

Appendix D: Storm Sewer Sizing

Design Storm	IDF Coeff			
	Year	A	B	C
Return Period Storm	5	853.61	4.70	0.77

Sewer Characteristics	Input Value
Inlet Time [min]	10
Manning's "n"	0.013

Description	MH Location			ROAD ROW			Runoff Calculations				Designed Pipe Characteristics									
	From	To	Distance [m]	A [ha]	C	A x C	DI#	A [ha]	C	A x C	Total Ax C	Tin [min]	i [mm/hr]	Q [cms]	Diameter [mm]	Slope [%]	Q_Full [cms]	V_Full [cms]	Pipe Time [min]	Capacity [%]
Sewershed 1	16994	16997	51.8	0.263	0.62	0.163	16995	0.555	0.420	0.233	0.456	10.00	108.922	0.138	375	0.65	0.141	1.281	0.674	98%
	16997	Tie-in to Yonge St Sewer	98.9	0.153	0.79	0.121	16993	0.144	0.420	0.060	0.577	10.67	105.246	0.169	375	1.17	0.190	1.719	0.959	89%
Sewershed 2	17535	17536	13.4	0.021	0.94	0.020	17531	0.206	0.420	0.087	0.533	10.00	108.922	0.161	675	0.95	0.820	2.292	0.097	20%
	17536	Junction (19838)	39.88	0.164	0.92	0.151	17533	0.337	0.420	0.141	0.684	10.10	108.372	0.206	750	3.55	2.100	4.753	0.140	10%
	Junction (19838)	17537	57.22	0.131	0.87	0.114	17293	0.680	0.420	0.286	0.914	10.24	107.594	0.273	750	3.55	2.100	4.753	0.201	13%
	17533	17548	86.315	0.045	0.95	0.043	St. Pauls Cres Sewer tie in to Mapleview STM Sewer at MH17537				0.043	10.00	108.922	0.013	300	0.98	0.096	1.356	1.061	14%
	17548	17543	91	0.114	0.95	0.108		0.151	11.06	103.259	0.043	300	1.05	0.099	1.403	1.081	44%			
	17543	17540	29	0.143	0.95	0.136		0.287	12.14	98.143	0.078	300	1.48	0.118	1.666	0.290	66%			
	17540	17537	31.5	0.070	0.95	0.067		0.353	12.43	96.868	0.095	450	1.56	0.356	2.241	0.234	27%			
	17537	17529	88.4	0.166	0.83	0.138	17580	0.570	0.950	0.542	1.997	12.43	96.868	0.537	825	1.7	1.873	3.505	0.420	29%
	17529	17525	116.6	0.239	0.78	0.185	17530	0.052	0.950	0.050	2.315	12.85	95.085	0.611	825	3.4	2.649	4.956	0.392	23%
	17525	17521	117.6	0.306	0.74	0.226	17528	0.380	0.350	0.133	2.541	13.24	93.490	0.660	825	2.73	2.374	4.441	0.441	28%
	17521	17517	101.1	0.312	0.72	0.225					2.766	13.69	91.766	0.705	900	1.95	2.531	3.978	0.424	28%
	17517	17516	48	0.214	0.76	0.163					2.929	14.11	90.178	0.734	975	0.98	2.221	2.974	0.269	33%
	17516	17513	92	0.120	0.73	0.087					3.016	14.38	89.203	0.747	975	1	2.243	3.005	0.510	33%
17513	OGS(17509)	100.9	0.238	0.72	0.172					3.188	14.89	87.417	0.774	1050	0.56	2.046	2.362	0.712	38%	
OGS(17509)	Outfall1	18.5	0.256	0.72	0.185					3.373	15.60	85.059	0.797	1050	0.7	2.287	2.641	0.117	35%	
Sewershed 3	17468	17471	116				17466	6.329	0.470	2.975	3.831	51.40	39.044	0.416	750	0.66	0.905	2.049	0.943	46%
	17471	19477	123.2	0.321	0.70	0.225	17467	2.040	0.420	0.857	4.056	52.34	38.549	0.434	825	0.54	1.056	1.975	1.040	41%
	19477	17476	118.7	0.323	0.72	0.234				4.290	53.38	38.019	0.453	825	0.83	1.309	2.449	0.808	35%	
	17476	17479	124	0.318	0.73	0.234	19842	3.637	0.550	2.000	6.524	54.19	37.619	0.682	825	0.81	1.293	2.419	0.854	53%
	17479	17482	116.1	0.319	0.72	0.230					6.754	55.05	37.206	0.698	825	0.78	1.269	2.374	0.815	55%
	17482	17486	95.6	0.312	0.76	0.236					6.990	55.86	36.822	0.715	900	0.63	1.438	2.261	0.705	50%
	17486	17490	90.1	0.233	0.75	0.175					7.165	56.56	36.497	0.726	900	1.08	1.883	2.960	0.507	39%
	17490	17493	97.6	0.227	0.75	0.171	17488	0.180	0.300	0.054	7.390	57.07	36.267	0.745	900	1.4	2.144	3.370	0.483	35%
	17493	17499	95.9	0.240	0.74	0.178					7.569	57.55	36.052	0.758	900	1.28	2.050	3.223	0.496	37%
	17499	17501	64.3	0.233	0.75	0.174					7.743	58.05	35.833	0.771	900	1.38	2.129	3.346	0.320	36%
	17501	OGS(17508)	122.1	0.165	0.78	0.129					7.872	58.37	35.694	0.780	1050	0.55	2.027	2.341	0.869	38%
	OGS(17508)	Outfall2	15.8	0.305	0.76	0.233					8.104	59.24	35.322	0.795	1050	0.61	2.135	2.466	0.107	37%

Appendix E: SWM Figures

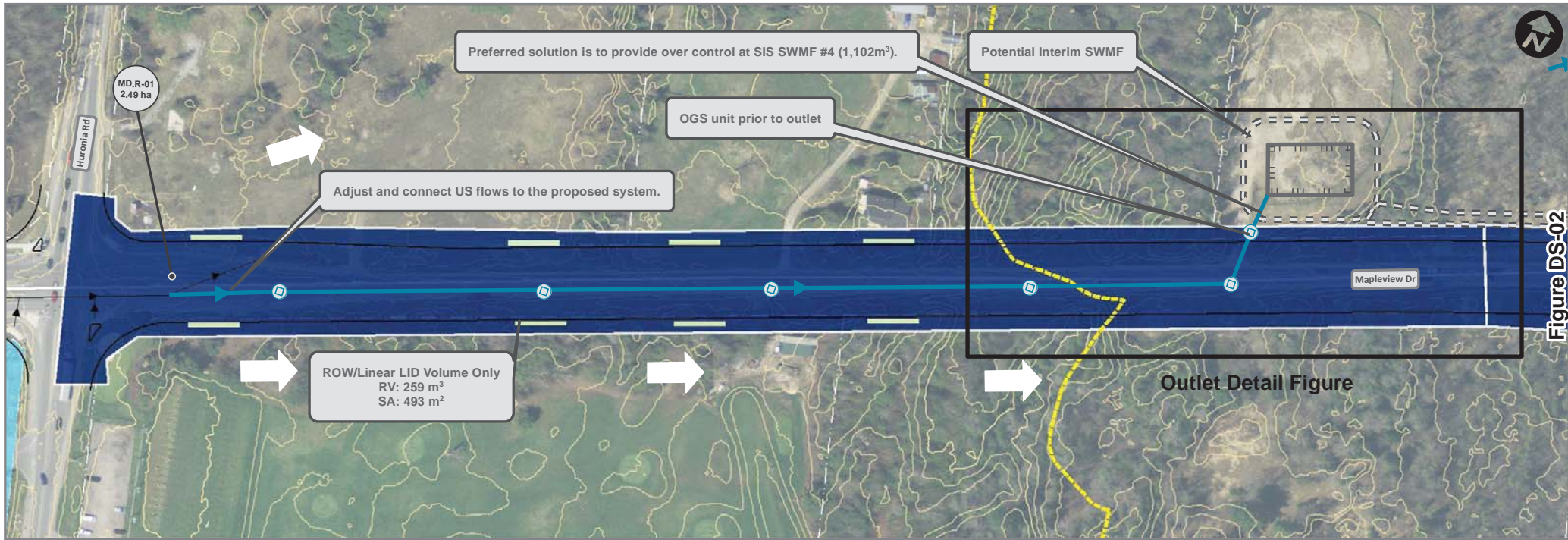
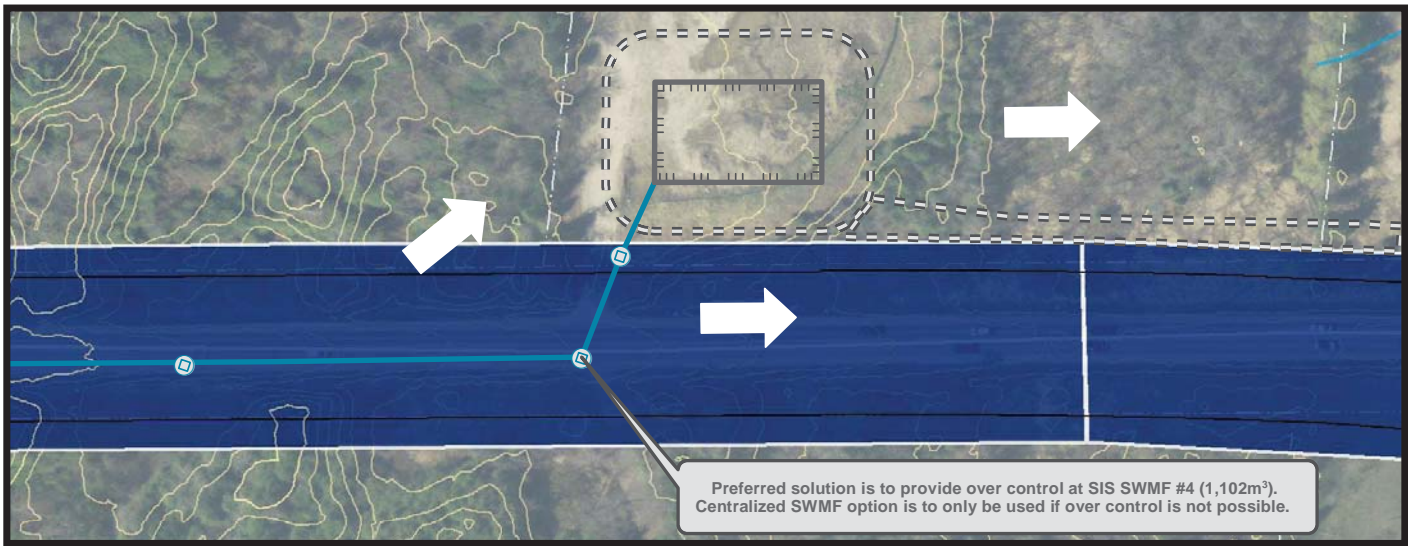


Figure DS-02



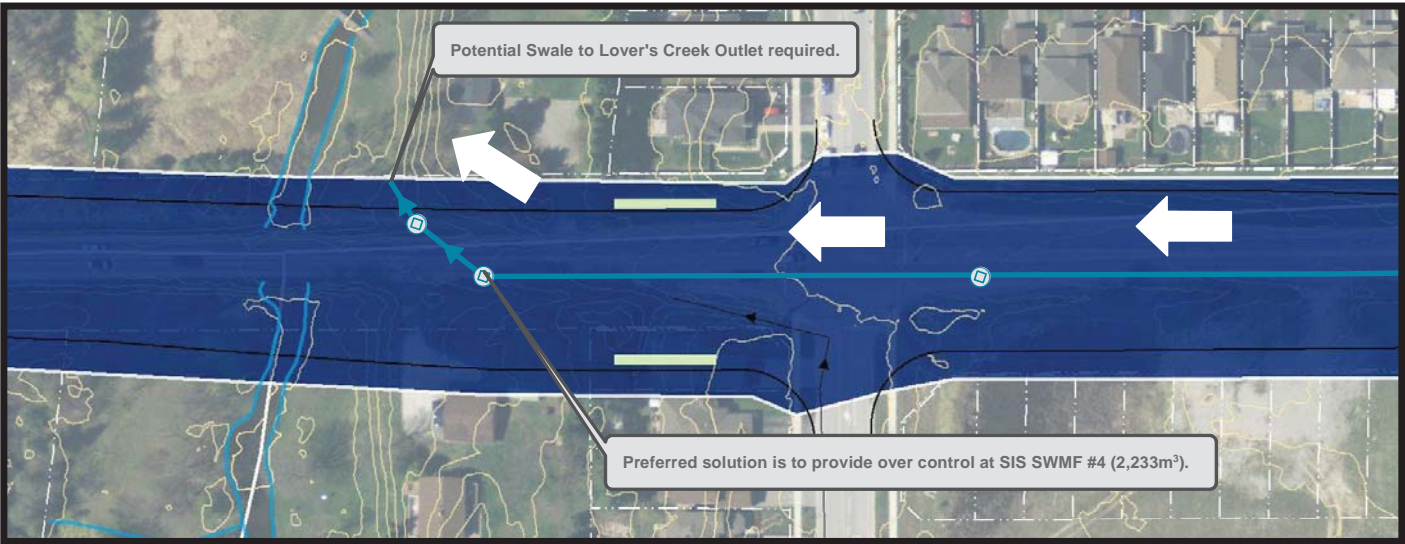
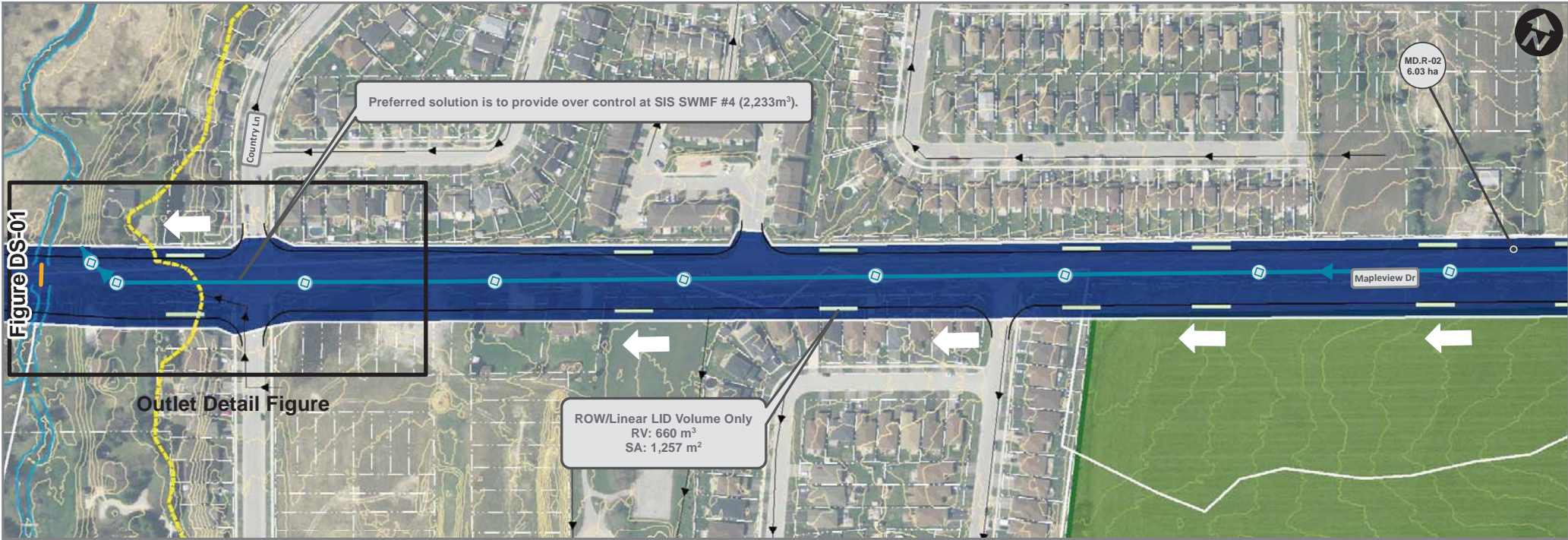
Outlet Detail Figure

Notes:

- Minor system conveyance via storm sewer network with OGS treatment at the outlet to Lovers Creek.
- Major system flow along Mapleview Drive, overflow to the east towards Lovers Creek. Provide over control for Water Quantity and Quality Volumes at SIS SWMF #4.
- Potential Locations for Linear LIDs have been allocated and are to be confirmed in Detailed Design.

Figure DS-01 - MD.R-01
Post Development SWM - Mapleview Drive East

	Proposed MH		Floodplain Setback
	Existing Property Line		Existing Pond
	Proposed Storm Network		Linear LID
	Existing Storm Pipe		Centralized and LLID
	Edge of Pavement		Potential Property
	Contour		Potential SWMF
	Master Plan Catchments		



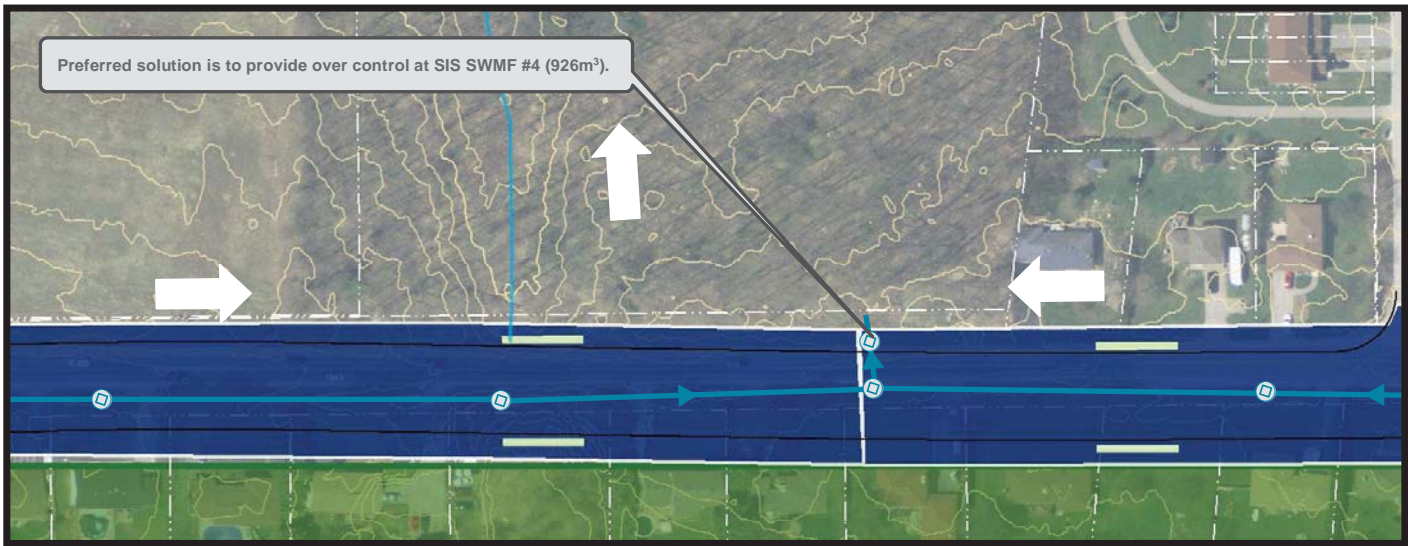
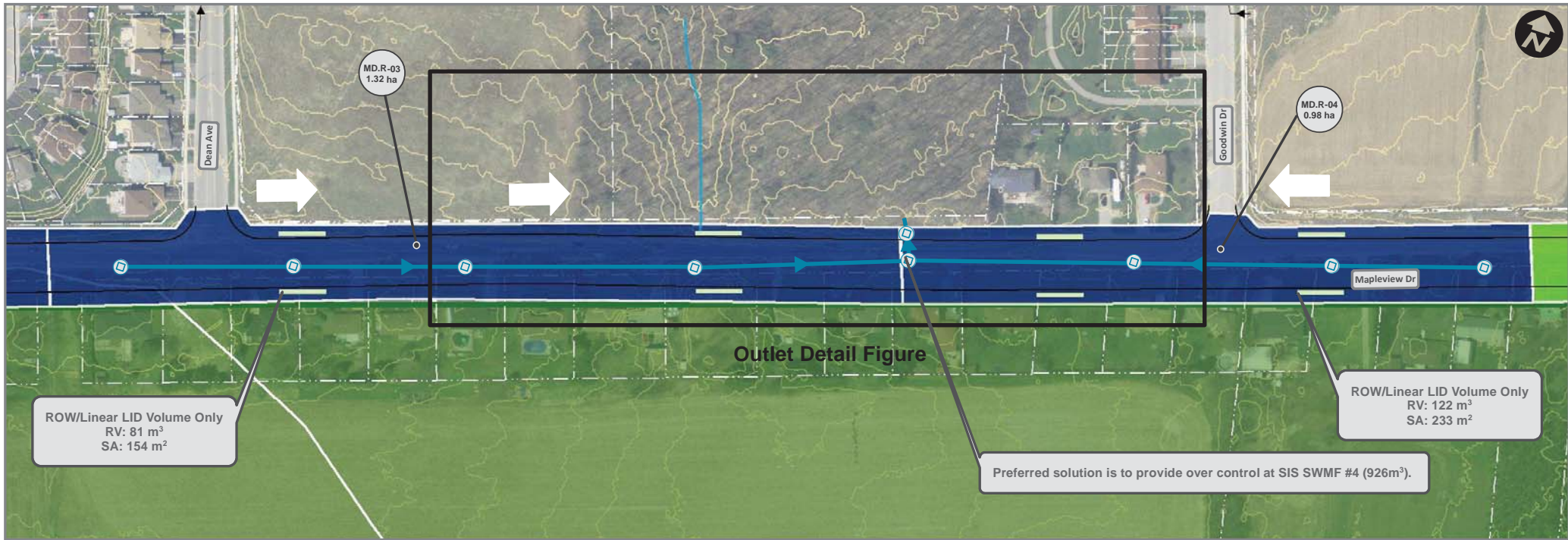
Outlet Detail Figure

Notes:

- Minor system treatment via storm sewer network with OGS treatment at outlet Lover's Creek.
- Major system and quantity control flow to Lover's Creek treated via over control at SIS SWMF# 4.
- Potential Locations for Linear LIDs have been allocated and are to be confirmed in Detailed Design.

Figure DS-02 - MD.R-02
Post Development SWM - Maplevue Drive East

	Proposed MH		Contour
	Existing Property Line		Development Lands
	Proposed Storm Network		Master Plan Catchments
	Existing Storm Pipe		Floodplain Setback
	Edge of Pavement		Linear LID
	Watercourse		Centralized and LLID



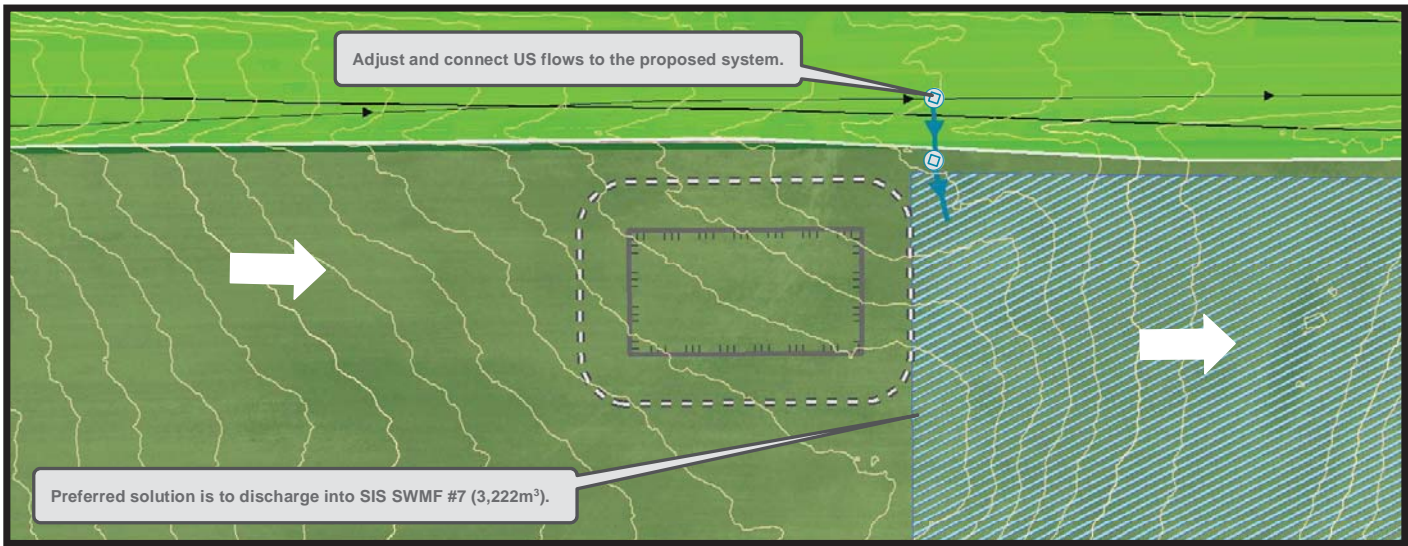
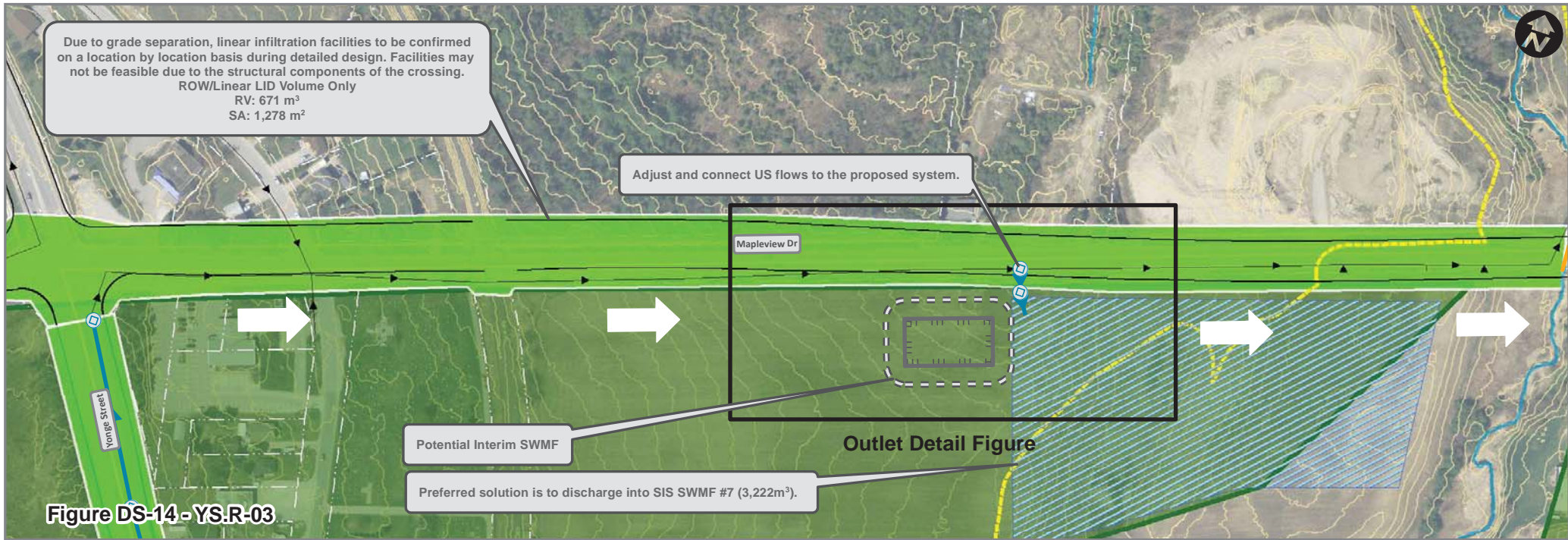
Outlet Detail Figure

Notes:

- Minor system treatment via storm sewer network with OGS treatment of both MD.R-03 and MD.R-04.
- Major system flow to the woodlot between Dean Ave and Goodwin Dr. Provide over control at SIS SWMF #4.
- Potential Locations for Centralized LIDs have been allocated and are to be confirmed in Detailed Design.

Figure DS-03 - MD.R-03 & MD.R-04
Post Development SWM - Mapleview Drive East

	Proposed MH		Contour
	Existing Property Line		Development Lands
	Proposed Storm Network		Master Plan Catchments
	Existing Storm Pipe		Linear LID
	Edge of Pavement		Centralized and LLID
	Watercourse		SWMF Outlet and LLID

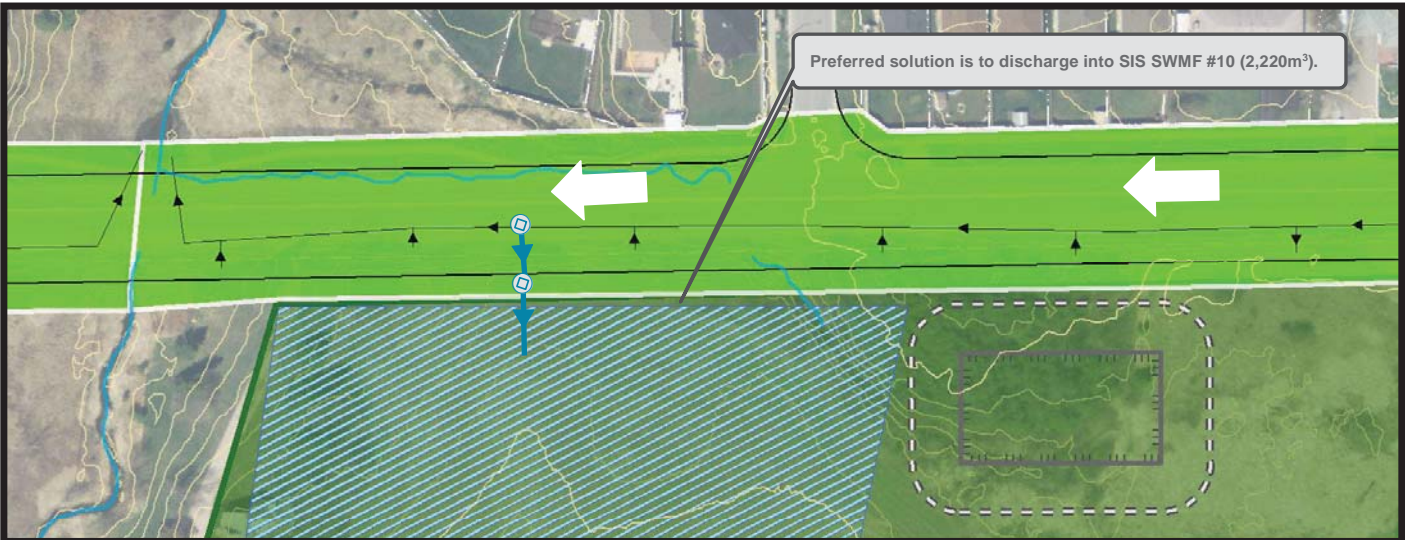
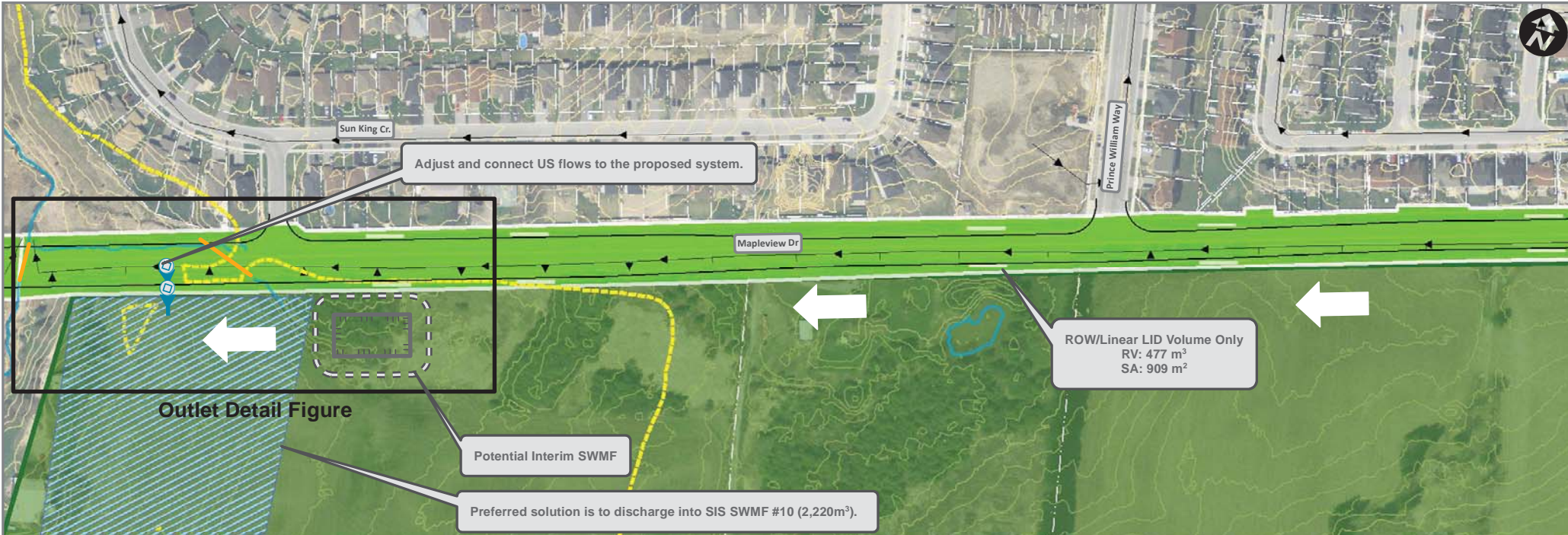


Notes:

- Minor system treatment via storm sewer network with OGS treatment at outlet to the SIS SWMF #7.
- Major system flow to the SIS SWMF #7, overflow to the east towards Hewitts Creek.
- Potential Locations for SIS SWMF have been allocated and are to be confirmed in Detailed Design.

