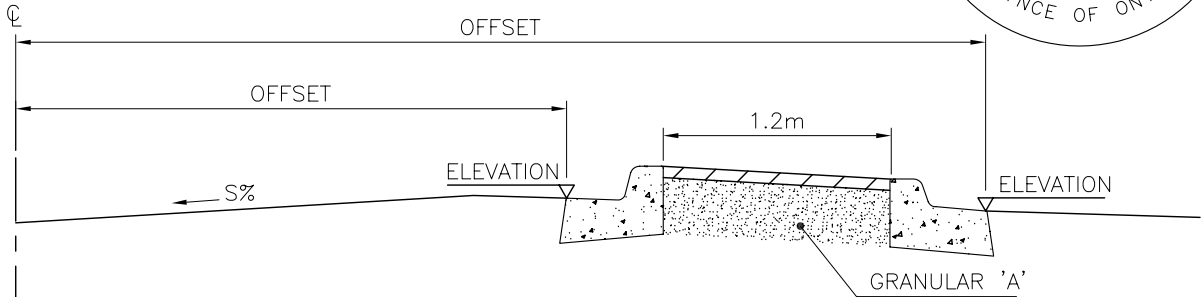
JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8  
JMCTG



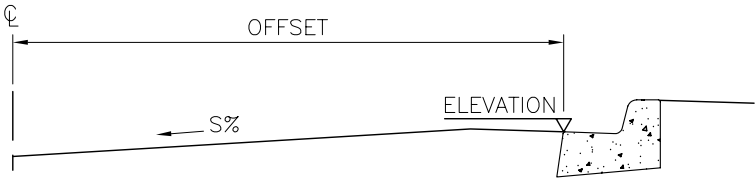
SHEET  
24



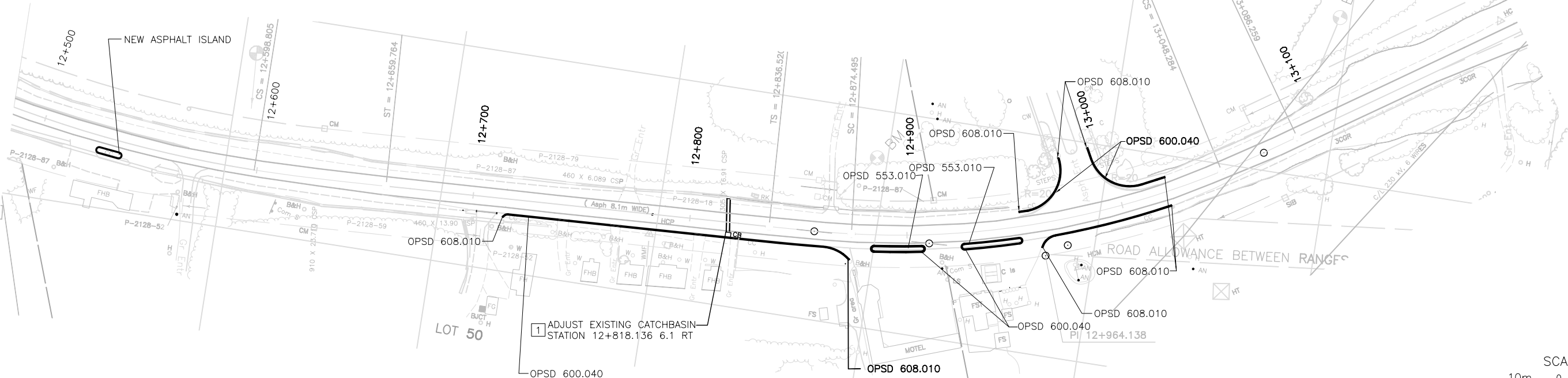
ISLAND PLAN



ISLAND ELEVATION



CURB AND GUTTER ELEVATION



SCALE  
10m 0 20m  
Horizontal

DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

CONT	2009-5002
WP	392-98-00



SHEET  
25

**DETAILS**  
CONCRETE CURB AND GUTTER  
CATCH BASIN

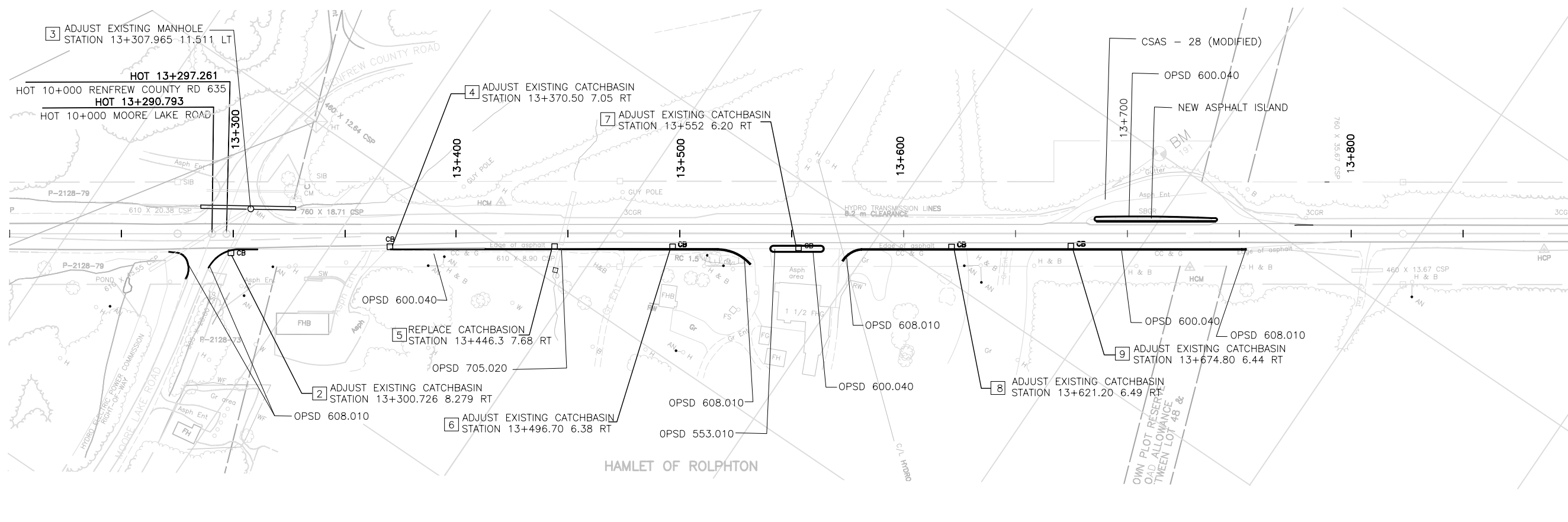
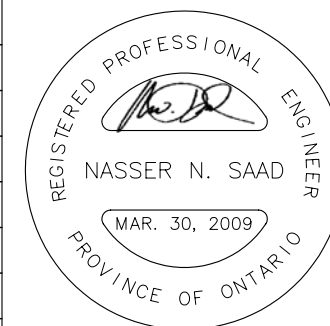
**JMC Transportation Group**  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8



CONCRETE CURB AND GUTTER						
LOCATION TOWNSHIP	STATION	LT/RT	AREA (SQ.M)	LENGTH (M)	EXISTING	
ROLPH	STA. 13+271.48 TO STA. 13+280.29	RT		18.1 RADII	MOORE LAKE ROAD—CC&G	
	STA. 13+288.76 TO STA. 13+311.16	RT		33.4 RADII	MOORE LAKE ROAD—CC&G	
	STA. 13+370.69 TO STA. 13+516.70	RT		146.0	CONCRETE CURB&G	
	STA. 13+516.70 TO STA. 13+531.65	RT		16.6 RADII	RADII—ENT. CONC. CURB	
	STA.13+540.30 TO STA.13+564.50	RT	45.5		ISLAND	
	STA. 13+572.60 TO STA. 13+581.14	RT		10 RADII	RADII—ENT. CONC. CURB	
	STA. 13+581.14 TO STA. 13+751.08	RT		169.94	CONCRETE CURB&G	
	STA. 13+683.80 TO STA. 13+739.40	LT	80		ISLAND	

CURB AND GUTTER ELEVATION		
STATION	OFFSET (m)	ELEVATION (m)
13+271.48	8.100	182.437
13+280.29	20.100	181.977
13+288.76	15.210	181.835
13+311.16	6.940	181.419
13+370.69	6.650	180.256
13+443.70	6.650	179.804
13+516.70	6.650	180.816
13+531.65	13.150	180.775
13+572.60	11.590	182.326
13+581.14	6.650	182.953
13+630.00	6.650	185.128
13+666.11	6.650	186.367
13+710.00	6.650	187.292
13+751.08	6.650	187.513

ISLAND ELEVATION		
STATION	OFFSET (m)	ELEVATION (m)
13+540.30	6.650	181.473
	8.850	181.401
13+564.50	6.650	182.334
	8.850	182.262
13+683.80	4.150	186.95
	6.350	186.878
13+710.00	4.150	187.442
	6.350	187.37
13+739.4	4.150	187.638
	6.350	187.566



CONCRETE CURB AND GUTTER					
LOCATION TOWNSHIP	STATION	LT/RT	AREA (SQ.M)	LENGTH (M)	EXISTING
ROLPH	STA. 19+724.17 TO STA. 19+734.65	RT	19.4		ISLAND
	STA. 24+967.79 TO STA. 25+003.26	LT	67.4		ISLAND
	STA. 25+020.26 TO STA. 25+030.26	LT	18.1		ISLAND
	STA. 25+262.60 TO STA. 25+284.62	LT	41.3		ISLAND

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

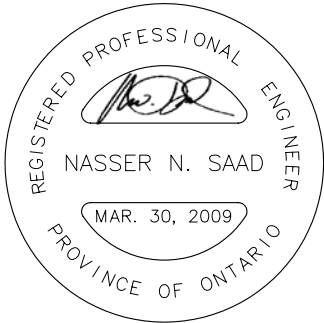
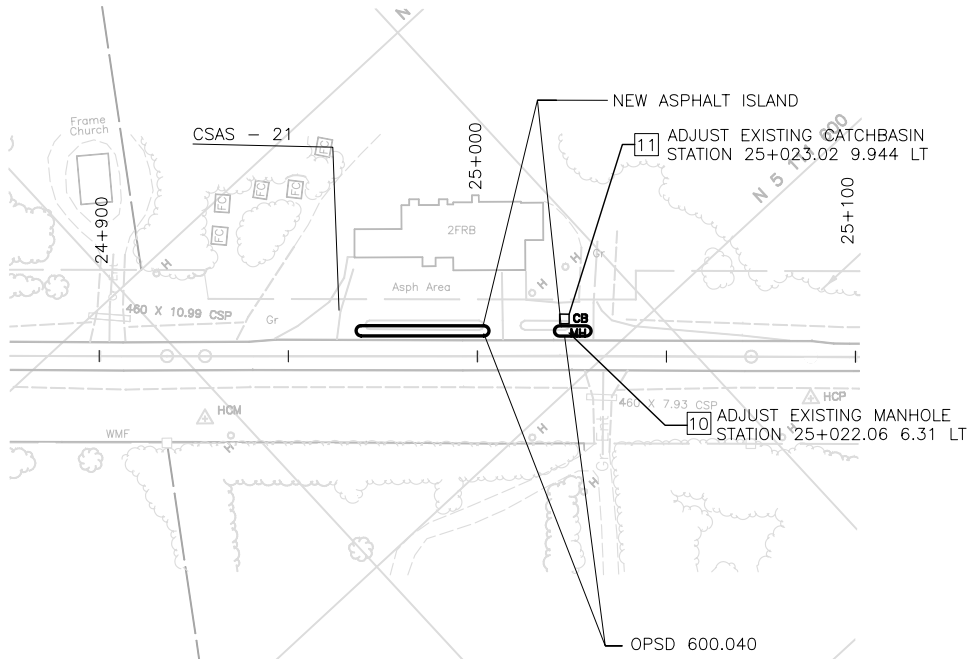
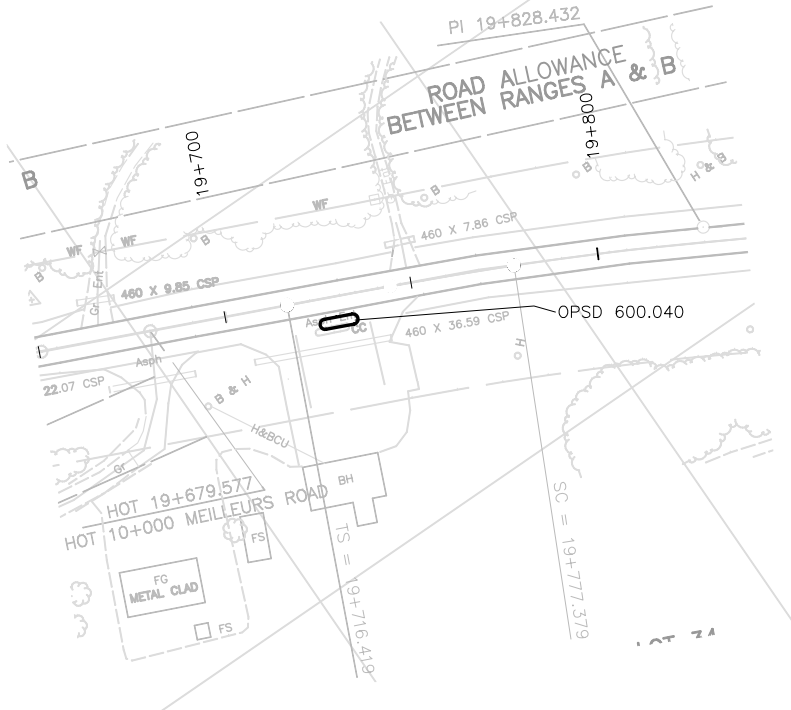
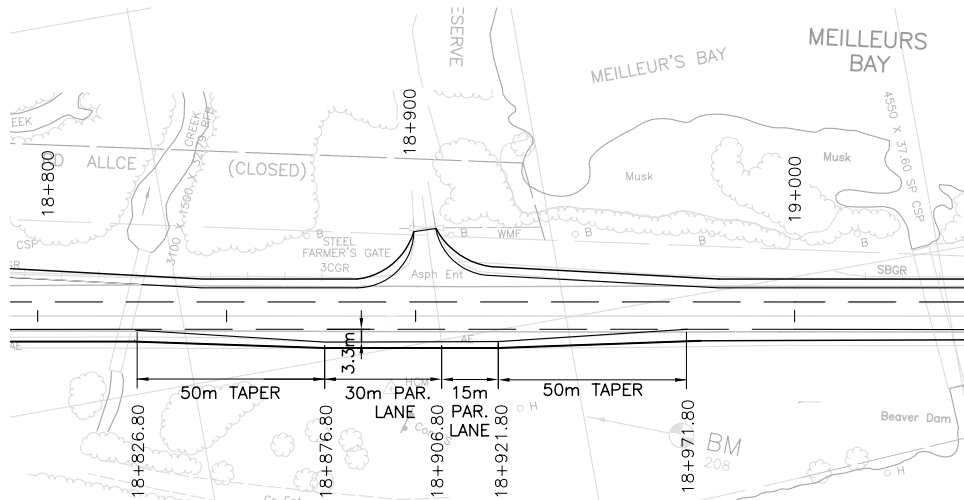
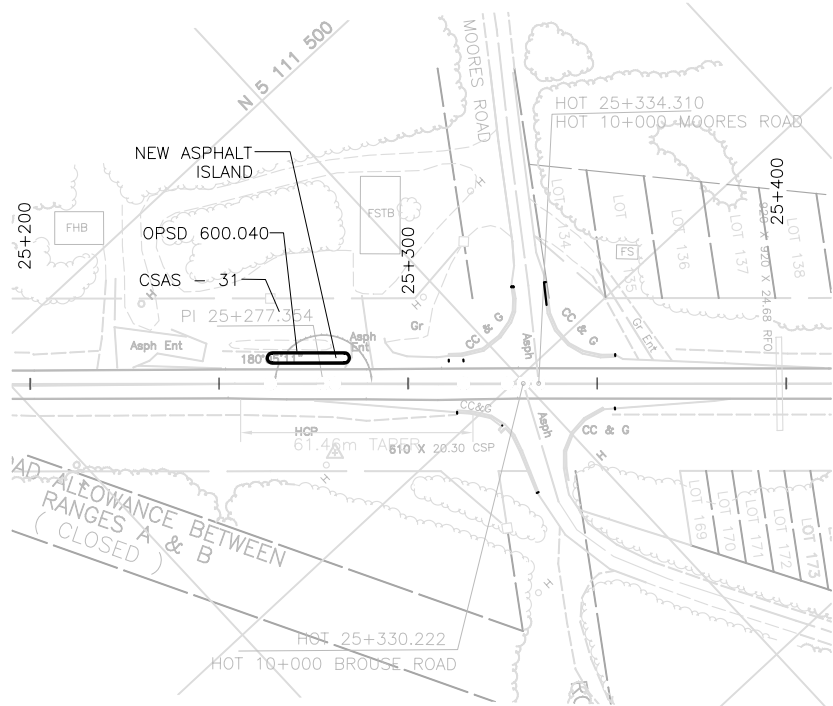


PLATE No	
CONT WP	2009-5002 392-98-00
DETAILS CONCRETE CURB AND GUTTER CATCH BASIN, LEFT TURN SLIP AROUND Survey _____ Revised _____	
JMC Transportation Group 264 Welland Ave. Unit 2 St. Catharines, ON L2R 2P8 JMCTG	

SHEET  
26



ISLAND ELEVATION		
STATION	OFFSET (m)	ELEVATION (m)
19+724.17	4.198	120.298
	6.398	120.190
19+734.65	4.262	120.331
	6.462	120.223
24+967.79	4.150	167.519
	6.350	167.454
25+003.26	4.150	167.310
	6.350	167.245
25+020.26	4.150	167.145
	6.350	167.08
25+030.26	4.150	167.037
	6.350	166.972
25+262.60	4.150	165.004
	6.350	164.939
25+284.62	4.150	164.847
	6.350	164.782



LEFT TURN SLIP AROUND

STA. 18+826.80 TO 18+971.80

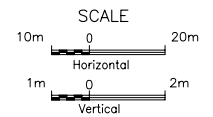
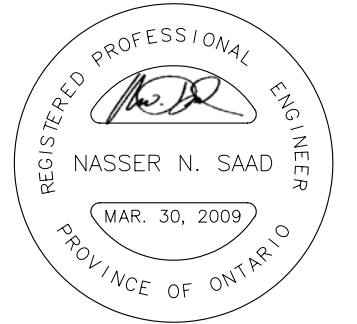
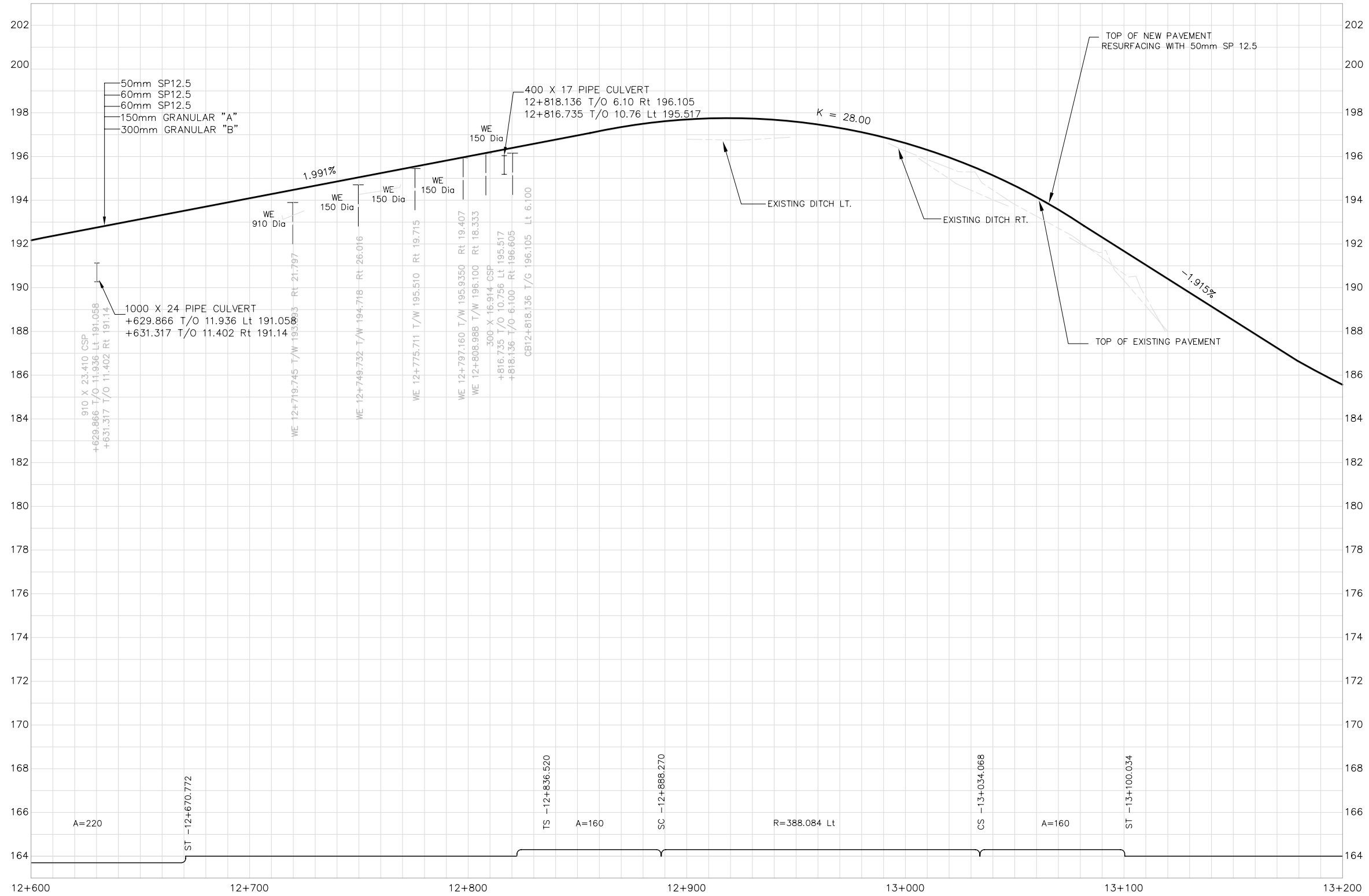
SCALE  
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Horizontal

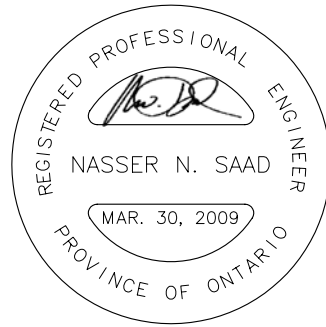


METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

PLATE No	
CONT WP	2009-5002 392-98-00
PROFILES	
STA 12+600	TO STA 13+200
Survey	Revised
JMC Transportation Group 264 Welland Ave. Unit 2 St. Catharines, ON L2R 2P8	
JMCOTG	

SHEET
27

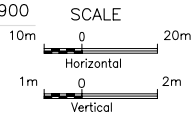
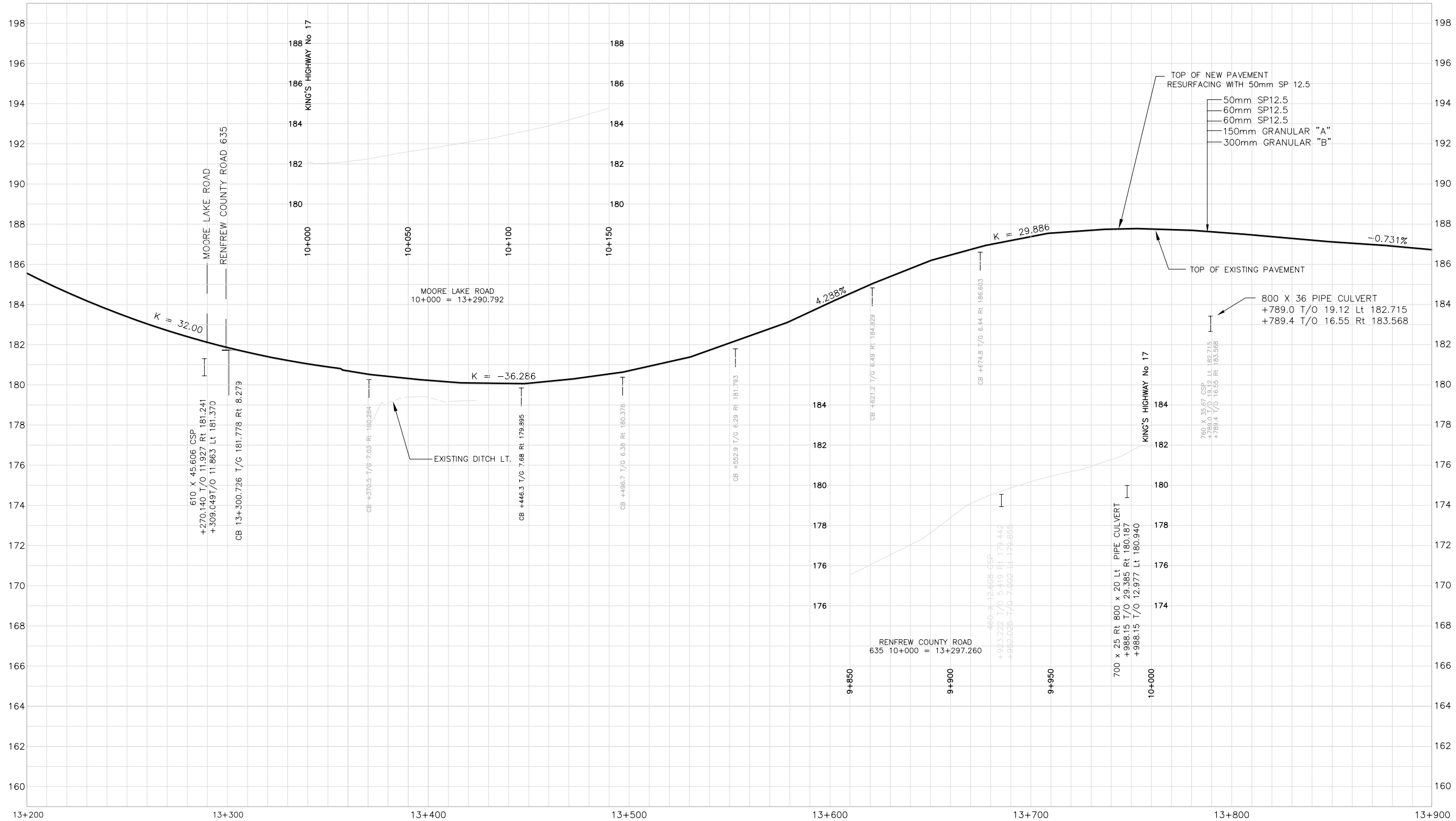


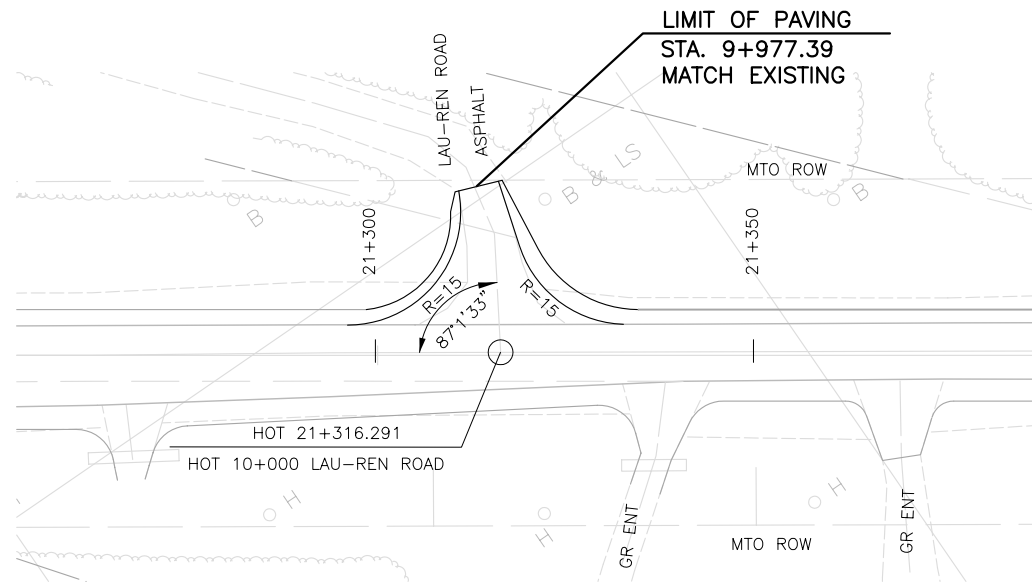


**METRIC**  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

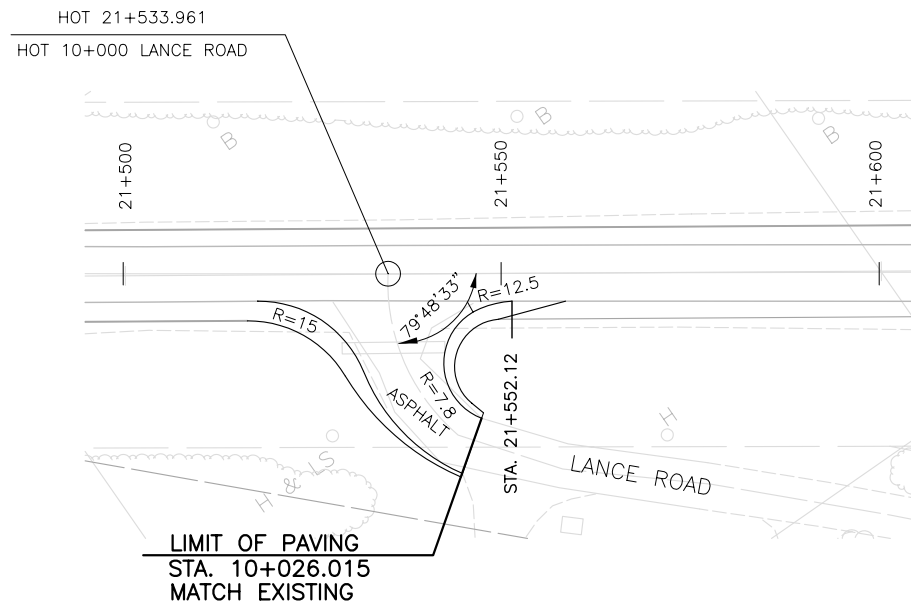
PLATE No	
CONT WP	2009-5002 392-98-00
PROFILES	
STA 13+200	TO STA 13+900
Survey	Revised
JMC Transportation Group 264 Welland Ave. Unit 2 St. Catharines, ON L2R 2P8	
JMC TG	

SHEET
28

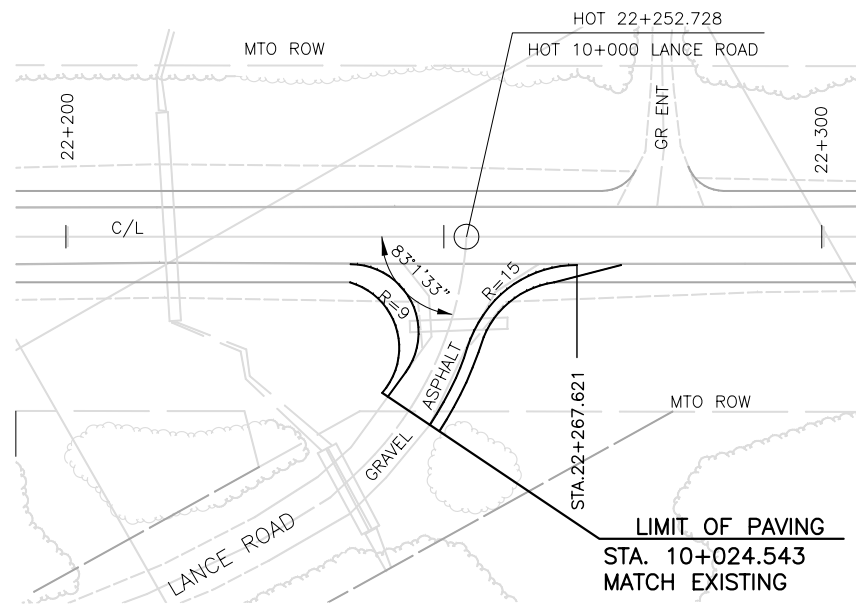




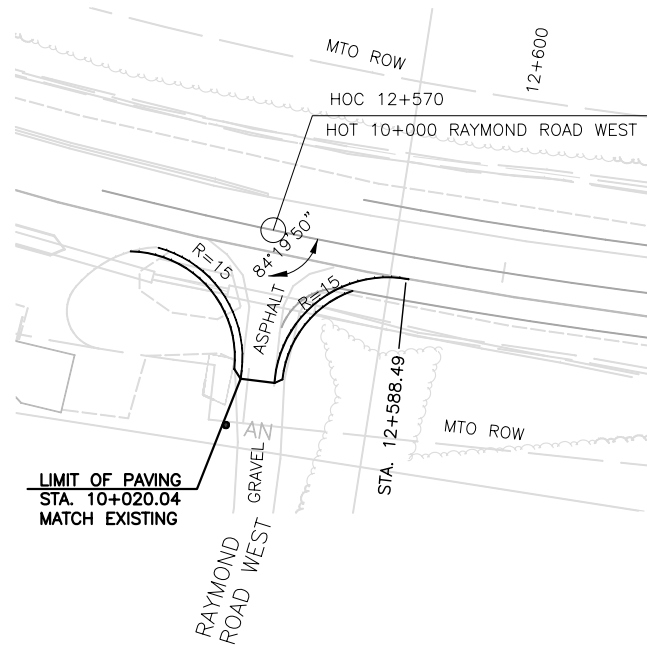
INTERSECTION LAYOUT  
LAU-REN ROAD (EAST JUNCTION)



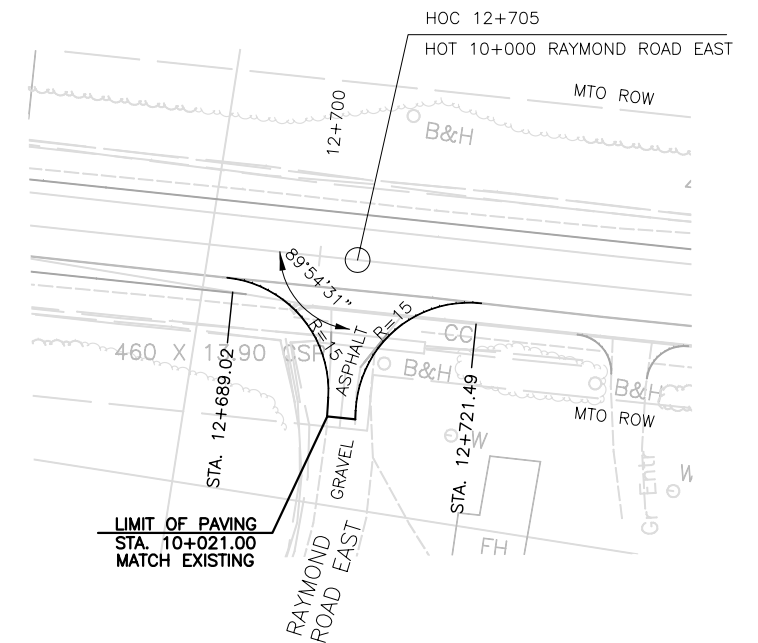
INTERSECTION LAYOUT  
LANCE ROAD (WEST JUNCTION)



INTERSECTION LAYOUT  
LANCE ROAD (EAST JUNCTION)



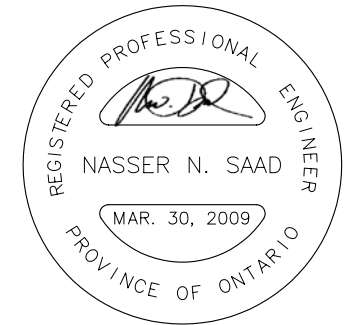
INTERSECTION LAYOUT  
RAYMOND ROAD (WEST JUNCTION)



INTERSECTION LAYOUT  
RAYMOND ROAD (EAST JUNCTION)

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

PLATE No	CONT 2009-5002 WP 392-98-00
INTERSECTION IMPROVEMENT LOCATIONS	SHEET 29
Survey	Revised
JMC Transportation Group 264 Welland Ave. Unit 2 St. Catharines, ON L2R 2P8	JMCTG



SCALE  
5m 0 10m  
Horizontal

LEGEND  
PAVEMENT MARKINGS

1	SOLID YELLOW, 10cm
2	SOLID DOUBLE YELLOW, 10cm
3	363 BROKEN YELLOW, 10cm
4	SOLID YELLOW, 20cm
5	SOLID WHITE, 10cm
6	333 BROKEN WHITE, 10cm
7	363 BROKEN WHITE, 10cm
8	393 BROKEN WHITE, 10cm
9	SOLID WHITE, 20cm

10	111 BROKEN WHITE, 20cm
11	333 BROKEN WHITE, 20cm
12	333 BROKEN WHITE, 30cm
13	SOLID WHITE, 30cm
14	SOLID WHITE, 45cm
15	SOLID WHITE, 60cm
20	SYMBOLS
] [ LIMIT OF MARKINGS	

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

PLATE No  
CONT 2009-5002  
WP 392-98-00

PAVEMENT MARKINGS  
Survey \_\_\_\_\_ Revised \_\_\_\_\_

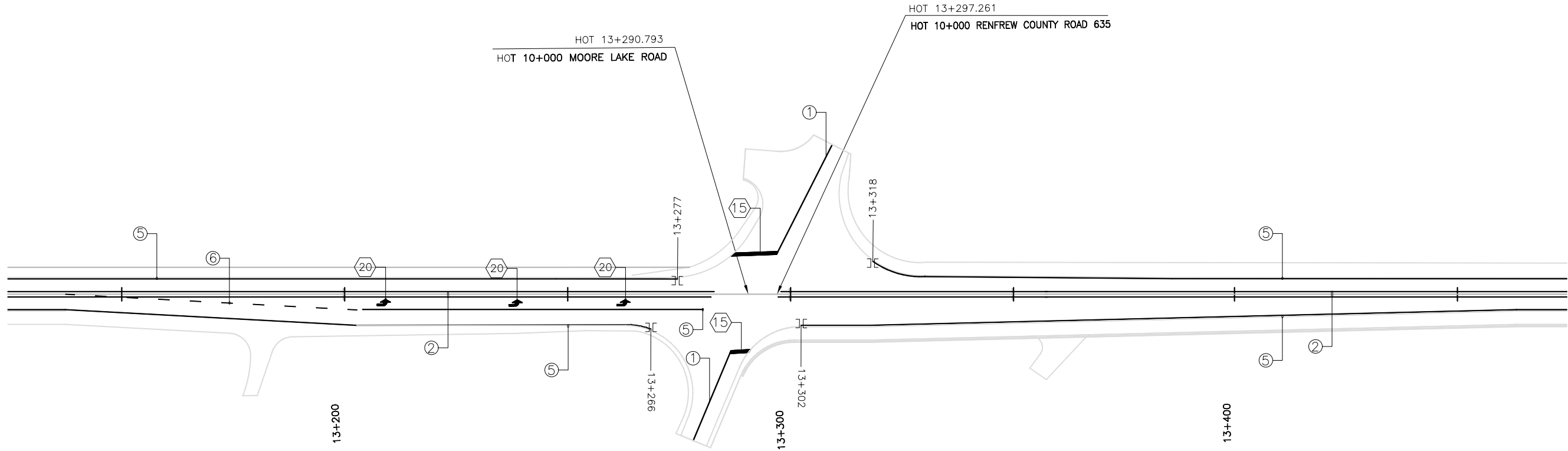
JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8



SHEET  
30

NOTES:

- 333, 363, 393, DENOTES PAVEMENT MARKING SPACING (ie., 3m LINE, 3m GAP, 3m LINE)
- ① DENOTES PAVEMENT MARKING
- ① DENOTES PAVEMENT MARKING, DURABLE



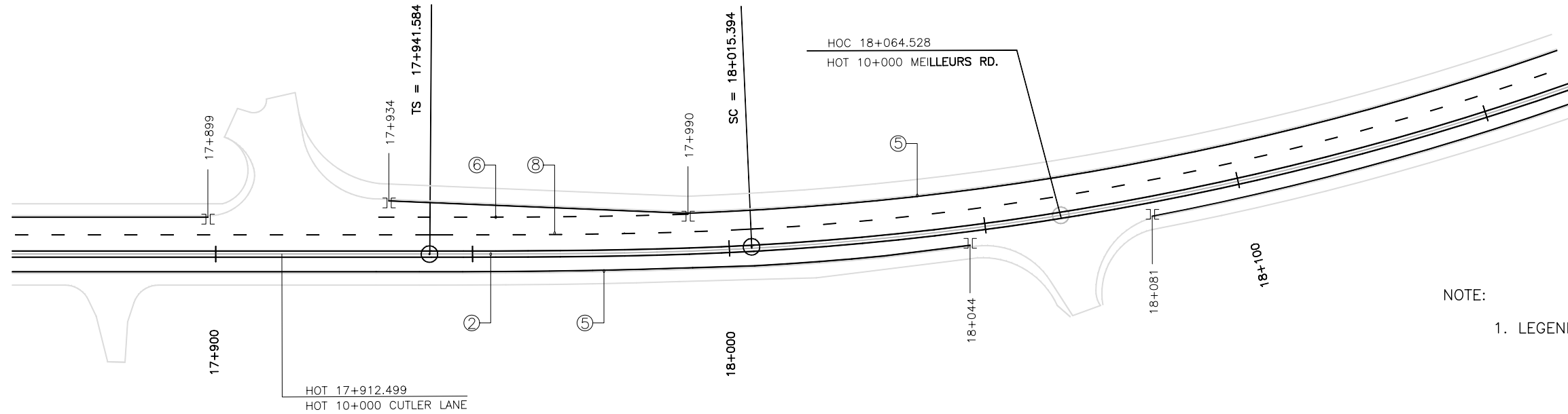
PAVEMENT MARKING  
MOORE LAKE ROAD AND RENFREW COUNTY ROAD

SCALE  
5m 0 10m  
Horizontal

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

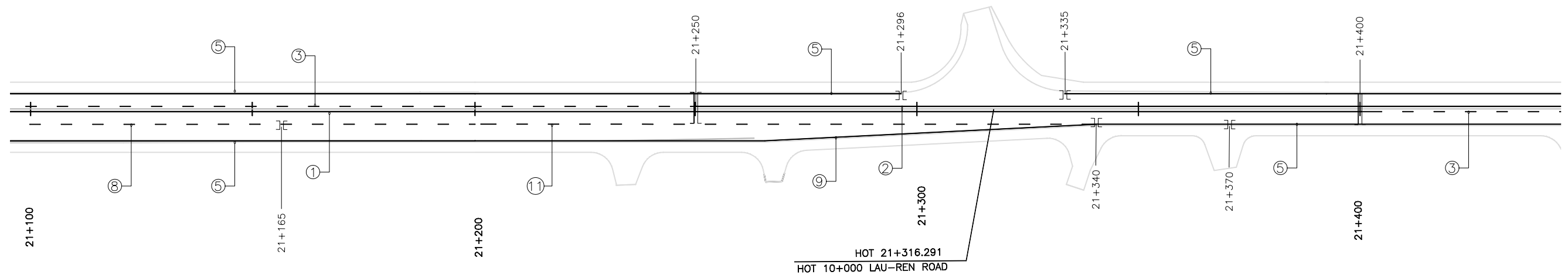
PLATE No	
CONT	2009-5002
WP	392-98-00
PAVEMENT MARKINGS	
Survey	Revised
JMC Transportation Group	JMCTG
264 Welland Ave., Unit 2	
St. Catharines, ON L2R 2P8	

SHEET  
31



## PAVEMENT MARKING

### MEILLEURS ROAD (WEST JUNCTION)



## PAVEMENT MARKING

### LAU-REN ROAD (EAST JUNCTION)

SCALE  
5m 0 10m  
Horizontal

NOTE:

1. LEGEND OF PAVEMENT MARKING REFER TO SHEET 30.

METRIC

DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

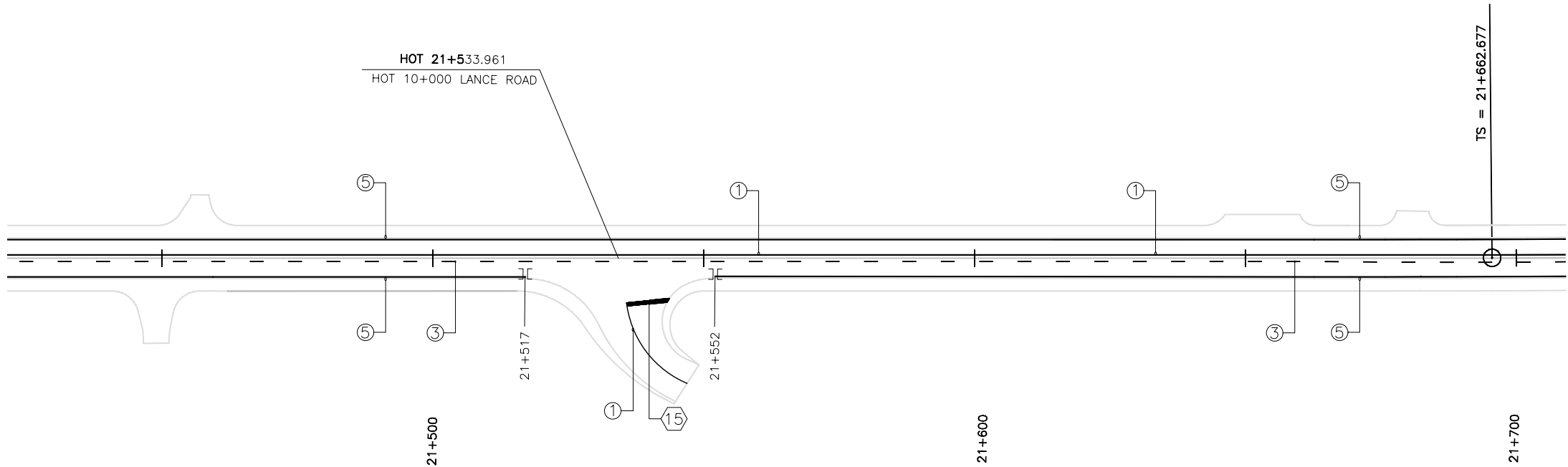
PLATE No  
CONT 2009-5002  
WP 392-98-00

PAVEMENT MARKINGS  
20+900 21+600  
Survey Revised

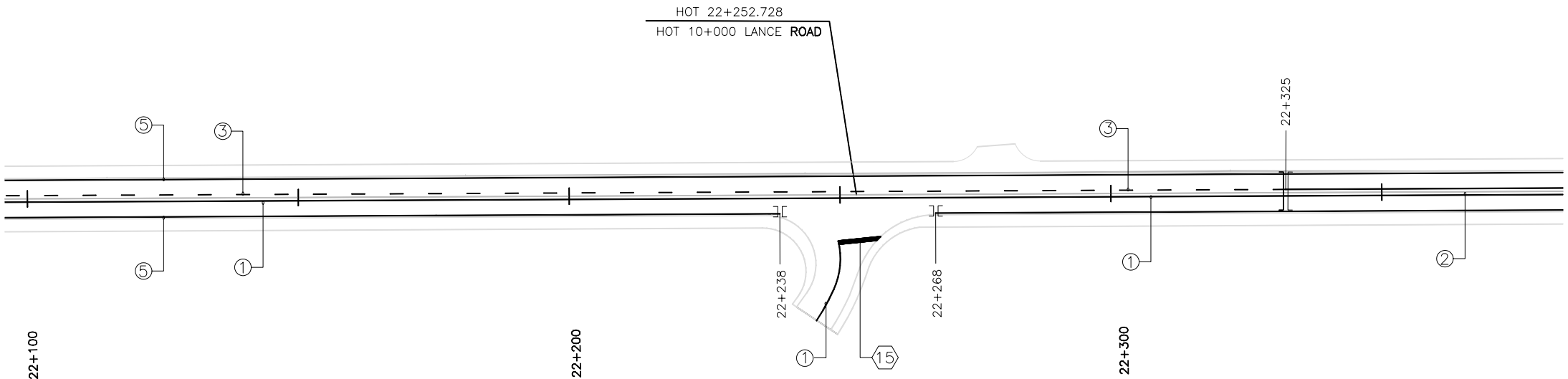
JMC Transportation Group  
264 Welland Ave., Unit 2  
St. Catharines, ON L2R 2P8



SHEET  
32

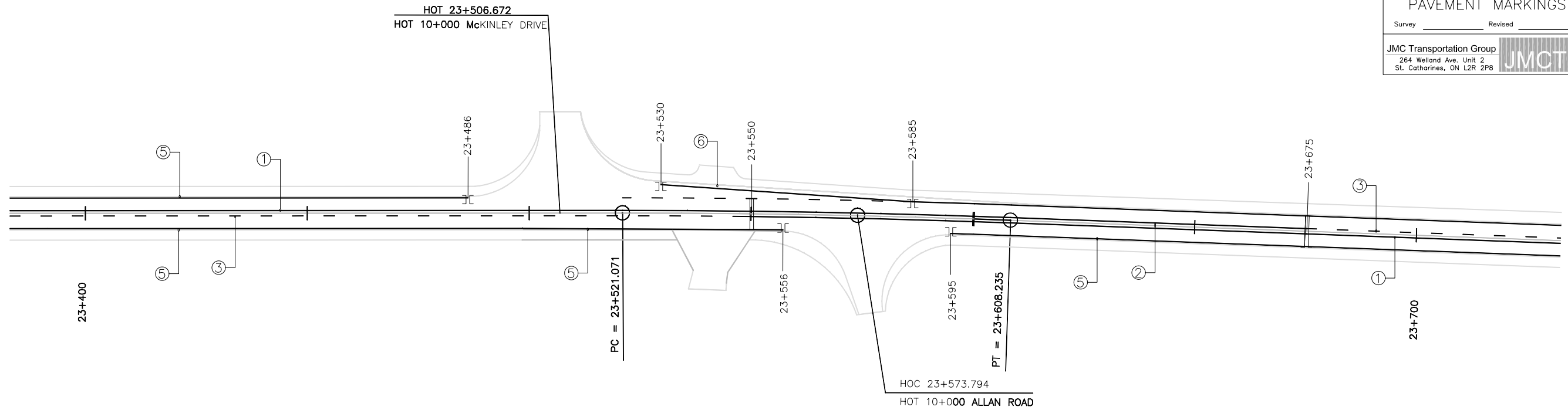


PAVEMENT MARKING  
LANCE ROAD (WEST JUNCTION)



PAVEMENT MARKING  
LANCE ROAD (EAST JUNCTION)

SCALE  
5m 0 10m  
Horizontal

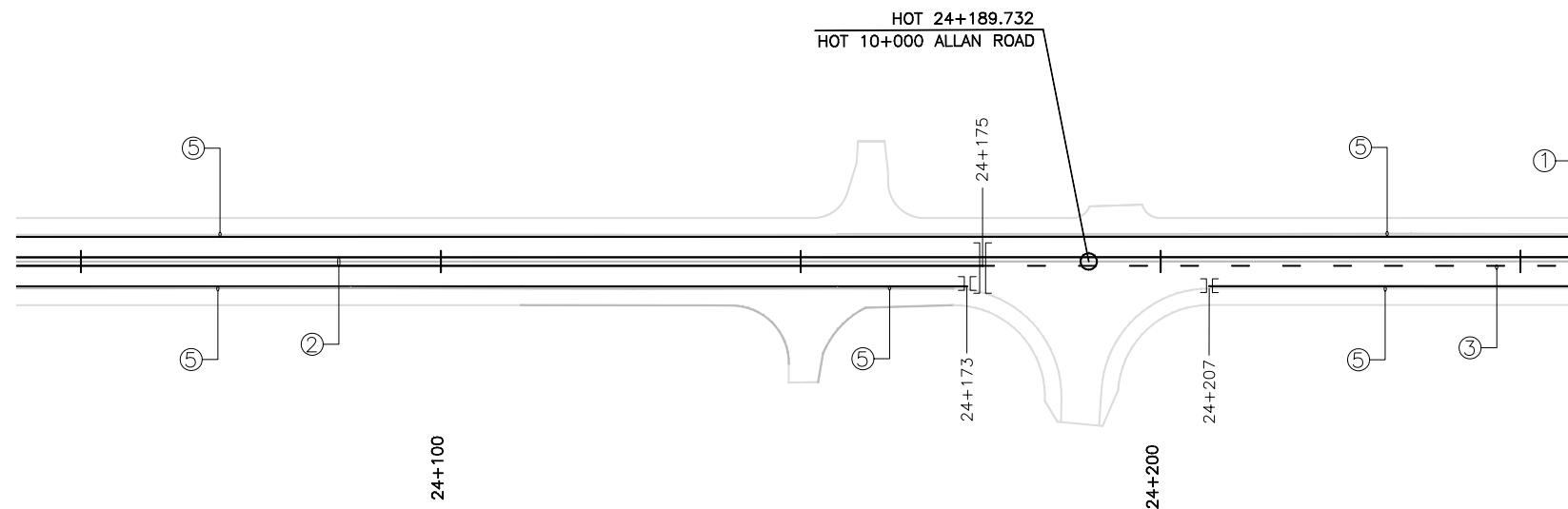


## PAVEMENT MARKING

### ALLAN ROAD (WEST JUNCTION)

NOTE:

1. LEGEND OF PAVEMENT MARKING REFER TO SHEET 30.



## PAVEMENT MARKING

### ALLAN ROAD (EAST JUNCTION)

SCALE  
5m 0 10m  
Horizontal

METRIC

DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

PLATE No

CONT 2009-5002  
WP 392-98-00

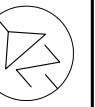
PAVEMENT MARKINGS

Survey \_\_\_\_\_ Revised \_\_\_\_\_

JMC Transportation Group

264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8

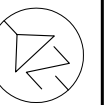
JMCTG



SHEET  
33

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

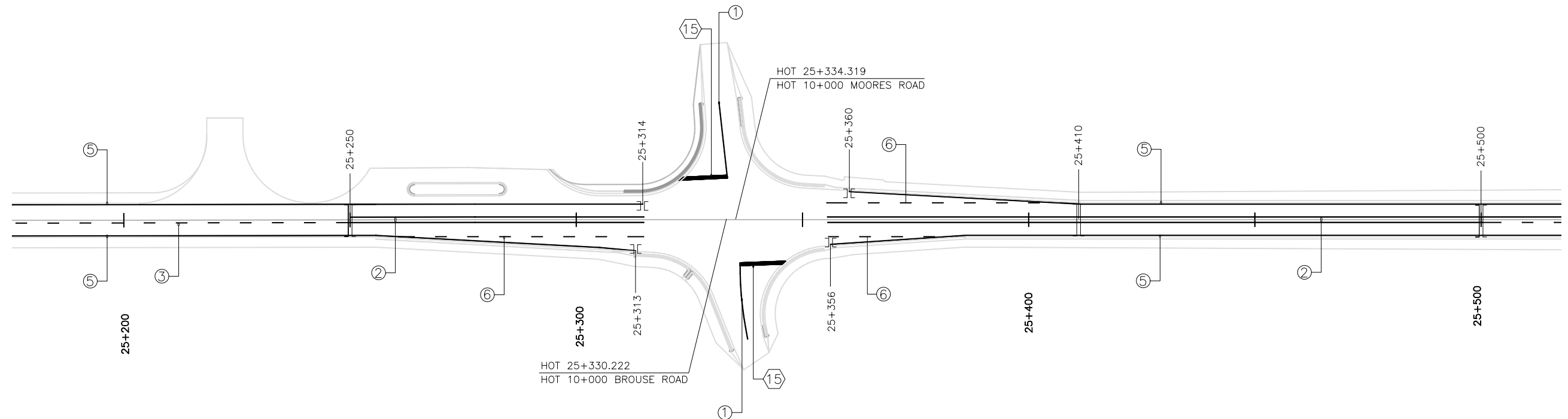
PLATE No	
CONT	2009-5002
WP	392-98-00
PAVEMENT MARKINGS	
Survey	Revised
JMC Transportation Group	
264 Welland Ave. Unit 2	
St. Catharines, ON L2R 2P8	



SHEET  
34

NOTE:

1. LEGEND OF PAVEMENT MARKING REFER TO SHEET 30.

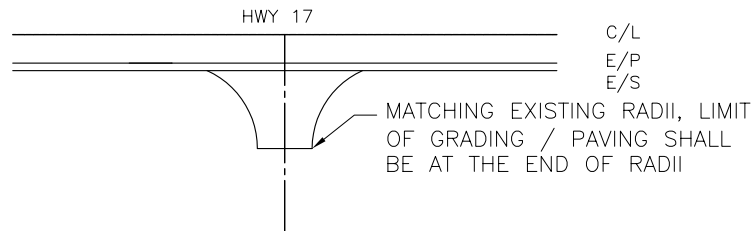


## PAVEMENT MARKING

### MOORES ROAD & BROUSE ROAD

SCALE  
5m 0 10m  
Horizontal





PRIVATE ENTRANCE  
TREATMENT

PAVED PRIVATE ENTRANCES ROLPH TOWNSHIP				
LOCATION	LT/RT	EXISTING SURFACE	LIMIT OF PAVING L (m)	PAVING DETAIL
STA 13+359	Rt.	Paved	23.0	Full depth removal of pavement, add granular A as required, pave with 50mm sp12.5
STA 15+725	Lt.	Paved	27.0	
STA 17+668	Rt.	Paved	18.6	
STA 18+903	Lt.	Paved	23.0	
STA 19+868	Lt.	Paved	16.0	
STA 23+892	Rt.	Paved	16.3	
STA 23+926	Rt.	Paved	16.9	

GRAVEL PRIVATE ENTRANCES HEAD TOWNSHIP				
LOCATION	LT/RT	EXISTING SURFACE	LIMIT OF GRADING L (m)	PAVING DETAIL
STA 28+944	Lt.	Gravel	11.9	Grading with new granular A material
STA 29+161	Rt.	Gravel	16.6	
STA 29+419	Lt.	Gravel	11.2	
STA 29+794	Lt.	Gravel	11.9	
STA 30+621	Rt.	Gravel	13.0	
STA 30+766	Rt.	Gravel	13.8	

GRAVEL PRIVATE ENTRANCES ROLPH TOWNSHIP				
LOCATION	LT/RT	EXISTING SURFACE	LIMIT OF GRADING L (m)	PAVING DETAIL
STA 10+266	Rt.	Gravel	12.7	Grading with new granular A material
STA 10+274	Lt.	Gravel	13.0	
STA 11+240	Lt.	Gravel	12.9	
STA 11+610	Rt.	Gravel	15.5	
STA 11+690	Lt.	Gravel	14.9	
STA 11+708	Rt.	Gravel	16.2	
STA 11+730	Rt.	Gravel	17.0	
STA 12+421	Rt.	Gravel	18.8	
STA 12+474	Rt.	Gravel	14.9	
STA 12+742	Rt.	Gravel	11.5	
STA 12+768	Rt.	Gravel	13.0	
STA 12+772	Lt.	Gravel	12.0	
STA 12+806	Rt.	Gravel	12.0	
STA 12+822	Rt.	Gravel	12.0	
STA 12+862	Lt.	Gravel	14.4	
STA 13+184	Rt.	Gravel	13.1	
STA 13+478	Rt.	Gravel	17.3	
STA 13+650	RT.	Gravel	12.3	
STA 13+808	Rt.	Gravel	20.0	
STA 14+578	Rt.	Gravel	13.9	
STA 14+752	Rt.	Gravel	12.5	
STA 14+826	Rt.	Gravel	21.0	
STA 15+115	Rt.	Gravel	14.0	
STA 15+315	Rt.	Gravel	12.9	
STA 15+375	Rt.	Gravel	12.8	
STA 15+425	Rt.	Gravel	13.0	
STA 15+457	Rt.	Gravel	13.1	
STA 15+743	Rt.	Gravel	13.3	
STA 16+255	Rt.	Gravel	15.5	
STA 16+743	Rt.	Gravel	8.2	
STA 16+888	Lt.	Gravel	16.2	
STA 17+030	Lt.	Gravel	17.7	
STA 17+125	Lt.	Gravel	17.2	
STA 17+192	Lt.	Gravel	17.3	
STA 17+201	Rt.	Gravel	17.2	

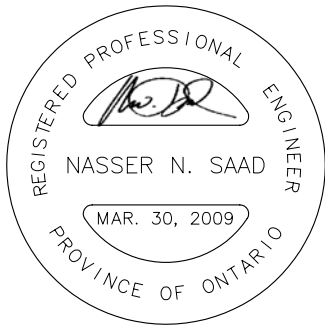
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AND/OR MILLIMETRES

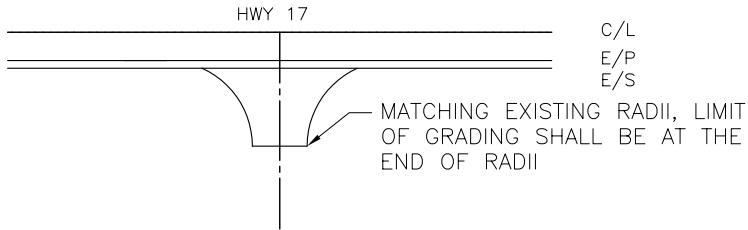
CONT 2009-5002  
WP 392-98-00

DETAILS

SHEET  
35

JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8





PRIVATE ENTRANCE TREATMENT

GRAVEL PRIVATE ENTRANCES ROLPH TOWNSHIP				
LOCATION	LT/RT	EXISTING SURFACE	LIMIT OF GRADING L (m)	PAVING DETAIL
STA 17+240	Lt.	Gravel	18.2	Grading with new granular A material
STA 17+243	Rt.	Gravel	17.6	
STA 17+308	Rt.	Gravel	17.2	
STA 17+325	Rt.	Gravel	17.3	
STA 17+346	Rt.	Gravel	17.7	
STA 17+346	Lt.	Gravel	18.2	
STA 17+451	Rt.	Gravel	17.0	
STA 17+583	Rt.	Gravel	17.5	
STA 17+879	Rt.	Gravel	21.0	
STA 18+300	Lt.	Gravel	17.5	
STA 18+615	Rt.	Gravel	14.6	
STA 18+622	Lt.	Gravel	22.5	
STA 18+680	Lt.	Gravel	23.0	
STA 18+750	Rt.	Gravel	14.5	
STA 19+125	Rt.	Gravel	20.8	
STA 19+190	Lt.	Gravel	16.9	
STA 19+265	Rt.	Gravel	13.0	
STA 19+404	Lt.	Gravel	14.5	
STA 19+447	Rt.	Gravel	14.0	
STA 19+548	Lt.	Gravel	19.9	
STA 19+590	Rt.	Gravel	19.0	
STA 19+595	Lt.	Gravel	20.0	
STA 19+668	Lt.	Gravel	14.0	
STA 19+750	Lt.	Gravel	14.0	
STA 20+025	Rt.	Gravel	9.4	
STA 20+066	Lt.	Gravel	16.7	
STA 20+366	Lt.	Gravel	12.2	
STA 20+400	Rt.	Gravel	18.8	
STA 20+751	Rt.	Gravel	18.3	
STA 20+904	Rt.	Gravel	18.8	
STA 20+965	Lt.	Gravel	18.3	
STA 21+230	Rt.	Gravel	17.2	
STA 21+265	Rt.	Gravel	16.5	
STA 21+338	Rt.	Gravel	18.0	
STA 21+370	Rt.	Gravel	13.5	
STA 21+449	Rt.	Gravel	15.7	

GRAVEL PRIVATE ENTRANCES ROLPH TOWNSHIP				
LOCATION	LT/RT	EXISTING SURFACE	LIMIT OF GRADING L (m)	PAVING DETAIL
STA 21+445	Lt.	Gravel	10.3	Grading with new granular A material
STA 21+653	Lt.	Gravel	8.1	
STA 21+678	Lt.	Gravel	8.8	
STA 21+755	Rt.	Gravel	13.4	
STA 21+798	Lt.	Gravel	8.7	
STA 21+868	Rt.	Gravel	14.7	
STA 22+020	Lt.	Gravel	9.3	
STA 22+081	Lt.	Gravel	9.7	
STA 22+278	Lt.	Gravel	9.1	
STA 22+595	Rt.	Gravel	13.8	
STA 22+652	Rt.	Gravel	11.2	
STA 22+700	Lt.	Gravel	11.4	
STA 22+975	Rt.	Gravel	12.6	
STA 22+995	Lt.	Gravel	10.1	
STA 23+539	Lt.	Gravel	10.6	
STA 23+540	Rt.	Gravel	17.8	
STA 23+846	Rt.	Gravel	14.6	
STA 23+990	Lt.	Gravel	14.3	
STA 24+149	Rt.	Gravel	16.7	
STA 24+156	Lt.	Gravel	16.8	
STA 24+190	Lt.	Gravel	7.8	
STA 24+361	Lt.	Gravel	15.5	
STA 24+387	Lt.	Gravel	14.6	
STA 24+405	Lt.	Gravel	14.3	
STA 24+481	Rt.	Gravel	13.6	
STA 24+695	Rt.	Gravel	18.2	
STA 24+728	Lt.	Gravel	9.2	
STA 24+748	Rt.	Gravel	16.2	
STA 24+776	Rt.	Gravel	14.8	
STA 24+785	Lt.	Gravel	12.8	
STA 24+828	Lt.	Gravel	15.0	
STA 24+904	Lt.	Gravel	13.3	
STA 25+027	Rt.	Gravel	14.0	
STA 25+163	Lt.	Gravel	18.9	
STA 25+370	Lt.	Gravel	10.8	

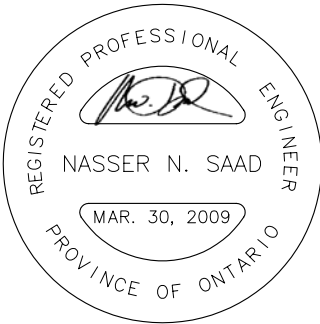
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DIMENSIONS ARE IN METRES  
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CONT 2009-5002  
WP 392-98-00

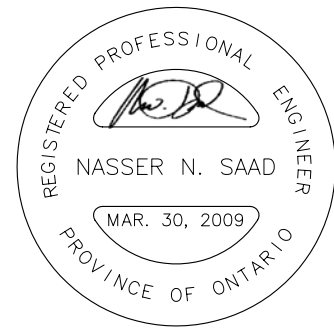
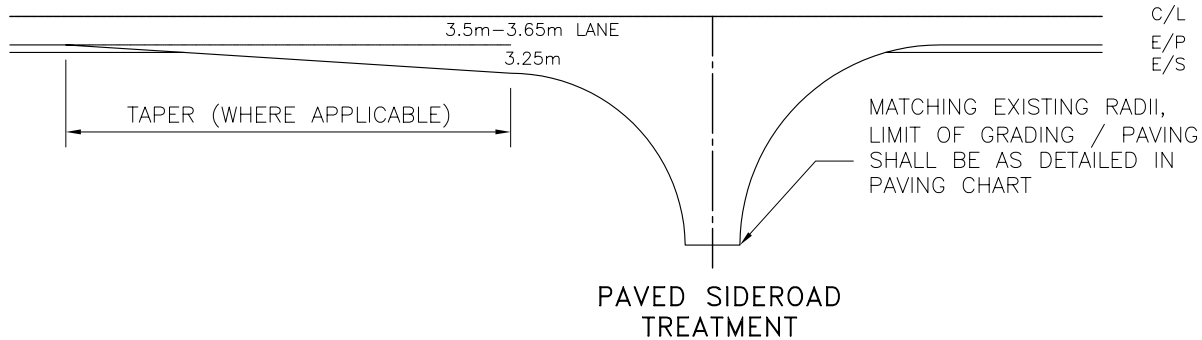
DETAILS

SHEET  
36

JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8



SIDEROAD ROLPH TOWNSHIP									
LOCATION		SIDEROADS NAME	LIMIT OF GRADING /PAVING	TYPE OF TREATMENT	RADIUS RT LT		TAPER	PAVING DETAIL	
STA 10+685	Lt.	Colton Creek Road	9+978.1	Gravel	7	15	N/A	Grading with new granular material	
STA 12+570	Rt.	Raymond Road (West Jct)	10+013.3	Paved	15	15	N/A	Fulll depth removal, add granular A as required, pave 40mm SP12.5 binder and 50mm SP12.5 surface course.	
STA 12+705	Rt.	Raymond Road (East Jct)	10+015.9	Paved	15	15	N/A		
STA 13+291	Rt.	Moore Lake Road	10+035.0	Paved	15	15	N/A		
STA 13+297	Lt.	Renfrew County Road 635	9+963.9	Paved	15	15	N/A		
STA 17+915	Lt.	Cutler Lane	9+968.0	Paved	10	15	60m		
STA 18+064	Rt.	Meilleurs Road (West Jct)	10+019.3	Paved	15	15	N/A		
STA 18+416	Lt.	Stewarts Lane (West Jct)	9+975.4	Paved	15	15	N/A		
STA 18+769	Lt.	Stewarts Lane (East Jct)	9+971.7	Paved	15	15	N/A		
STA 19+679	Rt.	Meilleurs Road (East Jct)	10+023.8	Paved	15	15	60m		
STA 19+903	Lt.	Lau-Ren Road ( West Jct)	9+970.4	Paved	12.5	15	60m		
STA 21+316	Lt.	Lau-Ren Road (East Jct)	9+977.2	Paved	15	15	N/A		
STA 21+533	Rt.	Lance Road (West Jct)	10+026.5	Paved	7.5	15	N/A		
STA 22+252	Rt.	Lance Road (East Jct)	10+24.5	Paved	15	9	N/A		
STA 22+501	Lt.	McKinley Drive (West Jct)	9+982.0	Paved	12.5	8	N/A		
STA 23+506	Lt.	McKinley Drive (East Jct)	9+979.1	Paved	15	15	60m		
STA 23+573	Rt.	Allan Road (West Jct)	10+022.3	Paved	15	15	N/A		
STA 24+189	Rt.	Allan Road (East Jct)	10+022.6	Paved	15	15	N/A		
STA 25+334	Lt.	Moore's Road	9+960.9	Paved	15	15	60m		
STA 25+330	Rt.	Brouse Road	10+032.6	Paved	15	15	61.5m		



METRIC  
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CONT 2009-5002  
WP 392-98-00

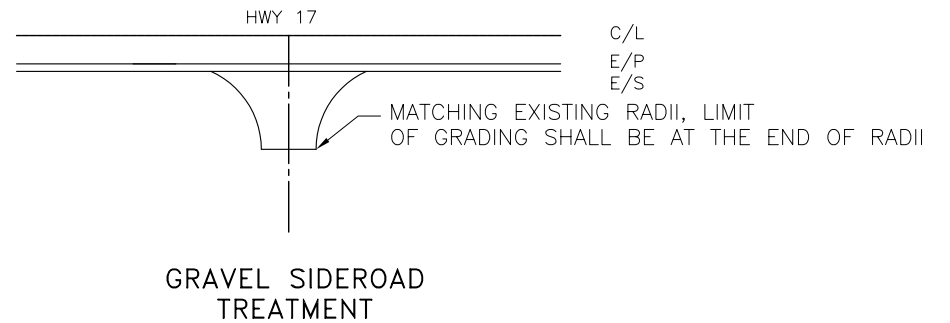
DETAILS

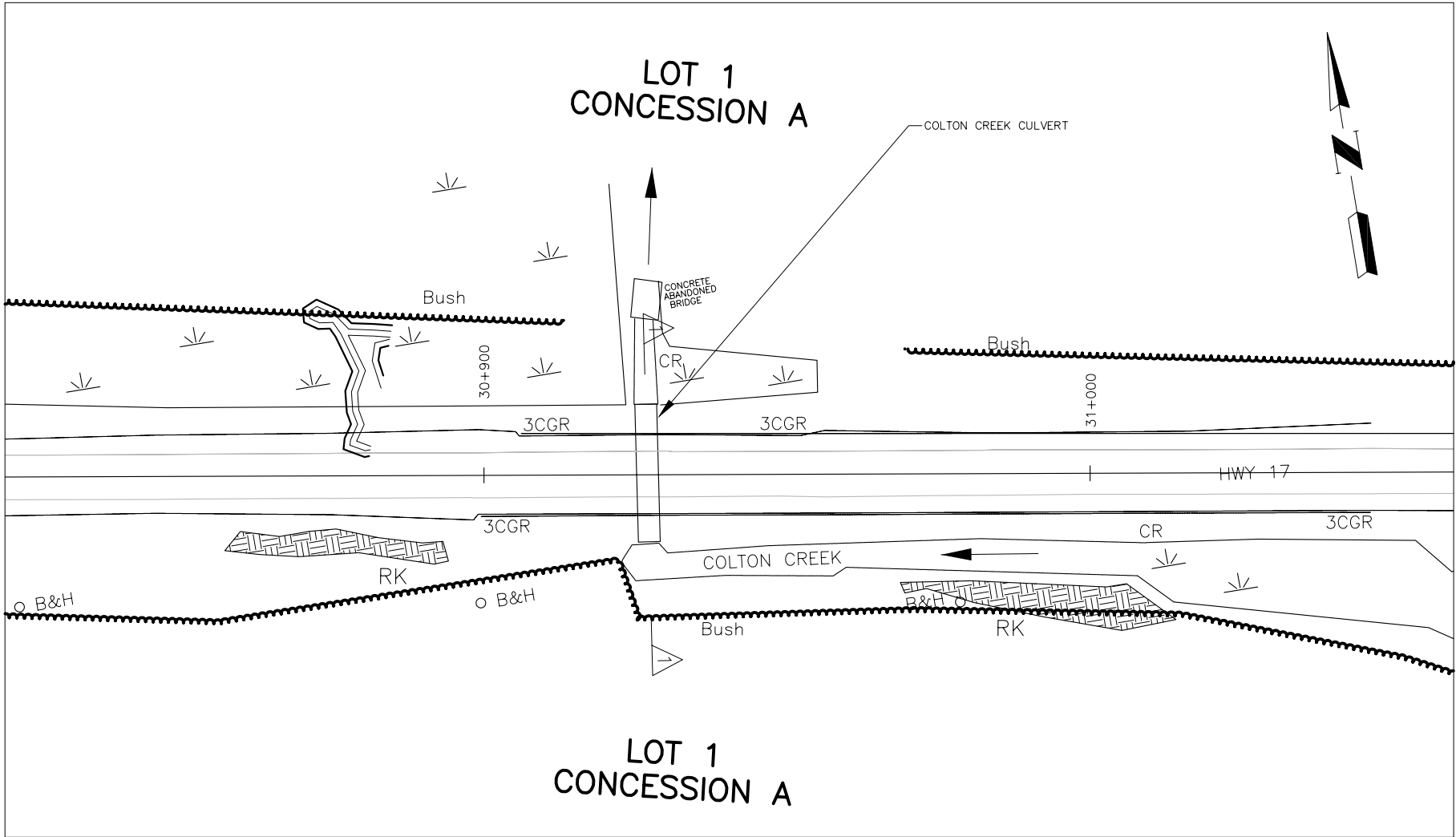
SHEET  
37

JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8

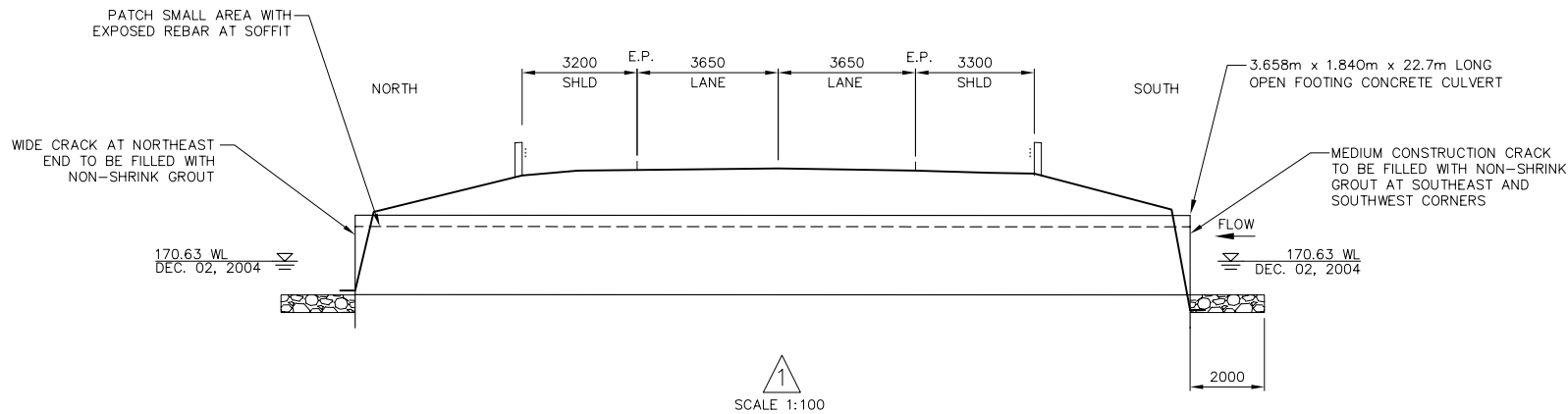


COMMERCIAL ENTRANCES ROLPH TOWNSHIP									
LOCATION		EXISTING SURFACE	LIMIT OF GRADING PAVING (m)	RADIUS R1 RT LT		PAVING DETAIL			
STA 12+521	Rt.	Paved	23.35		25	Fulll depth removal, add granular A as required, pave 40mm SP12.5 binder and 50mm SP12.5 surface course.			
STA 12+548	Rt.	Paved	23.35	25					
STA 12+900	Rt.	Paved	10.24	15	25				
STA 12+991	Lt.	Paved	28.59	20	20				
STA 13+552	Rt.	Paved	9.37	15	25				
STA 13+675	Lt.	Paved	ALL	20					
STA 13+745	Lt.	Paved	ALL		25				
STA 17+378	Lt.	Paved	24.87	15	7				
STA 17+490	Lt.	Paved	24.64	7	15				
STA 19+720	Rt.	Paved	30.01	15					
STA 19+740	Rt.	Paved	30.01		15				
STA 24+960	Lt.	Paved	22.88	15					
STA 25+006	Lt.	Paved	10.10						
STA 25+027	Lt.	Paved	10.00		25				
STA 25+230	Lt.	Paved	22.55	15	15				
STA 25+290	Lt.	Paved	12.17	15	10				