Figure DS-04 - MD.R-05
Post Development SWM - Mapleview Drive East

	Proposed MH		Development Lands
	Existing Property Line		Master Plan Catchments
	Proposed Storm Network		Floodplain Setback
	Existing Storm Pipe		SWMF Outlet and LLID
	Edge of Pavement		SIS SWMF
	Watercourse		Potential Property
	Contour		Potential SWMF



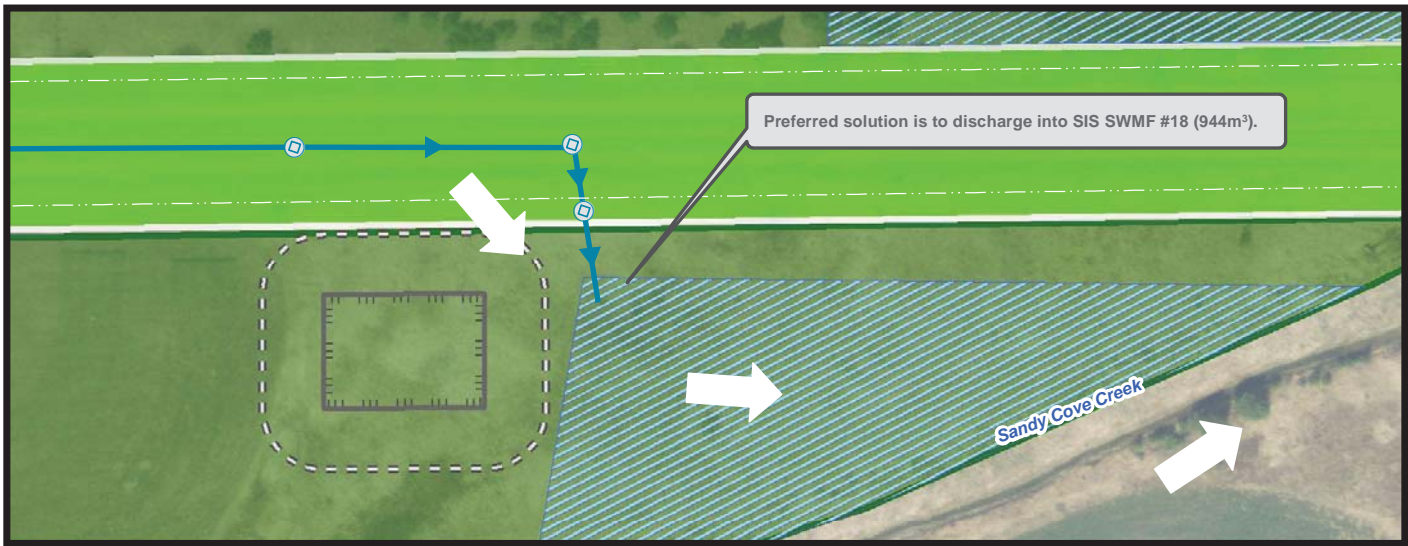
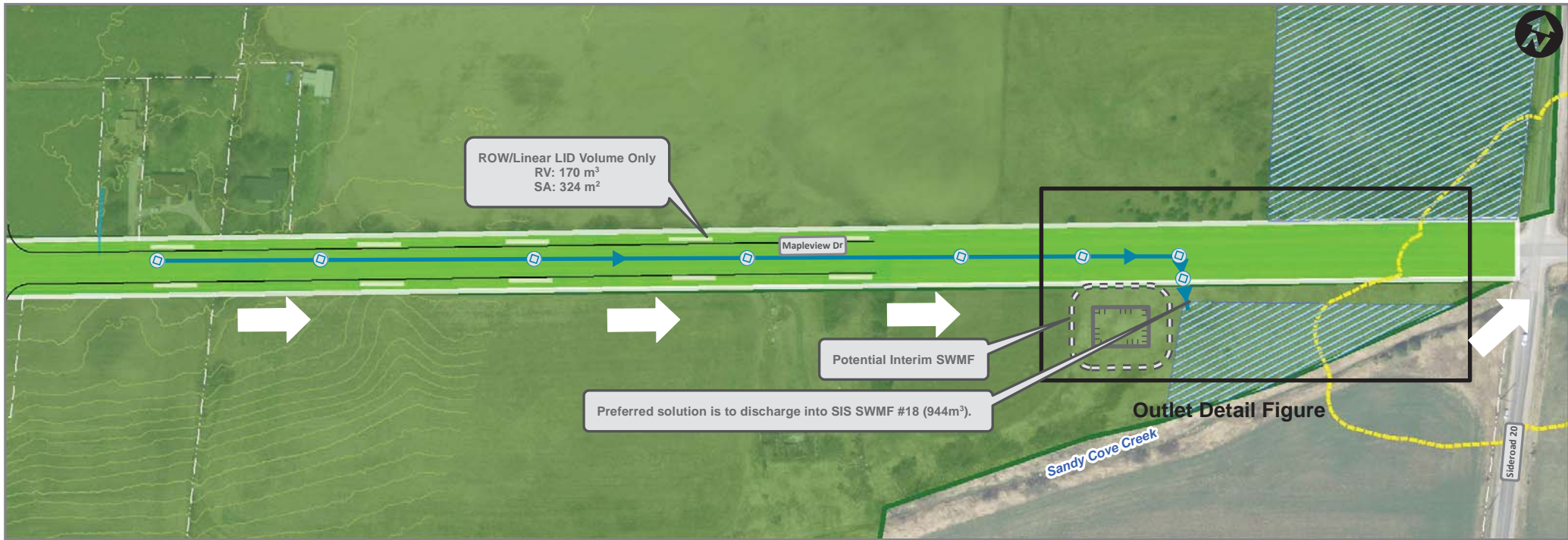
Outlet Detail Figure

Notes:

- Minor system conveyance via storm sewer network with OGS treatment at the outlet to SIS SWMF #10.
- Major system flow to SIS SWMF #10, overflow to the west towards Hewitt's Creek.
- Potential Locations for SIS SWMF have been allocated and are to be confirmed in Detailed Design.

Figure DS-05 - MD.R-06
Post Development SWM - Maplevue Drive East

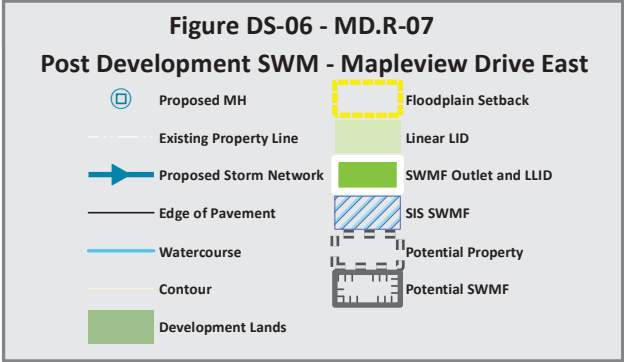
	Proposed MH		Master Plan Catchments
	Existing Property Line		Floodplain Setback
	Proposed Storm Network		Linear LID
	Existing Storm Pipe		SWMF Outlet and LLID
	Edge of Pavement		SIS SWMF
	Watercourse		Potential Property
	Contour		Potential SWMF
	Development Lands		

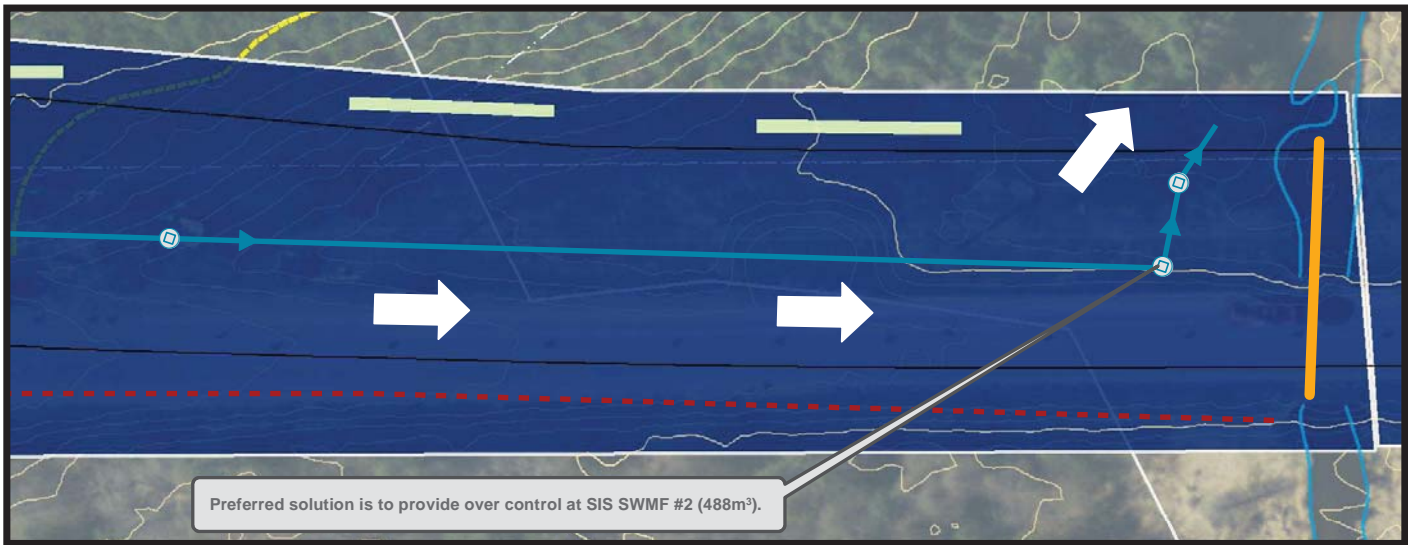
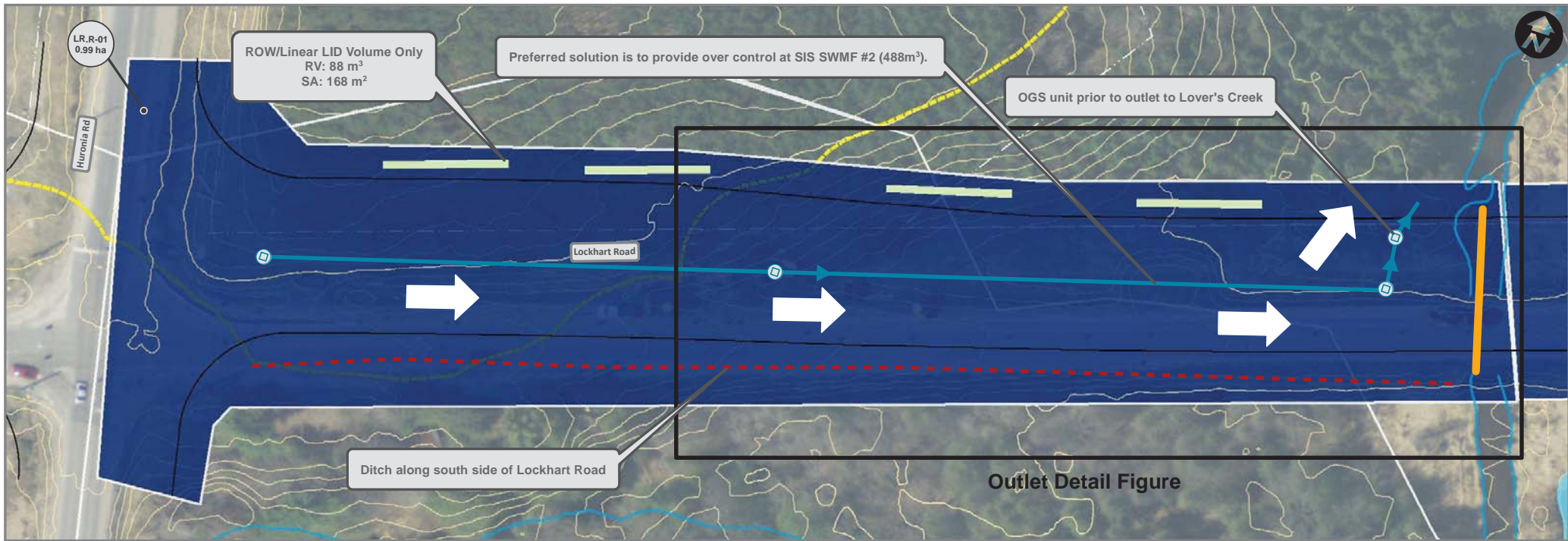


Outlet Detail Figure

Notes:

- Minor system conveyance via storm sewer network with OGS treatment at the outlet to SIS SWMF #18.
- Major system flow to SIS SWMF #18, overflow to the east towards Sandy Cove Creek.
- Potential Locations for SIS SWMF connections have been allocated and are to be confirmed in Detailed Design.

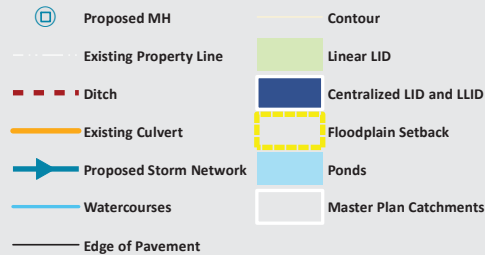


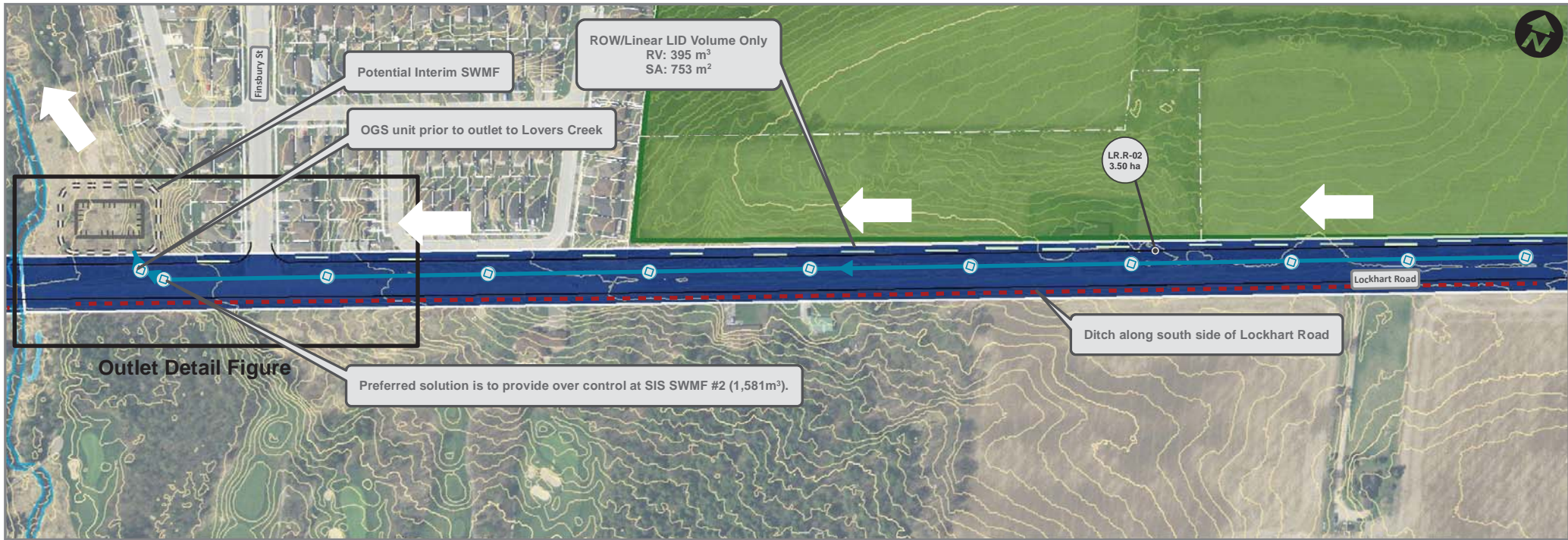


Notes:

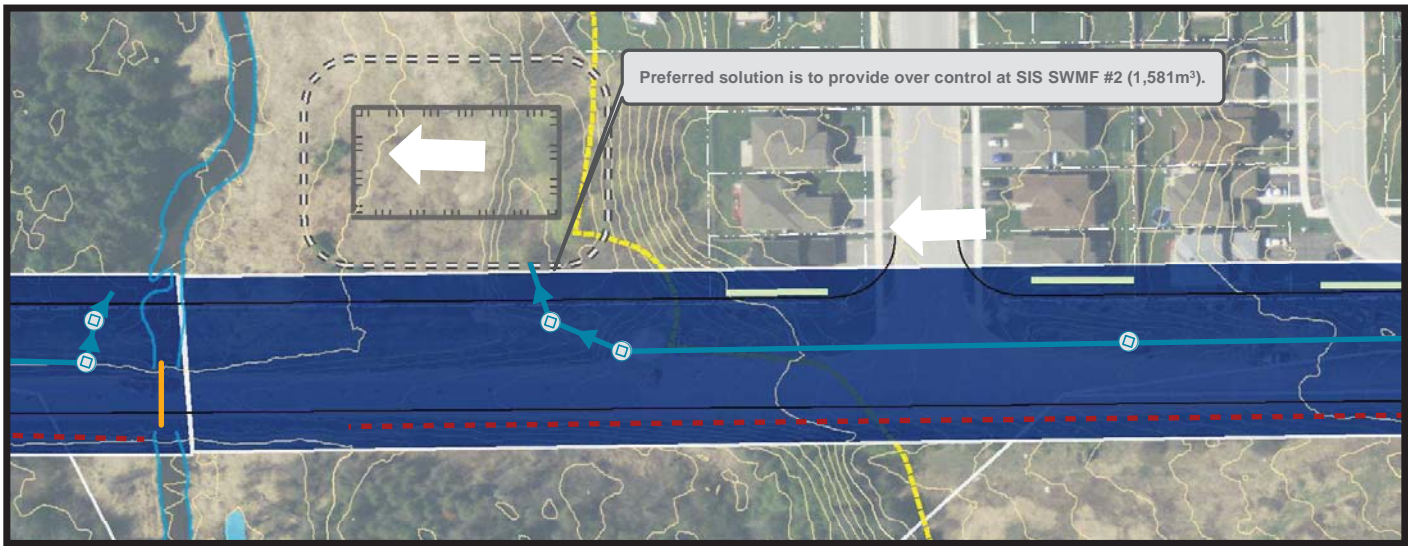
- Minor system treatment via storm sewer network with OGS treatment at outlet Lovers Creek.
- Major system flows along Lockhart Road to Lovers Creek. Provide over control for Water Quantity and Quality Volumes at SIS SWMF #2.
- Potential Locations for Linear LIDs have been allocated and are to be confirmed in Detailed Design.

Figure DS-07 - LR.R-01
Post Development SWM - Lockhart Road





Outlet Detail Figure

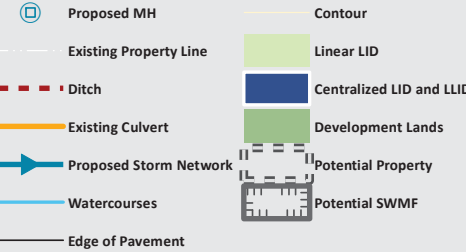


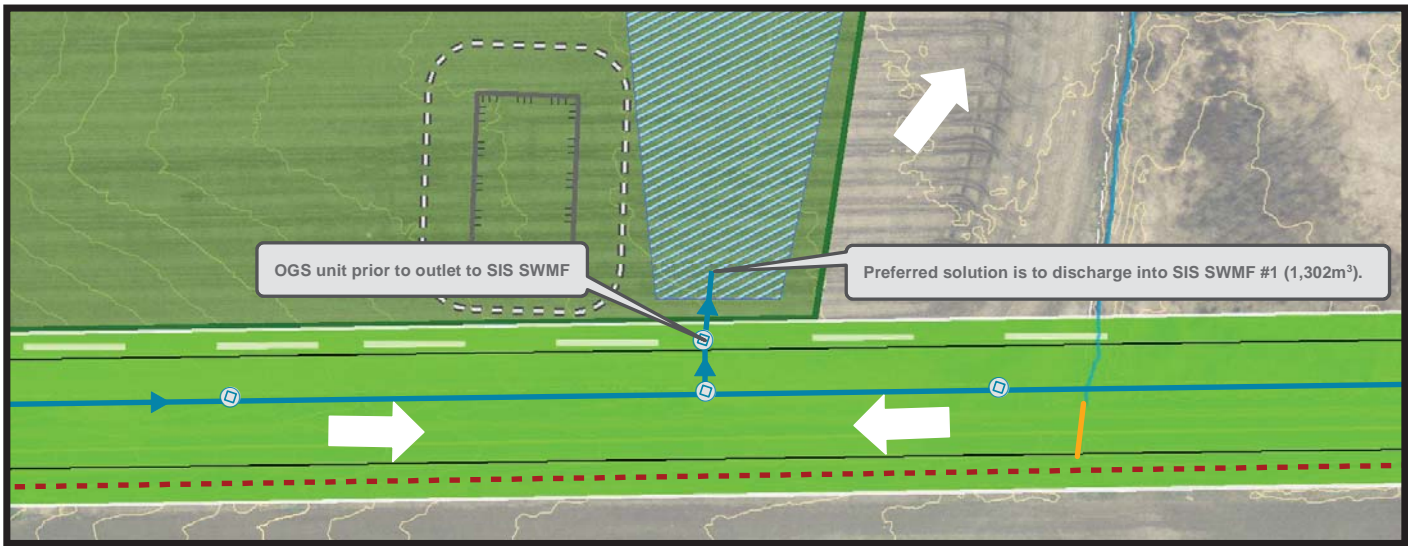
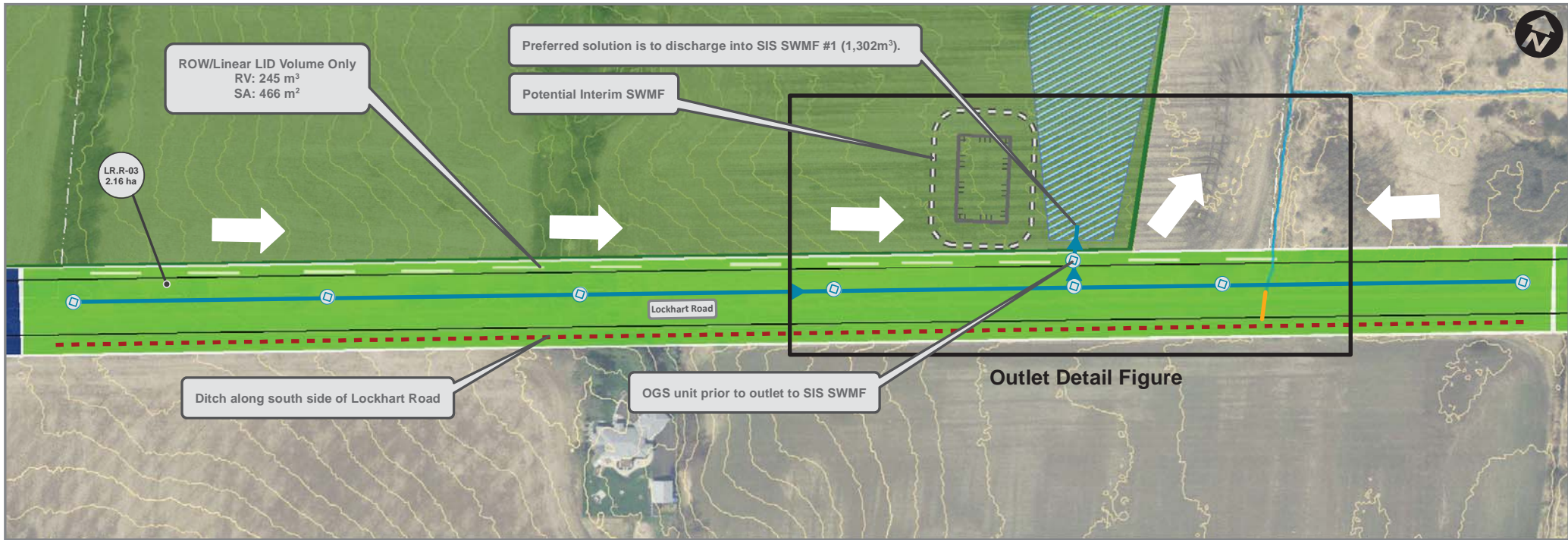
Outlet Detail Figure

Notes:

- Minor system conveyance via storm sewer network with OGS treatment at the outlet to Lovers Creek.
- Major system flows along Lockhart Road to Lovers Creek. Provide over control for Water Quantity and Quality Volumes at SIS SWMF #2.
- Potential Locations for Linear LIDs have been allocated and are to be confirmed in Detailed Design.

Figure DS-08 - LR.R-02
Post Development SWM - Lockhart Road





Outlet Detail Figure

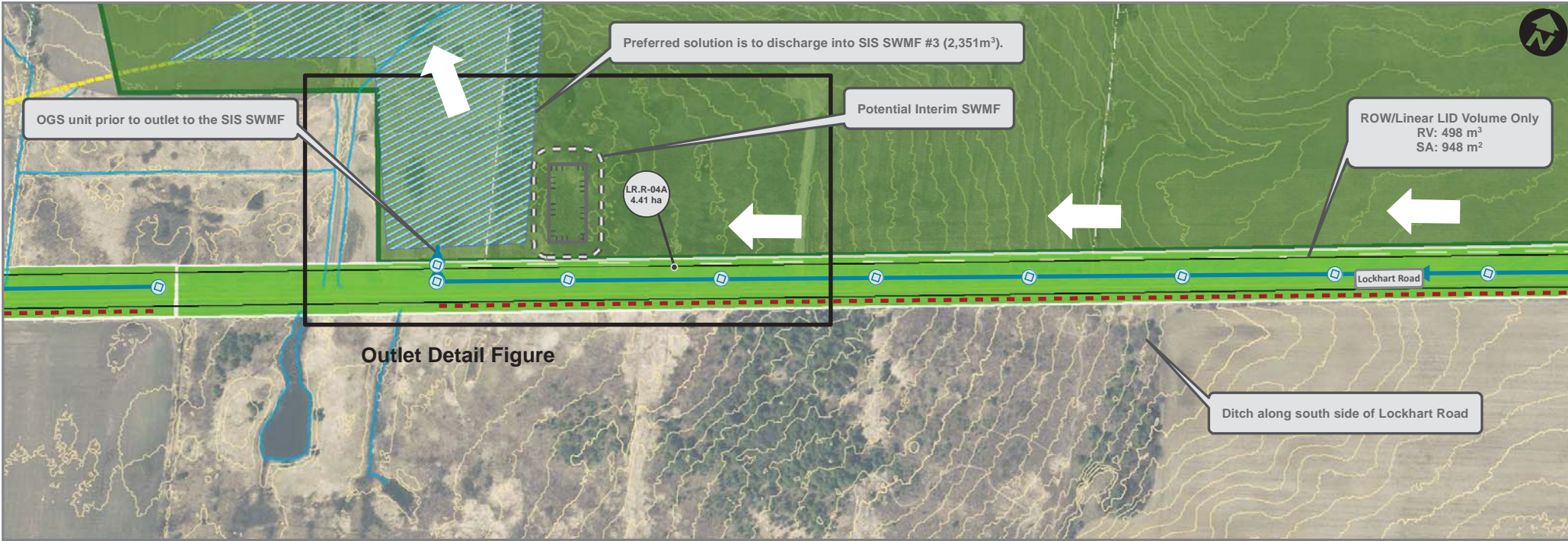
Notes:

- Minor system conveyance via storm sewer network with OGS treatment at the outlet to SIS SWMF #1.
- Major system flow to the SIS SWMF #1, overflow to the east towards the Lovers Creek Tributary.
- Potential Locations for the SIS SWMF have been allocated and are to be confirmed in Detailed Design.

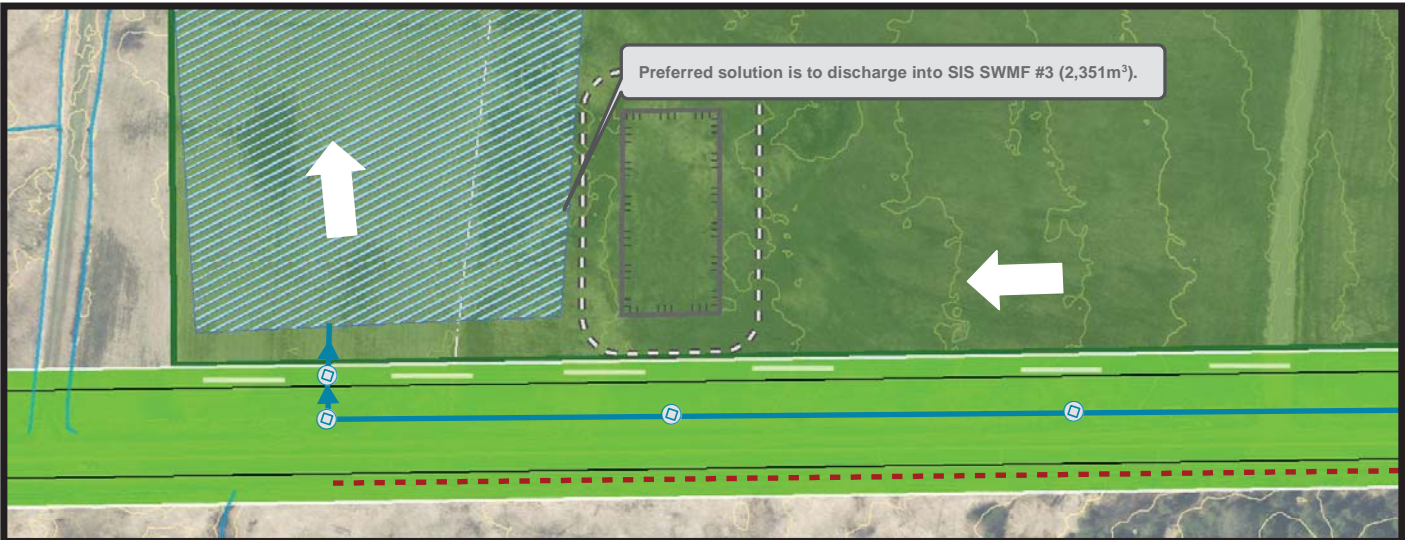
Figure DS-09 - LR.R-03

Post Development SWM - Lockhart Road

	Proposed MH		Development Lands
	Existing Property Line		Linear LID
	Ditch		Centralized LID and LLID
	Existing Culvert		SWMF and LLID
	Proposed Storm Network		Floodplain Setback
	Watercourses		SIS SWMF Facility
	Edge of Pavement		Potential Property
	Contour		Potential SWMF



Outlet Detail Figure



Outlet Detail Figure

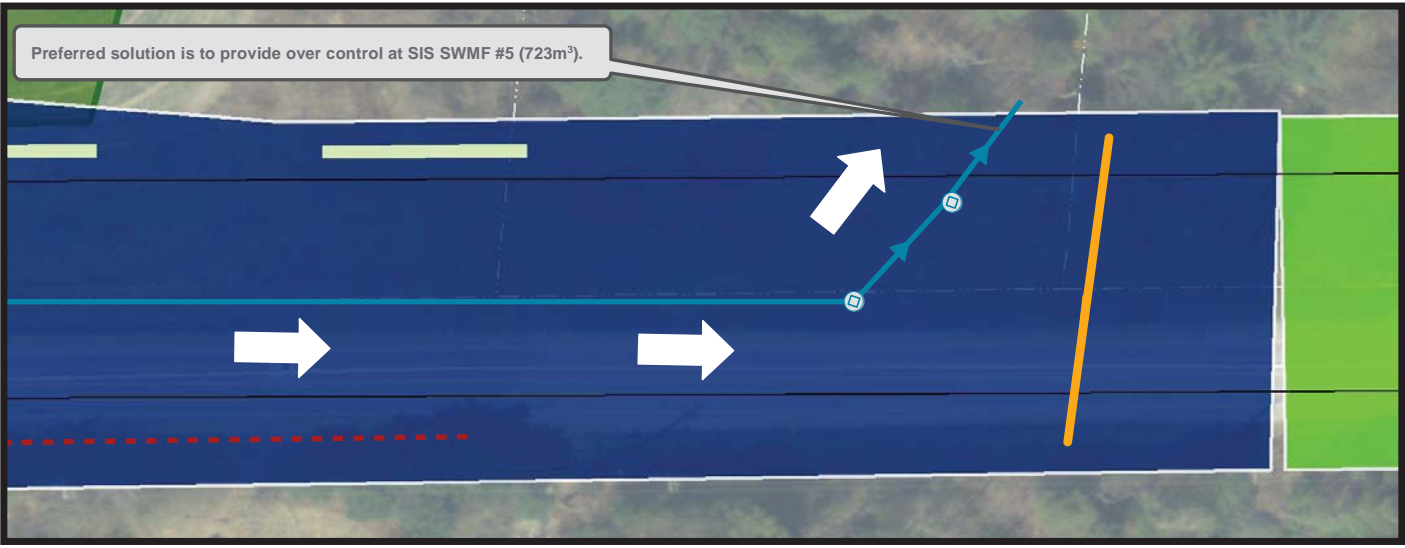
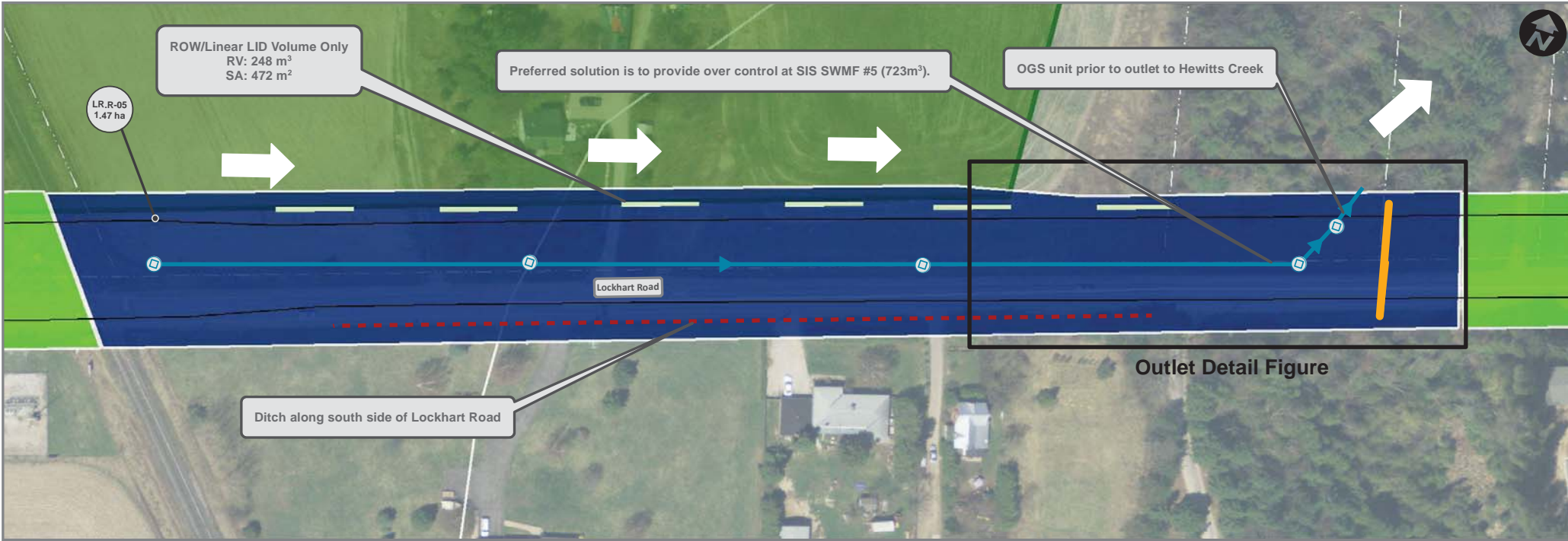
Notes:

- Minor system conveyance via storm sewer network with OGS treatment at the outlet to SIS SWMF #3.
- Major system flow to the SIS SWMF #3, overflow to the west towards the Lovers Creek Tributary.
- Potential Locations for the SIS SWMF have been allocated and are to be confirmed in Detailed Design.

Figure DS-10 - LR.R-04

Post Development SWM - Lockhart Road

	Proposed MH		Linear LID
	Existing Property Line		SIS SWM Facility
	Ditch		SWMF and LLID
	Existing Culvert		Development Lands
	Proposed Storm Network		Floodplain Setback
	Watercourses		Master Plan Catchments
	Edge of Pavement		Potential Property
	Contour		Potential SWMF



Outlet Detail Figure

Notes:

- Minor system conveyance via storm sewer network with OGS treatment at the outlet to Hewitts Creek.
- Major system and quantity control flow to Hewitts Creek. Provide over control for Water Quantity and Quality Volumes at SIS SWMF #5.
- Potential Locations for Linear LIDs have been allocated and are to be confirmed in Detailed Design.