PLAN  
SCALE 1:500



1  
SCALE 1:100

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

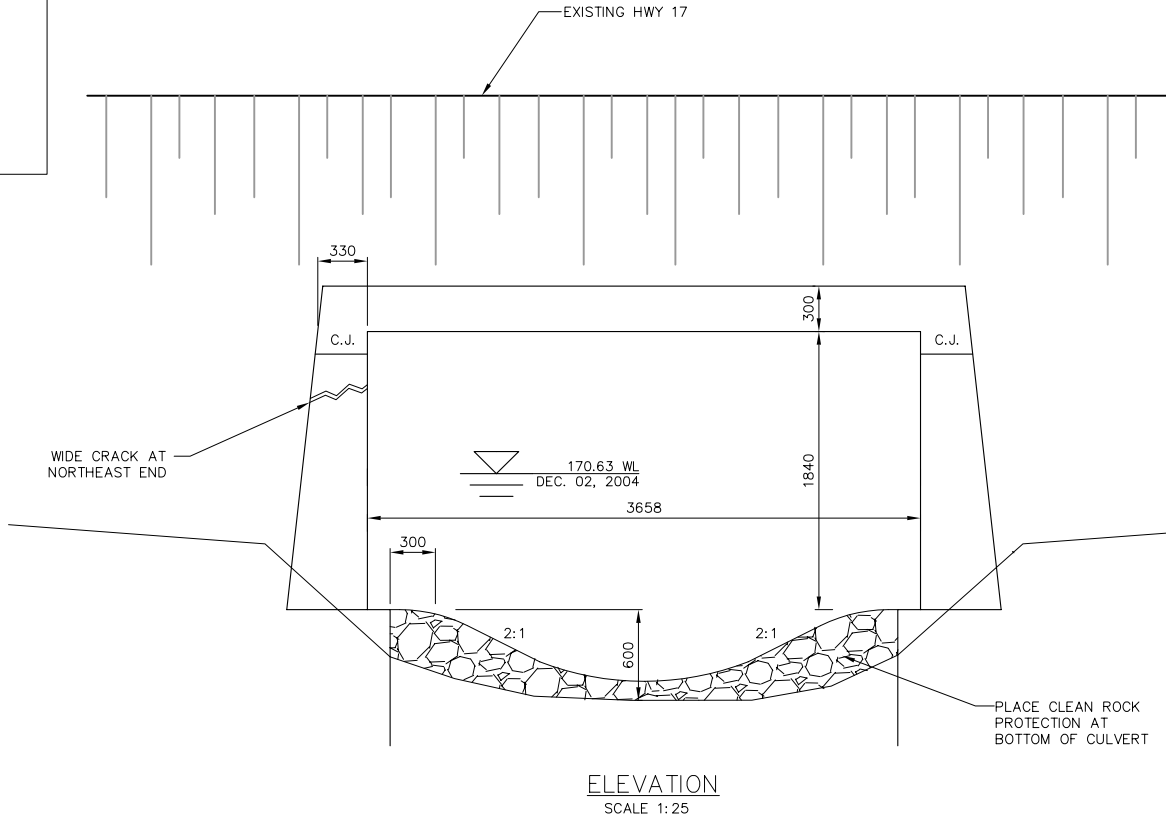
**K. SMART ASSOCIATES LIMITED**  
CONSULTING ENGINEERS AND PLANNERS  
85 McINTYRE DRIVE  
KITCHENER, ONTARIO N2R 1H6

HWY 17  
CONT No 2009-5002  
WP No 5828-05-01  
SITE 29-324  
COLTON CREEK CULVERT  
GENERAL ARRANGEMENT

SHEET  
38

- NOTES FOR CONCRETE REPAIRS:
1. REMOVE ALL LOOSE CONCRETE AND DELAMINATIONS.  
CARE SHOULD BE TAKEN TO PREVENT DEBRIS FROM FALLING INTO THE WATER.
  2. REMOVE CONCRETE 25mm± AROUND ALL EXPOSED REBARS.
  3. BLAST CLEAN EXPOSED REBARS.
  4. PATCH AREA WITH NON-SHRINK GROUT TO ORIGINAL DIMENSIONS.
  5. CLEAN UP CRACKS AND FILL WITH NON-SHRINK GROUT.

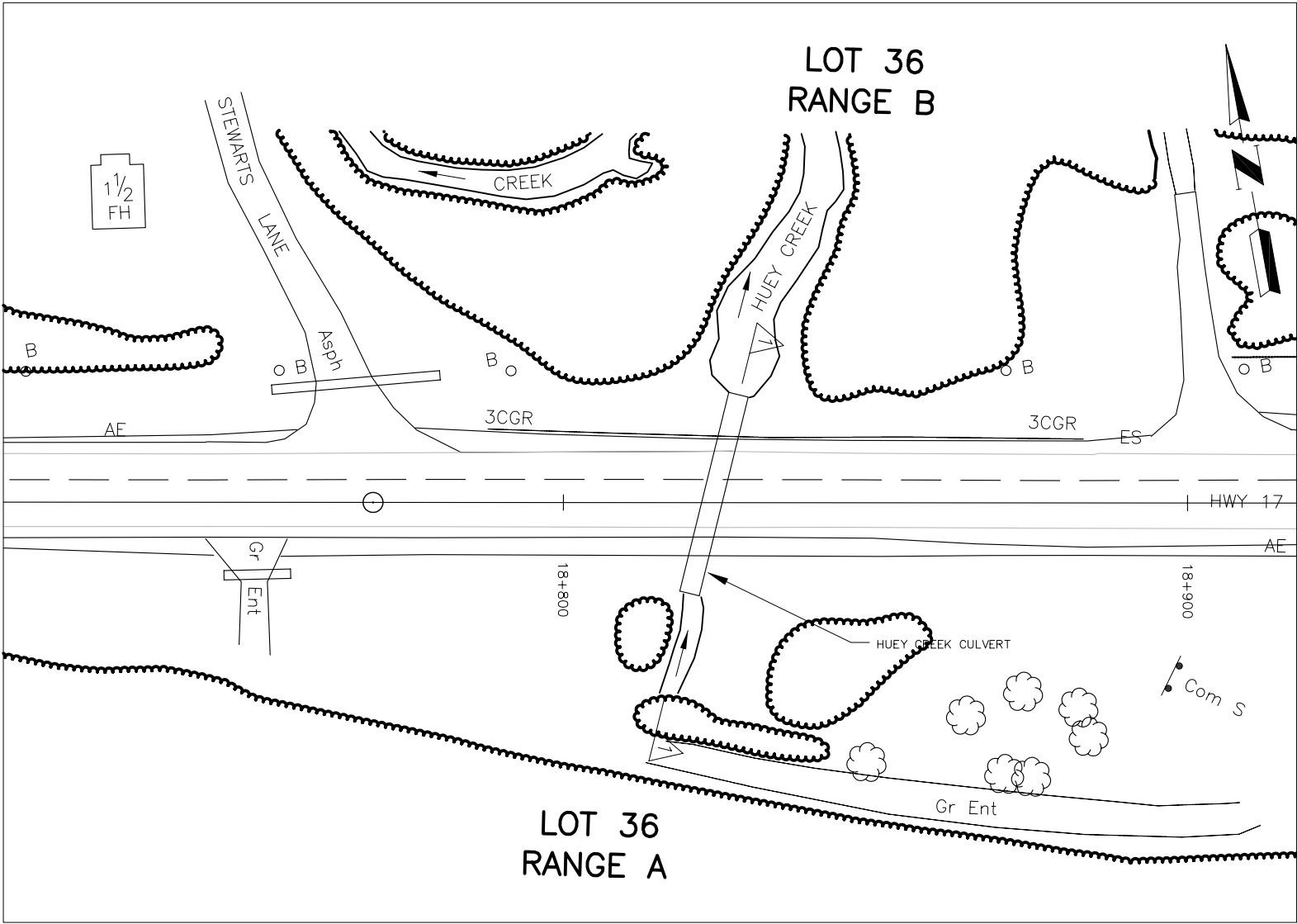
- SCOPE OF WORK
1. REPAIR CRACKS AT SOUTHEAST AND SOUTHWEST CORNERS.
  2. REPAIR CRACK AT NORTHEAST END.
  3. PATCH EXPOSED REBARS AT SOFFIT.
  4. PLACE CLEAN ROCK PROTECTION AT BOTTOM OF CULVERT.



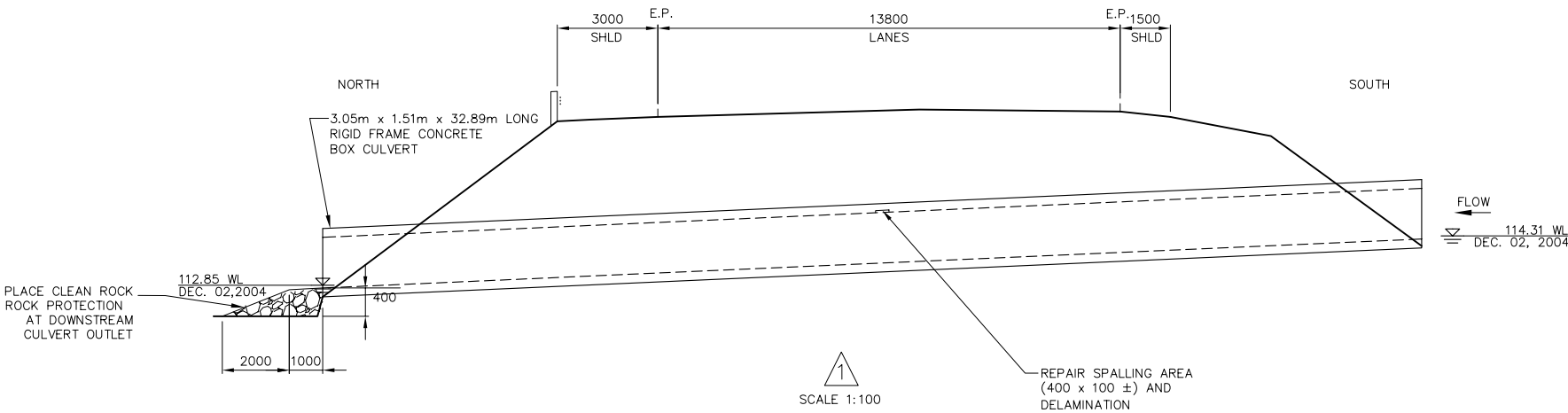
ELEVATION  
SCALE 1:25



REVISIONS		DATE	BY	DESCRIPTION
1	12/21/05	T.H.	AS PER MTO COMMENTS	
DESIGN	E.A.	CHK	K.A.S.	CODE CHBDC 2000
DRAWN	T.J.H.	CHK	E.A.	SITE 29-324
STRUCT				SCHEME
DWG	1			



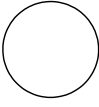
PLAN  
SCALE 1:500



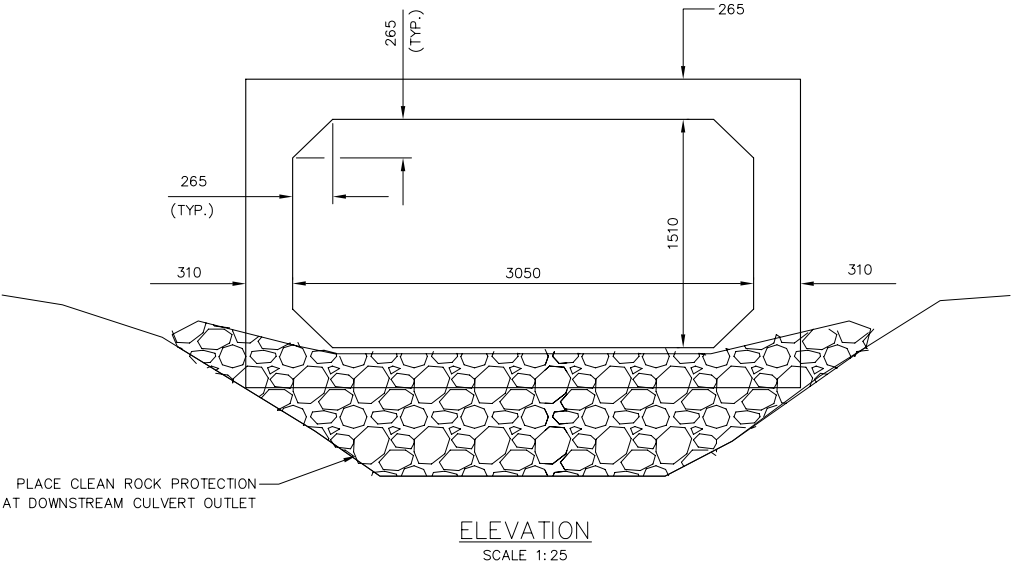
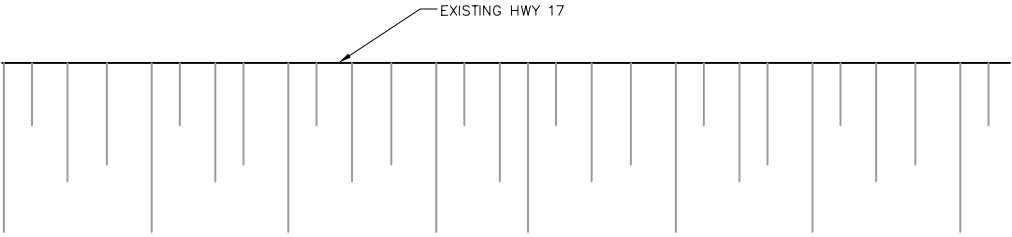
SCALE 1:100

METRIC  
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CONSULTING ENGINEERS AND PLANNERS  
85 McINTYRE DRIVE  
KITCHENER, ONTARIO N2R 1H6

HWY 17 CONT No 2009-5002 WP No 5827-05-01	
SITE 29-323 HUEY CREEK CULVERT GENERAL ARRANGEMENT	
SHEET 39	

- NOTES FOR CONCRETE REPAIRS:
1. REMOVE ALL LOOSE CONCRETE AND DELAMINATIONS.  
CARE SHOULD BE TAKEN TO PREVENT DEBRIS FROM FALLING INTO THE WATER.
  2. REMOVE CONCRETE 25mm± AROUND ALL EXPOSED REBARS.
  3. BLAST CLEAN EXPOSED REBARS.
  4. PATCH AREA WITH NON-SHRINK GROUT TO ORIGINAL DIMENSIONS.
- SCOPE OF WORK
1. REPAIR SPALLING AREA AT SOFFIT.
  2. PLACE CLEAN ROCK PROTECTION AT DOWNSTREAM CULVERT OUTLET.




ELEVATION  
SCALE 1:25




REVISIONS									
	12/21/05	T.H.	AS PER MTO COMMENTS						
DATE	BY	DESCRIPTION							
DESIGN	E.A.	CHK	K.A.S.	CODE	CHBDC 2000	LOAD	CHBDC	DATE	Nov./05
DRAWN	T.J.H.	CHK	E.A.	SITE	29-323	STRUCT	SCHEME	DWG	1



HWY 17
CONT No. 2009-5002
WP No 5826-05-01
<p style="text-align: center;">SITE 29-322</p> <p style="text-align: center;">MEILLEURS BAY CULVERT CONSTRUCTION DETAILS</p>

  
SHEET  
41



**K. SMART ASSOCIATES LIMITED**  
CONSULTING ENGINEERS AND PLANNERS

---

85 McINTYRE DRIVE  
KITCHENER, ONTARIO N2R 1H6



REINFORCING DENOTATION  
F.F. DENOTES FRONT FACE  
B.F. DENOTES BACK FACE  
E.F. DENOTES EACH FACE



REVISIONS										
	12/21/05	T.H.	AS PER MTO COMMENTS							
DATE	BY	DESCRIPTION								
DESIGN	E.A.	CHK	K.A.S.	CODE	CHBDC	2000	LOAD	CHBDC	DATE	Nov./05
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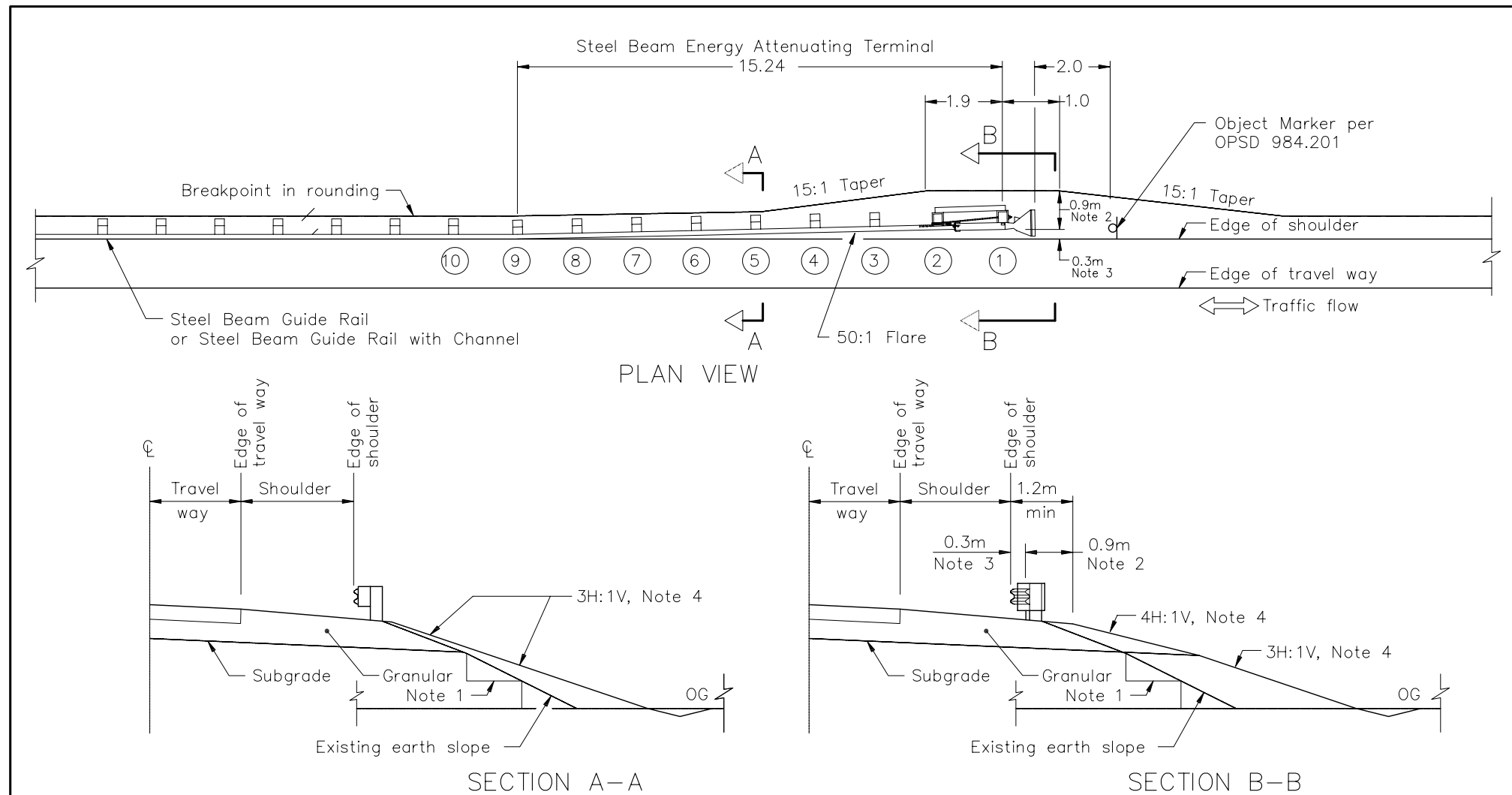
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PLATE No  
CONT 2009-5002  
GWP 392-98-00

DETAILS - MTOD

Survey \_\_\_\_\_ Revised \_\_\_\_\_  
JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8  
JMCTG

SHEET  
42



NOTES:

- Existing earth slope to be benched according to OPSD-208.010.
  - Measured from traffic face side of steel beam at post 1.
  - Based on 50:1 flare from post 9 to post 1.
  - Slope shall be flatter when specified.
- A All dimensions are in metres unless otherwise shown.

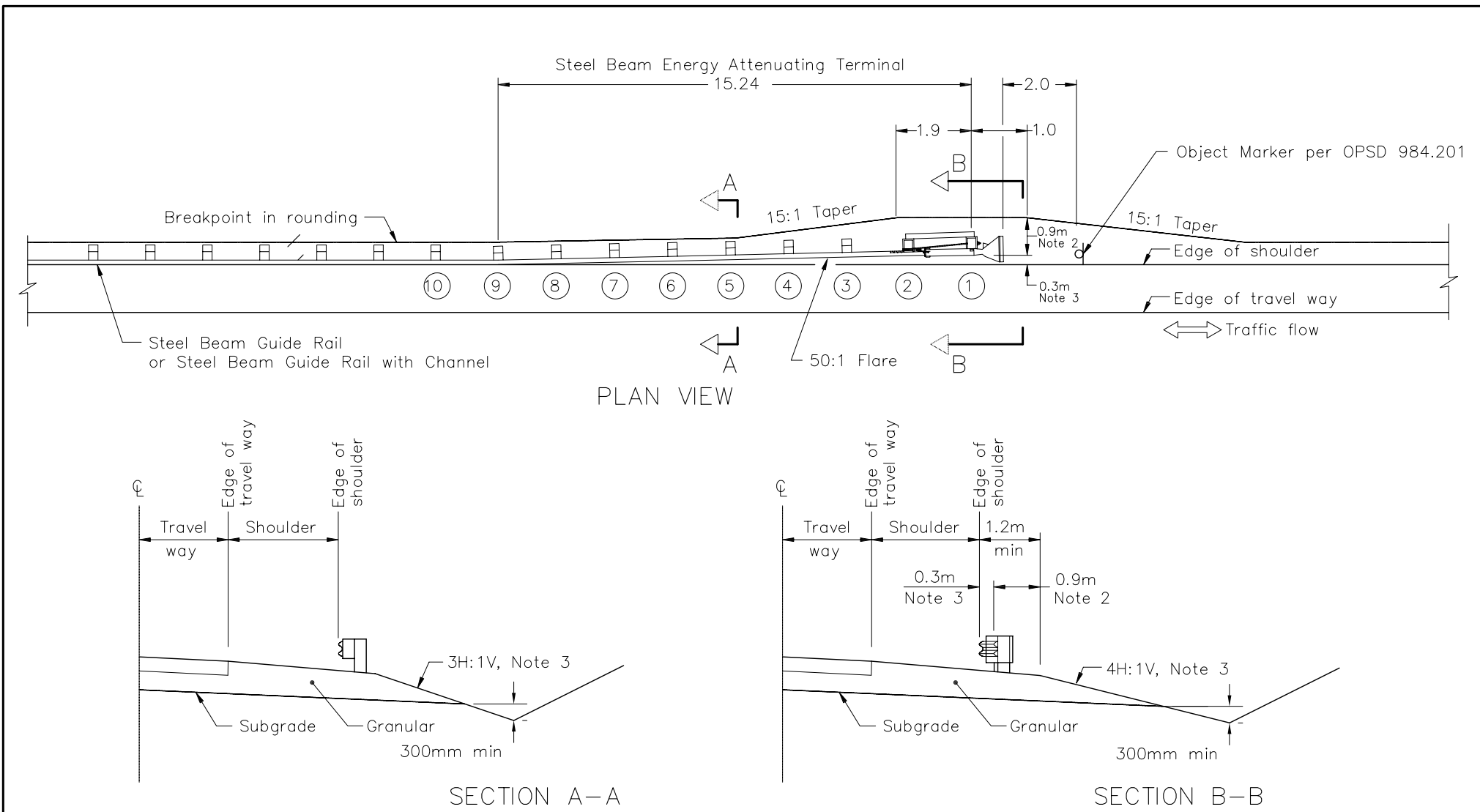
MINISTRY OF TRANSPORTATION ONTARIO DRAWING	January 2007	Rev	0
ROADWAY WIDENING- FILL SECTION	-----		
CONSTRAINED OR LEAVING END TREATMENT	-----		
STEEL BEAM ENERGY ATTENUATING TERMINAL	MTOD - 202.032		





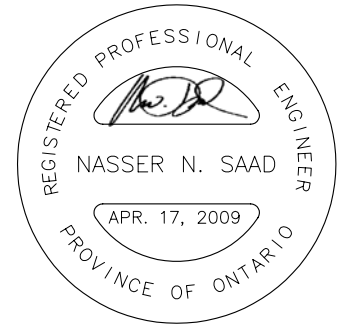
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AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

PLATE No		
CONT	2009-5002	
GWP	392-98-00	
DETAILS - MTOD		SHEET 43
Survey _____ Revised _____		
JMC Transportation Group 264 Welland Ave. Unit 2 St. Catharines, ON L2R 2P8		



- NOTES:
- 1 Measured from traffic face side of steel beam at post 1.
  - 2 Based on 50:1 flare from post 9 to post 1.
  - 3 Slope shall be flatter when specified.
  - A All dimensions are in metres unless otherwise shown.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING	January 2007	Rev	0
ROADWAY WIDENING- CUT SECTION			
CONSTRAINED OR LEAVING END TREATMENT			
STEEL BEAM ENERGY ATTENUATING TERMINAL	MTOD - 202.036		



METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

PLATE No  
CONT 2009-5002  
GWP 392-98-00

DETAILS - MTOD

Survey \_\_\_\_\_ Revised \_\_\_\_\_

JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8



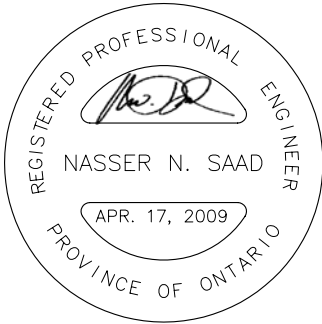
SHEET  
44

PIPE DIA mm	AREA m <sup>2</sup>	TRENCH WIDTH m	MAXIMUM HEIGHT OF FILL			
			RSC 160		RSC 250	
			≤ Trench Width	> Trench Width	≤ Trench Width	> Trench Width
840	0.55	1.50	10.4	10.4	13.0	13.0
900	0.64	1.59	8.7	8.7	11.0	11.0
1020	0.82	1.74	7.9	7.9	9.7	9.7
1070	0.90	1.81	7.9	7.9	9.1	9.1
1220	1.17	2.01	7.9	7.9	9.1	9.1
1370	1.47	2.22	7.9	7.9	9.1	9.1
1520	1.81	2.44	7.9	7.9	8.8	8.8
1680	2.22	2.65	7.3	7.3	8.8	8.8
1830	2.63	2.86	7.3	7.3	8.8	8.8
1980	3.08	3.05	7.3	7.3	8.2	8.2
2130	3.56	3.26	7.0	7.0	8.2	8.2
2290	4.12	3.50	6.5	6.5	7.7	7.7
2440	4.68	3.71	6.3	6.3	7.7	7.7

NOTES:

- A The table applies to Closed Profile Wall Polyethylene Pipe manufactured according to ASTM F894.  
B The table presumes groundwater is below the pipe.  
C Installation is according to OPSD-802.010 requirements.  
D For depths of cover and pipe sizes greater than shown or for other design conditions shall be calculated from first principles.  
E Minimum depth of cover over the pipe shall be 800mm or one pipe diameter, whichever is greater.  
F Depth of burial may increase with improved embedment materials.  
G Design assumptions:  
E=28,200psi, E'=2,000psi,  
dry soil specific gravity=120lb/cuft  
and H25 live loads.  
H Trench width is based on the  
higher pipe stiffness and is  
according to ASTM D2321.  
I All dimensions are in meters unless  
otherwise shown.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING	Date	August 2006	Rev	0
HEIGHT OF FILL TABLE CLOSED PROFILE WALL POLYETHYLENE PIPE RSC 160 AND RSC 250	-----			
	MTOD - 806.021			



METRIC  
DIMENSIONS ARE IN METRES  
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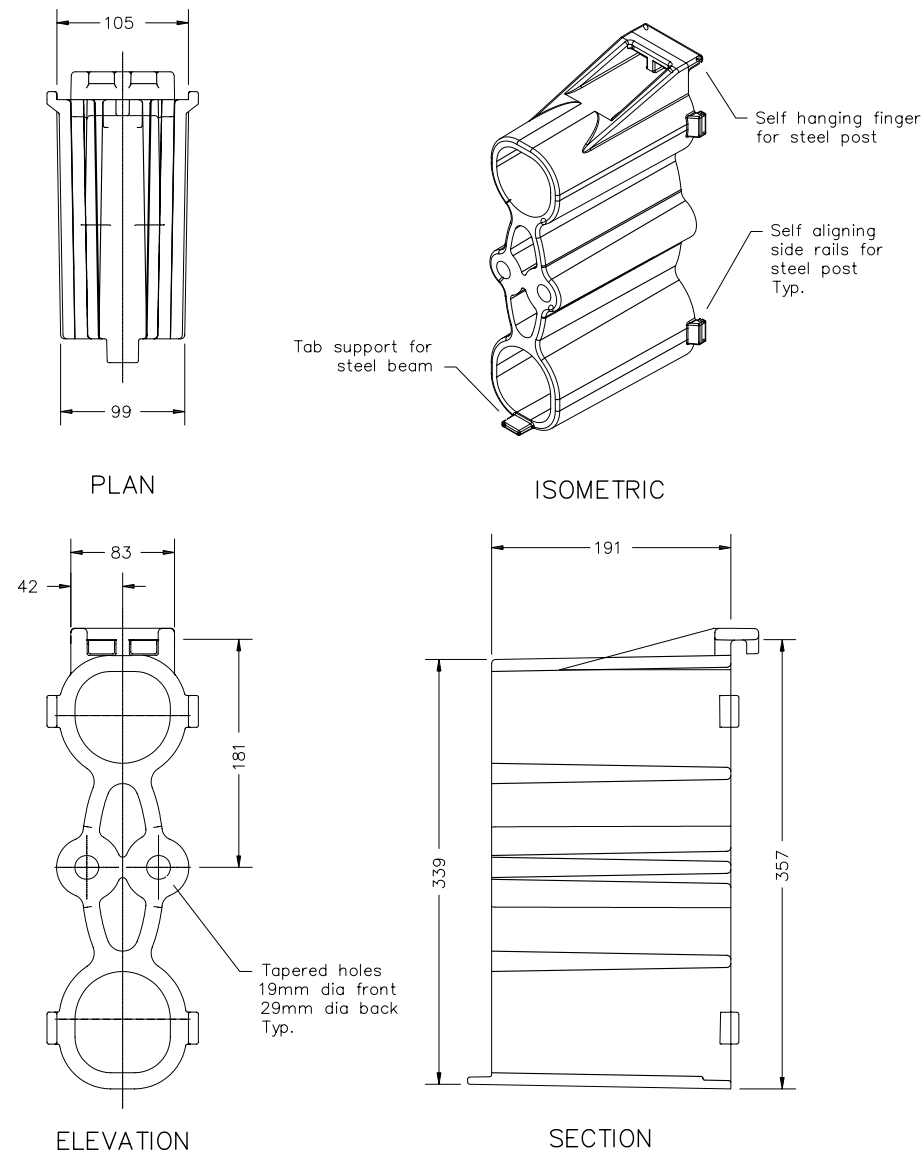
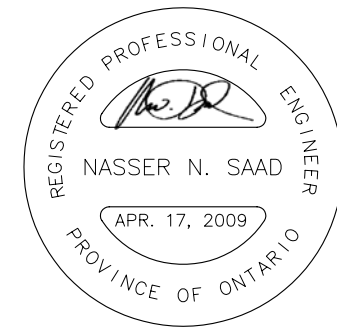
PLATE No  
CONT 2009-5002  
GWP 392-98-00

DETAILS - MTOD

Survey \_\_\_\_\_ Revised \_\_\_\_\_  
JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8

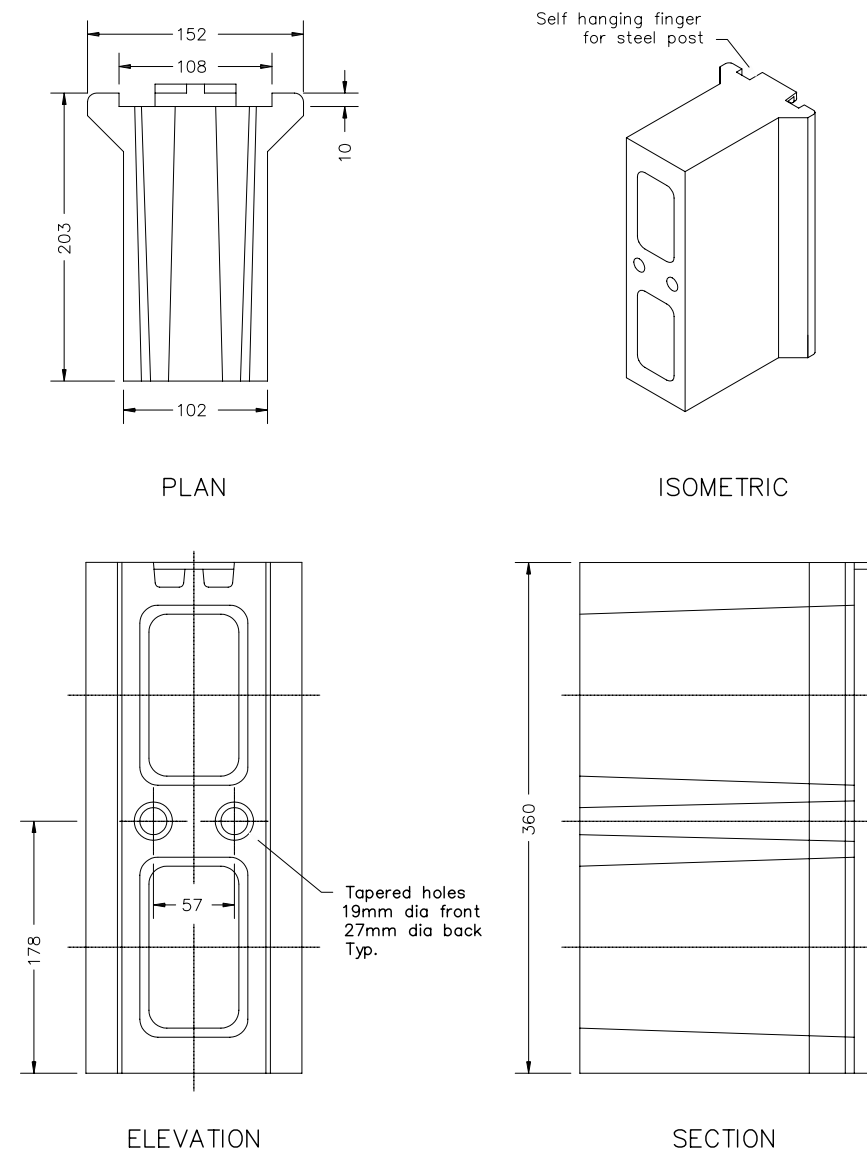


SHEET  
45



NOTES:  
A The component depicted is proprietary to Trinity Industries, Inc.  
B All dimensions are in millimetres unless otherwise shown.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING	December 2007	Rev	0
GUIDE RAIL SYSTEM, STEEL BEAM POLYETHYLENE OFFSET BLOCK - KING BLOCK COMPONENT	-----	-----	-----
	MTOD - 912.106		



NOTES:  
A The component depicted is proprietary to Mondo Polymer Technologies.  
B All dimensions are in millimetres unless otherwise shown.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING	December 2007	Rev	0
GUIDE RAIL SYSTEM, STEEL BEAM POLYMER OFFSET BLOCK - MONDO COMPONENT	-----	-----	-----
	MTOD - 912.107		

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

PLATE No  
CONT 2009-5002  
GWP 392-98-00

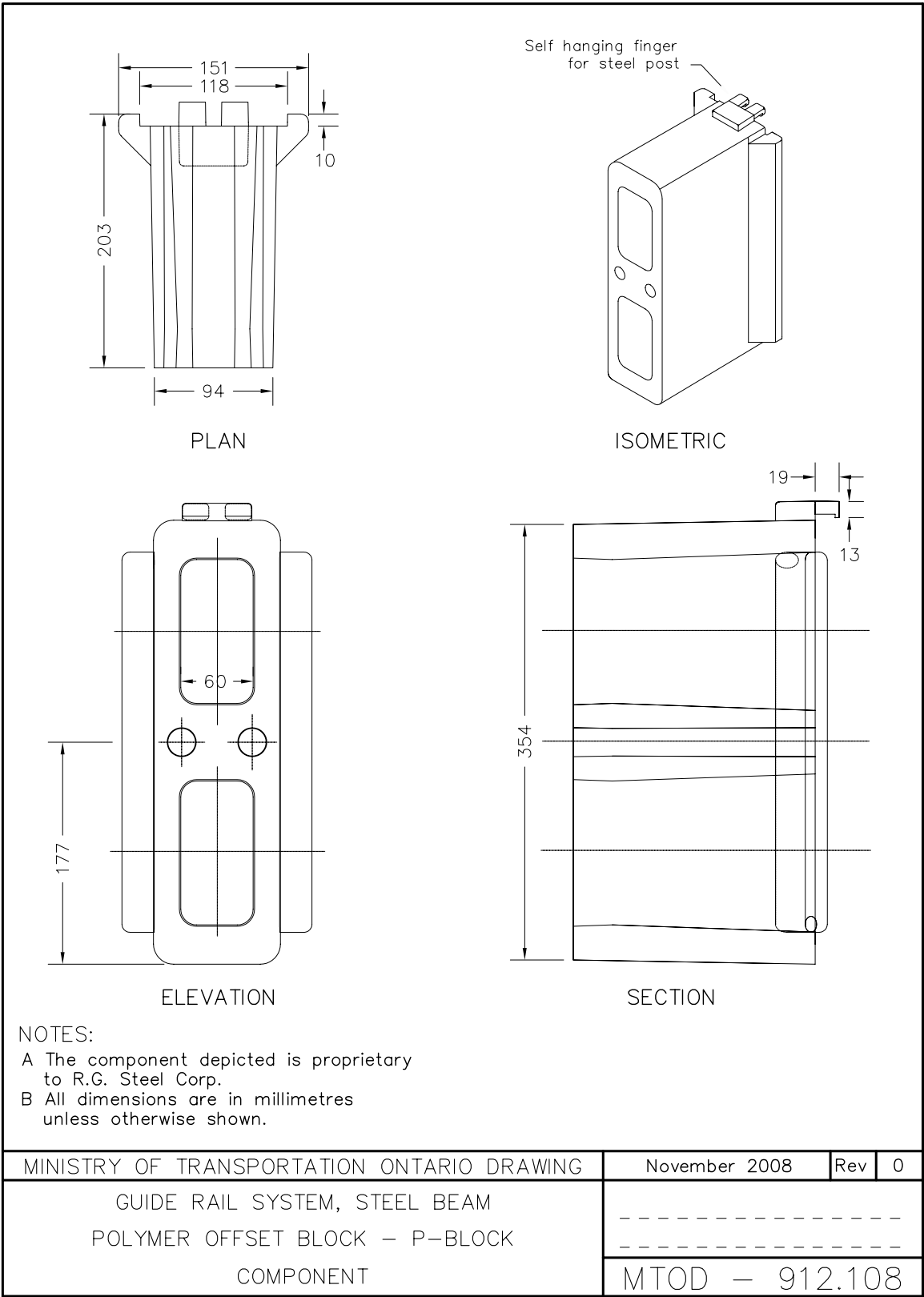
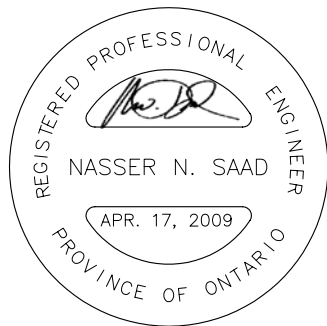
DETAILS - MTOD

Survey \_\_\_\_\_ Revised \_\_\_\_\_

JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8



SHEET  
46



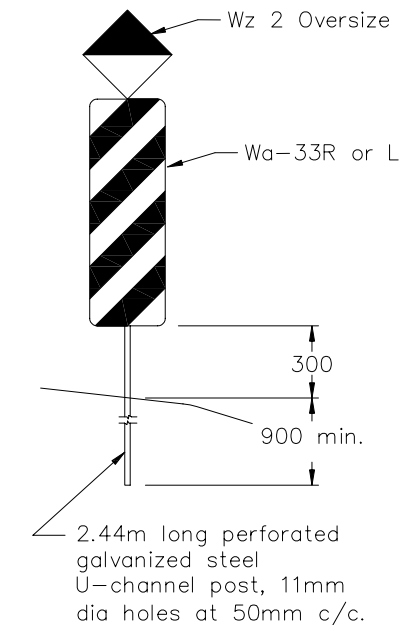
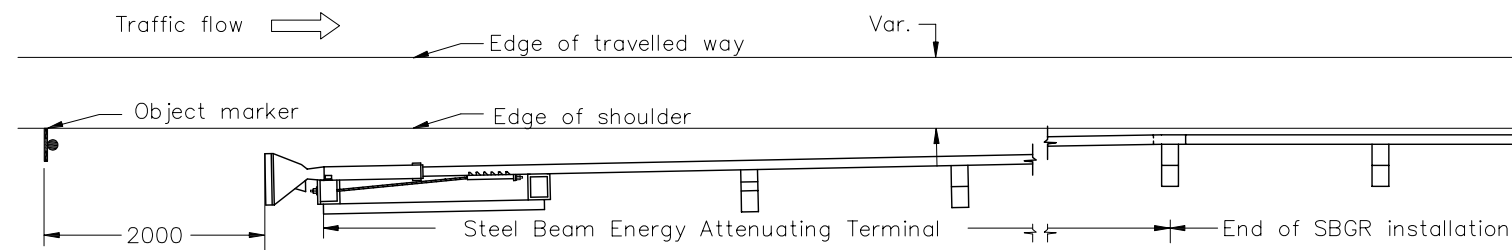
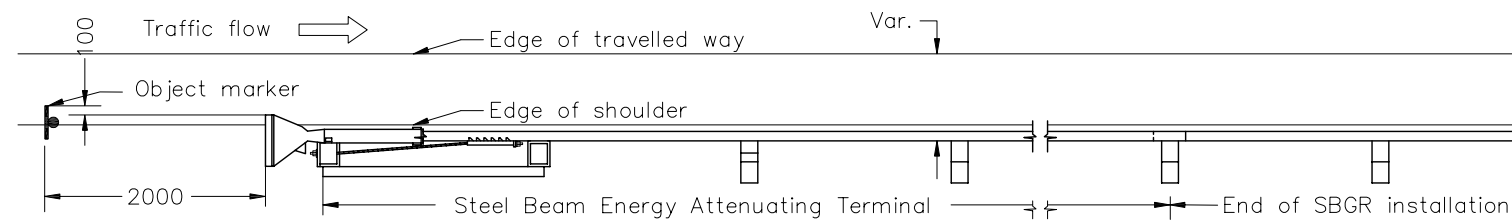
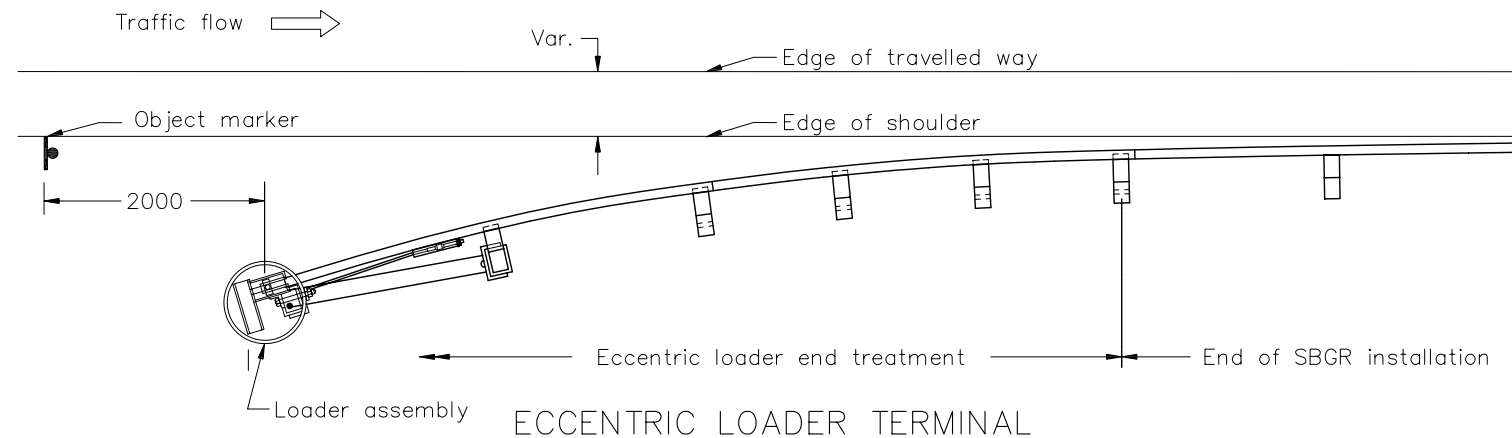
METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
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PLATE No  
CONT 2009-5002  
GWP 392-98-00

DETAILS - MTOD

Survey \_\_\_\_\_ Revised \_\_\_\_\_  
JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8  
JMCTG

SHEET  
47



NOTES:

A All dimensions are in millimetres unless otherwise shown.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING

December 2005

Rev

0

SIGN  
OBJECT MARKER-END TREATMENT  
INSTALLATION

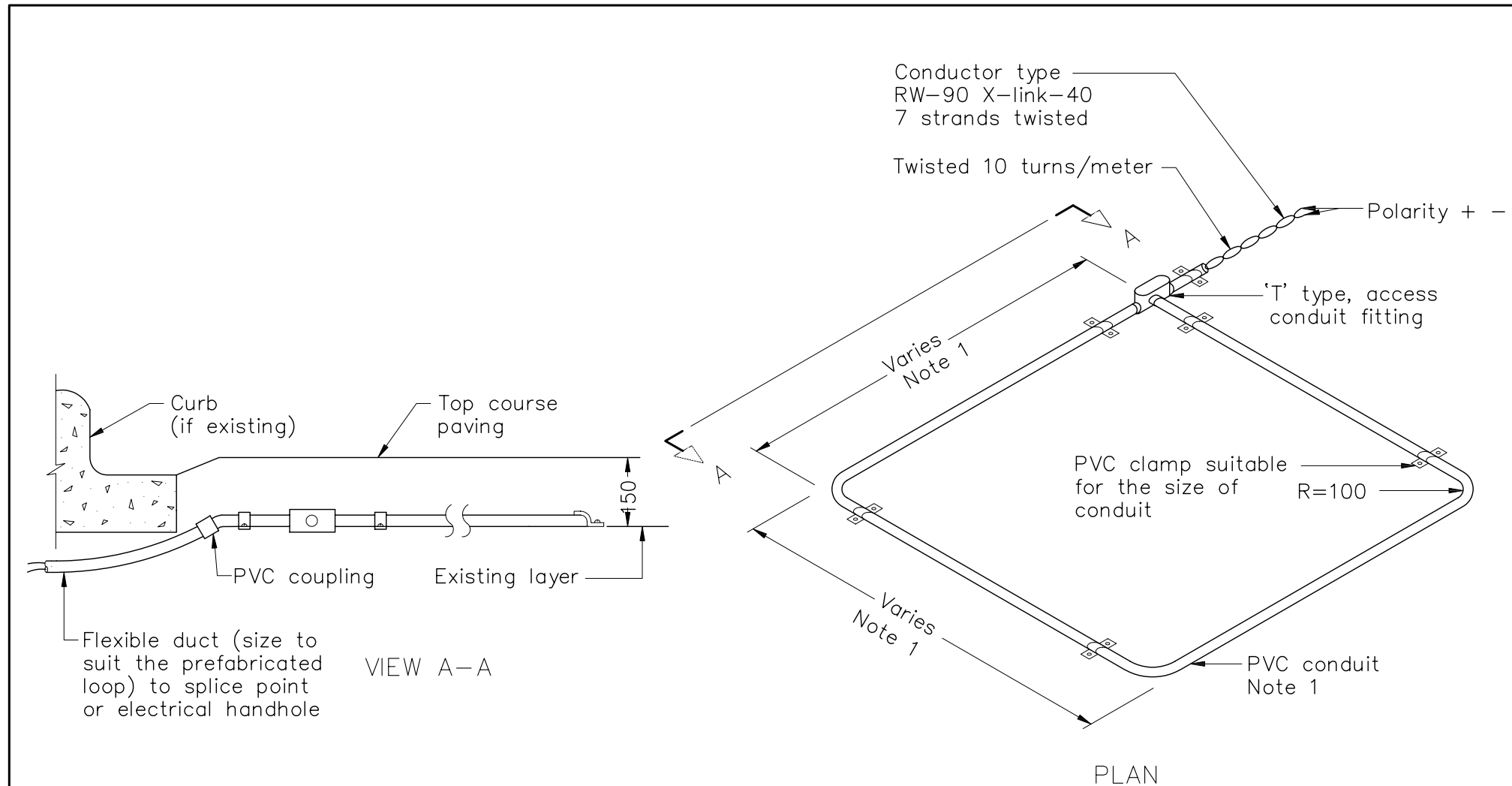
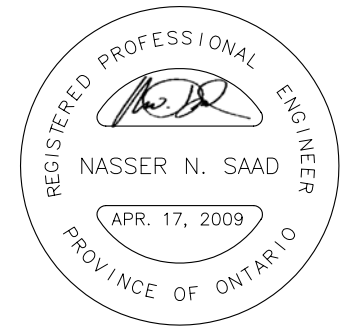
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METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES  
UNLESS OTHERWISE SHOWN

PLATE No  
CONT 2009-5002  
GWP 392-98-00

DETAILS - MTOD  
Survey \_\_\_\_\_ Revised \_\_\_\_\_  
SHEET 48

JMC Transportation Group  
264 Welland Ave. Unit 2  
St. Catharines, ON L2R 2P8  
JMCTG



NOTES:  
1 Dimensions as indicated elsewhere in the contract.  
A All dimensions are in millimetres unless otherwise shown.

MINISTRY OF TRANSPORTATION ONTARIO DRAWING	October 2008	Rev	0
PREFABRICATED DETECTOR LOOP	-----		
	-----		
	MTOD - 2901.404		



METRIC

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CONT2009-5002

WP392-98-00

SOIL DATA



SHEET

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ABBREVIATIONS FOR BORING AND TEST DATA					
Accep	Acceptable	Gry	Grey	Psty	Polystyrene
Agg	Aggregate	H	Heavy	Poss	Possible
Amor	Amorphous	Hi	Highly	PST	Prime & Surface Treatment
Asph	Asphalt	Hp	High Plasticity	Quant	Quantity
BR	Bedrock	HM	Hot Mix	D <sub>R</sub>	Relative Density
Blk	Black	Lt	Light	Reinf	Reinforced
Bl	Blue	Liq	Liquid	RSS	Remoulded Shear Strength
BH	Borehole	W <sub>L</sub>	Liquid Limit	RF	Rock Fill
Bld(y)	Boulder(y)	Lo	Loam	Sa	Sand
BlDs	Boulders	L	Loose	Sat	Saturated
BU	Break Up	Mrl	Marl	SH	Shale
Br	Brown	Matl	Material	St	Sensitivity
CF	Channel Face	Max	Maximum	SSM	Select Subgrade Material
Cl	Clay	MDD	Maximum Dry Density	Sh Rk	Shot Rock
Co	Coarse	MWD	Maximum Wet Density	Si(y)	Silt(y)
Cob	Cobbles	Med	Medium	Sl(y)	Slight(Iy)
Comp	Compact	MP	Medium Plasticity	SP	Slight Plastic
Conc	Concrete	Mod	Moderate	Stn(y)	Stone(y)
Contam	Contaminated	Mott	Mottled	Stks	Streaks
Cord	Corduoy	Mul	Mulch	Surf	Surface
Cr	Crushed	NFP	No Further Progress	Temp	Temperature
Dk	Dark	NFP (Blds)	No Further Progress (Boulders)	TH	Test Hole
Decomp	Decomposed	Num	Numerous	TP	Test Pit
D	Dense	OCC	Occasional	Tps	Topsoil
E	Earth	Wopt	Optimum Moisture Content	Tr	Trace
Fib	Fibrous	Ora	Orange	USS	Undisturbed Shear Strength
W	Field Moisture Content	Org	Organic	Unreif	Unreinforced
F	Fine	Org M	Organic Matter	Varv	Varved
Fr Wat	Free Water	Ob	Overburden	VF	Very Fine
FB	Frost Boil	Pavt	Pavement	WT	Water Table
FH	Frost Heave	Pedo	Pedological	Weath	Weathered
Gran	Granular	Pen Mac	Penetration Macadam	W	With
Gr	Gravel(y)	Wp	Plastic Limit Plasticity Index	Wd(y)	Wood(y)
Grn	Green	Ip	Plasticity Index	Yel	Yellow
HA	Hand Auger Equipment				
PA	Power Auger Equipment				

PAVEMENT CORING SURVEY					PAVEMENT RUT DEPTH SURVEY			
Station	Pavement Offset From Rt EP (m)	Pavement Core Depth (mm)	Shoulder Offset From Rt EP (m)	Shoulder Core Depth (mm)	Inner Rut Depth (mm)	Outer Rut Depth (mm)	Average Rut Depth (mm)	Remarks
28+395	6.2 Lt	110	7.1 Lt	105	3	4	4	
28+865	2.7 Lt	108	0.2 Rt	98	3	5	4	
29+200	2.0 Lt	128	0.1 Rt	110	3	4	4	
29+323	0.5 Lt	115	0.1 Rt	110	5	10	8	
29+739	4.0 Lt	86	7.2 Lt	94	5	2	4	
30+150	2.0 Lt	104	0.1 Rt	105	3	3	3	
30+530	6.8 Lt	140	7.1 Lt	130	5	8	7	
30+697	5.6 Lt	140	7.1 Lt	135	3	5	4	
30+882	4.0 Lt	150	7.1 Lt	170	2	4	3	
CHAINAGE EQUATION: 31+173 (Head Twp) = 10+009 (Rolph Twp)								
10+270	6.8 Lt	190	7.1 Lt	190	3	4	4	
10+447	5.0 Lt	160	7.1 Lt	135	2	3	3	
10+567	4.2 Lt	185	7.1 Lt	150	3	2	3	
11+011	6.3 Lt	155	7.1 Lt	148	4	7	6	
11+626	3.0 Lt	180	0.2 Rt	135	2	3	3	
11+850	5.0 Lt	168	7.1 Lt	140	3	3	3	
12+156	3.7 Lt	102	7.1 Lt	93	3	16	10	
12+653	1.0 Lt	180	0.3 Rt	175	2	5	4	
12+786	6.0 Lt	178	7.2 Lt	180	3	4	4	
13+322	0.5 Lt	244	0.4 Rt	166	2	1	2	
13+563	7.0 Lt	175	7.4 Lt	175	2	2	2	
13+724	6.7 Lt	189	7.3 Lt	166	2	2	2	
14+034	1.0 Lt	174	0.1 Rt	166	3	6	5	

N.T.S.



PAVEMENT CORING SURVEY					PAVEMENT RUT DEPTH SURVEY			
Station	Pavement Offset From Rt EP (m)	Pavement Core Depth (mm)	Shoulder Offset From Rt EP (m)	Shoulder Core Depth (mm)	Inner Rut Depth (mm)	Outer Rut Depth (mm)	Average Rut Depth (mm)	Remarks
14+440	7.0 Lt	164	7.1 Lt	159	12	12	12	
14+814	6.0 Lt	158	7.1 Lt	136	3	3	3	
15+226	2.3 Lt	152	0.1 Rt	152	2	2	2	
15+338	2.3 Lt	158	0.1 Rt	151	2	2	2	
15+858	4.0 Lt	147	7.1 Lt	136	5	2	4	
16+039	6.0 Lt	137	7.1 Lt	129	4	2	3	
16+597	6.9 Lt	163	7.1 Lt	147	2	2	2	
16+957	6.9 Lt	173	7.1 Lt	168	5	5	5	
17+303	1.0 Lt	198	0.2 Rt	50	3	2	3	
17+575	5.8 Lt	170	11.5 Lt	53	1	2	2	
17+685	0.7 Lt	218	0.4 Rt	92	2	1	2	
18+207	3.5 Lt	252	0.4 Rt	78	2	3	3	
18+538	8.7 Lt	154	12.2 Lt	57	2	2	2	
18+761	2.4 Lt	173	1.0 Rt	48	2	2	2	
19+119	6.1 Lt	228	11.3 Lt	68	1	2	2	
19+596	1.3 Lt	228	0.1 Rt	231	3	3	3	
19+733	6.0 Lt	150	7.3 Lt	130	3	3	3	PPS with Asphalt Curb & Gutter
20+107	3.2 Lt	173	0.4 Rt	171	3	2	3	PPS with Asphalt Curb & Gutter
20+553	1.8 Lt	182	0.7 Rt	97	3	3	3	
20+742	5.4 Lt	297	0.2 Rt	153	2	2	2	
21+295	1.6 Lt	172	0.1 Rt	148	6	1	4	

PAVEMENT CORING SURVEY					PAVEMENT RUT DEPTH SURVEY			
Station	Pavement Offset From Rt EP (m)	Pavement Core Depth (mm)	Shoulder Offset From Rt EP (m)	Shoulder Core Depth (mm)	Inner Rut Depth (mm)	Outer Rut Depth (mm)	Average Rut Depth (mm)	Remarks
21+514	0.5 Lt	148	0.2 Rt	135	2	2	2	
21+951	6.9 Lt	168	7.3 Lt	152	2	2	2	
22+006	4.4 Lt	150	7.4 Lt	130	2	2	2	
22+364	4.8 Lt	158	7.1 Lt	146	7	7	7	
22+831	4.8 Lt	172	7.1 Lt	104	2	2	2	
23+304	6.6 Lt	265	7.1 Lt	248	2	2	2	
23+435	3.9 Lt	194	7.2 Lt	160	4	5	5	
23+801	6.3 Lt	145	7.2 Lt	135	5	8	7	
24+202	6.8 Lt	182	7.2 Lt	169	3	3	3	
24+647	6.8 Lt	190	7.1 Lt	148	2	2	2	
24+886	1.3 Lt	173	0.2 Rt	173	5	2	4	
25+279	1.0 Lt	264	0.4 Rt	125	4	4	4	
25+502	2.5 Lt	190	0.3 Rt	112	3	5	4	
SIDE ROADS, TAPERS & COMMERCIAL ENTRANCES (Rolph Township)								
12+571	6.9 Rt	70	Raymond Road (West Junction)					
12+707	5.8 Rt	30	Raymond Road (East Junction)					
12+800	1.7 Rt	145	Fully Paved Shoulder					
12+925	1.7 Rt	133	Fully Paved Shoulder Entrance To Esso Service Station					
12+925	5.7 Rt	50	Entrance to Esso Service Station					
12+990	16.4 Lt	110	Abandoned Entrance					
13+288	7.1 Rt	110	Moore Lake Road					

METRIC  
DIMENSIONS ARE IN METRES  
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CONT 2009-5002  
WP 392-98-00

SOIL DATA



SHEET  
51

PR-D-707

BB-05

MINISTRY OF TRANSPORTATION, ONTARIO

Mar 10, 2009 - 8:50am

sheet 50-59 HWY 17 soil data.dwg

DRAWING NAME:  
CREATED:

PAVEMENT CORING SURVEY					PAVEMENT RUT DEPTH SURVEY				
Station	Pavement Offset From Rt EP (m)	Pavement Core Depth (mm)	Shoulder Offset From Rt EP (m)	Shoulder Core Depth (mm)	Inner Rut Depth (mm)	Outer Rut Depth (mm)	Average Rut Depth (mm)	Remarks	
13+300	22.8 Lt	110	County Road 635 (Swisha Road)						
13+725	21.2 Lt	50	Lookout Parking Area						
13+746	10.6 Lt	90	Entrance to Lookout Parking Area						
15+725	10.4 Lt	135	Entrance to Generating Station Dam						
17+377	14.4 Lt	136	Entrance to Verna's Diner (West)						
17+493	16.4 Lt	110	Entrance to Verna's Diner (East)						
17+525	12.6 Lt	100	Westbound Right Turn Taper to Verna's Diner						
17+650	1.6 Rt	95	Eastbound Right Turn Taper to Cochrane Lane						
17+671	7.0 Rt	73	Cochrane Lane						
17+912	17.6 Lt	85	River Pines Lane & Cutler Lane						
17+950	12.9 Lt	95	Westbound Right Turn Taper to River Pines Lane and Cutler Lane						
18+025	1.7 Rt	175	Eastbound Right Turn Taper to Meilleurs Road (West Junction)						
18+066	5.5 Rt	165	Meilleurs Road (West Junction)						
18+411	18.6 Lt	103	Stewarts Lane (West Junction)						
18+435	12.8 Lt	112	Westbound Right Turn Taper to Stewarts Lane (West Junction)						
18+767	18.2 Lt	97	Stewarts Lane (East Junction)						
18+790	12.8 Lt	103	Westbound Right Turn Taper to Stewarts Lane (East Junction)						
18+900	1.9 Rt	148	Eastbound Slip Around at Park Entrance						
18+904	16.9 Lt	118	Entrance to Meilleurs Bay Park						
18+925	12.4 Lt	105	Westbound Right Turn Taper to Meilleurs Bay Park						
19+653	1.8 Rt	112	Eastbound Right Turn Taper to Meilleurs Road (East Junction)						
19+678	8.1 Rt	82	Meilleurs Road (East Junction)						

PAVEMENT CORING SURVEY					PAVEMENT RUT DEPTH SURVEY				
Station	Pavement Offset From Rt EP (m)	Pavement Core Depth (mm)	Shoulder Offset From Rt EP (m)	Shoulder Core Depth (mm)	Inner Rut Depth (mm)	Outer Rut Depth (mm)	Average Rut Depth (mm)	Remarks	
19+712	1.8 Rt	145	Fully Paved Boulevard between Meilleurs Road and Commercial Entrance						
19+868	13.0 Lt	72	Pine Crest Road						
19+881	9.4 Lt	85	Westbound Fully Paved Shoulder between Lau-Ren Road and Pine Crest Road						
19+902	12.8 Lt	75	Lau-Ren Road (East Junction)						
19+921	8.9 Lt	105	Westbound Right Turn Taper to Lau-Ren Road						
21+314	15.3 Lt	178	Lau-Ren Road (West Junction)						
21+536	5.3 Rt	105	Lance Road (West Junction)						
22+252	5.8 Rt	88	Lance Road (East Junction)						
22+502	11.7 Lt	112	McKinley Drive (West Junction)						
23+504	17.3 Lt	128	McKinley Drive (East Junction)						
23+525	9.2 LT	35	Westbound Right Turn Taper to McKinley Drive (East Junction)						
23+573	8.1 Rt	60	Allan Road (West Junction)						
24+190	3.5 Rt	85	Allan Road (East Junction)						
25+028	8.9 Lt	48	Westbound Right turn Taper to Abandoned Service Station						
25+050	9.0 Lt	55	Westbound Right turn Taper to Abandoned Service Station						
25+310	1.7 Rt	65	Eastbound Right Turn Taper to Brouse Road						
25+310	10.2 Lt	72	Westbound Right Turn Taper to Ryans Gift Store						
25+332	16.2 Lt	122	Moore's Road						
25+335	7.5 Rt	100	Brouse Road						
25+360	1.2 Rt	55	Eastbound Lane Slip Around						
25+360	9.4 Lt	58	Westbound Right Turn Taper to Moore's Road						

METRIC

DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002

WP 392-98-00

SOIL DATA

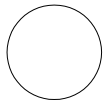


SHEET 52

N.T.S.

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00



SOIL DATA

SHEET  
53



Table 1

04-1181-137

Core Station	28+395	29+323	30+530	-
Asphalt Cement Content (%)	5.75	6.02	5.13	-
Recovered Penetration (0.1 mm)	50	38	23	-
Bulk Relative Density (Mg/m <sup>3</sup> )	2.386	2.376	2.307	-
Air Voids (%)	3.2	2.3	6.8	-

Sieve Size	Percent Passing			
26.5 mm	100.0	100.0	100.0	-
19.0 mm	100.0	100.0	100.0	-
16.0 mm	100.0	98.1	100.0	-
13.2 mm	95.2	92.2	89.0	-
9.5 mm	82.8	77.0	69.2	-
4.75 mm	62.0	60.0	49.3	-
2.36 mm	50.7	49.3	40.0	-
1.18 mm	41.5	39.7	32.4	-
0.600 mm	29.7	25.7	22.9	-
0.300 mm	16.7	13.8	13.8	-
0.150 mm	7.7	6.8	7.4	-
0.075 mm	4.3	3.9	4.4	-

Table 2

04-1181-137

Core Station	10+270	11+011	12+156	13+322
Asphalt Cement Content (%)	5.27	5.44	5.36	5.27
Recovered Penetration (0.1 mm)	28	37	44	33
Bulk Relative Density (Mg/m <sup>3</sup> )	2.332	2.356	2.380	2.370
Air Voids (%)	5.5	4.6	4.5	4.6

Sieve Size	Percent Passing			
26.5 mm	100.0	100.0	100.0	100.0
19.0 mm	98.0	100.0	100.0	100.0
16.0 mm	97.4	98.6	98.5	99.7
13.2 mm	87.0	91.4	91.4	93.8
9.5 mm	70.0	76.6	75.6	76.5
4.75 mm	53.0	55.6	55.0	54.6
2.36 mm	44.6	46.9	44.6	44.1
1.18 mm	37.0	39.1	37.3	35.9
0.600 mm	27.5	29.2	30.3	27.6
0.300 mm	16.8	17.5	19.1	17.6
0.150 mm	8.1	8.5	8.1	8.6
0.075 mm	4.7	5.0	4.5	5.0

DRAWING NAME: sheet 50-59 HWY 17 soil data.dwg  
CREATED: Mar 10, 2009 - 8:51am

MINISTRY OF TRANSPORTATION, ONTARIO

PR-D-707

88-05

Table 3

04-1181-137

Core Station	14+440	15+226	16+039	17+303
Asphalt Cement Content (%)	5.64	5.93	5.45	5.70
Recovered Penetration (0.1 mm)	33	55	41	27
Bulk Relative Density (Mg/m <sup>3</sup> )	2.361	2.332	2.353	2.397
Air Voids (%)	3.9	5.0	5.4	3.2

Sieve Size	Percent Passing			
26.5 mm	100.0	100.0	100.0	100.0
19.0 mm	100.0	100.0	100.0	100.0
16.0 mm	98.8	98.6	99.5	100.0
13.2 mm	92.1	91.6	92.3	92.3
9.5 mm	76.0	78.2	76.7	75.5
4.75 mm	57.5	62.0	57.6	57.3
2.36 mm	48.0	52.1	48.1	50.0
1.18 mm	39.9	43.7	40.9	42.4
0.600 mm	29.6	32.1	33.1	25.1
0.300 mm	18.0	17.9	20.4	15.6
0.150 mm	8.9	8.1	8.7	8.1
0.075 mm	5.1	4.6	4.7	4.5

Table 4

04-1181-137

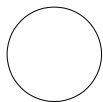
Core Station	18+207	19+119	20+107	21+295
Asphalt Cement Content (%)	5.63	5.89	5.65	5.55
Recovered Penetration (0.1 mm)	38	31	33	31
Bulk Relative Density (Mg/m <sup>3</sup> )	2.400	2.339	2.358	2.369
Air Voids (%)	3.1	5.5	4.5	4.4

Sieve Size	Percent Passing			
26.5 mm	100.0	100.0	100.0	100.0
19.0 mm	100.0	100.0	100.0	100.0
16.0 mm	100.0	10.0	98.5	99.6
13.2 mm	91.9	94.0	91.6	93.3
9.5 mm	73.7	77.3	75.3	77.2
4.75 mm	55.2	58.3	57.9	58.1
2.36 mm	48.7	50.6	48.5	47.5
1.18 mm	41.2	42.7	39.9	38.7
0.600 mm	23.3	24.2	29.4	29.1
0.300 mm	14.7	14.8	17.5	17.9
0.150 mm	7.8	7.6	8.3	8.5
0.075 mm	4.3	4.1	4.7	4.9

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

SOIL DATA



SHEET  
54

N.T.S.

Table 5

Core Station	22+006	23+304	24+202	25+279
Asphalt Cement Content (%)	6.22	5.49	5.77	6.32
Recovered Penetration (0.1 mm)	32	38	28	48
Bulk Relative Density (Mg/m <sup>3</sup> )	2.322	2.398	2.378	2.384
Air Voids (%)	5.2	3.5	3.1	2.5

Sieve Size	Percent Passing			
26.5 mm	100.0	100.0	100.0	100.0
19.0 mm	100.0	100.0	100.0	100.0
16.0 mm	99.7	99.1	98.9	99.3
13.2 mm	93.8	92.2	91.8	93.1
9.5 mm	81.1	75.3	73.6	79.4
4.75 mm	64.2	55.8	56.8	59.8
2.36 mm	54.1	46.5	49.5	51.3
1.18 mm	44.8	38.6	42.7	43.4
0.600 mm	32.4	29.7	28.6	28.8
0.300 mm	18.1	18.3	16.8	16.5
0.150 mm	8.1	8.4	7.7	7.7
0.075 mm	4.3	4.8	3.9	4.2

04-1181-137

Highway 17 - Ditch Survey

Station 10+225 to 25+650, Referenced to C/L  
Datums are referenced to the nearest E/P

10+225 10.00 Rt C/L D-300 PA

0 - 100 Dk Br Sa Tps  
100 - 820 Br Med Sa Occ Cob, Moist, Comp  
- 820 NFP BR

10+250 10.00 Rt C/L D-300 PA

0 - 120 Dk Br Sa Tps  
120 - 850 Br Med Sa, Moist, Comp  
- 850 NFP BR

11+625 11.00 Rt C/L D-500 PA

0 - 080 Dk Br Sa Tps  
080 - 1.50 Br Med Sa, Moist, Comp

11+650 11.00 Rt C/L D-400 PA

0 - 100 Dk Br Sa Tps  
100 - 1.50 Br Med Sa, Moist, Comp

11+675 11.00 Rt C/L D-600 PA

0 - 120 Dk Br Sa Tps  
120 - 1.50 Br Med Sa, Moist, Comp

11+700 11.00 Rt C/L D-400 PA

0 - 140 Dk Br Sa Tps  
140 - 1.50 Med Sa, Moist, Comp

11+850 12.00 Rt C/L D-300 PA

0 - 100 Dk Br Sa Tps  
100 - 1.50 Br Med Sa, Moist, Comp

11+875 12.00 Rt C/L D-400 PA

0 - 100 Dk Br Sa Tps  
100 - 1.50 Br Med Sa, Moist, Comp

11+900 12.00 Rt C/L D-300 PA

0 - 120 Dk Br Sa Tps  
120 - 1.50 Br Med Sa, Moist, Comp

11+925 12.00 Rt C/L D-400 PA

0 - 180 Dk Br Sa Tps  
180 - 1.50 Br Med Sa, Moist, Comp

11+950 12.00 Rt C/L D-400 PA

0 - 1.50 Br Med Sa, Moist, Comp

15+475 10.00 Rt C/L D-300 PA

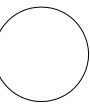
0 - 100 Dk Br Sa Tps  
100 - 1.10 Br Med Sa Occ Cob, Moist, Comp  
- 1.10 NFP BR

METRIC

DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

SOIL DATA



SHEET  
55

04-1181-137  
December, 2004

N.T.S.