Figure DS- 11 - LR.R-05
Post Development SWM - Lockhart Road

	Proposed MH		Edge of Pavement
	Existing Property Line		Linear LID
	Ditch		Centralized LID and LLID
	Existing Culvert		SWMF and LLID
	Proposed Storm Network		Development Lands
			Master Plan Catchments



Preferred solution is to discharge into SIS SWMF #8 (1,680m³).

Potential Interim SWMF

OGS unit prior to outlet to SIS SWMF

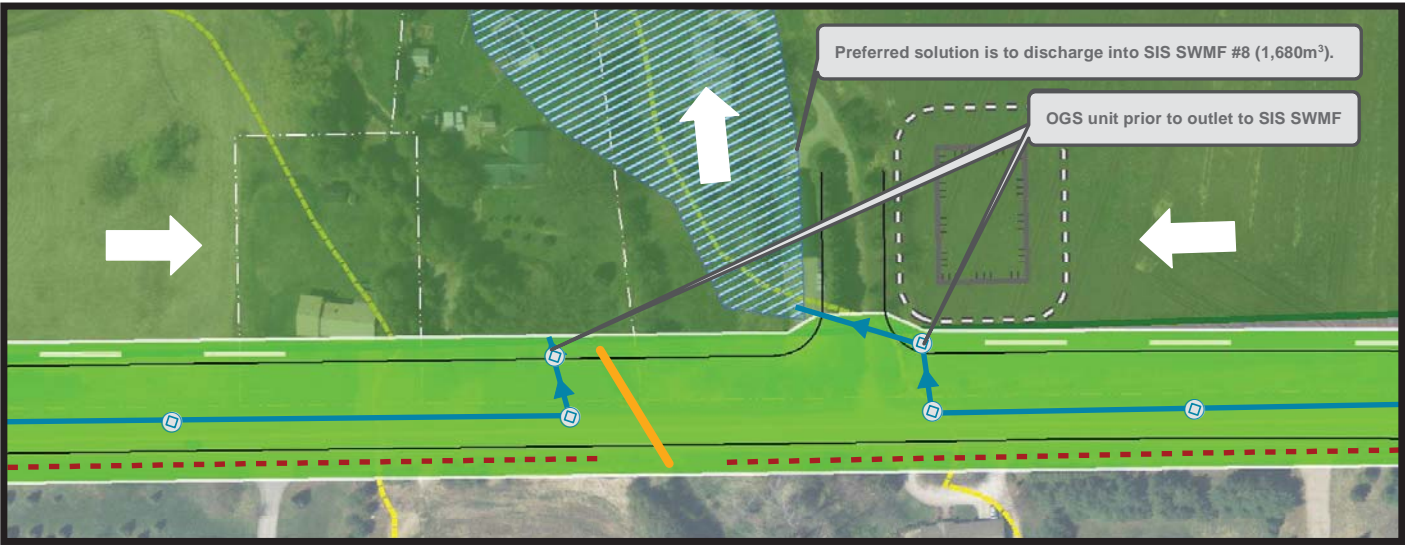
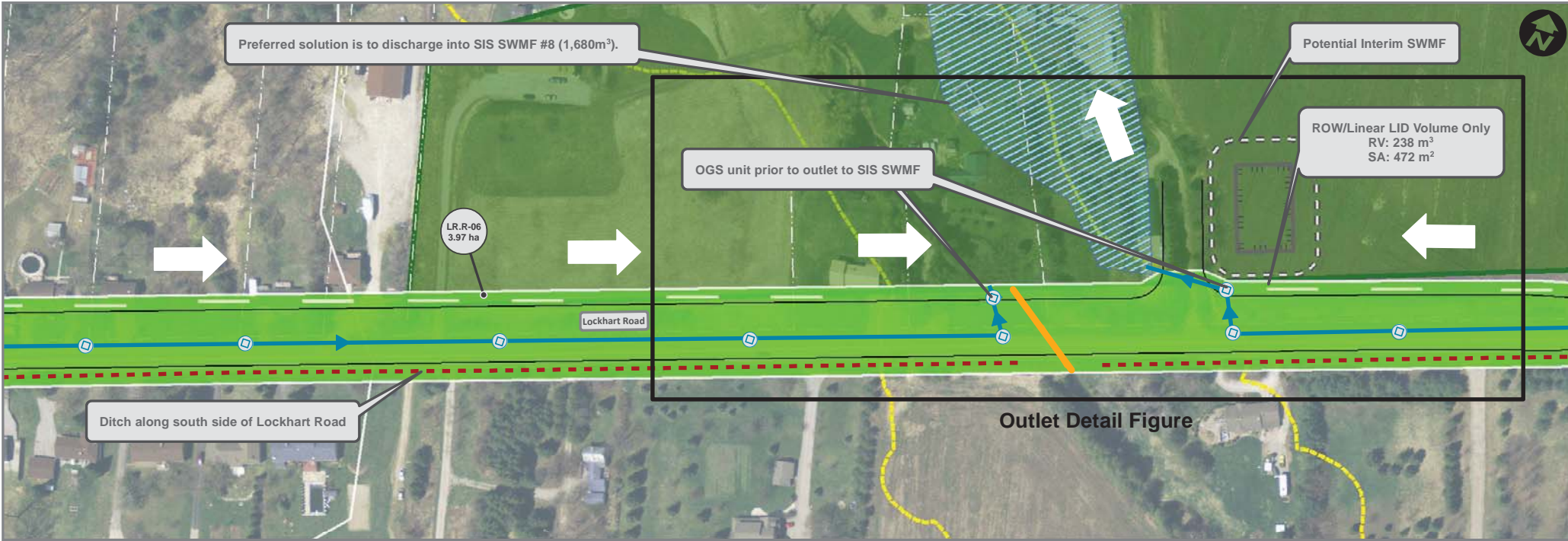
ROW/Linear LID Volume Only
RV: 238 m³
SA: 472 m²

LR.R-06
3.97 ha

Lockhart Road

Ditch along south side of Lockhart Road

Outlet Detail Figure



Outlet Detail Figure

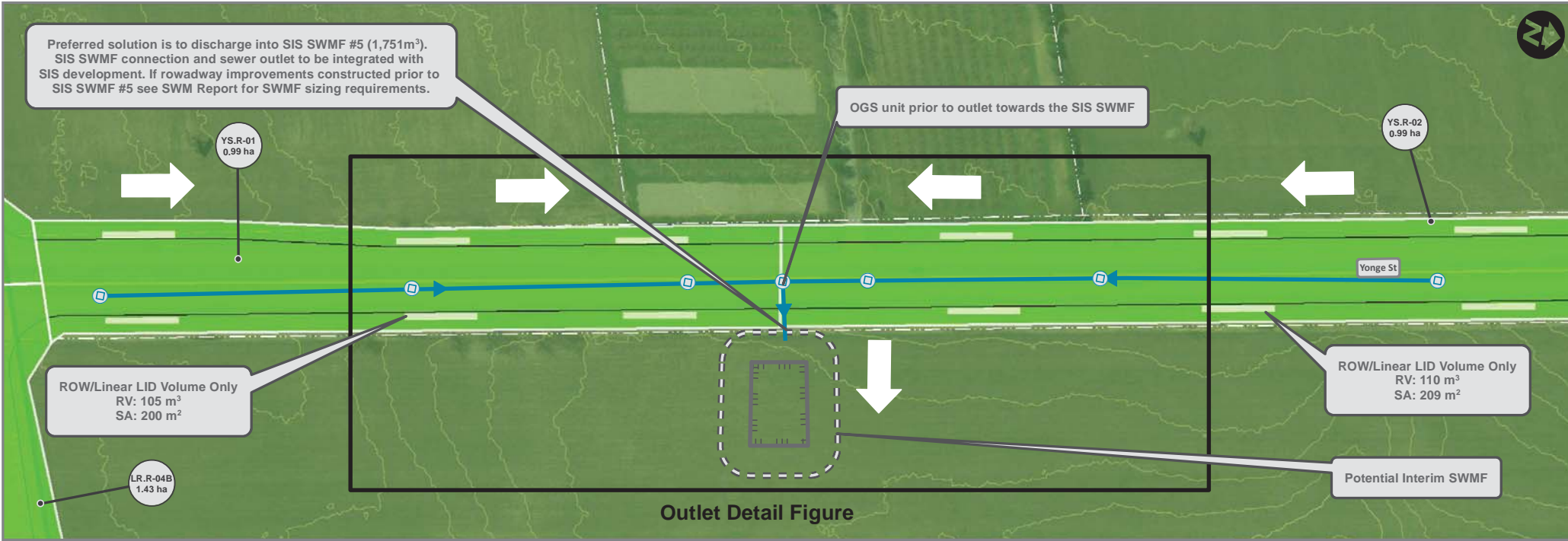
Notes:

- Minor system treatment via storm sewer network with OGS treatment at outlet to the SIS SWMF #8.
- Major system flow to the SIS SWMF #8, overflow to the west towards Hewitts Creek. West drainage system to be overcontrolled within SIS SWMF #8.
- Potential Locations for the SIS SWMF have been allocated and are to be confirmed in Detailed Design.

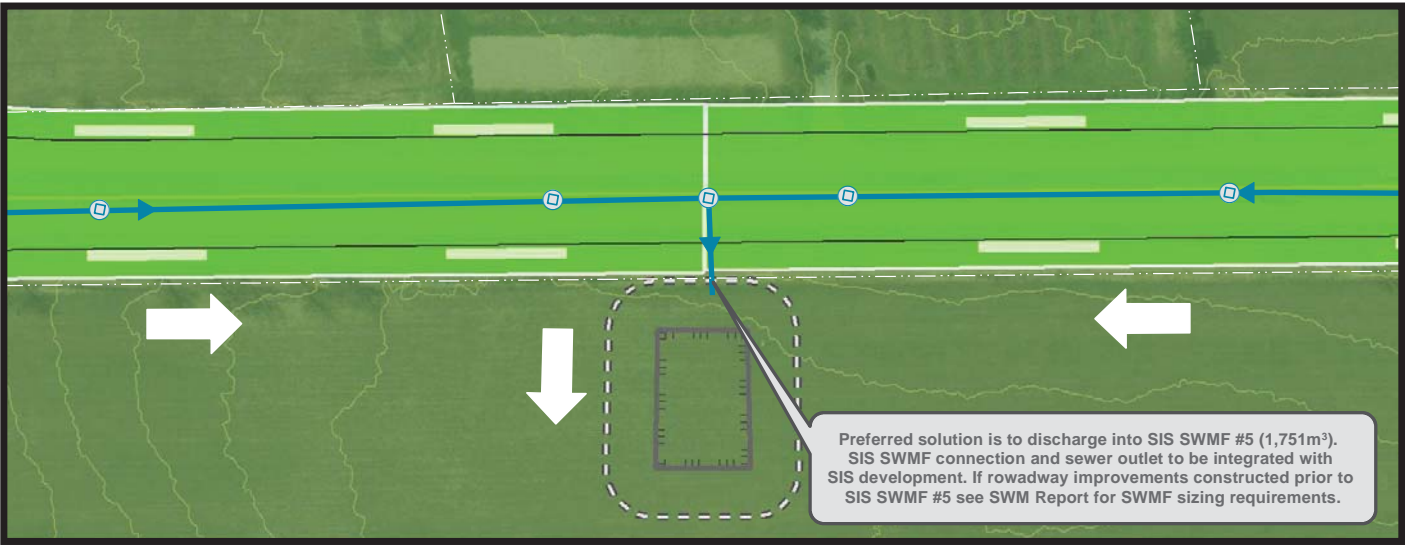
Figure DS-12 - LR.R-06

Post Development SWM - Lockhart Road

- | | | | |
|--|------------------------|--|------------------------|
| | Proposed MH | | SIS SWMF Facility |
| | Existing Property Line | | SWMF and LLID |
| | Ditch | | Development Lands |
| | Existing Culvert | | Floodplain Setback |
| | Proposed Storm Network | | Master Plan Catchments |
| | Edge of Pavement | | Potential Property |
| | Linear LID | | Potential SWMF |



Outlet Detail Figure



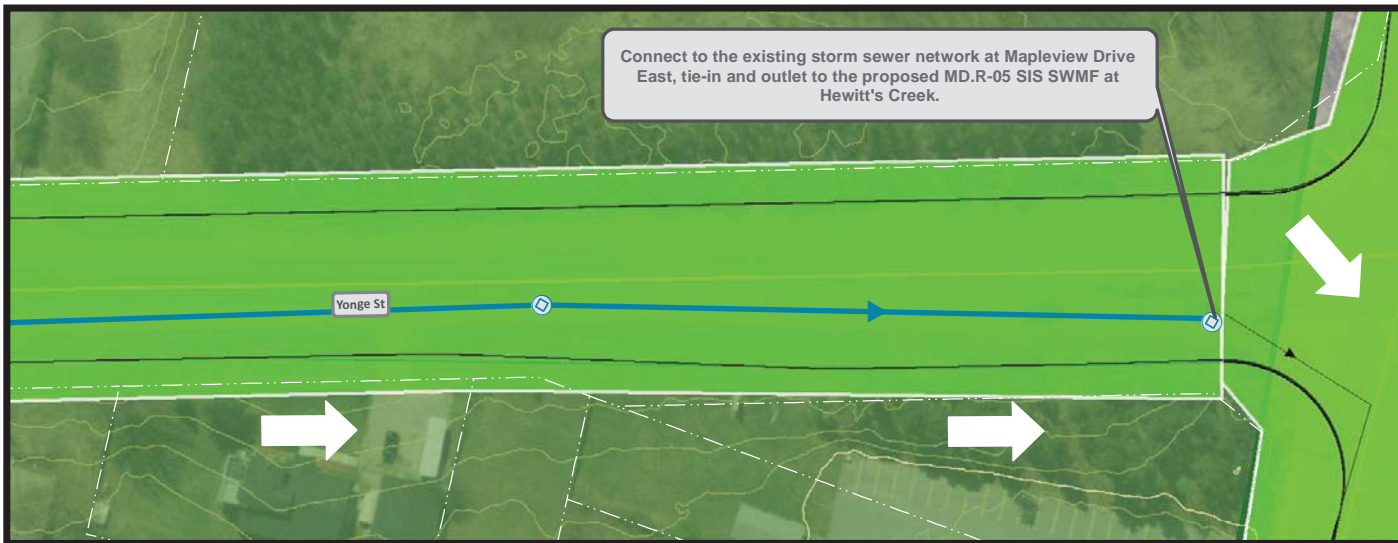
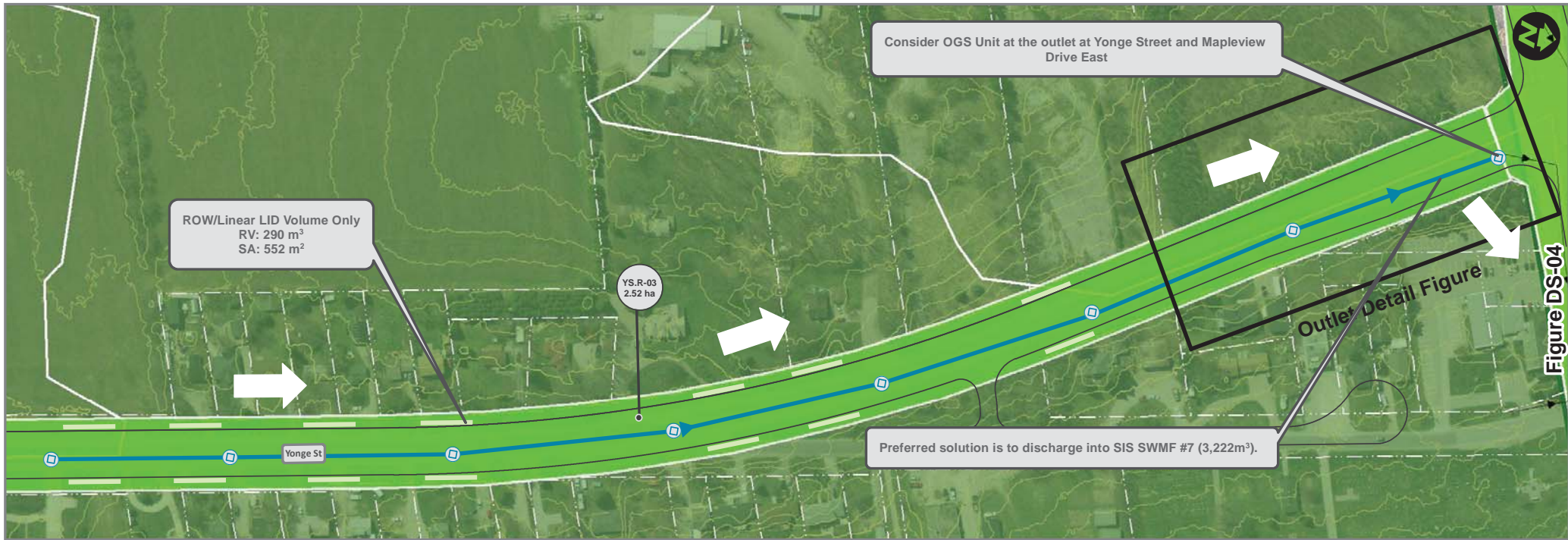
Outlet Detail Figure

Notes:

- Minor system treatment via storm sewer network with OGS treatment at the outlet to the SIS SWMF #5.
- Major system flow to the SIS SWMF #5, overflow to the east towards Hewitts Creek.
- Potential Locations for the SIS SWMF have been allocated and are to be confirmed in Detailed Design.

Figure DS-13 - YS.R-01 and YS.R-02 Post Development SWM - Yonge Street

	Proposed MH		Development Lands
	Existing Property Line		SWMF and LLID
	Edge of Pavement		Linear LID
	Proposed Storm Network		Potential Property
	Contour		Potential SWMF
	Master Plan Catchments		



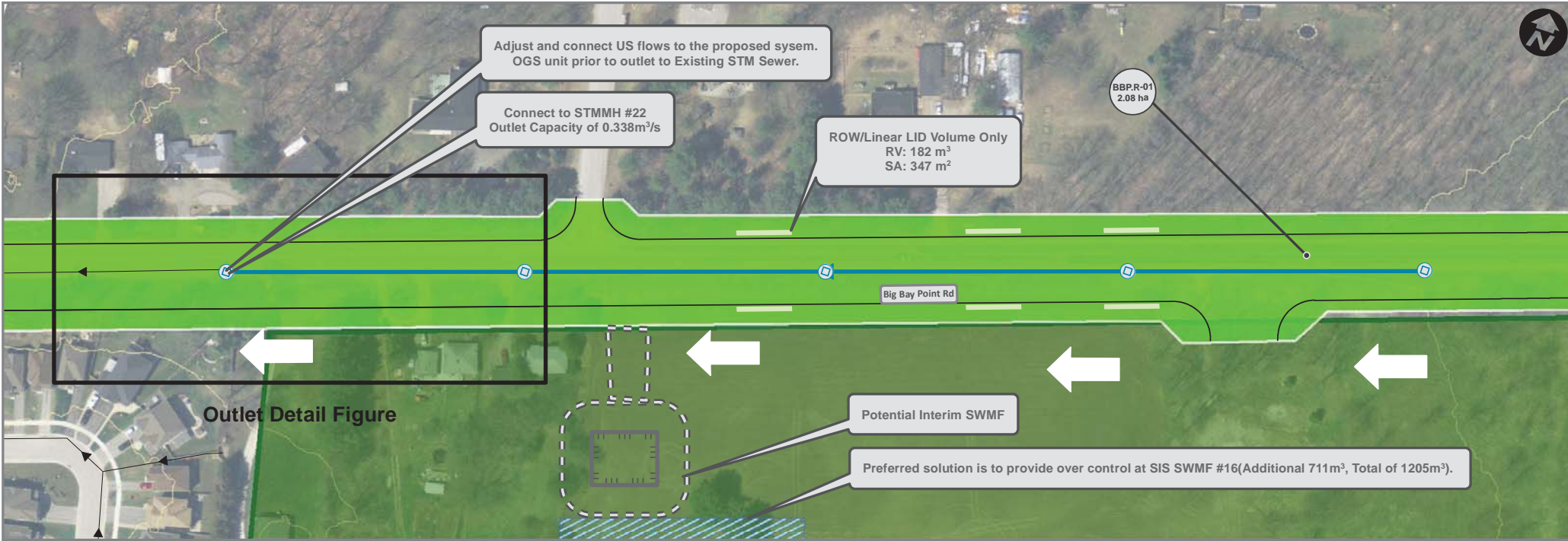
Outlet Detail Figure

Notes:

- Minor system conveyance via storm sewer network with OGS treatment at the outlet to an SIS SWMF.
- Major system flow to the MD.R-05 SIS SWMF, overflow to the east towards Hewitts Creek.
- Potential Locations for Linear LIDs have been allocated and are to be confirmed in Detailed Design.

Figure - DS-14 - YS.R-03
Post Development SWM - Yonge Street

	Proposed MH		Contour
	Existing Property Line		Development Lands
	Edge of Pavement		Master Plan Catchments
	Proposed Storm Network		Linear LID
	Existing Storm Pipe		SWMF Outlet and LLID

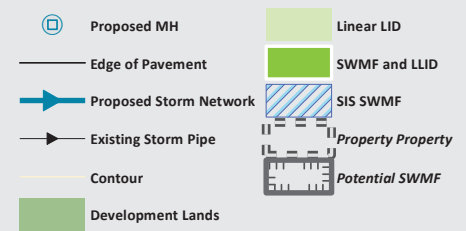


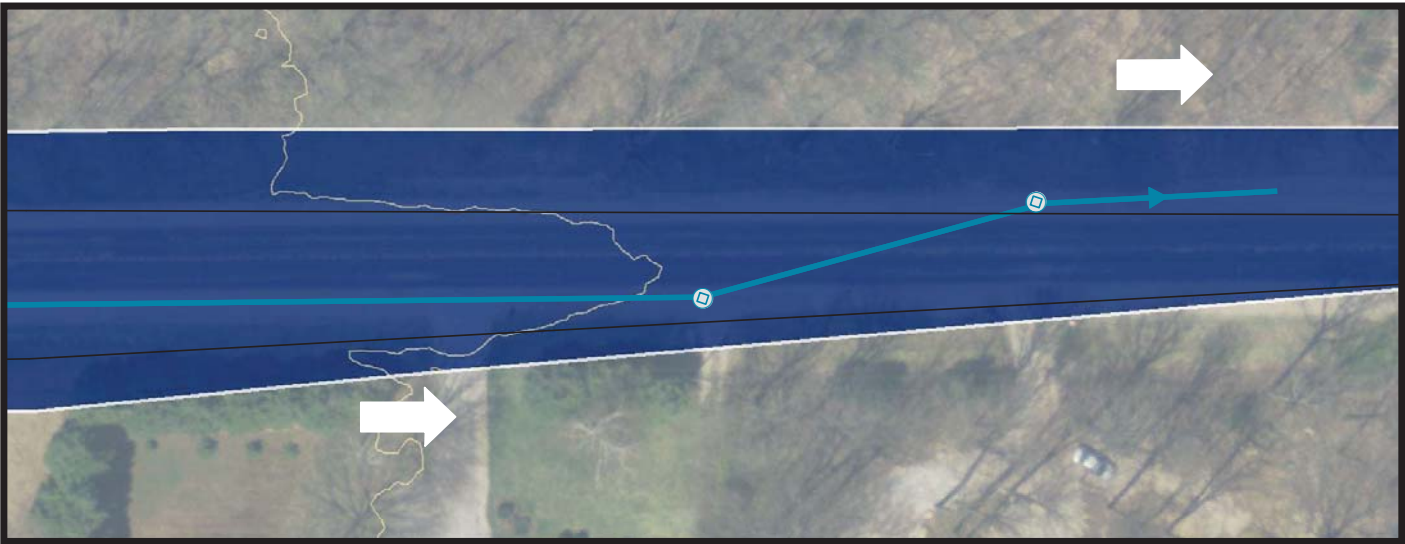
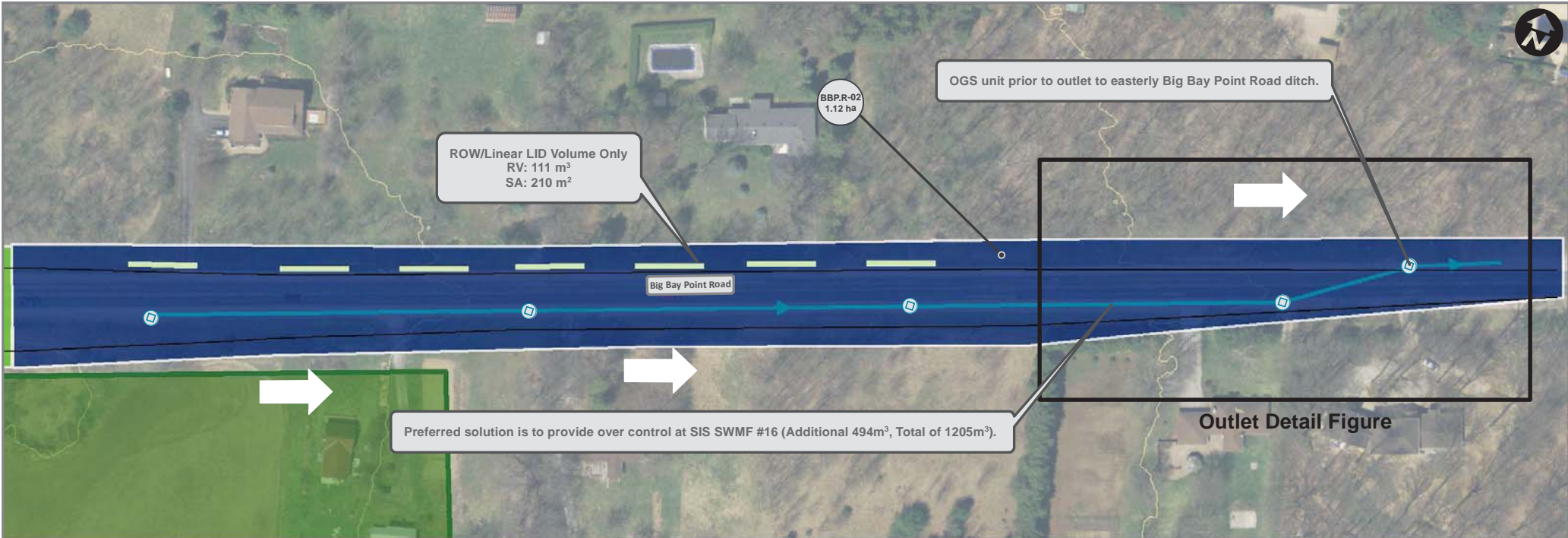
Outlet Detail Figure

Notes:

- Minor system conveyance via storm sewer network with OGS treatment at the outlet towards Hewitts Creek.
- Major system flow towards Hewitts Creek. Provide over control for Water Quantity and Quality Volumes at SIS SWMF #16.
- Potential Locations for Linear LIDs have been allocated and are to be confirmed in Detailed Design.

Figure DS-15 - BBP.R-01
Post Development SWM - Big Bay Point Road





Outlet Detail Figure

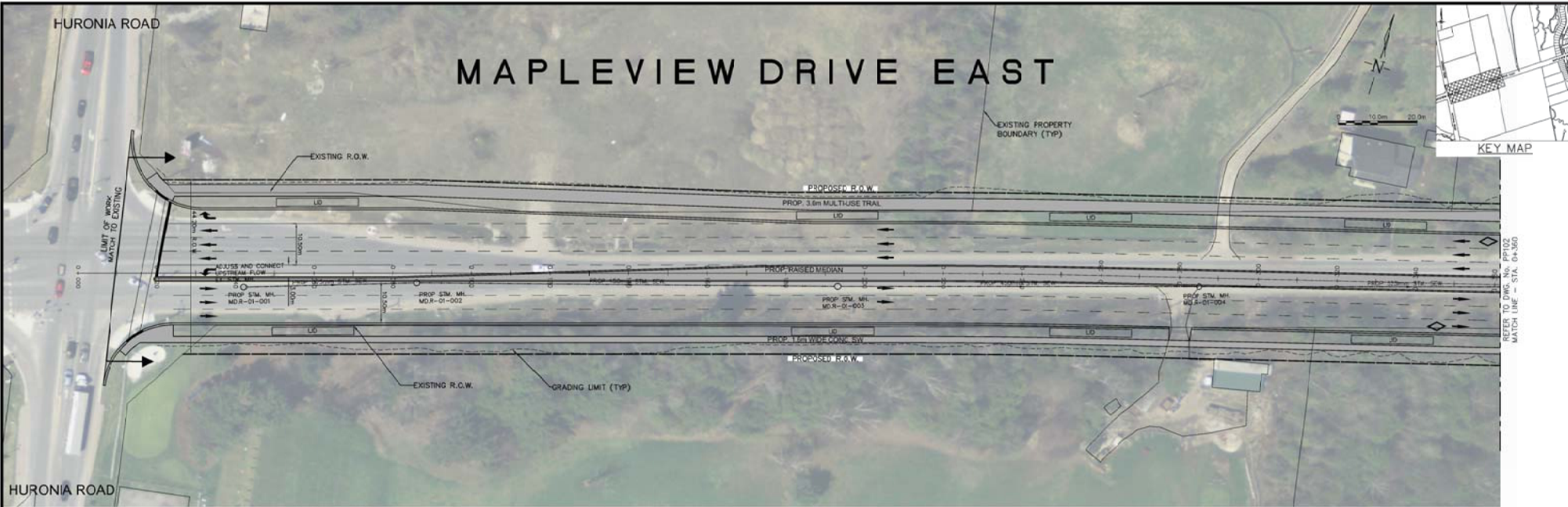
Notes:

- Minor system conveyance via storm sewer network with OGS treatment at the outlet towards Sandy Cove Creek.
- Major system flow towards Sandy Cove Creek. Provide over control for Water Quantity and Quality Volumes at SIS SWMF #16.
- Potential Locations for Linear LIDs have been allocated and are to be confirmed in Detailed Design.

Figure DS-16 - BBP.R-02
Post Development SWM - Big Bay Point Road

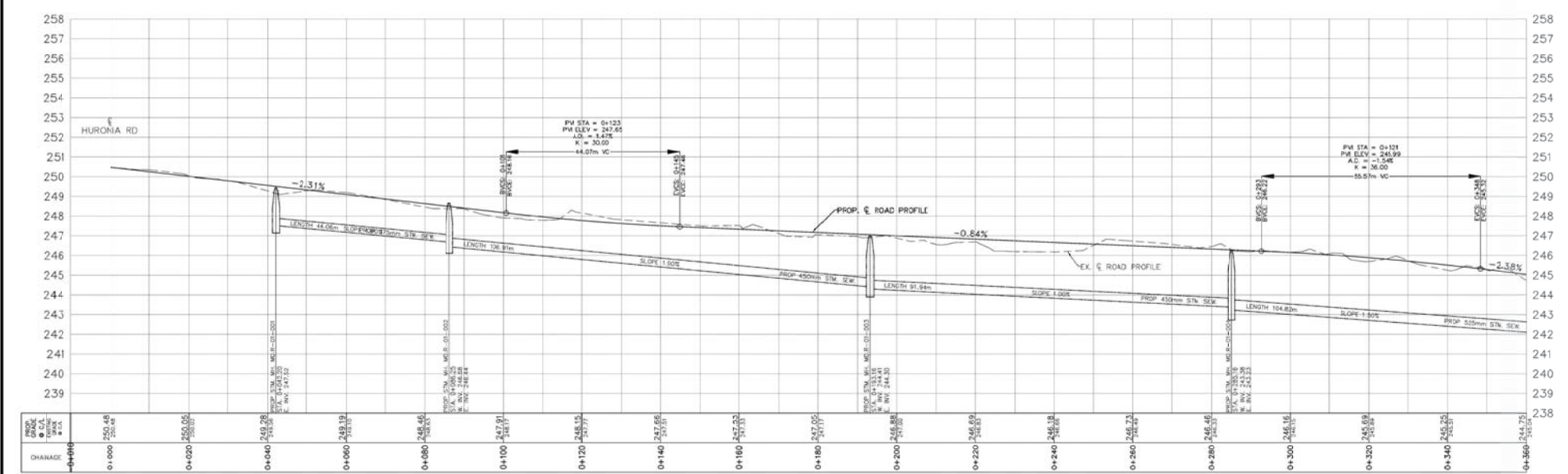
- | | |
|------------------------|--------------------------|
| Proposed MH | Development Lands |
| Edge of Pavement | Linear LID |
| Proposed Storm Network | Centralized LID and LLID |
| Contour | SWMF and LLID |

MAPLEVIEW DRIVE EAST



KEY MAP

REFER TO DWG. No. PP102
MATCH LINE - STA. 0+360



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.