PR-D-707

BB-05

MINISTRY OF TRANSPORTATION, ONTARIO

Mar 10, 2009 - 8:52am

sheet 50-59 HWY 17 soil data.dwg

DRAWING NAME:  
CREATED:

<b>Highway 17 - Ditch Survey</b> Station 10+225 to 25+650, Referenced to C/L Datums are referenced to the nearest E/P		
15+500	10.00 Rt C/L D-250 PA	
0	- 160	Dk Br Sa Tps
160	- 1.10	Gry Med Sa W Si Occ Cob, Moist, Comp
	- 1.10	NFP BR
15+525	10.00 Rt C/L D-250 PA	
0	- 180	Dk Br Sa Tps
180	- 700	Br Med Sa W Si Occ Cob, Moist, Comp
	- 700	NFP BR
15+550	10.50 Rt C/L D-300 PA	
0	- 240	Dk Br Si Tps
240	- 800	Br Med Sa W Si
	- 800	NFP BR
16+750	10.50 Rt C/L D-300 PA	
0	- 220	Dk Br Sa Tps
220	- 1.20	Br Med Sa Occ Cob, Moist, Comp
	- 1.20	NFP BR
16+775	10.50 Rt C/L D-300 PA	
0	- 240	Dk Br Sa Tps
240	- 700	Br Med Sa Occ Cob, Moist, Comp
	- 700	NFP BR
25+625	10.50 Rt C/L D-400 PA	
0	- 250	Dk Br Sa Tps
250	- 450	Br Med Sa W Si, Moist, Comp
	- 450	NFP BR
25+650	11.00 Rt C/L D-700 PA	
0	- 240	Dk Br Sa Tps
240	- 800	Br Med Sa, Moist, Comp
	- 800	NFP BR

<b>04-1181-137</b> December, 2004		
16+800	11.00 Rt C/L D-400 PA	
0	- 100	Dk Br Sa Tps
100	- 600	Gry Med Sa W Si Occ Cob, Moist, Comp
	- 600	NFP BR
25+525	10.00 Rt C/L D-300 PA	
0	- 250	Dk Br Sa Tps
250	- 1.00	Br Med Sa, Moist, Comp
	- 1.00	NFP BR
25+550	10.50 Rt C/L D-300 PA	
0	- 240	Dk Br Sa Tps
240	- 600	Br Med Sa W Si, Moist, Comp
	- 600	NFP BR
25+575	11.00 Rt C/L D-350 PA	
0	- 250	Dk Br Sa Tps
250	- 550	Br Med Sa W Si, Moist, Comp
	- 550	NFP BR
25+600	10.50 Rt C/L D-300 PA	
0	- 260	Dk Br Sa Tps
260	- 550	Br Med Sa W Si, Moist, Comp
	- 550	NFP BR

<b>Pavement Distortion</b> Station 30+625 to 30+770, Referenced to C/L Datums are referenced to the nearest E/P		
30+625	3.60 Lt C/L D-0 PA	
0	- 180	Asph
180	- 900	Br Sa W Gr*
900	- 950	PSTY
950	- 1.10	Br Co Sa
	- 1.10	NFP BR
* Sample Depth = 180 - 900		
Passing 26.5 mm = 100 %		
19.0 mm = 98 %		
13.2 mm = 94 %		
9.5 mm = 90 %		
4.75 mm = 85 %		
1.18 mm = 77 %		
300 um = 14 %		
75 um = 3 %		
w = %		
Unacceptable Granular A (Dirty) (Fine)		
30+625	8.50 Lt C/L D-250 PA	
0	- 700	Br Co Sa W Gr
700	- 1.30	Br Med Si Sa
	- 1.30	NFP BR

<b>04-1181-137</b> December, 2004		
30+635	3.60 Rt C/L D-0 PA	
0	- 180	Asph
180	- 480	Br Med Sa W Gr
480	- 720	Br Med Sa
720	- 770	PSTY
770	- 1.30	Br Med Si Sa*
	- 1.30	NFP BR
* Sample Depth = 770 - 1.30		
Passing 150 mm = 100 %		
26.5 mm = 100 %		
4.75 mm = 85 %		
1.18 mm = 80 %		
300 um = 57 %		
75 um = 21 %		
w = %		
Unacceptable Granular B		
Acceptable SSM		
30+640	8.60 Lt C/L D-350 PA	
0	- 400	Br Co Sa Gr
400	- 800	Br Co Sa
800	- 1.10	Br Co Sa W Cob
	- 1.10	NFP BR
30+655	8.50 Rt C/L D-1.40 PA	
0	- 200	Sh Rk
	- 200	NFP BR


METRIC

DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT  
WP

2009-5002  
392-98-00

SOIL DATA



SHEET  
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N.T.S.

DRAWING NAME: sheet 50-59 HWY 17 soil data.dwg  
CREATED: Mar 10, 2009 - 8:53am

MINISTRY OF TRANSPORTATION, ONTARIO

PR-D-707

BS-05

Pavement Distortion

Station 30+625 to 30+770, Referenced to C/L  
Datums are referenced to the nearest E/P

30+660 5.60 Lt C/L D-100 PA

0 - 400 Br Co Sa Gr  
400 - 800 Br Co Sa  
800 - 1.10 Br Co Sa W Cob  
- 1.10 NFP BR

30+670 3.60 Rt C/L D-0 PA

0 - 190 Asph  
190 - 500 Br Med Sa Gr  
500 - 950 Br Med Sa  
- 950 NFP BR

30+670 8.60 Rt C/L D-1.10 PA

0 - 400 Br Sa W Cob  
- 400 NFP BR

30+680 3.60 Lt C/L D-0 PA

0 - 150 Asph  
150 - 280 Br Sa Gr  
280 - 360 Asph  
360 - 650 Br Co Sa W Gr  
650 - 800 Br Sa  
800 - 1.10 Br Co Sa W Cob  
- 1.10 NFP BR

04-1181-137  
December, 2004

Pavement Distortion

Station 30+625 to 30+770, Referenced to C/L  
Datums are referenced to the nearest E/P

30+710 3.60 Rt C/L D-0 PA

0 - 170 Asph  
170 - 520 Br Med Sa Gr, Loose\*  
520 - 1.30 Br Med Sa  
- 1.30 NFP BR

\* Sample Depth = 170 - 520  
Passing 26.5 mm = 100 %

19.0 mm = 100 %  
13.2 mm = 92 %  
9.5 mm = 86 %  
4.75 mm = 72 %  
1.18 mm = 51 %  
300 um = 19 %  
75 um = 4 %

w = %  
Unacceptable Granular A 200  
(Fine)

30+720 4.80 Lt C/L D-100 PA

0 - 230 Br Co Sa Gr  
230 - 700 Br Co Sa  
700 - 1.20 Br Co Sa W Cob  
- 1.20 NFP BR

30+760 3.60 Lt C/L D-0 PA

0 - 150 Asph  
150 - 430 Br Co Sa Gr  
430 - 550 Asph  
550 - 1.00 Br Co Sa Gr  
1.00 - 1.30 Br Co Sa W Cob  
- 1.30 NFP BR

METRIC

DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

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SOIL DATA



SHEET  
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04-1181-137  
December, 2004

30+760 3.00 Rt C/L D-0 PA

0 - 190 Asph  
190 - 630 Br Med Sa W Gr  
630 - 890 Br Med Sa  
- 890 NFP Sh Rk

30+770 6.00 Lt C/L D-1.50 PA

0 - 280 Br Co Sa Gr  
280 - 1.10 Br Co Sa W Gr W Cob  
1.10 - 1.80 Br Co Sa W Cob  
- 1.80 NFP BR

30+770 3.60 Rt C/L D-0 PA

0 - 200 Asph  
- 530 Br Med Sa W Gr  
530 - 910 Br Med Sa  
- 910 NFP BR

N.T.S.

DRAWING NAME: sheet 50-59 HWY 17 soil data.dwg  
CREATED: Mar 10, 2009 - 8:54am

MINISTRY OF TRANSPORTATION, ONTARIO

PR-D-707

BS-05

Pavement Distortion

Station 16+100 to 16+195, Referenced to C/L  
Datums are referenced to the nearest E/P

16+100 9.00 Lt C/L D-500 PA

0 - 150 Br Sa Tps  
150 - 480 Br Si Sa  
- 480 NFP BR

16+110 6.00 Lt C/L D-0 PA

0 - 340 Br Sa W Gr  
340 - 1.20 Br Med Sa  
- 1.20 NFP BR

16+110 2.50 Rt C/L D-0 PA

0 - 140 Asph  
140 - 460 Br Cr Gr\*  
460 - 1.30 Br Med Sa W Gr\*\*  
- 1.30 NFP BR

\* Sample Depth = 140 - 460  
Passing 26.5 mm = 100 %  
19.0 mm = 100 %  
13.2 mm = 98 %  
9.5 mm = 90 %  
4.75 mm = 79 %  
1.18 mm = 62 %  
300 um = 21 %  
75 um = 5 %  
w = %

Unacceptable Granular A  
(Sandy)  
Acceptable Granular B

\*\* Sample Depth = 460 - 1.30  
Passing 150 mm = 100 %  
26.5 mm = 100 %  
4.75 mm = 98 %  
1.18 mm = 87 %  
300 um = 30 %  
75 um = 6 %  
w = %

Acceptable Granular B

04-1181-137  
December, 2004

Pavement Distortion

Station 16+100 to 16+195, Referenced to C/L  
Datums are referenced to the nearest E/P

16+110 6.00 Rt C/L D-100 PA

0 - 160 Br Cr Gr  
160 - 1.30 Br Med Sa W Gr  
- 1.30 NFP BR

16+110 10.00 Rt C/L D-500 PA

0 - 100 Br Sa Tps  
100 - 200 Red Med Sa  
- 200 NFP BR

16+150 6.00 Lt C/L D-100 PA

0 - 360 Br Sa W Gr  
360 - 1.30 Br Med Sa  
- 1.30 NFP BR

16+150 2.50 Rt C/L D-0 PA

0 - 135 Asph  
135 - 400 Br Sa W Gr  
400 - 1.30 Br Med Sa  
- 1.30 NFP BR

16+150 10.00 Rt C/L D-5.50 PA

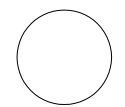
0 - 100 Br Sa Tps  
100 - 200 Br Med Sa  
- 200 NFP Gr

04-1181-137  
December, 2004

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

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WP 392-98-00

SOIL DATA



SHEET  
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N.T.S.



PR-D-707

BB-05

MINISTRY OF TRANSPORTATION, ONTARIO

Mar 10, 2009 - 8:54am

sheet 50-59 HWY 17 soil data.dwg

DRAWING NAME:

CREATED:

**Pavement Distortion**  
Station 16+100 to 16+195, Referenced to C/L  
Datums are referenced to the nearest E/P

16+195 2.50 Rt C/L D-0 PA

0	- 120	Asph
120	- 340	Br Cr Gr*
340	- 1.30	Br Med Sa
	- 1.30	NFP BR

\* Sample Depth = 120 - 340  
Passing 26.5 mm = 100 %  
19.0 mm = 96 %  
13.2 mm = 87 %  
9.5 mm = 78 %  
4.75 mm = 64 %  
1.18 mm = 45 %  
300 um = 20 %  
75 um = 4 %  
w = %

Unacceptable Granular A  
(Fine)

16+195 6.00 Rt C/L D-100 PA

0	- 300	Br Sa W Gr
300	- 1.20	Br Med Sa
	- 1.20	NFP BR

16+195 10.00 Rt C/L D-500 PA

0	- 100	Br Sa Tps
100	- 300	Br Med Sa
	- 300	NFP BR

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December, 2004

**Pavement Distortion**  
Station 12+000 to 12+225, Referenced to C/L  
Datums are referenced to the nearest E/P

12+000 3.60 Rt C/L D-0 PA

0	- 160	Asph
160	- 250	Br Sa W Gr
250	- 2.00	Br Med Sa*

\* Sample Depth = 250 - 2.00  
Passing 4.75 mm = 100 %  
2.00 mm = 100 %  
425 um = 86 %  
75 um = 3 %  
5 um = %  
2 um = %  
w = %  
Plasticity = Non-plastic  
Classification = F Sa  
Frost Susc. = LSFH  
'K' Factor = 0.08

04-1181-137  
December, 2004

12+015 3.60 Rt C/L D-0 PA

0	- 170	Asph
170	- 310	Br Cr Gr Sa*
310	- 1.50	Br Med Sa Tr Gr
1.50	- 2.30	Gry Si Sa, Wet @ 1.50**
2.30	- 2.90	Blk Si Sa W Org M***
2.90	- 3.60	Gry Si Sa, Sat

\* Sample Depth = 170 - 310  
Passing 26.5 mm = 100 %  
19.0 mm = 97 %  
13.2 mm = 85 %  
9.5 mm = 74 %  
4.75 mm = 64 %  
1.18 mm = 50 %  
300 um = 25 %  
75 um = 4 %  
w = %  
Unacceptable Gr anular A  
(Sandy)  
Acceptable Gran ular B

\*\* Sample Depth = 1.50 - 2.30  
Passing 4.75 mm = 100 %  
2.00 mm = 100 %  
425 um = 2 %  
75 um = 1 %  
5 um = 1 %  
2 um = 0 %  
w = 23 %  
Plasticity = Non-plastic  
Classification = F Sa  
Frost Susc. = LSFH  
'K' Factor = 0.06

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

SOIL DATA



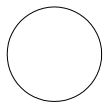
SHEET  
59

N.T.S.

PR-D-707 88-05  
MINISTRY OF TRANSPORTATION, ONTARIO  
sheet 60-67 HWY 17 soil data1.dwg  
Mar 10, 2009 - 8:55am  
DRAWING NAME:  
CREATED:

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00



SOIL DATA

SHEET  
60



Pavement Distortion

Station 12+000 to 12+225, Referenced to C/L  
Datums are referenced to the nearest E/P

04-1181-137  
December, 2004

\*\*\* Sample Depth = 2.30 - 2.90  
Passing 4.75 mm = 99 %  
  
2.00 mm = 98 %  
  
425 um = 84 %  
  
75 um = 8 %  
  
5 um = 3 %  
  
2 um = 2 %  
  
w = 71 %  
  
Plasticity = Non-plastic  
Classification = F Sa  
Frost Susc. = LSFH  
'K' Factor = 0.08

12+015 10.80 Rt C/L D-1.30 PA  
  
0 - 900 Gry Si Sa, Wet  
900 - 3.50 Blk Org Fib Root Matl

12+065 3.00 Rt C/L D-0 PA  
  
0 - 100 Asph  
  
100 - 420 Br Cr Gr Sa\*  
  
420 - 630 Asph  
  
630 - 730 Br Cr Gr Sa  
  
730 - 1.45 Br Med Sa  
  
1.45 - 2.30 Br Med Sa, Fr Wat @ 1.70  
  
2.30 - 3.70 Blk Org Fib Root Matl  
  
\* Sample Depth = 100 - 420  
Passing 26.5 mm = 100 %  
19.0 mm = 96 %  
13.2 mm = 81 %  
  
9.5 mm = 69 %  
4.75 mm = 53 %  
1.18 mm = 34 %  
300 um = 17 %  
75 um = 5 %  
w = %  
Acceptable Granular A

Pavement Distortion

Station 12+000 to 12+225, Referenced to C/L  
Datums are referenced to the nearest E/P

04-1181-137  
December, 2004

12+065 5.90 Rt C/L D-200 PA  
  
0 - 1.70 Br Sa Cr Gr W Cob\*  
1.70 - 2.30 Br Si Sa, Water, Fr Wat @ 1.80  
2.30 - 3.90 Blk Org, Fib Root Mat  
  
\* Sample Depth = 0 - 1.70  
Passing 150 mm = 100 %  
26.5 mm = 100 %  
4.75 mm = 64 %  
1.18 mm = 52 %  
300 um = 33 %  
75 um = 6 %  
w = %  
Acceptable Gran ular B

12+150 3.00 Rt C/L D-0 PA  
  
0 - 100 Asph  
100 - 500 Br Sa Cr Gr\*  
500 - 580 RAP Gr Mix  
580 - 730 Br Sa Cr Gr  
730 - 2.30 Gry Si Sa, Wet  
2.30 - 2.80 Blk Org Fib wood  
- 2.80 NFP BR  
  
\* Sample Depth = 100 - 500  
Passing 26.5 mm = 100 %  
19.0 mm = 86 %  
13.2 mm = 79 %  
9.5 mm = 62 %  
4.75 mm = 41 %  
1.18 mm = 18 %  
300 um = 4 %  
75 um = %  
w = %  
Unacceptable Granular A  
(Sandy)  
Unacceptable Granular B

N.T.S.

DRAWING NAME:  
CREATED:

sheet 60-67 HWY 17 soil data1.dwg

Mar 10, 2009 - 8:55am

MINISTRY OF TRANSPORTATION, ONTARIO

PR-D-707

BS-05

Pavement Distortion

Station 12+000 to 12+225, Referenced to C/L  
Datums are referenced to the nearest E/P

12+225 3.00 Rt C/L D-0 PA

0 - 130 Asph  
130 - 500 Br Sa Cr Gr  
500 - 1.30 Br Med Sa W Gr  
1.30 - 2.20 Br Med Sa  
2.20 - 3.40 Br Org Sa, Wet\*

\* Sample Depth = 2.20 - 3.40

Passing 150 mm = 82 %

26.5 mm = 80 %

4.75 mm = 60 %

1.18 mm = 6 %

300 um = %

75 um = %

w = 15 %

Acceptable Gran ular B

12+225 6.90 Rt C/L D-300 PA

0 - 1.50 Br Sa W Gr  
1.50 - 2.90 Gry Si Sa, Wet  
2.90 - 4.00 Blk Org Fib Root Matl

12+225 12.00 Rt C/L D-1.20 PA

0 - 360 Blk Amor Org  
360 - 360 Wat

04-1181-137  
December, 2004

Highway 17 - Frost Heave

Station 13+425 to 13+468, Referenced to C/L  
Datums are referenced to the nearest E/P

13+425 3.40 Lt C/L D-0 PA

0 - 190 Asph  
190 - 450 Br Cr Gr  
450 - 1.00 Br Med Sa  
- 1.00 NFP RF

13+425 5.90 Lt C/L D-200 PA

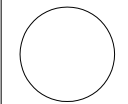
0 - 300 Br Sa Gr  
300 - 1.30 Br Med Sa  
- 1.30 NFP RF

04-1181-137  
December, 2004

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

SOIL DATA



SHEET  
61

N.T.S.

DRAWING NAME:  
CREATED:  
sheet 60-67 HWY 17 soil data1.dwg  
Mar 10, 2009 - 8:56am

MINISTRY OF TRANSPORTATION, ONTARIO  
PR-D-707  
88-05

**Highway 17 - Frost Heave**  
Station 13+425 to 13+468, Referenced to C/L  
Datums are referenced to the nearest E/P

13+425 5.50 Rt C/L D-100 PA

0 - 150 Asph  
150 - 400 Br Cr Gr  
400 - 1.80 Br F Sa  
- 1.80 NFP RF

13+425 11.20 Rt C/L D-100 PA

0 - 200 Br Sa Tps  
200 - 750 Br Si Sa  
- 750 NFP BR

13+447 3.40 Lt C/L D-0 PA

0 - 200 Asph  
200 - 440 Br Cr Gr  
440 - 1.60 Br Med Sa  
- 1.60 NFP RF

13+447 5.40 Lt C/L D-100 PA

0 - 550 Br Cr Gr  
550 - 1.70 Br Med Sa  
- 1.70 NFP RF

13+447 9.00 Lt C/L D-300 PA

0 - 500 Br Med Sa W Gr  
500 - 1.90 Br Med Sa  
- 1.90 NFP RF

13+447 3.60 Rt C/L D-100 PA

0 - 250 Asph  
250 - 530 Br Cr Gr  
530 - 1.60 Br F Sa  
- 1.60 NFP RF

13+447 5.30 Rt C/L D-100 PA

0 - 050 Asph  
050 - 250 Br Cr Gr\*  
250 - 2.00 Br Co Cr Gr, Soft\*\*

\* Sample Depth = 050 - 250  
Passing 26.5 mm = 96 %  
19.0 mm = 84 %  
13.2 mm = 89 %  
9.5 mm = 55 %  
4.75 mm = 40 %  
1.18 mm = 27 %  
300 um = 14 %  
75 um = 4 %  
w = %

Borderline Acceptable Granular A  
(Course)

\*\* Sample Depth = 250 - 2.00  
Passing 150 mm = 100 %  
26.5 mm = 89 %  
4.75 mm = 51 %  
1.18 mm = 37 %  
300 um = 18 %  
75 um = 5 %  
w = %

Acceptable Granular A

04-1181-137  
December, 2004

**Highway 17 - Frost Heave**  
Station 13+425 to 13+468, Referenced to C/L  
Datums are referenced to the nearest E/P

13+447 9.00 Rt C/L D-0 PA

0 - 2.00 Br Cr Gr, Soft\*

\* Sample Depth = 0 - 2.00  
Passing 26.5 mm = 100 %  
19.0 mm = 92 %  
13.2 mm = 83 %

9.5 mm = 71 %  
4.75 mm = 57 %  
1.18 mm = 40 %  
300 um = 21 %  
75 um = 4 %  
w = %

Borderline Acceptable Granular A  
(Fine)

13+468 3.70 Lt C/L D-0 PA

0 - 170 Asph  
170 - 300 Br Cr Gr  
300 - 1.60 Br Med Sa  
- 1.60 NFP RF

13+468 5.50 Lt C/L D-100 PA

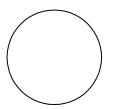
0 - 190 Br Cr Gr  
190 - 500 Br Med Sa  
500 - 1.60 Br Si F Sa  
- 1.60 NFP RF

- 1.60 NFP BR

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

SOIL DATA



SHEET  
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04-1181-137  
December, 2004

13+468 8.30 Lt C/L D-0 PA

0 - 250 Br Sa Gr  
250 - 1.50 Br Med Sa  
- 1.50 NFP RF

13+468 3.60 Rt C/L D-0 PA

0 - 190 Asph  
190 - 410 Br Cr Gr  
410 - 750 Br Med Sa  
750 - 1.90 Br Sa Gr\*  
- 1.90 NFP RF

\* Sample Depth = 750 - 1.90  
Passing 150 mm = 100 %  
26.5 mm = 100 %  
4.75 mm = 79 %  
1.18 mm = 65 %  
300 um = 35 %  
75 um = 5 %  
w = %

Acceptable Granular B

13+468 5.20 Rt C/L D-100 PA

0 - 150 Asph  
150 - 450 Br Cr Gr  
450 - 1.50 Br Med Sa

13+468 10.70 Rt C/L D-200 PA

0 - 200 Br Sa Tps  
200 - 1.60 Br Med Sa

N.T.S.

PR-D-70788-05

MINISTRY OF TRANSPORTATION, ONTARIO

sheet 60-67 HWY 17 soil data1.dwg

Mar 10, 2009 - 8:56am

DRAWING NAME:  
CREATED:

Highway 17 - Frost Heave

Station 23+840 to 23+935, Referenced to C/L

Datums are referenced to the nearest E/P

23+840 3.00 Rt C/L D-0 PA

0 - 180 Asph

180 - 390 Br Cr Gr

390 - 1.80 Br Si Sa W Gr\*

- 1.80 NFP RF

\* Sample Depth = 390 - 1.80

Passing 150 mm = 100 %

26.5 mm = 100 %

4.75 mm = 95 %

1.18 mm = 87 %

300 um = 65 %

75 um = 25 %

w = %

Acceptable Granular B

(Dirty and fine )

Acceptable SSM

04-1181-137

December, 2004

23+850 3.60 Lt C/L D-0 PA

0 - 180 Asph

180 - 370 Br Cr Gr

370 - 1.20 Br F Sa\*

1.20 - 2.00 Br Si Sa W Gr\*\*

\* Sample Depth = 1.20 -

\*\* Sample Depth = 1.20 - 2.00

Passing 150 mm = 100 %

26.5 mm = 100 %

4.75 mm = 94 %

1.18 mm = 72 %

300 um = 42 %

75 um = 16 %

w = %

Unacceptable Granular B

(Dirty)

Acceptable SSM

23+850 6.10 Lt C/L D-100 PA

0 - 180 Br Cr Gr

180 - 900 Br F Sa

900 - 1.60 Br Si Sa W Gr Occ Blds

- 1.60 NFP BR

23+850 8.60 Lt C/L D-1.10 PA

0 - 120 Br Sa Tps

120 - 700 Br Cr Gr

700 - 1.10 Br Si Sa W Gr, Wet @ 900

- 1.10 NFP BR

METRIC


DIMENSIONS ARE IN METRES

AND/OR MILLIMETRES

CONT 2009-5002

WP 392-98-00

SOIL DATA



04-1181-137

December, 2004

Highway 17 - Frost Heave

Station 23+840 to 23+935, Referenced to C/L

Datums are referenced to the nearest E/P

23+850 3.00 Rt C/L D-0 PA

0 - 180 Asph

180 - 380 Br Cr Gr

380 - 1.80 Br Si Sa W Gr\*

- 1.80 NFP RF

\* Sample Depth = 380 - 1.80

Passing 150 mm = 100 %

26.5 mm = 100 %

4.75 mm = 94 %

1.18 mm = 86 %

300 um = 67 %

75 um = 24 %

w = %

Unacceptable Granular B

(Dirty and fine )

Acceptable SSM

23+850 8.50 Rt C/L D-400 PA

0 - 900 Br Med Sa W Gr

- 900 NFP RF

23+860 3.20 Lt C/L D-0 PA

0 - 120 Asph

120 - 320 Br Sa Cr Gr\*

- 320 NFP BR

\* Sample Depth = 120 - 320

Passing 26.5 mm = 100 %

19.0 mm = 98 %

13.2 mm = 87 %

9.5 mm = 76 %

4.75 mm = 61 %

1.18 mm = 38 %

300 um = 17 %

75 um = 5 %

w = %

Unacceptable Granular A

(Fine)

23+860 6.50 Lt C/L D-100 PA

0 - 300 Br Sa Cr Gr

- 300 NFP RF

23+860 10.00 Lt C/L D-400 PA

0 - 300 Br Sa Cr Gr

300 - 600 Br Sa Gr W Cob

- 600 NFP RF

23+860 14.00 Lt C/L D-1.20 PA

0 - 400 Br Sa Org

- 400 NFP BR

N.T.S.

PR-D-707

88-05

MINISTRY OF TRANSPORTATION, ONTARIO

Mar 10, 2009 - 8:57am

sheet 60-67 HWY 17 soil data1.dwg

DRAWING NAME:

CREATED:

Highway 17 - Frost Heave

Station 23+840 to 23+935, Referenced to C/L

Datums are referenced to the nearest E/P

23+862 3.00 Rt C/L D-0 PA

0 - 120 Asph

120 - 400 Br Sa Cr Gr

- 400 NFP RF

23+862 11.00 Rt C/L D-2.00 HA

0 - 600 Br Co Si Sa, Wet

- 600 NFP BR

23+874 3.00 Rt C/L D-0 PA

0 - 175 Asph

175 - 310 Br Sa Cr Gr\*

- 310 NFP RF

\* Sample Depth = 175 - 310

Passing 26.5 mm = 100 %

19.0 mm = 85 %

13.2 mm = 73 %

9.5 mm = 63 %

4.75 mm = 50 %

1.18 mm = 33 %

300 um = 18 %

75 um = 4 %

w = %

Acceptable Granular A

23+874 6.00 Rt C/L D-100 PA

0 - 400 Br Sa Cr Gr

- 400 NFP RF

23+874 9.00 Rt C/L D-1.00 PA

0 - 450 Br Sa Cr Gr

- 450 NFP BR

23+878 5.50 Lt C/L D-100 PA

0 - 050 RAP Gr Mix

050 - 800 Br Sa Cr Gr

- 800 NFP RF

23+878 9.00 Lt C/L D-400 PA

0 - 1.00 Br Sa Gr W Cob

- 1.00 NFP RF

23+878 12.00 Lt C/L D-1.20 PA

0 - 150 Br Sa Tps

150 - 400 Br Si Sa

- 400 NFP RF

23+880 3.00 Rt C/L D-0 PA

0 - 185 Asph

185 - 400 Br Sa Cr Gr

- 400 NFP RF

Highway 17 - Frost Heave

Station 23+840 to 23+935, Referenced to C/L

Datums are referenced to the nearest E/P

23+890 3.20 Lt C/L D-0 PA

0 - 250 Asph

250 - 420 Br Sa Cr Gr

420 - 1.00 Br Med Sa, Moist

1.00 - 1.50 Br Med Sa, Wet\*

1.50 - 2.50 Br Med Sa, Sat

\* Sample Depth = 1.00 - 1.50

Passing 150 mm = 100 %

26.5 mm = 100 %

4.75 mm = 95 %

1.18 mm = 89 %

300 um = 82 %

75 um = 8 %

w = 19 %

Acceptable Granular B

23+898 3.00 Rt C/L D-0 PA

0 - 180 Asph

180 - 400 Br Sa Cr Gr

- 400 NFP RF

23+900 3.20 Lt C/L D-0 PA

0 - 180 Asph

180 - 440 Br Sa Cr Gr

- 440 NFP RF

23+900 11.00 Rt C/L D-2.00 HA

0 - 600 Br Si Sa, Wet

- 600 NFP BR

23+910 6.00 Rt C/L D-100 PA

0 - 050 RAP Gr Mix

050 - 2.00 Br Med Sa W Cob

23+910 8.00 Rt C/L D-500 PA

0 - 200 Br Cr Gr

- 200 NFP RF

23+925 3.30 Lt C/L D-0 PA

0 - 180 Asph

180 - 1.50 Br Med Sa, Moist

1.50 - 2.50 Br Med Sa, Wet

23+925 3.00 Rt C/L D-0 PA

0 - 240 Asph

240 - 390 Br Sa Cr Gr

390 - 1.80 Br Med Sa\*

- 1.80 NFP RF

\* Sample Depth = 390 - 1.80

Passing 150 mm = 100 %

26.5 mm = 100 %

4.75 mm = 90 %

1.18 mm = 81 %

300 um = 69 %

75 um = 4 %

w = %

Acceptable Granular B

METRIC

DIMENSIONS ARE IN METRES

AND/OR MILLIMETRES

CONT 2009-5002

WP 392-98-00

SOIL DATA

SHEET

64

04-1181-137

December, 2004

N.T.S.

C:\NSS-JMCTG\MTG\HWY17\CAD\100\HWY17\DWG\HWY 17 Soil Data1.dwg 2006/01/06 11:25:58 AM PST

DRAWING NAME: sheet 60-67 HWY 17 soil data1.dwg  
CREATED: Mar 10, 2009 - 8:57am

MINISTRY OF TRANSPORTATION, ONTARIO

PR-D-707

BS-05

**Highway 17 - Frost Heave**  
Station 23+840 to 23+935, Referenced to C/L  
Datums are referenced to the nearest E/P

23+935 3.00 Lt C/L D-0 PA

0	- 160	Asph
160	- 400	Br Sa Cr Gr
400	- 800	Br Med Sa
800	- 1.00	Br Co Sa
1.00	- 1.80	Br Med Sa
1.80	- 2.00	Br Co Si Sa

23+935 3.00 Rt C/L D-0 PA

0	- 230	Asph
230	- 390	Br Sa Cr Gr
390	- 1.70	Br Med Sa W Gr
	- 1.70	NFP RF

04-1181-137  
December, 2004

**Highway 17 - Frost Heave**  
Station 25+525 to 25+595, Referenced to C/L  
Datums are referenced to the nearest E/P

25+525 3.60 Lt C/L D-0 PA

0	- 220	Asph
220	- 450	Br Sa Cr Gr
450	- 900	Br Med Sa
	- 900	NFP BR

25+525 6.10 Lt C/L D-100 PA

0	- 230	Br Cr Gr
230	- 900	Br Med Sa
900	- 1.10	Br Si F Sa
	- 1.10	NFP BR

25+525 8.20 Lt C/L D-300 PA

0	- 200	Br Sa Tps
200	- 900	Br Med Sa*
	- 900	NFP BR

\* Sample Depth = 200 - 900

Passing 150 mm = 100 %

26.5 mm = 100 %

4.75 mm = 92 %

1.18 mm = 81 %

300 um = 76 %

75 um = 10 %

w = %

Borderline Granular B  
(Dirty)

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

SOIL DATA



SHEET  
65

04-1181-137  
December, 2004

25+525 11.60 Lt C/L D-500 PA

0	- 100	Br Sa Tps
100	- 700	Br Med Sa
	- 700	NFP BR

25+530 3.10 Rt C/L D-0 PA

0	- 260	Asph
260	- 410	Br Sa Cr Gr
410	- 800	Br Med Sa W Gr
	- 800	NFP BR

25+530 5.80 Rt C/L D-100 PA

0	- 320	Br Sa Cr Gr
320	- 750	Br Med Sa
	- 750	NFP BR

N.T.S.

DRAWING NAME:  
CREATED:

sheet 60-67 HWY 17 soil data1.dwg  
Mar 10, 2009 - 8:58am

MINISTRY OF TRANSPORTATION, ONTARIO

PR-D-707

88-05

**Highway 17 - Frost Heave**  
Station 25+525 to 25+595, Referenced to C/L  
Datums are referenced to the nearest E/P

25+540 3.60 Lt C/L D-0 PA

0 - 210 Asph  
210 - 430 Br Sa Cr Gr  
430 - 470 RAP  
470 - 900 Br Med Sa\*  
- 900 NFP BR

\* Sample Depth = 470 - 900  
Passing 150 mm = 100 %  
26.5 mm = 100 %  
4.75 mm = 80 %  
1.18 mm = 71 %  
300 um = 67 %  
75 um = 11 %  
w = %

Unacceptable Granular B  
(Dirty)

25+540 6.00 Lt C/L D-100 PA

0 - 200 Br Cr Gr  
200 - 1.10 Br Med Sa  
- 1.10 NFP BR

25+540 8.10 Lt C/L D-300 PA

0 - 150 Br Cr Gr  
150 - 900 Br Med Sa  
900 - 1.00 Br Si F Sa  
- 1.00 NFP BR

04-1181-137  
December, 2004

25+540 3.10 Rt C/L D-0 PA

0 - 250 Asph  
250 - 380 Br Sa Cr Gr\*  
380 - 950 Br Med Sa W Gr  
- 950 NFP BR

\* Sample Depth = 250 - 380  
Passing 26.5 mm = 100 %  
19.0 mm = 100 %  
13.2 mm = 89 %  
9.5 mm = 77 %  
4.75 mm = 62 %  
1.18 mm = 44 %  
300 um = 20 %  
75 um = 4 %  
w = %

Unacceptable Granular A  
(Fine)

25+540 6.20 Rt C/L D-100 PA

0 - 200 Br Sa Cr Gr  
200 - 850 Br Med Sa W Gr  
- 850 NFP BR

25+560 3.60 Lt C/L D-0 PA

0 - 230 Br Asph  
230 - 470 Br Sa Cr Gr  
470 - 500 RAP  
500 - 900 Br Med Sa  
- 900 NFP BR

**Highway 17 - Frost Heave**  
Station 25+525 to 25+595, Referenced to C/L  
Datums are referenced to the nearest E/P

25+560 6.50 Lt C/L D-100 PA

0 - 250 Br Sa Cr Gr  
250 - 1.20 Br Med Sa  
- 1.20 NFP BR

25+560 8.30 Lt C/L D-300 PA

0 - 200 Br Cr Gr  
200 - 1.20 Br Med Sa  
- 1.20 NFP BR

25+570 3.20 Lt C/L D-0 PA

0 - 230 Asph  
230 - 400 Br Cr Gr  
400 - 430 RAP  
430 - 560 Br Cr Gr  
560 - 670 Br Med Sa  
670 - 1.40 Br Si F Sa\*  
- 1.40 NFP BR

\* Sample Depth = 670 - 1.40  
Passing 150 mm = 100 %  
26.5 mm = 90 %  
4.75 mm = 86 %  
1.18 mm = 63 %  
300 um = 52 %  
75 um = 14 %  
w = %

Unacceptable Granular B  
(Dirty)

04-1181-137  
December, 2004

25+570 6.40 Lt C/L D-100 PA

0 - 260 Br Sa Cr Gr  
260 - 1.40 Br Med Sa  
- 1.40 NFP BR

25+570 3.10 Rt C/L D-0 PA

0 - 230 Asph  
230 - 400 Br Sa Cr Gr  
400 - 900 Br Med Sa W Gr\*  
- 900 NFP BR

\* Sample Depth = 400 - 900  
Passing 150 mm = 100 %  
26.5 mm = 100 %  
4.75 mm = 88 %  
1.18 mm = 87 %  
300 um = 73 %  
75 um = 33 %  
w = %

Unacceptable Granular B  
(Dirty)  
Unacceptable SS M  
(Dirty)

25+570 5.90 Rt C/L D-100 PA

0 - 400 Br Sa Cr Gr  
400 - 1.10 Br Med Sa  
- 1.10 NFP BR

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

SOIL DATA



SHEET  
66

N.T.S.



PR-D-707

88-05

MINISTRY OF TRANSPORTATION, ONTARIO

Mar 10, 2009 - 8:58am

sheet 60-67 HWY 17 soil data1.dwg

DRAWING NAME:

CREATED:

**Highway 17 - Frost Heave**  
Station 25+525 to 25+595, Referenced to C/L  
Datums are referenced to the nearest E/P

04-1181-137  
December, 2004

25+585 3.20 Lt C/L D-0 PA

0 - 240 Asph  
240 - 530 Br Sa Cr Gr  
530 - 595 Asph  
595 - 695 Br Sa Cr Gr  
695 - 850 Br Med Sa

- 850 NFP BR

25+585 5.40 Rt C/L D-0 PA

0 - 240 Br Sa Cr Gr  
240 - 600 Br Med Sa

- 600 NFP BR

25+586 3.20 Rt C/L D-0 PA

0 - 230 Asph  
230 - 400 Br Sa Cr Gr  
400 - 540 Br Med Sa  
540 - 1.10 Br Si Sa W Gr\*  
- 1.10 NFP BR

\* Sample Depth = 540 - 1.10

Passing 150 mm = 100 %  
26.5 mm = 100 %  
4.75 mm = 71 %  
1.18 mm = 56 %  
300 um = 36 %  
75 um = 15 %  
w = 7 %

Unacceptable Granular B  
(Dirty)

25+590 8.10 Lt C/L D-300 PA

0 - 300 Br Sa Cr Gr  
300 - 1.40 Br Med Sa  
- 1.40 NFP BR

25+590 15.50 Lt C/L D-1.40 PA

0 - 160 Br Sa Tps  
160 - 550 Br Med Sa

- 550 NFP BR

25+595 3.20 Lt C/L D-0 PA

0 - 220 Asph  
220 - 400 Br Sa Cr Gr  
  
400 - 500 Br Med Sa  
500 - 550 Asph  
550 - 670 Br Cr Gr  
670 - 1.30 Br Med Sa  
- 1.30 NFP BR

25+595 3.20 Rt C/L D-0 PA

0 - 230 Asph  
230 - 400 Br Sa Cr Gr  
400 - 900 Br Med Sa  
- 900 NFP BR

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

SOIL DATA



SHEET  
67

N.T.S.

Highway 17 - Culvert Replacement  
Station 10+324 to 24+868, Referenced to C/L  
Datums are referenced to the nearest E/P

04-1181-137  
December, 2004

10+324 4.50 Lt C/L D-0 PA  
0 - 040 RAP  
040 - 260 Br Cr Gr  
260 - 1.70 Br Med Sa, Moist, Comp  
- 1.70 NFP RF

10+327 4.50 Lt C/L D-0 PA  
0 - 040 RAP  
040 - 280 Br Cr Gr  
280 - 1.70 Br Med Sa, Moist, Comp  
- 1.70 NFP RF

10+329 4.50 Lt C/L D-0 PA  
0 - 050 RAP  
050 - 300 Br Cr Gr  
300 - 1.70 Br Med Sa, Moist, Comp  
- 1.70 NFP RF

10+330 13.00 Lt C/L D-1.80 PA  
0 - 2.00 Br Med Sa, Moist, Comp, Fr Wat @  
1.00, Sat

10+333 4.50 Lt C/L D-0 PA  
0 - 050 RAP  
050 - 360 Br Cr Gr  
360 - 2.00 Br Med Sa, Moist, Comp  
- 2.00 NFP RF

10+336 4.50 Lt C/L D-0 PA  
0 - 050 RAP  
050 - 420 Br Cr Gr  
420 - 1.60 Br Med Sa, Moist, Comp  
- 1.60 NFP RF

11+338 4.50 Lt C/L D-0 PA  
0 - 340 Br Cr Gr  
340 - 1.40 Br Med Sa, Moist, Comp  
- 1.40 NFP BR

11+341 4.50 Lt C/L D-0 PA  
0 - 380 Br Cr Gr  
380 - 1.50 Br Med Sa, Moist, Comp  
- 1.50 NFP RF

11+343 4.50 Lt C/L D-0 PA  
0 - 350 Br Cr Gr  
350 - 800 Br Med Sa, Moist, Comp  
- 800 NFP RF

11+344 14.00 Lt C/L D-1.60 PA  
0 - 300 Wat  
300 - 800 Blk Org  
800 - 2.00 Gry Si Sa, Sat, Comp

Highway 17 - Culvert Replacement  
Station 10+324 to 24+868, Referenced to C/L  
Datums are referenced to the nearest E/P

04-1181-137  
December, 2004

11+347 4.50 Lt C/L D-0 PA  
0 - 350 Br Cr Gr  
350 - 1.60 Br Med Sa, Moist, Comp  
1.60 - 2.10 Gry Med Sa, Wet, Comp, Fr Wat @ 1.60

2.10 - 2.80 Fib Peat\*  
2.80 - 3.00 Gry Si Sa, Sat, Comp  
\* Sample Depth = 2.10 - 2.80  
w = 123 %

11+350 4.50 Lt C/L D-0 PA  
0 - 350 Br Cr Gr  
350 - 2.00 Br Med Sa, Moist, Comp  
- 2.00 NFP RF

11+800 5.30 Lt C/L D-100 PA

0 - 080 RAP  
080 - 250 Br Cr Gr  
250 - 2.00 Br Med Sa

11+801 4.50 Lt C/L D-0 PA  
0 - 470 Br Cr Gr  
470 - 2.50 Br Med Sa, Moist, Comp

11+803 4.50 Lt C/L D-0 PA  
0 - 040 RAP  
040 - 550 Br Cr Gr  
550 - 2.50 Br Med Sa, Moist, Comp

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

SOIL DATA



SHEET  
68

DRAWING NAME: sheet\_68-71 HWY 17 soil data2.dwg  
CREATED: Mar 10, 2009 - 8:59am

MINISTRY OF TRANSPORTATION, ONTARIO

PR-D-707 88-05

**Highway 17 - Culvert Replacement**  
Station 10+324 to 24+868, Referenced to C/L  
Datums are referenced to the nearest E/P

04-1181-137  
December, 2004

**Highway 17 - Culvert Replacement**  
Station 10+324 to 24+868, Referenced to C/L  
Datums are referenced to the nearest E/P

04-1181-137  
December, 2004

12+223 4.50 Lt C/L D-0 PA  
0 - 450 Br Cr Gr  
450 - 1.60 Br Med Sa, Moist, Comp  
1.60 - 2.50 Gry Co Sa, Wet, Comp, Fr Wat @ 1.60, Sat

12+630 4.50 Rt C/L D-0 PA  
0 - 390 Br Cr Gr  
390 - 2.80 Br Med Sa, Moist, Comp  
2.80 - 3.20 Gry Sa W Si, Fr Wat @ 2.80, Sat, Comp

12+638 4.50 Rt C/L D-0 PA  
0 - 500 Br Cr Gr  
500 - 2.20 Br Med Sa, Moist, Comp  
2.20 - 2.80 Gry Sa W Si, Wet, Comp, Fr Wat @ 2.40, Sat  
2.80 - 3.20 Peat

15+107 4.50 Rt C/L D-0 PA  
0 - 030 RAP  
030 - 320 Br Cr Gr  
320 - 900 Br Med Sa, Moist, Comp  
- 900 NFP RF

12+224 13.00 Lt C/L D-900 PA  
0 - 700 Wat  
700 - 1.00 Blk Org  
1.00 - 1.50 Gry Co Sa, Sat, Comp

12+632 14.00 Rt C/L D-1.70 PA  
0 - 300 Wat  
300 - 500 Blk Org  
500 - 1.00 Gry Si Sa w Wd chips, Sat, Comp  
- 1.00 NFP RF

15+101 4.50 Rt C/L D-0 PA  
0 - 030 RAP  
030 - 280 Br Cr Gr  
280 - 1.70 Br Med Sa, Moist, Comp  
- 1.70 NFP RF

15+109 4.50 Rt C/L D-0 PA  
0 - 030 RAP  
030 - 400 Br Cr Gr  
400 - 2.00 Br Med Sa, Moist, Comp  
- 2.00 NFP RF

12+227 4.50 Lt C/L D-0 PA  
0 - 020 RAP  
020 - 700 Br Cr Gr  
700 - 1.30 Br Med Sa, Moist, Comp  
1.30 - 1.70 Gry Med Sa W Si, Wet, Comp  
- 1.70 NFP RF

12+633 4.50 Rt C/L D-0 PA  
0 - 480 Br Cr Gr  
480 - 2.40 Br Med Sa, Moist, Comp  
2.40 - 2.70 Gry Sa W Si, Fr Wat @ 2.40, Sat, Comp  
2.70 -3.20 Peat\*  
  
\* Sample Depth = 2.70 - 3.20  
  
w = 114 %

15+104 4.50 Rt C/L D-0 PA  
0 - 030 RAP  
030 - 300 Br Cr Gr  
300 - 650 Br Med Sa, Moist, Comp  
650 - 2.00 Br Med Sa Occ Cob, Moist, Comp  
- 2.00 NFP RF

15+112 4.50 Rt C/L D-0 PA  
0 - 030 RAP  
030 - 320 Br Cr Gr  
320 - 2.00 Br Med Sa, Moist, Comp  
- 2.00 NFP RF

12+230 4.50 Lt C/L D-0 PA  
0 - 500 Br Cr Gr  
500 - 1.00 Br Med Sa, Moist, Comp  
1.00 - 1.70 Gry Med Sa W Si, Wet, Comp  
- 1.70 NFP RF

12+635 4.50 Rt C/L D-0 PA  
0 - 450 Br Cr Gr  
450 - 2.30 Br Med Sa, Moist, Comp  
2.30 - 2.80 Gry Sa W Si, Moist, Comp, Fr Wat @ 2.70, Sat  
2.80 - 3.20 Peat

15+106 13.00 Rt C/L D-1.30 PA  
0 - 200 Dk Br Si Tps  
200 - 600 Br Med Sa, Wet, Comp  
- 600 NFP BR

20+796 7.50 Rt C/L D-0 PA  
0 - 400 Br Cr Gr  
- 400 NFP RF

20+798 7.50 Rt C/L D-0 PA  
0 - 420 Br Cr Gr  
- 420 NFP RF

12+628 4.50 Rt C/L D-0 PA  
0 - 520 Br Cr Gr  
520 - 2.70 Br Med Sa, Moist, Comp  
2.70 - 3.20 Gry Sa W Si, Wet, Comp, Fr Wat @ 2.70, Sat

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

SOIL DATA



SHEET  
69

N.T.S.

DRAWING NAME:  
CREATED:

sheet 68-71 HWY 17 soil data2.dwg  
Mar 10, 2009 - 9:00am

MINISTRY OF TRANSPORTATION, ONTARIO

PR-D-707 88-05

**Highway 17 - Culvert Replacement**  
Station 10+324 to 24+868, Referenced to C/L  
Datums are referenced to the nearest E/P

04-1181-137  
December, 2004

**Highway 17 - Culvert Replacement**  
Station 10+324 to 24+868, Referenced to C/L  
Datums are referenced to the nearest E/P

04-1181-137  
December, 2004

20+800	16.00	Rt C/L D-2.80	PA
0	- 200	Wat	
200	- 2.00	Gry Med Sa Occ Cob, Sat, Comp	
20+801	7.50	Rt C/L D-0	PA
0	- 550	Br Cr Gr	
	- 550	NFP RF	
20+803	7.50	Rt C/L D-0	PA
0	- 550	Br Cr Gr	
	- 550	NFP RF	
20+805	7.50	Rt C/L D-0	PA
0	- 500	Br Cr Gr	
	- 500	NFP RF	
21+022	7.50	Rt C/L D-0	PA
0	- 450	Br Cr Gr	
	- 450	NFP RF	
21+025	7.50	Rt C/L D-0	PA
0	- 500	Br Cr Gr	
	- 500	NFP RF	
21+027	17.00	Rt C/L D-1.60	PA
0	- 300	Wat	
300	-	2.00 Gry Med Sa, Sat, Comp -	

21+028	7.50	Rt C/L D-0	PA
0	- 500	Br Cr Gr	
	- 500	NFP RF	
21+030	7.50	Rt C/L D-0	PA
0	- 550	Br Cr Gr	
	- 550	NFP RF	
21+032	7.50	Rt C/L D-0	PA
0	- 500	Br Cr Gr	
	- 500	NFP RF	
21+954	4.50	Rt C/L D-0	PA
0	- 030	RAP	
030	- 340	Br Cr Gr	
340	- 1.60	Br Med Sa, Moist, Comp	
	- 1.60	NFP RF	
21+958	4.50	Rt C/L D-0	PA
0	- 020	RAP	
020	- 300	Br Cr Gr	
300	- 1.80	Br Med Sa, Moist, Comp	
	- 1.80	NFP RF	
21+960	14.00	Rt C/L D-2.50	PA
0	- 200	Wat	
200	- 1.50	Gry Med Sa, Sat, Comp	
	1.50	NFP BR	

21+961	4.50	Rt C/L D-0	PA
0	- 020	RAP	
020	- 350	Br Cr Gr	
350	- 1.80	Br Med Sa, Moist, Comp	
	- 1.80	NFP RF	
21+963	4.50	Rt C/L D-0	PA
0	- 030	RAP	
030	- 320	Br Cr Gr	
320	- 1.70	Br Med Sa, Moist, Comp	
	- 1.70	NFP RF	
21+966	4.50	Rt C/L D-0	PA
0	- 030	RAP	
030	- 290	Br Cr Gr	
290	- 1.40	Br Med Sa, Moist, Comp	
	- 1.40	NFP RF	
22+042	4.50	Rt C/L D-0	PA
0	- 040	RAP	
040	- 450	Br Cr Gr	
450	- 1.40	Br Med Sa, Moist, Comp	
	- 1.40	NFP RF	
22+044	4.50	Rt C/L D-0	PA
0	- 040	RAP	
040	- 400	Br Cr Gr	
400	- 1.30	Br Med Sa, Moist, Comp	
	- 1.30	NFP RF	

22+047	13.00	Rt C/L D-2.50	PA
0	- 100	Wat	
100	- 1.50	Br Med Sa, Sat, Comp	
22+048	4.50	C/L D-0	PA
0	- 040	RAP	
040	- 380	Br Cr Gr	
380	- 1.40	Br Med Sa, Moist, Comp	
1.40	- 1.60	Br Si Sa, Moist, Comp	
	- 1.60	NFP RF	
22+051	4.50	Rt C/L D-0	PA
0	- 050	RAP	
050	- 360	Br Cr Gr	
360	- 1.30	Br Med Sa, Moist, Comp	
1.30	- 1.70	Br Si Sa, Moist, Comp	
	- 1.70	NFP RF	
22+054	4.50	Rt C/L D-0	PA
0	- 050	RAP	
050	- 320	Br Cr Gr	
320	- 1.20	Br Med Sa, Moist, Comp	
	- 1.20	NFP RF	
22+618	4.50	Rt C/L D-0	PA
0	- 080	RAP	
080	- 330	Br Cr Gr	
330	- 1.30	Br Med Sa, Moist, Comp	
	- 1.30	NFP RF	

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

SOIL DATA



SHEET  
70

N.T.S.

DRAWING NAME:  
CREATED:  
sheet 68-71 HWY 17 soil data2.dwg  
Mar 10, 2009 - 9:00am

MINISTRY OF TRANSPORTATION, ONTARIO

PR-D-707

BS-05

**Highway 17 - Culvert Replacement**  
Station 10+324 to 24+868, Referenced to C/L  
Datums are referenced to the nearest E/P

04-1181-137  
December, 2004

**Highway 17 - Culvert Replacement**  
Station 10+324 to 24+868, Referenced to C/L  
Datums are referenced to the nearest E/P

04-1181-137  
December, 2004

22+620 4.50 Rt C/L D-0 PA

0 - 060 RAP  
060 - 310 Br Cr Gr  
310 - 800 Br Med Sa, Moist, Comp  
- 800 NFP RF

22+623 11.00 Rt C/L D-1.20 PA

0 - 300 Dk Br Si Tps  
300 - 900 Br Sa Si Tr Cl, Wet, Comp  
- 900 NFP BR

22+624 4.50 Rt C/L D-0 PA

0 - 050 RAP  
050 - 300 Br Cr Gr  
300 - 1.80 Br Med Sa, Moist, Comp  
- 1.80 NFP RF

22+627 4.50 Rt C/L D-0 PA

0 - 050 RAP  
050 - 300 Br Cr Gr  
300 - 1.70 Br Med Sa, Moist, Comp  
- 1.70 NFP RF

22+630 4.50 Rt C/L D-0 PA

0 - 070 RAP  
070 - 320 Br Cr Gr  
320 - 1.50 Br Med Sa, Moist, Comp  
- 1.50 NFP RF

23+594 4.50 Rt C/L D-0 PA

0 - 050 RAP  
050 - 270 Br Cr Gr  
270 - 1.20 Br Med Sa, Moist, Comp  
- 1.20 NFP RF

23+596 4.50 Rt C/L D-0 PA

0 - 040 RAP  
040 - 430 Br Cr Gr  
430 - 1.00 Br Med Sa, Moist, Comp  
- 1.00 NFP RF

23+599 13.00 Rt C/L D-2.00 PA

0 - 200 Wat  
200 - 400 Blk Org  
400 - 600 Br Sa & Gr, Sat, Comp  
600 - 1.40 Gry Sa W Si, Sat, Comp  
- 1.40 NFP RF

23+600 4.50 Rt C/L D-0 PA

0 - 050 RAP  
050 - 380 Br Cr Gr  
380 - 800 Br Med Sa, Moist, Comp  
- 800 NFP RF

23+603 4.50 Rt C/L D-0 PA

0 - 030 RAP  
030 - 400 Br Cr Gr  
400 - 800 Br Med Sa, Moist, Comp  
- 800 NFP RF

23+606 4.50 Rt C/L D-0 PA

0 - 030 RAP  
030 - 400 Br Cr Gr  
400 - 1.20 Br Med Sa, Moist, Comp  
- 1.20 NFP RF

24+859 4.50 Rt C/L D-0 PA

0 - 400 Br Cr Gr  
400 - 1.00 Br Med Sa, Moist, Comp  
- 1.00 NFP RF

24+861 4.50 Rt C/L D-0 PA

0 - 400 Br Cr Gr  
400 - 1.20 Br Med Sa, Moist, Comp  
- 1.20 NFP RF

24+863 13.00 Rt C/L D-1.30 PA

0 - 300 Br Si Tps  
300 - 2.00 Br Med Sa, Moist, Comp

24+864 4.50 Rt C/L D-0 PA

0 - 380 Br Cr Gr  
380 - 600 Br Med Sa, Moist, Comp  
- 600 NFP RF

24+866 4.50 Rt C/L D-0 PA

0 - 350 Br Cr Gr  
350 - 550 Br Med Sa, Moist, Comp  
- 550 NFP RF

24+868 4.50 Rt C/L D-0 PA

0 - 360 Br Cr Gr  
360 - 700 Br Med Sa, Moist, Comp  
- 700 NFP RF

METRIC  
DIMENSIONS ARE IN METRES  
AND/OR MILLIMETRES

CONT 2009-5002  
WP 392-98-00

SOIL REPORT



SHEET  
71

N.T.S.

WP 392-98-00		GEOTECHNICAL SURVEY DATA		METRIC		CONT No. 2009–5002		SHEET	
DATE OF SURVEY				TYPE OF SURVEY		WP 392–98–00		72	
Sept. 16, 1999				Geo-Logic Inc. Truck-Mounted Power Drill					
<div>NOTES</div> <div>1. Conditions and pavement depths apply only to the date of the investigation. 2. The boundaries between the strata have been established only at core/borehole locations between cores/boreholes. The boundaries are assumed and may be subject to error. 3. Soils are described according to the MTO soils classification system. 4. Pavement core locations were established using random numbers. 5. Abbreviations for boring and test data conform to OPSD 100.06.</div>									
<div><div><div>Sta. 10+200 300 LT</div><div>000-270 Asph 270-430 CrGr 430-1.00 Si F Sa 1.00 NFP RF</div><div>Sta. 10+400 2.6 LT</div><div>000-220 Asph 220-400 CrGr 400-600 Asph 600-780 CrGr 780 NFP RF</div><div>Sta. 10+600 0.9 LT</div><div>000-230 Asph 230-410 CrGr 410-530 Si F Sa 530-630 Asph 630-680 CrGr 680-1.00 F Sa Tr Gr 1.00 NFP RF</div><div>Sta. 10+800 2.8 RT</div><div>000-200 Asph 200-300 CrGr 300-440 Si F Sa 440-580 Asph 580-1.00 CrGr 1.00 NFP RF</div><div>Sta. 11+000 0.2 RT</div><div>000-160 Asph 160-370 CrGr</div><div>370-930 F Sa with Gr</div><div>930-1.07 Asph 1.07-1.50 F Sa Tr Gr</div><div>Sta. 11+200 1.6 LT</div><div>000-195 Asph 195-330 CrGr 330-980 Si F Sa Tr Gr 980-1.09 AsphMed Co Sa with Gr</div></div><div><div>Sta. 11+400 2.7 RT</div><div>000-220 Asph 220-360 CrGr 360-590 Si F Sa with Gr 590-740 Asph 740-990 CrGr 990-1.40 Si F Sa 1.40 NFP RF</div><div>Sta. 11+400 12.0 LT</div><div>000-300 Blk Org 300-1.80 Si F Sa Wet 1.80 NFP Sloughing</div><div>Sta. 11+400 14.0 RT</div><div>000-400 Blk Org 400-1.80 Si F Sa Wet 1.80 NFP Sloughing</div><div>Sta. 11+600 1.0 RT</div><div>000-220 Asph 220-360 CrGr 360-720 Si F Sa 720-800 Asph 800-1.50 F Med Sa Tr Gr</div><div>Sta. 11+800 1.30 LT</div><div>000-130 Asph 130-400 CrGr 400-500 F Sa Tr Si 500-550 CrGr 550-1.50 F Sa with Si</div><div>Sta. 12+000 1.50 RT</div><div>000-195 Asph 195-330 CrGr</div><div>330-520 F Med Sa Tr Si &amp; Gr</div><div>520-600 CrGr 600-1.50 F Med Sa Tr Si</div><div>Sta. 12+150 11.0 RT</div><div>000-300 Wat 300-1.80 Org, F Sa &amp; Si Wet 1.80 NFP Blds</div></div><div><div>Sta. 12+200 1.0 LT</div><div>000-125 Asph 125-760 CrGr 760-1.05 CrGr Tr Si 1.05 NFP RF</div><div>Sta. 12+400 2.2 RT</div><div>000-210 Asph 210-430 CrGr F Sa Tr Gr &amp; Si</div><div>Sta. 12+600 2.7 LT</div><div>000-165 Asph 165-330 CrGr 330-1.30 F Med Sa Tr Gr 1.30 NFP RF</div><div>Sta. 12+800 2.4 LT</div><div>000-200 Asph 200-400 CrGr 400-1.50 F Med Sa Tr Si</div><div>Sta. 13+000 1.20 LT</div><div>000-235 Asph 235-620 CrGr</div><div>620 NFP BR</div><div>Sta. 13+200 1.8 RT</div><div>000-230 Asph 230-380 CrGr 380-1.05 F Med Sa Tr Gr</div><div>1.05 NFP RF</div><div>Sta. 13+400 2.0 LT</div><div>000-280 Asph 280-500 CrGr 500-1.10 F Med Sa Tr Gr 1.10 NFP BR</div></div></div> <div><div>DR-99-1493-GL-553 Passing 4.75mm 60.7% Passing 75um 5.1% % Crushed 93.3% Not Acceptable Granular 'A' 60.7% Passing 4.75mm</div><div>DR-99-1494-GL-554 Passing 4.75mm 97.8% Passing 75um 6.4% Acceptable Granular 'B'</div><div>DR-99-1495-GL-555 Passing 4.75mm 75.8% Passing 75um 6.9% % Crushed 92.4% Not Acceptable Granular 'A' 75.8% Passing 4.75mm</div><div>DR-99-1496-GiL-556 Passing 4.75mm 94.0% Passing 75um 10.8% Not Acceptable Granular 'B' 10.8% Passing 75um</div><div>DR-99-1497-GL-557 Passing 4.75mm 72.8% Passing 75um 7.8% % Crushed 90.5% Not Acceptable Granular 'A' 72.8% Passing 4.75mm</div><div>DR-99-1498-GL-558 Passing 4.75mm 89.1% Passing 75um 7.3% Acceptable Granular 'B'</div></div>									



WP 392-98-00		GEOTECHNICAL SURVEY DATA		METRIC		CONT No. 2009–5002	SHEET
DATE OF SURVEY	TYPE OF SURVEY			WP 392–98–00	74		
Sept. 16, 1999	Geo-Logic Inc. Truck-Mounted Power Drill						
<div>NOTES</div> <div>1. Conditions and pavement depths apply only to the date of the investigation. 2. The boundaries between the strata have been established only at core/borehole locations between cores/boreholes. The boundaries are assumed and may be subject to error. 3. Soils are described according to the MTO soils classification system. 4. Pavement core locations were established using random numbers. 5. Abbreviations for boring and test data conform to OPSD 100.06.</div>							
Sta. 17+800 0.3 LT		Sta. 19+000 1.7 LT		Sta. 20+200 5.0 RT			
000-200 Asph 200-440 CrGr 440-700 Med Co Sa with Gr 700 NFP Blds		000-300 Asph 300-750 CrGr DR-99-1509-GL-569 Passing 4.75mm 73.6% Passing 75um 8.0% % Crushed 92.7% Not Acceptable Granular 'A' 73.6% Passing 4.75mm		000-200 Asph 200-500 CrGr 500 NFP Blds			
Sta. 18+000 2.5 LT		750 NFP RF		Sta. 20+400 2.5 RT			
000-270 Asph 270-700 CrGr DR-99-1507-GL-567 Passing 4.75mm 74.9% Passing 75um 8.2% % Crushed 88.8% Not Acceptable Granular 'A' 74.9% Passing 4.75mm		Sta. 19+000 5.0 LT		000-240 Asph 240-450 CrGr 450 NFP Blds			
700 NFP RF		000-185 Asph 185-800 CrGr 800 NFP RF		Sta. 20+400 5.2 RT			
Sta. 18+000 5.0 LT		Sta. 19+200 1.6 RT		000-180 Asph 180-360 CrGr 360 NFP Blds			
000-240 Asph 240-800 CrGr 800 NFP RF		000-310 Asph 310-520 CrGr 520-1.50 F Sa Tr Si DR-99-1510-GL-570 Passing 4.75mm 96.0% Passing 75um 32.1% Not Acceptable Granular 'B' 32.1% Passing 75um		Sta. 20+600 1.6 RT			
Sta. 18+200 0.9 LT		Sta. 19+400 3.0 RT		000-320 Asph 320-400 CrGr 400-630 F Med Sa with Gr 630 NFP Blds			
000-290 Asph 290-450 CrGr 450-1.50 F Med Sa Tr Gr		000-200 Asph 200-360 CrGr 360-760 F Med Sa Tr Gr 760 NFP Blds		Sta. 20+600 4.2 RT			
Sta. 18+400 0.1 RT		Sta. 19+600 1.0 RT		000-190 Asph 190-460 CrGr 460 NFP Blds			
000-230 Asph 230-370 CrGr 370-700 F Sa with Si & Gr 700 NFP SHRK / BR		000-240 Asph 240-350 CrGr 350-620 F Sa with Si Tr Gr 620 NFP Blds		Sta. 20+800 2.5 LT			
Sta. 18+600 3.7 LT		Sta. 19+800 1.2 LT		000-340 Asph 340-500 CrGr 500-1.05 Med Co Sa with Gr 1.05 NFP Blds			
000-200 Asph 200-450 CrGr 450-1.50 Med Sa with Gr DR-99-1508-GL-568 Passing 4.75mm 81.9% Passing 75um 37.4% Not Acceptable Granular 'B' 37.4% Passing 75um		000-190 Asph 190-330 CrGr 330-700 Med Co Sa Tr Gr 700 NFP Blds		Sta. 21+000 1.6 LT			
Sta. 18+800 1.5 RT		Sta. 20+000 3.0 RT		000-340 Asph 340-550 CrGr DR-99-1513-GL-573 Passing 4.75mm 69.9% Passing 75um 5.1% % Crushed 89.9% Not Acceptable Granular 'A' 69.6% Passing 4.75mm DR-99-1514-GL-574 Passing 4.75mm 77.9% Passing 75um 3.3% Acceptable Granular 'B'			
000-220 Asph 220-650 CrGr 650 NFP RF		460-1.05 Med Sa Tr Gr DR-99-1512-GL-572 Passing 4.75mm 97.4% Passing 75um 7.3% Acceptable Granular 'B'		550-950 Med Sa with Gr			
		1.05 NFP Blds		950 NFP Blds			





QUANTITY SHEETS  
CONTRACT NO. 2009-5002  
BOOK 1 OF 1

## INDEX

**W.P. No. 392-98-00**  
**Contract No. 2009-5002**

[illegible][illegible]

90-02

PH-D-502

MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

SHEET  
1

Location and Position		Close Cut Clearing (m2)												References
Sub - Totals Brought Forward:														
Hwy 17														
Township of Rolph														
12+462 to 12+516 RT		109												
12+575 to 12+675 RT		390												
17+960 to 18+060 RT		503												
18+070 to 18+170 RT		525												
18+310 to 18+385 LT		375												
18+430 to 18+530 LT		481												
21+205 to 21+305 LT		400												
21+330 to 21+430 LT		400												
21+429 to 21+529 RT		375												
21+543 to 21+643 RT		400												
23+390 to 23+490 LT		400												
23+525 to 23+625 LT		400												
24+075 to 24+175 RT		400												
24+195 to 24+295 RT		400												
Sub - Totals Carried Forward:		5558												
(P)														
TOTALS		0.56												
UNIT		ha												
ITEM No.		1												
Reference														
													CHKD. _____	
													APPR. _____	
													DATE _____	

Close Cut Clearing





90-02

PH-D-499

MINISTRY OF TRANSPORTATION - ONTARIO

Page 1 of 3		QUANTITIES - MISCELLANEOUS												W.P. No. 392-98-00 Contract No. 2009-5002		SHEET 4
Description		Granular Sealing (m2) [Rt. Side Machine Sprayed]	Granular Sealing (m2) [Lt. Side - Machine Sprayed]	Granular Sealing (m2) [Rt. Side Hand Sprayed]	Granular Sealing (m2) [Lt. Side Hand Sprayed]	Hot Mix Asphalt Miscellaneous										
Sub - Totals Brought Forward:																
Township of Head																
28+250 to 28+445		468	468													
28+445 to 28+452		17	17													
28+452 to 28+600		267	267	148	74											
28+600 to 28+750		270	270	150	75											
28+750 to 28+822		130	130	72	72											
28+822 to 28+914		221	166													
30+350 to 30+400		120	120													
30+400 to 30+427		17	17													
30+427 to 30+700		164			273											
30+700 to 30+800		60			100											
30+800 to 30+900		240	180		100											
Township of Rolph																
12+190 to 12+213		42	14	23												
12+213 to 12+420		376			207											
12+420 to 12+473		168		93	93											
12+473 to 12+504					31											
12+504 to 12+580			46													
12+526 to 12+538 - Rt. Island						23										
12+580 to 12+661		195	195													
12+661 to 12+700		24	94													
12+700 to 13+022			773													
12+884 to 12+908 - Rt. Island						47										
12+924 to 12+952 - Rt. Island						54										
Sub - Totals Carried Forward:		2779	2757	486	1025	124										
		(P)	(P)	(P)	(P)	(P)										
TOTALS																
UNIT		m2	m2	m2	m2	m2										
ITEM No.			7			9										
														CHKD. _____ APPR. _____ DATE _____		

Granular Sealing and Hot Mix Miscellaneous

90-02

PH-D-499

MINISTRY OF TRANSPORTATION - ONTARIO

Page 2 of 3		QUANTITIES - MISCELLANEOUS												W.P. No. 392-98-00 Contract No. 2009-5002		SHEET 5
Description		Granular Sealing (m2) [Rt. Side Machine Sprayed]	Granular Sealing (m2) [Lt. Side - Machine Sprayed]	Granular Sealing (m2) [Rt. Side Hand Sprayed]	Granular Sealing (m2) [Lt. Side Hand Sprayed]	Hot Mix Asphalt Miscellaneous										
Sub - Totals Brought Forward:		2779	2757	486	1025	124										
13+022 to 13+177			372	93												
13+177 to 13+184		5	17													
13+184 to 13+300			223	70												
13+310 to 13+363			32													
13+363 to 13+650					173											
13+540 to 13+565 Rt. Island						46										
13+650 to 13+675		15			15											
13+675 to 14+009		201	601		201											
13+684 to 13+740 Lt. Island						80										
14+009 to 14+210		121	483													
14+210 to 14+262			125													
14+262 to 14+276			34	14												
14+276 to 14+480			368	204	204											
14+480 to 14+541		147	110		61											
14+541 to 16+291		496	496													
16+291 to 16+660		222	4	218												
18+100 to 18+275		420			105											
18+275 to 18+679		243	243													
18+679 to 18+760		49			49											
19+724 to 19+735 - Rt. Island						20										
18+760 to 18+975		129	381		210											
19+810 to 20+610		640	588													
20+610 to 20+860		600	600													
22+757 to 22+960		488	365		102											
Sub - Totals Carried Forward:		6555	7799	1085	2145	270										
		(P)	(P)	(P)	(P)	(P)										
TOTALS																
UNIT		m2	m2	m2	m2	m2										
ITEM No.			7			9										
														CHKD. _____ APPR. _____ DATE _____		

Granular Sealing and Hot Mix Miscellaneous



[illegible]

CHKD. \_\_\_\_\_

APPR. \_\_\_\_\_

DATE \_\_\_\_\_

## Granular Sealing and Hot Mix Miscellaneous



QUANTITIES - HOT MIX AND GRANULAR																W.P. No. 392-98-00 Contract No. 2009-5002		SHEET 8
Description	Superpave 12.5 [50mm Lanes and PPS]	Superpave 12.5 [50mm Fully Paved Shld.]	Superpave 12.5 [50mm Ent. and Sideroads]	Superpave 12.5 [Binder Course - 40mm Side Rd&Comm. Ent.]	Superpave 12.5 [Binder Courses 2 layers - 60mm/layer, FH, Clvt & Light Dist. Area]	Superpave 12.5 [Padding]	Tack Coat [CIR/CIREAM Surface]	Tack Coat [Upper Binder - Side Rd, Ents&Pavt Dist. Area]	Tack Coat [Lower Binder - Culv., FH and Pavt Dist. Area]	Granular A [Shldrs, C and G and Islands]	Granular A [Frost Heave, Culv. and Repair Area]	Granular A [Sideroads and Entrances]	Granular B, Type 1 [Frost Heave, Culverts and Shld Repair]			References		
Sub - Totals Brought Forward:	42681	2000	0	0	36	340	36673	0	124	4711	107	113	108					
12+110 to 12+460	3000	675				60	1263			459		14						
12+000 to 12+300 Pavement Distress Area					631			190	190									
12+224 CL Culvert											190		326					
12+460 to 12+810	3032	673	724	71		57	2682	724		722		217						
12+570 Rt. Raymond Rd. W Side Road Culvert					7				24		9		15					
12+632 CL Culvert					18				61		56		53					
12+705 Rt. Raymond Rd. E Side Road Culvert					9				28		11		17					
12+810 to 13+160	2717	875	944	81		156	2767	835		698		231						
12+818 CL Sewer					13				44		34		63					
13+160 to 13+510	3037	1400	1504	138		121	2687	1504		233		355						
13+297 Lt. Renfrew County Rd Sewer (W) 13+297 Lt. Renfrew County Rd Sewer (E)					10 5				34 16		16 14		26 23					
13+435 to 13+460 Rt Shoulder											170		531					
13+510 to 13+860	3168	1103	1264	122		71	2818	1264		629		350						
13+860 to 14+210	3013	125				79	2663			846								
14+210 to 14+560	2975	675				78	2625			379								
14+560 to 14+910	2967					44	2617			638		21						
14+910 to 15+260	3044					98	2694			638		7						
Sub - Totals Carried Forward:	69634	7526	4436	412	729	1104	59489	6517	2521	9953	607	1308	1162					
<div>(P) (P) (P) (P) (P) (P) (P) (P) (P) (P) (P) (P) (P) (P) (P) (P)</div>																		
TOTALS																		
UNIT	m2	m2	m2	t	t	t	m2	m2	m2	t	t	t	t					
ITEM No.		11			10			8			12		13					
Reference																		
Remarks:																CHKD. _____ APPR. _____ DATE _____		

QUANTITIES - HOT MIX AND GRANULAR																W.P. No. 392-98-00 Contract No. 2009-5002		SHEET 9
Description	Superpave 12.5 [50mm Lanes and PPS]	Superpave 12.5 [50mm Fully Paved Shld.]	Superpave 12.5 [50mm Ent. and Sideroads]	Superpave 12.5 [Binder Course - 40mm Side Rd&Comm. Ent.]	Superpave 12.5 [Binder Courses 2 layers - 60mm/layer, FH, Clvt & Drains]	Superpave 12.5 [Padding]	Tack Coat [CIR/CIREAM Surface]	Tack Coat [Upper Binder - Side Rd, Ents&Pavt Dist. Area]	Tack Coat [Lower Binder - Culverts, FH and Pavt Dist. Area]	Granular A [Shoulders, Curb and Gutter and Islands]	Granular A [Frost Heave, Culverts and Repair Area]	Granular A [Sideroads and Entrances]	Granular B, Type 1 [Frost Heave, Culverts and Shld Repair]			References		
Sub - Totals Brought Forward:	69634	7526	4436	412	2918	1104	59489	517	22163	53	60758	1308	6254					
15+105 CL Culvert																		
15+260 to 15+610	2905						2555			720		25						
15+610 to 15+960	2905		275			11	2555	275		731		38						
15+960 to 16+310	2956	765				61	2606			671		9						
16+310 to 16+660	3168	890				158	2818			726								
16+383 CL Culvert					19				65		59		55					
16+660 to 17+010	3029	200				112	2679			889		14						
16+719 CL Culvert					19				65		60		63					
16+934 CL Culvert					17				59		60		60					
17+010 to 17+360	3815					7	3465			347		97						
17+360 to 17+710	4130		904	54			3780	904		237		213						
17+710 to 18+060	4068	370	437	42		142	3718	437		293		128						
18+060 to 18+410	4260	1213	274	27		132	3910	274		656		79						
18+410 to 18+760	4130	1750	370	36		5	3780	370		584		133						
18+605 Rt. Meilleurs Rd. Side Road Culvert					6				20		8		12					
18+760 to 19+110	4130	563	414	40			3780	414		342		110						
19+110 to 19+460	3723					140	3373			534		43						
19+460 to 19+810	2953		1017	98		89	2603	1017		397		313						
Sub - Totals Carried Forward:	115806	13277	8127	709	808	1961	101111	10208	2793	17080	852	2510	1406					
(P) (P) (P) (P) (P) (P) (P)																		
TOTALS																		
UNIT	m2	m2	m2	t	t	t	m2	m2	m2	t	t	t	t					
ITEM No.		11			10			8			12		13					
Reference																		
Remarks:																CHKD. _____ APPR. _____ DATE _____		