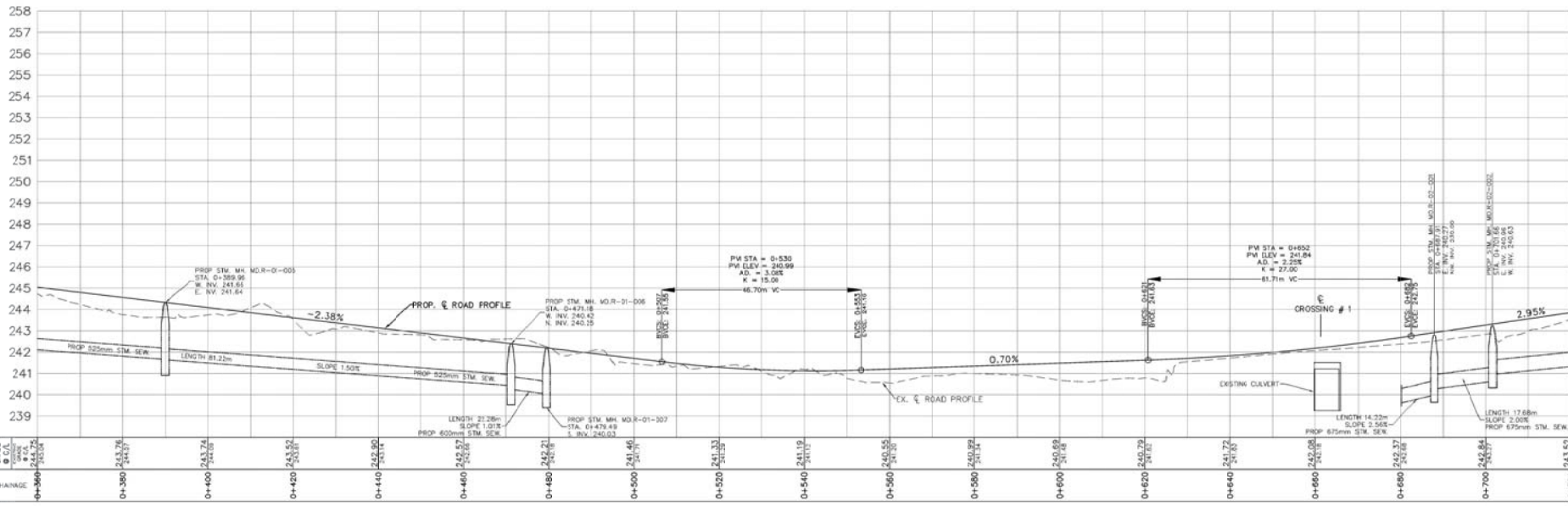
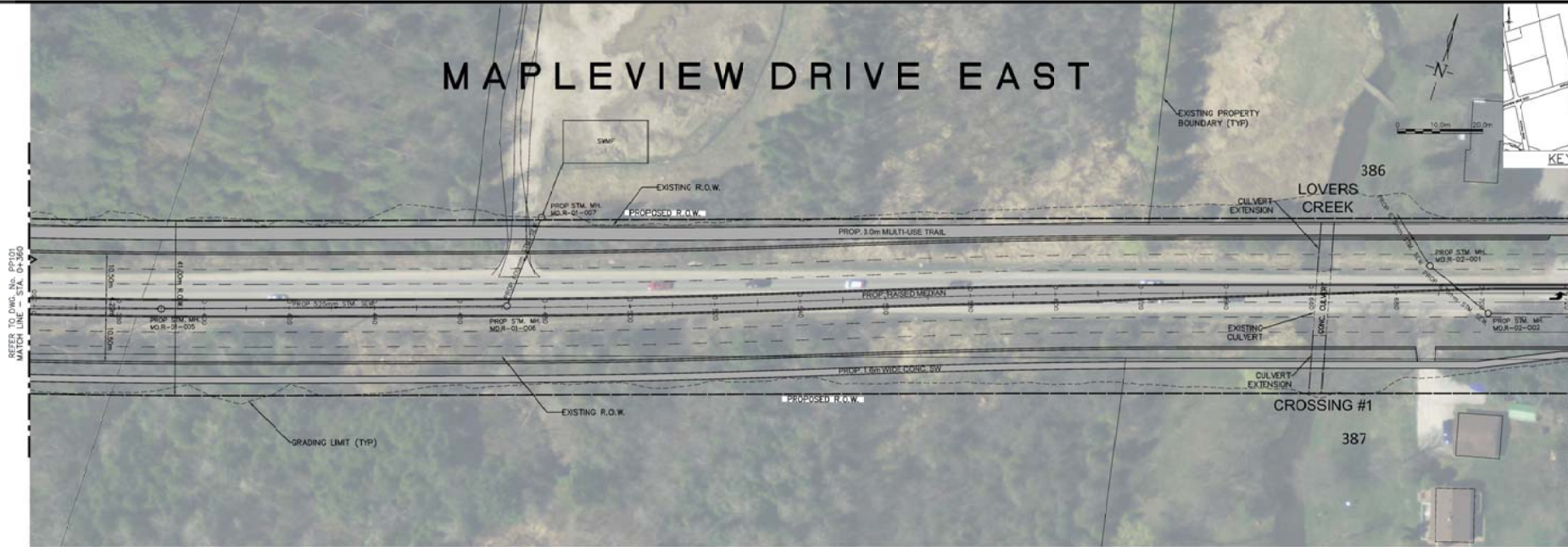


CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

MAPLEVIEW DRIVE EAST
WIDENING
HURONIA ROAD TO 20TH SIDE ROAD
PLAN & PROFILE
STA. 0+000 TO STA. 0+360

The City of BARRIE
ENGINEERING DEPARTMENT
SCALE: HOR. 1:100 VERT. 1:100
DESIGN: MSH DRAWN: MSH
REVIEWED: HS DATE: 17.02.14
CONTRACT NO: 2017-
SHEET NO: PP101

MAPLEVIEW DRIVE EAST



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.

HATCH

CITY OF BARRIE APPROVED

DATE:

..... DIRECTOR OF ENGINEERING

MAPLEVIEW DRIVE EAST WIDENING
HURONIA ROAD TO 20TH SIDE ROAD
PLAN & PROFILE
STA. 0+0360 TO STA. 0+720

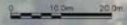
The City of **BARRIE**
ENGINEERING DEPARTMENT

SCALE: HOR. 1:100 VERT. 1:100
DESIGN: MSH DRAWN: MSH
REVIEWED: RJS DATE: 17.02.14

CONTRACT NO. 2017-
SHEET NO. PP102

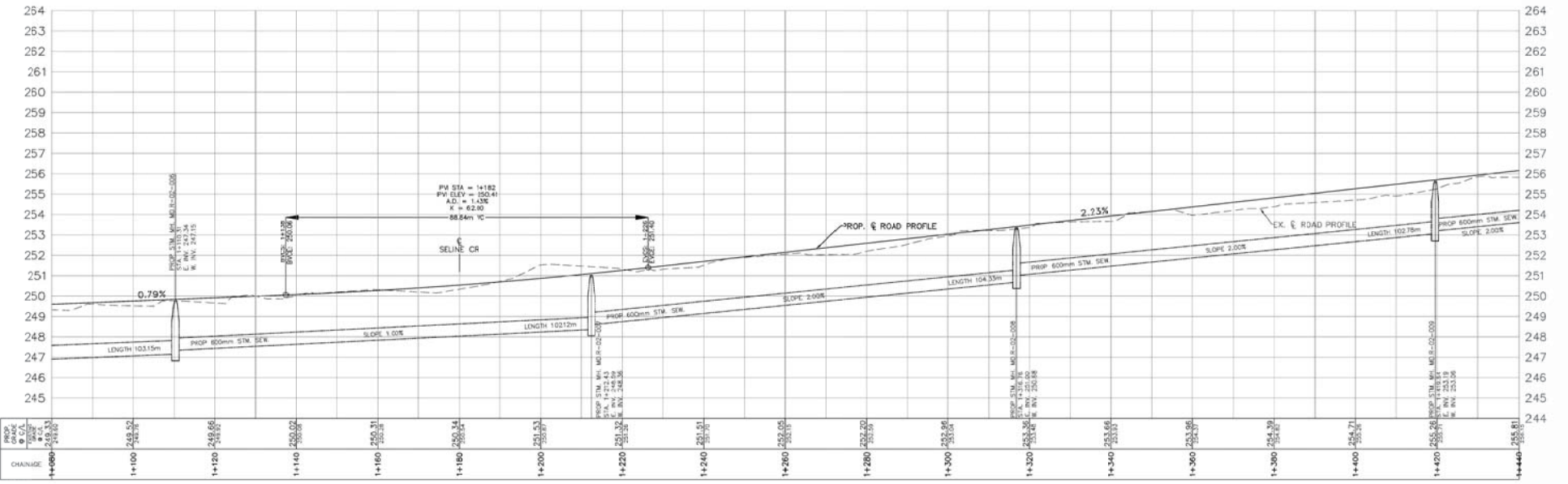
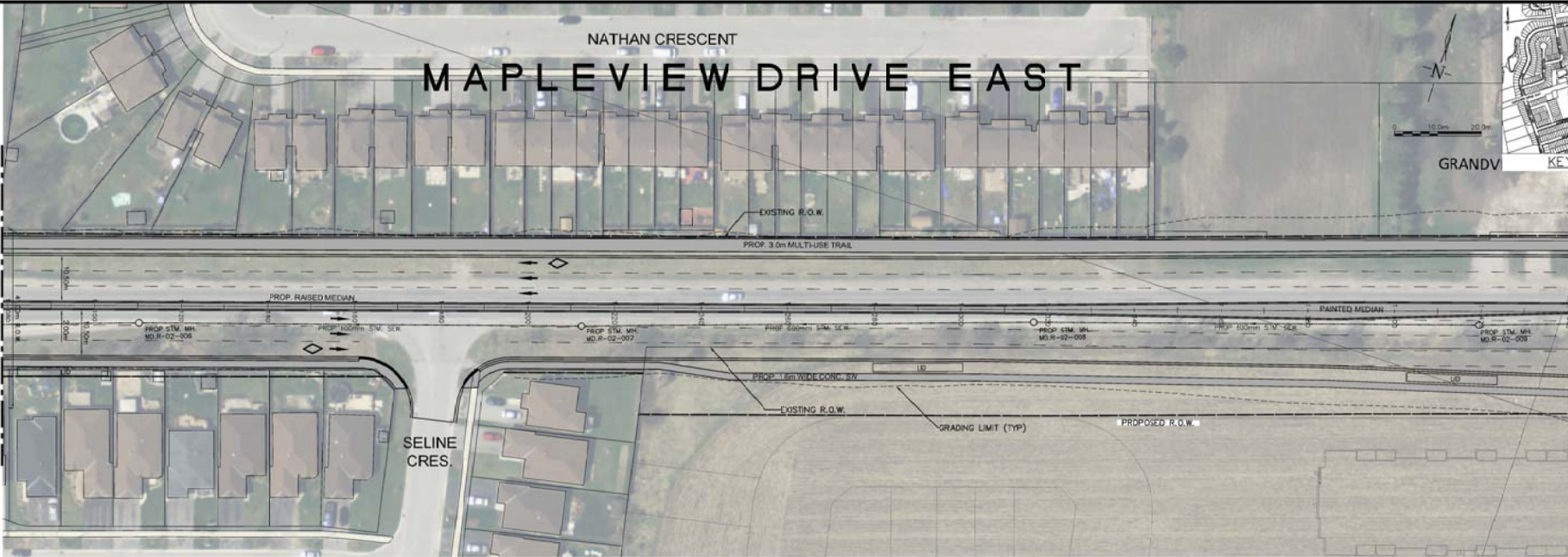
NATHAN CRESCENT MAPLEVIEW DRIVE EAST

GRANDVIEW KEY MAP



REFER TO DWG. No. PP103
MATCH LINE - STA. 1+080

REFER TO DWG. No. PP105
MATCH LINE - STA. 1+440



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



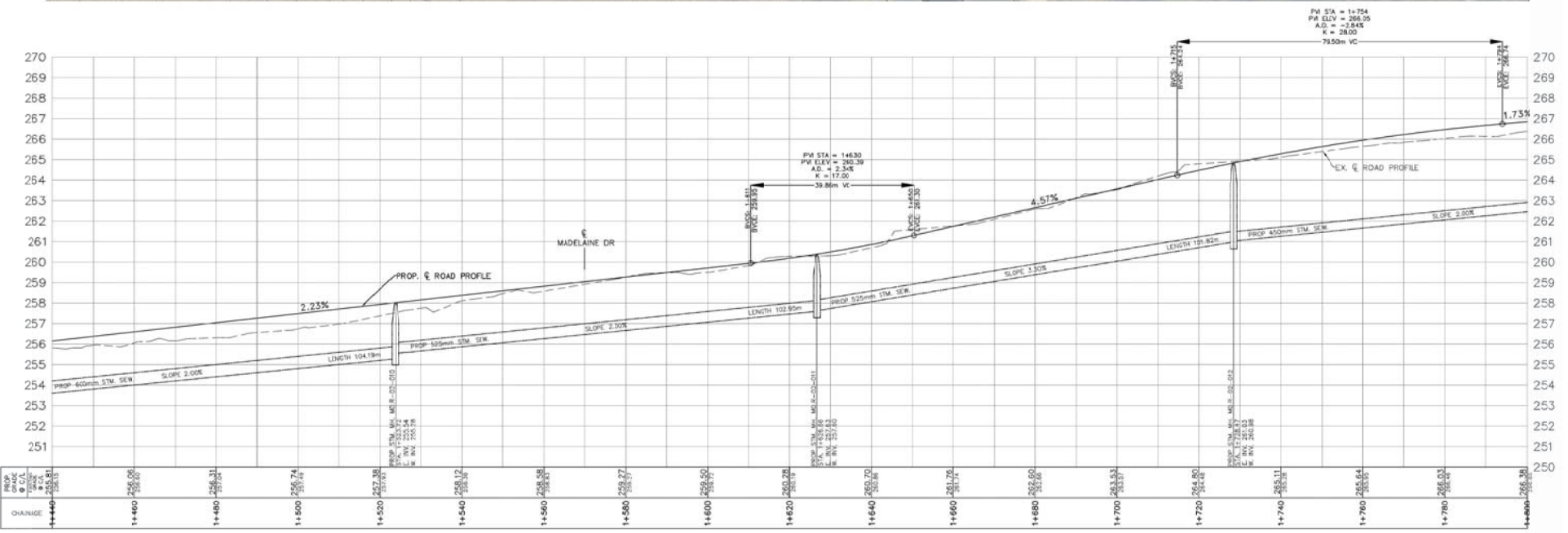
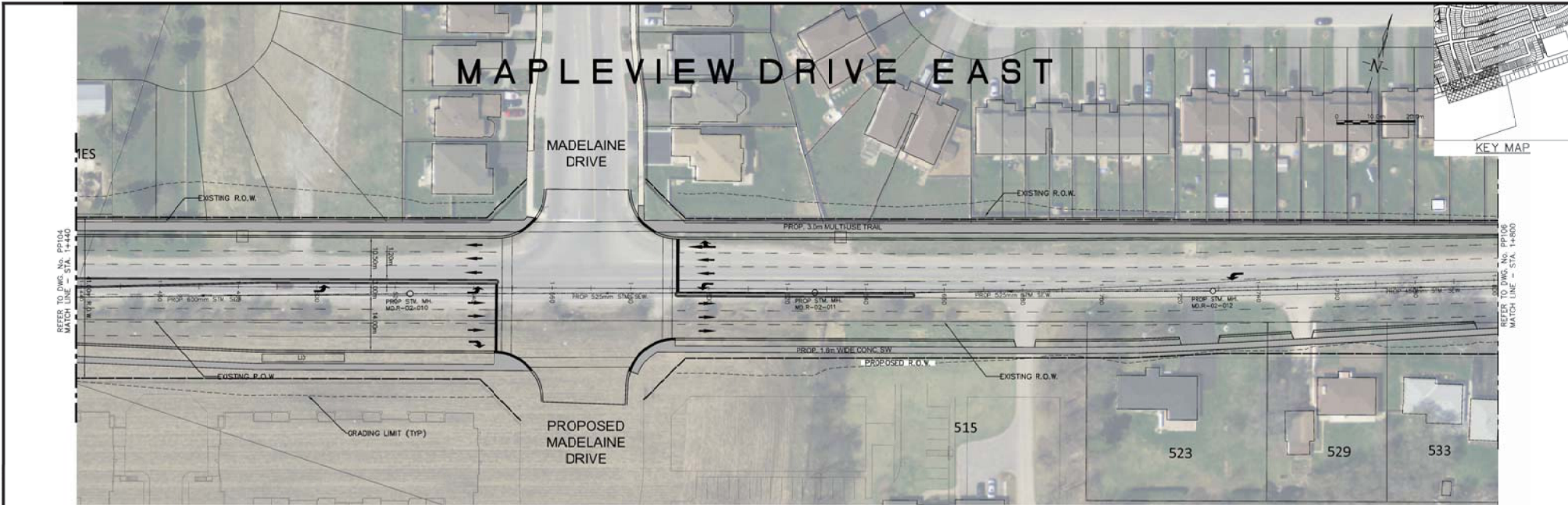
CITY OF BARRIE
APPROVED
DATE:

MAPLEVIEW DRIVE EAST
WIDENING
HURONIA ROAD TO 20TH SIDE ROAD
PLAN & PROFILE
STA. 1+180 TO STA. 1+440

The City of
BARRIE
ENGINEERING DEPARTMENT

SCALE HOR. 1:100 VERT. 1:100 CONTRACT NO. 2017-
DESIGN MSH DRAWN MSH SHEET NO. PP104
REVIEWED RS DATE 17.02.14

MAPLEVIEW DRIVE EAST



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

MAPLEVIEW DRIVE EAST
WIDENING
HURONIA ROAD TO 20TH SIDE ROAD
PLAN & PROFILE
STA. 1+440 TO STA. 1+800

The City of BARRIE
ENGINEERING DEPARTMENT

SCALE HOR. 1:100	VERT 1:100	CONTRACT NO. 2017-
DESIGN MSJ	DRAWN MSJ	SHEET NO. PP105
REVIEWED BJS	DATE 17.02.14	

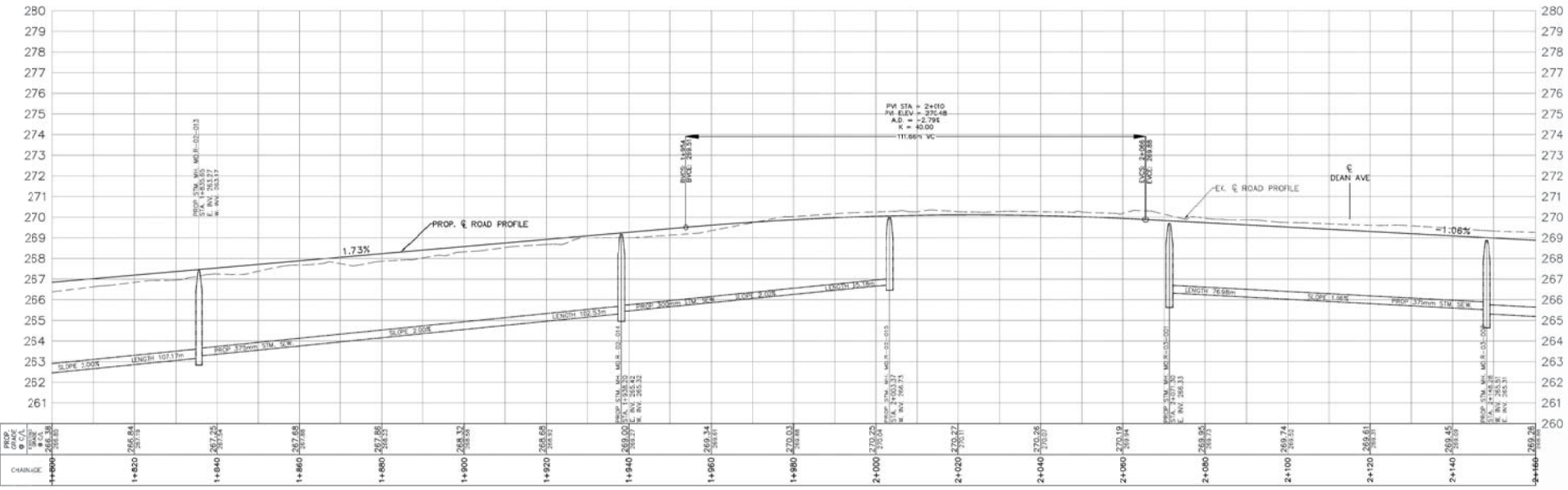
MAPLEVIEW DRIVE EAST

DEAN AVENUE

KEY MAP

REFER TO DWG. No. PP105
MATCH LINE - STA. 1+800

REFER TO DWG. No. PP107
MATCH LINE - STA. 2+160



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



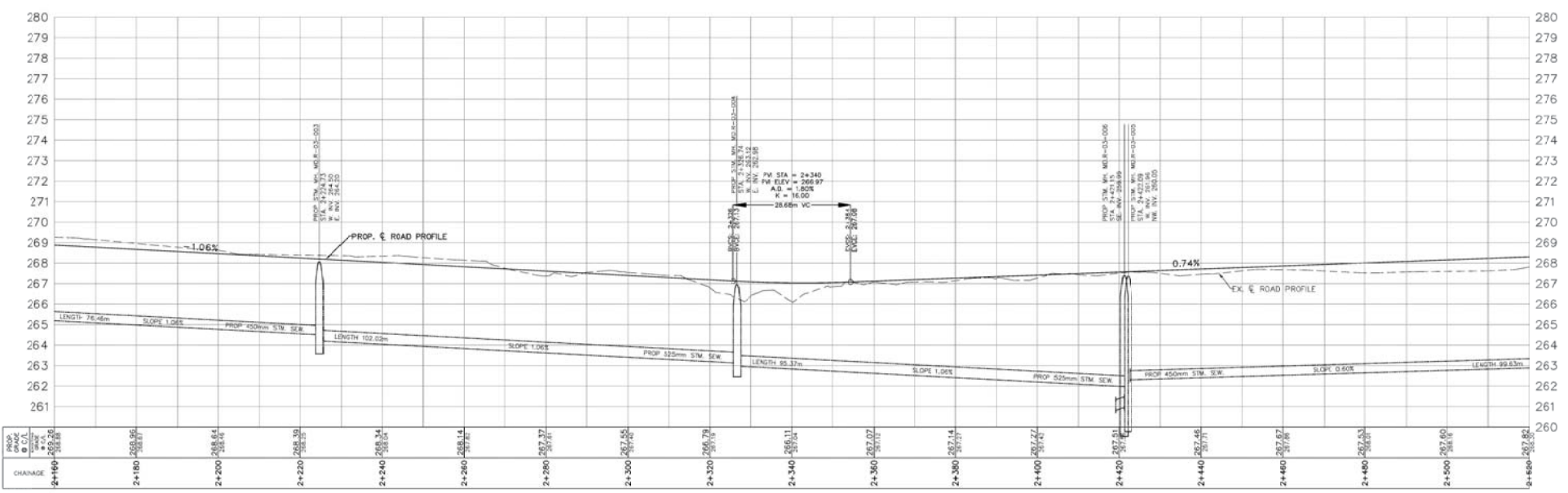
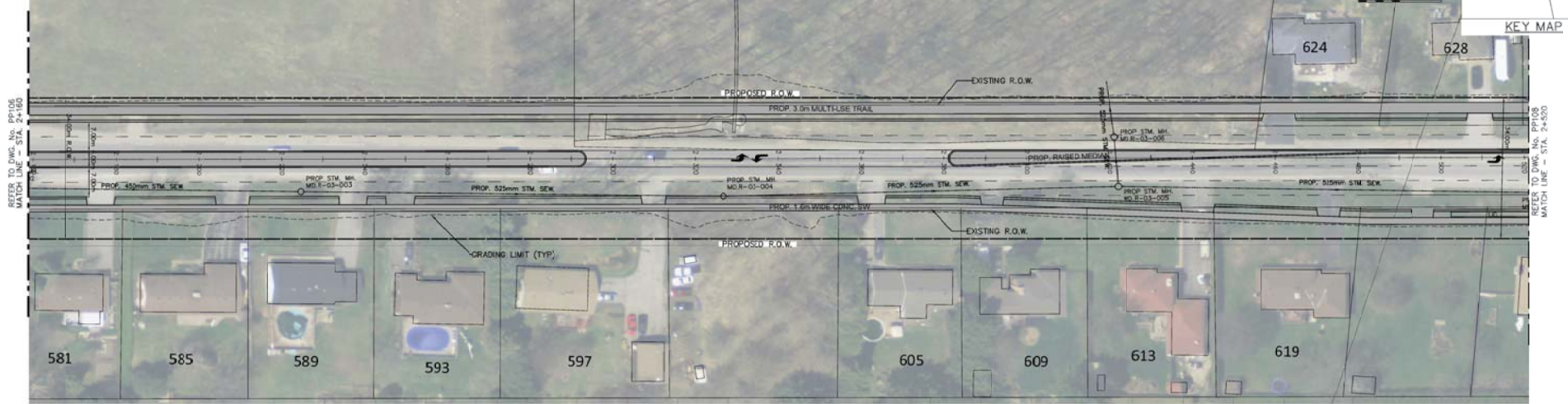
CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

MAPLEVIEW DRIVE EAST
WIDENING
HURONIA ROAD TO 20TH SIDE ROAD
PLAN & PROFILE
STA. 1+800 TO STA. 2+160

The City of BARRIE
ENGINEERING DEPARTMENT

SCALE HOR. 1:100	VERT 1:100	CONTRACT NO. 2017-
DESIGN MSJ	DRAWN MSJ	SHEET NO. PP106
REVIEWED BIS	DATE 17.02.14	

MAPLEVIEW DRIVE EAST



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

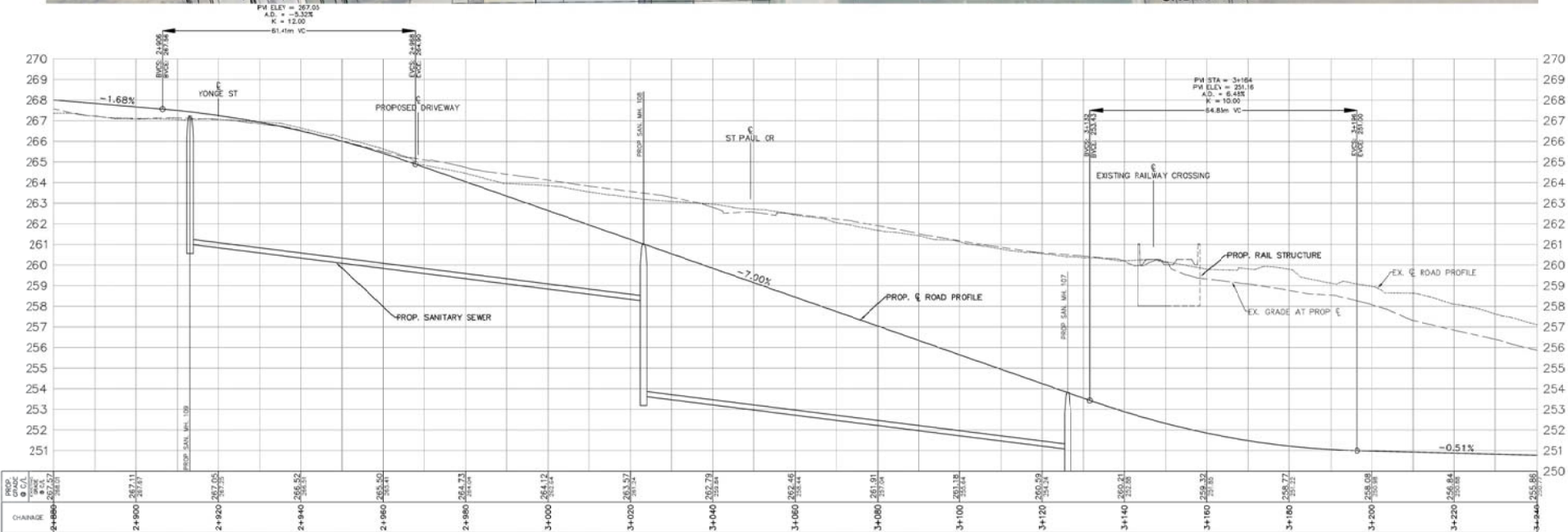
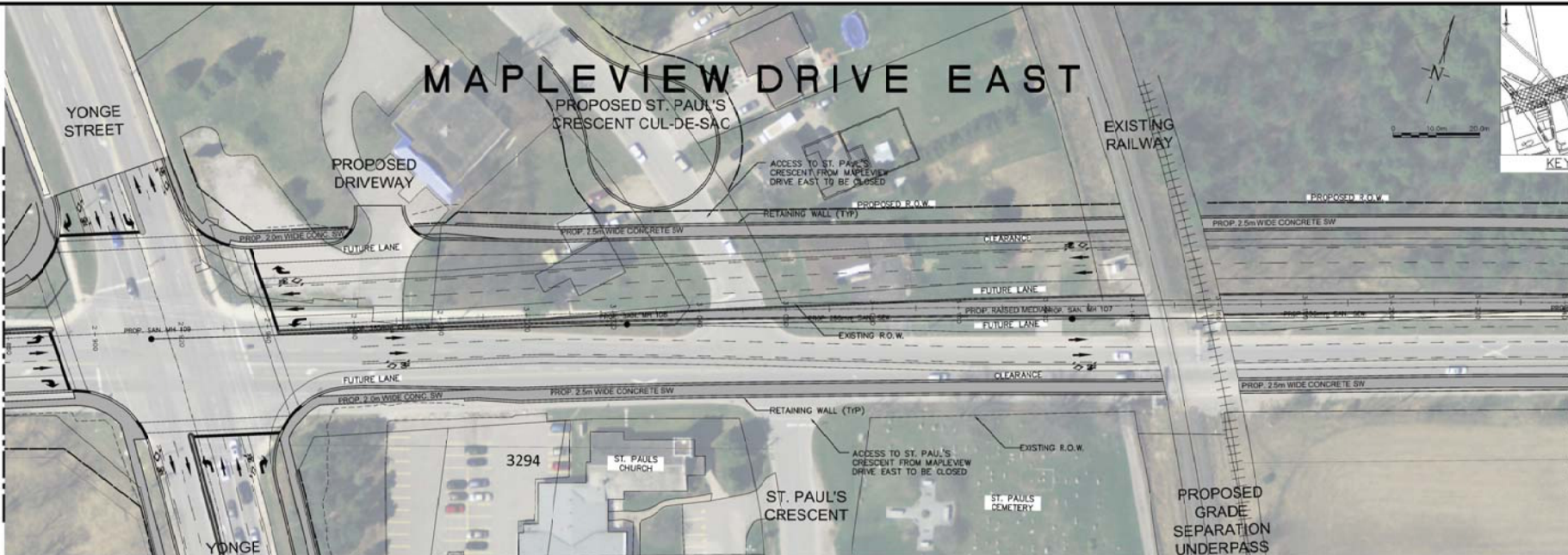
MAPLEVIEW DRIVE EAST
WIDENING
HURONIA ROAD TO 20TH SIDE ROAD
PLAN & PROFILE
STA. 2+160 TO STA. 2+520

The City of BARRIE
ENGINEERING DEPARTMENT

SCALE HOR. 1:100	VERT 1:100	CONTRACT NO. 2017-
DESIGN MSJ	DRAWN MSJ	SHEET NO. PP107
REVIEWED HJS	DATE 17.02.14	

MAPLEVIEW DRIVE EAST

PROPOSED ST. PAUL'S
CRESCENT CUL-DE-SAC



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



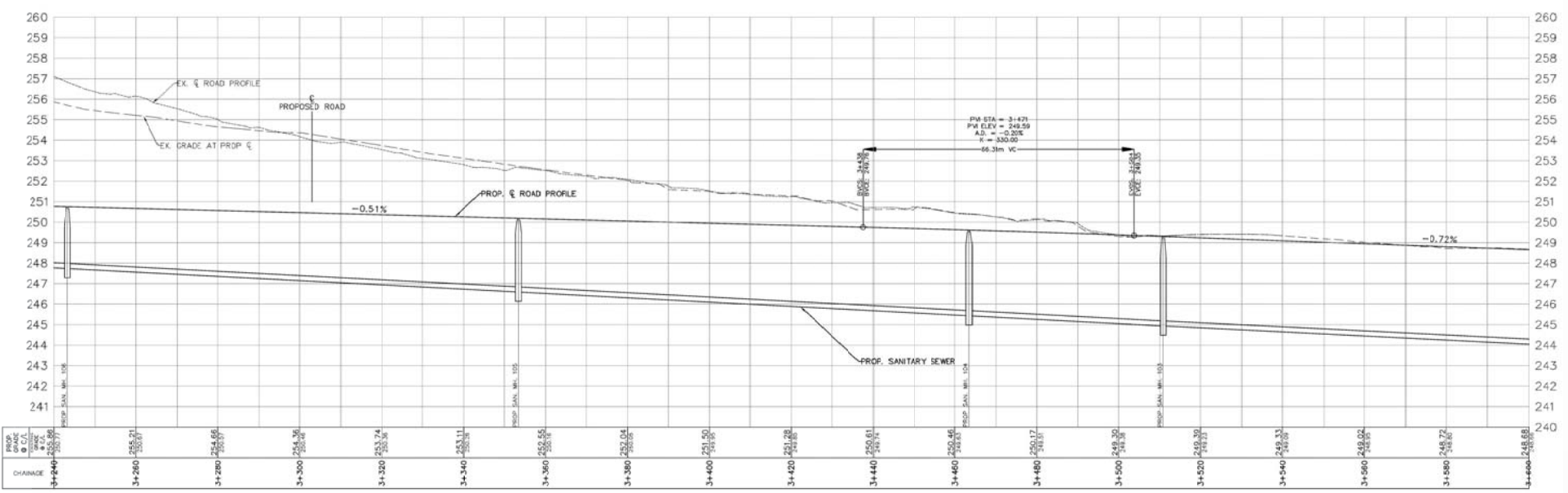
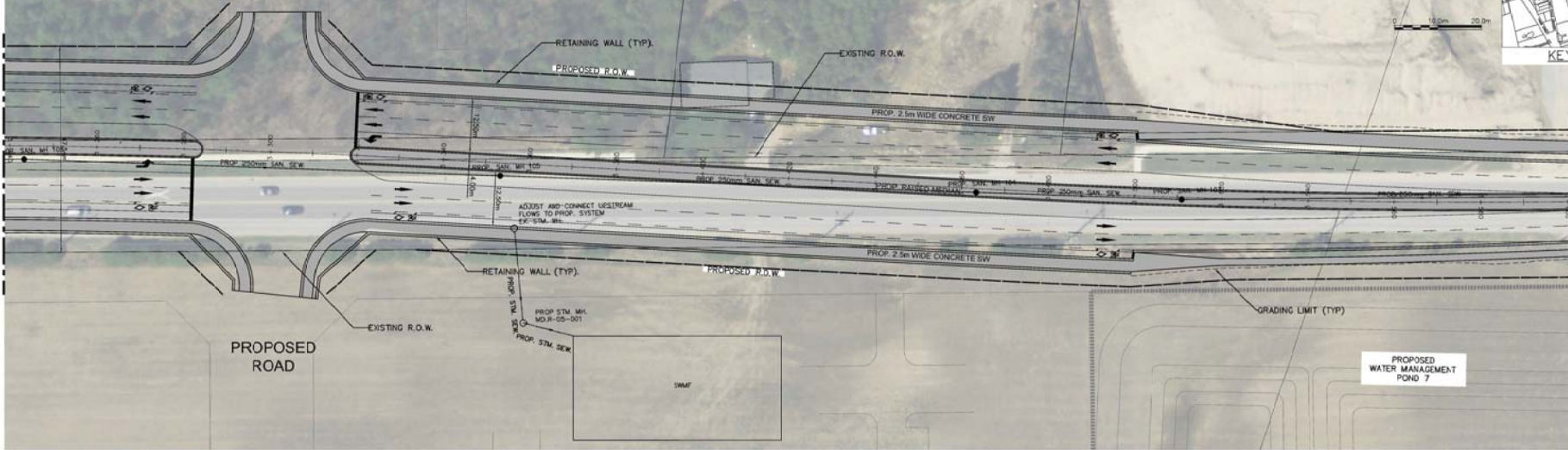
CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

**MAPLEVIEW DRIVE EAST
WIDENING**
HURONIA ROAD TO 20TH SIDE ROAD
STA. 2+880 TO STA. 3+240

The City of **BARRIE**
ENGINEERING DEPARTMENT

SCALE HOR. 1:100	VERT 1:100	CONTRACT NO. 2017-
DESIGN MSJ	DRAWN MSJ	SHEET NO. PP109
REVIEWED RIS	DATE 17.02.14	

MAPLEVIEW DRIVE EAST



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



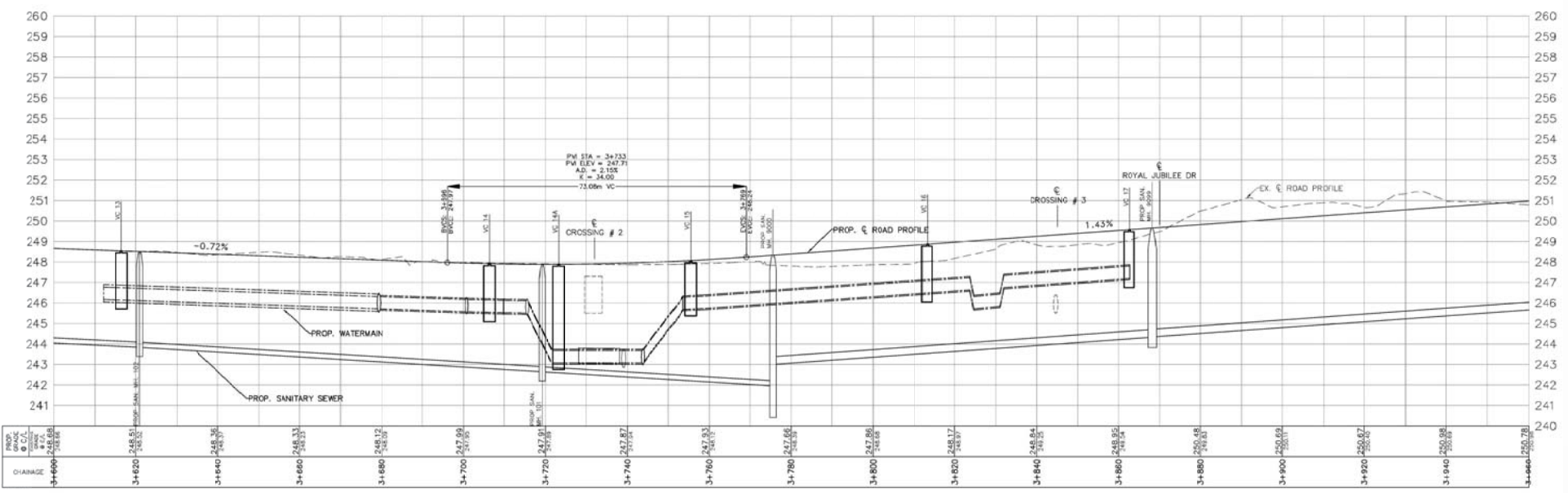
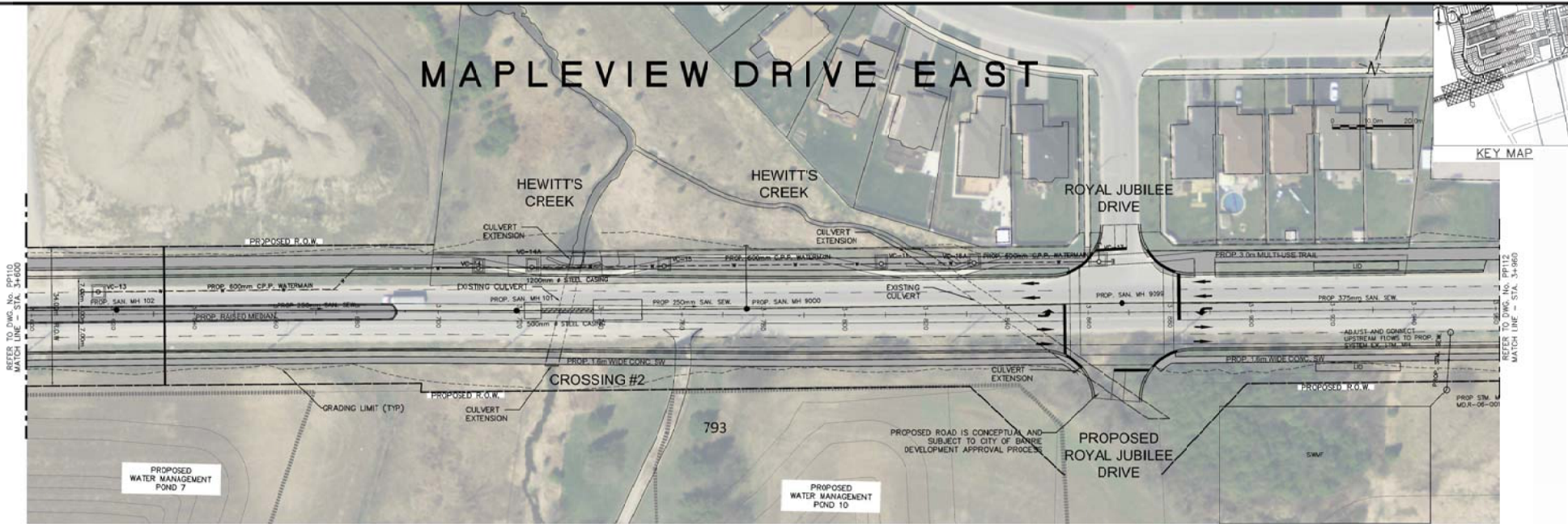
CITY OF BARRIE
APPROVED
DATE:
.....
DIRECTOR OF ENGINEERING

**MAPLEVIEW DRIVE EAST
WIDENING**
HURONIA ROAD TO 20TH SIDE ROAD
PLAN & PROFILE
STA. 3+240 TO STA. 3+600

The City of **BARRIE**
ENGINEERING DEPARTMENT

SCALE: HOR. 1:100	VERT. 1:100	CONTRACT NO. 2017-
DESIGN: MSH	DRAWN: MSH	SHEET NO. PP110
REVIEWED: HJS	DATE: 17.02.14	

MAPLEVIEW DRIVE EAST



GENERAL NOTES
 REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01 R.S.	
B	ISSUED FOR DRAFT SUBMISSION	17.03.24 R.S.	
C	ISSUED FOR FINAL SUBMISSION	17.08.25 R.S.	