QUANTITIES - HOT MIX AND GRANULAR																W.P. No. 392-98-00 Contract No. 2009-5002		SHEET 10
Description	Superpave 12.5 [50mm Lanes and PPS]	Superpave 12.5 [50mm Fully Paved Shld.]	Superpave 12.5 [50mm Ent. and Sideroads]	Superpave 12.5 [Binder Course - 40mm Side Rd&Comm. Ent.]	Superpave 12.5 [Binder Courses - 2 layers - 60mm/layer, FH, Clvt & Light Dist. Area]	Superpave 12.5 [Padding]	Tack Coat [CIR/CIREAM Surface]	Tack Coat [Binder - Side Rd, Ents&Pavt Dist. Area]	Tack Coat [Binder - Culverts, FH and Pavt Dist. Area]	Granular A [Shoulders, Curb and Gutter and Islands]	Granular A [Frost Heave, Culverts and Repair Area]	Granular A [Sideroads and Entrances]	Granular B, Type 1 [Frost Heave, Culverts and Shld Repair]			References		
Sub - Totals Brought Forward:	115806	13277	8127	709	808	1961	101111	1208	93	1080	852	2510	406					
19+508 CL Culvert					17				59		61		67					
19+810 to 20+160	3190	1349	482	33		100	2840	482		419		119						
19+903 Lt. Pinecrest Rd Side Road Culvert					11				38		14		23					
20+044 CL Culvert					17				59		57		58					
20+160 to 20+510	4130	1750					3780			706		11						
20+510 to 20+860	4130	500				21	3780			460		6						
20+860 to 21+210	4130					60	3780			740		19						
21+027 CL Culvert					26				89		52		63					
21+210 to 21+560	3360		543	52		23	3010	543		421		181						
21+560 to 21+910	3002					133	2652			866		21						
21+910 to 22+260	2905		250	24		22	2555	250		437		81						
21+960 CL Culvert					13				44		44		44					
22+047 CL Culvert					13				44		45		44					
22+260 to 22+610	2974		145	14		82	2624	145		639		46						
22+610 to 22+960	3058					115	2708			1098		10						
22+623 CL Culvert					18				63		55		51					
22+776 CL Culvert					23				78		67		60					
22+960 to 23+310	2905					152	2555			550		8						
Sub - Totals Carried Forward:	149590	16876	9547	832	946	2669	131395	11628	3267	23416	1247	3012	1816					
<div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div></div>																		
TOTALS																		
UNIT	m2	m2	m2	t	t	t	m2	m2	m2	t	t	t	t					
ITEM No.		11			10			8			12		13					
Reference																		
Remarks:																CHKD. _____ APPR. _____ DATE _____		

QUANTITIES - HOT MIX AND GRANULAR																W.P. No. 392-98-00 Contract No. 2009-5002		SHEET 11
Description	Superpave 12.5 [50mm Lanes and PPS]	Superpave 12.5 [50mm Fully Paved Shld.]	Superpave 12.5 [50mm Ent. and Sideroads]	Superpave 12.5 [Binder Course - 40mm Side Rd&Comm. Ent.]	Superpave 12.5 [Binder Courses 2 layers - 60mm/layer, FH, Clvt & Light Dist. Area]	Superpave 12.5 [Padding]	Tack Coat [CIR/CIREAM Surface]	Tack Coat [Upper Binder - Side Rd, Ents&Pavt Dist. Area]	Tack Coat [Lower Binder - Culverts, FH and Pavt Dist. Area]	Granular A [Shoulders, Curb and Gutter and Islands]	Granular A [Frost Heave, Culverts and Repair Area]	Granular A [Sideroads and Entrances]	Granular B, Type 1 [Frost Heave, Culverts and Shld Repair]			References		
Sub - Totals Brought Forward:	149590	16876	9547	832	946	2669	131395	1628	867	2416	247	3012	816					
23+310 to 23+660	2949		673	65		53	2599	673		388		192						
23+574 Rt. Allan Rd. Side Road Culvert					10				34		13		21					
23+599 CL Culvert					18				63		71		67					
23+660 to 24+010	2905	375	271				2555	271		394		47						
23+824 to 23+946 (Frost Heave)					257				891		699		4342					
23+ 845 - Ent Culvert Rt.											4		3					
23+890 - Ent Culvert Rt.											9		7					
23+ 930 - Ent Culvert Rt.											8		7					
24+010 to 24+360	2905		250	24		17	2555	250		278		84						
24+360 to 24+710	2905					31	2555			430		45						
24+710 to 25+060	2905		1073	104		22	2555	1073		433		334						
25+060 to 25+410	2905		1306	127		62	2555	1266		540		359						
25+187 CL Culvert					15				52		53		49					
25+410 to 25+725.78	2692	200				10	2306			151								
Tack Coat for tie in limits							140											
Platform for SBGR - End Treatment													28					
Sub - Totals Carried Forward:	169756	17451	13120	1152	1246	2864	149215	15161	4307	26030	2104	4073	6340					
<div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div></div>																		
TOTALS		200,327			5,262			168,683			32,207		6,340					
UNIT	m2	m2	m2	t	t	t	m2	m2	m2	t	t	t	t					
ITEM No.		11			10			8			12		13					
Reference																	CHKD. _____ APPR. _____ DATE _____	
Remarks:																		

90-02

PH-D-502

MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

SHEET  
12

Location and Position	Concrete Curb and Gutter [600.040] [Straight]	Concrete Curb and Gutter [600.040] [Circular]											References
Sub - Totals Brought Forward:													
Hwy 17													
Township of Rolph													
12+526.2 to 12+538.4 Rt (Island)	25	8											
12+716.8 to 12+721.5 Rt		5											
12+721.5 to 12+861.8 Rt	140												
12+861.8 to 12+874 Rt		14											
12+883.42 to 12+908.29 Rt (Island)	50	8											
12+925.3 to 12+953.72 Rt (Island)	57	8											
12+952.4 to12+975.8 Lt		40											
12+959.50 to 13+021.20 Rt	62												
12+991.2 to 13+022.4 Lt		45											
13+288.76 to 13+311.16 Rt		34											
13+370.69 to 13+516.7 Rt	146												
13+516.7 to 13+531.65 Rt		15											
13+540.3 to 13+564.5 Rt (Island)	48	8											
13+572.6 to 13+581.14 Rt		10											
13+581.14 to 13+751.08 Rt	170												
13+683.8 to 13+739.4 Lt	111	8											
19+724.17 to 19+734.65 Rt (Island)	21	8											
24+967.79 to 25+003.26 Lt (Island)	71	8											
Sub - Totals Carried Forward:	901	219											
	(P)	(P)											
TOTALS													
UNIT	m	m											
ITEM No.		14											
Reference													
													CHKD. _____ APPR. _____ DATE _____

Conc C&G

**W.P. No. 392-98-00**  
**Contract No. 2009-5002**

[illegible]



QUANTITIES - DRAINAGE, MANHOLES, CATCH BASINS AND DITCH INLETS																	W.P. No. 392-98-00		SHEET	
																	Contract No. 2009-5002		14	
Location	Str No	Station	Offset CL Grate or Cover	Type of Structure Std No	New Grate Std No	Slope of Grate	Top of Grate Elevation	Low Invert Elevation	Depth of Structure		1500 mm Manholes Catchbasins and Ditch Inlets, Over 4 m	Adjusting and Rebuilding Manholes Catchbasins and DI's	Breaking into MH,CB, DI, Culverts and Sewers	Clean Out Catchbasins, Maintenance Holes and Ditch Inlets	400 mm Pipe Sewer 450 S 126000 400 C 000411, 450 C 000411	700 mm Pipe Sewer 750 S 126000 700 C 000011	800 mm Pipe Sewer 825 S 100000 800 C 000211, 840 C 006000			References
Sub - Totals Brought Forward:																				
Township of Rolph																				
12+818.13 Rt - Raise CB	1	12+818.13	6.1	Existing	Existing	6%	196.133					1		1						
12+818.13 - Outlet Pipe													1		17					
13+300.73 Rt - Raise CB	2	13+300.73	8.28	Existing	Existing	6%	181.728					1		1						
13+307.97 Lt - Raise MH	3	13+307.97	11.86	Existing	Existing	2.5%	181.799					1		1						
13+307.97 Lt - East Pipe													1				19			
13+307.97 Lt - West Pipe													1			21				
13+370.5 Rt - Raise CB	4	13+370.5	6.6	Existing	Existing	6%	180.264					1		1						
13+446.3 Rt - Replace Existing CB	5	13+446.3	6.4	705.020	400.100	6%	179.816				1									
13+496.7 Rt - Raise CB	6	13+496.7	6.38	Existing	Existing	6%	180.387					1		1						
13+552 Lt - Raise CB	7	13+552	6.29	Existing	Existing	6%	181.943					1		1						
13+621.2 Rt - Raise CB	8	13+621.2	6.49	Existing	Existing	6%	184.786					1		1						
13+674.8 Rt - Raise CB	9	13+674.8	6.44	Existing	Existing	6%	186.618					1		1						
25+022.1 Lt - Raise Manhole	10	25+022.1	6.31	Existing	Existing	2.5%	167.092					1		1						
25+023 Lt - Raise CB	11	25+023	9.94	Existing	Existing	2.5%	166.990					1		1						
Sub - Totals Carried Forward:											1	10	3	10	17	21	19			
									(P) (P) (P) (P) (P) (P) (P)											
									TOTALS	1	10	3	10	17	21	19				
									UNIT	each	each	each	each	m	m	m				
									ITEM No.	15	16	17	18	19	20	21				
																			CHKD. _____	
																			APPR. _____	
																			DATE _____	

Pipe Sewers, Manholes and Catch Basin

QUANTITIES - PIPE CULVERTS

W.P. No. 392-98-00  
Contract No. 2009-5002

Culvert No	Station	Location and Position	Ext		Skew No	End Finish	Depth of Pipe	Pipe Fill Material			Pipe Joints	Treatment	Inv Elev		500 mm Pipe Culvert 500 C 000311	600 mm Pipe Culvert 600 C 000311	600 mm Pipe Culvert 600 C 000211	600 mm Pipe Culvert 600 C 000111	700 mm Pipe Culvert 700 C 000211	800 mm Pipe Culvert 825 S 100000 800 C 000021	References	
			Left	Right				Bedding	Cover	Backfill			Upstream	Downstream								
Sub - Totals Brought Forward:																						
		Twp of Rolph																				
	12+570	Raymond Rd. W Junc														20						
	12+710	Raymond Rd. E Junc														20						
	18+065	Meilleurs Rd.			90		0.33	G	G	N			147.91	147.66		12						
	19+903	Pinecrest Rd.			90		0.48	G	G	N			123.25	122.71			20					
	23+574	Allan Rd.			90		1.2	G	G	N			166.18	165.81				18				
	10+330	CL Culvert			85		1.70	G	G	N			173.69	172.796					26			
	11+344	CL Culvert			90		2.0	G	G	N			173.084	173.034								
	12+224	CL Culvert			90		1.1	G	G	G		F	174.125	174.064								
	15+105	CL Culvert			90		1.9	G	G	N			163.592	163.312								
	16+383	CL Culvert			90		2.6	G	G	N			145.161	144.748								
	16+719	CL Culvert			105		1.88	G	G	N			136.319	135.341								
	16+934	CL Culvert			90		1.27	G	G	N			135.373	135.349								
	19+508	CL Culvert			90		2.36	G	G	N			117.981	117.875								
	20+044	CL Culvert			90		2.50	G	G	N			126.991	126.860								
	21+027	CL Culvert			90		1.74	G	G	N			160.289	159.854								
	21+960	CL Culvert			90		3.0	G	G	N			153.829	152.614								

Pipe Material Code - 6 digits defined as noted below:

1st digit = Concrete

- 1 - 50-D or HE-A  
2 - 65-D or HE-I  
3 - 100-D or HE-II
- 4 - 140-D or HE-III  
5 - HE-IV

2nd digit = PVC

- 1 - Class 210  
2 - Class 320

3rd digit = HDPE

- 1 - Class 210  
2 - Class 320
- 3 - RSC 160  
4 - RSC 250
- 5 - Class 210 or RSC 160  
6 - Class 320 or RSC 250

4th digit = Galv; 5th digit = Alum & 6th digit = Poly. Lam. Steel

- 1 - 1.6 mm thick  
2 - 2.0 mm thick  
3 - 2.8 mm and 3.0 mm thick  
4 - 3.5 mm and 4.0 mm thick  
5 - 4.2 mm and 5.0 mm thick  
6 - 6.0 mm thick  
7 - 7.0 mm thick

**Note:** '0' for any digit means that the pipe material represented is not acceptable. Same pipe material with a higher value is also acceptable. This pipe material code applies to all circular and non-circular pipe material.

Pipe Type

- S - Smooth inner wall pipe
- C - Corrugated inner wall pipe

Pipe Joints

- N - not sealed, L or H
- L - low pressure seal, or H
- H - high pressure seal

**Note:** N joints is specified if no code is entered.

End Finish (OPSD 801.01 - 02 - 03)

- SqE - Square End
- B - Bevel
- Sk - Skew End
- SB - Step Bevel
- ES - Steel end section

**Note:** All pipes are SqE and symmetrical to CL unless otherwise stated.

Treatments

- F - Frost Treatment
- P - Pave Invert
- S - Channel Substrate
- B - Fish Baffles

**Depth to Pipe** is from top of road surface at CL to top of base pipe opening directly below the CL unless otherwise stated.

Pipe Fill Material

- N - Native or Granular
- G - Granular A or B Type I, II or III
- B - Granular A or B Type II
- A - Granular A
- U - Unshrinkable fill

**Notes:** N applies to cover and backfill only.  
1 letter specifies material for all pipes.  
2 letter codes specifies fill material for rigid and flexible pipes respectively.  
Specified pipe fill materials are G for bedding and N for cover and backfill if no code is entered.  
Embedment material for flexible pipes specified in bedding material column.

Frost Penetration

Frost Penetration depth - 2.00

	(P)	(P)	(P)	(P)	(P)	(P)
TOTALS						
UNIT	m	m	m	m	m	m
ITEM No.	22		23		24	

CHKD. \_\_\_\_\_  
APPR. \_\_\_\_\_  
DATE \_\_\_\_\_

QUANTITIES - PIPE CULVERTS

W.P. No. 392-98-00

Contract No. 2009-5002

Culvert No	Station	Location and Position	Ext		Skew No	End Finish	Depth of Pipe	Pipe Fill Material			Pipe Joints	Treatment	Inv Elev		800 mm Pipe Culvert 825 S 100000 800 C 000111	800 mm Pipe Culvert 825 S 100000 800 C 000031	800 mm Pipe Culvert 825 S 100000 840 C 006000, 800 C 000021	800 mm Pipe Culvert 825 S 100000 800 C 000111, 840 C 006000	800 mm Pipe Culvert 825 S 100000 800 C 000211, 840 C 006000	800 mm Pipe Culvert 825 S 100000 800 C 000311, 840 C 006000	References		
			Left	Right				Bedding	Cover	Backfill			Upstream	Downstream									
Sub - Totals Brought Forward:																							
		Twp of Rolph																					
	12+570	Raymond Rd. W Junc																					
	12+710	Raymond Rd. E Junc																					
	18+065	Meilleurs Rd.			90		0.33	G	G	N			147.91	147.66									
	19+903	Pinecrest Rd.			90		0.48	G	G	N			123.25	122.71									
	23+574	Allan Rd.			90		1.2	G	G	N			166.18	165.81									
	10+330	CL Culvert			85		1.70	G	G	N			173.69	172.796									
	11+344	CL Culvert			90		2.0	G	G	N			173.084	173.034		25							
	12+224	CL Culvert			90		1.1	G	G	G		F	174.125	174.064			25						
	15+105	CL Culvert			90		1.9	G	G	N			163.592	163.312	23								
	16+383	CL Culvert			90		2.6	G	G	N			145.161	144.748									
	16+719	CL Culvert			105		1.88	G	G	N			136.319	135.341									
	16+934	CL Culvert			90		1.27	G	G	N			135.373	135.349									
	19+508	CL Culvert			90		2.36	G	G	N			117.981	117.875									
	20+044	CL Culvert			90		2.50	G	G	N			126.991	126.860			27						
	21+027	CL Culvert			90		1.74	G	G	N			160.289	159.854									
	21+960	CL Culvert			90		3.0	G	G	N			153.829	152.614					27				
Sub - Totals Carried Forward:															23	25	25	27	27	0			
<b>Pipe Material Code - 6 digits defined as noted below:</b>		<b>Pipe Type</b>		<b>Depth to Pipe</b>																		CHKD. _____ APPR. _____ DATE _____	
<b>1st digit = Concrete</b>		<b>2nd digit = PVC</b>																					
1 - 50-D or HE-A		4 - 140-D or HE-III		1 - Class 210																			
2 - 65-D or HE-I		5 - HE-IV		2 - Class 320																			
<b>3rd digit = HDPE</b>		<b>Pipe Joints</b>		<b>Pipe Fill Material</b>																			
1 - Class 210		N - not sealed, L or H		N - Native or Granular																			
2 - Class 320		L - low pressure seal, or H		G - Granular A or B Type I, II or III																			
3 - 100-D or HE-II		H - high pressure seal		B - Granular A or B Type II																			
<b>4th digit = Galv; 5th digit = Alum &amp; 6th digit = Poly. Lam. Steel</b>		<b>Note:</b> N joints is specified if no code is entered.		A - Granular A																			
1 - 1.6 mm thick		U - Unshrinkable fill																					
2 - 2.0 mm thick		<b>End Finish (OPSD 801.01 - 02 - 03)</b>		<b>Notes:</b> N applies to cover and backfill only.																			
3 - 2.8 mm and 3.0 mm thick		SqE - Square End		1 letter specifies material for all pipes.																			
4 - 3.5 mm and 4.0 mm thick		B - Bevel		2 letter codes specifies fill material for rigid and flexible pipes respectively.																			
5 - 4.2 mm and 5.0 mm thick		Sk - Skew End		Specified pipe fill materials are																			
6 - 6.0 mm thick		SB - Step Bevel		G for bedding and N for cover and backfill if no code is entered.																			
7 - 7.0 mm thick		ES - Steel end section		Embedment material for flexible pipes specified in bedding material column.																			
<b>Note:</b> '0' for any digit means that the pipe material represented is not acceptable. Same pipe material with a higher value is also acceptable. This pipe material code applies to all circular and non-circular pipe material.		<b>Note:</b> All pipes are SqE and symmetrical to CL unless otherwise stated.		<b>Frost Penetration</b>																			
		<b>Treatments</b>		Frost Penetration depth - 2.00																			
		F - Frost Treatment																					
		P - Pave Invert																					
		S - Channel Substrate																					
		B - Fish Baffles																					

QUANTITIES - PIPE CULVERTS

W.P. No. 392-98-00

Contract No. 2009-5002

Culvert No	Station	Location and Position	Ext		Skew No	End Finish	Depth of Pipe	Pipe Fill Material			Pipe Joints	Treatment	Inv Elev		800 mm Pipe Culvert 800 C 000311	800 mm Pipe Culvert 825 S 100000	900 mm Pipe Culvert 900 S 120000, 910 S 006000 900 C 006311	900 mm Pipe Culvert 900 S 100000 900 C 000311	900 mm Pipe Culvert 900 C 000111	900 mm Pipe Culvert 900 S 120000, 910 S 006000 900 C 006111	References	
			Left	Right				Bedding	Cover	Backfill			Upstream	Downstream								
Sub - Totals Brought Forward:																						
		Twp of Rolph																				
	12+570	Raymond Rd. W Junc																				
	12+710	Raymond Rd. E Junc																				
	18+065	Meilleurs Rd.			90		0.33	G	G	N			147.91	147.66								
	19+903	Pinecrest Rd.			90		0.48	G	G	N			123.25	122.71								
	23+574	Allan Rd.			90		1.2	G	G	N			166.18	165.81								
	10+330	CL Culvert			85		1.70	G	G	N			173.69	172.796								
	11+344	CL Culvert			90		2.0	G	G	N			173.084	173.034								
	12+224	CL Culvert			90		1.1	G	G	G		F	174.125	174.064								
	15+105	CL Culvert			90		1.9	G	G	N			163.592	163.312								
	16+383	CL Culvert			90		2.6	G	G	N			145.161	144.748			29					
	16+719	CL Culvert			105		1.88	G	G	N			136.319	135.341				26				
	16+934	CL Culvert			90		1.27	G	G	N			135.373	135.349					22			
	19+508	CL Culvert			90		2.36	G	G	N			117.981	117.875						27		
	20+044	CL Culvert			90		2.50	G	G	N			126.991	126.860								
	21+027	CL Culvert			90		1.74	G	G	N			160.289	159.854								
	21+960	CL Culvert			90		3.0	G	G	N			153.829	152.614								

Sub - Totals Carried Forward:

0

0

29

26

22

27

Pipe Material Code - 6 digits defined as noted below:

1st digit = Concrete

- 1 - 50-D or HE-A
- 2 - 65-D or HE-I
- 3 - 100-D or HE-II
- 4 - 140-D or HE-III
- 5 - HE-IV

2nd digit = PVC

- 1 - Class 210
- 2 - Class 320

3rd digit = HDPE

- 1 - Class 210
- 2 - Class 320
- 3 - RSC 160
- 4 - RSC 250
- 5 - Class 210 or RSC 160
- 6 - Class 320 or RSC 250

4th digit = Galv; 5th digit = Alum & 6th digit = Poly. Lam. Steel

- 1 - 1.6 mm thick
- 2 - 2.0 mm thick
- 3 - 2.8 mm and 3.0 mm thick
- 4 - 3.5 mm and 4.0 mm thick
- 5 - 4.2 mm and 5.0 mm thick
- 6 - 6.0 mm thick
- 7 - 7.0 mm thick

**Note:** '0' for any digit means that the pipe material represented is not acceptable. Same pipe material with a higher value is also acceptable. This pipe material code applies to all circular and non-circular pipe material.

Pipe Type

- S - Smooth inner wall pipe
- C - Corrugated inner wall pipe

Pipe Joints

- N - not sealed, L or H
- L - low pressure seal, or H
- H - high pressure seal

**Note:** N joints is specified if no code is entered.

End Finish (OPSD 801.01 - 02 - 03)

- SqE - Square End
- B - Bevel
- Sk - Skew End
- SB - Step Bevel
- ES - Steel end section

**Note:** All pipes are SqE and symmetrical to CL unless otherwise stated.

Treatments

- F - Frost Treatment
- P - Pave Invert
- S - Channel Substrate
- B - Fish Baffles

**Depth to Pipe** is from top of road surface at CL to top of base pipe opening directly below the CL unless otherwise stated.

Pipe Fill Material

- N - Native or Granular
- G - Granular A or B Type I, II or III
- B - Granular A or B Type II
- A - Granular A
- U - Unshrinkable fill

**Notes:** N applies to cover and backfill only.  
1 letter specifies material for all pipes.  
2 letter codes specifies fill material for rigid and flexible pipes respectively.  
Specified pipe fill materials are G for bedding and N for cover and backfill if no code is entered.  
Embedment material for flexible pipes specified in bedding material column.

Frost Penetration

Frost Penetration depth - 2.00

	(P)	(P)	(P)	(P)	(P)	(P)
TOTALS						
UNIT	m	m	m	m	m	m
ITEM No.				26		

CHKD. \_\_\_\_\_  
APPR. \_\_\_\_\_  
DATE \_\_\_\_\_

QUANTITIES - PIPE CULVERTS

W.P. No. 392-98-00

Contract No. 2009-5002

Culvert No	Station	Location and Position	Ext		Skew No	End Finish	Depth of Pipe	Pipe Fill Material			Pipe Joints	Treatment	Inv Elev		900 mm Pipe Culvert 900 C 000311	900 mm Pipe Culvert 900 S 100000 900 C 000411	1000 mm Pipe Culvert 1000 C 000411				References	
			Left	Right				Bedding	Cover	Backfill			Upstream	Downstream								
Sub - Totals Brought Forward:																						
		Twp of Rolph																				
	12+570	Raymond Rd. W Junc																				
	12+710	Raymond Rd. E Junc																				
	18+065	Meilleurs Rd.			90		0.33	G	G	N			147.91	147.66								
	19+903	Pinecrest Rd.			90		0.48	G	G	N			123.25	122.71								
	23+574	Allan Rd.			90		1.2	G	G	N			166.18	165.81								
	10+330	CL Culvert			85		1.70	G	G	N			173.69	172.796								
	11+344	CL Culvert			90		2.0	G	G	N			173.084	173.034								
	12+224	CL Culvert			90		1.1	G	G	G		F	174.125	174.064								
	15+105	CL Culvert			90		1.9	G	G	N			163.592	163.312								
	16+383	CL Culvert			90		2.6	G	G	N			145.161	144.748								
	16+719	CL Culvert			105		1.88	G	G	N			136.319	135.341								
	16+934	CL Culvert			90		1.27	G	G	N			135.373	135.349								
	19+508	CL Culvert			90		2.36	G	G	N			117.981	117.875								
	20+044	CL Culvert			90		2.50	G	G	N			126.991	126.860								
	21+027	CL Culvert			90		1.74	G	G	N			160.289	159.854	29							
	21+960	CL Culvert			90		3.0	G	G	N			153.829	152.614								
Sub - Totals Carried Forward:															29	0	0					

Pipe Material Code - 6 digits defined as noted below:

1st digit = Concrete

- 1 - 50-D or HE-A
- 2 - 65-D or HE-I
- 3 - 100-D or HE-II
- 4 - 140-D or HE-III
- 5 - HE-IV

2nd digit = PVC

- 1 - Class 210
- 2 - Class 320

3rd digit = HDPE

- 1 - Class 210
- 2 - Class 320
- 3 - RSC 160
- 4 - RSC 250
- 5 - Class 210 or RSC 160
- 6 - Class 320 or RSC 250

4th digit = Galv; 5th digit = Alum & 6th digit = Poly. Lam. Steel

- 1 - 1.6 mm thick
- 2 - 2.0 mm thick
- 3 - 2.8 mm and 3.0 mm thick
- 4 - 3.5 mm and 4.0 mm thick
- 5 - 4.2 mm and 5.0 mm thick
- 6 - 6.0 mm thick
- 7 - 7.0 mm thick

**Note:** '0' for any digit means that the pipe material represented is not acceptable. Same pipe material with a higher value is also acceptable. This pipe material code applies to all circular and non-circular pipe material.

Pipe Type

- S - Smooth inner wall pipe
- C - Corrugated inner wall pipe

Pipe Joints

- N - not sealed, L or H
- L - low pressure seal, or H
- H - high pressure seal

**Note:** N joints is specified if no code is entered.

End Finish (OPSD 801.01 - 02 - 03)

- SqE - Square End
- B - Bevel
- Sk - Skew End
- SB - Step Bevel
- ES - Steel end section

**Note:** All pipes are SqE and symmetrical to CL unless otherwise stated.

Treatments

- F - Frost Treatment
- P - Pave Invert
- S - Channel Substrate
- B - Fish Baffles

**Depth to Pipe** is from top of road surface at CL to top of base pipe opening directly below the CL unless otherwise stated.

Pipe Fill Material

- N - Native or Granular
- G - Granular A or B Type I, II or III
- B - Granular A or B Type II
- A - Granular A
- U - Unshrinkable fill

**Notes:** N applies to cover and backfill only.  
1 letter specifies material for all pipes.  
2 letter codes specifies fill material for rigid and flexible pipes respectively.  
Specified pipe fill materials are G for bedding and N for cover and backfill if no code is entered.  
Embedment material for flexible pipes specified in bedding material column.

Frost Penetration

Frost Penetration depth - 2.00

	(P)		(P)	(P)			
TOTALS							
UNIT	m	m	m				
ITEM No.			27				

CHKD. \_\_\_\_\_  
APPR. \_\_\_\_\_  
DATE \_\_\_\_\_

**W.P. No. 392-98-00**  
**Contract No. 2009-5002**

Culvert No	Station	Location and Position	Ext		Skew No	End Finish	Depth of Pipe	Pipe Fill Material			Pipe Joints	Treatment	Inv Elev		500 mm Pipe Culvert 500 C 000311	600 mm Pipe Culvert 600 C 000311	600 mm Pipe Culvert 600 C 000211	600 mm Pipe Culvert 600 C 000111	700 mm Pipe Culvert 700 C 000211	800 mm Pipe Culvert 825 S 100000 800 C 000021	References																				
			Left	Right				Bedding	Cover	Backfill			Upstream	Downstream																											
Sub - Totals Brought Forward:															0	0	52	20	18	26																					
	22+047	CL Culvert			90		2.79	G	G	N			154.137	153.048																											
	22+623	CL Culvert			95		2.07	G	G	N			158.625	157.785																											
	22+776	CL Culvert			90		3.65	G	G	N			157.861	157.561																											
	23+599	CL Culvert			90		1.68	G	G	N			166.133	165.500																											
	23+845 Rt	Ent Culvert														10																									
	23+890 Rt	Ent Culvert													24																										
	23+930 Rt	Ent Culvert													18																										
	25+184	CL Culvert			90		2.26	G	G	N			163.388	163.109																											
	12+632	CL Culvert			90		1.60	G	G	N			191.140	191.058																											
Sub - Totals Carried Forward:															42	10	52	20	18	26																					
<div><div><div>Pipe Material Code - 6 digits defined as noted below:</div><div><div>1st digit = Concrete</div><div>1 - 50-D or HE-A 2 - 65-D or HE-I 3 - 100-D or HE-II</div><div>2nd digit = PVC</div><div>1 - Class 210 2 - Class 320</div><div>3rd digit = HDPE</div><div>1 - Class 210 2 - Class 320</div><div>4th digit = Galv; 5th digit = Alum &amp; 6th digit = Poly. Lam. Steel</div><div>1 - 1.6 mm thick 2 - 2.0 mm thick 3 - 2.8 mm and 3.0 mm thick 4 - 3.5 mm and 4.0 mm thick 5 - 4.2 mm and 5.0 mm thick 6 - 6.0 mm thick 7 - 7.0 mm thick</div><div>Note: '0' for any digit means that the pipe material represented is not acceptable. Same pipe material with a higher value is also acceptable. This pipe material code applies to all circular and non-circular pipe material.</div></div><div><div>Pipe Type</div><div>S - Smooth inner wall pipe C - Corrugated inner wall pipe</div><div>Pipe Joints</div><div>N - not sealed, L or H L - low pressure seal, or H H - high pressure seal Note: N joints is specified if no code is entered.</div><div>End Finish (OPSD 801.01 - 02 - 03)</div><div>SqE - Square End B - Bevel Sk - Skew End SB - Step Bevel ES - Steel end section Note: All pipes are SqE and symmetrical to CL unless otherwise stated.</div><div>Treatments</div><div>F - Frost Treatment P - Pave Invert S - Channel Substrate B - Fish Baffles</div></div><div><div>Depth to Pipe</div><div>is from top of road surface at CL to top of base pipe opening directly below the CL unless otherwise stated.</div><div>Pipe Fill Material</div><div>N - Native or Granular G - Granular A or B Type I, II or III B - Granular A or B Type II A - Granular A U - Unshrinkable fill</div><div>Notes:</div><div>N applies to cover and backfill only. 1 letter specifies material for all pipes. 2 letter codes specifies fill material for rigid and flexible pipes respectively. Specified pipe fill materials are G for bedding and N for cover and backfill if no code is entered. Embedment material for flexible pipes specified in bedding material column.</div><div>Frost Penetration</div><div>Frost Penetration depth - 2.00</div></div></div><div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div><div>(P)</div></div><table><tr><td>TOTALS</td><td>42</td><td></td><td>82</td><td></td><td>18</td><td></td></tr><tr><td>UNIT</td><td>m</td><td>m</td><td>m</td><td>m</td><td>m</td><td>m</td></tr><tr><td>ITEM No.</td><td>22</td><td></td><td>23</td><td></td><td>24</td><td></td></tr></table></div>															TOTALS	42		82		18		UNIT	m	m	m	m	m	m	ITEM No.	22		23		24		CHKD. _____ APPR. _____ DATE _____					
															TOTALS	42		82		18																					
															UNIT	m	m	m	m	m	m																				
															ITEM No.	22		23		24																					









90-02

PH-D-502

MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

SHEET  
23

Location and Position	Removal of Asphalt Pavement [150mm],[Full Depth]	Removal of Asphalt Pavement [50 mm],[Full Depth ]	Removal of Asphalt Pavement, Partial Depth [0-50mm]	Removal of Asphalt Curb and Gutter [Roadway]	Removal of Concrete Curb and Gutter [Roadway]	Removal of Maintenance Holes, Catchbasins, Ditch Inlets and Valve Chambers	Removal of Pipe Culverts and Sewers [CSP]	Removal of Cable Guide Rail [3 CGR]	Removal of Anchor Blocks	Removal of Steel Beam Guide Rail [Single Rail ] [Without Channel]			References
Sub - Totals Brought Forward:													
Twp of Head													
Tie in Transition at W. limit - 28+250			70										
29+649 - 29+745 Lt								96	2				
29+826 - 29+916 Lt								90	2				
30+022 - 30+151 Lt								129	2				
Twp of Rolph													
10+330 - CL Culvert							26						
11+344 - CI Culvert							24						
12+000 to 12+300 (Pvmt. Distress Area)	2160												
12+224 - CL Culvert							24						
12+240 to 12+580 Lt				340									
12+260 Lt - Twin CB						1							
12+334 to 12+442 Lt								108	2				
12+364 Lt - CB						1							
12+366 Lt - Sewer Pipe							17						
12+474 Lt - Sewer Pipe							8						
12+521 Rt - Comm Ents	556												
12+527 to 12+543 Rt - Island					32								
12+570 Rt - Raymond Rd West Junc.	87												
12+570 Rt - Raymond Rd West Culvert							12						
12+632 - CL Culvert							24						
12+661 - 13+786 Rt Shoulders		3263											
12+697 to 13+024 Rt					327								
12+705 Rt - Raymond Rd East Junc Culvert							14						
12+705 Rt - Raymond Rd East Junc.	81												
12+818 CL - Sewer Pipe							17						
Sub - Totals Carried Forward:	2884	3263	70	340	359	2	166	423	8	0			
	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)			
TOTALS													
UNIT	m2	m2	m2	m	m	each	m	m	each	m			
ITEM No.		28	29	30	31	32	33	34	35	36			
Reference													
													CHKD. _____ APPR. _____ DATE _____

Removals

90-02

PH-D-502

MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

SHEET  
24

Location and Position	Removal of Asphalt Pavement [150mm],[Full Depth]	Removal of Asphalt Pavement [50 mm],[Full Depth ]	Removal of Asphalt Pavement, Partial Depth [0-50mm]	Removal of Asphalt Curb and Gutter [Roadway]	Removal of Concrete Curb and Gutter [Roadway]	Removal of Maintenance Holes, Catchbasins, Ditch Inlets and Valve Chambers	Removal of Pipe Culverts and Sewers [CSP]	Removal of Cable Guide Rail [3 CGR]	Removal of Anchor Blocks	Removal of Steel Beam Guide Rail [Single Rail ] [Without Channel]			References
Sub - Totals Brought Forward:	2884	3263	70	340	359	2	166	423	8	0			
12+952 to 12+976 Lt					40								
12+900 Rt - Comm Ents	304												
12+991 Lt - Comm Ents	531												
12+991 to 13+023 Lt					45								
13+271 to 13+281 Rt					18								
13+289 to 13+311 Rt					34								
13+291 Rt - Moore Lake Rd	538												
13+297 Lt - Renfrew County Rd	728												
13+308 Lt - Sewer Pipe East							19						
13+308 Lt - Sewer Pipe West							21						
13+359 Rt - Private Ent		82											
13+370 to 13+751 Rt					381								
13+446 Rt - CB						1							
13+552 Rt - Comm Ents	209												
13+675 Lt - Comm Ents	1055												
13+685 to 13+734 Lt										49			
14+180 to 14+330 Rt				150									
14+223 Rt - CB						1							
14+328 Rt - Twin CB						1							
15+105 CL Culvert							23						
15+725 Lt - Private Ents		275											
16+196 to 16+654 Rt				458									
16+286 Rt - CB						1							
16+286 Rt - Sewer Pipe							7						
16+378 Rt - CB						1							
16+378 Rt - Sewer Pipe							8						
16+383 CL Culvert							28						
Sub - Totals Carried Forward:	6249	3620	70	948	877	7	272	423	8	49			
	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)			
TOTALS													
UNIT	m2	m2	m2	m	m	each	m	m	each	m			
ITEM No.		28	29	30	31	32	33	34	35	36			
Reference													
													CHKD. _____ APPR. _____ DATE _____

Removals

90-02

PH-D-502

MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

SHEET  
25

Location and Position	Removal of Asphalt Pavement [150mm],[Full Depth]	Removal of Asphalt Pavement [50 mm],[Full Depth ]	Removal of Asphalt Pavement, Partial Depth [0-50mm]	Removal of Asphalt Curb and Gutter [Roadway]	Removal of Concrete Curb and Gutter [Roadway]	Removal of Maintenance Holes, Catchbasins, Ditch Inlets and Valve Chambers	Removal of Pipe Culverts and Sewers [CSP]	Removal of Cable Guide Rail [3 CGR]	Removal of Anchor Blocks	Removal of Steel Beam Guide Rail [Single Rail ] [Without Channel]			References
Sub - Totals Brought Forward:	6249	3620	70	948	877	7	272	423	8	49			
16+472 Rt - CB						1							
16+561 Rt - CB						1							
16+561 Rt - Sewer Pipe							13						
16+653 Rt - Twin CB						1							
16+653 Rt - Sewer Pipe							10						
16+719 - CL Culvert							26						
16+934 - CL Culvert							22						
17+378 Lt - Comm Ents	183												
17+490 Lt - Comm Ents	374												
17+668 Rt - Private Ents		347											
17+912 - 18+770 Lt - Shoulders		1716											
17+915 Lt - Cutler Lane	437												
18+064 Rt - Meilleurs Rd W. Junc	274												
18+065 Rt - Meilleurs Rd Culvert							12						
18+275 - 18+975 Rt		1820											
18+416 Lt - Stewarts Lane W. Junc	370												
18+769 Lt - Stewarts Lane E. Junc	414												
19+679 Rt - Meilleurs Rd E. Junc	260												
19+720 Rt - Comm Ents.	757												
19+868 Lt - Private Ents.		145											
19+508 - CL Culvert							27						
19+903 Lt - Lau-Ren W - Culvert							19						
19+903 Lt - Lau-Ren Rd.	337												
19+721 to 19+731 Rt - Island					20								
19+967 Rt - Twin CB						1							
19+967 Rt - Sewer Pipe							7						
19+967 Lt - Twin CB						1							
Sub - Totals Carried Forward:	9655	7648	70	948	897	12	408	423	8	49			
	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)			
TOTALS													
UNIT	m2	m2	m2	m	m	each	m	m	each	m			
ITEM No.		28	29	30	31	32	33	34	35	36			
Reference													
													CHKD. _____ APPR. _____ DATE _____