CITY OF BARRIE
 APPROVED
 DATE:
 DIRECTOR OF ENGINEERING

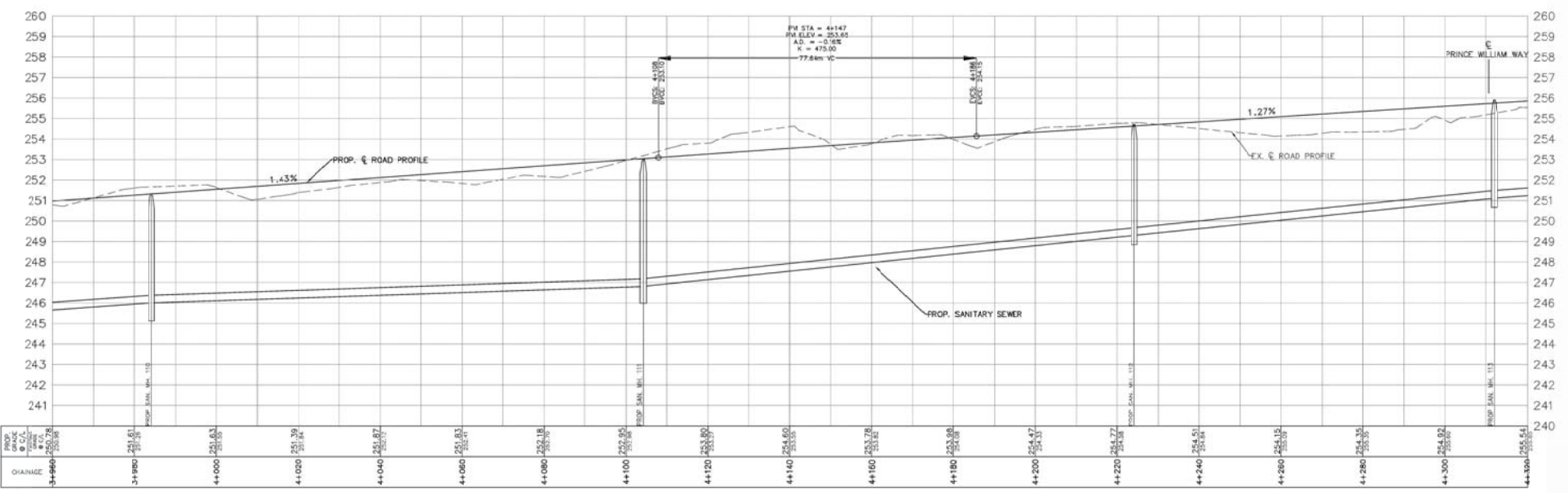
MAPLEVIEW DRIVE EAST
 WIDENING
 HURONIA ROAD TO 20TH SIDE ROAD
 PLAN & PROFILE
 STA. 3+600 TO STA. 3+960

The City of BARRIE
 ENGINEERING DEPARTMENT

SCALE HOR. 1"=50' VERT. 1"=10'
 DESIGN: MSH DRAWN: MSH
 REVIEWED: HJS DATE: 17.02.14

CONTRACT NO: 2017-
 SHEET NO: PP111

MAPLEVIEW DRIVE EAST



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.
B	ISSUED FOR DRAFT SUBMISSION	17.02.24	R.S.
C	ISSUED FOR FINAL SUBMISSION	17.08.25	R.S.



CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

MAPLEVIEW DRIVE EAST
WIDENING
HURONIA ROAD TO 20TH SIDE ROAD
PLAN & PROFILE
STA. 3+960 TO STA. 4+320

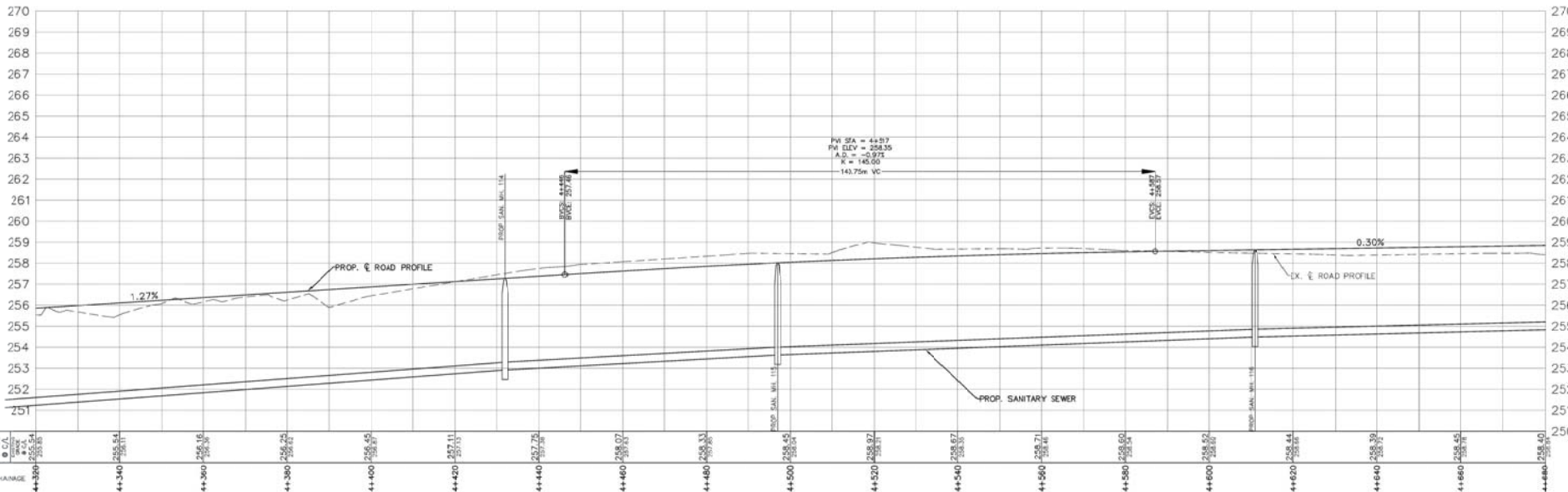
The City of
BARRIE
ENGINEERING DEPARTMENT

SCALE HOR. 1:100 VERT. 1:100 CONTRACT NO. 2017-
DESIGN MSH DRAWN MSH SHEET NO. PP112
REVIEWED BJS DATE 17.02.14

MAPLEVIEW DRIVE EAST

KEY MAP

PRINCE WILLIAM WAY



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.

HATCH

CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

**MAPLEVIEW DRIVE EAST
WIDENING**
HURONIA ROAD TO 20TH SIDE ROAD
PLAN & PROFILE
STA. 4+320 TO STA. 4+680

The City of
BARRIE
ENGINEERING DEPARTMENT

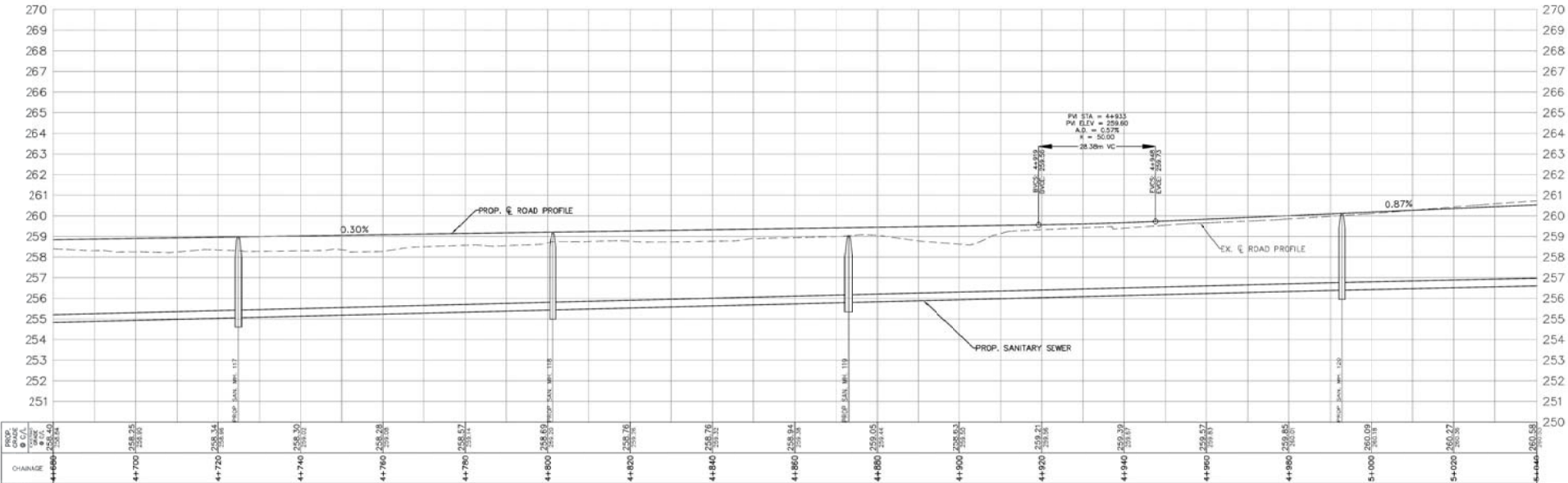
SCALE HOR. 1:100 VERT. 1:100 CONTRACT NO. 2017-
DESIGN MSH DRAWN MSH SHEET NO. PP113
REVIEWED HJS DATE 17.02.14

MAPLEVIEW DRIVE EAST



REFER TO PWS. NO. PP113
MATCH LINE - STA. 4+680

REFER TO DWG. NO. PP115
MATCH LINE - STA. 5+040



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.

HATCH

CITY OF BARRIE
APPROVED

DATE:

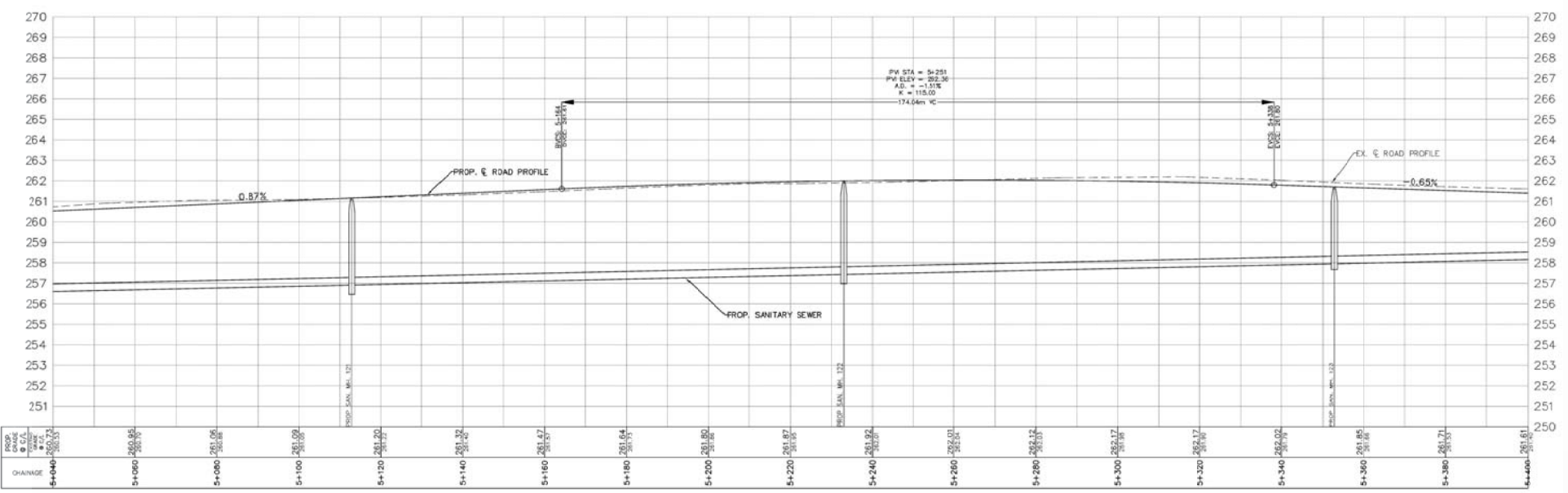
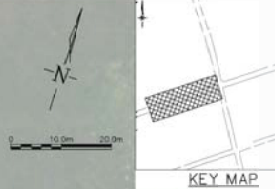
.....
DIRECTOR OF ENGINEERING

**MAPLEVIEW DRIVE EAST
WIDENING**
HURONIA ROAD TO 20TH SIDE ROAD
PLAN & PROFILE
STA. 4+680 TO STA. 5+040

The City of
BARRIE
ENGINEERING DEPARTMENT

SCALE HOR. 1:100 VERT 1:100 CONTRACT NO. 2017-
DESIGN MSH DRAWN MSH SHEET NO. PP114
REVIEWED RIS DATE 17.02.14

MAPLEVIEW DRIVE EAST



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.

HATCH

CITY OF BARRIE APPROVED

DATE:

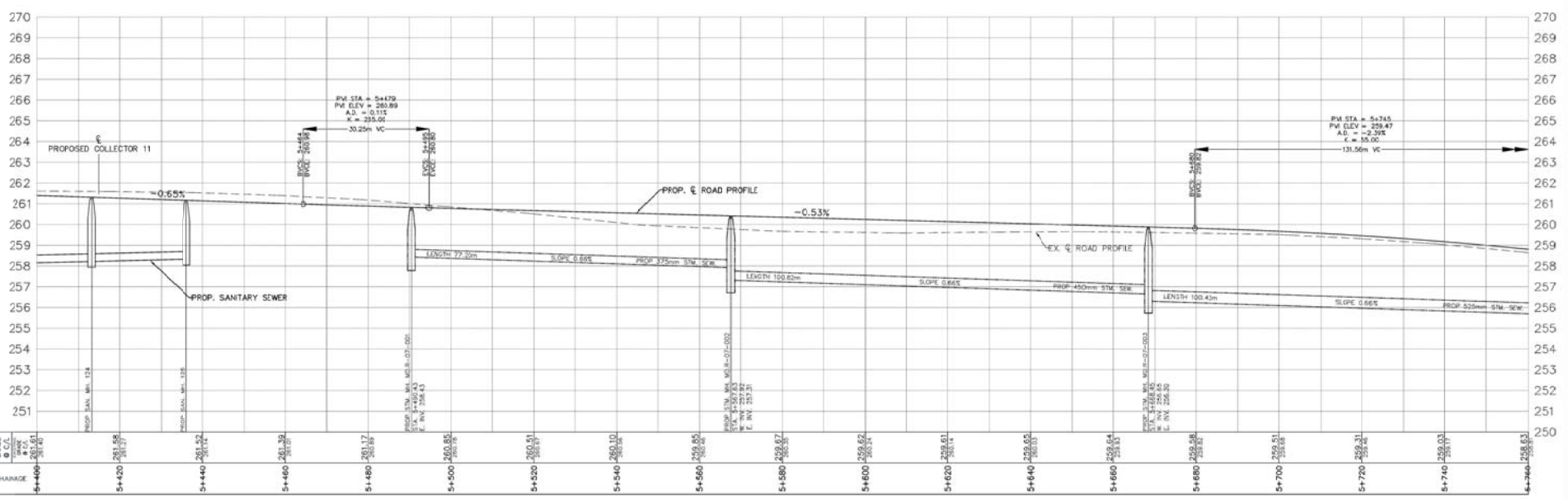
..... DIRECTOR OF ENGINEERING

MAPLEVIEW DRIVE EAST WIDENING
 HURONIA ROAD TO 20TH SIDE ROAD
 PLAN & PROFILE
 STA. 5+040 TO STA. 5+400

The City of **BARRIE**
 ENGINEERING DEPARTMENT

SCALE HOR. 1:100 VERT 1:100 CONTRACT NO. 2017-
 DESIGN MSH DRAWN MSH SHEET NO. PP115
 REVIEWED HJS DATE 17.02.14

MAPLEVIEW DRIVE EAST



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

MAPLEVIEW DRIVE EAST
WIDENING
HURONIA ROAD TO 20TH SIDE ROAD
PLAN & PROFILE
STA. 5+400 TO STA. 5+760

The City of BARRIE
ENGINEERING DEPARTMENT

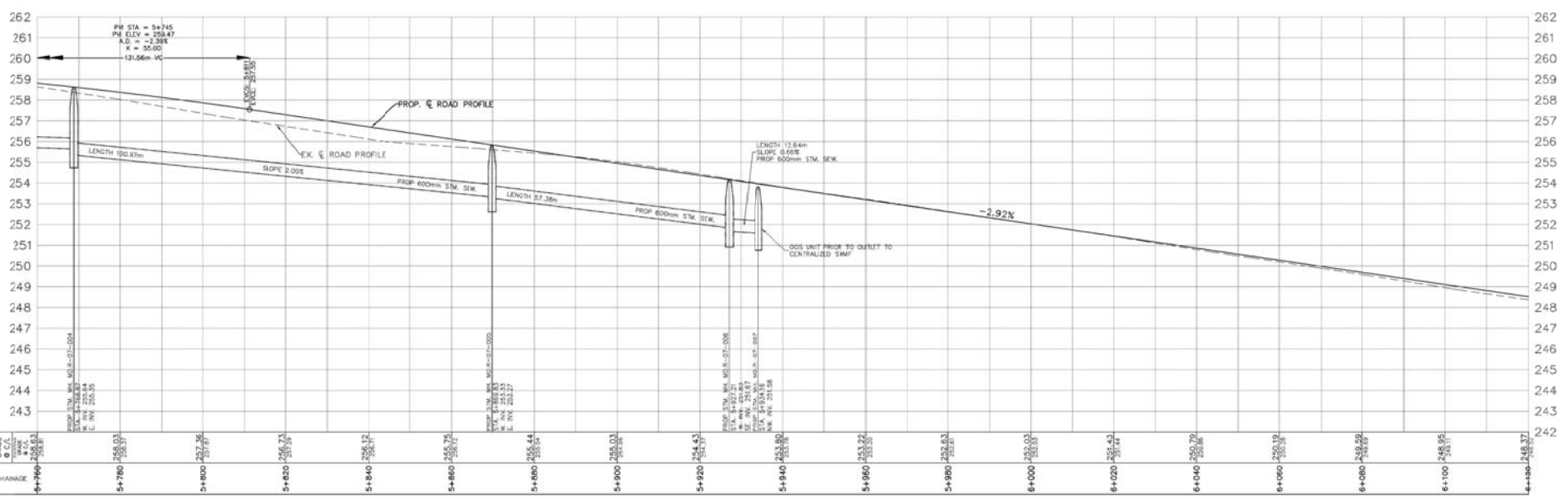
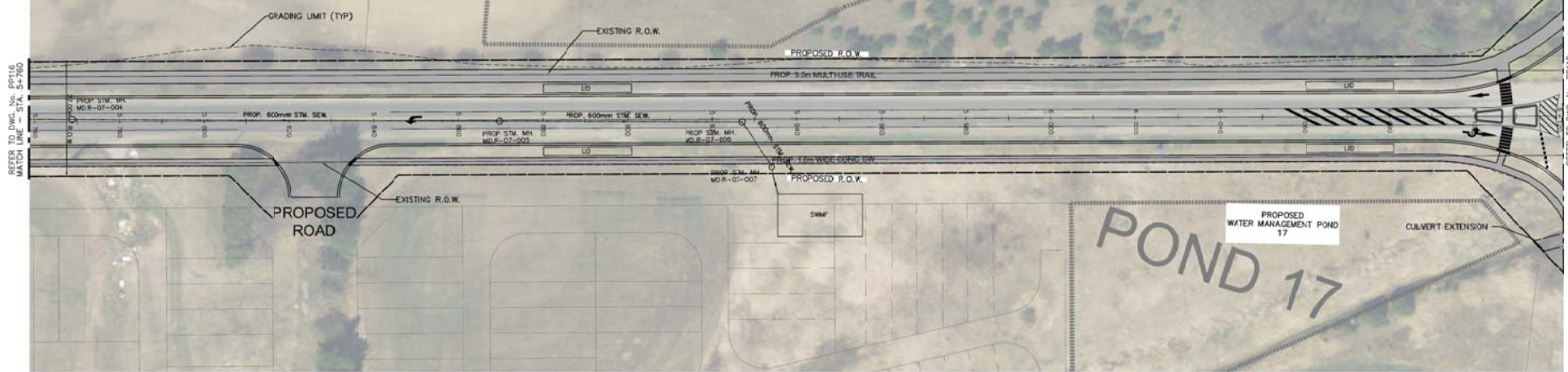
SCALE HOR. 1:100	VERT 1:100	CONTRACT NO. 2017-
DESIGN MSH	DRAWN MSH	SHEET NO. PP116
REVIEWED RIS	DATE 17.02.14	

MAPLEVIEW DRIVE EAST

PROPOSED WATER MANAGEMENT POND 14



KEY MAP



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



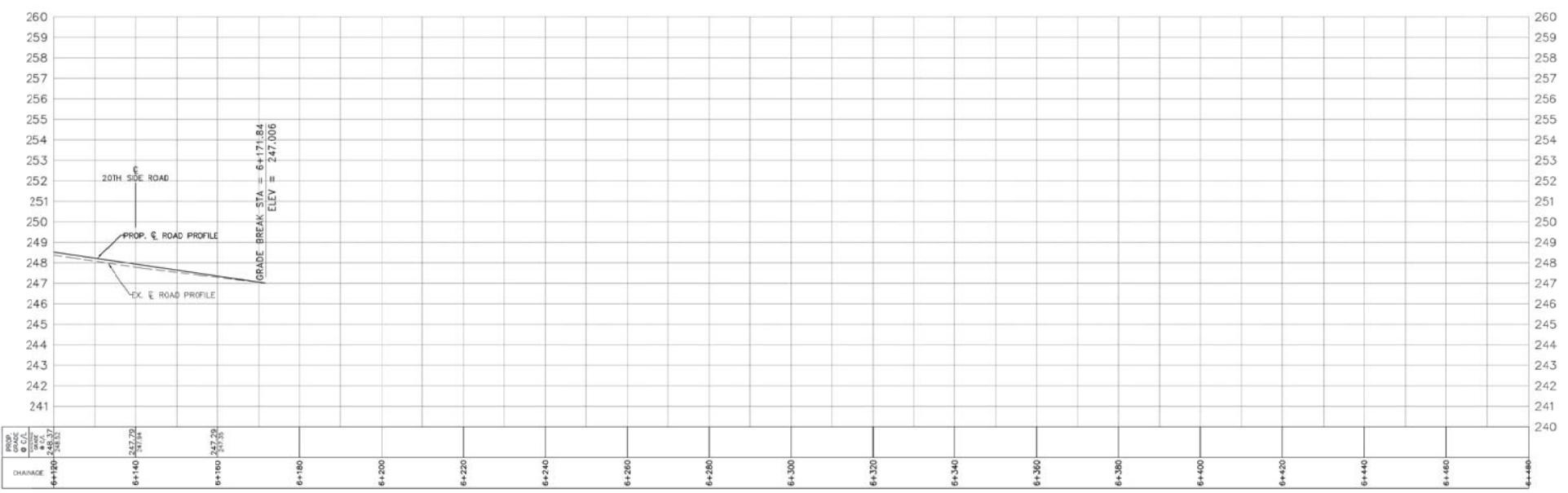
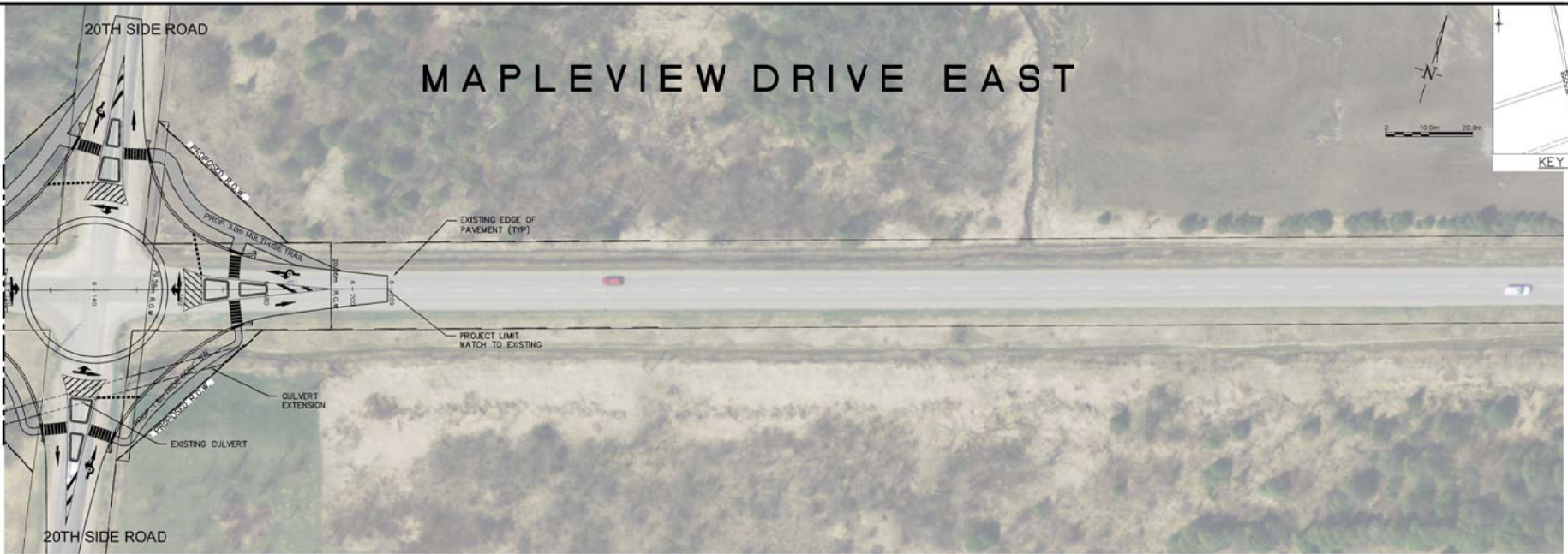
CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

MAPLEVIEW DRIVE EAST
WIDENING
HURONIA ROAD TO 20TH SIDE ROAD
PLAN & PROFILE
STA. 5+760 TO STA. 6+120

The City of
BARRIE
ENGINEERING DEPARTMENT

SCALE: HOR. 1:100 VERT. 1:100 CONTRACT NO. 2017-
DESIGN: MSH DRAWN: MSJ SHEET NO. PP117
REVIEWED: HJS DATE: 17.02.14

MAPLEVIEW DRIVE EAST



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



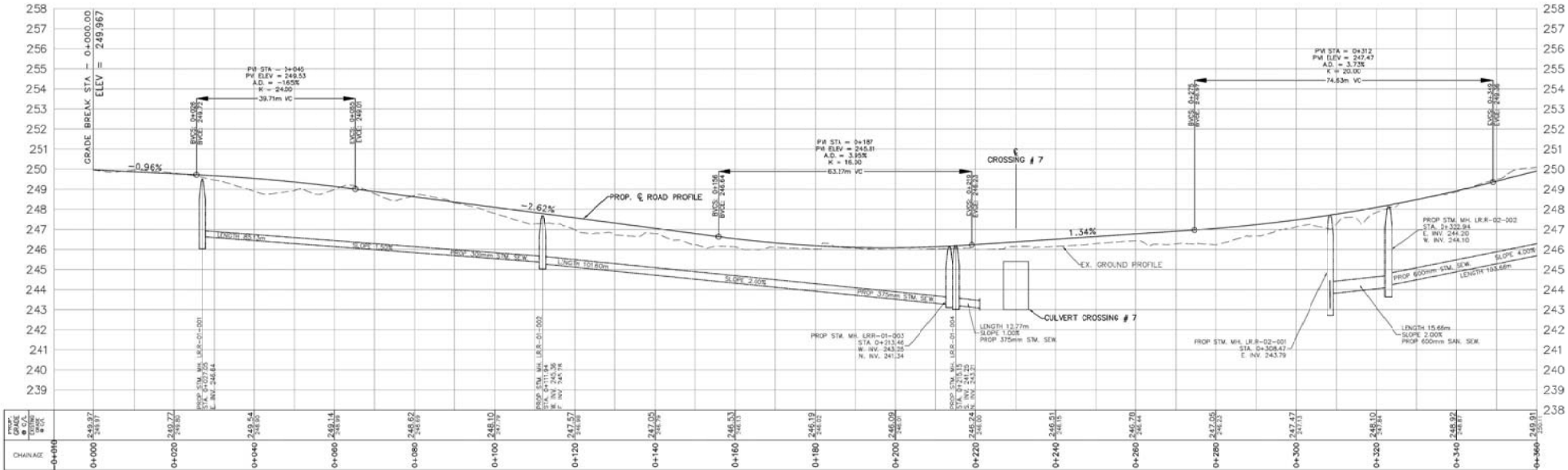
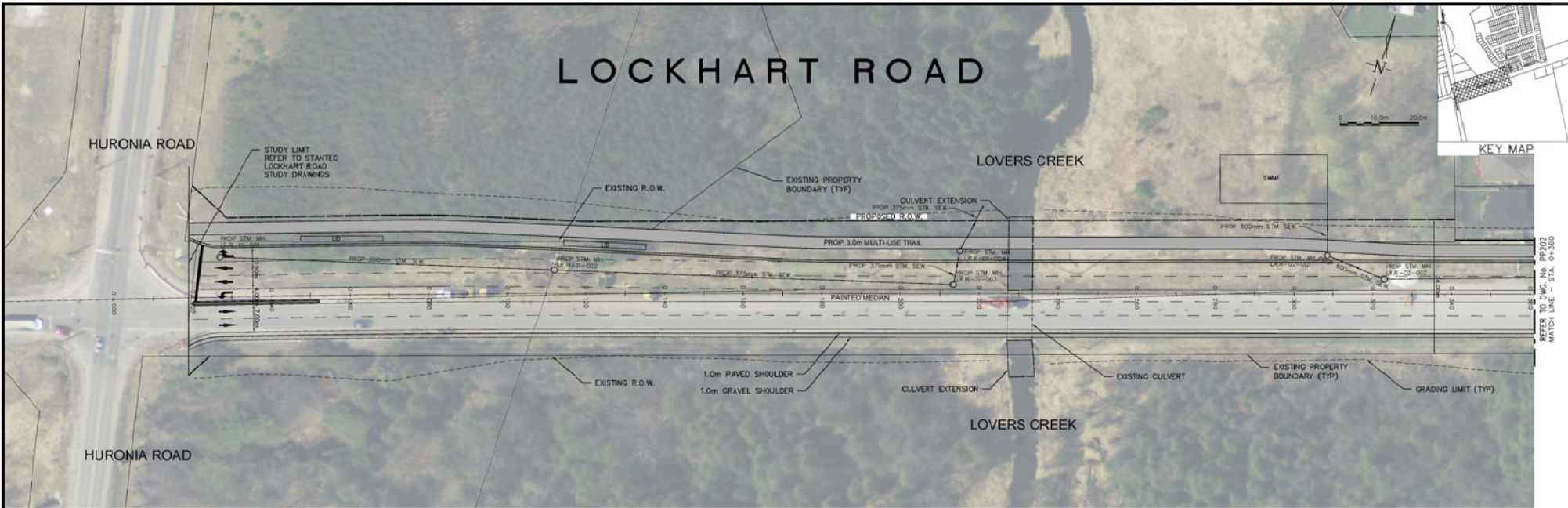
CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

**MAPLEVIEW DRIVE EAST
WIDENING**
HURONIA ROAD TO 20TH SIDE ROAD
PLAN & PROFILE
STA. 6+120 TO STA. 6+171.84

The City of
BARRIE
ENGINEERING DEPARTMENT

SCALE HOR. 1:100	VERT. 1:100	CONTRACT NO. 2017-
DESIGN MSH	DRAWN MSH	SHEET NO. PP118
REVIEWED RIS	DATE 17.02.14	

LOCKHART ROAD



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.