Removals

90-02

PH-D-502

MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

SHEET  
26

Location and Position	Removal of Asphalt Pavement [150mm],[Full Depth]	Removal of Asphalt Pavement [50 mm],[Full Depth ]	Removal of Asphalt Pavement, Partial Depth [0-50mm]	Removal of Asphalt Curb and Gutter [Roadway]	Removal of Concrete Curb and Gutter [Roadway]	Removal of Maintenance Holes, Catchbasins, Ditch Inlets and Valve Chambers	Removal of Pipe Culverts and Sewers [CSP]	Removal of Cable Guide Rail [3 CGR]	Removal of Anchor Blocks	Removal of Steel Beam Guide Rail [Single Rail ] [Without Channel]			References
Sub - Totals Brought Forward:	9655	7648	70	948	897	12	408	423	8	49			
19+967 Lt - Sewer Pipe							9						
19+967 to 20+063 Lt				96									
19+967 to 20+610 Rt				643									
20+044 - CL Culvert							27						
20+088 to 20+363 Lt				275									
20+090 Rt - CB						1							
20+090 Rt - Sewer Pipe							8						
20+090 Lt - CB						1							
20+090 Lt - Sewer Pipe							10						
20+178 Rt - CB						1							
20+178 Rt - Sewer Pipe							7						
20+196 Lt - CB						1							
20+196 Lt - Sewer Pipe							7						
20+271 Rt - CB						1							
20+271 Rt - Sewer Pipe							7						
20+303 Lt - CB						1							
20+303 Lt - Sewer Pipe							7						
20+362 Rt - CB						1							
20+362 Rt - Sewer Pipe							7						
20+398 to 20+663 Lt				265									
20+409 Lt - CB						1							
20+409 Lt - Sewer Pipe							7						
20+453 Rt - CB						1							
20+453 Rt - Sewer Pipe							7						
20+516 Lt - CB						1							
20+516 Lt - Sewer Pipe							7						
Sub - Totals Carried Forward:	9655	7648	70	2227	897	22	518	423	8	49			
	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)			
TOTALS													
UNIT	m2	m2	m2	m	m	each	m	m	each	m			
ITEM No.		28	29	30	31	32	33	34	35	36			
Reference													
													CHKD. _____ APPR. _____ DATE _____

Removals

90-02

PH-D-502

MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

SHEET  
27

Location and Position	Removal of Asphalt Pavement [150mm],[Full Depth]	Removal of Asphalt Pavement [50 mm],[Full Depth ]	Removal of Asphalt Pavement, Partial Depth [0-50mm]	Removal of Asphalt Curb and Gutter [Roadway]	Removal of Concrete Curb and Gutter [Roadway]	Removal of Maintenance Holes, Catchbasins, Ditch Inlets and Valve Chambers	Removal of Pipe Culverts and Sewers [CSP]	Removal of Cable Guide Rail [3 CGR]	Removal of Anchor Blocks	Removal of Steel Beam Guide Rail [Single Rail ] [Without Channel]			References
Sub - Totals Brought Forward:	9655	7648	70	2227	897	22	518	423	8	49			
20+548 Rt - CB						1							
20+548 Rt - Sewer Pipe							7						
21+027 - CL Culvert							29						
21+316 Lt. Lau-Ren East Junc	251												
21+533 Rt - Lance Rd West Junc.	292												
21+960 - CL Culvert							27						
22+047 - CL Culvert							27						
22+252 Rt - Lance Rd East Junc.	250												
22+501 Lt - McKinley Dr. W. Junc	145												
22+623 - CL Culvert							26						
22+776 - CL Culvert							31						
23+506 Lt. - McKinley Dr. East Junc.	424												
23+573 Rt - Allan Rd.	249												
23+573 Rt - Allan Rd Culvert							18						
23+599 - CL Culvert							25						
23+847 to 23+923 (Frost Heave)	879												
23+845 Rt - Ent. Culvert							10						
23+890 Rt. - Ent. Culvert							24						
23+930 Rt. - Ent. Culvert							18						
23+892 Rt - Private Ents		131											
23+926 Rt - Private Ents		140											
24+189 Rt - Allan Rd East Junc.	250												
24+960 LT - Comm Ents	544												
24+970 to 25+002 Lt - Island					64								
25+334 Lt - Moore's Rd	380												
25+006 Lt - Comm Ents	529												
25+011 to 25+025 Lt - Island					28								
Sub - Totals Carried Forward:	13848	7919	70	2227	989	23	760	423	8	49			
	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)			
TOTALS													
UNIT	m2	m2	m2	m	m	each	m	m	each	m			
ITEM No.		28	29	30	31	32	33	34	35	36			
Reference													
													CHKD. _____ APPR. _____ DATE _____

Removals



**W.P. No. 392-98-00**  
**Contract No. 2009-5002**

Location and Position	Rip Rap	(+ Geotextile) [Class II],[Non-Woven], [75-150 UN],[1]												References
Sub - Totals Brought Forward:														
Hwy 17														
Township of Rolph														
10+330 Centerline Culvert	7	12												
12+224 Centerline Culvert	7	12												
12+632 Centerline Culvert	10	16												
15+105 Centerline Culvert	7	12												
21+027 Centerline Culvert	8	14												
21+960 Centerline Culvert	7	12												
22+047 Centerline Culvert	7	12												
22+623 Centerline Culvert	7	12												
22+776 Centerline Culvert	21	28												
25+184 Centerline Culvert	8	14												

Rip Rap



QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00

Contract No. 2009-5002

Location and Position	Pavement Marking [Solid] [Yellow , 10 cm]	Pavement Marking [3,6,3] [Yellow, 10 cm Rt]	Pavement Marking [3,6,3] [Yellow , 10 cm - CL ]	Pavement Marking [3,6,3] [Yellow, 10 cm Lt]	Pavement Marking [Solid ] [White, 10 cm]	Pavement Marking [3,3,3] [White , 20 cm Rt]	Pavement Marking [3,3,3] [White, 20 cm - Lt ]	Pavement Marking [Solid ] [White , 20 cm - Rt]	Pavement Marking [Solid ] [White , 20 cm Lt]	Pavement Marking [3,9,3] [White , 10 cm Rt]	Pavement Marking [3,9,3] [White , 10 cm Lt]	Pavement Marking [3,3,3] [White , 10 cm Rt]	References
Sub - Totals Brought Forward:													
Hwy 17 - Twp of Head													
28+250 to 28+440	380				380								
28+440 to 28+880	440			147	880								
28+880 to 29+910	2060				2060								
29+910 to 30+200	290			97	580								
30+200 to 30+450	500				500								
30+450 to 30+780	330	110			660								
30+780 to 31+173.5			132		788								
Hwy 17 - Twp Rolph													
10+009.8 - 10+020			4		22								
10+020 - 10+425	405			135	810								
10+425 - 10+672	494				494								
10+672 - 10+685	26				13								
10+685 - 10+706	21			7	21								
10+706 - 11+020	314			105	628								
11+020 - 11+350	330	110			660								
11+350 - 11+610	260			87	520								
11+610 - 11+754	288				288								
11+754 - 12+130	376	126			752								
121+130 - 12+544	828				828								
12+544 - 12+581	74				37								
Raymond Rd - West Junc - 12+570 Rt	10												
12+581 - 12+688	214				214								
12+688 - 12+708	40				20								
Raymond Rd - East Junc - 12+705 Rt	10												
12+708 - 13+160	904				904								
Sub - Totals Carried Forward:	8594	346	136	578	12059	0	0	0	0	0	0	0	
	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	
TOTALS													
UNIT	m	m	m	m	m	m	m	m	m	m	m	m	
ITEM No.		38											
Reference													
													CHKD. _____ APPR. _____ DATE _____

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MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

SHEET  
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Location and Position	Pavement Marking [3,3,3] [White , 10 cm Lt]	Pavement Marking, Durable [Solid, White, 60 cm ]	Pavement Marking Symbols, Durable [Arrow ]										References
Sub - Totals Brought Forward:													
Hwy 17 - Twp of Head													
28+250 to 28+440													
28+440 to 28+880													
28+880 to 29+910													
29+910 to 30+200													
30+200 to 30+450													
30+450 to 30+780													
30+780 to 31+173.5													
Hwy 17 - Twp Rolph													
10+009.8 - 10+020													
10+020 - 10+425													
10+425 - 10+672													
10+672 - 10+685													
10+685 - 10+706													
10+706 - 11+020													
11+020 - 11+350													
11+350 - 11+610													
11+610 - 11+754													
11+754 - 12+130													
121+130 - 12+544													
12+544 - 12+581													
Raymond Rd - West Junc - 12+570 Rt		60											
12+581 - 12+688													
12+688 - 12+708													
Raymond Rd - East Junc - 12+705 Rt		60											
12+708 - 13+160													
Sub - Totals Carried Forward:	0	120	0										
	(P)	(P)	(P)										
TOTALS													
UNIT	m	m	each										
ITEM No.		39	40										
Reference													
													CHKD. _____ APPR. _____ DATE _____

Pavement Marking

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

Location and Position	<i>Pavement Marking [Solid] [Yellow , 10 cm]</i>	<i>Pavement Marking [3,6,3] [Yellow, 10 cm Rt]</i>	<i>Pavement Marking [3,6,3] [Yellow , 10 cm - CL ]</i>	<i>Pavement Marking [3,6,3] [Yellow, 10 cm Lt]</i>	<i>Pavement Marking [Solid ] [White, 10 cm]</i>	<i>Pavement Marking [3,3,3] [White , 20 cm Rt]</i>	<i>Pavement Marking [3,3,3] [White, 20 cm - Lt ]</i>	<i>Pavement Marking [Solid ] [White , 20 cm - Rt]</i>	<i>Pavement Marking [Solid ] [White , 20 cm Lt]</i>	<i>Pavement Marking [3,9,3] [White , 10 cm Rt]</i>	<i>Pavement Marking [3,9,3] [White , 10 cm Lt]</i>	<i>Pavement Marking [3,3,3] [White , 10 cm Rt]</i>	References
Sub - Totals Brought Forward:	8594	346	136	578	12059	0	0	0	0	0	0	0	
13+160 - 13+220	120				120							30	
13+209 Rt													
13+220 - 13+266	92				138								
13+239 Rt													
13+266 - 13+283	34				28								
13+263 Rt													
13+283 - 13+298 - Renfrew County Intersection													
Moore Lake Rd - 13+291 Rt	31												
Renfrew County Rd - 13+297 Lt	33												
13+298 - 13+318	40				20								
13+318 - 14+300	1964				1964								
14+300 - 14+480	180	60			360								
14+480 - 14+600			40		240								
14+600 - 14+910	310			104	620								
14+910 - 15+230	320	107			640								
15+230 - 15+590			120		720								
15+590 - 15+675	85			29	170								
15+675 - 17+080	2810				2810								
17+080 - 17+110	60				30				60				
17+110 - 17+315	410				205	205			410				
17+315 - 17+370	110				110						14		
17+370 - 17+590	220	74			440						55		
17+590 - 17+650	60	20			120						15	30	
17+650 - 17+686	36	12			36						9		
17+686 - 17+720	34	12			68						9		
17+720 - 17+899	358				358						45		
17+899 - 17+934	70				35						9		
Cutler Lane - 17+915 Lt	28												
Sub - Totals Carried Forward:	15999	631	296	711	21291	0	205	0	470	0	156	60	
	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	
TOTALS													
UNIT	m	m	m	m	m	m	m	m	m	m	m	m	
ITEM No.		38											
Reference													
													CHKD. _____ APPR. _____ DATE _____

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MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

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Location and Position	<div>Pavement Marking [3,3,3] [White , 10 cm Lt]</div>	<div>Pavement Marking, Durable [Solid, White, 60 cm ]</div>	<div>Pavement Marking Symbols, Durable [Arrow ]</div>										References
Sub - Totals Brought Forward:	0	120	0										
13+160 - 13+220													
13+209 Rt			1										
13+220 - 13+266													
13+239 Rt			1										
13+266 - 13+283													
13+263 Rt			1										
13+283 - 13+298 - Renfrew County Intersection													
Moore Lake Rd - 13+291 Rt		60											
Renfrew County Rd - 13+297 Lt		90											
13+298 - 13+318													
13+318 - 14+300													
14+300 - 14+480													
14+480 - 14+600													
14+600 - 14+910													
14+910 - 15+230													
15+230 - 15+590													
15+590 - 15+675													
15+675 - 17+080													
17+080 - 17+110													
17+110 - 17+315													
17+315 - 17+370													
17+370 - 17+590													
17+590 - 17+650													
17+650 - 17+686													
17+686 - 17+720													
17+720 - 17+899													
17+899 - 17+934													
Cutler Lane - 17+915 Lt		60											
Sub - Totals Carried Forward:	0	330	3										
<div>(P) (P) (P)</div>													
TOTALS													
UNIT	m	m	each										
ITEM No.		39	40										
Reference													
													CHKD. _____ APPR. _____ DATE _____

Pavement Marking

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00

Contract No. 2009-5002

Location and Position	<div>Pavement Marking [Solid] [Yellow , 10 cm]</div>	<div>Pavement Marking [3,6,3] [Yellow, 10 cm Rt]</div>	<div>Pavement Marking [3,6,3] [Yellow , 10 cm - CL ]</div>	<div>Pavement Marking [3,6,3] [Yellow, 10 cm Lt]</div>	<div>Pavement Marking [Solid ] [White, 10 cm]</div>	<div>Pavement Marking [3,3,3] [White , 20 cm Rt]</div>	<div>Pavement Marking [3,3,3] [White, 20 cm - Lt ]</div>	<div>Pavement Marking [Solid ] [White , 20 cm - Rt]</div>	<div>Pavement Marking [Solid ] [White , 20 cm Lt]</div>	<div>Pavement Marking [3,9,3] [White , 10 cm Rt]</div>	<div>Pavement Marking [3,9,3] [White , 10 cm Lt]</div>	<div>Pavement Marking [3,3,3] [White , 10 cm Rt]</div>	References
Sub - Totals Brought Forward:	15999	631	296	711	21291	0	205	0	470	0	156	60	
17+934 - 17+990	112				112						14		
17+990 - 18+044	108				108						14		
18+044 - 18+081	74				37						10		
Meilleurs Rd W. Junc - 18+064 Rt	16												
18+081 - 18+370	578				578						73		
18+370 - 18+399	29	10			58						8		
18+399 - 18+437	38	13			38						10		
Stewarts Lane W. Junc.- 18+416 Lt	21												
18+437 - 18+744	307	103			614						77		
18+744 - 18+792	48	16			48						12		
Stewarts Lane E. Junc.- 18+769 Lt	25												
18+792 - 18+827	35	12			70						9		
18+827 - 18+972	145	49			290						37	73	
18+972 - 19+015	43	15			86						11		
19+015 - 19+300	570				570						72		
19+300 - 19+600	600				600								
19+600 - 19+625	50				50							13	
19+625 - 19+660	35			12	70							18	
19+660 - 19+697	37			13	37								
Meilleurs Rd. East Jun. 19+679 Rt	20												
19+697 - 19+895	198			66	396								
19+895 - 19+926	31			11	31								
Lau-Ren Rd. W Junc - 19+903 Lt	26												
19+926 - 19+986	60			20	120								
19+986 - 20+100	114			38	228								
20+100 - 20+485	385			129	770					97			
20+485 - 20+950	930				930					117			
20+950 - 21+165	215			72	430					54			
Sub - Totals Carried Forward:	20849	849	296	1072	27562	0	205	0	470	268	503	164	
	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	
TOTALS													
UNIT	m	m	m	m	m	m	m	m	m	m	m	m	
ITEM No.		38											
Reference													
													CHKD. _____ APPR. _____ DATE _____

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MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

SHEET  
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Location and Position	<div>Pavement Marking [3,3,3] [White , 10 cm Lt]</div>	<div>Pavement Marking, Durable [Solid, White, 60 cm ]</div>	<div>Pavement Marking Symbols, Durable [Arrow ]</div>										References
Sub - Totals Brought Forward:	0	330	3										
17+934 - 17+990	28												
17+990 - 18+044													
18+044 - 18+081													
Meilleurs Rd W. Junc - 18+064 Rt													
18+081 - 18+370		60											
18+370 - 18+399													
18+399 - 18+437													
Stewarts Lane W. Junc.- 18+416 Lt		60											
18+437 - 18+744													
18+744 - 18+792													
Stewarts Lane E. Junc.- 18+769 Lt		60											
18+792 - 18+827													
18+827 - 18+972													
18+972 - 19+015													
19+015 - 19+300													
19+300 - 19+600													
19+600 - 19+625													
19+625 - 19+660													
19+660 - 19+697													
Meilleurs Rd. East Jun. 19+679 Rt		60											
19+697 - 19+895													
19+895 - 19+926													
Lau-Ren Rd. W Junc - 19+903 Lt		60											
19+926 - 19+986	30												
19+986 - 20+100													
20+100 - 20+485													
20+485 - 20+950													
20+950 - 21+165													
Sub - Totals Carried Forward:	58	630	3										
<div>(P) (P) (P)</div>													
TOTALS													
UNIT	m	m	each										
ITEM No.		39	40										
Reference													
													CHKD. _____ APPR. _____ DATE _____

Pavement Marking

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MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

SHEET  
36

Location and Position	<div>Pavement Marking [Solid] [Yellow , 10 cm]</div>	<div>Pavement Marking [3,6,3] [Yellow, 10 cm Rt]</div>	<div>Pavement Marking [3,6,3] [Yellow , 10 cm - CL ]</div>	<div>Pavement Marking [3,6,3] [Yellow, 10 cm Lt]</div>	<div>Pavement Marking [Solid ] [White, 10 cm]</div>	<div>Pavement Marking [3,3,3] [White , 20 cm Rt]</div>	<div>Pavement Marking [3,3,3] [White, 20 cm - Lt ]</div>	<div>Pavement Marking [Solid ] [White , 20 cm - Rt]</div>	<div>Pavement Marking [Solid ] [White , 20 cm Lt]</div>	<div>Pavement Marking [3,9,3] [White , 10 cm Rt]</div>	<div>Pavement Marking [3,9,3] [White , 10 cm Lt]</div>	<div>Pavement Marking [3,3,3] [White , 10 cm Rt]</div>	References
Sub - Totals Brought Forward:	20849	849	296	1072	27562	0	205	0	470	268	503	164	
21+165 - 21+250	85			29	85	85		170					
21+250 - 21+296	92				46	46		92					
21+296 - 21+335	78					39		78					
Lau-Ren Rd. E. Jun- 21+316 Lt	19												
21+335 - 21+340	10				5	5		10					
21+340 - 21+370	60				30			60					
21+370 - 21+400	60				60								
21+400 - 21+513	113	38			226								
21+513 - 21+552	39	13			39								
Lance Rd - W. Junc 21+533	23												
21+552 - 21+856	304	102			608								
21+856 - 22+025			57		338								
22+025 - 22+233	208			70	416								
22+233 - 22+268	35			12	35								
Lance Rd - E. Junc - 22+252 Rt	21												
22+268 - 22+325	57			19	114								
22+325 - 22+490	330				330								
22+490 - 22+521	62				31								
Mc-Kinley Drive W. Junc - 22+501 Lt	11												
22+521 - 22+760	478				478								
22+760 - 22+970	210			70	420								
22+970 - 23+225	510				510								
23+225 - 23+486	261	87			522								
23+486 - 23+530	44	15			44								
Mc-Kinley Drive E. Junc - 23+506 Lt	19												
23+530 - 23+550	20	7			40								
23+550 - 23+560	20				20								
23+560 - 23+585	50				25								
Sub - Totals Carried Forward:	24068	1111	353	1272	31984	175	205	410	470	268	503	164	
	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	
TOTALS													
UNIT	m	m	m	m	m	m	m	m	m	m	m	m	
ITEM No.		38											
Reference													
													CHKD. _____ APPR. _____ DATE _____

Pavement Marking

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MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

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Location and Position	<div>Pavement Marking [3,3,3] [White , 10 cm Lt]</div>	<div>Pavement Marking, Durable [Solid, White, 60 cm ]</div>	<div>Pavement Marking Symbols, Durable [Arrow ]</div>										References
Sub - Totals Brought Forward:	58	630	3										
21+165 - 21+250													
21+250 - 21+296													
21+296 - 21+335													
Lau-Ren Rd. E. Jun- 21+316 Lt													
		60											
21+335 - 21+340													
21+340 - 21+370													
21+370 - 21+400													
21+400 - 21+513													
21+513 - 21+552													
Lance Rd - W. Junc 21+533		60											
21+552 - 21+856													
21+856 - 22+025													
22+025 - 22+233													
22+233 - 22+268													
Lance Rd - E. Junc - 22+252 Rt		60											
22+268 - 22+325													
22+325 - 22+490													
22+490 - 22+521													
Mc-Kinley Drive W. Junc - 22+501 Lt		60											
22+521 - 22+760													
22+760 - 22+970													
22+970 - 23+225													
23+225 - 23+486													
23+486 - 23+530													
Mc-Kinley Drive E. Junc - 23+506 Lt		60											
23+530 - 23+550	10												
23+550 - 23+560	5												
23+560 - 23+585	13												
Sub - Totals Carried Forward:	86	930	3										
	(P)	(P)	(P)										
TOTALS													
UNIT	m	m	each										
ITEM No.		39	40										
Reference													
													CHKD. _____ APPR. _____ DATE _____

Pavement Marking



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MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

SHEET  
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Location and Position	<div>Pavement Marking [Solid] [Yellow , 10 cm]</div>	<div>Pavement Marking [3,6,3] [Yellow, 10 cm Rt]</div>	<div>Pavement Marking [3,6,3] [Yellow , 10 cm - CL ]</div>	<div>Pavement Marking [3,6,3] [Yellow, 10 cm Lt]</div>	<div>Pavement Marking [Solid ] [White, 10 cm]</div>	<div>Pavement Marking [3,3,3] [White , 20 cm Rt]</div>	<div>Pavement Marking [3,3,3] [White, 20 cm - Lt ]</div>	<div>Pavement Marking [Solid ] [White , 20 cm - Rt]</div>	<div>Pavement Marking [Solid ] [White , 20 cm Lt]</div>	<div>Pavement Marking [3,9,3] [White , 10 cm Rt]</div>	<div>Pavement Marking [3,9,3] [White , 10 cm Lt]</div>	<div>Pavement Marking [3,3,3] [White , 10 cm Rt]</div>	References
Sub - Totals Brought Forward:	24068	1111	353	1272	31984	175	205	410	470	268	503	164	
Allan Rd - W. Junc - 23+573 Rt	18												
23+585 - 23+595	20				10								
23+595 - 23+675	160				160								
23+675 - 23+925	250			84	500								
23+925 - 24+175	500				500								
24+175 - 24+207	32	11			32								
Allan Rd. East Junc - 24+189 Rt	18												
24+207 - 24+475	268	90			536								
24+475 - 25+250			259		1550								
25+250 - 25+314	128				128							32	
25+314 - 25+356 - Brouse Rd Ints													
Brouse Rd - 25+330 Rt	29												
Moore's Rd - 25+334 Lt	31												
25+356 - 25+410	108				108							27	
25+410 - 25+500	180				180								
25+500 - 25+726		76			552								
Pavement Marking - Winter Shut Down													
Twp of Rolph													
10+326 - 10+334	8			3	16								
11+340 - 11+348	8			3	16								
12+000 - 12+130	130	44			260								
12+130 - 12+300	340				340								
12+620 - 12+636	16				16								
13+435 - 13+460	50				25								
15+101 - 15+109	8	3			16								
16+379 - 16+387	16				16								
Sub - Totals Carried Forward:	26386	1335	612	1362	36945	175	205	410	470	268	503	223	
	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	(P)	
TOTALS													
UNIT	m	m	m	m	m	m	m	m	m	m	m	m	
ITEM No.		38											
Reference													
													CHKD. _____ APPR. _____ DATE _____

Pavement Marking

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MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

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Location and Position	<div>Pavement Marking [3,3,3] [White , 10 cm Lt]</div>	<div>Pavement Marking, Durable [Solid, White, 60 cm ]</div>	<div>Pavement Marking Symbols, Durable [Arrow ]</div>										References
Sub - Totals Brought Forward:	86	930	3										
Allan Rd - W. Junc - 23+573 Rt		60											
23+585 - 23+595													
23+595 - 23+675													
23+675 - 23+925													
23+925 - 24+175													
24+175 - 24+207													
Allan Rd. East Junc - 24+189 Rt		60											
24+207 - 24+475													
24+475 - 25+250													
25+250 - 25+314													
25+314 - 25+356 - Brouse Rd Ints													
Brouse Rd - 25+330 Rt		60											
Moore's Rd - 25+334 Lt		60											
25+356 - 25+410	27												
25+410 - 25+500													
25+500 - 25+726													
Pavement Marking - Winter Shut Down													
Twp of Rolph													
10+326 - 10+334													
11+340 - 11+348													
12+000 - 12+130													
12+130 - 12+300													
12+620 - 12+636													
13+435 - 13+460													
15+101 - 15+109													
16+379 - 16+387													
Sub - Totals Carried Forward:	113	1170	3										
<div>(P) (P) (P)</div>													
TOTALS													
UNIT	m	m	each										
ITEM No.		39	40										
Reference													
													CHKD. _____ APPR. _____ DATE _____

Pavement Marking



**W.P. No. 392-98-00**  
**Contract No. 2009-5002**

[illegible]

## QUANTITIES - MISCELLANEOUS 1

**W.P. No. 392-98-00**

**Contract No. 2009-5002**

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[illegible]

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MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

SHEET  
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QUANTITIES - MISCELLANEOUS 1													
W.P. No. 392-98-00 Contract No. 2009-5002													
SHEET 43													
Location and Position	Cable Guide Rail [3 CGR]	Adjust Cable Guide Rail	Anchor Blocks	Single Rail Steel Beam Guide Rail [912.40]	Steel Beam Energy Attenuating Terminal [End Treatment]								References
Sub - Totals Brought Forward:													
Twp of Head													
28+484 - 28+750 Lt		266											
29+509 - 30+180 Lt				671	2								
30+435 - 30+620 Lt		185											
30+620 - 30+746 Lt	126		2										
30+746 - 30+801 Lt		55											
30+801 - 30+905 Lt	104		2										
30+900 - 31+056 Rt		156											
30+905 - 30+952		47											
30+952 - 31+061 Lt	109		2										
Twp of Rolph													
12+221 - 12+496 Lt	275		2										
12+308 - 12+410 Rt		102											
13+447 - 13+508 Lt		61											
13+777 - 13+898 Lt		121											
14+801 - 14+984 Lt		183											
16+266 - 16+380 Rt		114											
17+799 - 17+868 Rt		69											
17+815 - 17+897 Lt		82											
Sub - Totals Carried Forward:	614	1441	8	671	2								
(P) (P) (P) (P) (P)													
TOTALS													
UNIT	m	m	each	m	each								
ITEM No.	43	44	45	46	47								
Reference													
													CHKD. _____ APPR. _____ DATE _____

Guide Rails

**W.P. No. 392-98-00**  
**Contract No. 2009-5002**

[illegible]

90-02

PH-D-502

MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

SHEET  
45

Location and Position	Straw Bale Flow Checks	Light Duty Silt Fence Barriers	Removal of Electrical Equipment [Traffic Counting Station]	Prefabricated Loops	Traffic Counting Station [Type 1] [MOTD - 2901.0210]								References
Sub - Totals Brought Forward:													
Hwy 17													
Twp of Head													
To be placed at the end of dich clean out locations	7												
Total of 7 locations													
Twp of Rolph	34												
To be placed at the end of dich clean out locations													
Total of 34 locations													
ICS 17-335			100 %	4	1								
Located approx. 0.6 km. E of Brouse Rd													
Township of Rolph													
Centreline Culvert													
Sta. 10+330 Rt of Culvert		30											
Sta. 10+330 Lt of Culvert		30											
Centreline Culvert													
Sta. 11+344 Rt of Culvert		30											
Sta. 11+344 Lt of Culvert		30											
Centreline Culvert													
Sta. 12+224 Rt of Culvert		30											
Sta. 12+224 Lt of Culvert		30											
Raymond Rd. West Junc. Sta. 12+570 Rt													
Right Side of culvert		8											
Left Side of culvert		8											
Centreline Culvert													
Sta. 12+632 Rt of Culvert		30											
Sta. 12+632 Lt of Culvert		30											
Raymond Rd. East Junc. Sta. 12+705 Rt													
Right Side of culvert		8											
Sub - Totals Carried Forward:	41	264	100 %	4	1								
TOTALS	(P)	(P)	(P)	(P)									
UNIT	each	m	LS	each	each								
ITEM No.	48	49	50	51	52								
Reference													
													CHKD. _____ APPR. _____ DATE _____

Straw Bale Flow Checks, Light Duty Silt Fence Barriers and Traffic Counter Station



90-02

PH-D-502

MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

SHEET  
46

Location and Position	Straw Bale Flow Checks	Light Duty Silt Fence Barriers	Removal of Electrical Equipment [Traffic Counting Station]	Prefabricated Loops	Traffic Counting Station [Type 1] [MOTD - 2901.0210]								References
Sub - Totals Brought Forward:	41	264	100 %	4	1								
Left Side of culvert		8											
Centreline Culvert													
Sta. 15+105 Rt of Culvert		30											
Sta. 15+105 Lt of Culvert		30											
Centreline Culvert													
Sta. 16+383 Rt of Culvert		10											
Sta. 16+383 Lt of Culvert		10											
Centreline Culvert													
Sta. 16+719 Rt of Culvert		30											
Sta. 16+719 Lt of Culvert		30											
Centreline Culvert													
Sta. 16+934 Rt of Culvert		30											
Sta. 16+934 Lt of Culvert		30											
Meilleurs Rd. Sta. 18+605 Rt													
Rt Side of Culvert		8											
Lt Side of Culvert		8											
Centreline Culvert													
Sta. 19+508 Rt of Culvert		10											
Sta. 19+508 Lt of Culvert		10											
Pinecrest Rd. Sta. 19+903 Lt													
Rt Side of Culvert		8											
Lt Side of Culvert		8											
Centreline Culvert													
Sta. 20+044 Rt of Culvert		10											
Sta. 20+044 Lt of Culvert		10											
Centreline Culvert													
Sta. 21+027 Rt of Culvert		30											
Sta. 21+027 Lt of Culvert		30											
Sub - Totals Carried Forward:	41	604	100 %	4	1								
	(P)	(P)	(P)	(P)									
TOTALS													
UNIT	each	m	LS	each	each								
ITEM No.	48	49	50	51	52								
Reference													
													CHKD. _____ APPR. _____ DATE _____

Straw Bale Flow Checks, Light Duty Silt Fence Barriers and Traffic Counter Station

90-02

PH-D-502

MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - MISCELLANEOUS 1

W.P. No. 392-98-00  
Contract No. 2009-5002

SHEET  
47

Location and Position	Straw Bale Flow Checks	Light Duty Silt Fence Barriers	Removal of Electrical Equipment [Traffic Counting Station]	Prefabricated Loops	Traffic Counting Station [Type 1] [MOTD - 2901.0210]								References
Sub - Totals Brought Forward:	41	604	100 %	4	1								
Centreline Culvert													
Sta. 21+960 Rt of Culvert		10											
Sta. 21+960 Lt of Culvert		10											
Centreline Culvert													
Sta. 22+047 Rt of Culvert		10											
Sta. 22+047 Lt of Culvert		10											
Centreline Culvert													
Sta. 22+623 Rt of Culvert		30											
Sta. 22+623 Lt of Culvert		30											
Centreline Culvert													
Sta. 22+776 Rt of Culvert		12											
Sta. 22+776 Lt of Culvert		12											
Allan Rd. Sta. 23+574 Rt													
Rt Side of Culvert		8											
Lt Side of Culvert		8											
Centreline Culvert													
Sta. 23+599 Rt of Culvert		30											
Sta. 23+599 Lt of Culvert		30											
Frost Heave													
Station 23+824 to 23+946 Rt and Lt.		246											
Station 23+875 Rt - CL ditch Rt and Lt	2												
Station 23+920 Rt - CL ditch Rt and Lt	2												
Centreline Culvert													
Sta. 25+187 Rt of Culvert		10											
Sta. 25+187 Lt of Culvert		10											
Sub - Totals Carried Forward:	45	1070	100 %	4	1								
(P) (P) (P) (P)													
TOTALS	45	1,070	100 %	4	1								
UNIT	each	m	LS	each	each								
ITEM No.	48	49	50	51	52								
Reference													
													CHKD. _____
													APPR. _____
													DATE _____

Straw Bale Flow Checks, Light Duty Silt Fence Barriers and Traffic Counter Station

**Site No: 29-322**  
**Drawing No: 2**

**W.P. No. 392-98-00**  
**Contract No. 2009-5002**

[illegible]

**Site No: 29-323**  
**Drawing No: 2**

**W.P. No. 392-98-00**  
**Contract No. 2009-5002**

[illegible]

**Site No: 29-324**  
**Drawing No: 2**

**W.P. No. 392-98-00**  
**Contract No. 2009-5002**

[illegible]

90-02

PH-D-505

MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - HOT MIX AND GRANULAR															W.P. No. 392-98-00		SHEET	
															Contract No. 2009-5002		51	
Description	Cold In-Place Recycled Mix	Cold In-Place Recycled Expanded Asphalt Mix														References		
Sub - Totals Brought Forward:																		
Twp of Head -																		
28+250 - 28+600	2555	2555																
28+600 - 28+950	2555	2555																
28+950 - 29+300	2702	2702																
29+300 - 29+650	2818	2818																
29+650 - 30+000	2615	2615																
30+000 30+350	2555	2555																
30+350 - 30+700	2555	2555																
30+700 - 31+050	2555	2555																
31+050 - 31+173.61 - End of Twp of Head	903	903																
Twp of Rolph																		
10+009.81 - 10+360	2621	2621																
10+360 - 10+710	2808	2808																
10+710 - 11+060	2569	2569																
11+060 - 11+410	2555	2555																
11+410 - 11+760	2665	2665																
11+760 - 12+000	1752	1752																
12+300 - 12+460	1263	1263																
12+460 - 12+810	2682	2682																
Sub - Totals Carried Forward:	40728	40728																
(P) (P)																		
TOTALS																		
UNIT	m2	m2																
ITEM No.	65	66																
Reference																		
Remarks:																CHKD. _____		
																APPR. _____		
																DATE _____		

Cold In-Place Recycled Mix

Expanded Asphalt Mix

90-02

PH-D-505

MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - HOT MIX AND GRANULAR															W.P. No. 392-98-00		SHEET
															Contract No. 2009-5002		52
Description	Cold In-Place Recycled Mix	Cold In-Place Recycled Expanded Asphalt Mix														References	
Sub - Totals Brought Forward:	40728	40728															
12+810 - 13+160	2767	2767															
13+160 - 13+510	2687	2687															
13+510 - 13+860	2818	2818															
13+860 - 14+210	2663	2663															
14+210 - 14+560	2625	2625															
14+560 - 14+910	2617	2617															
14+910 - 15+260	2694	2694															
15+260 - 15+610	2555	2555															
15+610 - 15+960	2555	2555															
15+960 - 16+310	2605	2605															
16+310 - 16+660	2818	2818															
16+660 - 17+010	2679	2679															
17+010 - 17+360	3465	3465															
17+360 - 17+710	3780	3780															
17+710 - 18+060	3718	3718															
18+060 - 18+410	3911	3911															
18+410 - 18+760	3780	3780															
18+760 - 19+110	3780	3780															
19+110 - 19+460	3373	3373															
Sub - Totals Carried Forward:	98618	98618															
(P) (P)																	
TOTALS																	
UNIT	m2	m2															
ITEM No.	65	66															
Reference																	
Remarks:																CHKD. _____	
																APPR. _____	
																DATE _____	

Cold In-Place Recycled Mix

Recycled Mix

Cold In-Place Recycled Expanded Asphalt Mix

90-02

PH-D-505

MINISTRY OF TRANSPORTATION - ONTARIO

QUANTITIES - HOT MIX AND GRANULAR															W.P. No. 392-98-00		SHEET
															Contract No. 2009-5002		53
Description	Cold In-Place Recycled Mix	Cold In-Place Recycled Expanded Asphalt Mix														References	
Sub - Totals Brought Forward:	98618	98618															
19+460 - 19+810	2603	2603															
19+810 - 20+160	2840	2840															
20+160 - 20+510	3780	3780															
20+510 - 20+860	3780	3780															
20+860 - 21+210	3780	3780															
21+210 - 21+560	3010	3010															
21+560 - 21+910	2652	2652															
21+910 - 22+260	2555	2555															
22+260 - 22+610	2624	2624															
22+610 - 22+960	2708	2708															
22+960 - 23+310	2555	2555															
23+310 - 23+660	2599	2599															
23+660 - 24+010	2555	2555															
24+010 - 24+360	2555	2555															
24+360 - 24+710	2555	2555															
24+710 - 25+060	2555	2555															
25+060 - 25+410	2555	2555															
25+410 - 25+725.78	2306	2306															
Sub - Totals Carried Forward:	149185	149185															
	(P)	(P)															
TOTALS	149,185	149,185															
UNIT	m2	m2															
ITEM No.	65	66															
Reference																	
Remarks:																CHKD. _____	
																APPR. _____	
																DATE _____	

Cold In-Place Recycled Mix

Recycled Mix

& Cold In-Place Recycled Expanded Asphalt Mix