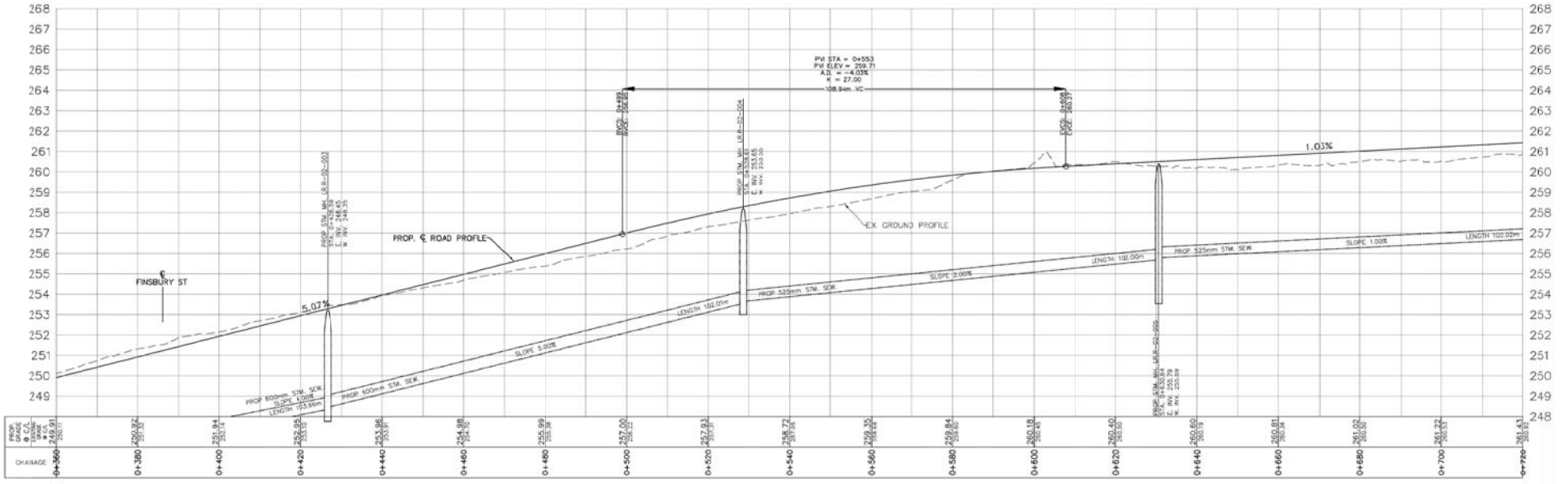
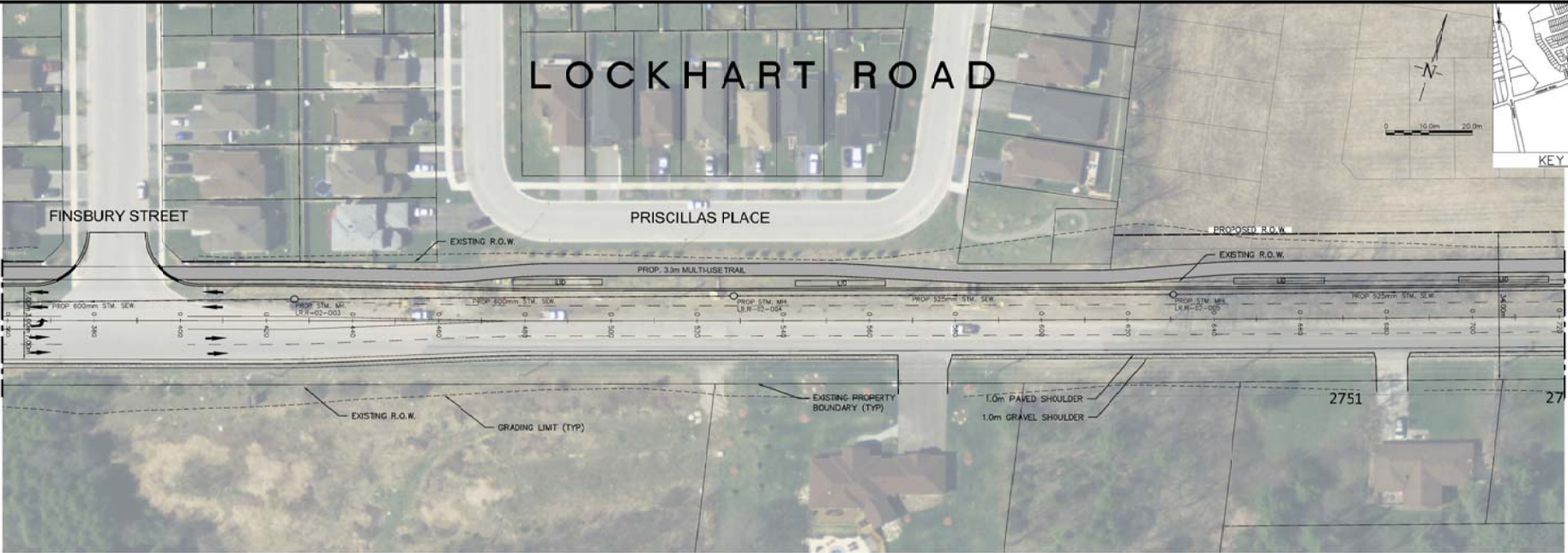
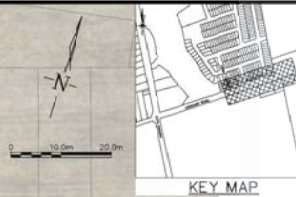


CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

LOCKHART ROAD WIDENING
HURONIA ROAD TO PHASE I BOUNDARY
PLAN & PROFILE
STA. 0+000 TO STA. 0+360

The City of **BARRIE**
ENGINEERING DEPARTMENT
SCALE HOR. 1:100 VERT 1:100
CONTRACT NO. 2017-
DESIGN MSH DRAWN MSH SHEET NO. PP201
REVIEWED HS DATE 17.02.14

LOCKHART ROAD



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.

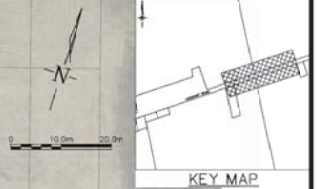


CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

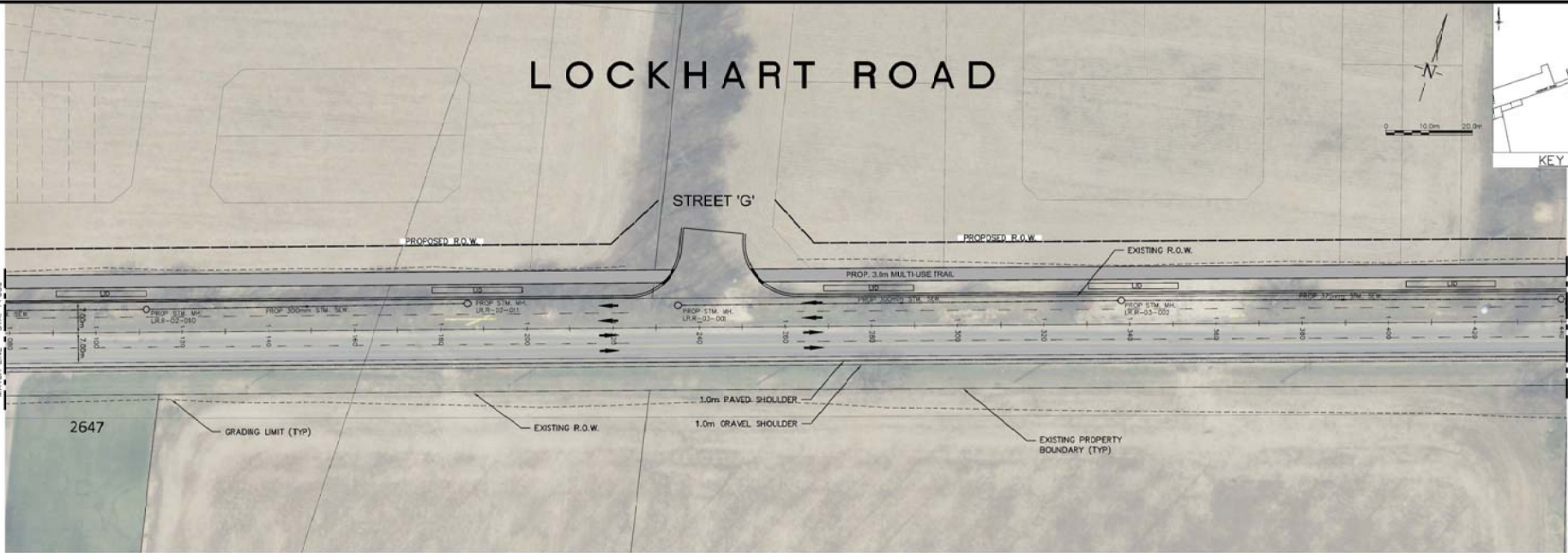
LOCKHART ROAD WIDENING
HURONIA ROAD TO PHASE I BOUNDARY
PLAN & PROFILE
STA. 0+360 TO STA. 0+720

The City of **BARRIE**
ENGINEERING DEPARTMENT
SCALE: HOR. 1:100 VERT. 1:100
DESIGN: MSH DRAWN: MSH CONTRACT NO: 2017-
REVIEWED: HJS DATE: 17.02.14 SHEET NO: PP202

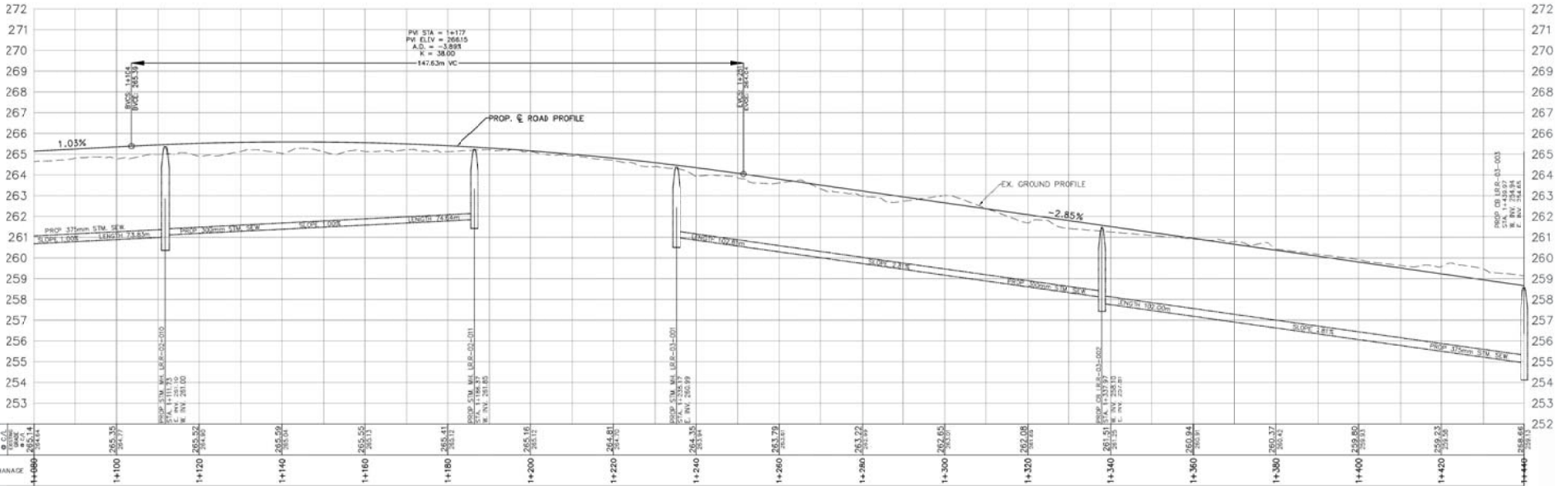
LOCKHART ROAD



REFER TO DWG. NO. PP203
FOR PLAN VIEW



REFER TO DWG. NO. PP203
FOR PLAN VIEW
MATCH LINE - STA. 14400



PROP. GRADE	EXIST. GRADE	PROF. STA.	PROF. ELEV.	PROF. ELEV. - 1.00m	PROF. STA.	PROF. ELEV.	PROF. ELEV. - 1.00m
1+080	254.14	1+100	255.35	254.35	1+120	255.32	254.32
		1+140	255.52	254.52	1+160	255.52	254.52
		1+180	255.41	254.41	1+200	255.16	254.16
		1+220	254.81	253.81	1+240	253.35	252.35
		1+260	253.72	252.72	1+280	253.22	252.22
		1+300	252.65	251.65	1+320	252.08	251.08
		1+340	251.51	250.51	1+360	250.84	250.84
		1+380	250.27	249.27	1+400	249.80	248.80
		1+420	249.23	248.23	1+440	248.66	247.66

GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.

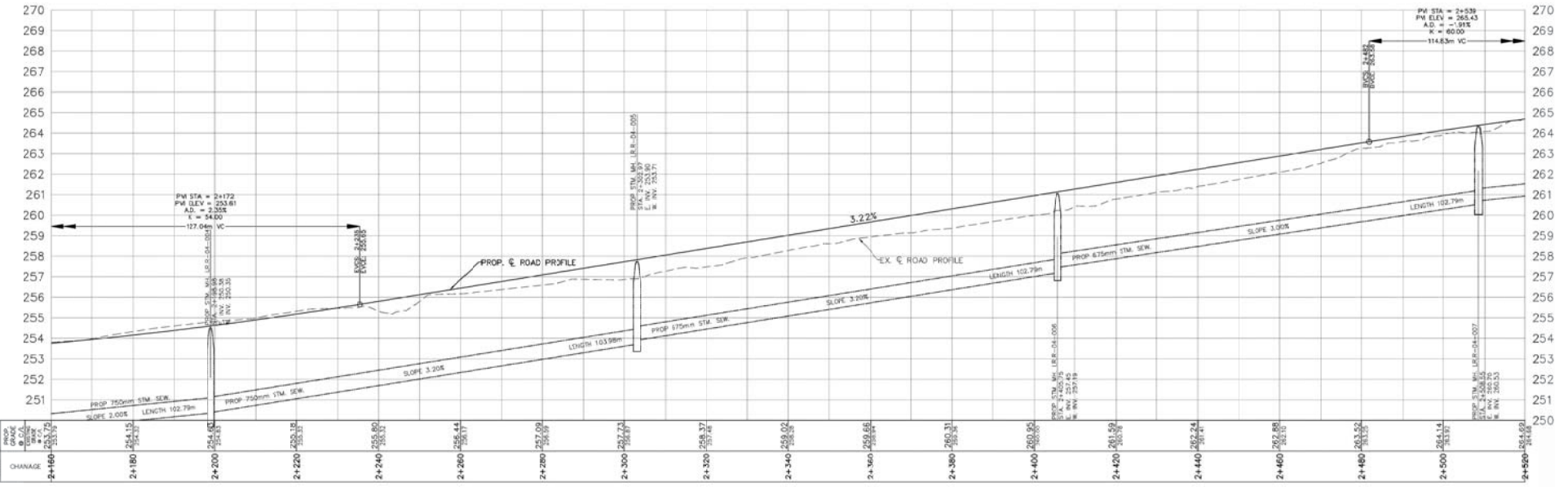
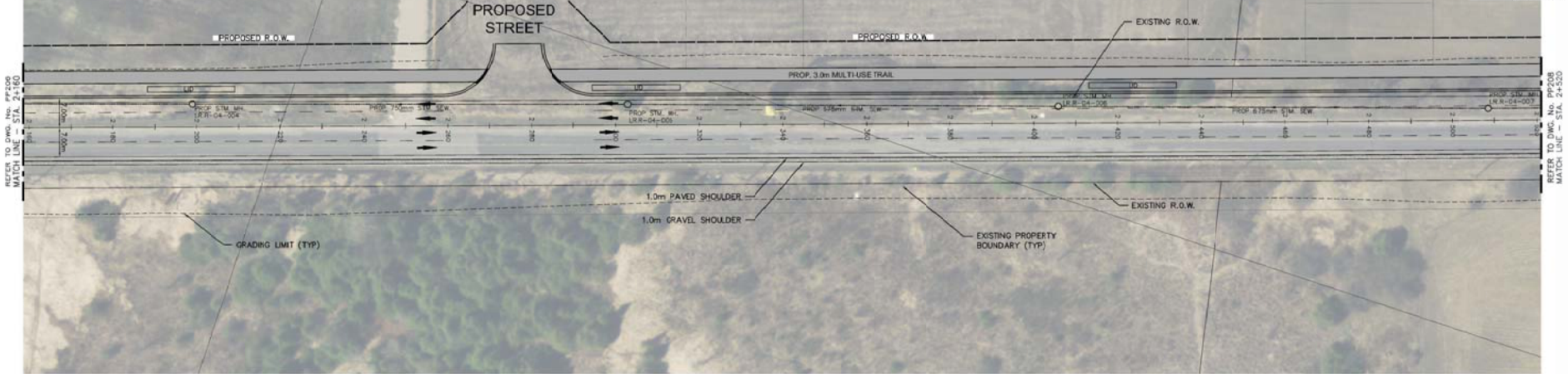
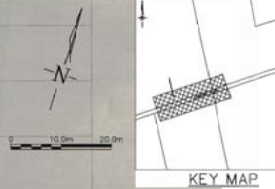


CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

**LOCKHART ROAD
WIDENING**
HURONIA ROAD TO PHASE I BOUNDARY
PLAN & PROFILE
STA. 1+080 TO STA. 1+440

The City of
BARRIE
ENGINEERING DEPARTMENT
SCALE HOR. 1:100 VERT. 1:100
DESIGN: MSH DRAWN: MSH CONTRACT NO. 2017-
REVIEWED: RJS DATE: 17.02.14 SHEET NO. PP204

LOCKHART ROAD



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

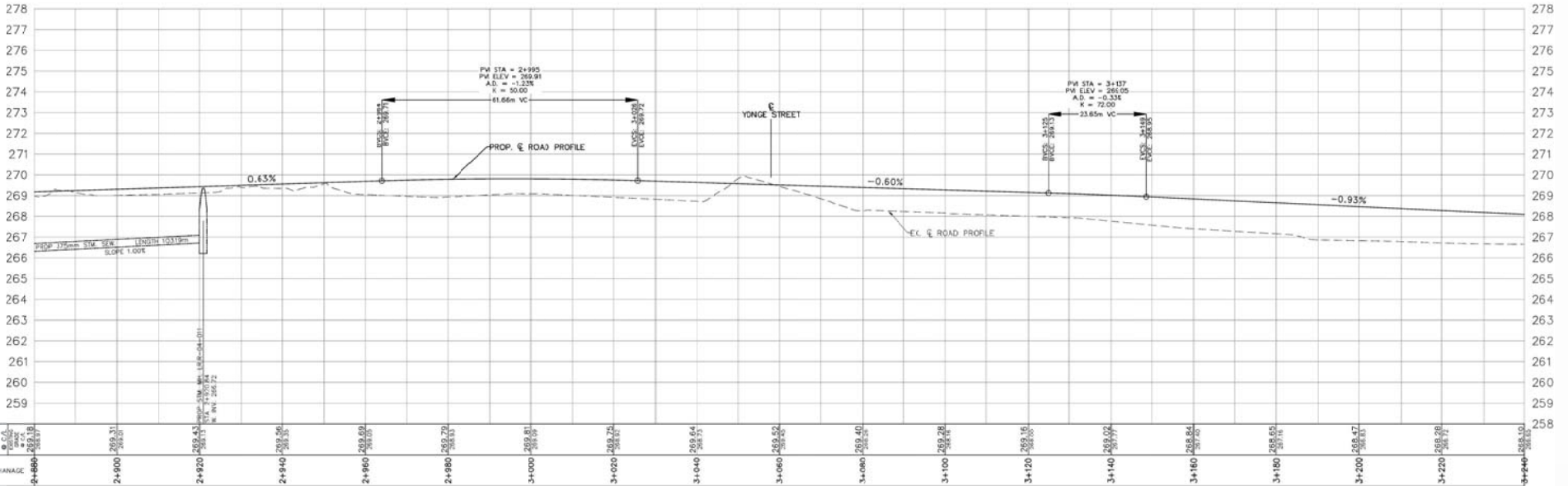
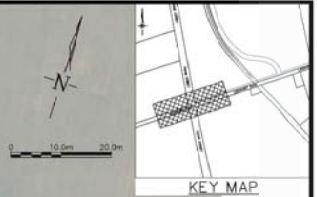
**LOCKHART ROAD
WIDENING**
HURONIA ROAD TO PHASE I BOUNDARY
PLAN & PROFILE
STA. 2+160 TO STA. 2+520

The City of
BARRIE
ENGINEERING DEPARTMENT
SCALE HOR. 1:100 VERT. 1:100
DESIGN: MSH DRAWN: MSH CONTRACT NO. 2017-
REVIEWED: HJS DATE: 17.02.14 SHEET NO. PP207

LOCKHART ROAD

YONGE STREET

YONGE STREET



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

LOCKHART ROAD WIDENING
HURONIA ROAD TO PHASE I BOUNDARY
PLAN & PROFILE
STA. 2+880 TO STA. 3+240

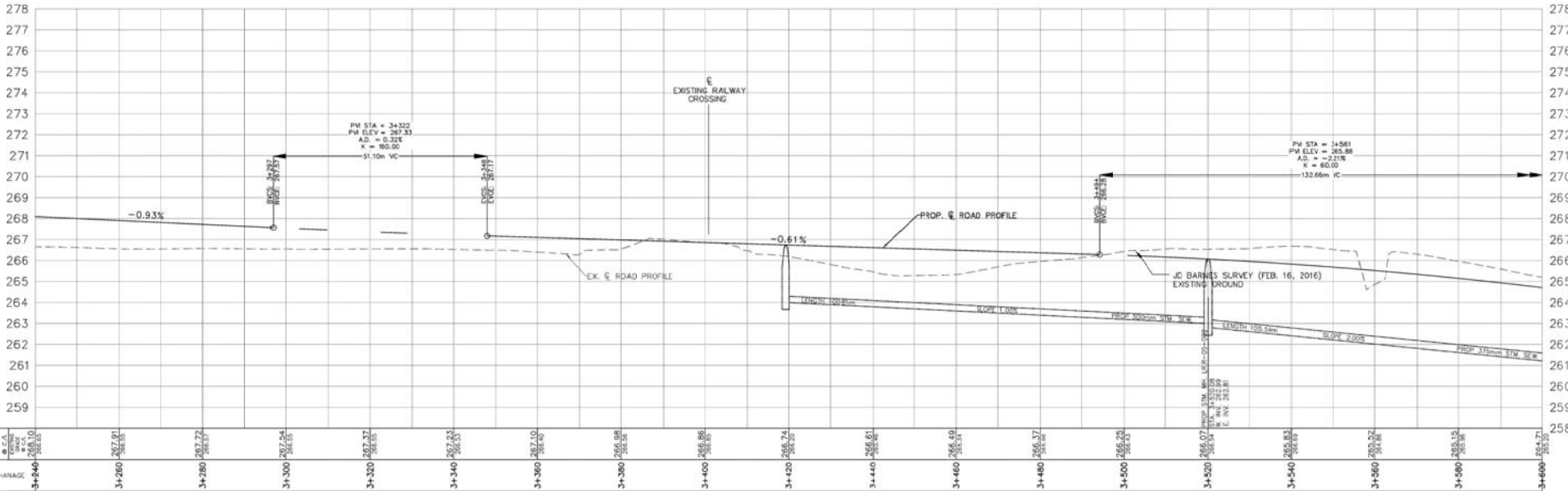
The City of **BARRIE**
ENGINEERING DEPARTMENT
SCALE HOR. 1:100 VERT. 1:100
DESIGN: MCM DRAWN: MCM CONTRACT NO. 2017-
REVIEWED: BJS DATE: 17.02.14 SHEET NO. PP209

LOCKHART ROAD

PROPOSED INTERIM COLLECTOR ROAD #8

750

KEY MAP



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.

HATCH

CITY OF BARRIE APPROVED

DATE:

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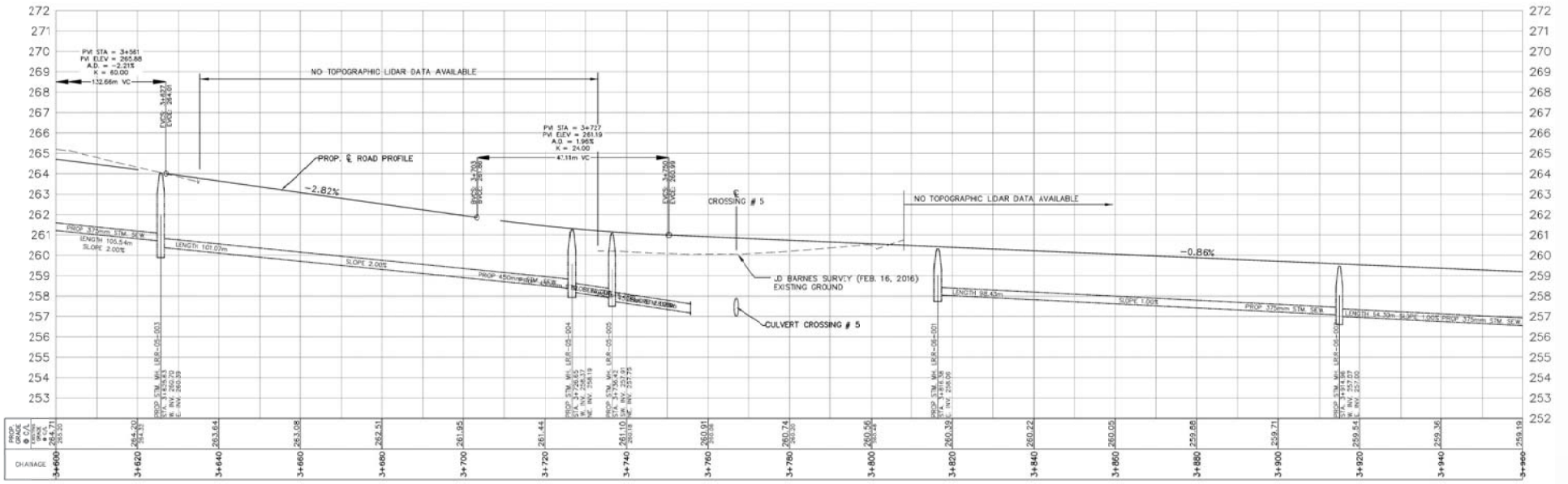
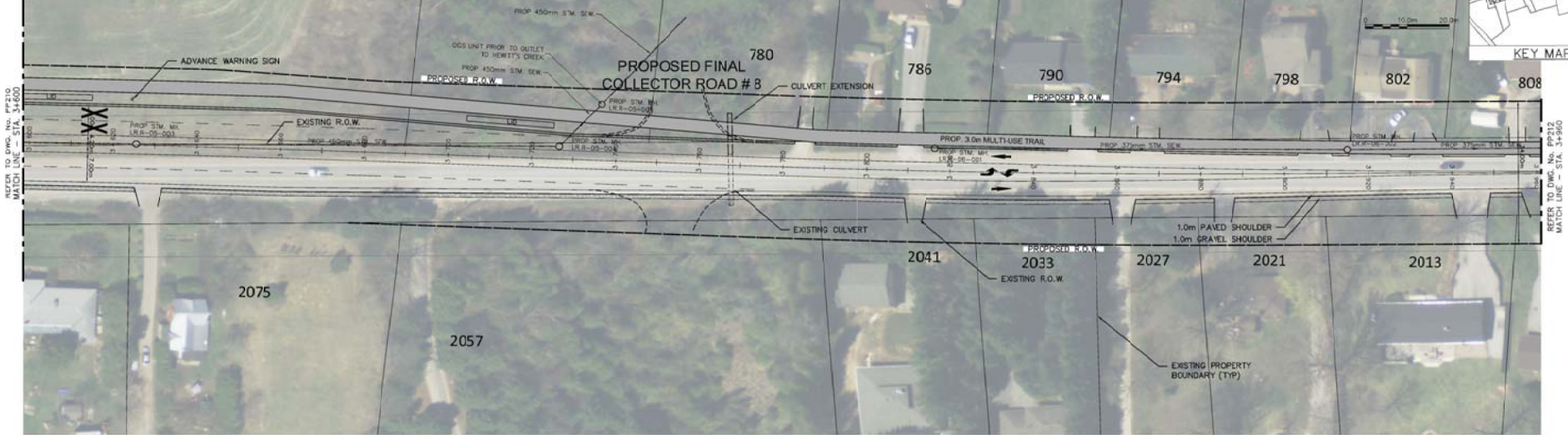
LOCKHART ROAD WIDENING
HURONIA ROAD TO PHASE I BOUNDARY

PLAN & PROFILE
STA. 3+240 TO STA. 3+600

The City of **BARRIE**
ENGINEERING DEPARTMENT

SCALE HOR. 1:100 VERT. 1:100 CONTRACT NO. 2017-
DESIGN MSH DRAWN MSH SHEET NO. PP210
REVIEWED RJS DATE 17.02.14

LOCKHART ROAD



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



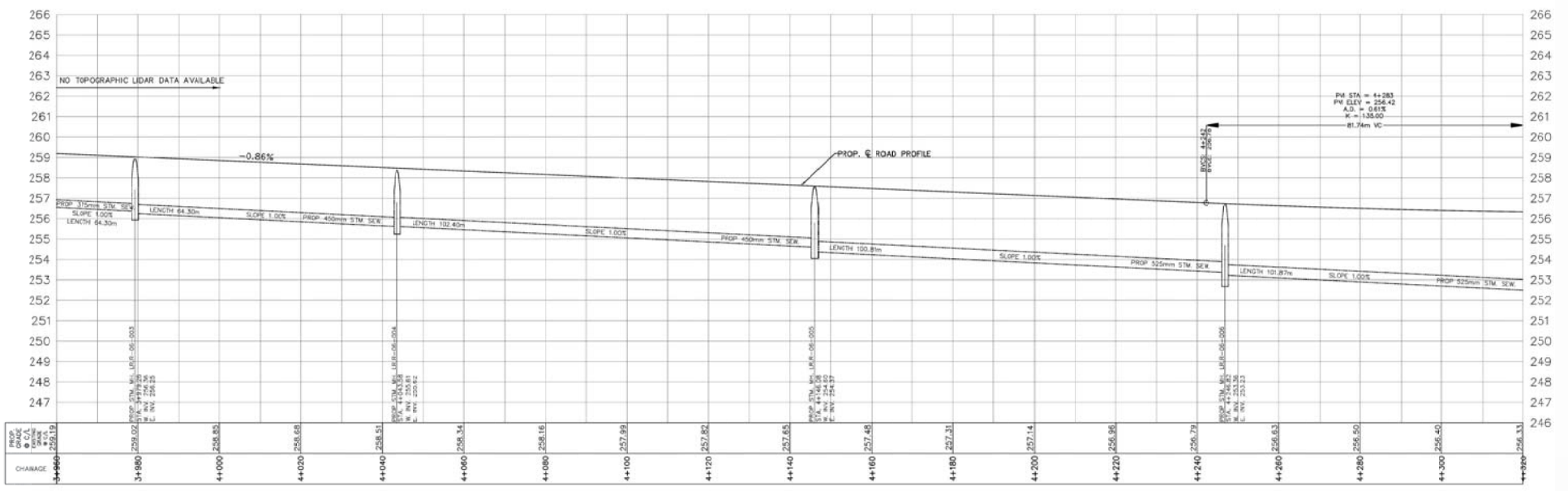
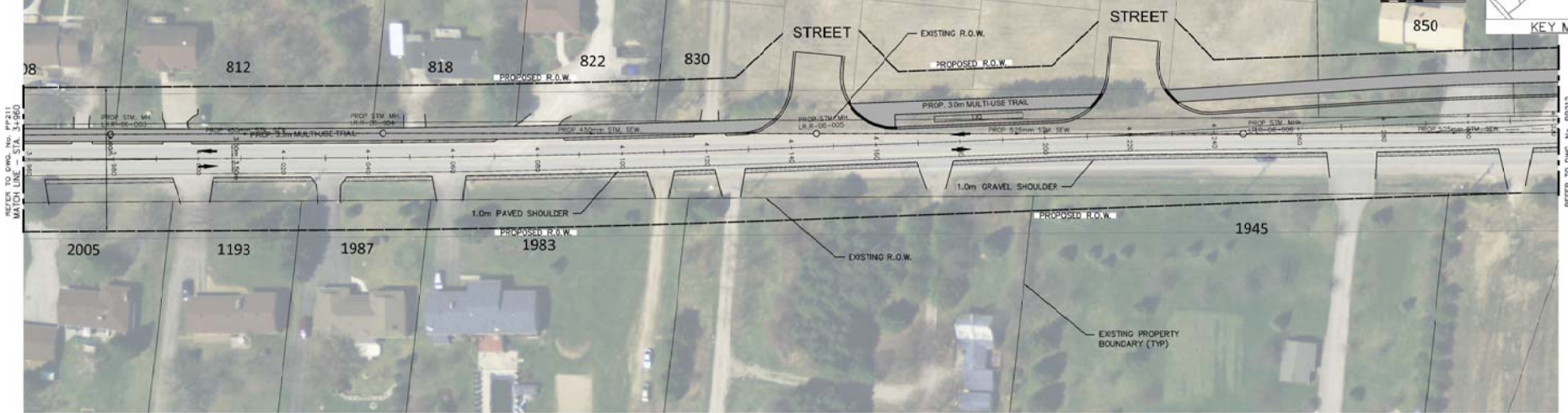
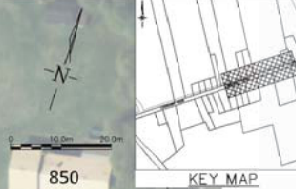
CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

**LOCKHART ROAD
WIDENING**
HURONIA ROAD TO PHASE I BOUNDARY
PLAN & PROFILE
STA. 3+600 TO STA. 3+960

The City of
BARRIE
ENGINEERING DEPARTMENT

SCALE HOR. 1:100	VERT. 1:100	CONTRACT NO. 2017-
DESIGN: HRS	DRAWN: MSH	SHEET NO. PP211
REVIEWED: HRS	DATE: 17.02.14	

LOCKHART ROAD



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



CITY OF BARRIE
APPROVED
DATE:

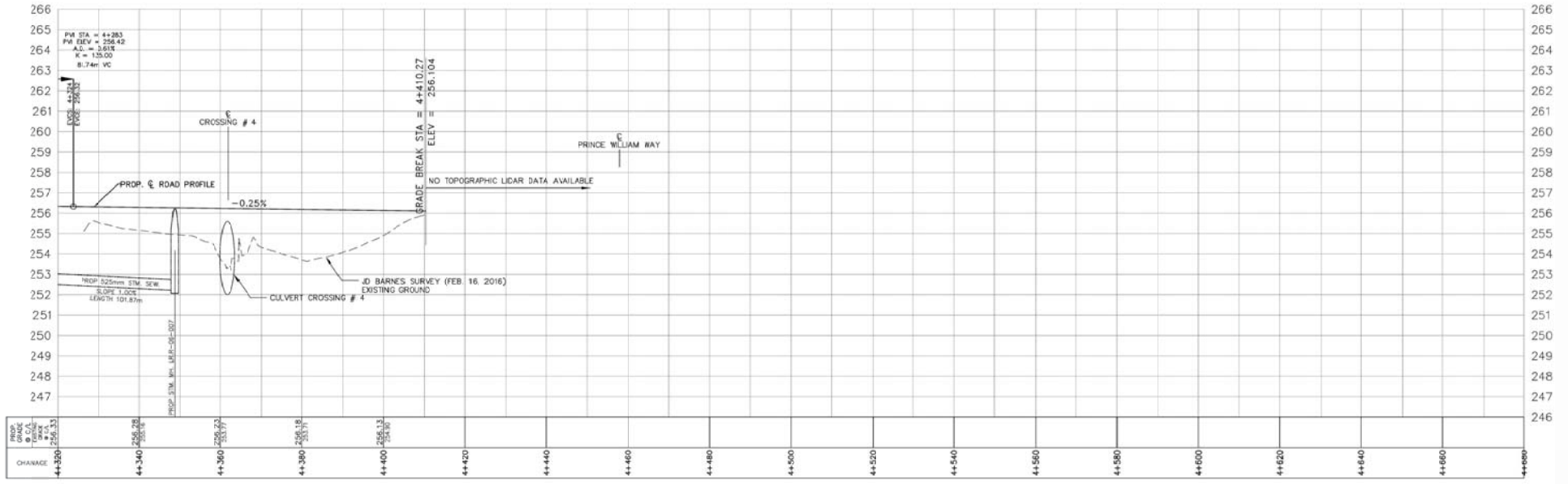
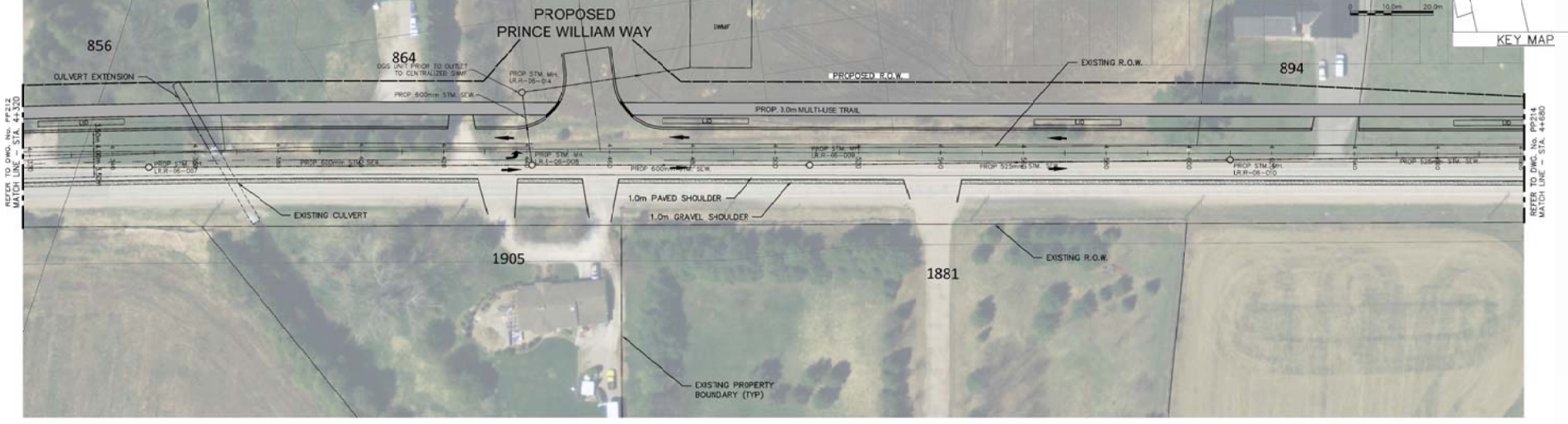
**LOCKHART ROAD
WIDENING**
HURONIA ROAD TO PHASE I BOUNDARY
PLAN & PROFILE
STA. 3+960 TO STA. 4+320

The City of
BARRIE
ENGINEERING DEPARTMENT

SCALE HOR. 1:100 VERT. 1:100
DESIGN: MSH DRAWN: MSH
REVIEWED: R/S DATE: 17.02.14

CONTRACT NO: 2017-
SHEET NO: PP212

LOCKHART ROAD



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



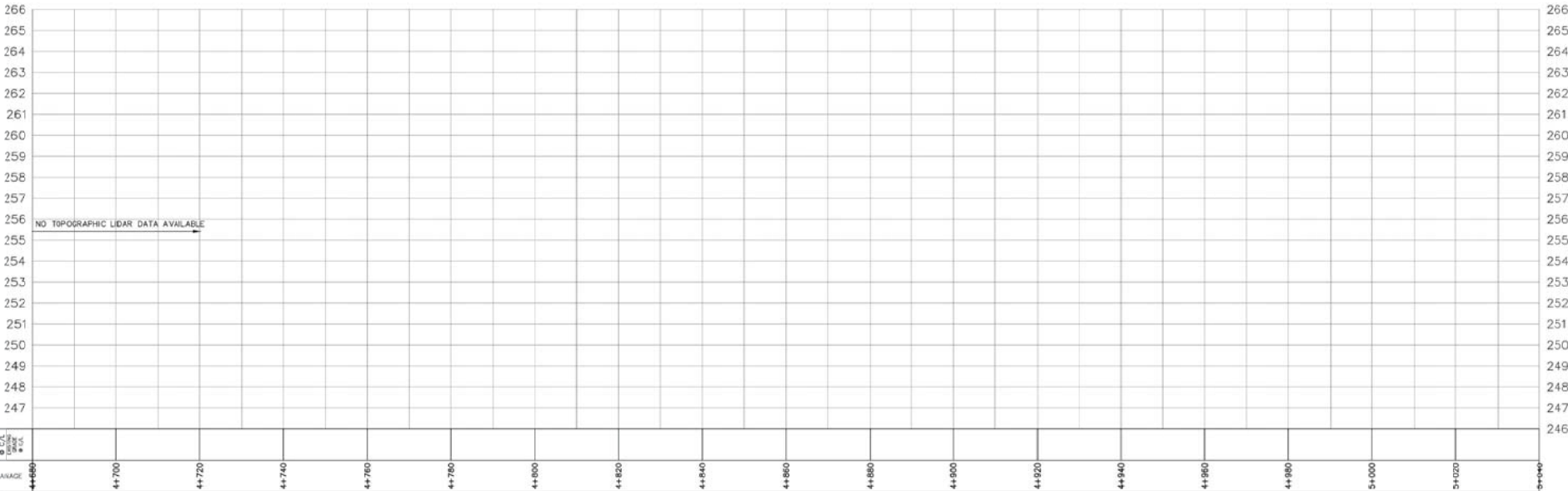
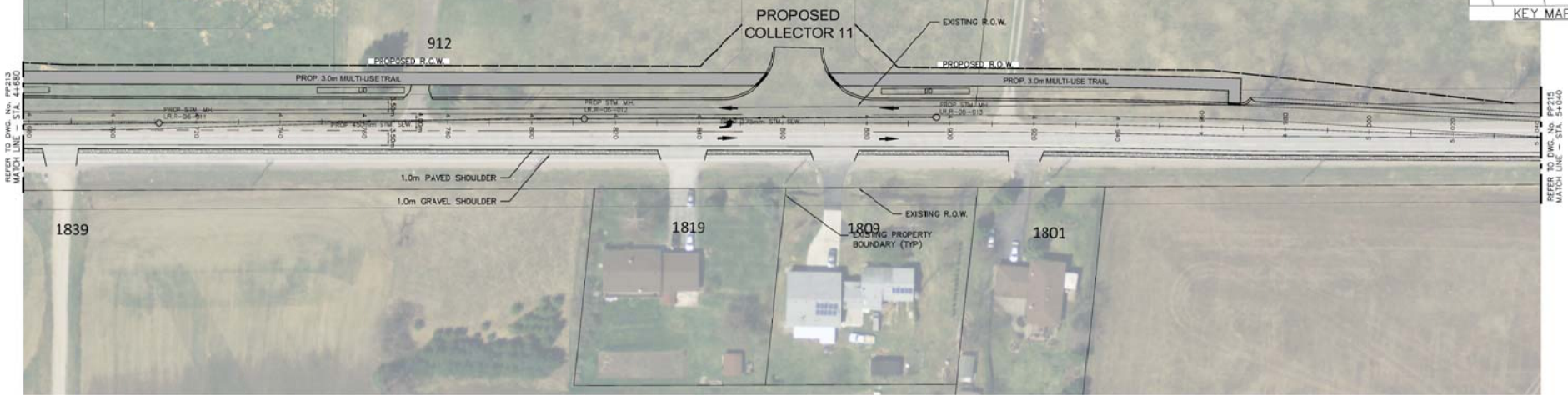
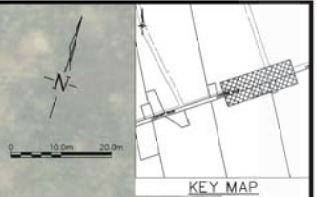
CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

**LOCKHART ROAD
WIDENING**
HURONIA ROAD TO PHASE I BOUNDARY
PLAN & PROFILE
STA. 44-320 TO STA. 4+680

The City of
BARRIE
ENGINEERING DEPARTMENT

SCALE: HOR. 1:100 VERT. 1:100
DESIGN: MSH DRAWN: MSH CONTRACT NO: 2017-
REVIEWED: R/S DATE: 17.02.14 SHEET NO: PP213

LOCKHART ROAD



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



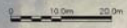
CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

**LOCKHART ROAD
WIDENING**
HURONIA ROAD TO PHASE I BOUNDARY
PLAN & PROFILE
STA. 4+680 TO STA. 5+040

The City of **BARRIE**
ENGINEERING DEPARTMENT

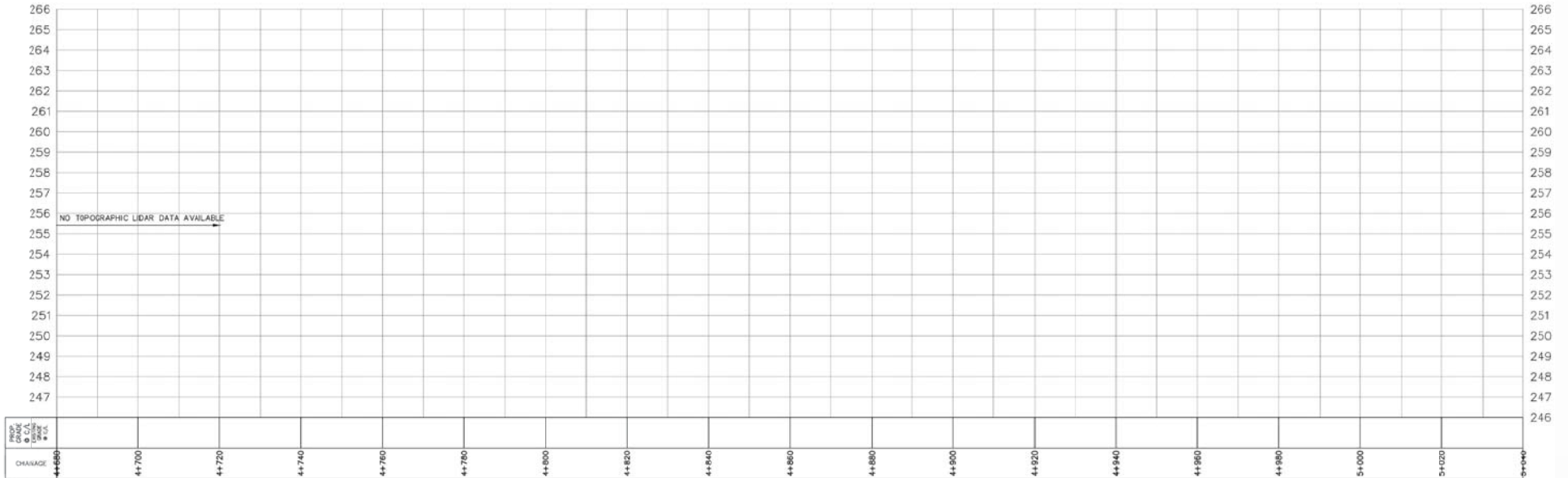
SCALE HOR. 1:100	VERT. 1:100	CONTRACT NO. 2017-
DESIGN MSH	DRAWN MSH	SHEET NO. PP214
REVIEWED RIS	DATE 17.02.14	

LOCKHART ROAD



KEY MAP

REFER TO DWG. NO. PP214
MATCH TO EXISTING



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.

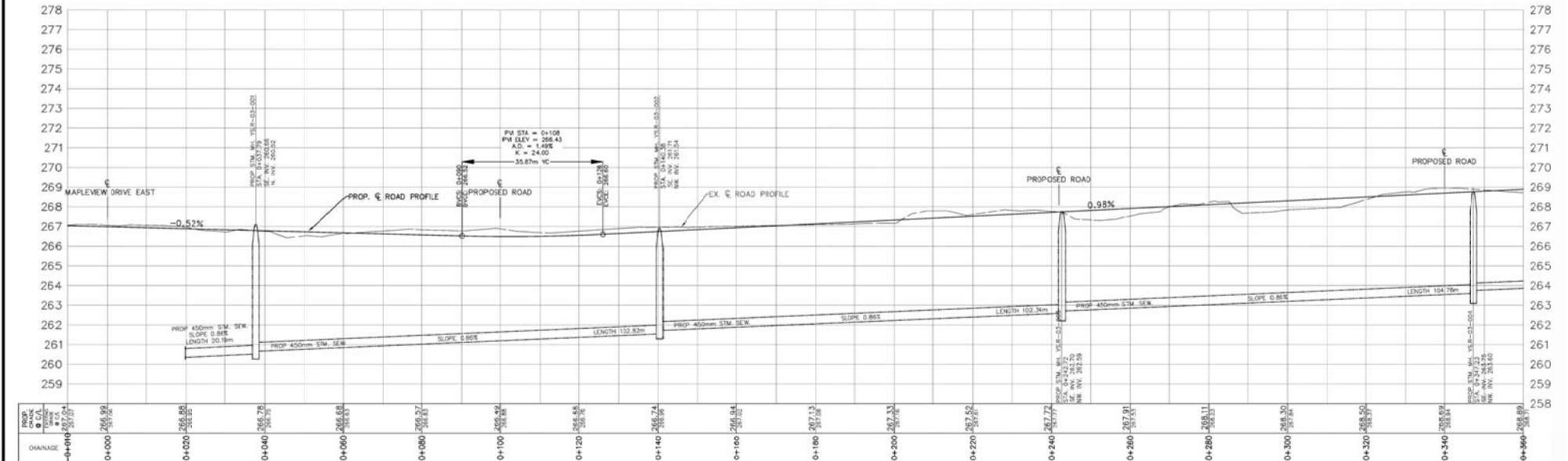
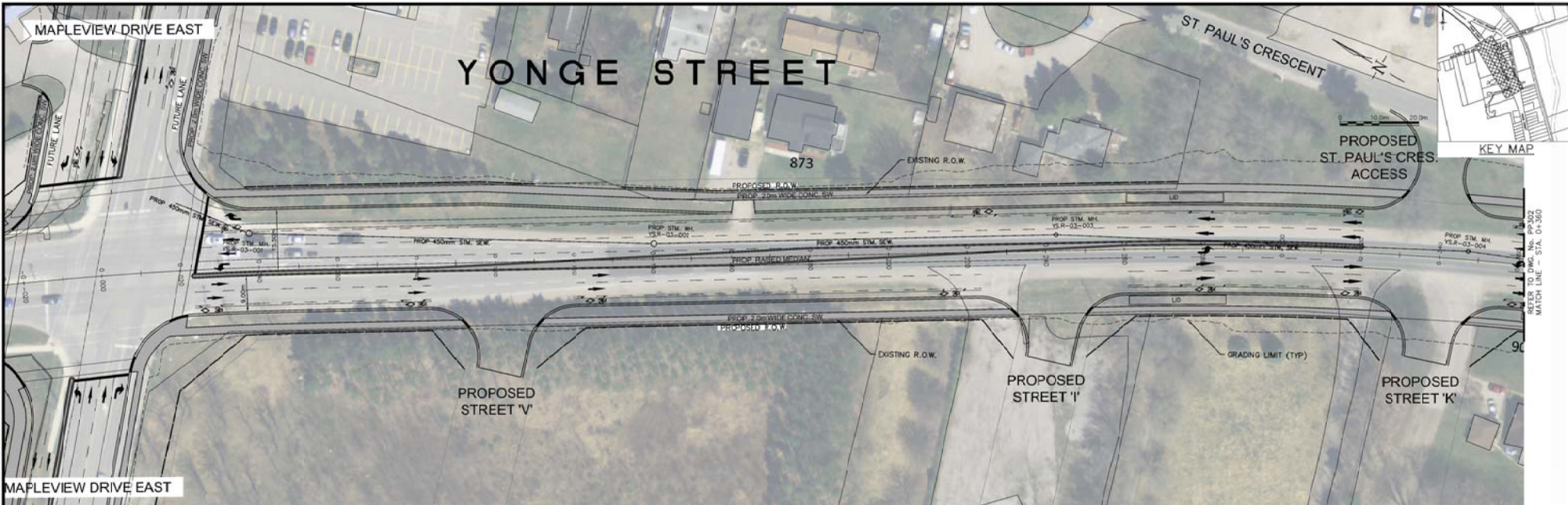


CITY OF BARRIE
APPROVED
DATE:
.....
DIRECTOR OF ENGINEERING

**LOCKHART ROAD
WIDENING**
HURONIA ROAD TO PHASE I BOUNDARY
PLAN & PROFILE
STA. 5+040 TO STA. 5+160.5

The City of
BARRIE
ENGINEERING DEPARTMENT

SCALE HOR. 1:100	VERT. 1:100	CONTRACT NO. 2017-
DESIGN MSH	DRAWN MSH	SHEET NO.
REVIEWED RIS	DATE 17.02.14	PP215



GENERAL NOTES
 REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



CITY OF BARRIE
 APPROVED
 DATE:
 DIRECTOR OF ENGINEERING

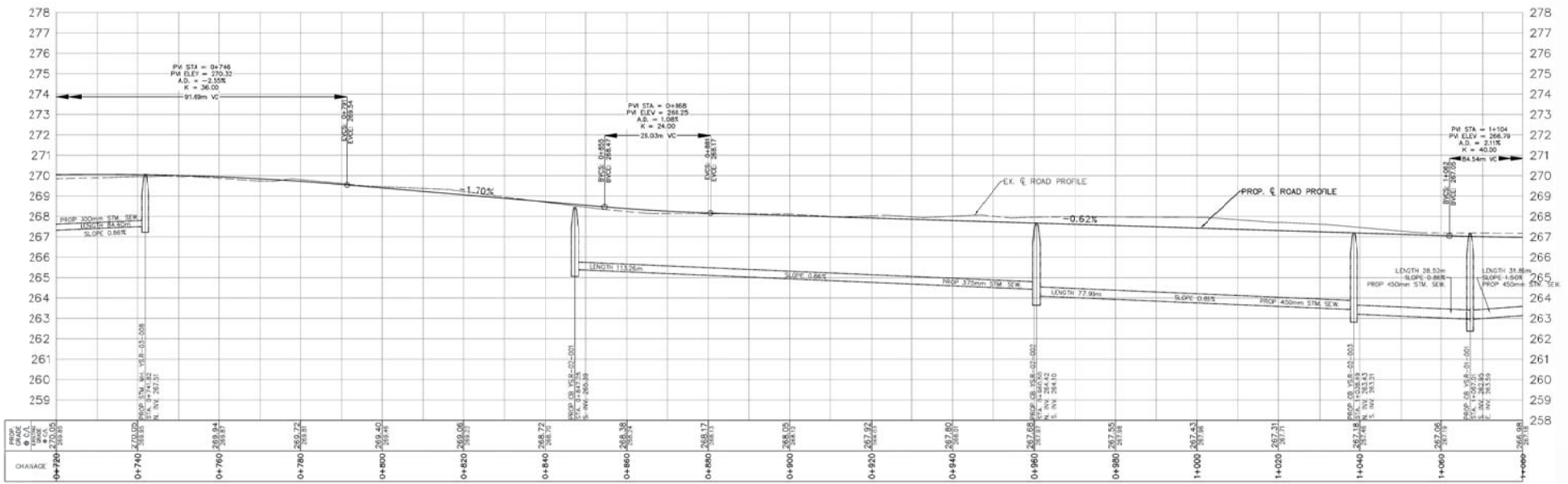
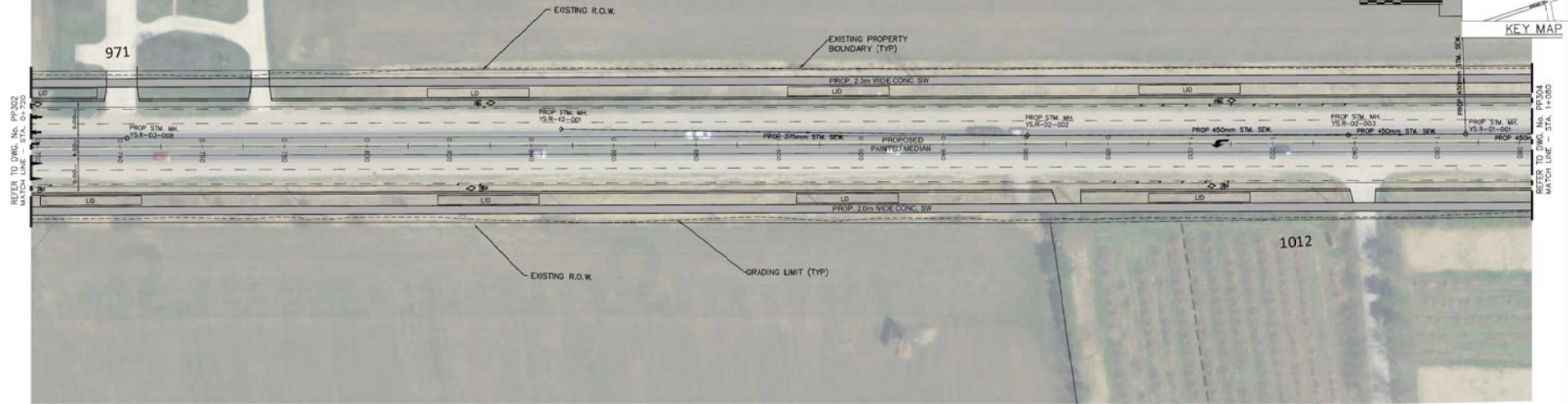
YONGE STREET WIDENING
 MAPLEVIEW DRIVE EAST TO
 LOCKHART ROAD
 PLAN & PROFILE
 STA. 0+000 TO STA. 0+360

The City of
BARRIE
 ENGINEERING DEPARTMENT

SCALE: HOR. 1"=100' VERT. 1"=10'
 DESIGN: MSH DRAWN: MSH
 REVIEWED: HJS DATE: 17.02.14

CONTRACT NO. 2017-
 SHEET NO. PP301

YONGE STREET



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



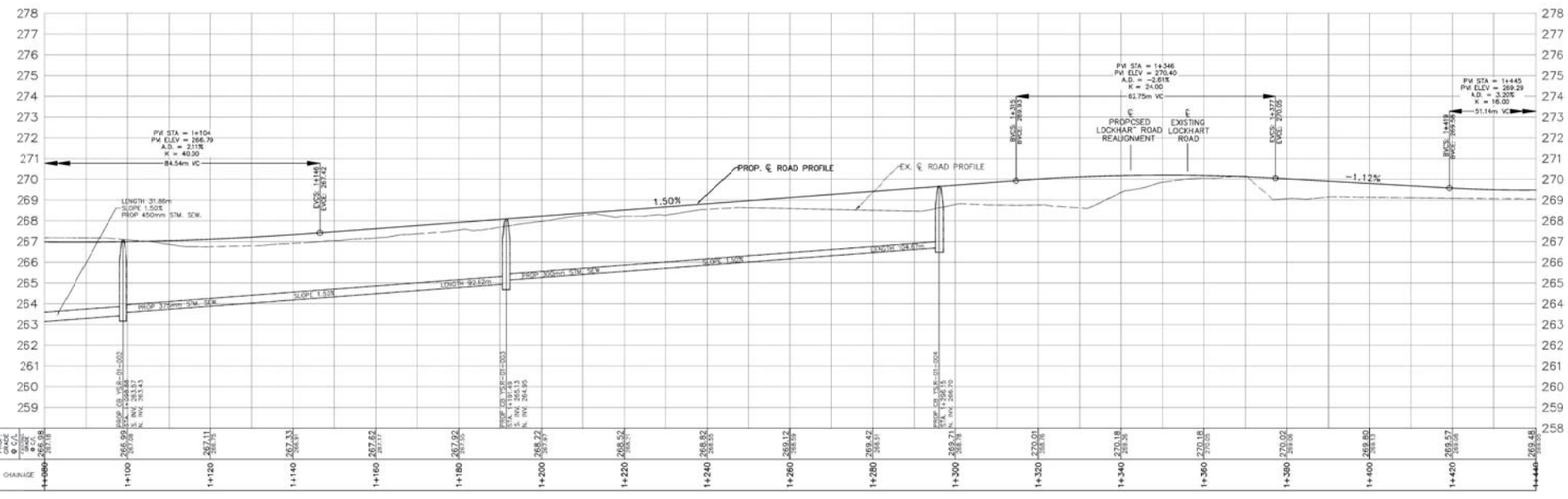
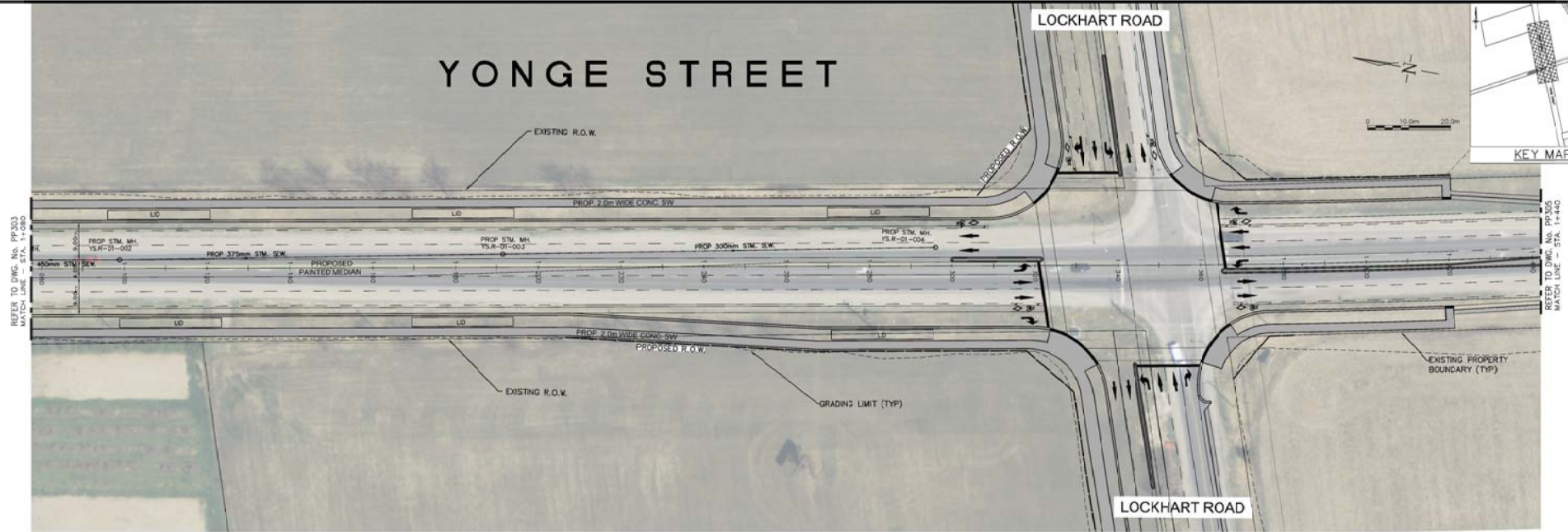
CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

YONGE STREET WIDENING
MAPLEVIEW DRIVE EAST TO
LOCKHART ROAD
PLAN & PROFILE
STA. 0+720 TO STA. 1+080

The City of
BARRIE
ENGINEERING DEPARTMENT

SCALE HOR. 1:100 VERT. 1:100 CONTRACT NO. 2017-
DESIGN MSH DRAWN MSH
REVIEWED HS DATE 17.02.14 SHEET NO. PP303

YONGE STREET



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.

HATCH

CITY OF BARRIE
APPROVED

DATE:

.....
DIRECTOR OF ENGINEERING

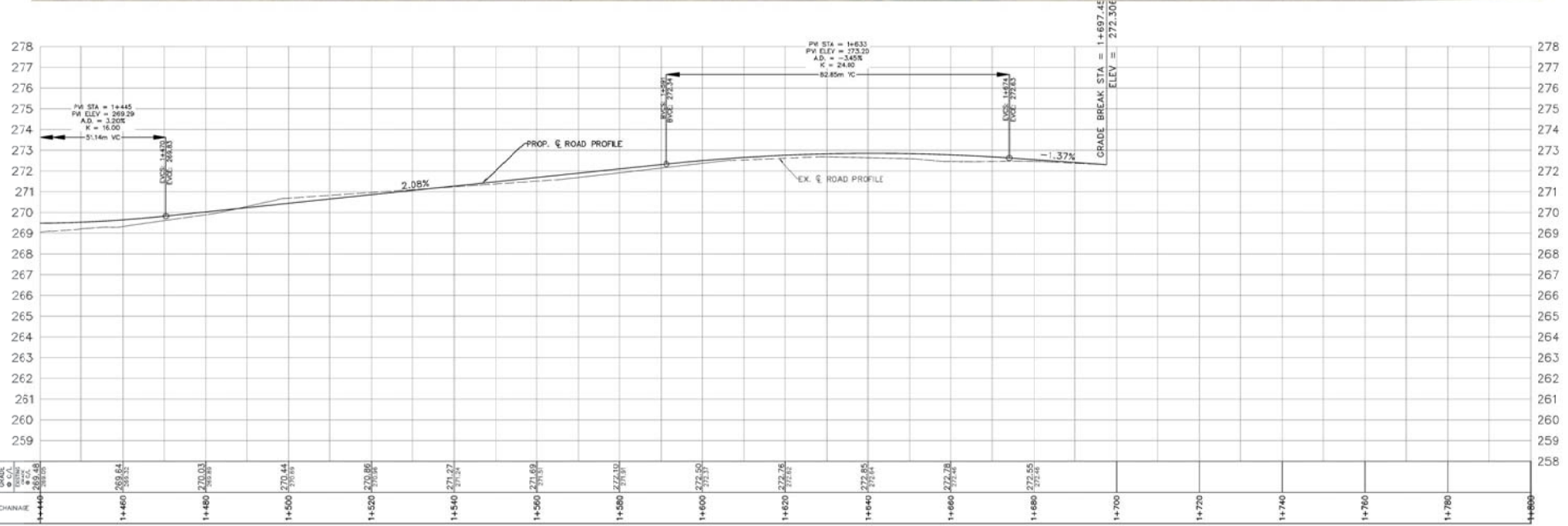
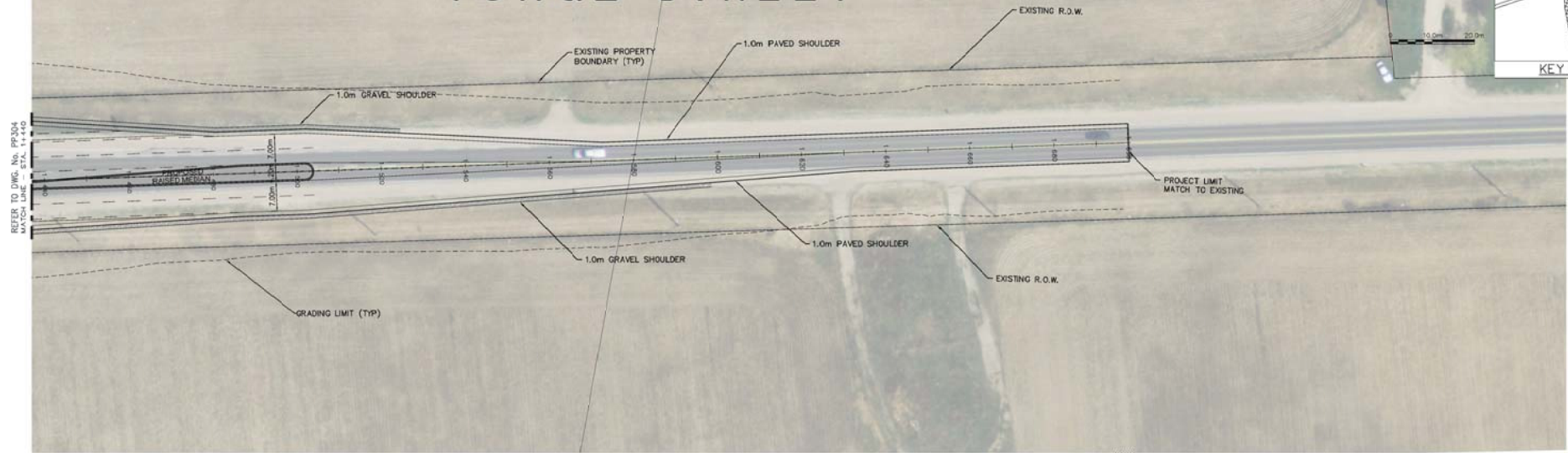
YONGE STREET WIDENING
MAPLEVIEW DRIVE EAST TO
LOCKHART ROAD

PLAN & PROFILE
STA. 1+080 TO STA. 1+440

The City of
BARRIE
ENGINEERING DEPARTMENT

SCALE HOR. 1:100 VERT. 1:100 CONTRACT NO. 2017-
DESIGN MSH DRAWN MSH
REVIEWED RIS DATE 17.02.14 SHEET NO. PP304

YONGE STREET



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

YONGE STREET WIDENING
MAPLEVIEW DRIVE EAST TO
LOCKHART ROAD
PLAN & PROFILE
STA. 1+440 TO STA. 1+698

The City of
BARRIE
ENGINEERING DEPARTMENT

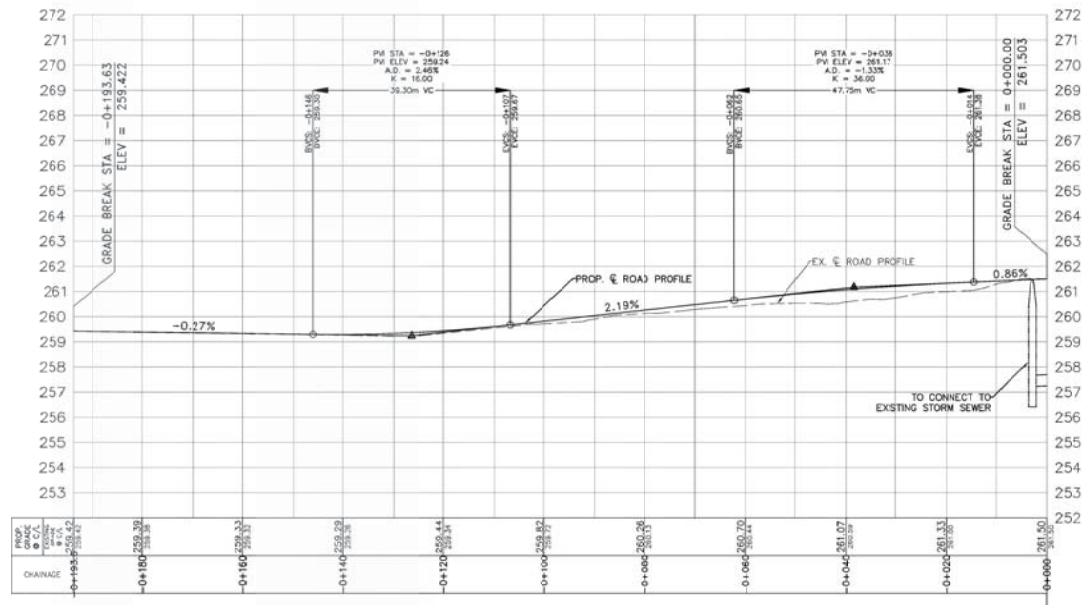
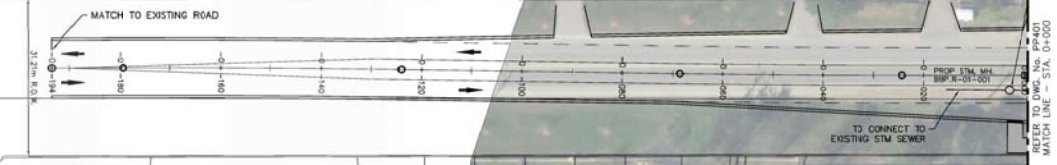
SCALE HOR. 1:100	VERT 1:100	CONTRACT NO. 2017-
DESIGN MSJ	DRAWN MSJ	SHEET NO. PP305
REVIEWED RIS	DATE 17.02.14	

BIG BAY POINT ROAD

NO AERIAL IMAGERY AVAILABLE

KEY MAP

THE QUEENSWAY



PROP. GRADE	EXIST. GRADE	CHAINAGE
259.47	259.47	-0+193.63
259.32	259.32	-0+180.29
259.37	259.37	-0+160.29
259.29	259.29	-0+140.29
259.44	259.44	-0+120.44
259.82	259.82	-0+100.82
260.26	260.26	-0+080.26
260.70	260.70	-0+060.70
261.07	261.07	-0+040.07
261.33	261.33	-0+020.33
261.50	261.50	0+000.00

GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.
B	ISSUED FOR DRAFT SUBMISSION	17.03.24	R.S.
C	ISSUED FOR FINAL SUBMISSION	17.08.25	R.S.

NO.	REVISIONS	DATE	APPROVED



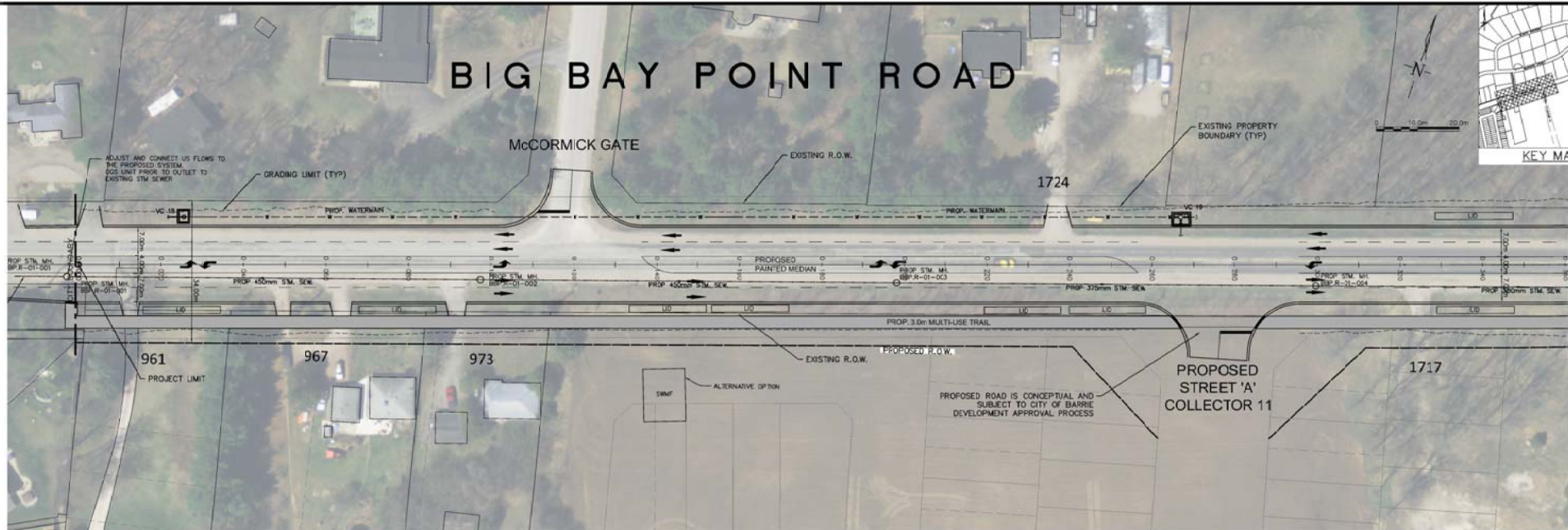
CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

BIG BAY POINT ROAD
WIDENING
CITY BOUNDARY TO COLLECTOR 11
PLAN & PROFILE
STA. -0+193.6 TO STA. 0+000

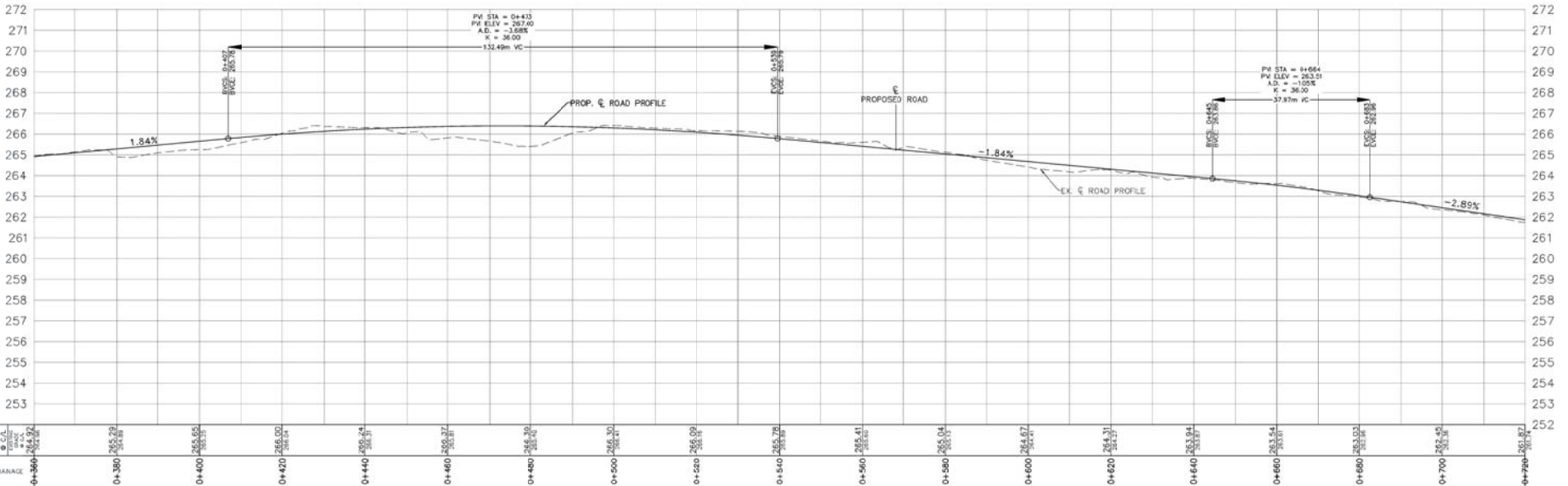
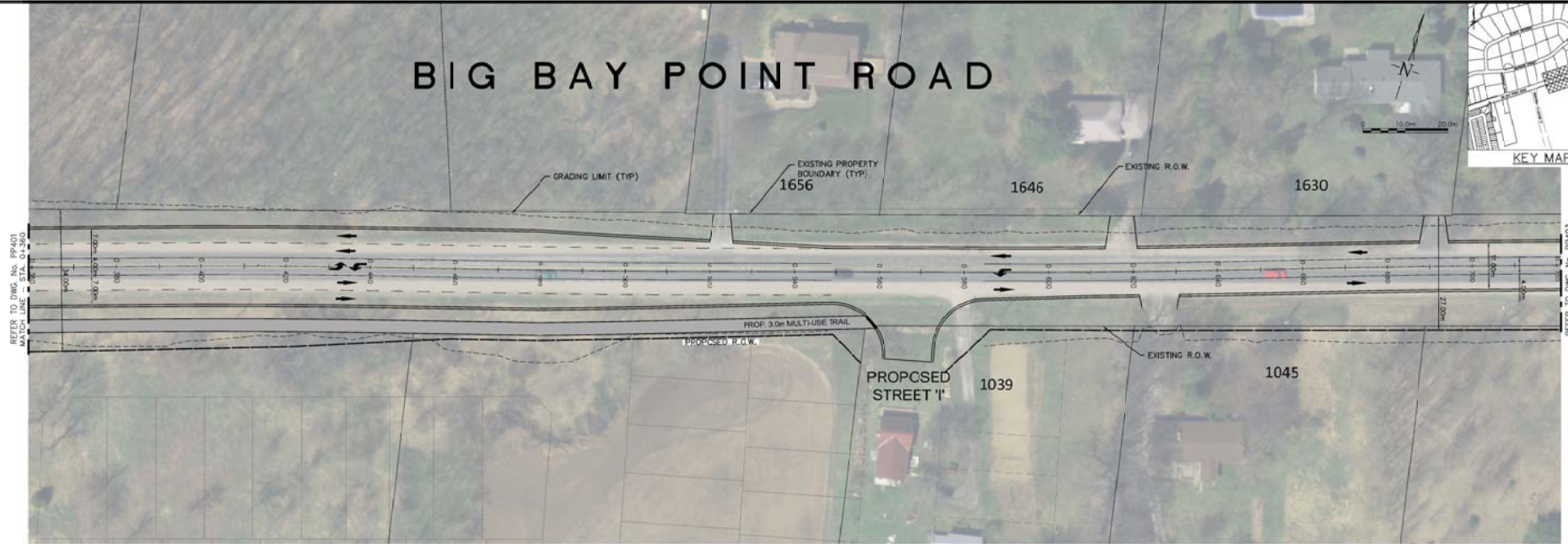
The City of **BARRIE**
ENGINEERING DEPARTMENT

SCALE HOR. 1:100	VERT. 1:100	CONTRACT NO. 2017-
DESIGN MSJ	DRAWN MSJ	SHEET NO. PP400
REVIEWED HIS	DATE 17.08.22	

BIG BAY POINT ROAD



BIG BAY POINT ROAD



CHANGELINE	0+360	0+380	0+400	0+420	0+440	0+460	0+480	0+500	0+520	0+540	0+560	0+580	0+600	0+620	0+640	0+660	0+680	0+700	0+720
GRADE	254.92	255.22	255.55	255.92	256.24	256.37	256.39	256.30	256.02	255.78	255.41	254.94	254.67	254.31	253.94	253.54	253.03	252.50	252.07

GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



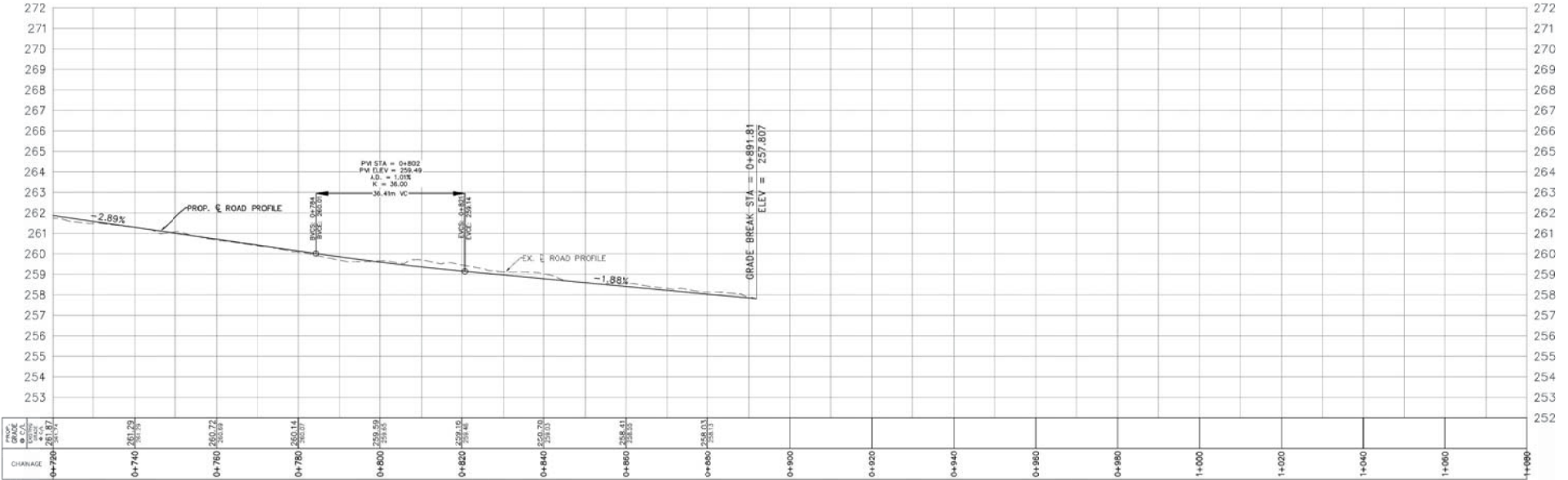
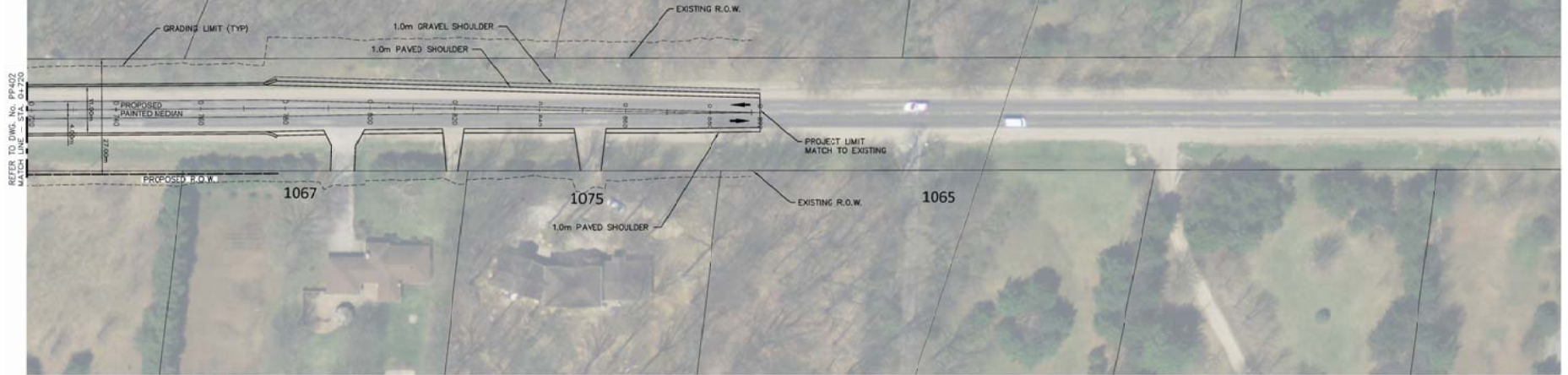
CITY OF BARRIE
APPROVED
DATE:
DIRECTOR OF ENGINEERING

BIG BAY POINT ROAD
WIDENING
CITY BOUNDARY TO COLLECTOR 11
PLAN & PROFILE
STA. 0+360 TO STA. 0+720

The City of **BARRIE**
ENGINEERING DEPARTMENT

SCALE HOR. 1:100	VERT. 1:100	CONTRACT NO. 2017-
DESIGN MSH	DRAWN MSH	SHEET NO. PP402
REVIEWED BJS	DATE 17.02.14	

BIG BAY POINT ROAD



GENERAL NOTES
REFER TO CURRENT CITY OF BARRIE STANDARDS FOR APPLICABLE GENERAL NOTES.

NO.	REVISIONS	DATE	APPROVED
A	ISSUED FOR INTERNAL REVIEW	17.03.01	R.S.



CITY OF BARRIE
APPROVED
DATE:
.....
DIRECTOR OF ENGINEERING

BIG BAY POINT ROAD
WIDENING
CITY BOUNDARY TO COLLECTOR 11
PLAN & PROFILE
STA. 0+720 TO STA. 0+892

The City of **BARRIE**
ENGINEERING DEPARTMENT

SCALE HOR. 1:100	VERT 1:100	CONTRACT NO. 2017-
DESIGN MSH	DRAWN MSH	SHEET NO.
REVIEWED RIS	DATE 17.02.14	PP403

Appendix F: LID Design

Stormwater Management Evaluation Matrix Assumptions

Property Cost	(\$)	270
Excavation Cost	(\$)	50
Annual Interest Rate	(%)	2.50
Inflation	(%)	1.00
Effective Annual Interest Rate	(%)	1.50
Life Span	(years)	50
Drainage Area	(ha)	1.50
Proposed ROW Width	(m)	34
Length of Road	(m)	440
Imperviousness	(%)	80%
Total Impervious Area	(ha)	1.20
Water Quality Volume (12.5mm x Impervious Area)	(m ³)	150
Centralized Bioretention Surface Area	(m ²)	800
Total Centralized Bioretention Area	(m ²)	1,200
Linear Bioretention Surface Area (assume 1m per side)	(m ²)	800
Infiltration Trench/Gallery Area (assumes 1m H x 1m W)	(m)	374
Perforated Pipe Length	(m)	374
Additional Land for enhanced grass swale (urban section)	(m ²)	3,520
Modified Rational 100 Year Storage Volume	(m ³)	250
Oversized Pipe (1350mm diameter)	(m)	185
Dry Pond Area (assumes 20% of Drainage Area)	(m ²)	2,992
Wet Pond Permanent Pool Volume	(m ³)	305
Wet Pond Area (assumes 20% of Drainage Area)	(m ²)	2,992

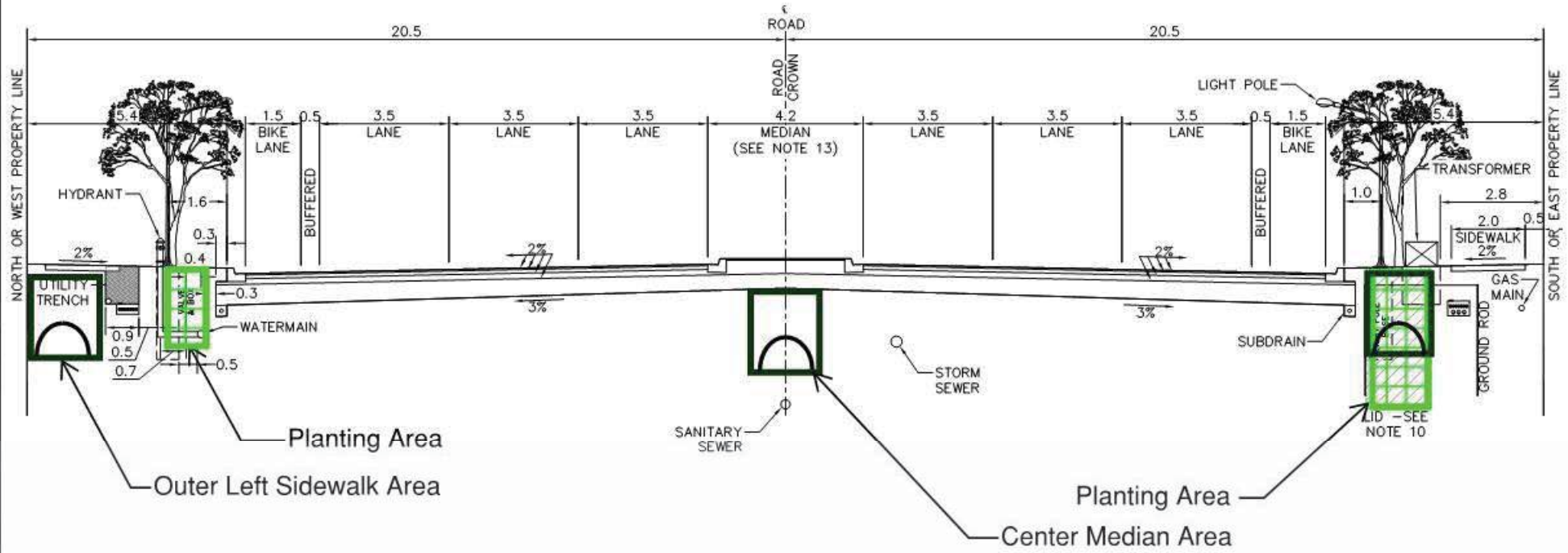
Stormwater Management Evaluation Matrix

	How Criteria is Being Assessed	Bioretention		Infiltration Trench		Perforated Pipe	Infiltration Gallery (Stormtech)		Enhanced Grass Swale		Stormceptor	Mechanical Filtration (Jellyfish)	Oversized Pipes	Dry Pond (for Road only)	Wet Pond (for Road only)	Landowner Ponds	
		Centralized	Linear	Centralized	Linear		Centralized	Linear	Rural	Urban							
Water Quality Evaluation																	
Total Suspended Solids	Ability to achieve 80% TSS removal					N/A							N/A				
Phosphorus	Ability to achieve 80% P removal					N/A							N/A				
Volume Reduction Evaluation (Infiltration)																	
Infiltration Volume	Ability to infiltrate 12.5 mm (assumes good soil)											N/A	N/A	N/A		N/A	N/A
Groundwater Level	Works in areas of high groundwater											N/A	N/A	N/A		N/A	N/A
Water Quantity Evaluation (Rate)																	
Quantity Control	Ability to match post to pre flows	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A					
Operation and Maintenance																	
Inspection Frequency (per year)		2x		1/5x		1/5x		1x		1x		1x	1x	1/5x	1x	1x	1x
Maintenance Frequency (per year)		1x		1x		1/5x		1/5x		1/10x		1x	1/5x	1/5x	1/10x	1/10x	1/10x
Property Requirements																	
Property	Ability to fit within proposed ROW without additional land acquisition																
Score																	
Evaluation score based on ranking identified below		34	40	30	36	19	32	38	40	32	23	27	18	38	27	31	
Economic Evaluation																	
Evaluation is based on a 1.5 ha drainage area with a 80% imperviousness (440 m road with a 34m ROW)																	
Property Cost (A)		\$324,000	\$0	\$100,980	\$0	\$0	\$100,980	\$0	\$0	\$950,400	\$0	\$0	\$0	\$807,840	\$807,840	DC Credits	
Capital Cost (B)		\$315,237	\$255,237	\$166,958	\$86,918	\$143,990	\$80,727	\$40,000	Unknown	\$512,050	\$92,950	\$109,725	\$109,725				
Annual Maintenance Cost (C)		\$5,858	\$4,682	\$4,682	\$4,359	\$2,200	\$2,500	Unknown	\$0	\$500	\$500	\$500					
Rehabilitation Cost ² (D)		\$46,178	\$0	\$0	\$0	\$0	\$0	Unknown	\$0	\$30,000	\$240,000	\$240,000					
Life Span Cost = A + B + C x 50 Years + D		\$978,338	\$255,237	\$502,055	\$401,075	\$321,034	\$462,897	\$361,917	\$190,727	\$1,141,127	\$165,000	\$512,050	\$955,790	\$1,182,565	\$374,725		
Present Value of Total Annual Maintenance and Rehabilitation Cost ³		\$236,871	\$236,871	\$163,880	\$163,880	\$163,880	\$152,547	\$152,547	\$76,999	\$76,999	\$87,499	\$0	\$81,130	\$526,545	\$526,545		
Present Value of Lifespan cost		\$876,108	\$492,108	\$431,818	\$330,838	\$250,798	\$397,517	\$296,537	\$157,726	\$1,027,399	\$127,499	\$512,050	\$981,920	\$1,444,110	\$636,270		

	Negative Impact				Neutral Impact	Positive Impact			
	Greatest			Least		Least			Greatest
	1	2	3	4	5	6	7	8	9
Total Suspended Solids	Does not provide TSS removal					Provides some TSS Removal	Provides 50% TSS Removal	Provides 60 - 70% TSS Removal	Provides 80% or greater TSS Removal
Phosphorus	Does not provide Phosphorus Removal					Provides some Phosphorus Removal	Provides 50% Phosphorus Removal	Provides 60 - 70% Phosphorus Removal	Provides 80% or greater Phosphorus Removal
Infiltration Volume	Facility can not infiltrate the 12.5mm volume						Facility can infiltrate some of the 12.5mm volume		Facility can infiltrate 12.5mm volume
Groundwater Level	Facility does not function in high groundwater levels		Facility does not function properly, but could be utilized in high groundwater levels				Facility can function with reduced abilities in high groundwater levels		Facility can properly function in a high groundwater table
Quantity Control									Provides extended detention and quantity control for the 2-100 year events
Property	Does not fit in the ROW, additional lands required		Can partially fit in the ROW, additional land may be required				Fits within the ROW, may require underground/surface space currently used for other items (trees, utility, etc.)		Fits within the ROW

Notes:

- Centralized Bioretention facility require separate detention facilities for the 2- to 100-year events. Detention cannot take place in these facilities.
- Rehabilitation cost for a Bioretention facility includes replacing top layer of amended soil, mulch and vegetation and was applied at year 25. Rehabilitation costs for the Ponds includes cleanup and replacing vegetation and was applied at years 12, 24 and 36.
- Present Value = $\sum (\text{Annual Maintenance Cost} + \text{Rehabilitation Cost} - \text{when applicable}) / (1 + \text{Effective Annual Interest Rate})^n \text{ Year}$. The Effective Annual Interest Rate = Annual Interest Rate - Inflation



NOTES:

1. ROADWAY CROWN IS SHOWN IN THE CENTRE OF PAVEMENT. THERE MAY BE INSTANCES WHERE IT IS PREFERRED TO LOCATE THE CROWN COINCIDENT WITH THE CENTERLINE SEPARATING OPPOSING TRAFFIC.
2. COVER ON STORM, SANITARY AND WATERMAIN AS PER CITY OF BARRIE DESIGN CRITERIA.
3. REFER TO TRANSPORTATION POLICIES AND DESIGN GUIDELINES FOR PAVEMENT DESIGN METHODOLOGY.
4. TREES TO BE PLACED IN LOCATIONS APPROVED BY THE PARKS, PLANNING, AND DEVELOPMENT BRANCH. (SEE BSD-1315)
5. ALL BOULEVARDS TO BE ACTIVELY GROWING NURSERY SOD TO BE LAID ON 200mm OF TOPSOIL GRADED AND ROLLED IN ACCORDANCE WITH CITY OF BARRIE LOT GRADING AND DRAINAGE STANDARDS AND DESIGN MANUAL.
6. SUBDRAINS TO BE INSTALLED AS PER GENERAL NOTE BSD-N2 "E" AND BSD-314.
7. ALL SERVICE LOCATIONS SHOWN ARE FOR GUIDELINE PURPOSES ONLY AND MAY DEVIATE AS PER THE DIRECTION OF THE CITY ENGINEERING DEPARTMENT WHEN STANDARD LOCATION CANNOT BE ACHIEVED.
8. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.
9. FOR COMMON UTILITY TRENCH DESIGN AND CLEARANCE DETAILS REFER TO BSD-315.
10. RIGHT-OF-WAY SHALL BE DESIGNED TO INCORPORATE LOW IMPACT DEVELOPMENT (LID) FACILITIES AS NEEDED. MAXIMUM AVAILABLE WIDTH FOR LID IN BOULEVARD IS SHOWN. LID SYSTEMS TO BE DESIGNED IN CONFORMANCE WITH THE CITY OF BARRIE STORM DRAINAGE AND STORMWATER MANAGEMENT POLICIES AND DESIGN GUIDELINES.
11. THE CLEARANCE FROM THE SIDEWALK TO THE TRANSFORMER IS MINIMIZED TO 0.3 m TO MAXIMIZE THE CLEARANCE ON THE OTHER SIDE (FROM THE TRANSFORMER TO THE CURB).
12. FOR DETAILS ON LIGHT STANDARD AND POLE BASE LOCATION AND DEPTH REFER TO CITY OF BARRIE ROADWAY ILLUMINATION POLICIES AND DESIGN GUIDELINES AND ASSOCIATED DRAWINGS.
13. AT AN INTERSECTION, THE 4.2 METRE MEDIAN BECOMES A 3.0 METRE LEFT-TURN LANE WITH 1.2 METRE RAISED MEDIAN.

CITY OF BARRIE STANDARD								APR'D:	DATE: 16.07.11
29.2 m ASPHALT 41.0m ROAD ALLOWANCE								DRAWN:	SCALE: N.T.S
				DRAFT 95% SUBMISSION					
NO.	REVISION	INIT.	DATE	BSD-311					

SWM Volume Treatment Requirements

A. Facility Requirements

Typical SWM Facility Requirements

	Length to Width Ratio	Depth [m]		
Facility	4	2		

B. Design Depth Requirements

For each catchment develop the required treatment volume

SWM FACILITY SUMMARY TABLE															
Catchment Description		Treatment Requirements				Proposed Bottom Design [m]			Proposed Dimensions			Facility Design			Comment
#	Total Drainage Area [ha]	Quantity Control Volume (m3)	Quality Control Volume (m3)	LID Control Volume (m3)	Total Volume (m3)	Width	Length	Depth	Width	Length	Top Area [m2]	Total Volume [m3]	Net Volume [m3]		
Mapleview Drive East															
MD.R-01	2.49	497.00	605.00	258.75	1102.00	6.50	26.00	2.00	22.50	42.00	945	1114	12	SIS Over Control	
MD.R-02	6.03	768.00	1465.00	660.15	2233.00	11.50	46.00	2.00	27.50	62.00	1705	2234	1		
MD.R-03	1.32	220.00	321.00	122.20	541.00	2.80	11.20	2.00	18.80	27.20	511	543	2		
MD.R-04	0.98	147.00	238.00	80.79	385.00	1.50	6.00	2.00	17.50	22.00	385	394	9		
3 + 4	2.30	367.00	559.00	202.99	926.00	5.50	22.00	2.00	21.50	38.00	817	938	12		
MD.R-05	3.89	475.00	945.00	670.80	2090.80	11.00	44.00	2.00	27.00	60.00	1620	2104	13		
5+YS3	6.41	704.00		960.68	3221.68	14.90	59.60	2.00	30.90	75.60	2336	3224	2		
MD.R-06	4.97	536.00	1207.00	477.25	2220.25	11.50	46.00	2.00	27.50	62.00	1705	2234	14		
MD.R-07	2.02	283.00	491.00	170.10	944.10	5.80	23.20	2.00	21.80	39.20	855	989	45		
Lockhart Road															
LR.R-01	0.99	247.00	241.00	88.00	488.00	2.40	9.60	2.00	18.40	25.60	471	494	6	SIS Over Control	
LR.R-02	3.50	731.00	850.00	395.20	1581.00	8.90	35.60	2.00	24.90	51.60	1285	1602	21		
LR.R-03	2.16	532.00	525.00	244.80	1301.80	7.50	30.00	2.00	23.50	46.00	1081	1306	4		
LR.R-04A	4.41	782.00	1071.00	497.60	2350.60	12.00	48.00	2.00	28.00	64.00	1792	2368	17		
LR.R-04B	1.43	261.00	347.00	136.00	744.00	4.30	17.20	2.00	20.30	33.20	674	748	4		
LR.R-05	1.47	366.00	357.00	247.60	723.00	4.20	16.80	2.00	20.20	32.80	663	733	10		
LR.R-06	3.97	478.00	964.00	238.40	1680.40	9.30	37.20	2.00	25.30	53.20	1346	1692	12		
Yonge Street															
YS.R-01	0.99	159.00	241.00	105.00	505.00	2.50	10.00	2.00	18.50	26.00	481	506	1		
YS.R-02	0.99	151.00	241.00	109.50	501.50	2.50	10.00	2.00	18.50	26.00	481	506	5		
5+YS3+LR.R-04B	3.41	571.00	829.00	350.50	1750.50	9.60	38.40	2.00	25.60	54.40	1393	1761	11		
YS.R-03	2.52	229.00	612.00	289.88	1130.88	6.60	26.40	2.00	22.60	42.40	958	1132	2		
Bay Point Road															
BBPR.R-01	2.08	183.00	311.00	182.00	494.00	2.40	9.60	2.00	18.40	25.60	471	494	0	SIS Over Control	
BBPR.R-02	1.12	248.00	463.00	110.50	711.00	4.10	16.40	2.00	20.10	32.40	651	718	7		
SIS Over Control (Quantity and Quality Volume Only)															

Input			
Catchment	Area	Impervious	Enhanced Storage Volume (m3/ha)
MD.R-01	2.49	80	242.94
MD.R-02	6.03	80	242.94
MD.R-03	1.32	80	242.94
MD.R-04	0.98	80	242.94
MD.R-05	3.89	80	242.94
MD.R-06	4.97	80	242.94
MD.R-07	2.02	80	242.94
LR.R-01	0.99	80	242.94
LR.R-02	3.5	80	242.94
LR.R-03	2.16	80	242.94
LR.R-04A	4.41	80	242.94
LR.R-04B	1.43	80	242.94
LR.R-05	1.47	80	242.94
LR.R-06	3.97	80	242.94
YS.R-01	0.99	80	242.94
YS.R-02	0.9928	80	242.94
YS.R-03	2.52	80	242.94
BBPR.R-02	1.28	80	242.94
BBPR.R-01	1.904	80	242.94

Calculation			
Catchment		Enhanced	Unit
MD.R-01	=	605	m3
MD.R-02	=	1465	m3
MD.R-03	=	321	m3
MD.R-04	=	238	m3
MD.R-05	=	945	m3
MD.R-06	=	1207	m3
MD.R-07	=	491	m3
LR.R-01	=	241	m3
LR.R-02	=	850	m3
LR.R-03	=	525	m3
LR.R-04A	=	1071	m3
LR.R-04B	=	347	m4
LR.R-05	=	357	m3
LR.R-06	=	964	m3
YS.R-01	=	241	m3
YS.R-02	=	241	m3
YS.R-03	=	612	m3
BBPR.R-02	=	311	m3
BBPR.R-01	=	463	m3

enhanced
 35 140
 55 190
 70 225
 85 250

Note
 Input or select from list

